INSTRUCTION MANUAL

ADR-50D

UNIVERSAL CLOSURE MONITOR

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WARRANTY

The manufacturer warrants each unit for a period of one year to be free of defects in material and workmanship under normal use and service, the obligation of the manufacturer under this warranty being limited to replacing and at the factory of manufacture any part of said unit found to be defective.

This warranty is expressly in lieu of all other warranties and representations, expressed of implied, and all other obligations, liabilities, and consequential damages which might arise out of the utilization of this equipment.

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1.0 DESCRIPTION

The ADR-50D Universal Closure Monitor is a very accurate method to measure the internal vacuum or pressure of cans, glass containers or plastic enclosures with a foil or metalized foil closure on a single file inline basis.

The ADR-50D is a self-contained unit that mounts directly to your conveyor. It consists of the Control Head which contains all of the sensors and control circuits necessary for operation, the mechanical mount and lifter mechanism and rejector. It is complete and ready for installation as supplied.

1.1 FUNCTION

The ADR-50D consists of two measuring systems. The first is the Position Sense system to locate the container under test and the second is the Proximity Sensing system to measure the lid position and hence the internal pressure.

The Position Sense system utilizes a pulsed infrared light source and tuned infrared receiver to minimize external light or noise interference.

The Proximity Sense system uses an eddy current type of measurement which responds to any type of metallic material. This sensing system assures you of extremely accurate measurements.

The ADR-50D is capable of measuring container vacuum or pressure well in excess to 2500 containers per minute. The limiting factor is the speed of the associated reject system. The Standard Speed Rejector or SSR-1000C is capable of rejecting containers of 800 containers per minute, and the High Speed Rejector or HSR-2000 is capable of rejecting containers at a rate in excess of 1200 c.p.m.

1.1.1 FEATURES: Among the special features of the ADR-50D are the following:

A. Variable Rate Rejector is standard on the ADR-50D. The reject system will accommodate lines with modulated line speeds without a requirement for purchasing or installing rotary shaft encoders.

B. Storage on information production container details of 100 containers for quick changeover.

C. Auto-Calibration for instantaneous calibration.

D. Password protection at three levels for access control.

E. Rolling Average feature provides constant monitoring of your process to detect any changes in process parameters such as fill level, fill temperature, etc. (See 3.2.14).

F. Rolling Average Auto-Recalibration. If an unusually large shift in rolling average is encountered, you can program the ADR-50D to recalibrate automatically.

G. Counters. Three counters are included in the features of the ADR-50D. They are Total Count, Net Count and Reject Count. Either Total Count or Net Count (total count, less reject count) can be displayed, as well as Reject count.

H. An RS-232 Communications Port is available to transmit ADR data.

I. Programmable Alarms/Controls. The ADR-50D provides as standard a control output when either the Rolling Average Upper Limit or Rolling Average Lower Limit is breached.

1.2 APPLICATION

The ADR-50D is suitable for use on cans with conventional, pull tab or tape tab ends, with no coding, ink jet coding, embossed or debossed codes. It is not affected by product touching or coating the can end unless the product deforms the end of the can. The ADR-50D can be used on glass containers with metal lids or with plastic lids with metal foil closures. It can be used on plastic tubs with metal foil (or plastic film with vacuum deposited metal coatings) closures.

It is best suited for containers with closures over 2 inch (50mm) diameter. For smaller diameter closures or for glass lines where you want to detect cocked caps, you should consider the ADR-50DB Bantam model. The ADR-50D will accommodate any closure up to 6.25 inch (160mm) diameter. We can accommodate larger diameter closures on special order.

1.3 OPTIONS

1.3.1 CP-1 – Communications Port can send packages of information to a computer which provided output signal for:

1. Good Container Lid Deflection
2. All Container Lid Deflection
3. In-Limit Rolling Average
4. Out-Of-Limit Rolling Average

Note: See Menu 4 on page 3-29 for more information on the above option.

1.3.2 PC – Programmable Counter Controller Controls Package which provides an alarm/control output signal upon:

1. Excess Consecutive Rejects
2. Excess Rejects within a Given Quantity of Containers
3. Excess Rejects within a Given Time Period
4. A Repetitive Pattern of Rejects Developing
5. A Predetermined Count of containers Processed Being Achieved.

Note: See Menu 5 on page 3-33 for more information on the above option.

1.3.3 AIC-110 – Alarm/Indicator Controller Provides an interface between the ADR-50D logic level control signal output and the devices to be driven.

1.3.4 Relieved Reference Strip option which is used for pressure applications, or for pull tab cans where the center of the container is expected to be higher than the chines or edges of the container. This option has the center of the reference strip cut away so that the center of the container will not lift the reference strip.

1.4 Thank you for selecting the ADR-50D Universal Closure Monitor. We appreciate your confidence and will do our best to provide the support necessary to assure successful use of this equipment.

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2 INSTALLATION

2.0 INTRODUCTION

Installation of the ADR-50D Universal closure monitor has been made as simple as possible, to reduce your installation costs and line down time. By following the procedure outlined, installation will be completed quickly and painlessly.

2.1 LOCATION

Select the position on the line where the ADR-50D is to be installed. On lines coming from the closing machine, the ADR-50D should be located at a point where the containers have cooled as much as possible. This will allow the containers to achieve a fairly uniform internal pressure. Variation in temperature will change the internal pressure of the container, reducing the validity of test results. Also, with greater time after closing, more leakage will occur in defective containers with a better chance of detection.

Where containers are drawn from the warehouse for labeling and shipment, the only consideration is convenience of handling. Most installations are made just before the labeler.

The location selected should be close to a leg or support on the conveyor, at a point of maximum conveyor stiffness. Since the unit is supported from a single point on the conveyor side and vibration or movement of the conveyor bed will be transmitted through the support pipe to the sensor housing. Therefore, care should be used in locating the ADR-50D at a point of minimum movement in the conveyor. *Do not mount the ADR-50D support pipe on an adjacent wall or building structural member, since the sensors must move with the motion of the conveyor bed. If excess motion is encountered, connect a stiffener from the conveyor to the floor or building structure.*
The ADR-50D requires about sixteen inches (40cm) of clear line space. It will be necessary to remove the guide rail from one side of the line where the containers are being rejected to.

2.2 POWER REQUIREMENTS

The ADR-50D is wired to accept the power supply of the country of installation. It requires single phase power, 50 or 60 hertz at 1 amp. Standard voltages are 90 - 264 volts. Power for the ADR-50D should not be taken from a line used to power heavy motors or motor controllers where electrical “noise” is likely to be present on the line.

Compressed air at 2 c.f.m., 60 to 120 p.s.i. (4 to 8 atm.) is required to operate the reject mechanism. For line speeds in excess of 500 c.p.m. The air supply line must be one half inch i.p.s. Minimum. A filter, regulator and lubricator must be installed in the air line supplying the rejector.

2.3 PRELIMINARY

Unpack the unit and inspect for damages. Observe the arrow on the delrin reference strip at the bottom of the line sensor housing. This indicates the direction of container flow.

Remove the front panel and enclosure from the line sensor housing by unscrewing the four thumb screws and unplug the squire connector from the back of the pan assembly and set aside the front panel and enclosure with the two cables (C-1A & C-2A).

Be sure that the tapered side of the lower clamping ring (1, Fig. 2.1) atop the housing mates with the half-ball (2, Fig. 2.1) on the candy cane. Feed the three studs at the top of the housing through the holes in the upper clamping ring and secure with the three lock-washers and 1/4-20 nuts provided. DO NOT INSTALL NUTS OR WASHERS BETWEEN UPPER AND LOWER CLAMPING RINGS. (See Fig. 2.1).

Position the housing over the line at the point where the containers are to be checked. Swing the candy cane around until the cane lifter assembly is flat against the conveyor side and temporarily clamp the mounting plate to the conveyor so that the pipe is perpendicular to the conveyor bed.

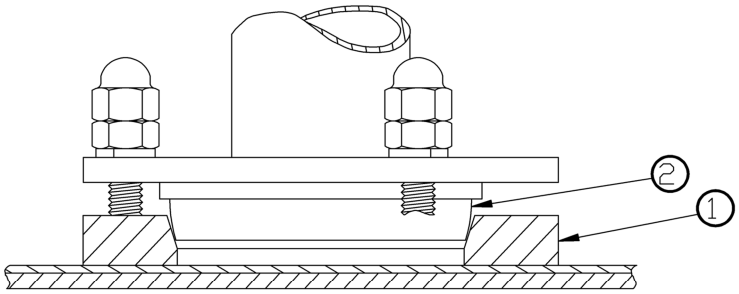


FIGURE 2.1

NOTE: The support pipe may be mounted upstream or downstream from the housing on either side of the conveyor. If the control and indicator lights fall on the wrong side of the line, loosen the ball joint and rotate the housing so that they are where you want them. Then check the Delrin reference strip for correct line flow direction. If this is wrong, remove the screws along the lower edge of the housing, slide the chassis pan out and turn it around to align the arrow with flow direction.

With the cane lifter mounting bracket clamped to the conveyor, make a preliminary adjustment for container height. Crank the cane lifter to its highest position. Loosen the four nuts clamping the can lifter to the candy can pipe and raise the candy cane so that the ADR reference strip clears the top of the container by at least 1 inch (25.4mm). Rotate the centerline adjust crank (at the center of the line housing face) so that the reference strip is at the center of its travel.

Loosen the two nuts on the lock bar located on the cane lifter and lower the housing with the cane lifter handwheel until the reference strip just touches the top of the container. (Note: Do not turn cane lifter handwheel with lock bar tightened for this will strip the gears in cane lifter). Swing the ADR housing across the line so that the top of the container is centered under the red crosslines on the reference strip. Tighten the four pipe clamp nuts to lock the pipe in the cane lifter and tighten the four acorn nuts to secure them.

Remove the tallest container to be tested from the line and replace it with the shortest container to be tested. Crank the can lifter down to see that the height adjustment will cover the full range. Position the container so that it is centered under the crosslines on the Delrin reference strip. Check to see that the rejector can be mounted on one side of the line and provisions for rejected containers can be made on the other side. If everything is clear, proceed with permanent installation.

Unplug the power cable (C-2A) from the enclosure and connect the 9 pin square connector side of the C-2A cable marked with a red dot to the cable connector, also marked with a red dot, emerging from inside the line housing from the candy cane mounting pipe. Connect the (C-1A) sense cable, marked with a green dot to the back of the pan assembly. Reconnect the round connector of the power cable (C-2A) to the back of the enclosure and slide the front panel and enclosure back into the line housing and tighten the four thumb screws.

2.4 PERMANENT INSTALLATION

2.4.1 EQUIPMENT MOUNTING: Attach the cane lifter assembly to the conveyor bed permanently. If there is insufficient stiffness when the unit is attached, stiffen with bolts and spacers to the other side of the conveyor.

2.4.2 ELECTRICAL INSTALLATION: Bring a power line with ground into the condulet junction box at the lower end of the pipe. Wire as shown in figure 2.2. Connect the black wire (L-1) to the black wire, the white wire (L-2) to the white wire and the green wire (Ground) to green. Connect the wires from the rejector (violet and brown) to the corresponding wires in the condulet box.

ADR-50D INSTALLATION WIRING

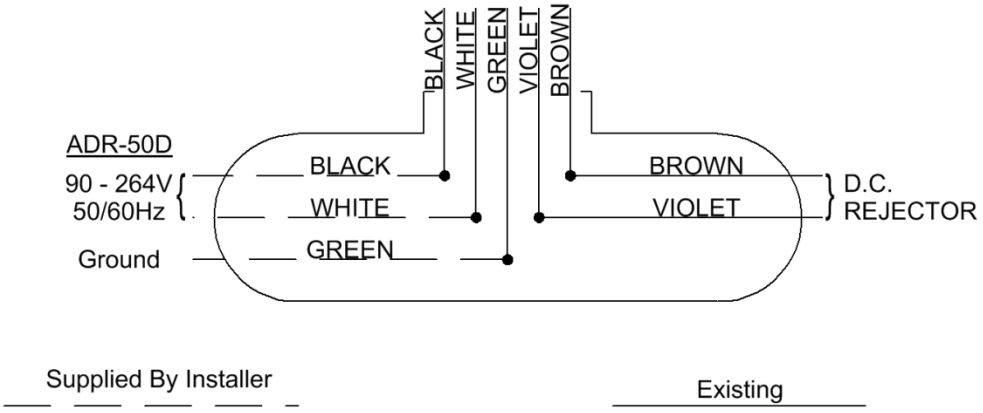


FIGURE 2.2

2.4.3 REJECTOR INSTALLATION: Mount the air cylinder rejector to the side of the conveyor at a convenient point one-half to ten container diameters but no greater than 39.3 inches (999mm) downstream from the crossline under the Delrin reference strip. *We recommend that the rejector be installed at a point between one-half and five container diameters downstream form the crossline to minimize reject errors.* The rejector should be positioned vertically so that the rubber bumper is slightly below the center of the container to be rejected. Set the rejector so that the stroke is angled downstream about fifteen degrees, not perpendicular to the container flow. If necessary, remove a section of guide rail to clear the rejector bumper. Then slide the rejector forward until the bumper just clears the container. If there is too much space between the rejector bumper and the edge of the container, the rejector stroke may be too short after contact, and the bumper may have accelerated enough to damage the container at impact.

Remove the guide rail on the opposite side of the line for a sufficient distance to clear the containers being rejected. This is usually about one-half container diameter plus 6 inches (152.4mm) downstream from the center and one-half container diameter upstream. It may be necessary to increase this for higher line speeds. Attach a filtered air line to the rear of the rejector.

Attach a reject receiving tray or carry-off device for the rejected containers. This completes installation.

3 OPERATION

3.0 MECHANICAL ADJUSTMENTS

The initial mechanical setup of the ADR is the most critical part of the operation of the unit. Improper adjustments will cause apparent drift and instability, insensitivity or complete failure. In a large percentage of apparent electronic troubles, the cause is really improper mechanical adjustment.

Because of the nature of the ADR-50D mount, there is some interaction between the various mechanical adjustments, so before starting the line, check carefully to see that the final mechanical settings are correct. (See pages 3-3 through 3-5.)

3.0.1 GUIDE RAILS: Before swinging the ADR-50D Line Sensor Housing over the line, the guide rails must be set so that there is minimum clearance. Place a sample container between the guide rails at the point where the measurement will be made. Set the rails so there is no more then 1/16 inch (1.5mm) clearance between the container and guide rails. Do not set the rails tight against the container as there will be some variation in diameters.

3.0.2 CENTERING: Swing the unit over the line and lower the head unit the low point of the Delrin reference strip just touches the top of a sample container. Lock the cane lifter in this position.

Snug the ball joint so that it is fairly tight, but still possible to move the housing on the ball.

Adjust the centerline adjust (crank at the lower center of the line housing face) to place the reference strip in the center of its travel. Align the centerline on the Delrin reference strip with the center of the container and rotate the line housing on the ball joint until the container center travels down the reference strip centerline. The unit must be centered with the container is under the crosslines of the reference strip.

3.0.3 CONTACT PRESSURE: Next, set the angle of approach so that there is a very slight incline of the reference strip (Page 3-3). The container should contact the reference strip at least one container diameter before the crossline is reached. When the container is centered on the crossline, it should lift the reference strip from 1/16 inch (1.5mm) to 3/32 inch (2mm) (page 3-4). Less lift will result in bouncing on the container causing false readings and more lift will result in excess wear of the reference strip.

With the container under the crossline, the Delrin reference strip must rest on both container edges at the crossline – THIS IS IMPORTANT. Now, check for equal pressure at both points of contact. Lift the reference strip at each edge at the crossline. The pressure must be the same on each edge or uneven wear and erratic results will occur.

Lock the ball joint tightly.

Have you done everything correctly? Check again for the following:

1. Container travels along the centerline.

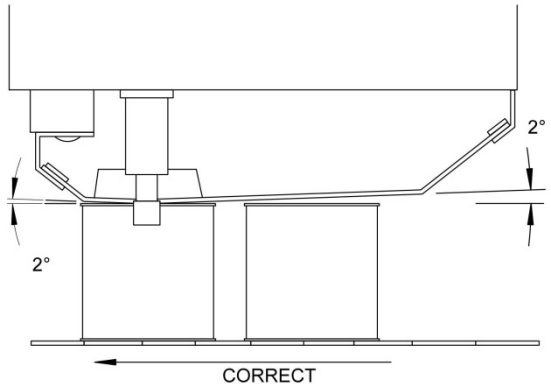
2. Container contacts reference strip at least one can diameter before the crosslines.

3. Low point of Delrin reference strip (at crosslines) resting on edges of container when centered.

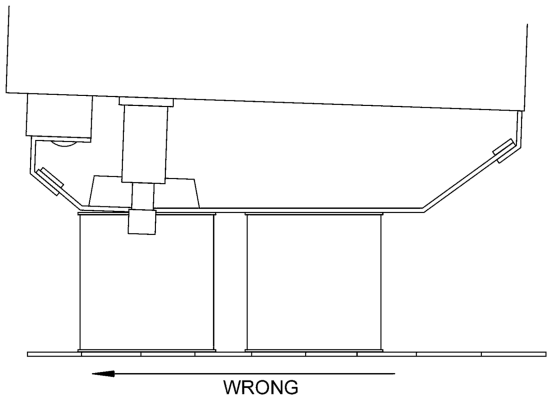
4. Equal pressure on both edges of container at crossline.

5. Delrin reference strip lifts 1/16 inch (1.5mm) to 3/32 inch (2mm) with can at crossline.

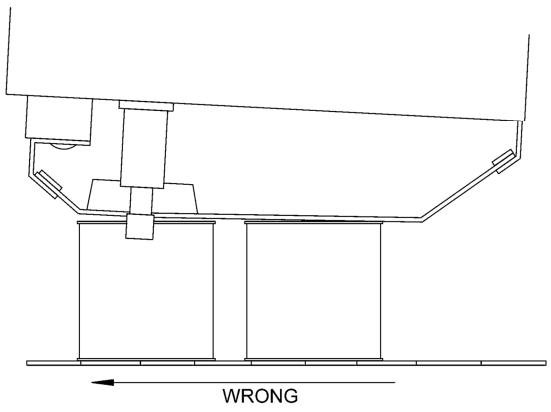
REFERENCE STRIP
FORE/AFT TILT ADJUSTMENT



Correct reference strip angle. Containers lead in at very light angle so that following container will not lift the probe.



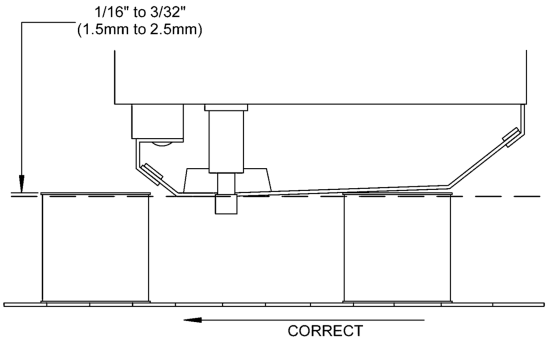
Reference strip parallel to the conveyor. Close following containers will cause reference strip chatter or bounce. Results – will be erratic operation.



Reference strip angled UP. Reference strip rests on rear edge of container. Following container will lift reference strip clear of leading container.

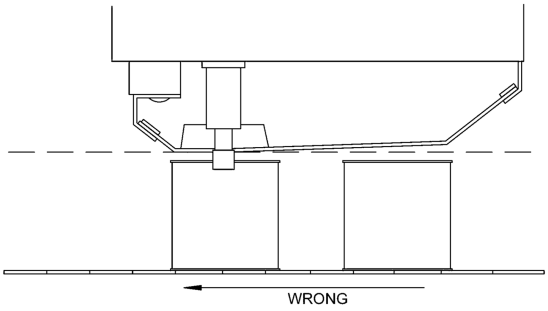
Results – will be erratic operation, no separation between good and bad containers, excess reference strip wear.

REFERENCE STRIP
HEIGHT ADJUSTMENT



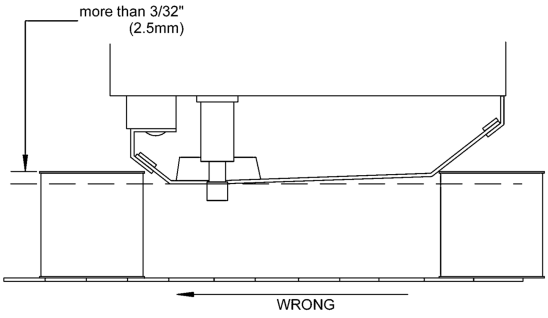
Each container raises the reference strip 1/16 inch (1.5mm) to 3/32 inch (2.5mm) as it passes under the probe. Container lid should touch strip about half way down along center line.

Results – no bounce or chatter no excessive wear optimum measurement results.



Reference strip set too high. Does not make firm, positive contact with container top.

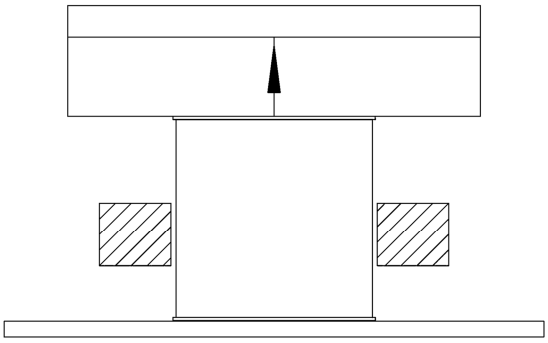
Results – no discrimination between good and bad containers, erratic results. Unit will probably appear inoperative. Will probably drive you nuts while trying to set up.



Reference strip set too low. Container raises reference strip more then 3/32 inch (2.55mm) as it passes under probe.

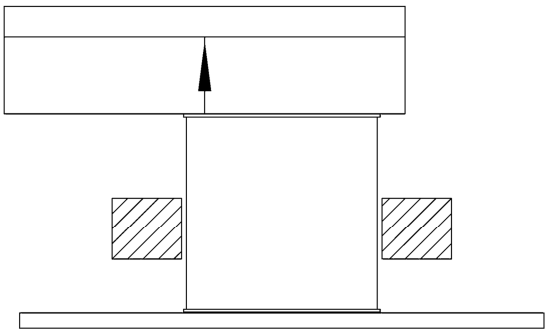
Results – if not too severe, unit will operate normally but reference strip will wear excessively. If severe, will cause container to stumble, may cause erratic results. Will cause reference strip to wear quickly.

REFERENCE STRIP/GUIDE RAIL
LATERAL ADJUSTMENT



CORRECT

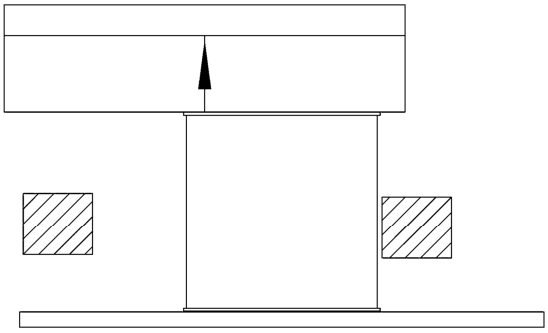
Container centered on centerline of reference strip, guide rails closed down 1/16 inch (1.5mm) clearance from container body. Reference strip contacts both sides of container lid with equal pressure.



WRONG

Container off center line of reference strip – probe not centered over center of lid.

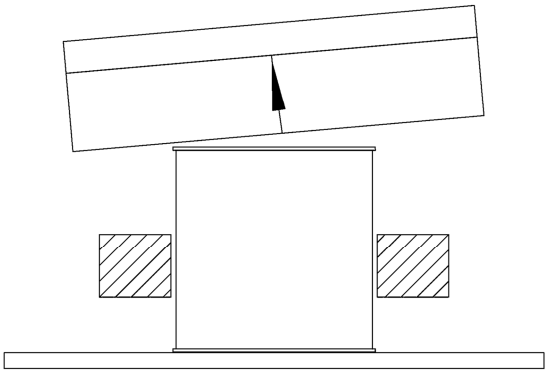
Results – poor or no discrimination between good and bad cans. May exhibit rotational error.



WRONG

Guide rails not stopped down on container.

Results – erratic operation, poor or no discrimination.



WRONG

Reference strip tilted, contacting on side of lid only.

Results – erratic operation, unreliable setting, or excessive reference strip wear.

3.1 CALIBRATION/OPERATION

The ADR-50D is extremely simple and straightforward to calibrate at initial setup, and even easier to return to the setup for a product you have run before. After you have accomplished the mechanical setup described in the first part of section 3.0, you power up, and tell the ADR-50D the distance from the sensor to the rejector. You never have to enter that again, unless the distance changes, (All information you enter is stored in battery powered Random Access Memory, where it will remain until you change the information or for ten years, whichever comes first.)

To calibrate the ADR-50D for a specific container, you tell the ADR-50D that container diameter and then pass a good container under it. THAT'S IT!

You will want to nail things down even closer than that rudimentary setup, but that is the basic calibration procedure, and your ADR-50D will provide you with some protection with no further calibration from the very first container that passes through the ADR.

3.1.0.1 You communicate with your ADR-50D through the front panel controls and indicators. The ADR reports to you and coaches you through the Liquid Crystal Display (LCD) and LED Status Indicators. You enter instructions through the Keys on the front panel.

In the following text, each step in the setup will be preceded by a bracketed two-number group **[1/03]** which refers to the MENU (**1** in the example), and to the SELECTION from that menu (**03** in the example). These numbers correspond to the numbers in the lower left hand corner of the LCD display panel. To get to the menu you want, repeatedly press the MENU button until it cycles (**1-9**) to the number you want and then SELECT button until it cycles (**01-99**) to the selection you want within the selected menu.

3.1.0.2 THE MENUS are groups of like-oriented functions, as follows:

MENU 1 BASIC ADR-50D SETUP PARAMETERS

MENU 2 SETUP FOR CONTAINERS YOU RUN, INSTALLED IN MEMORY FOR RECALL AS NEEDED

MENU 3 CONTAINER COUNTER CONTROLS

MENU 4 COMMUNICATIONS (Option)

MENU 5 PROGRAMMABLE COUNTERS (Option)

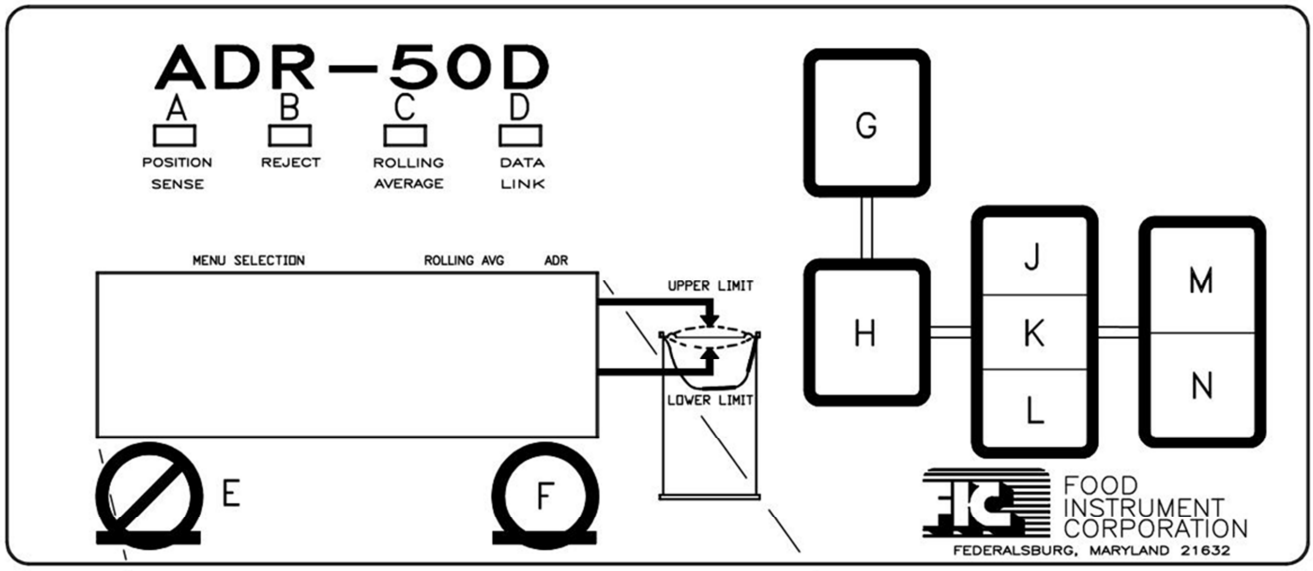
MENU 6 PASSWORD ACCESS

MENU 7 PASSWORD CONTROL AND ENTERY

MENU 8 NOT USED

MENU 9 TEST & INFORMATION

3.1.0.3 **FRONT PENEL DISPLAY/CONTROLS**



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A	A	D	J	.	C	O	N	T	R	A	S	T		5	2	.	5		7	5
B										S	/	A		5	0	.	2		5	1
C		N	E	T	–	0	1	1	4	6	3	2		4	7	.	5		2	5
D	1	/	0	1				0	0	1	1	8		5	3	.	0		9	9

LCD DISPLAY FORMAT

The following list gives the location and description of each of the areas of the Liquid Crystal Display used to communicate visually with you.

AREA	FUNCTION	DESCRIPTION
A1-A12	MENU INDENTIFIER FIELD	Alphanumeric
B1-B7	DATA ENTRY FIELD	Alphanumeric
B10	PASSWORD SECURITY IND.	Alphanumeric
B12	PASSWORD ACCEPTED IND.	Alphanumeric
D1	MANU NUMBER	Numeric, 0-9
D3-D4	SELECTION FROM MENU	Numeric, 00-99
C2-C5	NET COUNT INDICATOR	Alphanumeric
C6-C12	TOTAL CONTAINERS	Numeric, 0-9,999,999
D8-D12	REJECT CONTAINERS	Numeric, 0-99,999
A14-A17	UPPER LIMIT, ROLLING AVG.	Numeric, 00.0-99.9
B14-B17	ROLLING AVERAGE	Numeric, 00.0-99.9
C14-C17	LOWER LIMIT, ROLLING AVG.	Numeric, 00.0-99.9
D14-D17	LAST OUT-OF LIMITS, R.A.	Numeric, 00.0-99.9
A19-A20	UPPER LIMIT, ADR	Numeric, 0-99
B19-B20	ADR READING	Numeric, 0-99
C19-C20	LOWER LIMI, ADR	Numeric, 0-99
D12-D20	LAST OUT-OF LIMITS, ADR	Numeric, 0-99

LED INDICATORS

A - POSITION SENSE LED INDICATOR

COLOR	STEADY	BLINKING
GREEN	Photosensor Clear	Containers Running
YELLOW	ADR Not Calibrated	-----
RED	Static Test	No Signal
DARK	Sensor Blocked	

B - REJECT LED INDICATOR

COLOR	STEADY	BLINKING
RED	Rejector Disabled	Blinks When Rejecting
YELLOW	------	Blinks – Disabled Reject
DARK	Dark When Idle	Dark When Idle

C – ROLLING AVERAGE LED INDICATOR

COLOR	STEADY	BLINKING
GREEN	Within Limits	-----
YELLOW	Accumulating Sample	Low Limit Excursion
RED	Turned Off	High Limit Excursion

D – DATA LINK LED INDICATOR

COLOR	STEADY	BLINKING
GREEN	On	Transmitting
YELLOW	Waiting Data	-----
RED	Off	Error

SWITCHES

E - REJECT DISABLE — Prevents Rejector from firing.

F - REJECT ENABLE — Allows Rejector To Fire.

G - MENU KEY — Menu Key selects menu numbers 1 – 9.

H - SELECT KEY — Selects items 1-99 on selected menu.

J/K/L- UP/NEXT/DOWN — Three switches. These switches are used to respond to queries or to enter data. “J”, the UP Key, increments numbers upward at the cursor, or causes the query “YES?” to switch between YES and NO in the display field B1-B5.

“K”, the NEXT Key, moves the cursor left to right in any area where numbers are to be entered into more than one column.

“L”, the DOWN Key, increments numbers downward at the cursor, or causes the query “YES?” to switch between YES and NO in the display field B1-B7.

M/N-CLEAR/ENTER	Two Switches. “M”, the CLEAR Key, is used to clear numbers at the cursor field, changing numbers to “0” or the minimum number for the value. Use the “CLEAR” Key to reset counters to “0” **[MENU 3]**, **NOTE: In ALL cases, you must press the ENTER Key after CLEAR – EXCEPT when using AUTO-CAL [2/03]**. “N”, the ENTER Key. Press ENTER to store information you have generated, either numeric or Yes/No.

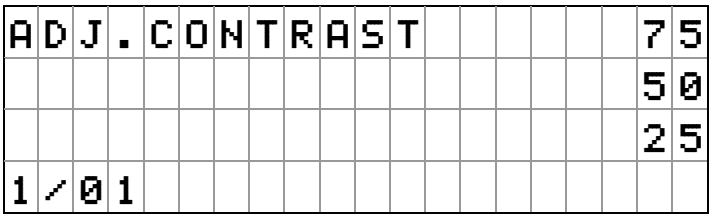
NOTE: If you want to move descending in menus press the ↑ up arrow key without pressing the **ENTER** key. If you want to move ascending in the menus press the ↓ down arrow key without pressing the **ENTER** key. This causes the **MENU** and **ITIEM** buttons to change directions. **CUSTION:** If you do press **ENTER** you <u>will</u> change your settings.

NOTE: THE REMAINDER OF THIS SECTION IS DEVOTED TO A DEPICTION OF EACH OF THE AVAILABLE SELECTIONS OF EACH MENU AND HOW THAT SELECTION EFFECTS THE OPERATION OF YOUR ADR-50D.

3.1.00 **MENU 1** GENERAL

Menu 1 is used to enter information that is specific to your installation, such as Rejector type, distance between Sensor and Rejector or to provide information such as unit Serial Number. All information that is known at the time of shipment will be programmed into Menu 1 at the factory. Normally, you will only have to enter the distance from sensor to rejector (**[Menu 1/03]** ADJ.REJ.DST.) at installation. Once done, you will not need to make any changes to Menu 1 until you modify your installation.

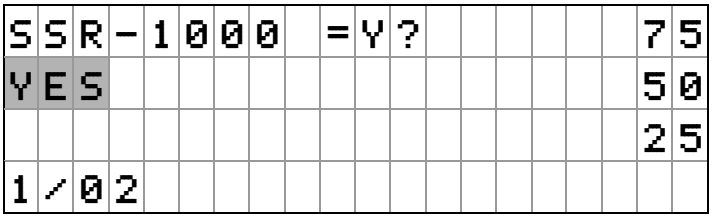
3.1.1 **[1/01]** SCREEN CONTRAST CONTROL



<u>Keystrokes</u>:
UP (repeatedly) to increase contrast, DOWN to reduce contrast.

At power-up, or after a power interruption, the ADR Menu/Selection always starts at Menu position 1/01. If the screen is blank, try turning unit off and back on than press UP several times.

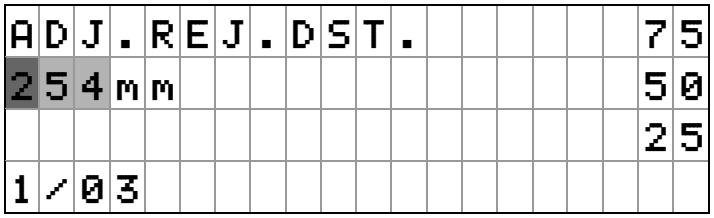
3.1.2 **[1/02]** SELECT REJECTOR TYPE



<u>Keystrokes</u>:
UP/DOWN switches between YES and NO, ENTER.

Set to YES if you have an SSR-1000C Standard Speed Rejector or SSR-1000S Shrouded Rejector, NO if you have an HSR-2000 High Speed Rejector.

3.1.3 **[1/03]** ADJUST REJECTOR DISTANCE



Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, NEXT,
UP/DOWN, ENTER

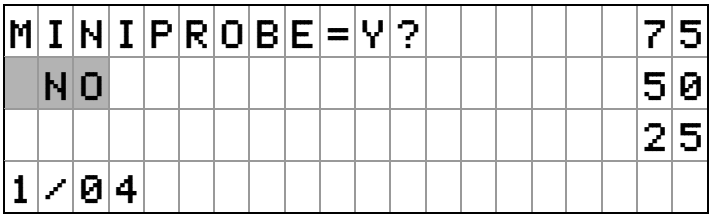
In all examples, the shaded area, as in the number 254 above, represents the active area that you will work in. The darker block shows a cursor. Until you have entered a value, the cursor is an underline under the active figure. When you enter a new figure the cursor will change to a dark background as the new figure blinks. The cursor will continue to blink until the changes you have made are entered into memory by pressing the **ENTER** Key or are canceled by moving off of this menu selection without first pressing the **ENTER** Key.

After installation is complete, measure the distance between the Photo/Light sensor and the Rejector Bumper. (If you measure in inches, multiply the distance by 25.4 to convert inches to millimeters (mm). Round off to the nearest whole number of millimeters.) Enter the distance in millimeters into the display. Be sure that the correct distance in millimeters (inches X 25.4) is displayed. If there is an error, press **CLEAR** and re-enter the number. Then press **ENTER** to record the distance in memory.

FINE TUNING It may prove necessary to make a fine adjustment of the rejector distance after you have finished entering the container data in Menu 2. NOT NOW! If the rejector hits the container too soon, or before the container arrives, go back to Menu **[1/03]** and Increase the distance number slightly and press the **ENTER** key. If the Rejector hits the container too late or after the container passes, than reduce the number and press the **ENTER** Key. You cannot test for accuracy until you have determined and entered the container diameter into memory **[2/02]**.

Once this number has been entered and proven, it will never be necessary to alter it until you move the position of the rejector.

3.1.4 **[1/04]** PROBE SELECT

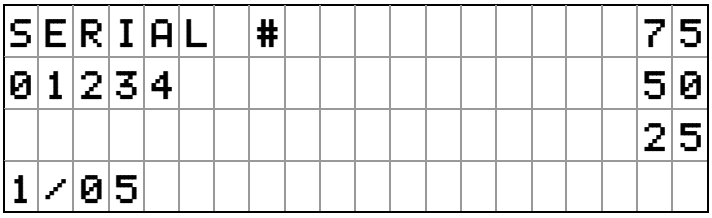


Keystrokes:
UP/DOWN Key, ENTER

The ADR-50DB Bantam utilizes a small Sense Probe exclusively. The ADR-50D and ADR-50DR may use ether the standard probe or the miniprobe. The standard probe is used for most can or glass applications. The miniprobe is recommended for use with small diameter closures. You can identify your probe by inspecting the probe on the reference strip. If the probe is about 1.5 inch (38mm) diameter it is the standard probe. If it is about 1 inch (25mm) diameter, set in a 1.5 inch (38mm) epoxy base, it is a miniprobe.

Select YES for the Bantam ADR-50DB or the ADR-50D or ADR-50DR equipped with the miniprobe. Select NO for the ADR-50D or ADR-50DR equipped with the standard Probe.

3.1.5 **[1/05]** DISPLAY UNIT SERIAL NUMBER



Passive screens will displays your unit serial number and other selected values only.

This completes the line specific information. The information you have entered will not change until the Rejector is moved or until the unit is converted from or to Bantam operation.

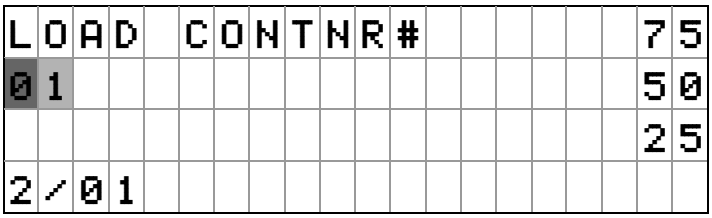
INTENTIONALLY
LEFT BLANK

3.2. MENU 2 ENTER CONTAINER SPECIFIC INFORMATION

MENU 2 is where you set up a file for each container you run. Once you have loaded the data into the file and save it, any time that you run the container, you simply recall that file and load it into the ADR. The ADR is then ready to run that container when you have adjusted the guide rails and container height.

> **NOTE:** PASSWORD SCURITY: If Password Security is active, shown with an "**S/A**" (Security Active) in the center of the second line of the screen, than you cannot enter any parameters until you have entered a valid password in **MENU [6/01]**. To change any parameter in Menu 2, a valid password must be entered.
>
> The new value will remain in effect until a new container number is selected **MENU [2/01]**. To make the change permanent, you must save the change at **[2/12]**, which can only be done with the Supervisor's Password entered at **[6/01]**. If you do not save the changes at **[2/12]**, the values in Menu 2 will revert back to the values in effect before you entered the changes.

3.2.1 **[2/01]** LOAD CONTAINER NUMBER



Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, ENTER

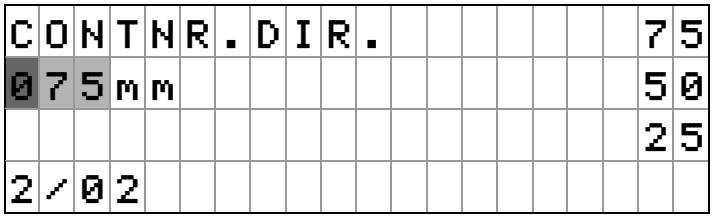
You can enter data for up to 100 containers. The information to be entered includes:

- Container Diameter **[2/02]**
- Sensitivity **[2/03]**
- Calibration Level **[2/10]**
- Accept Range limits **[2/11]** & **[2/12]**
- Rolling Average parameters **[2/14]** & **[2/15]**

Once you have established this data for each container you have ran and saved, you can recall the data by simply calling up Menu **[2/01]**, load the container number and press **ENTER**. The ADR-50D will then be electrically set up to run that container. You will have to adjust the ADR height and your guide rails to accommodate mechanical changes in the container.

Saving Container Data is Menu **[2/25]**.

3.2.2 **[2/02]** SET CONTAINER DIAMETER

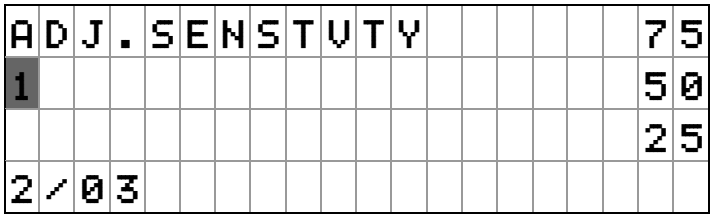


Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, NEXT,
UP/DOWN, ENTER

Enter the diameter of the container at the height where it breaks the Photo/Light sensor, usually the body diameter for a can or plastic tub or the cap diameter for a jar. This measurement is in millimeters. If you measure in inches, multiply by 25.4 to convert to millimeters. Round off to the nearest whole number.

The range of diameters is 25mm (1 inch) to 165mm (6-1/2 inches). The accuracy of your measurement determines the ability of the Rejector to tack conveyor speed.
BE ACCURATE!

3.2.3 **[2/03]** ADJUST SYSTEM SENSITIVITY

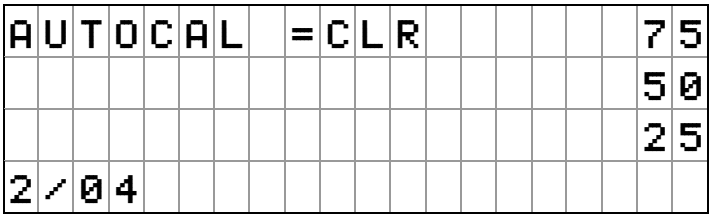


Keystrokes:
UP/DOWN (Range 0-4),
ENTER

Settings 0, 1 and 2 expand or reduce the value of an ADR reading. A setting of 0 provides the least change in ADR reading for a change in lid position; a setting of 2 gives the greatest change in ADR reading for a change in lid position.

Setting 3 increases probe sensitivity for deep cans such as coffee cans, while setting 4 reduces probe sensitivity for containers, where the lid is very close to the probe face, such as a jar lid.

3.2.4 **[2/04]** AUTOMATIC CALIBRATION



Keystrokes:
CLEAR

To recalibrate the ADR-50D for new containers, select Menu **[2/04]** and press the **CLEAR** key. When the next container passes, the ADR-50D will automatically adjust its calibration to give an ADR value of close to 50 on the display. This should be done when the conveyor is running at a slower speed, using a known good container. It should not be done when there is full container flow. You may not have knowledge of the quality of the container on which it is calibrated.

3.2.5 **[2/05]** NOT USED

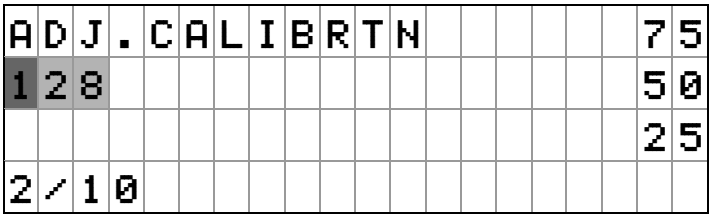
3.2.6 **[2/06]** NOT USED

3.2.7 **[2/07]** NOT USED

3.2.8 **[2/08]** NOT USED

3.2.9 **[2/09]** NOT USED

3.2.10 **[2/10]** ADJUST ADR-50D CALIBRATION

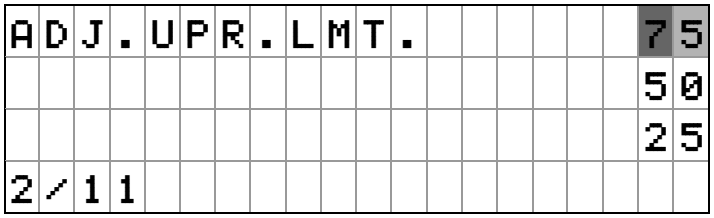


Keystrokes:
UP/DOWN Repeatedly
(Range 00-256), ENTER

This screen allows you to fine-tune your ADR-50D Calibration. Your goal is to calibrate the ADR-50D so that the average good container will have an ADR reading of 50 (second row, right).

This control, used while observing the Rolling Average **[2/16]**, allows you to achieve an extremely accurate calibration based on a large sample of 256 containers on a real-time basis. To achieve a change in the calibration as indicated by the three digit number (second row, left), you press the UP or DOWN button to increase or decrease the calibration level (ranging from 1 - 245), then press enter. When you press enter, the Rolling Average **[2/16]** will move slowly to a new value.

3.2.11 **[2/11]** SET UPPER LIMIT

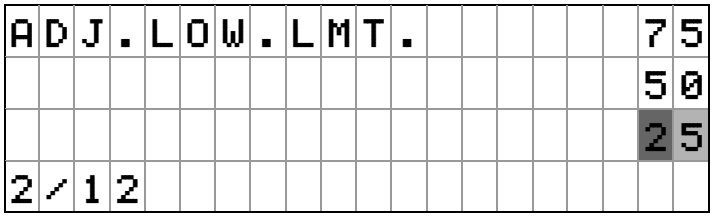


Keystrokes:
UP/DOWN, NEXT,
UP/DOWN (Range 00-99),
ENTER

The ADR UPPER LIMIT determines the level above which lids that are too high are rejected. This setting can best be determined by observation of reject containers. The Upper Limit controls the "Internal Pressure Too High" set point. (Remember, higher pressure means lower vacuum.) If containers with pressure too high are being accepted, lower the Upper Limit. If containers with acceptable pressure or vacuum are rejected, raise the Upper Limit. A setting of 99 for the upper limit will disable the Upper Limit Reject function.

CAUTION – Setting the LOWER LIMIT higher than the UPPER LIMIT will cause all containers to be rejected.

3.2.12 **[2/12]** SET LOWER LIMIT

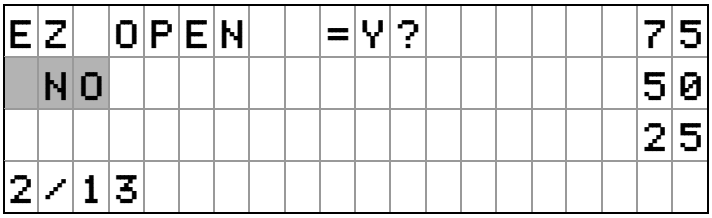


Keystrokes:
UP/DOWN, NEXT,
UP/DOWN (Range 00-99),
ENTER

The ADR LOWER LIMIT controls the reject level below which containers are rejected. This limit rejects low pressure (or high vacuum) containers, as well as containers with missing lids. A setting of 00 disables the Lower Limit Reject function.

CAUTION – Setting the LOWER LIMIT higher than the UPPER LIMIT will cause all containers to be rejected.

3.2.13 **[2/13]** E-Z OPEN CONTAINERS



Keystrokes:
UP, ENTER

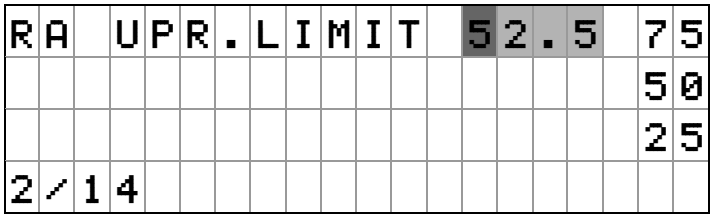
This menu selection configures the ADR-50D for a Pull-Tab Container (YES or Non-Pull-Tab Container (NO). The UP Key switches the display between YES and NO. When the correct response is displayed, press **ENTER**.

3.2.14 ROLLING AVERAGE: The Rolling Average function is a unique feature of the ADR-50D. As each container passes under the ADR-50D, it generates a value between ADR-00 and ADR-99, proportional to the relative lid position of the container. Each of these values is accumulated until 256 containers have been tested. The 256 values are averaged and the average, if Rolling Average is enabled, is shown on the second line of the display, to the left of the ADR value. As each new container is tested, the first value in the queue is discarded, the new value added, and a new average is calculated. The display is updated once each second.

While the ADR display reflects the instantaneous value for each container, it is very difficult to observe trends until they are well established, perhaps beyond the limits of safety. The Rolling Average will vary very little until there is a change in one or more process parameters, in which case the change will be noted almost immediately. If a change occurs, the Rolling Average will begin to move to a new level, and the new Rolling Average will settle out after 256 containers have passed. At five hundred containers per minute, this change to a new level will be complete in one half minute.

The Rolling Average Limits **[2/14]** and **[2/15]** can be set very close (depending on the uniformity of your process) to the Rolling Average value, usually within 2 or 3. In the example below, the Rolling Average Limits are set to ± 2-1/2 of the average reading at 47.5 and 52.5. Thus a relatively minor change in your process will show up as a change in the Rolling Average, and when a limit is exceeded, will cause the Rolling Average LED on the front panel to blink, Red for Upper Limit excursion and Yellow for Lower Limit excursion. An output signal can be sent to the Comm. Port connector on the back side of the ADR-50D enclosure see **[5/01]** – **[5/04]**.

[2/14] ROLLING AVERAGE UPPER LIMIT

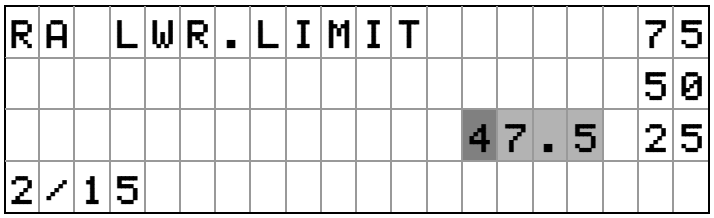


Keystrokes:
UP or DOWN, NEXT, UP or DOWN, NEXT, NEXT, UP or DOWN, (Range 00.0 – 99.9), ENTER

Do not set UPPER LIMIT lower then LOWER LIMIT!

The Rolling Average Upper Limit sets the limit of excursion of the Rolling Average above the nominal center line value (normally 50.0). Center line value is adjusted at **[2/10]** ADJUST CALIBRATION. If the Rolling Average Display **[2/16]** has been enabled, the Rolling Average Front Panel LED will change to a blinking Red signal whenever the Upper Limit is exceeded.

3.2.15 **[2/15]** ROLLING AVERAGE LOWER LIMIT



Keystrokes:
UP/DOWN, NEXT, UP/DOWN, NEXT, NEXT, UP/DOWN (Range 00.0 – 99.9), ENTER

Do not set UPPER LIMIT lower then LOWER LIMIT!

The Rolling Average Lower Limit sets the limit of excursion of the Rolling Average below the nominal center line value (normally 50.0). Center line value is adjusted at **[2/10]** ADJUST CALIBRATION. If the Rolling Average Display **[2/16]** has been enabled, the Rolling Average Front Panel LED will change to a blinking Yellow signal whenever the limit is exceeded.

3.2.16 **[2/16]** ROLLING AVERAGE DISPLAY ENABLE

S	H	O	W		R	A	=	Y	E	S	?		5	2	.	5		7	5
Y	E	S											#	#	.	#		5	0
													4	7	.	5		2	5
2	/	1	6										5	2	.	6		9	4

Keystrokes:
UP, UP, ENTER

To enable the Rolling Average function, toggle to YES and press **ENTER**. The Rolling Average will begin to accumulate container ADR values, the Rolling Average LED will turn from Red (Rolling Average off) to solid Yellow, until the full sample has been accumulated. When the 256 container samples has accumulated and averaged, the LED color will change to solid Green if within limits, blinking Yellow if below limits and blinking Red if above limits, and Rolling Average Display will change from **##.#** to a numeric display.

When Rolling Average is active, the most recent out-of-limits maximum value is displayed below the Lower Limit setting display (52.6 in the example above), and will remain displayed until it is displaced by a later excursion.

3.2.17 **[2/17]** ENABLE ROLLING AVERAGE AUTO-RECALIBRATION

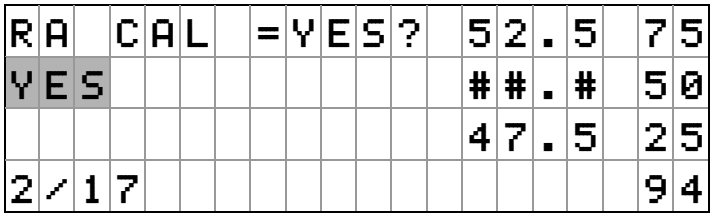
Rolling Average Auto-Recalibration recognizes a sudden change in ADR readings caused by an event such as a change in can ends, and recalibrates the unit to accommodate that change. This is accomplished by taking a small number of ADR readings and averaging those readings and comparing that average to the 256 container Rolling Average **[2/16]**. If an event occurs (such as a new manufacturer's can ends applied) which causes a major shift in ADR readings, that will cause the short average to change to the new ADR reading quickly, while the Rolling Average **[2/16]** will be much slower to change. When the difference between the Short Average **[2/18]** and the Rolling Average **[2/16]** exceeds the Threshold **[2/19]** amount, then the ADR-50D will automatically recalibrate to bring the rolling average back within the Short Average Minimum Deviation **[2/20]** of the Upper and Lower Rolling Average Limits. Before enabling this feature ensure that the rolling average has finished averaging and is close to “50.0” with the ADR reading. Remember RA Auto-Recalibration calibrates to the 256 Rolling Average and if the 256 Rolling Average is not within the ADR reading of 50 it will calibrate to the rolling average.

The **POSITION SENSE** LED will turn amber when ADR starts recalibrating and turn back to green when calibration is satisfied.

Be extremely careful when implementing this function. It can bite you. If you were to suddenly introduce cold water into your cans instead of product, the ADR-50D would recalibrate with only a few cans rejected before recalibration and proceeding as if all was normal.

To enable this function, press UP to toggle the query to YES, then press **ENTER**.

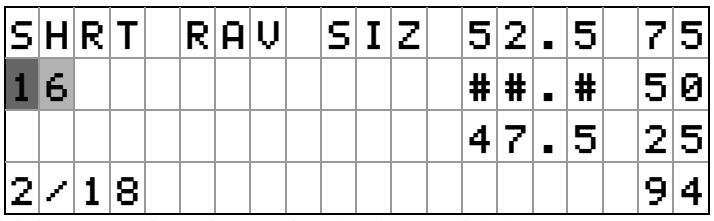
IF PASSWORD SECURITY IS INSTALLED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1



Keystrokes:
UP, ENTER

IMPORTANT – To activate this feature menu **[2/16]** must be enabled. To view Menus **[2/18]** to **[2/20]**, you must press **ENTER** two times at menu **[2/17]**. These menus are necessary to implement Rolling Average Auto-Calibration. Repeat to turn these menus back off.

3.2.18 **[2/18]** SHORT AVERAGE SIZE

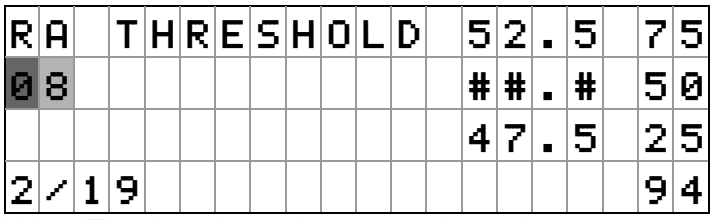


Keystrokes:
UP, UP, ENTER

Value toggles through 08, 16 and 32.

This screen selects the number of containers in the short average. Normal practice suggests that 08 container sample provides the best, most stable and fastest response.

3.2.19 **[2/19]** ROLLING AVERAGE THRESHOLD SET

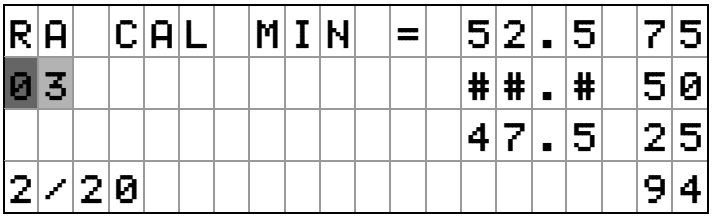


Keystrokes:
UP, UP, ENTER

Value Toggles through 04, 08, 16 and 32.

This screen selects the amount the Short average must diverge from the Rolling Average to trigger the Rolling Average Auto-Recalibrate process. Experience suggests that if a value of 16 is selected for Short Average size, 08 is a good Threshold selection, or 32 Short Average and 16 Threshold.

3.2.20 **[2/20]** SHORT AVERAGE MINIMUM DEVIATION



Keystrokes:
UP, UP, ENTER

This screen has values of 1 through 8.

The Minimum deviation determines when the unit satisfies the Auto-Calibration requirement. At a setting of 3, when the Auto-Recalibration is recalibrating the ADR-50D it will stop recalibrating after the Short Average is within 3 of the Rolling Average and maintains that Short Average, this is judged to be within bounds. The ADR-50D resumes normal operation.

Best results seem to be achieved with the lowest setting of the Short Average Minimum Deviation.

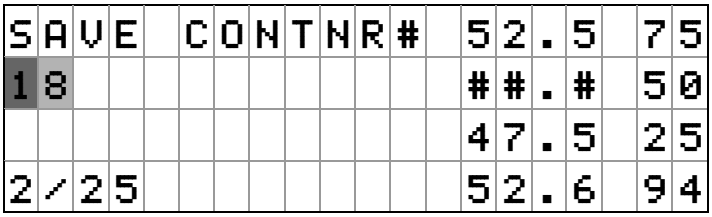
3.2.21 **[2/21]** NOT USED

3.2.22 **[2/22]** NOT USED

3.2.23 **[2/23]** NOT USED

3.2.24 **[2/24]** NOT USED

3.2.25 **[2/25]** SAVE CONTAINER DATA



Keystrokes:
UP/DOWN, NEXT, UP/DOWN (Range 00 – 99), ENTER

IF PASSWORD SECURITY IS INSTALLED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THEIS MENU SELECTION. SEE PARAGRAPH 3.6.1

To save the data you have entered in the menu selections above, press **ENTER**. This menu selection will default to the container number set in **[2/01]**, so you will normally only press **ENTER**. Be absolutely certain that you have the correct container number assigned on the display, since you will cause the data to be stored in that file, regardless of whether or not another container is stored there.

If you want to create a new container number by altering an existing container's data, enter the new container number and press **ENTER**. Example: If you are running corn in a #10 size can. You have this stored as Container #22. You receive can ends from a different supplier. When running those can ends, the Calibration level **[2/10]** changes from 128 to 141. All other variables you have entered into Menu 2 remain the same. You can go to can #22, change the calibration level from 128 to 141 in menu **[2/10]** and then go to menu **[2/25]** and save container #33. This will save all of menu 2 settings for container #33. You can then run your #10 size cans of corn as either Container #22 or Container #33, depending on which supplier's end is used. This will only work if you do not have to change any mechanical settings on the ADR-50D between containers.

3.3 **MENU 3** COUNTER MENU

The ADR-50D incorporates three counters. The total container count is a count of every container that enters the ADR. The Net container count is the total container count minus total rejects, and reject count is total rejects detected. Total and Net counts cannot be displayed simultaneously. Either Total or Net count will be displayed in the seven-digit display area. If the rejector is disabled, any rejects detected will be counted, even if the container was not rejected from the line. All counters accumulate count when containers are running, even if the count is not displayed.

3.3.1 **[3/01]** COUNTERS DISPLAY ENABLE

S	H	O	W		C	N	T		=	Y	?							7	5
Y	E	S																5	0
					0	0	0	0	0	0	0							2	5
3	/	0	1				0	0	0	0	0							9	4

Keystrokes:
UP, ENTER

Menu **[3/01]** switches between YES and NO when the UP key is pressed. Press **ENTER** when the response you want is displayed. No count numbers are displayed when NO, Both count numbers are displayed when YES.

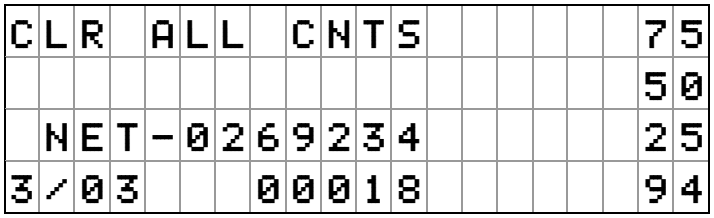
3.3.2 **[3/02]** SHOW NT COUNT

S	H	O	W		N	E	T		=	Y	?							7	5
Y	E	S																5	0
	N	E	T	-	0	0	0	0	0	0	0							2	5
3	/	0	2				0	0	0	0	0							9	4

Keystrokes:
UP, ENTER

Menu **[3/02]** switches between YES and NO when the UP key is pressed. Press **ENTER** when the response you want is displayed. Net count is displayed at YES, gross count is displayed at NO.

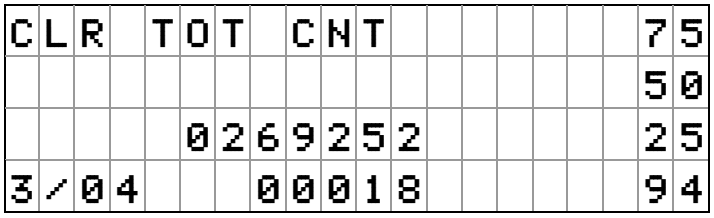
3.3.3 **[3/03]** CLEAR ALL COUNTERS



Keystrokes:
ENTER

This is a passive screen. To clear all three counters, select Menu **[3/03]** and press **ENTER**. This will clear all counters, even if not displayed.

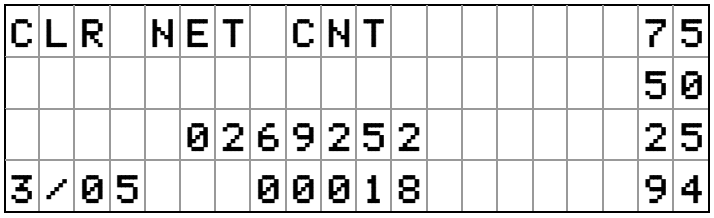
3.3.4 **[3/04]** CLEAR TOTAL CONTAINER COUNT



Keystrokes:
ENTER

This is a passive screen. To clear Total Count, select Menu **[3/04]** and press **ENTER**. Total Count will clear, even if not displayed.

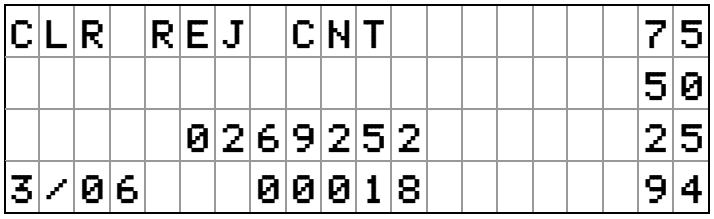
3.3.5 **[3/05]** CLEAR NET CONTAINER COUNT



Keystrokes:
ENTER

This is a passive screen. To clear Net count, select Menu **[3/05]** and press **ENTER**. Net Count will clear, even if not displayed.

3.3.6 **[3/06]** CLEAR REJECTED CONTAINER COUNT



Keystrokes:
ENTER

This is a passive screen. To clear Rejects count, select menu **[3/06]** and press ENTER. Reject Count will clear, even if not displayed.

3.4 **MENU 4** COMMUNICATIONS PORT

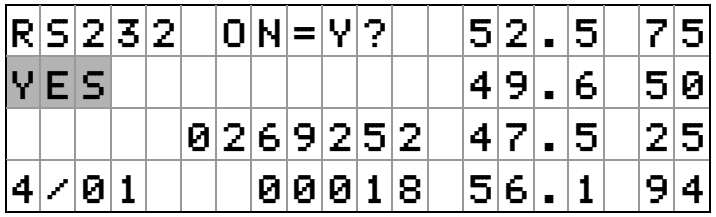
Note: Menu 4 is a purchased option. To activate these menus please contact your Representative or contact us at Food Instrument Corporation.

The communications port is an RS-232 port, transmitting ADR data through J-2, labeled COMM. PORT, at the back of the waterproof enclosure. This is not a two-way communications port but transmit only.

The communications port can transmits the following data:

1. Good Container Lid Deflection
2. Bad Container Lid Deflection
   (And if selected)
3. Rolling Average
4. Out-Of-Limits Rolling Average

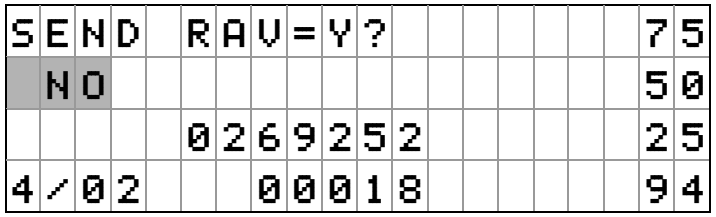
3.4.1 **[4/01]** ACTIVATE COMMUNICATIONS PORT



Keystrokes:
UP, UP, ENTER

This screen turns the RS-232 Port ON or OFF. If NO is selected, no RS-232 signal will be transmitted, and the screen **[4/02]** below is inactive.

3.4.2 **[4/02]** ROLLING AVERAGE TRANSMIT



Keystrokes:
UP, UP, ENTER

This screen enables transmission of Rolling Average information as well as ADR Good and Bad container readings, when Communications Function is active. If No is selected on this menu, only ADR Good and Bad Container reading will be transmitted.

Comm. Link

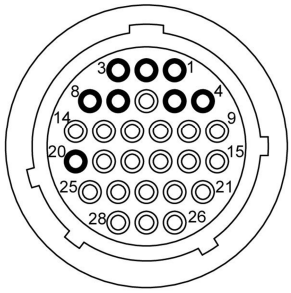
This is the large connector on the back of the waterproof enclosure or the small connector at the bottom of the tee or at the bottom of the Remote Cabinet. It is part of the optional programmable Counter Controller Menus **[5/07] – [5/30]** and the RS-232 Communication.

The RS-232 option allows your unit to be connected to a computer via RS-232 Communication (signal out only).

RS-232 Communication

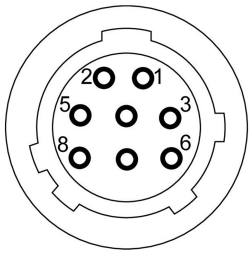
Enclosure Comm. Link Pin-out

Pin 1 – (GND) Ground
Pin 2 – (TXD) Transmit Data
Pin 3 – (RXD) Receive Data
Pin 4 – (RTS) Ready to Send
Pin 5 – (CTS) Clear to Send
Pin 7 – (GND) Ground
Pin 8 – (DCD) Data Carrier Detected
Pin 20 – (DTR) Data Terminal Ready



Tee Cover Comm. Link Pin-out

Pin 1 – (GND) Ground
Pin 2 – (TXT) Transmit Data
Pin 3 – (RXD) Receive Data
Pin 4 – (RTS) Ready to Send
Pin 5 – (CTS) Clear to Send
Pin 6 – (DTR) Data Terminal Ready
Pin 7 – (GND) Ground
Pin 8 – (DCD) Data Carrier Detected



COMMUNICATIONS DATA PACKET INFORMATION

The RS-232 communications (Level 1) consists of data packets that represent either lid deflection or rolling average information. The data packets are composed of a registration byte, a type byte and finally two or more data bytes. This structure is represented in the figure below for the four types of data packets that are supported in this release.

	Reg. Byte	Type Byte	Data Byte
Good Containers Lid Deflection	( )	(!)	(5)(0)
Container Lid Deflection	( )	(“)	(1)(5)
In-Limits Rolling Average	( )	(#)	(4)(4)(.)(1)
Out-of-Limit Rolling Average	( )	($)	(2)(8)(.)(9)

Registration Byte is an ASCII “Space” (hexadecimal '20'). Whenever this byte is seen in the data stream it signifies that a new data packet is beginning. This may occur even if all the data from the preceding packet has not been received. Therefore, the receiving software must keep a constant check for this possibility and discard any incomplete data packet information.

Type Byte is the description of the kind of information in the packet and indirectly the length of the packet. Lid deflection information packet descriptors can be either a (!) exclamation point or a (“) quote denoting either a good or bad lid deflection respectively. Good and bad determination is a 50D based decision predicated on the upper and lower lid limit settings.

Rolling Average information packet descriptors can be either a (#) pounds sign or a ($) dollar sign denoting either an in-bounds or out-of-bounds rolling average respectively. In-Bounds and Out-of-Bounds determination is a 50D based decision predicated on the Rolling Average upper and lower boundary settings.

Data Byte portion of the data packet varies in length based on the type of information being sent by the ADR-50D. For Lid Deflection type packets, the data portion of the packet is 2 bytes (4 bytes for the entire packet). For Rolling Average type packets, the data portion of the packet is 4 bytes (6 bytes for the entire packet).

The RS-232 Transmission characteristic for setting up the users receiver are:
[9600 Baud, 8 data bits, 1 stop bit, odd parity.]

Hardware handshaking is employed using the modem control signals RTS, CTS, DCD and DSR.

INTENTIONALLY
LEFT BLANK

3.5 **MENU 5** PROGRAMMABLE ALARMS/CONTROLS

The ADR-50D PC Programmable Alarms/Controls menu presents the selection of control functions programmed for the ADR-50D.

Note that some of these functions are a purchased option, (Menus **[5/07] – [5/30]**).

There are seven functions currently available:

1. Rolling Average Out Of Upper Limit – When the Rolling Average Upper Limit is exceeded, an alarm condition occurs. **[5/01]**
2. Rolling Average Out Of Lower Limit – When the Rolling Average Lower Limit is exceeded, and alarm condition occurs. **[5/04]**
3. "J' Consecutive Rejects – When the maximum number of containers (J) are rejected consecutively, and alarm condition occurs. **[5/07]**
4. "X' Rejects in "Y" Containers – When the maximum number of rejects (X) occur in the last (Y) number of containers, and alarm condition occurs. **[5/11]**
5. "S" Rejects in "T" Minutes – When the maximum number of rejects (S) occurs within the last (T) minutes, and alarm condition occurs. **[5/16]**
6. Every "P^{th}" Container, "Q" Times – When every "P^{th}" (6^{th} for example) container is rejected, (Q) times in a row, and alarm condition occurs. "P" could be set to 6 if you had a six head closing machine, which would alert you to a defective seaming roll. If an alarm occurred. **[5/21]**
7. Terminal Count "N" - Set to alarm at a predetermined count. **[5/26]**

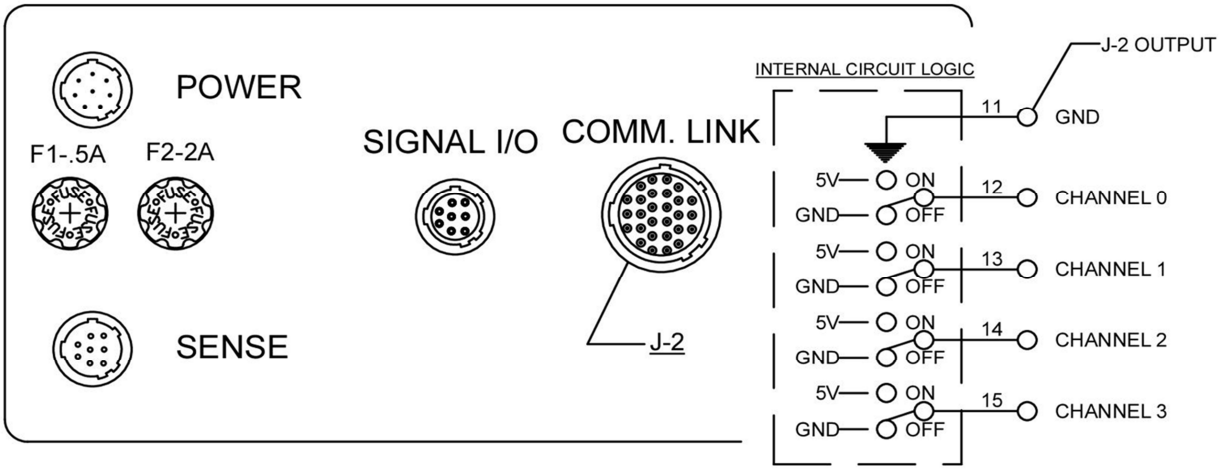
When an alarm condition occurs, a logic level signal occurs at the COMM. LINK Connector (See Figure 3-1). This signal can be fed to the Food Instrument Corporation optional accessory AIC-110 Alarm Indicator/Controller, or to an external controller. These signals can be used to operate an audible or visible alarm, or to switch a motor to start or stop etc.

This Menu is unique, in that if any function is not made active, then the Menu selections to set other parameters of that function are not displayed.

If one of the primary selections (01, 04, 07, 11, 16, 21, 26) is chosen, it is followed by the screens required for programming that function.

The first screen following, (OFF, 1=.5, 2=1), disables (-0), selects a 5 volt 50 millisecond output pulse (-1), or a 5 volt 100 millisecond pulse (-2). When a programmed event occurs, the selected output pulse appears at the Comm. Link Connector at the back of the waterproof enclosure (Figure 3.1). When used with the Food Instrument Corporation AIC-110 Alarm Indicator/Controller, the 50 millisecond pulse will cause a momentary contact closure at the AIC-110, while the 100 millisecond pulse will cause a latched contact closure that can only be released with the reset button.

The second screen following, (OUTPUT CAN.), selects one of four available output channels, channel 0, 1, 2 or 3. This screen directs the output pulse to the selected channel, and to the input channel of the AIC-110. More than one function can be assigned to the same output channel. For example, both Rolling Average Upper Limit Alarm and Rolling Average Lower Limit Alarm could be selected to Channel 0. Then, if either an Upper Limit or Lower Limit Alarm occurred, either condition would activate Channel 0.



COUNTERS OUTPUT
Figure 3.1

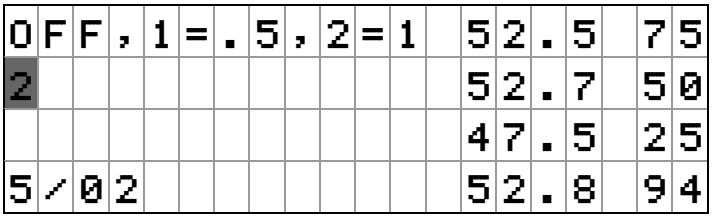
3.5.1 **[5/01]** ROLLING AVERAGE UPPER LIMIT ALARM

>	R	A	U	-	L	I	M		=	Y	?		5	2	.	5	7	5
Y	E	S											4	9	.	6	5	0
													4	7	.	5	2	5
5	/	0	1										5	6	.	1	9	4

Keystrokes:
UP, UP, ENTER

This screen turns the Rolling Average Upper Limit Alarm function On or Off. Pressing the UP key toggles the display from YES to NO. **ENTER** must be pressed to make selection.

3.5.2 **[5/02]** ROLLING AVERAGE UPPER LIMIT ALARM ENABLE



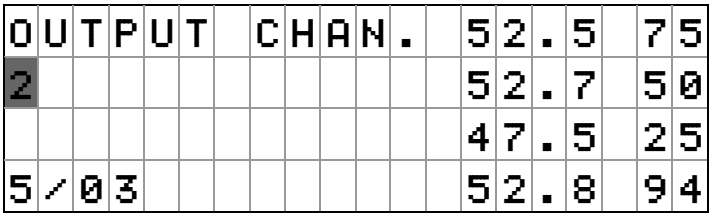
Keystrokes:
UP, UP, ENTER

This menu has three selections; 0 (OFF), 1 or 2. If 1 is selected, the logic level output signal is 50 milliseconds at +5 volts. If 2 is selected, the logic level output signal is 100 millisecond at +5 volts.

If 1 is selected, the AIC-110 will switch the selected output ON upon sensing a 50 millisecond pulse, and remain on the 50 milliseconds. Once reset, the AIC-110 output will remain off until the Rolling Average drops below the Upper Limit, and then rises above the Upper Limit again.

Upon sensing a 100 millisecond pule, the AIC-110 will switch the output ON and latch ON until manually reset. It will not drop out if the Alarm condition ceases.

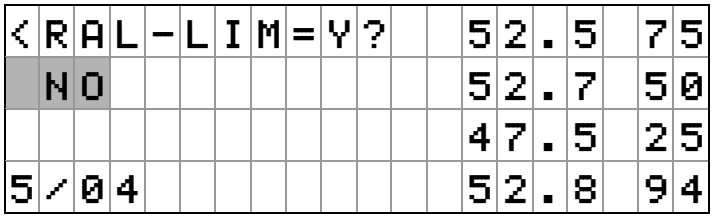
3.5.3 **[5/03]** ALARM OUTPUT CHANNEL SELECT



Keystrokes:
UP, UP, ENTER

This screen selects the output channel for the Alarm signal. Four channels are available, 0, 1, 2 and 3. More than one Alarm signal can be assigned to any channel. You can program both the Upper Limit and Lower Limit Rolling Average Alarm to channel 0, and if either limit is exceeded, that channel will be activated.

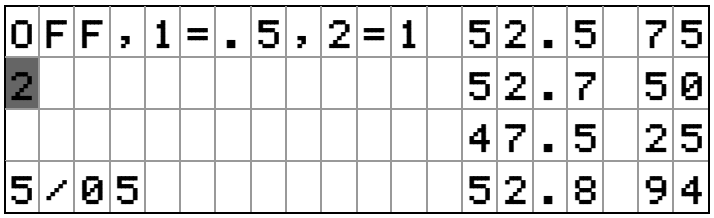
3.5.4 **[5/04]** ROLLING AVERAGE LOWER LIMIT ALARM



Keystrokes:
UP, UP, ENTER

This screen turns the Rolling Average Lower Limit Alarm function On or Off. Pressing the UP key toggles the display from YES to NO. **ENTER** Must be pressed to make selection.

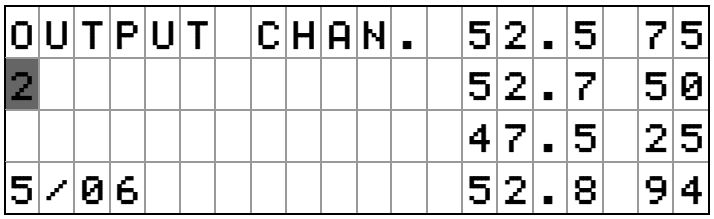
3.5.5 **[5/05]** ROLLING AVERAGE LOWER LIMIT ALARM ENABLE



Keystrokes:
UP, UP, ENTER

Same as 3.5.2 above.

3.5.6 **[5/06]** ALARM OUTPUT CHANNEL SELECT



Keystrokes:
UP, UP, ENTER

Same as 3.5.3 above.

NOTE: Menus **[5/07] – [5/30]** are functions that are purchased options. To activate these menus please contact your Representative or contact us at Food Instrument Corporation.

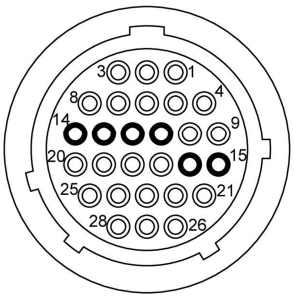
These connectors are part of Menus **[5/07] – [5/30]** and are located at the back of the waterproof enclosure or on the condulet tee at the bottom of the cane or on the bottom of the Remote Cabinet. It is part of the optional Programmable Counter Controller and the RS-232 Communication menus **[4/01] - [4/02]**.

The Programmable Counter Controller is used to connect the AIC-110 or other alarms and/or turn on or off a conveyor or other systems.

Programmable Counter Controller

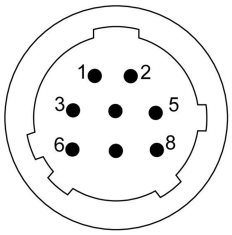
Enclosure Comm. Link Pin-Out

Pin 11 – (GND) Ground
Pin 12 – Channel 0
Pin 13 – Channel 1
Pin 14 – Channel 2
Pin 15 – Channel 3
Pin 16 – 5 Volt



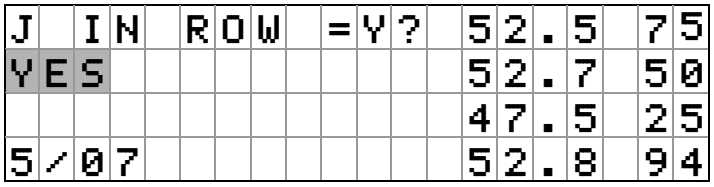
Tee Cover Counter Controller

Pin 1 – (GND) Ground
Pin 2 – Channel 0
Pin 3 – Channel 1
Pin 4 – Channel 2
Pin 5 – Channel 3
Pin 6 – 5 Volt



REJECTS IN A ROW alerts you when the amount of rejects (J) in a row have been reached.

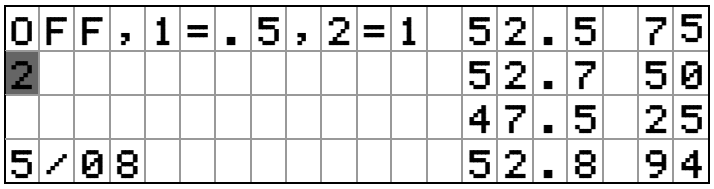
3.5.7 **[5/07]** J IN A ROW REJECTS



Keystrokes:
UP, UP, ENTER

This screen turns this alarm On or Off.

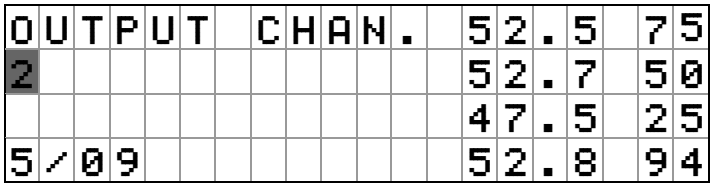
3.5.8 **[5/08]** J IN A ROW REJECTS ALARM ENABLE



Keystrokes:
UP, UP, UP, ENTER

Same as 3.5.2

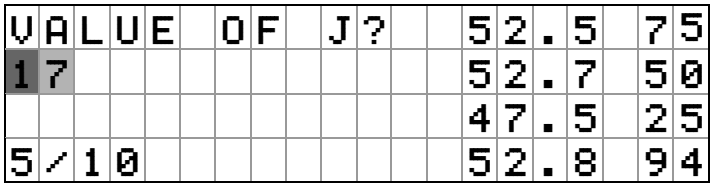
3.5.9 **[5/09]** ALARM OUTPUT CHANNEL SELECT



Keystrokes:
UP, UP, ENTER

Same as 3.5.3

3.5.10 **[5/10]** SET VALUE OF J

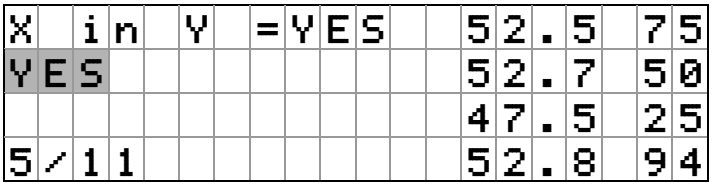


Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, ENTER

Selects a value for “J” consecutive rejects; range 2 – 32.

REJECTS IN A GIVEN AMOUNT OF CONTAINERS will alarm you when the amount of reject(X) have been reached in the given amount of containers(Y).

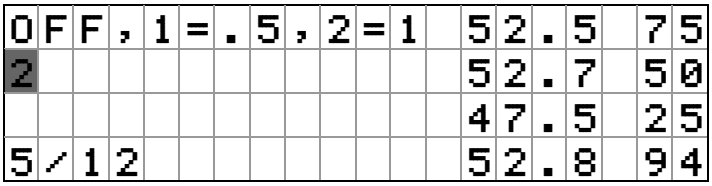
3.5.11 **[5/11]** "X" REJECTS IN "Y' CONTAINERS



Keystrokes:
UP, UP, ENTER

This screen turns this alarm On or Off.

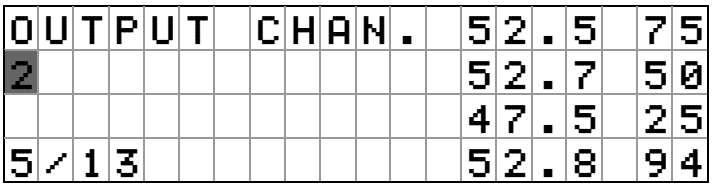
3.5.12 **[5/12]** "X" IN "Y" ALARM ENABLE



Keystrokes:
UP, UP, UP, ENTER

Same as 3.5.2

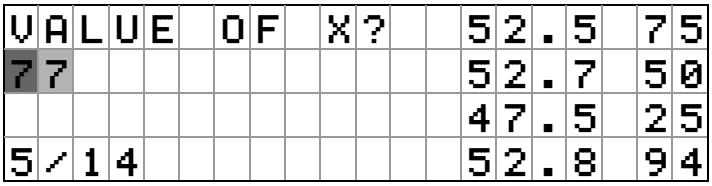
3.5.13 **[5/13]** ALARM OUTPUT CHANNEL SELECT



Keystrokes:
UP, UP, ENTER

Same as 3.5.3

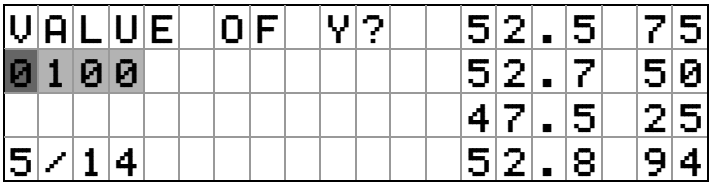
3.5.14 **[5/14]** SET THE VALUE OF "X" REJECTS



Keystrokes:
UP, UP, NEXT, UP, UP, ENTER

This Screen sets the number of "X" rejects in a given sample size that will cause an alarm, (Range 1 – 99).

3.5.15 **[5/15]** SET THE VALUE OF 'Y" NUMBER OF CONTAINERS

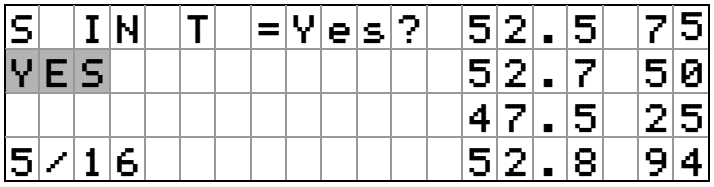


Keystrokes:
UP, UP, NEXT, UP, UP, NEXT, UP, UP, NEXT, UP, UP, ENTER

This Screen sets the value of "Y", determining the number of containers in which "X" rejects will cause an alarm. Range 10 – 9000.

NUMBER OF REJECTS IN A GIVEN TIME alerts you when the amount of rejects (S) has been reached in a given amount of time (T) in minutes.

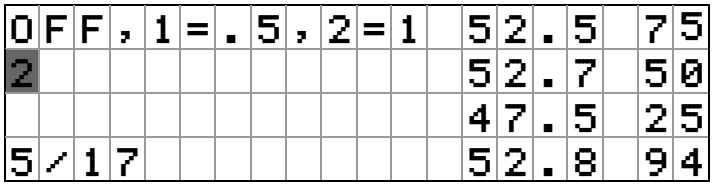
3.5.16 **[5/16]** "S" REJECTS IN "T" MINUTES ALARM



Keystrokes:
UP, UP, ENTER

This screen turns this alarm On or Off.

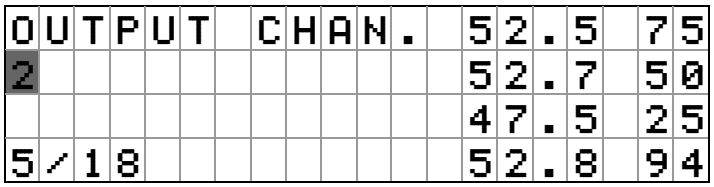
3.5.17 **[5/17]** "S" REJECTS IN "T" MINUTES ALARM ENABLE



Keystrokes:
UP, UP, UP, ENTER

Same as 3.5.2

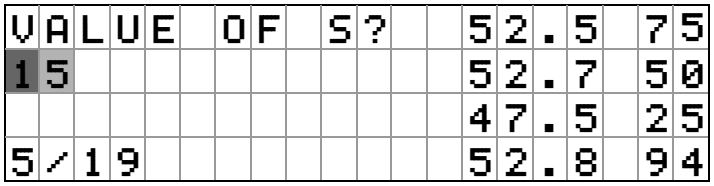
3.5.18 **[5/18]** "S" REJECTS IN "T" MINUTES ALARM OUTPUT CHANNEL SELECTOR



Keystrokes:
UP, UP, ENTER

Same as 3.5.3

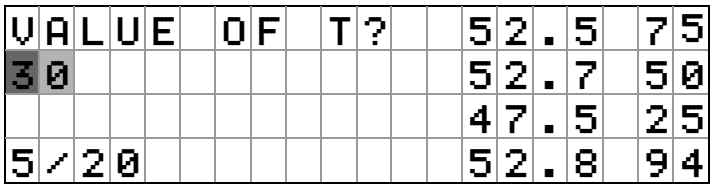
3.5.19 **[5/19]** SET VALUE OF "S" REJECTS



Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, ENTER

This screen sets the number of REJECTS, Range 2 – 30.

3.5.20 **[5/20]** SET VALUE OF "T" MINUTES



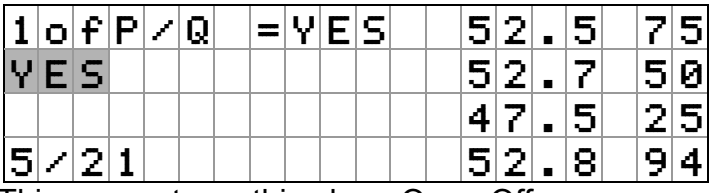
Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, ENTER

This screen sets the number of minutes of test period. Range 1 – 30 minutes.

EVERY Pth CONTAINER Q TIMES alarms you when a reject pattern (Q) in a given number of containers in a cycle (P) has been detected.

This is useful with a multi head sealing machine. It will alert you if one of the heads is going bad. Make (P) number of heads and (Q) a number of reject patterns to alert you.

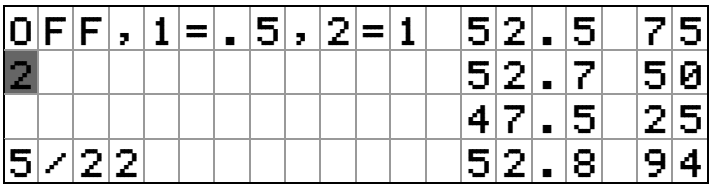
3.5.21 **[5/21]** EVERY "Pth" CONTAINER, "Q" TIMES



Keystrokes:
UP, UP, ENTER

This screen turns this alarm On or Off.

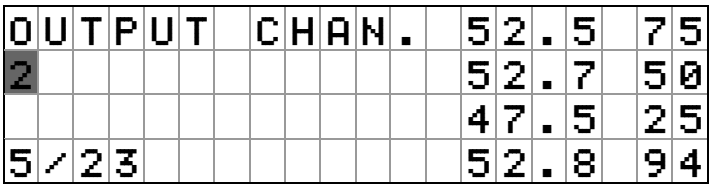
3.5.22 **[5/22]** EVERY "Pth" CONTANER ALAM ENABLE



Keystrokes:
UP, UP, ENTER

Same as 3.5.2

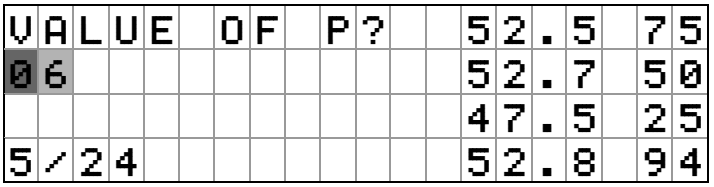
3.5.23 **[5/23]** EVERY "Pth" CONTAINER ALARM OUTPUT CHANNEL SELECTOR



Keystrokes:
UP, UP, UP, ENTER

Same as 3.5.3

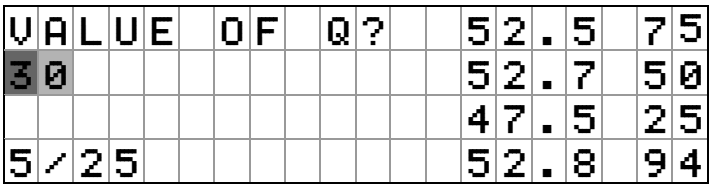
3.5.24 **[5/24]** SET VALUE OF "P"



Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, ENTER

Set the number of containers in the cycle. Range 2 – 99

3.5.25 **[5/25]** SET VALUE OF "Q"

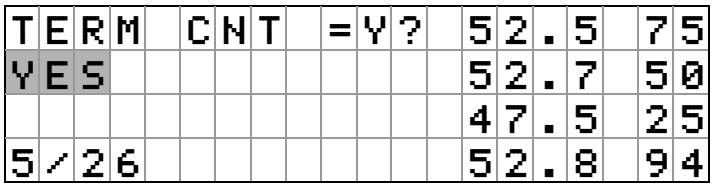


Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, ENTER

This screen sets the number of repetitions to trigger an alarm. Range 2 - 30

ALARM AT PREDETERMINED COUNT alarms when a container count is reached.

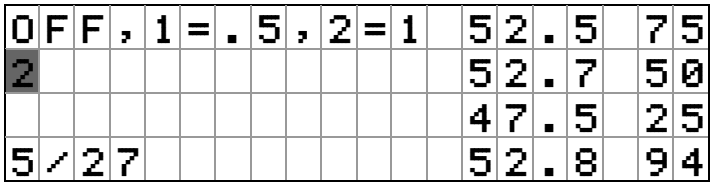
3.5.26 **[5/26]** ALARM AT PREDETERMINED COUNT



Keystrokes:
UP, UP, ENTER

This screen Enables or Disables this alarm.

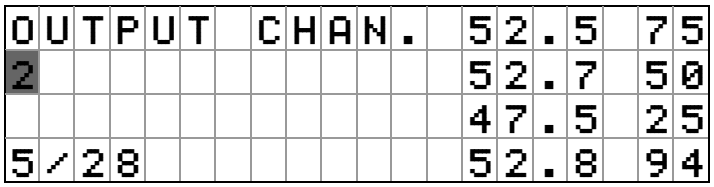
3.5.27 **[5/27]** PREDETERMINED COUNT ALARM ENABLE



Keystrokes:
UP, UP, ENTER

Same as 3.5.2

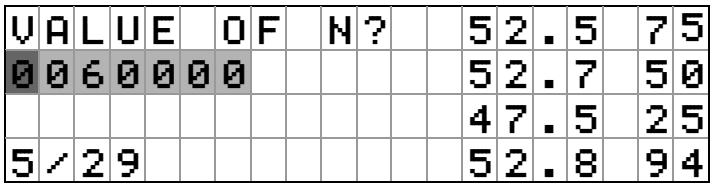
3.5.28 **[5/28]** PREDETERMINED COUNT CHANNEL SELECTOR



Keystrokes:
UP, UP, ENTER

Same as 3.5.3

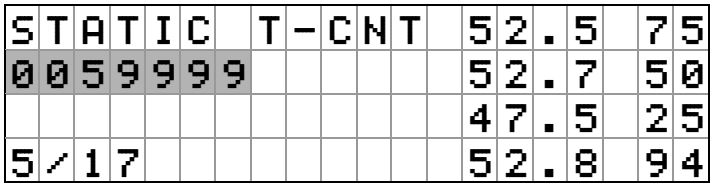
3.5.29 **[5/29]** SET PREDETERMINED COUNT “N”



Keystrokes:
UP/DOWN, NEXT
UP/DOWN, NEXT,……,
UP/DOWN, ENTER

This screen sets the number of containers at which the alarm triggers.

3.5.30 **[5/30]** DISPLAY CURRENT VALUE OF “N”



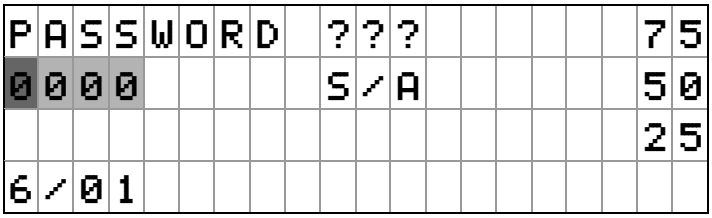
When selected, Menu **[5/30]** displays the count remaining before the alarm triggers.

3.6 **MENU 6** PASSWORD ENTERY

Menu 6 consists of one selection only. This Menu will not be displayed if the PASSWORD system is disabled. When the PASSWORD system is active, you must enter your password in this system, except to adjust the Contrast or to Enable or Disable the Rejector from the front panel. It will be necessary to use the Supervisor's Password to alter or make a change on some Menu Selections. These Menus will be identified in the Instruction Manual with the following box:

IF PASSWORD SECURITY IS INVOIKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

3.6.1 **[6/01]** ENTER PASSWORD FOR ACCESS



Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, NEXT,
UP/DOWN, NEXT
UP/DOWN, ENTER

When a correct Password has been entered, the "**A**" of the **S/A** will appear, indicating that the Password has been accepted. You will be able to alter the ADR-50D settings until the Password Time expires. When the time expires, you must re-enter your Password at Menu **[6/01]** to continue. You can cancel your Password entry at any time by recalling Menu **[6/01]** and pressing the **CLEAR** button.

To gain access to **Menu 7** when password security is invoked, after entering the supervisor's password at Menu **[6/01]** you must press the Menu key.

INTENTIONALLY
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3.7 **MENU 7** PASSWORD CONTROL / ENABLE

IF PASSWORD SECURITY IS INVOKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

This Menu allows you to invoke the Password system, install up to three different passwords (numerical values 0001 – 9999) and to set the length of time after the Password has been accepted before the system stops accepting entries. The ADR-50D is shipped with passwords set as follows:

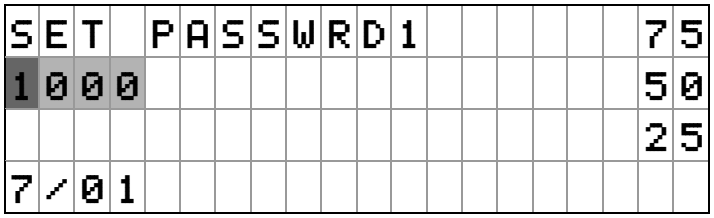
Supervisor's Password (#1)	1000
Password number 2	2000
Password number 3	3000

The first Menu, **[7/01]**, controls the Supervisor's Password, Password #1. This Password, in addition to allowing access to all Password protected functions, allows changing of passwords, invoking or disabling Password Protection and setting the length of time a password will allow changes before the system becomes secure again. Password 2 and 3 are available on Menus **[7/02]** and **[7/03]** respectively. Only the Supervisor's Password can gain access to any selection on Menu 7.

To the right of the Password display is a two-part message, **S/A**. The **S** indicates that the Password Security is ON. When this message is displayed, Password Security is active and no one can make any adjustment to any ADR parameters without entering a valid password. When the **S** is absent, security has not been invoked and anyone can make adjustments to the ADR-50D. **MENU 6** will not appear. The **A** indicates that the Password had been ACCEPTED and the authorized personnel can make changes to the system.

3.7.1 **[7/01]** SET SUPERVISOR'S PASSWORD

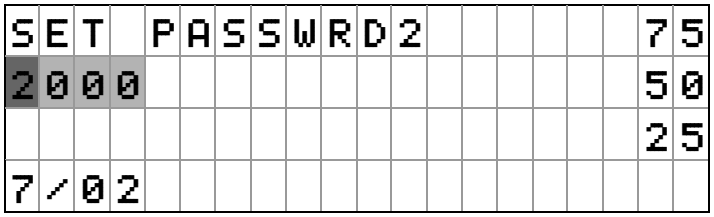
IF PASSWORD SECURITY IS INVOKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1



Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, NEXT,
UP/DOWN, NEXT
UP/DOWN, ENTER

To change the Supervisor's password, the current Supervisor's password must be entered at Menu **[6/01]** to gain access to this menu. Once accessed, the Password can be set to any value between 0001 and 9999. Do not select 0000 as a password. Menu **[6/01]** always starts at 0000. If you use 0000 as your password, then every time Menu 6 is selected it will recognize 0000 as a valid password and open the system to change. Unit Password Security is turned ON Menu **[7/05]**, anyone can change passwords or system parameters.

3.7.2 **[7/02]** SET PASSWORD 2

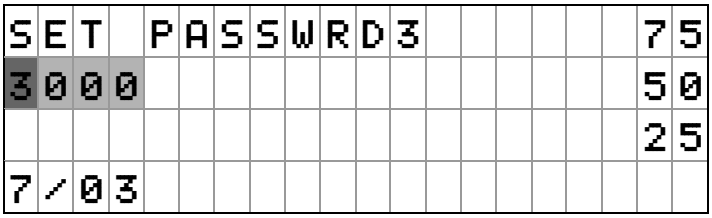


Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, NEXT,
UP/DOWN, NEXT,
UP/DOWN. ENTER

To change Password 2, insert any value between 0001 and 9999 (see above), then **ENTER**.

3.7.3 **[7/03]** SET PASSWORD 3

IF PASSWORD SECURITY IS INVOKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

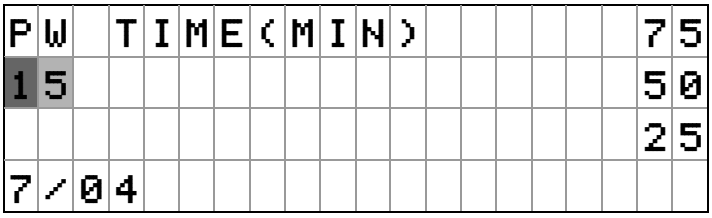


Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, NEXT,
UP/DOWN, NEXT,
UP/DOWN, ENTER

To change Password 3, insert any value between 0001 and 9999 (see above), then **ENTER**.

3.7.4 **[7/04]** SET PASSWORD TIME ON/OFF

IF PASSWORD SECURITY IS INVOKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1

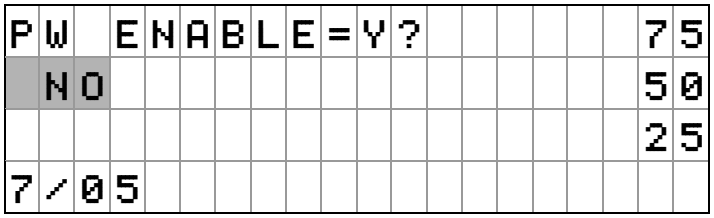


Keystrokes:
UP/DOWN, NEXT,
UP/DOWN, ENTER
(RANGE 01-15)

When Password Security is enabled, the Password Timer is started when a valid Password is entered. Access to secure menus is allowed until the Password times out or until the Password is CLEARED at Menu **[6/01]**. With this Menu, **[7/04]**, that time can be set between 1 minute and 15 minutes. After entering the Supervisor's Password at Menu **[6/01]**, enter the Maximum length of time you want the Password active in this menu and then press **ENTER** to store it in memory.

3.7.5 **[7/05]** ENABLE/DISABLE PASSWORD SECURITY

IF PASSWORD SECURITY IS INVOKED, SUPERVISOR'S PASSWORD IS REQUIRED TO SAVE OR CHANGE ANY DATA ON THIS MENU SELECTION. SEE PARAGRAPH 3.6.1



Keystrokes:
UP, UP, ENTER

This menu ENABLES or DISABLES the password security system. By pressing the UP Key you can switch between YES and NO in the highlighted block on the display. Select the proper response and press ENTER.

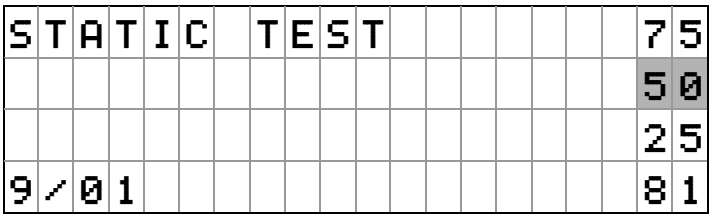
MENU 8

INTENTIONALLY LEFT OUT

3.9 **MENU 9** SYSTEM TESTS

This menu provides tests for the bench technician when troubleshooting the ADR-50D. None of these Menu Selections is used during operation of the ADR-50D. These pages are provided for information purposes only.

3.9.1 **[9/01]** STATIC TEST



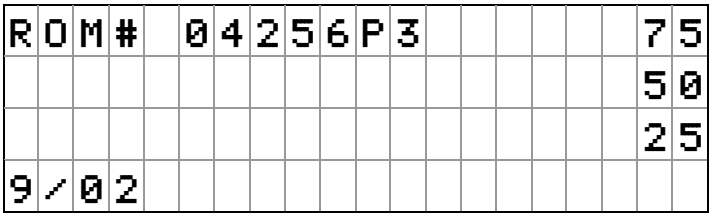
Keystrokes:
NEXT

This Menu Selection tests the operation of the ADR-50D when the conveyor is not running, or the unit is being checked on the bench.

1. If the ADR has been turned off and back on, break the Photo/Light beam with your finger a couple of times first.
2. Place a container under the sensor.
3. Press NEXT, the ADR reading for that container will appear where “50” is shown above.

By repeatedly pressing NEXT, you can observe the stability of the ADR readings.

3.9.2 **[9/02]** ROM (Read Only Memory) REVISION NUMBER



Menu Selection **[9/02]** is a passive screen. The number displayed is that of the installed version of the ROM in this unit. When a new ROM is installed, this number will change to reflect the current version installed.

3.9.3 **[9/03]** PROBE TEST

P	R	O	B	E		T	S	T	=	Y	?						7	5
	N	O															0	0
																	2	5
9	/	0	3														8	1

Keystrokes:
UP, UP, ENTER

This menu selection provides an active test of the SENSE Probe. To Activate the Probe Test selection, toggle to “Y”. After completion of the probe test, you MUST reset the screen to “N”.

With no container under the Sense Probe, pass your finger between the Light Source and Photosensor to break the infra-red light beam. This should produce an ADR reading of 00. Any reading other than 00 indicates an out-of-balance probe. The probe set must be replaced.

When a container is passed under the probe, an ADR reading of 99 should be produced. This indicates that the probe is working and is sufficiently sensitive for the cans under test. After completion of the probe test, you MUST reset the screen to “N”.

3.9.4 **[9/04]** CLEAR RAM

R	A	M		C	L	R		T	E	S	T						7	5
																	5	0
																	2	5
9	/	0	4														8	1

This Screen is part of the Bench Test and Setup procedure at installation of the new ROM. It is not user accessible.

3.9.5 **[9/05]** DAS PULSE TRAIN ENABLE

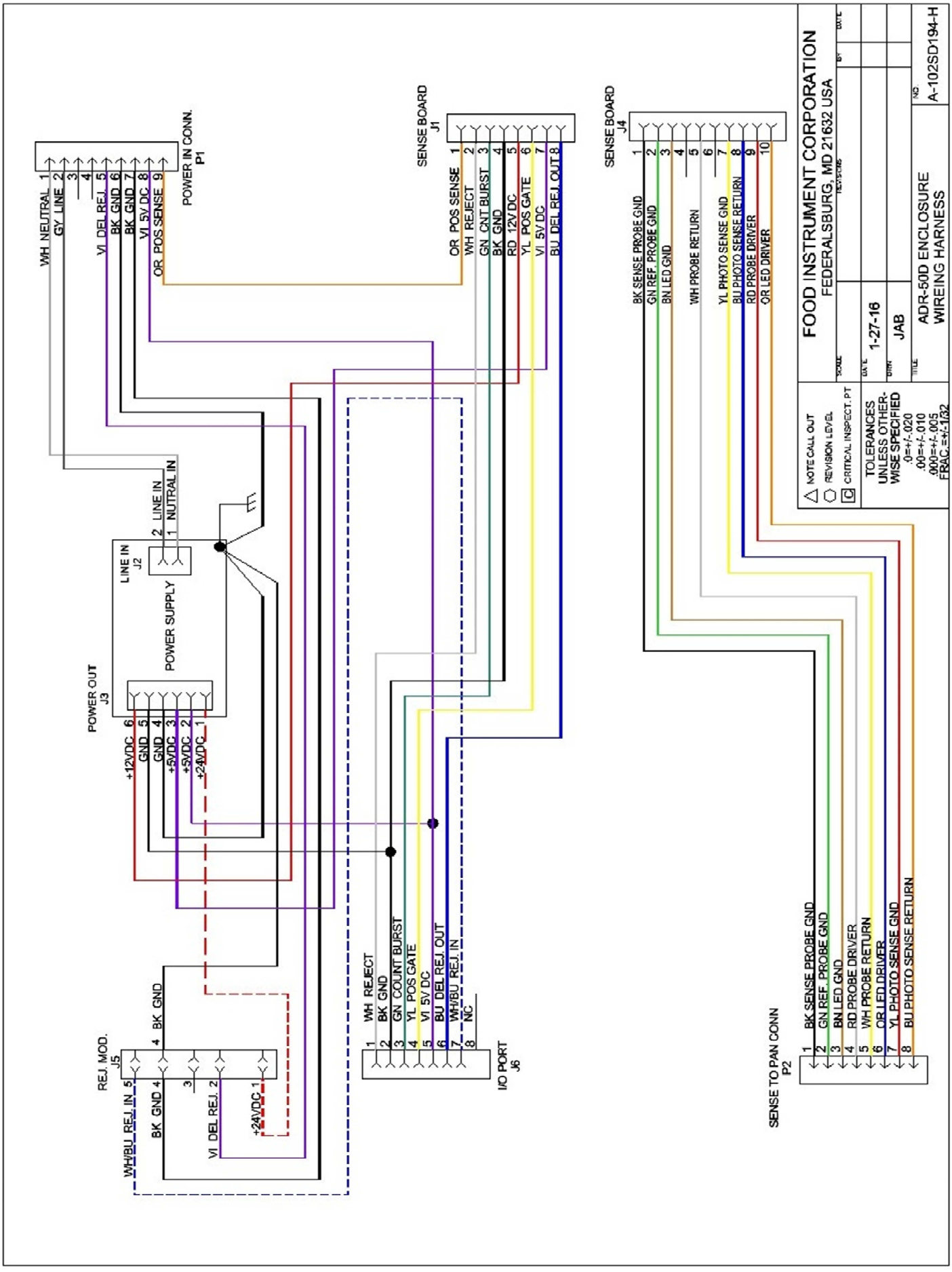
P	U	L	S	E		O	N	=	Y	?							7	5
	N	O															5	0
																	2	5
9	/	0	5														8	1

Keystrokes:
UP, UP, ENTER

This Menu selection enables a test signal for a bench test. Selecting “Y” will have no effect on operation, except to possibly slow down signal processing. It should be left at “N”.

4.0	PRIMARY POWER TROUBLESHOOTING	
	NOTE:	Insure that a single ground wire goes back to the electrical panel. Insure that the ADR-50D is not connected to any motor supply voltages. Insure that the ADR-50D is connected directly to the AC power source through a panel breaker.
	4.0.1	Check for a tripped breaker or bad fuse in breaker panel.
	4.0.2	Check AC power input for water in connectors, frayed wires or broken wires.

4.1	POWER SUPPLY TROUBLESHOOTING	
	CAUTION:	DO NOT APPLY AC POWER AT THIS TIME.
	4.1.1	Unscrew 4 thumb screws on front panel and slide front panel and enclosure out. Disconnect pigtails from back of enclosure.
	4.1.2	Remove 10 front panel screws using 7/64” Allen wrench in spare parts kit.
	4.1.3	Separate amplifier assembly (front panel and attached circuit boards) from waterproof enclosure lifter from the left side first allowing right side to hinge.
	4.1.4	Check all wire connections to verify that they are secure and no wire has pulled away from connectors.
	4.1.5	Make sure boards don’t touch enclosure or ground keeping wires connected to board.
	WARNING:	Caution should be used when power is applied.
	4.1.6	Using the bench cord from the spare parts kit and the power cable (C-2A), apply power to enclosure.
	4.1.7	Check output pins from power supply to verify that they have the correct output voltage. See wiring schematic on page 4-3.
	4.1.8	If output voltages are not correct replace power supply with Food Instrument Corporation part number F10-116-0038 power supply.


FOOD INSTRUMENT CORPORATION
FEDERALSBURG, MD 21632 USA
ADR-50D ENCLOSURE
WIREING HARNESS
A-102SD194-H
1-27-16
JAB
POWER IN CONN. P1
WH NEUTRAL 1
GY LINE 2
VI DEL REJ. 5
BK GND 6
BK GND 7
VI 5V DC 8
OR POS SENSE 9
SENSE BOARD J1
OR POS SENSE 1
WH REJECT 2
GN CNT BURST 3
BK GND 4
RD 12V DC 5
YL POS GATE 6
VI 5V DC 7
BU DEL REJ OUT 8
SENSE BOARD J4
BK SENSE PROBE GND 1
GN REF. PROBE GND 2
BN LED GND 3
WH PROBE RETURN 4
YL PHOTO SENSE GND 5
BU PHOTO SENSE RETURN 6
RD PROBE DRIVER 7
OR LED DRIVER 8
LINE IN J2
2 LINE IN
1 NUTRAL IN
POWER SUPPLY
POWER OUT J3
+12VDC 6
GND 5
GND 4
+5VDC 3
+5VDC 2
+24VDC 1
REJ. MOD. J5
WH/BU REJ. IN 5
BK GND 4
3
VI DEL REJ. 2
+24VDC 1
BK GND
I/O PORT J6
1 WH REJECT
2 BK GND
3 GN COUNT BURST
4 YL POS GATE
5 VI 5V DC
6 BU DEL REJ. OUT
7 WH/BU REJ. IN
8 NC
SENSE TO PAN CONN P2
1 BK SENSE PROBE GND
2 GN REF. PROBE GND
3 BN LED GND
4 RD PROBE DRIVER
5 WH PROBE RETURN
6 OR LED DRIVER
7 YL PHOTO SENSE GND
8 BU PHOTO SENSE RETURN
NOTE CALL OUT
REVISION LEVEL
CRITICAL INSPECT. PT
TOLERANCES UNLESS OTHERWISE SPECIFIED
.0=+/-.020
.00=+/-.010
.000=+/-.005
FRAC.=+/-1/32

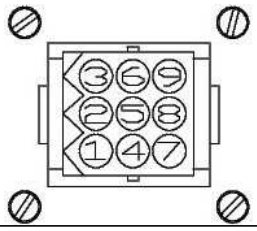
4.2	AMPLIFIER ASSEMBLY TROUBLESHOOTING		
		TROUBLE	POSSIBLE SOLUTIONS
	4.2.1	Green Position Sense L.E.D. Does not light.	Recheck -Section 4.4, Pan Assembly Repair. Inspect and Repair -Broken or frayed wires and connections to sense board. -Sense connector pins on back side of enclosure. -Sense cable (C-1A) Replace (In Order) -Sense Board (115A019-D) -Processor Board (115A020-D) -Led/Video Board (115A021-B)
	4.2.2	Upper Limit or Lower Limit will not adjust correctly.	Check and/or Replace -Membrane Switch -Verify that Password is not enabled. There will be an "**S/A**" displayed on the screen. Replace -Processor Board (115A020-D) -Front Panel Assembly (115A029-A) Replace (In Order) -Sense Board (115A019-D) -Processor Board (115A020-D) -Led/Video Board (115A021-B)
	4.2.3	ADR readout does not read "00" with no container under ADR and position sense triggered. (See also section 4.4.1)	Check - See section 3.9.3 **PROBE TEST** -See section 4.4, Pan Assembly Repair.
	4.2.4	Display is blank but LED's are lit.	Check -Turn off power for 30 seconds and back on. Arrow up about 10 times or until you can see display.

	AMPLIFIER ASSEMBLY TROUBLESHOOTING Cont'd		
		TROUBLE	POSSIBLE SOLUTIONS
	4.2.5	Display is blank with two black horizontal lines.	Check -Turn off power for 30 seconds and back on. If display does not come up normal send enclosure back to Manufacture.
	4.2.6	Strange characters on display.	Check -Turn off power for 30 seconds and back on. If display does not come up normal send enclosure back to Manufacture.
	4.2.7	Looks as though you're changing settings but when you go back it didn't take.	Check -Verify that Password is not enabled. There will be an "**S/A**" displayed on the screen.

4.3	REJECTOR ASSEMBLY TROUBLESHOOTING		
		TROUBLE	POSSIBLE SOLUTIONS
	4.3.1	Reject L.E.D. Does not flash red for a reject when upper or lower limit is exceeded.	Replace (In Order) -Sense Board (115A019-D) -Processor Board (115A020-D) -Led/Video Board (115A021-B) -Power Harness (102A556-A)
	4.3.2	Reject Cylinder does not operate.	Check -Jumper plug in the back of enclosure I/O Port. If Jumper plug is missing rejector will not fire. -Air supply no less than 60 p.s.i. -Reject/Disable Switch to Rejector. -Try the rejector with another unit if possible. Inspect and Repair -Power harness from to Sens Board. -Wiring and connections from back of enclosure, in conduit Tee and rejector coil connector. Replace -Rejector Card (102A335-D) -Rejector Coil (F10-116-0003) -Rejector (SSR-1000)
	4.3.3	Rejector misses container	Check -Cont. Dia. in Menu **[2/02]** -Reject Dist. in Menu **[1/03]** -Air supply no less than 60 p.s.i. Replace -Processor Board (115A020-D)

4.4 PAN ASSEMBLY TROUBLESHOOTING

	TROUBLE	POSSIBLE SOLUTIONS
4.4.1	ADR does not read “00” when no can is present under probe.	Check -See section 3.9.3 **PROBE TEST** Replace -Sense and Reference Probe Pairs. Note: -Probes must be changed as matched pairs. Note: The end of the Position Sense that the wires come in on is the photo sense (yellow) side.
4.4.2	No green Position Sense light on Front Panel.	
	4.4.2.1	Check Position Sense Lens -Check for cracks, scratches and dirt. -Clean with dry cloth or replace if needed.
	4.4.2.2	Check Red Light Source Insert 2.1 With a digital camera with a non-polarized lens point it directly into the Red Light Source Insert. You should see a small purple light from the light source in your camera display. 2.2 Set OHM meter to Diode test. 2.3 Place meter red lead on Pin 3 violet and meter black lead on Pin 4 black of pan connector, and record resistance reading. 2.4 Reveres connections and record resistance reading. 2.5 Remove one lead and connect to pan assembly, and record reading. 2.6 Compare results with Table 4-B.



Pan Connector

1 - Photo Sense	YELLOW
2 - Photo Sense	BLUE
3 - Light Source	VIOLET
4 - Light Source	BLACK
6 – Sensor Signal	WHITE
7 – Sensor Power Ground	BACK
8 – Sensor Power	RED
9 – Sensor Signal Ground	GREEN

Refer to Table 4-B below

	PAN ASSEMBLY TROUBLESHOOTING Cont'd	
	TROUBLE	POSSIBLE SOLUTIONS
	4.4.2.3	Check Yellow Photo Sensor Insert 3.1 Set OHM meter to Diode test. 3.2 Place meter leads on Pin 2 Blue wire, and Pin 1 Yellow wire of pan connector. 3.3 Using sunlight, flashlight or low wattage incandescent bulb shine light directly in to yellow insert lens and record resistance reading. 3.4 Reverse connections and repeat Step 3.3. 3.5 Remove one meter lead and connect to pan assembly, and repeat Step 3.3. 3.6 Compare results with Table 4-B. 3.7 Check Pin Terminals for loose wire in pan assembly. 3.8 Check and/or replace pan cable (C-1A). Replace -Lens (102M293-E) -Insert(s) (Light 102A252-B1 Red) (Photo 102A252-B2 Yellow) -Yoke Assembly (115A043-A) -Pin Ejector will be needed to replace Yoke Assembly (F30-107-0010)

TABLE 4-B

INSERT TESTED	METER LEAD CONNECTIONS				
	LEAD TO PAN	Red Lead	Black Lead	Red Lead	Black Lead
RED LIGHT SOURCE INSERT	INFINITE	Pin 3 <3K OHMS	Pin 4	Pin 4 >20K OHMS	Pin 3
YELLOW PHOTO-SENSOR INSERT	INFINITE	Pin 2 LIGHT <3K OHMS	Pin 1 DARK >5K OHMS	Pin 1 LIGHT OR DARK >20K OHMS	Pin 2

If measurements are different than above table, replace inserts as required.

NOTES:

THE ABRIDGE GUIDE TO ADR-50D OPERATION
ROM # 04256P3

I. Complete instrument installation and mechanical setup as covered in section 2 and 3.0.

II. GENERAL OPERATION:

A. The ADR-50D contains nine main menus. Each contains various numbers of individual sub-menus. The lower left corner of the display identifies each screen. The main menu number is followed by a diagonal (/) and the specific sub-menu number currently being displayed.

B. Pressing **MENU** scrolls between main menus, displaying the first sub-menu. Pressing **SELECT** scrolls between the various sub-menus in each main menu.

C. The up(↑), down(↓) arrows and **NEXT** keys are used to adjust screen values. A blinking, shaded area creates a ***cursor***, which indicates the value under adjustment. The **ENTER** key must be pressed to ***set*** or ***load*** an adjusted value into the instrument.

Pressing **NEXT** moves the cursor between columns in any number. For example, pressing **NEXT** when the 2 in 250, moves the cursor to the 5.

In most screens the instrument indicates the adjustment item by an underline which changes to a blinking cursor during adjustment, and then returns to a solid underline once adjustment has been achieved.

III. MAIN MENUS:

#	1st SCREEN TEXT	MENU FUNCTIONS
1	"ADJ.CONTRAST"	Basic Setup
2	"LOAD CONTNR#"	Container Specific Information
3	"SHOW CNT =Y?"	Counters
4	"RS232 ON=Y? "	External Communications
5	">RAU-LIM =Y? "	Programmable Counter/Controller
6	"PASSWORD ???"	Password engage access
7	"SET PASSWRD1"	Password Modification and Security
8	NOT USED	
9	"STATIC TEST"	Self-testing, stationary containers

NOTE: Main menus are identified by the first sub-menu screen text and number.
Main menu titles are **not** displayed, the lower left hand corner of each screen indicates menu and item number.

IV. MAIN AND SUB-MENUS

1: BASIC SETUP FUNCTIONS

Screen Text	Translation	Operation Sequence
1/01 "ADJ.CONTRAST"	Adjust screen contrast	↑ or ↓ arrows
1/02 "SSR-1000 =Y?"	Select Rejector Type[1]	↑ to switch between YES & NO, ENTER
1/03 "ADJ.REJ.DST."	Adjust Rejector Distance[2]	↑, ↓, NEXT as needed, press ENTER
1/04 "MINIPROBE=Y?"	Sensor Type: Standard or Mini?[3]	↑ to switch between YES & NO, ENTER
1/05 "SERIAL #"	Display Unit Serial Number	Not Applicable

2: **CONTAINER SPECIFIC INFORMATION**

Screen Text	Translation	Operation Sequence
2/01 “LOAD CONTNR#”	Loads memory stored data[4]	↑, ↓, NEXT as needed, press ENTER
2/02 “CONTNR.DIA.”	Adjust to closure diameter[5]	↑, ↓, NEXT as needed, press ENTER
2/03 “ADJ.SENSTVTY”	Select sensor power level[6]	↑ or ↓, press ENTER
2/04 “AUTOCAL =CLR”	Auto calibration	CLEAR, run a container at line speed
2/10 “ADJ.CALIBRTN”	Adjust mid-level value	↑, ↓, NEXT as needed, press ENTER
2/11 “ADJ.UPR.LIM.”	Adjusts upper limit	↑, ↓, NEXT as needed, press ENTER
2/12 “ADJ.LOW.LIM.”	Adjusts lower limit	↑, ↓, NEXT as needed, press ENTER
2/13 “EZ OPEN =Y”	Is the closure an EZO?	↑ to switch between YES & NO, press ENTER
2/14 “RA UPR.LIMIT”	Adjusts Rolling Average upper limit	↑, ↓, NEXT as needed, press ENTER
2/15 “RA LWR.LIMIT”	Adjusts Rolling Average lower limit	↑, ↓, NEXT as needed, press ENTER
2/16 “SHOW RA=YES?”	Show Rolling Average?	↑ to switch between YES & NO, press ENTER
2/17 “RA CAL =YES?”	Turns on Rolling Average Autocal.[7]	↑ to switch between YES & NO, press ENTER
2/18 “SHRT RAV SIZ”	Sets Short RA size to calibrate from	↑, ↓, NEXT as needed, press ENTER
2/19 “RA THRESHOLD”	Set limit to which calibration triggers	↑, ↓, NEXT as needed, press ENTER
2/20 “RA CAL MIN”	Set limit to when calibration is satisfied	↑, ↓, NEXT as needed, press ENTER
2/25 “SAVE CONTNR#”	Save Container Number	↑, ↓, NEXT as needed, press ENTER

3: **COUNTERS**

Screen Text	Translation	Operation Sequence
3/01 “SHOW CNT =Y?”	Display Container Counts?	↑ to switch between YES & NO, press ENTER
3/02 “SHOW NET =Y?”	Show Net count?[8]	Same as above
3/03 “CLR ALL CNTS”	Clear all counters?	Press ENTER
3/04 “CLR TOT CNT”	Clears count of Total Containers	Press ENTER
3/05 “CLR NET CNT”	Clears Net count	Press ENTER
3/06 “CLR REJ CNT	Clears Rejects count	Press ENTER

4: **COMMUNICATIONS**

Screen Text	Translation	Operation Sequence
4/01 “SEND RAV=Y?”	Send Rolling Average?	↑ to switch between YES & NO, press ENTER
4/02 “RS232 ON=Y?”	Turn on RS232 port?	↑ to switch between YES & NO, press ENTER

5: **PROGRAMMABLE COUNTER/CONTROLLER** (OPTION)

Screen Text	Translation	Operation Sequence
5/01 “J IN A ROW”	Program group: Consecutive Rejects[9]	Not Applicable
5/02 “OFF, 1=.5,2=1”	J in a Row Alarm Enable/Disable[10]	↑ for 0, 1 or 2, press ENTER
5/03 “OUTPUT CHAN.”	J in a Row Alarm Selector[11]	↑ for 0, 1 or 2, press ENTER
5/04 “VALUE OF J?”	Adjust J, from 2 – 32	↑, ↓, NEXT as needed, press ENTER
5/05 “TRAP X IN Y”	Program Group: Rejects/Quantity	Not Applicable
5/06 “OFF,1=.5,2=1”	X in Y, Alarm Enable/Disable	↑ for 0, 1 or 2, press ENTER
5/07 “OUTPUT CHAN.”	X in Y Alarm Selector	↑ for 0, 1, 2 or 3 press ENTER
5/08 “VALUE OF X?”	Adjust X, from 1 – 99	↑, ↓, NEXT as needed, press ENTER

Screen Text	Translation	Operation Sequence
5/09 “VALUE OF Y?”	Adjust Y, from 10 – 9000	↑, ↓, NEXT as needed, press ENTER
5/10 “TRAP S IN T”	Program Group: Rejects/Time	Not Applicable
5/11 “OFF,1=.5,2=1”	S in T minutes Alarm Enable/Disable	↑ for 0, 1 or 2, press ENTER
5/12 “OUTPUT CHAN.”	S in T minutes Alarm Selector	↑ for 0, 1, 2 or 3 press ENTER
5/13 “VALUE OF S?”	Adjust S, from 2 – 30	↑, ↓, NEXT as needed, press ENTER
5/14 “VALUE OF T?”	Adjust T, from 1 – 30	↑, ↓, NEXT as needed, press ENTER
5/15 “TRAP 1ofP/Q”	Program Group: Repeat Patterns	Not Applicable
5/16 “OFF,1=.5,2=1”	1 of P/Q Alarm Enable/Disable	↑ for 0, 1 or 2, press ENTER
5/17 “OUTPUT CHAN.”	1 of P/Q Alarm Selector	↑ for 0, 1, 2 or 3, press ENTER
5/18 “VALUE OF P?”	Adjust P from 2 – 99	↑, ↓, NEXT as needed, press ENTER
5/19 “VALUE OF Q?”	Adjust Q from 2 – 30	↑, ↓, NEXT as needed, press ENTER
5/20 “>RAU LIMIT”	Program Group: RA Upper Limit[12]	Not Applicable
5/21 “OFF,1=.5,2=1”	RA Upr Lim Alarm Enable/Disable	↑ for 0, 1 or 2, press ENTER
5/22 “OUTPUT CHAN.”	RA Upr Lim Alarm Selector	↑ for 0, 1, 2 or 3, press ENTER
5/23 “<RAL LIMIT”	Program Group: RA Lower Limit[12]	Not Applicable
5/24 “OFF,1=.5,2=1”	RA Lwr Lim Alarm Enable/Disable	↑ for 0, 1 or 2, press ENTER
5/25 “OUTPUT CHAN.”	RA Lwr Lim Alarm Selector	↑ for 0, 1, 2 or 3, press ENTER

6: **PASSWORD OVERRIDE ACCESS**

Screen Text	Translation	Operative Sequence
6/01 “PASSWORD ???”	Enter Password (to allow change)[13]	↑, ↓, NEXT as needed, press ENTER(CLAR)[14]

7: **PASSWORD MODIFICATIONS AND SECURITY**

Screen Text	Translation	Operative Sequence
7/01 “SET PASSWRD1”	Set Password #1[15]	↑, ↓, NEXT as needed, press ENTER
7/02 “SET PASSWRD2”	Set Password #2	↑, ↓, NEXT as needed, press ENTER
7/03 “SET PASSWRD3”	Set Password #3	↑, ↓, NEXT as needed, press ENTER
7/04 “PW TIMEOUT”	Password Timeout Duration[16]	↑, ↓, NEXT as needed, press ENTER
7/05 “PW ENABLE=Y?”	Enable/Disable Security	↑ to switch between YES & NO, press ENTER

8: **NOT USED**

9: **SELF TESTING, STATIONARY CONTAINERS**

Screen Text	Translate	Operative Sequence
9/01 “STATIC TEST”	Static Test	Press NEXT
9/02 “ROM# 05082P1”	Display ROM Version #	Not Applicable
9/03 “PROBE TST =Y?”	Test Probes	↑ to switch between YES & NO, press ENTER
9/04 “RAM CLR TST”	Used in Factory Setup	Not Applicable
9/05 “PULES ON=Y?”	Used in Factory Setup	Not Applicable

V. SETTING UP YOUR FIRST CONTAINER:

A. Complete installation as described in the Manual, Section 2 and Mechanical Set Up in Section 3.0, taking note of the accurate distance between the rejector (at bumper center line) and sense probe center line. Power up instrument.

B. Adjust screen contrast to suit, go to menu **[1/01]**, adjust with the ↑ ↓ arrows.

C. Enter rejector distance in millimeters (from **[1/01]**, press **SELECT** twice to arrive at **[1/03]**, enter distance with ↑, ↓ and/or NEXT keys, press **ENTER**).

D. Press **MENU** once to go to the menu 2, first item, "Load container" will be displayed. Press **SELECT** to go to **[2/02]** "Contnr. Dia." (Load Container does not apply until containers have been saved in item **[2/25]**) Enter container diameter in millimeters (using ↑, ↓ and/or **NEXT** keys) when correct, press **ENTER**.

E. Press **SELECT** to go to item **[2/04]**, "Autocalibrate" and press **CLEAR**. While the conveyor is running at normal speed, place a container just before the ADR-50D and let a container pass under. This works best at slow speeds.

F. The far right side of the display will then show a 75 upper limit, a middle value of around 50, and a lower limit of 25.

G. If the middle value does not read 50 then press **SELECT** to go to item **[2/10]**, "Adj.Calibrtn" and press the ↑, ↓ to fine tune. You must press **ENTER** before passing the container under the ADR-50D again.

H. To modify upper limit, press **SELECT** once to go to item **[2/11]**. Adjust the upper limit values to suit individual requirements with the ↑, ↓ and/or **NEXT** keys, press **ENTER**.

I. To modify the lower limit, press **SELECT** once to bring up item **[2/12]**, and adjust values appropriately with ↑, ↓ and/or **NEXT**, press **ENTER**.

J. Rolling average can be adjusted in menus **[2/14]** and **[2/15]**. However it's recommended these be set after observing the RA values automatically established by the ADR. Excursions will be noted on the display, indicating values which when loaded, will prompt the yellow and red flashing RA LED as excursions occur.

K. Press **SELECT** until **[2/25]** "Save Contnr#" is displayed. Load a number by pressing the arrow (↑) keys and **NEXT** until the preferred number is displayed at the cursor. Press **ENTER**.

Setup and operation is now complete. Follow the same procedure for successive containers. At changeover to a previously loaded container, simply go to Main Menu **[2/01]**, "Load Contner#", enter the container number established in K using the arrows keys (↑ ↓), **NEXT**, then press **ENTER**. All data stored specific to that container number is recalled and immediately applied.

Footnotes:

1) **[1/02]** The SSR-1000C is the standard rejector supplied with the ADR-50D instruments. Set to NO only if system configuration includes the optional HSR-2000 High Speed Rejector.

2) **[1/03]** Rejector Distance is the distance from the rejector center line to ADR positional sensors' center line in millimeters.

3) **[1/04]** 50D and DR instruments are standard equipped with either probe, DRB instruments with the Miniprobe. Setting is correctly set at the factory. If reset incorrectly, the instrument will be ***incapacitated***.

4) **[2/01]** Loading a new container automatically **RESETS** all counters.

5) **[2/02]** Closure Diameter in millimeters is required.

6) **[2/03]** There are five levels of sensitivity 0 – 4. 0 being the lowest, 1 being the standard setting. Generally only being changed with extreme changes in closure diameter or configuration.

7) **[2/17]** Pushing **ENTER** twice reveals the next 3 sub-menus to control the Auto-Calibration.

8) **[3/02]** Initial display shows total containers processed and rejected, NET count is displayed at YES, gross count at NO.

9) **[5/01]** In the Programmable/Counter Controller Menus, one screen is used at announce, or identify the individual program and its associated screens. The screens here referred to as PROGRAM GROUP: (as appropriate) have no user selectable settings.

10) **[5/02]** These screens engage or disengage the alarm system, and define the type of signal: 0 turns OFF the alarm, 1 provides a non-latched signal, 2 provides a latched signal requiring operator action to disengage when used with the AIC-110, or 50 and 100 milliseconds signals respectively when used without the AIC-110.

11) **[5/03]** Selects between four possible output channels (0,1,2,3) for the specific programs' alarm at occurrence.

12) **[5/20]** Rolling Average values (Upper & Lower Limits) are set in screens **[2/10]** and **[2/11]**.

13) **[6/01]** Not seen unless Password Security is **ON**.

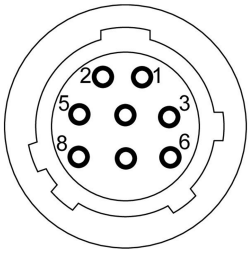
14) **[6/01]** In this screen, pressing **CLEAR** terminates the "PASSWORD TIME OUT" Period.

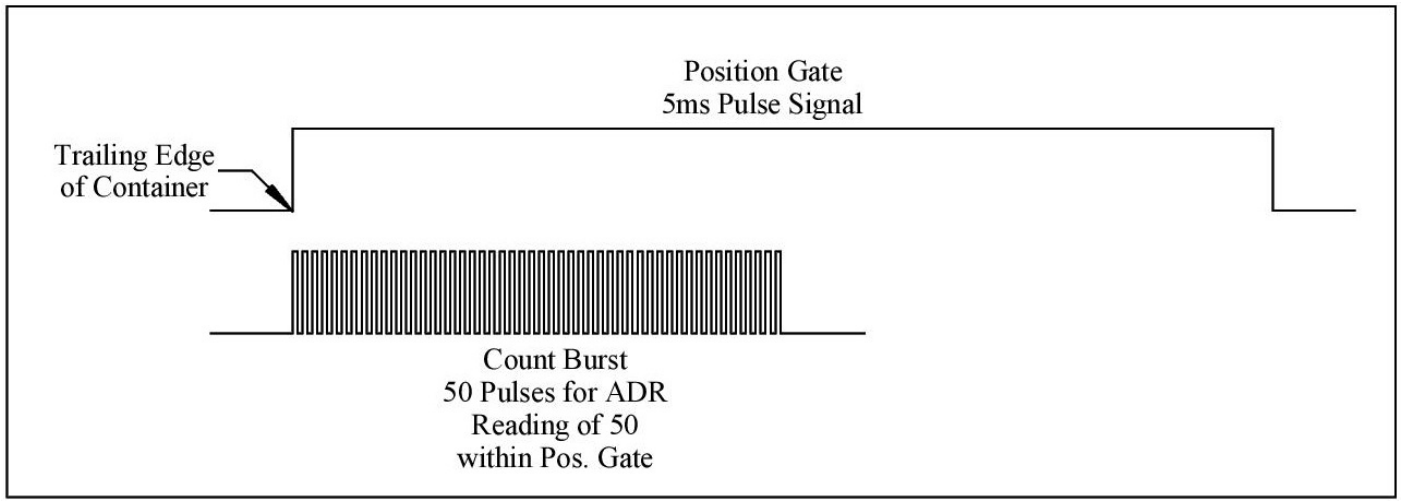
15) **[7/01]** Visible only when security is **OFF**. When security is **ON**, the entry of password 1 (in menu **[6/01]**) is required to view and access menu 7.

16) **[7/04]** Determines the length of operator instrument access once password privileges are invoked.

SIGNAL I/O PORT J4

Pin#	Name	Description
1	REJECT	Real time reject signal, High going Low, 5VDC, 18ms pulse.
2	GND	Ground
3	COUNT BURST	Sends a 5VDC pulse signal of the ADR reading within the time frame of the 5ms Position Gate time. Each time there is a 5VDC pulse it represents one count of the ADR reading. Example: if the ADR has a reading of 50 there will be 50 5VDC pulses within the 5ms Position Gate time frame. See illustration below
4	POS GATE	Sends a 5ms pulse after a container passes the position sense (Photo/Light).
5	5V DC	5V DC out
6	DEL REJ OUT	This is the delayed reject out signal. It will be 5VDC out and pulse to 0V when reject is triggered.
7	REJ IN	This goes directly to the Rejector Card located input inside of enclosure which triggers the rejector. DEL REJ OUT (Pin 6) should be inputted into this pin for the rejector to fire.
8	N/A	This pin is not used





SPECIAL ADR-50D SET-UP PROCEDURE FOR EZO / PULL-TAB CANS

The ADR will work effectively on the pull-bat end of EZO cans just as well as on the opposite end, and in some case, where the opposite end is rigid, will work only on the pull-tab end.

The top of the regular or non-EZO can is generally symmetrical about its center. If a number of cans are passed through the ADR with various rotations about the center point of the lid, there is essentially no difference in how the lid and its deflection appear to the ADR.

If the mechanical set-up of the ADR is such that the can is not precisely centered under the sense probe, there will not be a significant difference in the ADR reading regardless of the rotational orientation of the top end, or lid.

This is not true of the pull-tab or foil-tab can end. If the can end is not precisely centered under the sensing probe, then a different reading will be displayed depending on the orientation of the pull-tab as the can passes under the ADR. In extreme cases, this variation can be as much as 50 to 60 units on the ADR display. Even a setup that would be perfectly acceptable on a non-EZO can will yield a 15 to 20 unit variation on an EZO container end.

Mechanical Setup and adjustments to ensure consistent EZO can measurements

SETUP PROCEDURE:

The following instructions will achieve the setup of the ADR, which will ensure perfectly satisfactory operation with EZO cans.

Step 1: **Mechanical setup procedure**

Go through the mechanical setup procedure (pages 3-1 to 3-5, Section 3.0 to 3.0.3 including Reference Strip Force/Aft Tilt Adjustment, Height Adjustment and Lateral Adjustment) and be absolutely certain that the setup procedure has been followed accurately.

Step 2: **Dynamic monitoring requirements**

Turn on the conveyor. The conveyor must be running at operating speed for the rest of the procedure. ADR readings on EZO cans are speed-sensitive and any variation in speed will necessitate repeating this entire procedure. Do not pass cans under the ADR by hand since that will not duplicate the operating speed of the system.

Step 3: **Determination of pull-tab orientation effects on EZO Can deflection**

a) Set ADR up by selecting Menu **[2/10]** Adjust Calibration. (After completing the AUTOCAL procedure with this can on Menu **[2/04]**)

b) Place an EZO can on the conveyor so that it passes under the ADR with the pull-tab pointing forward in the direction of flow. Repeat the procedure and adjust the Calibration Adjustment until the ADR displays a reading of 50. Repeat this procedure and minimum of three can passes to confirm.

c) Place the same can on the conveyor so that it passes under the ADR with the pull-tab pointing back (opposite to the direction of flow). Note the difference in the ADR readings after repeating this procedure a minimum of three can passes to confirm. Example if the ADR reads 50 with the pull-tab pointing forward and 37 with the pull-tab pointing backward, the difference is 13.

Step 4: **Fore and Aft Adjustment** to eliminate this difference it is necessary to change the angle of the Position Sense Beam assembly.

a) Locate the two 6mm lock nuts on the sides of the Position Sense Beam Yoke assembly. Slightly loosen the two nuts and move the yoke slightly and lightly secure one nut.

b) Repeat the procedure of passing the can under the ADR with the pull-tab pointing forward and with the pull-tab pointing backward. The readings will have changed from those noted in step 3. If the difference in readings in this Step has increased over that noted in Step 3, move the Position Sense Beam assembly slightly the opponent direction.

c) Again, pass the can under the ADR with the pull-tab pointing forward and then with the pull-tab pointing back and note the difference. Repeat this procedure of moving the Position Sense Beam assembly in very small increments and testing for no more than +/- 1 unit is achieved.

d) Pass the can under the ADR repeatedly with the pull-tab pointing forward and readjust the Calibration Adjustment to give the reading of “50”. Secure the lock nuts at the on the side of the Position Sense Beam assembly yoke brackets.

Step 5: **Lateral Adjustment** to eliminate this difference it is necessary to regulate the lateral position of the Sense Probe and Reference Strip assembly.

a) Place the can on the conveyor with the pull-tab pointing towards the operator as it passes under the ADR. Note the ADR reading.

b) Place the can on the conveyor with the pull-tab pointing towards the opposite side of the conveyor form the operator as it passes under the ADR. Note the ADR reading and calculate the difference.

c) Note the difference in ADR readings when the can is passed (three times minimum) under the ADR with the pull-tab pointing towards the operator and when the can is passed under the ADR with the pull-tab pointing away from the operator.

d) Using the lateral adjustment crank-handle adjust eh position of the reference strip and sensing probe.

e) If the difference decreased after moving the ADR toward the operator continue with the clockwise adjustment of the crank-handle and if the difference increases after moving the ADR toward the operator continue with the counter-clockwise adjustment of the crank-handle. Continue these adjustments until the difference between the ADR readings has been reduced +/- 1 unit.

Step 6: **Four-way adjustment confirmation**

Finally repeat Steps 3 and 4, if necessary, until the difference between the ADR readings has been reduced to +/- 2 units.

Step 7: **Final 360° pull-tab orientation compensation test**

Pass the can under the ADR without regard to the pull-tab orientation. The ADR readings should be held within +/-2 units of the mid-range “50” reading. If not repeat Steps 3 to 5 until it is achieved with nothing less than +/- 2 units of the mid-range “50” reading being acceptable.

This procedure should only need to be undertaken once per EZO can size.

Technical Data		
Parameter	Conditions	Data
Input Voltage		90….264VAC
Input Current		1A max. (RMS) @ 115VAC
Frequency		47….63Hz
Inrush Current	Cold start at 25°C	60A max. @ 240VAC
Air Pressure		60-120 p.s.i.
Maximum Dimensions		38.5"H x 19.5"D x 41"L 97.8cm H x 49.5cm D x 104.1cm L
Weight		56 lb. (25.4kg)

ADR-50D PREVENTATIVE MAINTENANCE

1. **CLEAN UNIT WEEKLY** - This consists of wiping off the reference strip and the photo sense eyes.

2. **CHECK REFERENCE STRIP FOR WEAR WEEKLY** – Run hands across bottom of Reference Strip to check for grooving. If a groove has occurred on one side only then the setup of the unit needs to be adjusted. Also visually check strip to see that the wear is occurring only near the probe holder. If groove occurs more than a can diameter before the probe holder, then the set up needs to be adjusted.

3. **OIL REJECTOR MONTHLY** – Remove air from the center hole on the rejector valve. Put a few drops of oil (10W non-detergent) into hole. Reconnect air supply and fire rejector to lubricate thoroughly.

4. **CHECK STABILITY MONTHLY** – Go to Menu [9/01], pass your finger through the photo/light beam a few times and then place a container stationary under the probe, press the NEXT key and record reading. Do this several times and the reading should be ± 1 digit. Next, pass one container under unit several times and the reading should be ± 2 digits. If the stability is not correct than if possible replace enclosure with another and test again. If the results are the same replace probe. If the results change when enclosure is replaced then enclosure may need to be sent in for calibration.

5. **PROBE CHECK MONTHLY** – Go to Menu [9/03] and arrow up to YES and press ENTER. With no container under the Sense Probe, pass your finger between the Light Source and Photosensor to break the infra-red light beam. This should produce an ADR reading of 00 any reading other than 00 indicates an out-of-balance probe. The probe set must be replaced. When a container is passed under the probe, an ADR reading of 99 should be produced. This indicates that the probe is working and is sufficiently sensitive for the cans under test. After completion of the probe test you MUST rest the screen to "N".

6. **CHECK WIRES AND CONNECTIONS MONTHLY** – Check all wires to verify that no insulation has been cut or now bear wire is exposed. Check all connections and terminals to verify that all are secure and not falling apart. Repair or replace as needed.