Filler/Dispenser/IBC

HI-3010

INSTALLATION AND SERVICE MANUAL

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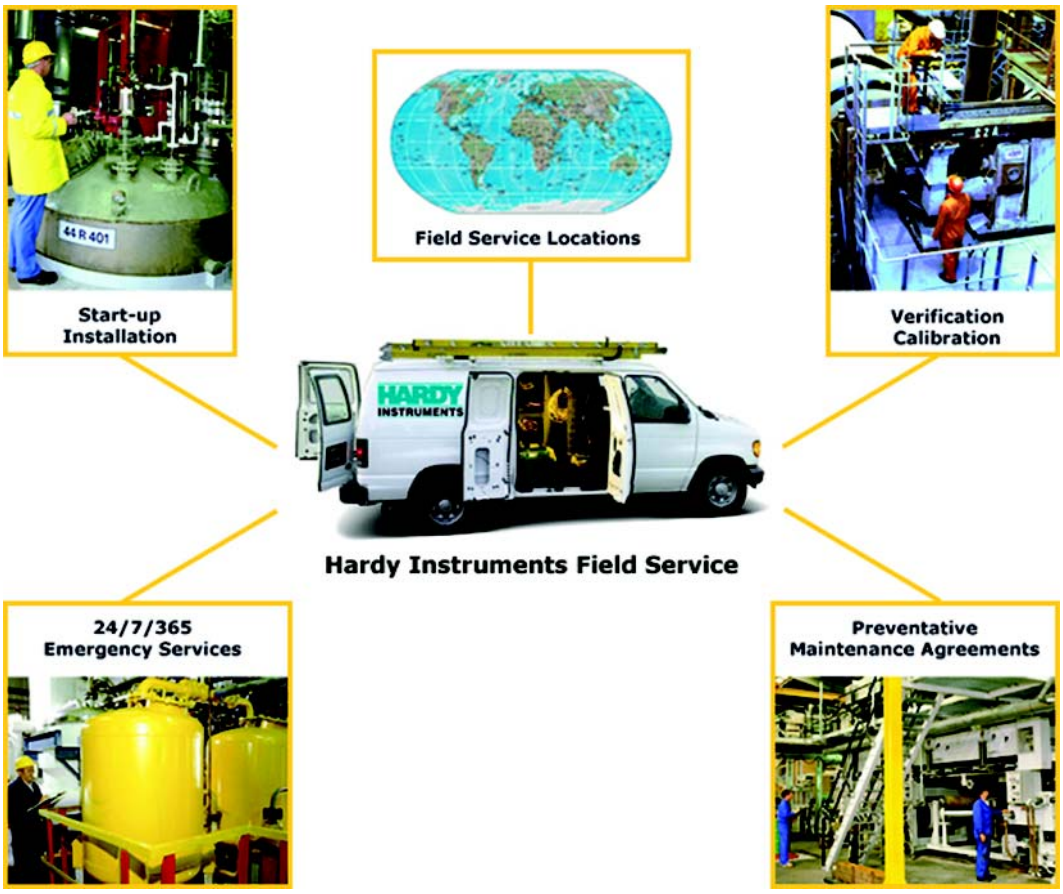

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CHAPTER 1: OVERVIEW

General Introduction to the Hardy Filler/Dispenser/IBC HI 3010 Service Manual

This Service Manual provides installation, setup and troubleshooting procedures for the HI 3010 Filler/Dispenser/IBC. For information on network setup, optional cards, security, and Email, see the HI 3000 Series Operation and Installation Manual.

To get the maximum service life from this product, technicians should use this instrument in accordance with recommended practices either implied or expressed in this manual. Before using the Filler/Dispenser/IBC all service personnel should read and understand all cautions, warnings, and safety procedures, referenced or explicitly stated in this manual, to insure the safe operation and repair of this instrument. Hardy Instruments sincerely appreciates your business. We encourage input about the performance and operation of our products from our customers. Should you not understand any information in this manual or experience any problems with this product, please contact our Technical Support Department at:

Phone: (858) 278-2900
FAX: (858) 278-6700
E-Mail:

- hardysupport@hardyinst.com
- hi_sales@hardyinst.com

Or visit our web site at:

http://www.hardyinstruments.com

Our web site is full of useful information about our products, process weighing and vibration analysis applications. You can also update the Filler/Dispenser/IBC Manual. The latest revised manuals are available FREE in the Support Section of our Web Site. While you're on the site feel free to visit the other web pages which can provide answers to your questions about, load points, process weighing, vibration analysis or other Hardy instruments. Be sure to sign up for the Hardy Newsletter to get the latest information on all Hardy products and services. For answers to technical issues and service problems check the Hardy Web Tech on our Hardy Web Site. Most problems can be resolved by the Hardy Web Tech, 365 days a year, 24 hours a day 7 days a week. You can still contact a technician by phone during our operating hours if necessary.

Description

The Hardy Instruments Filler/Dispenser/IBC controller is part of a complete line of application specific process weighing and condition monitoring instruments. The Filler/Dispenser/IBC instrument is available as an HI 3010, a stand alone controller with a display (4 lines; 20 characters) and key pad or an HI 3010R, blind remote stand-alone controller, swivel mounted with no display. A remote 6 digit, 7 segment LED display is available as an option for the HI 3010R. The Filler/Dispenser controller has built-in totalizers that keep you up to date as to the following:

- History of Totals for each of the twelve (12) internally stored material configurations include:

    1. Number of Cycles
    2. Amount of material in a cycle

The HI 3010 Filler/Dispenser/IBC is designed with output alarms, for example:

- Over Fills/Under Fills
- Feed Time-outs
- Out of Tolerance
- Not OK to Fill
- Too Many Jogs
- Discharge gate is not responding
- Change an Immediate Bulk container

The HI 3010 Filler/Dispenser/IBC is field configurable for filling, dispensing and IBC (Intermediate Bulk Container) applications. This instrument is a stand-alone controller with fast and slow speeds and auto-adjusting preacts for precise, rapid process control. Displays keep the user up to date as to the number of cycles and amount of material in the cycle. In addition the instrument maintains a history of the totals for each of the twelve internally stored material configurations. Output alarms warn the operator of overfills, feed time-outs, out of zero tolerance, not OK to fill, too many jogs, if the discharge gate is not responding or when to change an intermediate bulk container. The Filler/Dispenser/IBC contains Hardy Instrument's core features:

- WAVERSAVER® - Eliminates the effects of vibration on the scale.
- C2® Electronic Calibration - Calibration without test weights.
- SMM (Secure Memory Module) - Memory for manual transfer of configuration data to another HI 3010 instrument(s).

All of Hardy's 3000 Series instrumentation is loaded with standard features like a selectable 10/100 BaseT Ethernet port and an embedded web server to link performance diagnostics and setup data to and from your local Intranet, Extranet, VPN or via the Internet (World Wide Web). A standard Devicenet interface allows multiple applications to be

viewed and controlled from one display and allows 3rd party I/O to be easily added to the system. Mapped I/O saves you wiring costs by distributing the I/O where you need it at the process or in the control room. The controllers act as “Masters” over Ethernet/IP and Devicenet communications while optional interfaces for Allen-Bradley Remote I/O, Profibus and Analog provide communications to PLC® and DCS systems. Hard copy records can be printed via a standard 232 simplex printer port to an external printer.

NOTE: PLC® is a registered trademark of the Allen-Bradley Corporation.

Built-in Smart Diagnostics (Knowledge base) learns how your system operates and auto-tunes it for maximum throughput to finish your process faster. Alarms alert you to problems or potential problems that can affect your process. The Filler/Dispenser/IBC has Internet Wizards that walk you through the instrument set up while on board help files are just a key press away.

Typical Applications

- Filling a Vessel Using a Feeder - Filling is the adding (gain-in-weight) of a material into a container on a scale. (See Fig. 1-1)
- Filling into a Vessel from another Vessel (See Fig. 1-2)
- Dispensing A Vessel Using a Feeder - Dispensing is the adding of a material by (loss-in-weight) from a vessel on a scale to a container which is off the scale. (See Fig. 1-3)
- Dispensing from a vessel to another vessel. (See Fig. 1-4)

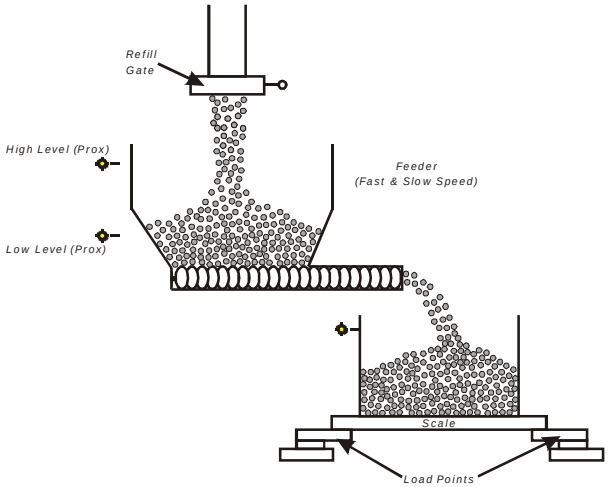


FIG. 1-1 FILLING A VESSEL USING A FEEDER

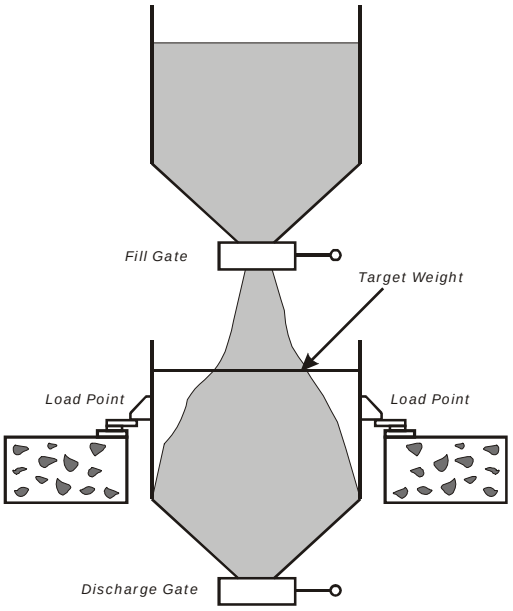


FIG. 1-2 FILLING INTO A VESSEL FROM ANOTHER VESSEL

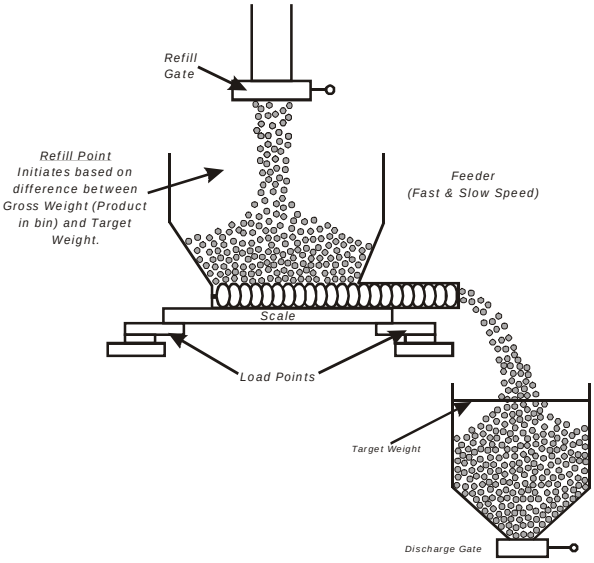


FIG. 1-3 DISPENSING INTO A VESSEL FROM A FEEDER

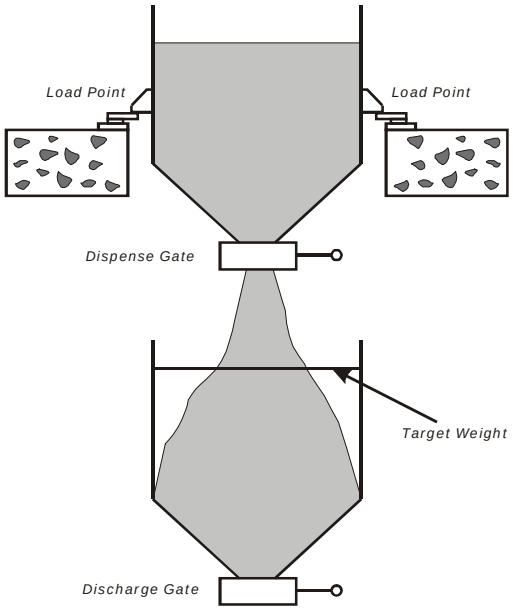


FIG. 1-4 DISPENSING (LOSS-IN-WEIGHT) FROM A VESSEL TO ANOTHER VESSEL

Hardy Web Tech

We have implemented Hardy Web Tech, our new Online Tech Support Knowledge Base, to serve your tech support needs better than ever before. Hardy Web Tech helps you immediately find answers to your technical questions. Just type in your question and see if your answer exists in our knowledgebase, which is populated by interactions with customers like you.

You can also create your personalized support page, and your own support section that you can access 24/7. You can even view and update your entire call history, as well as maintain your profile containing your product and system information, so we can more effectively meet your needs.

Last, but not least, we invite all user feedback. Click on the "Provide Feedback" link to let us know how we're doing! What do you like about the product? What's missing? How do you like our new support site? Anything! Your comments are important and will help us shape the future direction of our products.

Connectivity

All HI 3000 Series products enable the user to use the selectable 10/100 base T Ethernet port or use its embedded web server to link performance, diagnostics and setup data to and from your intranet, extranet, VPN or the internet. Receive alarms via e-mail or over WAP enabled devices including cellular phones. A DeviceNet interface allows multiple applications to be viewed and controlled from a display and additional 3rd party I/O to be easily added to the filling/dispensing system. The controller has a single RS-232 serial port configured as a printer port.

Setup Wizards

Setup Wizards enable the user to walk through the instrument set up. On-board Help files are just a key press or click away.

Mapped I/O

Mapped I/O saves wiring costs by distributing the I/O where you need it, at the process or in the control room. The controller is a DeviceNet Scanner and the DeviceNet Scan table is configured using RS Networx®. Optional interfaces for Allen-Bradley Remote I/O, Profibus and Analog provide communications to PLC and DCS systems.

WAVERSAVER®

Typically, mechanical noise (from other machinery in a plant environment) is present in forces larger than the weight forces trying to be detected. The HI 3010 is fitted with WAVERSAVER® technology which eliminates the effects of vibratory forces present in all industrial weight control and measurement applications. By eliminating the factor of vibratory forces the controller is capable of identifying the actual weight data. WAVERSAVER® can be configured from the front panel to ignore noise with frequencies as low as 0.25 Hz. One of four higher additional cut off frequencies may be selected to provide a faster instrument response time. The default factory configuration is 0.50 Hz vibration frequency immunity.

C2® Calibration

C2® Second Generation Calibration enables a scale system to be calibrated electronically without using certified test weights which equals the systems load capacity. A C2 weighing system consists of up to eight load sensors, a junction box, interconnect cable and an instrument with C2 capabilities, such as the Filler/Dispenser/IBC. All Hardy Instruments C2 certified load sensors contain digital information detailing its unique performance characteristics. The Hardy Filler/Dispenser/IBC reads the performance charac-

teristics of each individual load sensor and detects the quantity of load sensors in the system. Calibration is performed by simply adding a reference point from the front panel or via the Web Server. The reference can be zero (no weight on the scale) or alternatively, a known weight on the scale. The instrument is capable of performing traditional calibration such as with the use of certified test weights.

NOTE: WAVERSAVER® and C2® are registered trademarks of Hardy Instruments Inc.

On-Board Diagnostics

The HI 3010 has a built in diagnostics utility which enables the operator to rapidly troubleshoot a weighing system from the front panel of the controller or via the Web Server. Simply press the Test button and scroll through several tests that will furnish the current state of each of the parameters that concern your application and the weigh system. Help is just a click away in the event you should not understand the information on the display or need a description of the parameter.

Secure Memory Module (SMM)

The Secure Memory Module stores critical configuration (up to 12 material configurations), calibration and setup data of the HI 3010 Filler/Dispenser/IBC, thereby protecting this information from corruption. During system operation when a new parameter is entered, the SMM automatically updates the value in its memory. Data stored in one HI 3010 can be restored in another HI 3010 by physically transferring the SMM to the new instrument. The SMM is conveniently accessible from the instruments rear panel.

Relays

The HI 3010 has four standard AC solid-state electronic relays that can be used to open or close valves or gates or turn motors, mixers, vibration equipment, heaters, coolers, etc. on or off

Serial Port

One standard RS 232 serial port which can be configured to transmit weight data to a serial printer. Baud rates are user selectable at 600, 1200, 2400, 4800, 9600 or 19,200.

Options

-JB

Enables the instrument to sum four load sensor inputs to act as a built-in summing box.

HI 3000-RC

Rear cap for the HI 3000 Series controllers. Upgrades the entire assembly to a NEMA 4X rating by enclosing all the rear panel connectors.

-PB

Profibus interface allows instrument capabilities to be communicated remotely to and from a Siemens or other Profibus compatible processor.

-AC

AC input power for the HI 3000 Series remote mount instrument to act as a booster power supply for multiple instruments on Devicenet.

-RIO

Allen-Bradley Remote I/O interface allows full instrument capabilities to be communicated remotely to and from an Allen-Bradley processor.

Smart Diagnostics (-SD)

Smart Diagnostics consists of a daughter card (See Fig. 1-5) and rear panel that is attached to the main board in all instruments. The Smart Diagnostics card enables the user to attach three (3) additional load cells to the HI 3000 Series instrument for a total of four. This option enables the user to:

- Read individual C2 load Sensor certification data
- Perform a Stability Test
- Display load sensor weight and voltage readings from the front panel and web
- Perform a return to Zero test
- Set Factory Defaults
- From the Front Panel or Web Page, turn On/Off individual load sensors and displays individual weights, mV/V (millivolts/volt) and mV (millivolts).

To get price and availability for the Smart Diagnostics option, contact your local Hardy Representative or the Hardy Service Center.

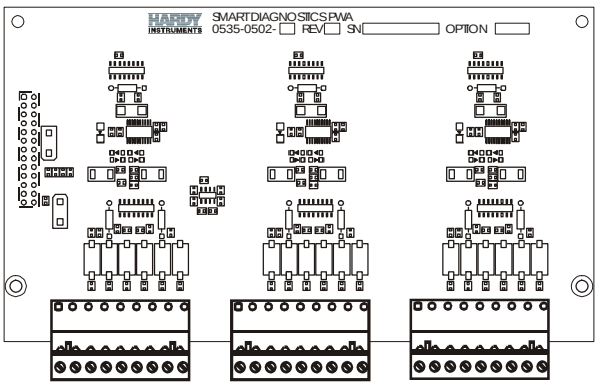


FIG. 1-5 SMART DIAGNOSTICS CARD

Hardware

If you are retrofitting Smart Diagnostics to an existing system you should receive:

- Smart Diagnostics Card
- Rear Plate with three additional ports
- Fasteners to connect the rear plate to the Main Board and to the rear of the chassis.
- Rear Panel for Smart Diagnostics card (See Fig. 2)
- Installation and Operation Manual
- 4 standoffs

NOTE: Smart Diagnostics does not require a junction box.

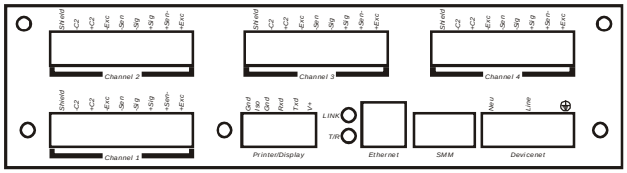


FIG. 1-6 SMART DIAGNOSTICS REAR PANEL

-MB

Stainless steel wall mount swivel bracket/stand for wall or desktop mounting.

Communication Options

NOTE: For Installation, Configuration and Setup please refer to the HI 3000 Operation and Installation Manual, Cabling and Networks Sections.

EtherNet/IP™

EtherNet/IP, short for **E**thernet **I**ndustrial **P**rotocol, is an open industrial networking standard that takes advantage of commercial, off-the-shelf Ethernet communication chips and media. Ethernet technology, enables the user to access device-level data from the Internet.The Ethernet/IP networking standard supports both implicit messaging (real-time I/O messaging) and explicit messaging (message exchange). EtherNet/IP is an open network that takes advantage of commercial technology that already exists.
TCP/IP is the transport and network layer protocol of the Internet and is commonly linked with all Ethernet installations and the business world. TCP/IP provides a set of services that any two devices can use to share data. Because Ethernet technology and standard protocol suites such as TCP/IP have been published for public use, standardized software tools and physical media have been mass-produced and are readily available, offering you the benefits of known technology and accessibility. The UDP/IP (User Datagram Protocol) is also used in conjunction with the Ethernet network. UDP/IP provides fast, efficient data transport required for real-time data exchange.

MOD-Bus/TPC/IP

TCP/IP is the common transport protocol of the Internet and is actually a set of layered protocols, providing a reliable data transport mechanism between machines. Ethernet has become the de facto standard of corporate enterprise systems and it has also become the de facto standard for factory networking. Ethernet has matured to the point that the cost of implementing this network solution has been dropping to where its cost is commensurate with those of today's fieldbuses. Using Ethernet TCP/IP in the factory allows true integration with the corporate Intranet and MES systems that support your factory.

OPC

OLE for Process Control (OPC) enables an HI 3000 module to communicate with any device that supports OLE/COM. The architecture is designed to utilize the Microsoft distributed OLE technology (DCOM) to facilitate clients interfacing to remote servers.

Remote I/O (RIO) Interface to the Allen Bradley Network

The RIO port allows bi-directional communications with Allen-Bradley Programmable Logic Controllers (PLC) and Small Logic Controllers (SLC). The HI 3010 represents a selectable 1/4, 1/2, 3/4 or full rack of discrete I/O (32 bits in the Logic Controllers output and input image files) to the PLC Controller and supports both discrete and block transfers of data. It can support up to 230.4 Kbaud transfer rates.

Profibus

Allows bi-directional communications to Profibus (Process Fieldbus) products including those made by Siemens, GE Fanuc and Texas Instruments. This interface supports PROFIBUS-DP (Decentralized Periphery) and processes both Selectable Predetermined and Block transfer commands. It supports up to 12 Mbaud transfer rates.

CHAPTER 2: SPECIFICATIONS

About Chapter 2

Chapter 2 lists the specifications for the HI 3010 Filler/Dispenser. Specifications are listed for the standard instrument and for instruments fitted with optional equipment. The specifications listed are designed to assist in the installation, operation and troubleshooting of the instrument. Service personnel should be familiar with this section before attempting an installation or repair of the instrument.

Specifications for a Standard Instrument

Update Rate:

- 55 updates per second

Resolution:

- Displayed: 1:985,000 (3 mV/V load cells)
- Internal 1:1,048,5761

Excitation Voltage:

- 5 VDC
- Drives up to 8 350 ohm load cells

Averages:

- 1 to 250 - Sliding, User Selectable in Single Unit Increments

Input:

- Up to eight (8) 350 ohm Full Wheatstone Bridge, Strain Gauge Load Sensors/Cells (5 volt excitation) on one vessel.
- Signal Voltage Range ± 0-120mV/V (± 600 mV)

Display:

- 4 line x 20 character backlit LCD
- 5 x 7 dot matrix

Display Increments (Graduations):

- 1,2,5,10,20,50,100,200,500 user selectable
- Corresponding weight is dependent on the decimal point location.

Standard Electronic AC Relays:

- Wire Size: 12 AWG Maximum
- Maximum Switch Current: .5 Amps
- Maximum Switch Power: 120 Watts
- Maximum Switch Voltage: .5 Amps @ 240 VAC
- Single Cycle Surge: 85 Amps (Peak)

Standard Electronic DC Relays:

- Wire Size: 12 AWG Maximum
- Maximum Switch Current: .5 Amps
- Maximum Switch Voltage: .5 Amps @ 60 VDC
- Switch Voltage: 5-60 VDC
- 1 second surge: 5 Amps

Non-Linearity:

- 0.0015% of Full Scale

WAVERSAVER®:

- Off
- 7.5 Hz
- 3.5 Hz
- 1.0 Hz
- 0.5 Hz
- 0.25 Hz

Calibration Techniques:

- C2® - Second Generation: Electronic
- Traditional - Calibration with test weights

Standard Interfaces:

- Ethernet - 10/100 Base T; embedded server
- DeviceNet - Master Scanner
- Serial RS 232 - simplex to Printer.

Excitation Monitor:

- Current less than 10%

Power and Utility Requirements:

Voltage - Universal Power Supply (50/60 Hz)

- 120-240 VAC ± 10%
- 12 - 24 VDC

Frequency

- 47-63 Hz

Power:

- 10 Watts maximum with options

Watts available for DeviceNet Power:

- 15 Watts

Common Mode Voltage Range

- ± 2.5 VDC

Common Mode Rejection:

- 100dB @ 50-60Hz

Environmental Requirements:

Operating Temperature Range:

- -10º to 50º C (14º to 122º F)

Storage Temperature Range:

- -20º to70º C (-4º to 158º F)

Temperature Coefficient:

- Less than 0.005% of full scale per degree C for zero and span.

Humidity Range:

- 0-90% (non-condensing)

Approvals:

- CE
- UL
- CUL

Instrument Local I/O:

- 5 mappable inputs optically isolated
- 4 mappable outputs 48-240 VAC Form A Electronic
- 3rd party mappable over DeviceNet

Physical Characteristics:

Panel Mount (Model # HI 3010-PM)

Depth

- 8.03" (203.96mm) Back of the Bezel to rear cable clearance.

Case Dimensions

- 6.125"H x 8.56"W x 6.03"D (155.57mmH x 217.42mmW x 1.53.16mmD)

Front Panel Dimensions

- 7.686" H x 9.40" W x 0.625" D (195.22mm H x 247.39mm W x 15.87mmD)

Panel Cutout Dimensions

- 6.75" H x 8.94" W (1775mm H x 227mm W)

Case Material

- GE Cycolac Type KJW - Flame Retardant ABS (Acrylanitrile Butadiene Styrene)

Weight

- 4.6 pounds (2.1 Kilograms)

Rating

- Front Panel NEMA 4 Seal

Wall Mount (HI 3010-MB)

Base Dimensions

- 9.3” L x 4.0” W (236.22mm L x 101.60mm W)

Overall Height with HI 3010 installed, as measured from the base to the top of the front plate.

- 11.77” High (298.96mm H)

Swivel Material

- 304 Stainless Steel

Specifications for I/O Option Boards

Profibus Option Board

Power Supply:

- +5V max - 350mA

Operating Temperature:

- 0 - 70° C (32° - 158° F)

Profibus Services:

- DP Services

ID Number and GSD Support:

- 1003H with Standard GSD File (May change if required)

Input Size:

- 0-122 Words

Output Size:

- 0-122 Words

Combined Input and Output Size:

- Not exceed 208 Words

ControlNet Option Board

Power Supply:

- +5V max - 350mA

Operating Temperature:

- 0 - 70° C (32° - 158° F)

ControlNet Baud Rate:

- 5 Mbit/second

Max I/O Data Capacity:

- Input - 250 bytes
- Output - 250 bytes

ControlNet Supported Features:

- Redundant Media
- Cyclic Messaging

RIO Option Board

Power Supply:

- +5V max - 350mA

Operating Temperature:

- 0 - 70° C (32° - 158° F)

RIO Baud Rate:

- 57.6, 115, 225 Kbit/second

Max I/O Data Capacity:

- Input - 63 bytes (Full Rack)
- Output - 63 bytes (Full Rack)
- 15 Bytes Discrete
- 48 Bytes Block

RIO Supported Features:

- Block Transfer Data
- IO Mode
- 1/4, 1/2, 3/4 and Full Rack

Control of the Rack_Size and Starting_Quarter Combinations

Starting Quarter	Valid Rack Sizes
First	For all Rack Sizes
Second	For 1/4, 1/2, 3/4 Racks
Third	For 1/4, 1/2 Racks
Fourth	Only for 1/4 Racks

Table 1: Quarter Combinations

EtherNet/IP™ Option Card

Power Supply:

- +5V max 450mA

Operating Temperature:

- 0 - 70° C (32° - 158° F)

Baud Rate:

- 10/100 Mbit/s

I/O Input:

- 2048 bytes

I/O Output:

- 2048 bytes

Application Interface:

- Parallel

Specification Rel. 2:

- EtherNet/IP level 2 I/O Server CIP (ControlNet & DeviceNet)

Functionality:

- 10/100Mbit MB/TCP +EtherNet/IP + IT functions

Specifications for Peripherals/Systems Components

HI 215JB-SS1 or PS1 Series:

Case Dimensions:

- 6.25"H x 6.25"W x 4.50D (158.75mmH x 158.75mmW x 114.3mmD)

Weight

- 5 pounds (2.27 Kilograms)

Enclosure Ratings

- -SS1 Stainless Steel NEMA 4 & 4X
- -PS1 Painted Carbon Steel NEMA 4

CHAPTER 3: INSTALLATION

About Chapter 3

All information contained in Chapter 3 pertains to unpacking, cabling, interconnecting and installing the HI 3010 Filler/Dispenser. Alternatives to any specifications contained or implied in this section are not recommended. It is very important that the user and service personnel be familiar with the procedures contained in this chapter, before installing or operating the HI 3010 Filler/Dispenser.

NOTE: Ethernet and DeviceNet installation and setup instructions are located in the HI 3000 Series Operation and Installation Manual in the Cabling Section. There are also installation instructions in the Quick Installation Guide.

Unpacking

Step 1. Before signing the packing slip, inspect the packing for damage of any kind.
Step 2. Report any damage to the carrier company immediately.
Step 3. Check to see that everything in the package matches the bill of lading. You should normally have:

HI 3010 Panel Mount

- (1) HI 3010 Filler/Dispenser with mating connectors and ordered options installed.
- (1) Mounting Kit with a mounting bracket, gasket and (4) RAF 8-32 captive screws.
- CD containing User Guide and Service Manuals

Step 4. If any items are missing, damaged, or there are any questions, please contact Customer Support at:

Hardy Instruments
9440 Carroll Park Drive, Suite 150
San Diego, CA 92121

Phone: (858) 278-2900
FAX: (858) 278-6700
Web Site: http//www.hardyinstruments.com
E-Mail: hardysupport@hardyinst.com

Step 5. Record the model number and serial number of the Weight Controller. Store in a convenient, secure location for reference when contacting Hardy Instruments Customer Service Department or to buy parts or firmware upgrades.

Disassembly and Reassembly Notes and Cautions

- Always disconnect the power cord before disassembling.

WARNING: FAILURE TO DISCONNECT THE POWER CORD BEFORE DISASSEMBLING MAY CAUSE PERSONAL INJURY AND/OR PROPERTY DAMAGE.

- Make sure that any disassembly is done in a clean, well ventilated, properly controlled static environment.
- Always make sure that the assemblies and sub-assemblies are well supported and insulated when doing any repairs on the instrument.
- Place small fasteners, connectors and electrical parts in closed containers so as not to lose parts during reassembly.
- Read all the disassembly instructions before any disassembly begins. Be sure that you are familiar with the procedures. If any of the instructions for disassembly are unclear, contact Hardy Instruments, Technical Support Department for additional information and assistance.
- Do not disconnect any electrical plug, connector or terminal unless an identification tag is present or one is attached. Always note where the connector or plug was attached to the electrical component or wiring harness.
- Always install complete hardware groups (Screws, Washers, Lock Washers, Spacers, Etc.) back to the original point of removal.
- Always replace broken or damaged modules or hardware immediately!
- Always check to be sure that no loose parts are sitting on printed circuit boards or electrical connectors or wires when disassembling or reassembling.
- Always protect printed circuit boards from electrostatic discharge (ESD). Always use approved ESD wrist straps and anti-static pads.
- Always perform a final inspection after completing any reassembly to be sure that all fasteners are tight, all connectors are secure and there are no loose parts on any of the printed circuit boards in the instrument.

- Always follow proper safety procedures when working on or around the instrument.

WARNING: IF A LITHIUM BATTERY IS REPLACED WITH AN INCORRECT TYPE IT MAY CAUSE AN EXPLOSION WHICH WILL CAUSE PROPERTY DAMAGE OR PERSONAL INJURY.

Mechanical Installation

Installing the HI 3010 in a Panel

Panel Cutout Specifications

Enclosure Size Requirements:

- Overall depth of the enclosure must be a minimum of 8.5" to allow for the 2" clearance between the rear panel of the HI 3010 Filler/Dispenser and the inside surface of the rear panel of the enclosure. (See Fig. 3-1)
- There must be a 1" clearance completely around the bezel and other installed units.

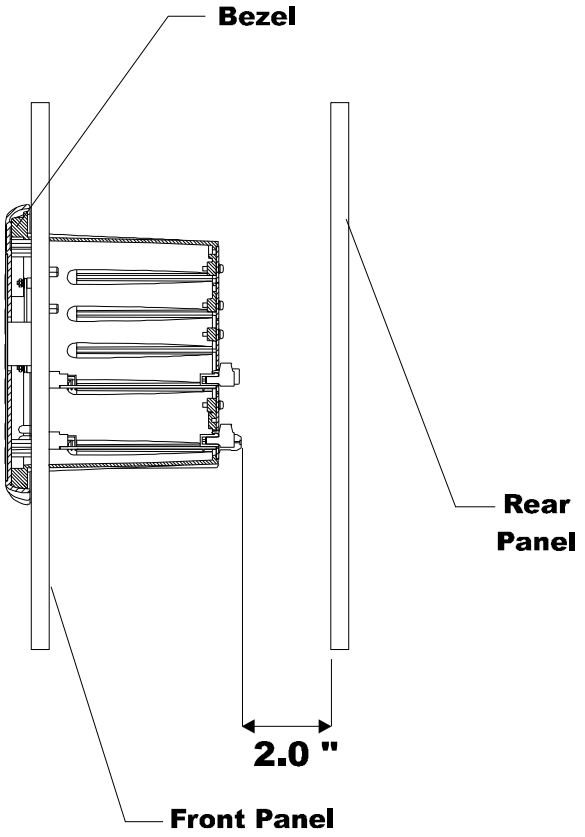


FIG. 3-1 REAR PANEL CLEARANCE REQUIREMENT

Dimensions of the panel cutout. (See Fig. 3-2)

- 8.94” ±.06 (227.076mm ± 1.52mm) Wide
- 6.625” ±.06 (168.26mm ± 1.52mm) High

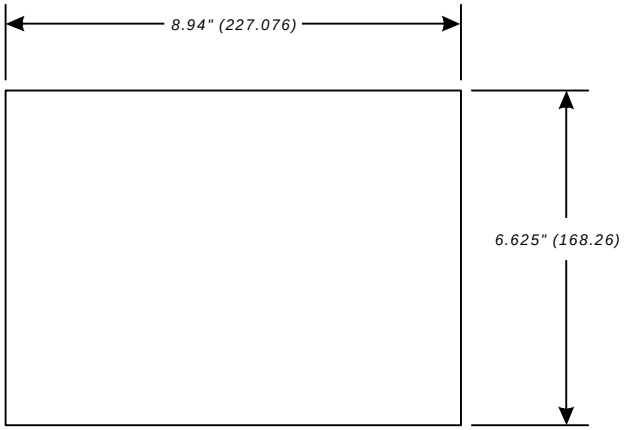


FIG. 3-2 PANEL CUTOUT DIMENSIONS

Installing the HI 3010 Filler/Dispenser

Step 1. Make sure that all Electrostatic Discharge (ESD) precautions are taken before and during installation.

Step 2. The Filler/Dispenser comes with a NEMA 4 & 4X rated compression gasket. Slide the gasket over the rear of the instrument until the gasket is flush with the back side of the front panel. (See Fig. 3-3)

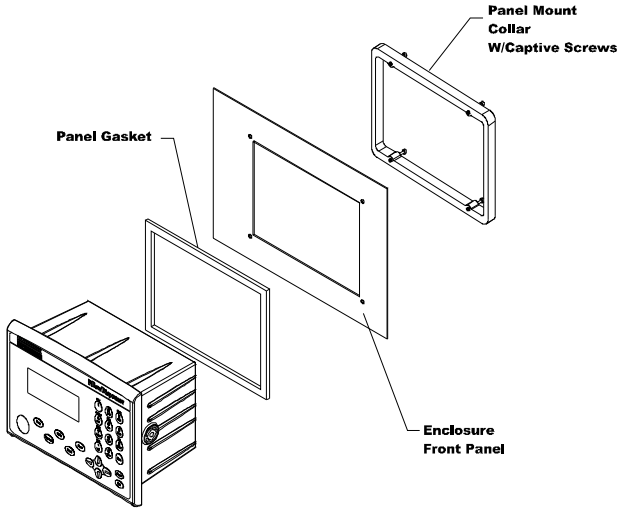


FIG. 3-3 PANEL MOUNT INSTALLATION

Step 3. Gently slide the Filler/Dispenser with the gasket into the cutout in the enclosure front panel or door until the gasket is flush with the enclosure front panel. (See Fig. 3-4) Be sure to secure the instrument with both hands when installing.

Step 4. Line up the instrument’s tapped holes with the through holes in the enclosure front panel.

CAUTION: ONCE THE GASKET IS COMPRESSED IT SHOULD NOT BE USED AGAIN. WHENEVER THE FILLER/DISPENSER IS REMOVED FROM THE PANEL, RE INSTALL WITH A NEW GASKET.

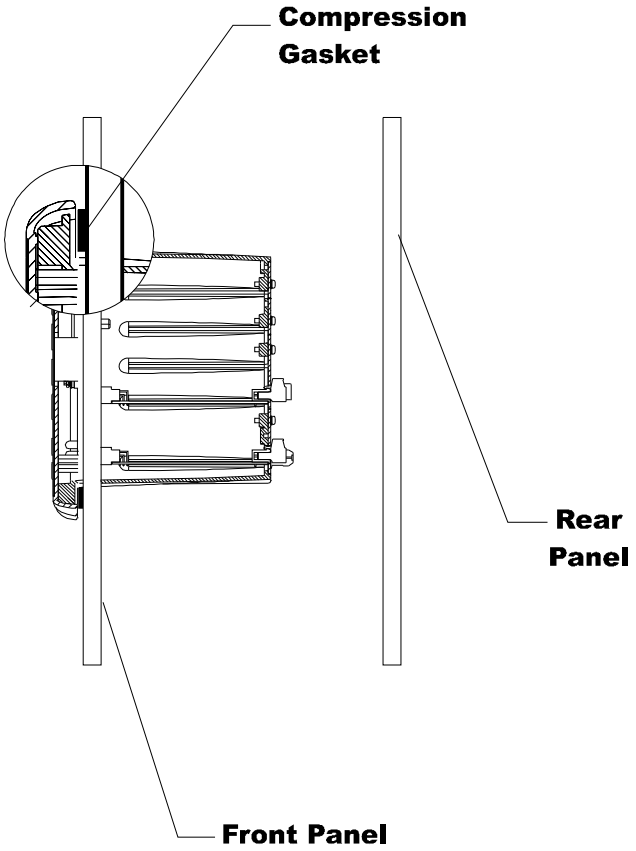


FIG. 3-4 NEMA 4 GASKET FLUSH AGAINST THE FRONT PANEL OF THE ENCLOSURE

Step 5. Gently slide the Panel Mount Collar over the rear of the instrument. (See Fig. 3-3)

Step 6. Push the captive screws through the holes in the Enclosure Front Panel and install the screws into the tapped holes on the instrument until the screws are finger tight.

Step 7. Use a slotted head screwdriver and tighten each screw until the instrument is snug and the compression gasket is tight against the Enclosure Front Panel. DO NOT OVERTIGHTEN!

Step 8. The Panel Mount installation is complete.

Installing the HI 3010 in a Swivel/Wall Mount

About the Swivel/Wall Mount

The swivel mounts allows the Filler/Dispenser to mount on a horizontal or vertical surface. The instrument is mounted in the swivel which is fastened to a hard surface. The mount not only supports the instrument but also allows the Filler/Dispenser to rotate for a better view of the display and more convenient access to the front panel key board. The Swivel Mount also serves as a wall mount. Simply rotate the swivel mount 90 degrees and attach it to a wall. The swivel allows the instrument to rotate several degrees, even with cables and rear cover attached.

Step 1. Use four (4) 1/4 x 20 fasteners to fasten the swivel mount to a horizontal surface. (See Fig. 3-5)

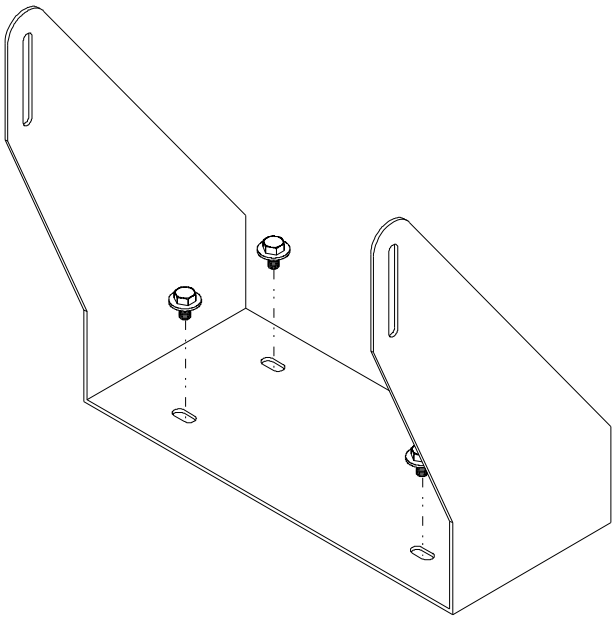


FIG. 3-5 INSTALLING THE SWIVEL MOUNT TO A HORIZONTAL SURFACE

Step 2. Place the Filler/Dispenser between the Swivel Mount brackets so that the threaded holes in the instrument are aligned with the slots in the Swivel bracket. (See Fig. 3-6)

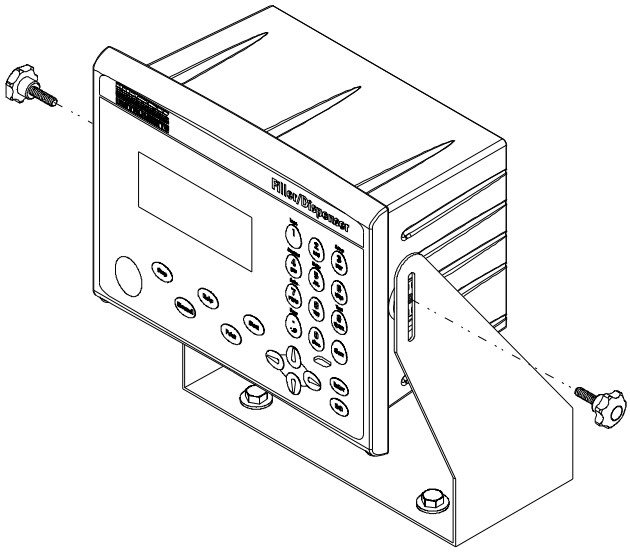


FIG. 3-6 FILLER/DISPENSER INSTALLING IN A SWIVEL MOUNT

Step 3. Screw the two (2) fastener knobs into the threaded holes on each side of the Filler/Dispenser until the brackets are snug against the instrument. (See Fig. 3-6 & 3-7)

CAUTION: DO NOT OVERTIGHTEN.

Step 4. To rotate the instrument in the swivel mount, loosen the two fastener knobs.
Step 5. Rotate the instrument to the position you want.
Step 6. Re-tighten the fastener knobs.

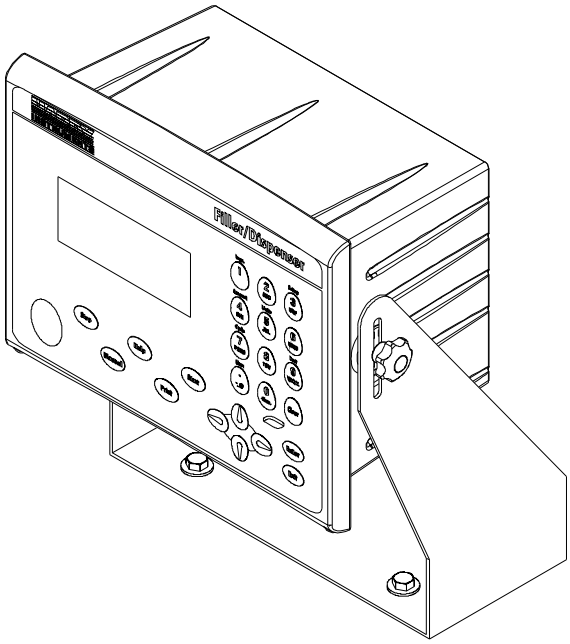


FIG. 3-7 FILLER/DISPENSER INSTALLED IN A SWIVEL MOUNT

Step 7. Use four (4) 1/4 x 20 fasteners to fasten the swivel mount to a vertical surface. (See Fig. 3-8)

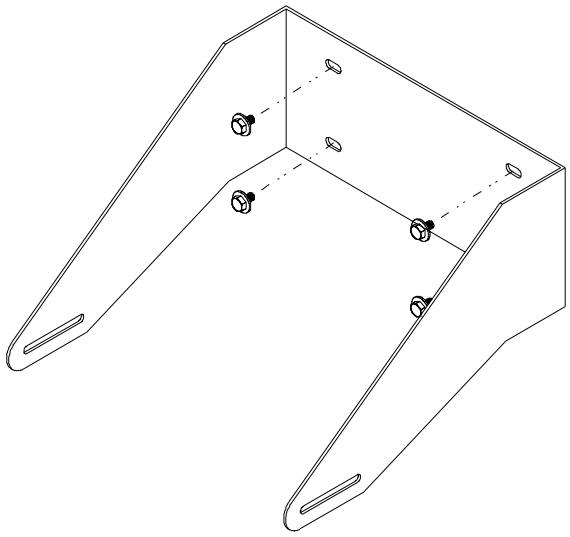


FIG. 3-8 INSTALLING THE SWIVEL MOUNT TO A VERTICAL SURFACE

Step 8. Place the Filler/Dispenser between the Swivel Mount brackets so that the threaded holes in the instrument are aligned with the slots in the Swivel bracket. (See Fig. 3-9)

NOTE: When wall mounted, the unit should support a 14 pound weight for one minute without coming loose or damaging the equipment.

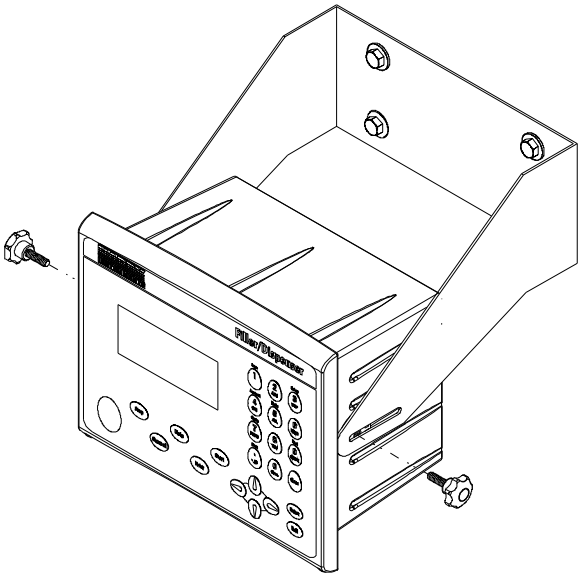


FIG. 3-9 FILLER/DISPENSER INSTALLING IN A SWIVEL WALL MOUNT

Step 9. Screw the two fastener knobs into the threaded holes on each side of the Filler/Dispenser until the brackets are snug against the instrument. (See Figs. 3-9 & 3-10)

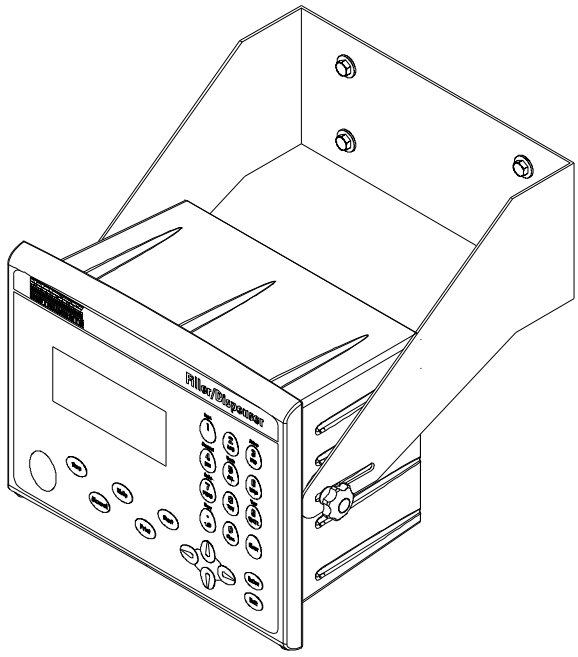


FIG. 3-10 FILLER/DISPENSER INSTALLED IN A SWIVEL/WALL MOUNT

Installing Printed Circuit Boards

Step 1. From the back of the instrument, align the PCB board with the housing slots in the instrument so that the backplane connector is facing the instrument. (See Fig. 3-11)

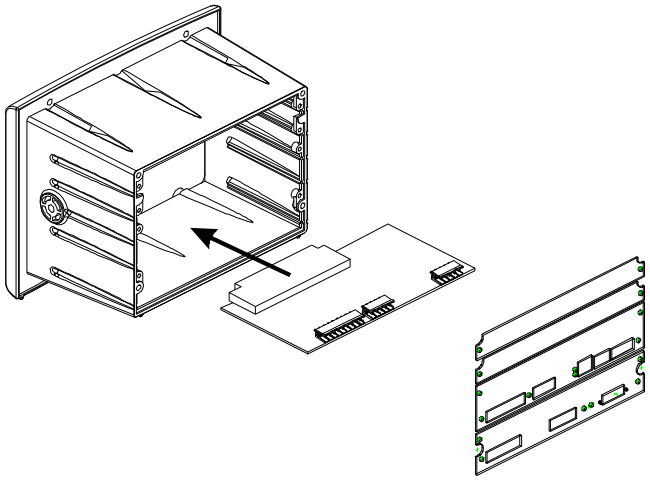


FIG. 3-11 MAIN CONTROLLER BOARD INSTALLATION/LINING UP BOARDS WITH THE SLOTS

Step 2. Gently slide the circuit board into the slots making sure that the each side of the PC board is in the proper slot. (See Fig. 3-12)

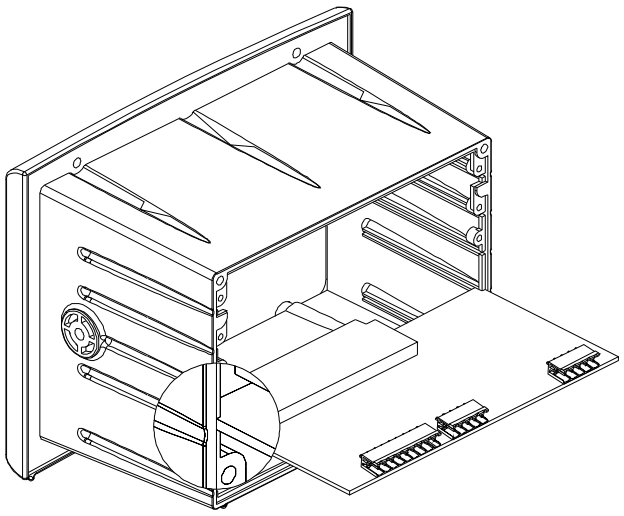


FIG. 3-12 MAIN CONTROLLER BOARD INSTALLATION/SLIDING THE BOARD INTO THE INSTRUMENT

Step 3. Gently push the PC board all the way into the instrument until the backplane connector is connected to the backplane.

Step 4. Install the Main Board rear plate. (See Fig. 3-13)

- Place the Main Board rear plate so that the threaded holes on each side of the instrument chassis are aligned.
- Screw a panhead screw (#4-40) into the threaded hole on the instrument chassis. Do not tighten.
- Screw the panhead screws that attach the rear plate to the Main Board until they are finger tight.
- Use a Phillips head screw driver and tighten all the installed screws until snug.

CAUTION: DO NOT OVERTIGHTEN.

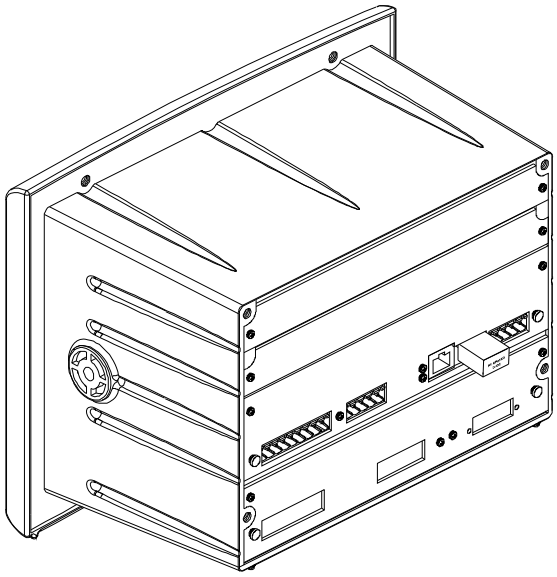


FIG. 3-13 MAIN CONTROLLER BOARD INSTALLED WITH REAR PLATE

Step 5. Installation of all the PC Boards used in any HI 3000 Series Instrument requires the same procedures.

Installing the Smart Diagnostics (-SD) Card

NOTE: For Configuration Instructions go to Chapter 4 - Options Configuration/Smart Diagnostics Configuration.

Step 1. Unplug the power connector and cable.
Step 2. Remove the Secure Memory Module.
Step 3. Unplug the load cell connector and cable.
Step 4. Disconnect all the communication cables connected to the instrument.
Step 5. Use a phillips head screw driver and remove the two phillips head screws that fasten the back plate to the rear of the instrument chassis. (See Fig. 3-14)

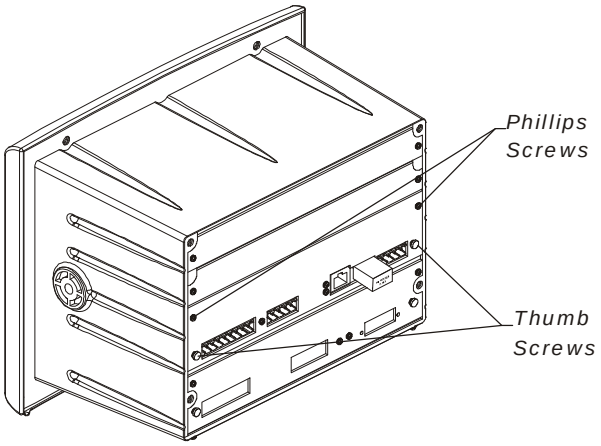


FIG. 3-14 REAR PLATE FASTENERS

Step 6. Grasp the two thumb screws and gently pull the rear plate and Main Board out of the instrument.
Step 7. Use a phillips head screw driver and remove the three phillips screws that fasten the rear plate to the Single Channel Main board.
Step 8. Remove the two thumb screws that fasten the rear plate to the Single Channel Main board.
Step 9. Attach the four (4) 7/8” standoffs to the Smart Diagnostics Card with the four (4) 1/4” phillips screws. Tighten the screws until they are snug. Do not overtighten. (See Fig. 3-15)
Step 10. With the Hardy Logo facing the back of the Main board, line up the pins of the Smart Diagnostics card with the connector on the Main board.

NOTE: Make sure that none of the pins are bent before installing.

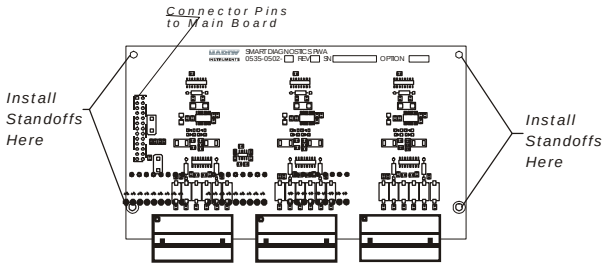


FIG. 3-15 STANDOFF LOCATIONS

Step 11. Gently push the pins into the connector making sure that the standoffs are aligned with the standoff holes in the Main board. When the standoffs are flush with the Main board.
Step 12. Use a phillips head screw driver and install the four (4) phillips screws that fasten the main board to the

four (4) standoffs. Tighten until snug, do not overtighten.

Step 13. Use a Phillips head screw driver and install the three (3) phillips screws that fasten the Smart Diagnostics rear plate to the Main board.

Step 14. Install the two (2) thumb screws that fasten the Smart Diagnostics rear plate to the Main board.

Step 15. Line the Smart Diagnostics Card and the Main board with the guide slots on either side of the chassis.

Step 16. Gently slide the Smart Diagnostics assembly back into the HI 3000 Series instrument.

Step 17. Install the two (2) phillips screws that fasten the Smart Diagnostics rear plate to the chassis.

Step 18. Plug the Load Cell connectors into the Channel inputs at the rear panel.

Step 19. Install the communication cables.

Step 20. Install the Secure Memory Module.

Installation complete.

NOTE: For Configuration Instruction for Smart Diagnostics go to Chapter 4, Smart Diagnostics Configuration.

Removing Printed Circuit Boards

Step 1. Unplug all the cables that are connected to the instrument.

Step 2. Use a Phillips head screw driver and remove the two (2) pan head screws that fasten the rear plate to the instrument. You do not need to remove any of the screws that fasten the rear panel to the PC Board.

Step 3. Use your fingers to grasp the two (2) (knurled knobs) that are mounted on the rear panels.

Step 4. Gently pull the knobs away from the instrument until the PC Board is clear of the instrument slots.

Step 5. Store the circuit board in a secure and dry location, free of any ESD.

Electrical Installation

Cabling and Interconnecting

Recommended Installation Procedures

- Carefully plan the cable runs and wiring connections before routing, cutting and trimming cables and wires.

CAUTION: INSTRUMENT POWER AND RELAY WIRES SHOULD BE ROUTED AWAY FROM ALL OTHER SIGNAL CABLES TO AVOID ELECTRICAL INTERFERENCE.

- All cabling should be neatly bundled, tied, and dressed.
- Use a 6 inch service bend to relieve stress on the connectors and to ease servicing the unit.
- Make sure that all plugs are firmly in place.
- Be sure to secure the power cord with the two (2) captive screw-on clips.
- All connections are made at the rear panel of the Filler/Dispenser./IBC.

AC Power Wiring

WARNING: DO NOT OPERATE WITH INCORRECT LINE VOLTAGE. TO DO SO WILL RESULT IN PROPERTY DAMAGE AND/OR PERSONAL INJURY. MAKE SURE THAT THE POWER SOURCE DOES NOT EXCEED 240 VAC.

- The AC power should be supplied by a “clean” primary line, directly from the power panel. This line should not supply any other equipment, including the feeding unit, and should be supplied with a minimum 10 amp breaker. (See Fig. 3-16)

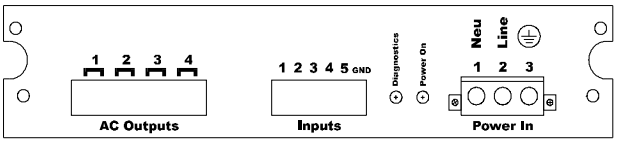


FIG. 3-16 POWER WIRING DIAGRAM

- Power Input J1

  J1-1 Neu (Low)
  J1-2 Line (HI)
  J1-3 Ground

Step 1. The HI 3000 Series instruments are configured with a universal power supply rated from 120 to 240 VAC. The instruments can be powered by a 120 or 240 VAC power source and requires no switching or jumper settings.

Step 2. Install a 3-wire, minimum 14 AWG power line to the 3-pin terminal block connector. (See Fig. 3-16)

Step 3. The power and relay circuit card filters and conditions AC power. However, for noisy power lines, external conditioning may be required.

-DC Power Wiring

WARNING: DO NOT OPERATE WITH INCORRECT LINE VOLTAGE. TO DO SO WILL RESULT IN PROPERTY DAMAGE AND/OR PERSONAL INJURY. MAKE SURE THAT THE POWER SOURCE DOES NOT EXCEED 24 VDC.

- The DC power should be supplied by a “clean” primary line, directly from the DC power source.

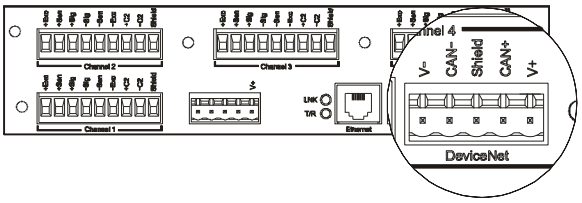


FIG. 3-17 DC POWER SUPPLY CONNECTION

Step 1. Connect your positive and negative DC voltage lines to the Phoenix connector that plugs into the DeviceNet Connector. (See Fig. 3-17)
Step 2. Plug the connector into the DeviceNet Connector at the rear panel.

NOTE: Use DC power source when you have the -DC option and do not have the DeviceNet Option. The DeviceNet option has its own DC power source.

Load Point Connections

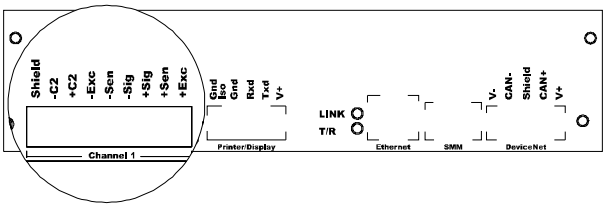


FIG. 3-18 REAR PANEL/LOAD POINT CONNECTIONS

C2® Load Point Connection

Cable color Code for C2 Load Points (left to right facing the rear panel):

- Shield Ground Wire
- C2- Violet
- C2+ Grey
- EXC- Black
- SEN- Brown
- SIG- White
- SIG+ Green
- SEN+ BLUE
- EXC+ RED

Step 1. Remove the factory installed jumper from the terminal block if you are connecting an 8 wire cable from the junction box.
Step 2. Connect the cable (Recommended load cell cable: Hardy Instruments Prt. # 6020-0001) wires to the J9 terminal block according to the cable color chart. (See Below)

NOTE: To purchase Hardy Load Cell cable, contact your local Hardy Representative or Distributor.

Step 3. Plug the terminal block into the Channel 1 connector on the rear panel.

Non-C2 Load Point Connection

Cable color Code for Non-C2 Load Points:

- Shield Ground Wire
- C2- Not Used
- C2+ Not Used
- EXC- Black
- SEN- Brown
- SIG- White
- SIG+ Green
- SEN+ Blue
- EXC+ Red

Step 1. Remove the factory installed jumper from the terminal block if you have 6 wire load cell cable that includes sense wires from the load cell or junction box.
Step 2. Connect the cable (Recommended load cell cable: Hardy Instruments Prt. # 6020-0001) wires to the J9 terminal block according to the Non-C2 cable color chart.
Step 3. Plug the terminal block into the Channel 1 (J9) connector on the rear panel.

LVDT and Half Bridge Load Cells/Sensors

Please contact Hardy Technical Support for installation instructions.

Junction Box Wiring

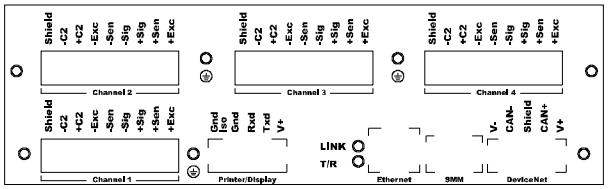


FIG. 3-19 JUNCTION BOX CONNECTIONS

Step 4. Connect the cable wires directly to the terminal blocks according to the C2 or Non-C2 cable color charts.
Step 5. Plug the terminal blocks into Channels 1 thru 4 connectors on the rear panel. Write down which load cell is connected to Channel 1, Channel 2, Channel 3, Channel 4 for future reference.

NOTE: If you have one load point you must plug it into Channel 1. If you have more than one load point you must make sure that you plug one of the load points into Channel 1.

Step 6. If you only have 3 load cells, do not use Channel 4.

Installation of Secure Memory Module (SMM)

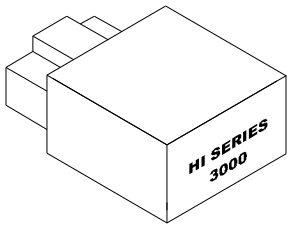


FIG. 3-20 SECURE MEMORY MODULE (SMM)

Step 7. Slide the module with the notch up into the module housing at the rear panel. (See Fig. 3-20 & 21)

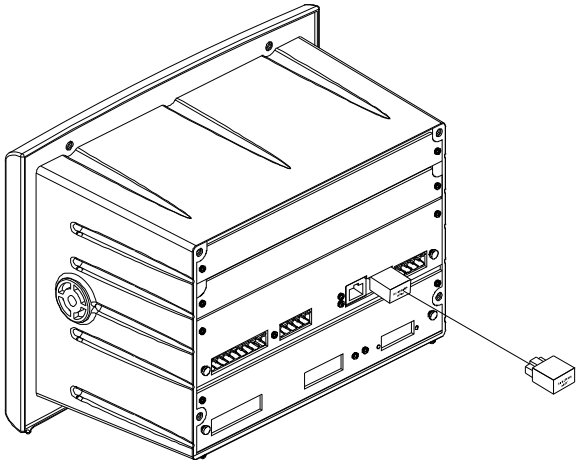


FIG. 3-21 INSTALLING THE SECURE MEMORY MODULE

Step 8. Press the module in until it stops. Do not force the module, it should slide in easily.
Step 9. To remove the module pull the module straight out of the housing. (See Fig. 3-21)

Transferring a Secure Memory Module

NOTE: Make sure that when you move an SMM to another instrument that you know what type of instrument that will receive the SMM. For example if you accidently place a Dispenser into a previously configured Filler, the Filler changes into a Dispenser and vice versa. Make sure that you know the type of instrument the SMM was taken from.

CAUTION: DO NOT REMOVE AN SMM WITH THE POWER ON. ALWAYS DISCONNECT THE POWER CABLE FROM THE INSTRUMENT BEFORE REMOVING OR INSTALLING THE SECURE MEMORY MODULE.

Step 1. Disconnect the power cable from the Instrument.
Step 2. Remove the Secure Memory Module from the instrument.
Step 3. Install the Secure Memory Module into the new instrument.
Step 4. Power up the new instrument.

CHAPTER 4: CONFIGURATION

About Chapter 4

Chapter 4 contains step-by-step instructions for configuring the Hardy Instruments, HI 3010 Filler/Dispenser/IBC. The procedures include complete instructions for configuring the Filler/Dispenser from the Front Panel, DeviceNet and Web Browser). We highly recommend reading the procedures before configuring the Filler/Dispenser. For information on network setup, optional cards, and Email, see the HI 3000 Series Operation and Installation Manual.

Being familiar with the operating procedures insures that the Filler/Dispenser will provide trouble free service. For the best performance of the HI 3010 Filler/Dispenser, any instructions that are not contained in this manual (either implicit or explicit) are not recommended. It is important to note that the HI 3000 Series standard products do not require any jumper or dip switch settings. Some of the communication option cards do have jumper settings, however.

Getting Started

Before configuring the Hardy HI 3010 Filler/Dispenser, check to make sure the following procedures have been performed.

- Panel Mount and Blind Mount units properly installed. (See chapter 3 - Installation)
- Power and Load Point cables properly installed
- Communication cables properly installed.
- All connectors securely fastened.

All the functions of the Filler/Dispenser operate the same no matter what the interface. First let's get familiar with configuring the Filler/Dispenser from the front panel of the instrument. (See Fig. 4-1)

Help Dialog

About the Help Dialog

As you move through the setup/configuration menus you may on occasion need assistance. If you need help, do the following:

Step 1. Use the up and down arrows and move the cursor in front of the Menu Item you want help on.
Step 2. Press the Help button either on the front Panel and a Help Dialog appears. The Help Dialog tells you what the Menu Item is used for or other descriptive information to help you enter the right parameters for the current menu item.
Step 3. Push the clear button again to return to the current menu.

Configuring the Filler/Dispenser from the Front Panel

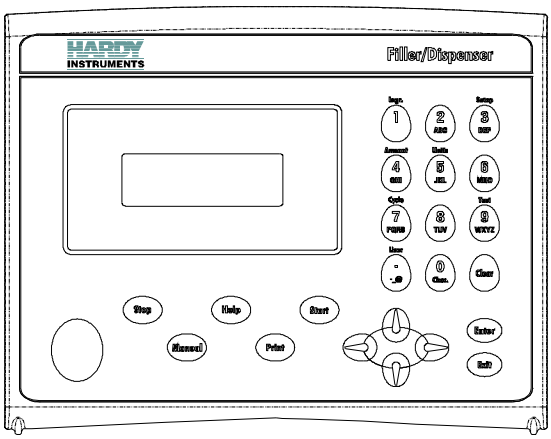


FIG. 4-1 FRONT PANEL

Front Panel Display

The Front Panel Display is a 4 line x 20 Alphanumeric character LCD. The screen displays all the menus for Configuring, Calibrating and Operating the HI 3010 Filler/Dispenser.

Button Functions

Start Button

The Stop button if pressed once will pause the filling or dispensing process. If the Stop Button is pressed twice it stops the process and puts the Filler/Dispenser in a standby mode which it will maintain until another button is pressed.

Help Button

The Help Button initiates the Help Dialog which displays a Help message for the current Menu Item (the Menu Item in front of the cursor) that is displayed.

Manual Button

Enables you to enter the manual mode of operation for the following:

- Tare Scale - Press Clear button to tare the instrument.
- Discharge - Press the Start button to start a discharge.
- Refill - Press the Start button to Start a refill.
- Auxiliary Device - Press the Start button to start an Auxiliary device.
- Fast Fill/Dispense - Press the Start button to start the Fast Fill.
- Fill/Dispense - Press the Start button to start slow fill.

Print Button

The Print Button when pressed brings up a series of screens (See Fig. 4-2) and allows the user to Print the following:

- Current Fill/Dispense
- Current Cycle
- Totals
- Setup Data

Press the Print button, the following screen appears:

```
PRINT KEY MENU
> Print current Disp
  Print Current Cycle
  Print Totals
```

FIG. 4-2 PRINT SCREEN DEFAULT

Note that the cursor is in front of the Print Current Fill Menu. that is the default setting. The print button will only print the menu with a cursor in front of it. To move to another menu press the up or down arrow until the cursor is in front of the menu you want to print.

Up/Down - Left/Right Buttons

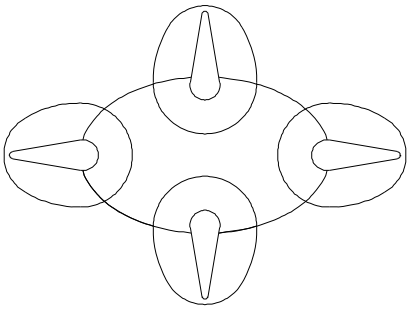


FIG. 4-3 DIRECTIONAL BUTTONS

The Up/down arrow buttons move the cursor vertically allowing the user to scroll through each item of a menu. The Left/Right arrow buttons move the cursor horizontally left and right. The Left arrow button has an added backspace function. For example, if there are AlphaNumeric characters that appear in the display, as you press the left arrow button it erases the characters. The Right arrow button moves the cursor to the right in the display and does not erase a alphanumeric entry. The Left/Right arrow buttons also move the cursor through a pick list. (See Fig. 4-3)

Enter Button

The Enter Button enters the alphanumeric value entered for a menu item in the display. The Enter Button also enters the selections from a pick list. (See Fig. 4-4)

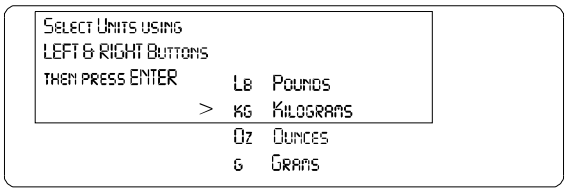


FIG. 4-4 LIST SELECTION/ENTER BUTTON

For example, when selecting units from a pick list, use the left and right arrows to move the cursor in front of the unit you want and press the Enter button.

Exit Button

The Exit Button disregards the current value entry, restores the previous value and moves the cursor to the last menu.

Clear Button

The Clear Button clears the total alphanumeric entry and repositions the cursor for the first entry.

Ing./1 Button

Enables you to change the preprogrammed ingredient (1-12) while in the Standby Mode. Also enters the integer 1 in the display.

2/ABC Button

Enters the integer 2 in the display. Also enters the letters A, B,C, in uppercase and a,b,c in lower case then the number 2.

NOTE: Pushing the button once enters an uppercase A. Pushing the button a second time enters an uppercase B, third time a C. Push the button a fourth time and a lowercase "a" is entered. Push the button a fifth time and a lowercase "b" is entered. When the button is pushed a seventh time the number "2" is entered. You need to push the buttons rapidly. If you delay too long the instrument accepts the alphanumeric character and moves the cursor to the left preparing for the left entry. If this happens, use the left arrow button to erase the current entry and enter another character. This is true for all the alphanumeric buttons.

Setup/3/DEF Button

This button enables you to access the configuration and setup menus. Also enters the number 3 and the letters D, E, F.

Amount/4/GHI

Enables you to change the amount of the ingredient while in the standby mode. Also enters the number 4 and the letters C, H, I.

Units/5/JKL Button

Enables you to change the units of measure (Lbs/Kg/oz/g) while in the standby mode of operation. Also enters the integer 5 and the letters J, K, L.

6/MNO Button

Enters the integer 6 and the letters M, N, O.

Cycle/7/PQRS Button

Enables you to change the number of cycles (fills or dispenses) while in the standby mode. Also enters the integer 7 and letters P, Q, R, S.

8/TUV Button

Enters the integer 8 and the letters T, U, V.

Test/9/WXYZ Button

Enables you to enter the selftest or diagnostics mode. Also enters the integer 9 and letters W, X, Y, Z.

User/-/_/@/blank/,/. Button

Enables you to change the 3 digit user code while in the standby mode. Also enters a dash (-) underscore (_) at (@), comma (,) and period (.) symbols.

0/(/)/*/+/#/&/' Button

Enables you to enter the left side of a parentheses (, enter the right side of a parentheses), asterisk(*), plus sign (+), ampersand (&), apostrophe (‘) and the integer 0.

NOTE: Whenever you see --> arrow in a menu it means that there is a sub-menu that you need to go to in order to set the parameters.

Selecting Configuration Menus

When the Filler/Dispenser first starts up, the function selection display appears. (See fig. 4-5)

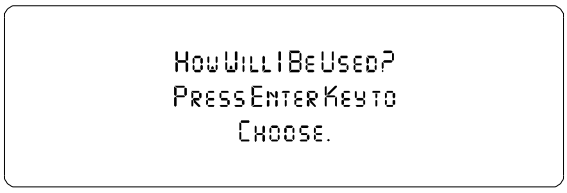


FIG. 4-5 WELCOME DISPLAY

Step 1. Press the Enter button. The Instrument Selection screen displays. (See Fig. 4-6)

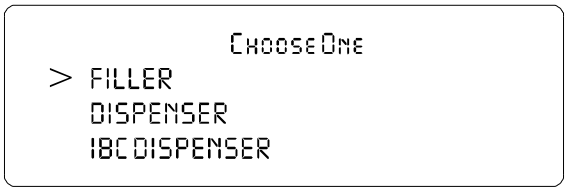


FIG. 4-6 INSTRUMENT SELECTION SCREEN WITH FILLER SELECTED (DEFAULT)

Step 2. To move the cursor up and down press the up and down arrows until the cursor is in front of the instrument you want to select.

Step 3. Press the Enter button. A prompt asking if you are sure this is the instrument you want appears. (See Fig. 4-7)

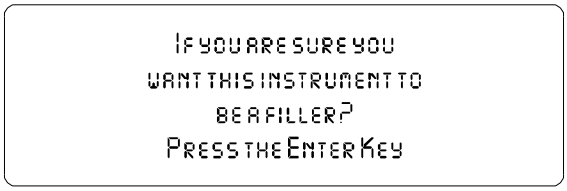


FIG. 4-7 PROMPT CONFIRMING SELECTION

Step 4. If this is the instrument you want to use, press the Enter button. The Standby Display appears. (See Fig. 4-8)

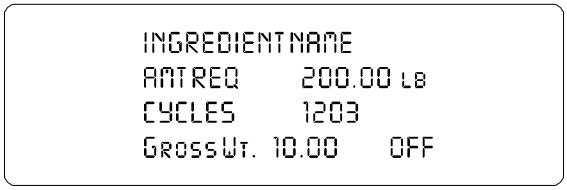


FIG. 4-8 STANDBY DISPLAY

Step 5. Press the Setup/3/DEF button once. The Configuration Menu appears with the cursor in front of

"ADJUST INGREDIENT" (Default). (See Fig. 4-9)

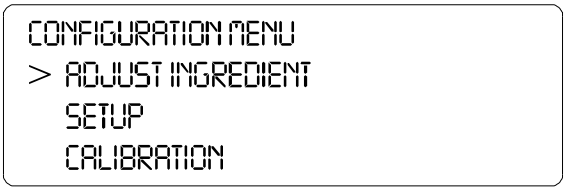


FIG. 4-9 CONFIGURATION MENU/ADJUST INGREDIENT

Configuring Ingredients from the Front Panel

About Configuring Ingredients

You can configure from 1 - 12 ingredients in the Filler/Dispenser. Each ingredient can be given an Ingredient Name, Ingredient Number (1 thru 12), Set tolerance (Discrete or Percent), Target Weight and Preact. You can also configure the Gate Time, Jog On Time and several other parameters. All these settings insure that each ingredient is exactly configured to deliver the exact amount of material for your filling or dispensing process.

Step 1. With the cursor in front of "ADJUST INGREDIENT", Press the Enter button. The "ADJUST INGREDIENT" sub-menu appears with the cursor in front of Ingredient 1 (Default). (See Fig. 4-10)

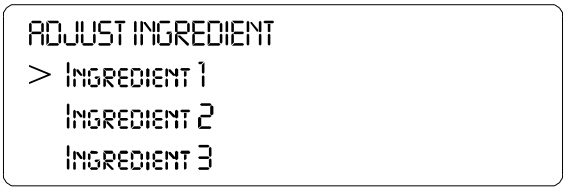


FIG. 4-10 ADJUST INGREDIENT SUB-MENU/ INGREDIENT #1

NOTE: If you want to move to another ingredient, press the up or down arrow buttons until the cursor is in front of the ingredient you want to adjust.

NOTE: Our example goes through configuring Ingredient #1, for illustration purposes, however setting all the parameters for all 12 ingredients is exactly the same.

Step 2. Press the Enter button. Ingredient 1 sub-menu appears with the cursor in front of "Ingredient 1". (See Fig. 4-11) (Default)

Ingredient Name Parameter

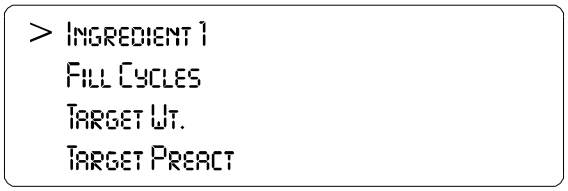


FIG. 4-11 INGREDIENT 1 SUB-MENU/ENTER INGREDIENT NAME

PARAMETER:INGREDIENT NAME
RANGE: 19 ALPHANUMERIC CHARACTERS
DEFAULT: INGREDIENT 1

Step 1. Press the Clear button to clear the existing ingredient name. (See Fig. 4-12)

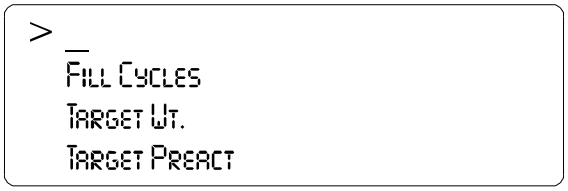


FIG. 4-12 CLEARING INGREDIENT NAME

Step 2. Use the alphanumeric key pad to enter the new Ingredient Name. Remember you can only use 19 characters. In our example we entered Flour. (See Fig. 4-13)

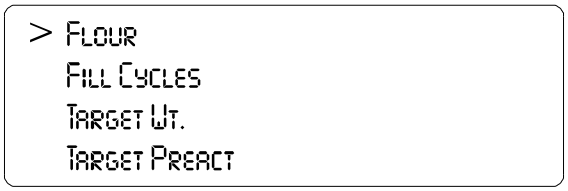


FIG. 4-13 INGREDIENT NAME ENTERED/FLOUR

Step 3. Press the Enter button to select the entry. The entry is selected and the cursor moves to the next item in the menu. In this case it is the Fill Cycle. (See Fig. 4-14)

NOTE: Another way to accept the entered parameter is to use the down arrow. When you press the down arrow after entering a parameter value the instrument accepts that entry and moves the cursor to the next item on the menu.

Fill Cycles

About Fill/Dispense Cycles

Fill cycles are the number of fill/dispense cycles you are going to use for this ingredient. In our example we are using the ingredient Flour and we want "Flour" to cycle 15 times.

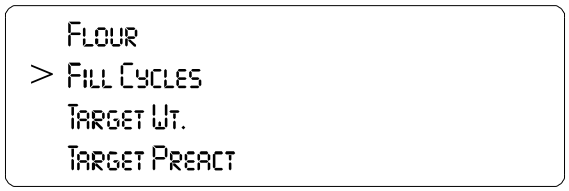


FIG. 4-14 INGREDIENT MENU/FILL/DISPENSE CYCLES

PARAMETER:FILL/DISPENSE CYCLES
RANGE: 0 - 9,999
DEFAULT: 1

NOTE: For continuous fills/dispenses set the parameter to 0.

Step 1. The cursor is in front of Fill Cycles. If you are entering this parameter for the first time, use the alphanumeric key pad and enter the number of cycles you want for this ingredient. (See Fig. 4-15)
Step 2. If a value already exists, press the Clear button to clear the previous entry.
Step 3. Use the alphanumeric key pad and enter the number of cycles for this ingredient. In our example we set 15 cycles for the ingredient Flour. (See Fig. 4-15)

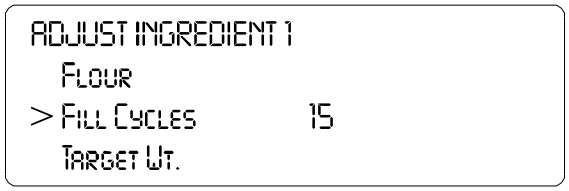


FIG. 4-15 FILL/DISPENSE/CYCLES PARAMETER

Step 4. Press the Enter button. The cycles are set and the cursor moves to Target Wt. (See Fig. 4-16)

Target Weight

About Target Weight

The Target Weight is the gain-in-weight (Fill) or loss-in-weight value (Dispense) you want for this ingredient. If you want one cycle to fill/dispense 100 lbs of an ingredient, you set the Target Weight to 100. Keep in mind that the Units Parameter is set in another menu. In our example we set the Target Weight to 100 lbs. (See Fig. 4-16)

PARAMETER:TARGET WEIGHT
RANGE: .000001 - 999,999
DEFAULT: 1

Step 1. The cursor is in front of Target Weight. If you are entering this parameter for the first time, use the alphanumeric key pad and enter the target weight for this ingredient. (See Fig. 4-16)

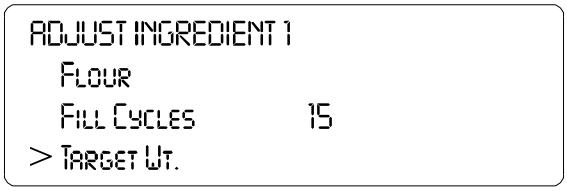


FIG. 4-16 INGREDIENT MENU/TARGET WEIGHT

Step 2. If a value already exists, press the Clear button to clear the previous entry.
Step 3. Use the alphanumeric key pad and enter the target weight for this ingredient. In our example we used 100.00 lbs. (See Fig. 4-17)

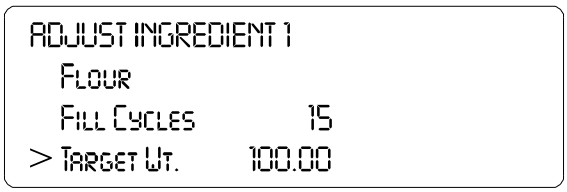


FIG. 4-17 TARGET WEIGHT PARAMETER

Step 4. Press the Enter button. The Target Weight is set and the cursor moves to Target Preact. (See Fig. 4-18)

Target Preact

About Target Preact

Target Preact is the number of units above or below the set point value (Target Weight) at which time you want the relay to trip. Use as an "in flight" compensation value for the time it takes for a valve, gate to close or a conveyor to stop. You want to set the Target Preact to start closing/stopping so that when it closes or stops completely the Target Weight Set Point is reached.

About Smart Preact

Smart Preact is an automatic function that calculates the loss-in-weight/gain-in-weight during a cycle to determine if the Target Preact Set Point is set so that the cycle is within

the Target Weight Tolerance. If it is not, the instrument automatically calculates a new Target Preact so that the next cycle is hitting the Target Weight. While the Smart Preact is on, the Filler/Dispenser continues to determine the Smart Preact Set Point maintaining and/or improving Fill/Dispense accuracy.

PARAMETER:TARGET PREACT
RANGE: .000001 - 999,999
DEFAULT: 1.0 SMART PREACT: OFF

Step 1. The cursor is in front of Target Preact. (See Fig. 4-18)

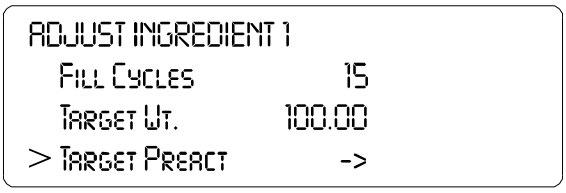


FIG. 4-18 TARGET PREACT PARAMETER

Step 2. Press the Enter button. The Target Preact Menu appears. (See Fig. 4-19)

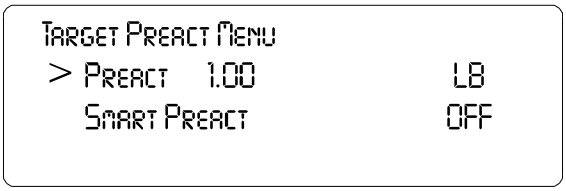


FIG. 4-19 TARGET PREACT SUB-MENU

Step 3. Press the Clear button to clear the previous entry.
Step 4. Use the alphanumeric key pad and enter the Target Preact Value for this ingredient. In our example we used 3.00 lbs as the Target Preact. (See Fig. 4-20)

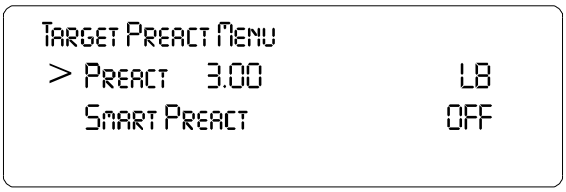


FIG. 4-20 TARGET PREACT MENU/SET PREACT

Step 5. Press the down arrow button to move the cursor in front of Smart Preact. (See Fig. 4-21)
Step 6. Use the left or right arrow to toggle between OFF and ON. In our example we turned the Smart Preact ON. (See Fig. 4-21)

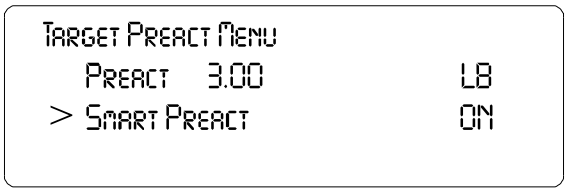


FIG. 4-21 TARGET PREACT MENU/SMART PREACT

Step 7. Press the Exit button to get back to the /Adjust Ingredient 1 Menu.

Target Window

About Target Window

The Target Window is the weight tolerance for an ingredient. There is a Maximum tolerance and a Minimum tolerance setting. The Maximum tolerance is the weight above the target weight you can accept you your process. The Minimum is the weight below the target weight you can accept in your process. The Target Window can be set as weight or percentage.

PARAMETER:TARGET WINDOW (WT)
RANGE: MIN WT. .000000-999,999
MAX WT. .000000-999,999
DEFAULT: 1.0

PARAMETER:TARGET WINDOW (%)
RANGE: MIN% 0.00-99.9
MAX% 0.00-99.9
DEFAULT: 2

Step 1. The cursor should be in front of Target Window. If it is not, use the up and down arrow buttons to move the cursor in front of Target Window. (See Fig. 4-22)
Step 2. Press the left or right button to select Weight (WT) or Percentage (%). (See Figs. 4-22 & 4-23)

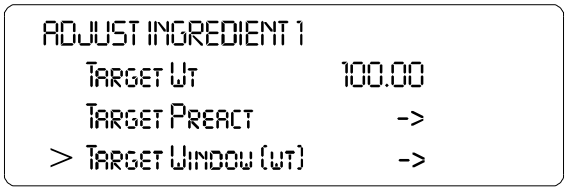


FIG. 4-22 INGREDIENT SETUP MENU/SELECTING TARGET WINDOW/WEIGHT

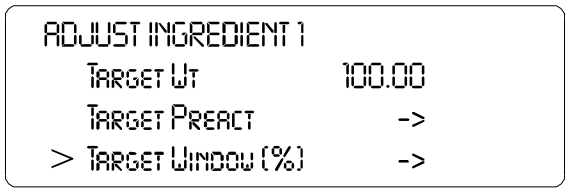


FIG. 4-23 INGREDIENT SETUP MENU/SELECTING TARGET WINDOW/PERCENTAGE

Step 3. Press the Enter button to access the parameter values.
Step 4. Press the Clear button to clear the entry. Use the alphanumeric key pad to enter the new Max tolerance value either in weight or percentage.
Step 5. Press the Enter button to set the entry.
Step 6. Press the down arrow button so the cursor is in front of Target Max. (See Fig. 4-24)

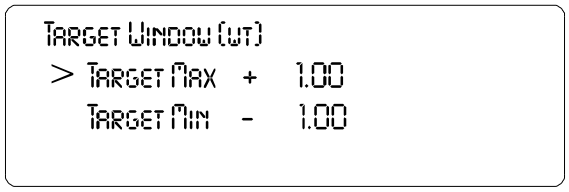


FIG. 4-24 TARGET WINDOW/WEIGHT

Step 7. Press the Clear button to clear the entry. Use the alphanumeric key pad to enter the new Max tolerance value either in weight or percentage. (See Fig. 4-25)

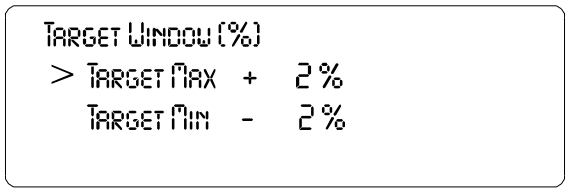


FIG. 4-25 TARGET WINDOW/PERCENTAGE

NOTE: If you set the Target Weight parameter in weight, when you view the settings in percentage the set weight is automatically converted to the correct percentage and vice versa.

Step 8. Press the Enter button to set the entry.
Step 9. Press the down arrow button so the cursor is in front of Target Min. (See Fig. 4-24)
Step 10. Press the Clear button to clear the entry. Use the alphanumeric key pad to enter the new Max tolerance value either in weight or percentage. (See Fig. 4-25)
Step 11. Press the Enter button to set the entry.
Step 12. Press the Exit button to return to the Adjust Ingredient 1 Menu. The cursor should be in front of JOG. If it is not press the up or down arrow until the cursor is in front of JOG. (See Fig. 4-26)

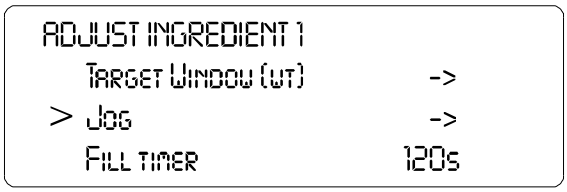


FIG. 4-26 ADJUST INGREDIENT 1/JOG

Jog Parameters

About Jog Parameters

The Jog is used when a cycle underfills. At the end of a cycle the system waits to determine the status of a fill/dispense. If there is an underfill, (i.e. the fill is below the Target Window) the system waits and then the jog is turned on. The Filler/Dispenser jogs for a preset period of time for a preset number of cycles until the fill/dispense is within the Target Window. If at the end of the jog counts the weight is still not within the Target Window, you have the option to go through the jog cycles again. The Jog parameters include the Jog On Time, the amount of time you want the jog to run for each jog count. The Jog Count which is the number of times you want the instrument to go through the jog cycle. The Jog Off Time is the time you want the jog to be off while the instrument calculates the change in weight to see if the jog increased the weight so that the fill/dispense is within the Target Window. To shut OFF the Jog function, set the Jog On Time to 0.

NOTE: The Jog settings should be made in conjunction with the Fast and Slow Fill timers. It is recommended that the AutoPreact be turned on so that the system can self adjust until you no longer need a jog during each cycle. If the instrument goes through the jog sequence for each cycle you will need to adjust the Fill/Dispense Timers and/or the Preact.

PARAMETER:JOG ON TIME
RANGE: 00.0-99.9
DEFAULT: 2.50

PARAMETER:JOG COUNT
RANGE: 0-9
DEFAULT: 5

PARAMETER:JOG OFF TIME
RANGE: 00.0-99.9
DEFAULT: 1.00

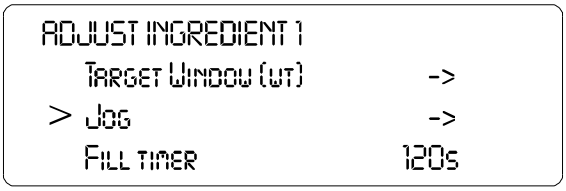


FIG. 4-27 ADJUST INGREDIENT 1/JOG

Step 1. Press the Enter button. The Jog Menu appears with the cursor in front of Jog On Time. (See Fig. 4-28)

FIG. 4-28 JOG MENU/DEFAULT SETTINGS

Step 2. Press the Clear button to clear the previous entry.
Step 3. Use the alphanumeric key pad to enter the new Jog On time. In our example we use 1.00 second.
Step 4. Press the Enter button to set the entry.
Step 5. Press the down arrow to move the cursor in front of Jog Count. (See Fig. 4-29)

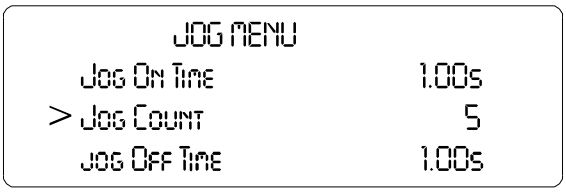


FIG. 4-29 JOG COUNT PARAMETER

Step 6. Press the Clear button to clear the previous entry.
Step 7. Use the right or left arrow button to increase or decrease the Jog Count value.
Step 8. Press the Enter button to set the entry.
Step 9. Press the down arrow button to move the cursor in front of Jog Off Time. (See Fig. 4-30)

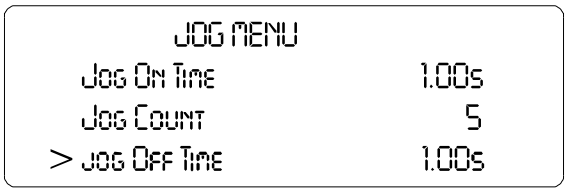


FIG. 4-30 JOG OFF TIME PARAMETER

Step 10. Press the Clear button to clear the previous entry.
Step 11. Use the alphanumeric key pad to enter the new Jog Off time. In our example we used 1.00 second.
Step 12. Press the Enter button to set the entry.
Step 13. Press the Exit button to return to the Adjust Ingredient 1 Menu.

Fill/Dispense Time Parameter

About Fill/Dispense Timer

The Fill/Dispense Timer sets the time limit allowed to complete one cycle. To turn off the timer, set the Timer to 0.

PARAMETER:FILL TIMER
RANGE: 0-999
DEFAULT: 120 SECONDS

Step 1. Press the down arrow button until the cursor is in front of Fill Timer. (See Fig. 4-31)

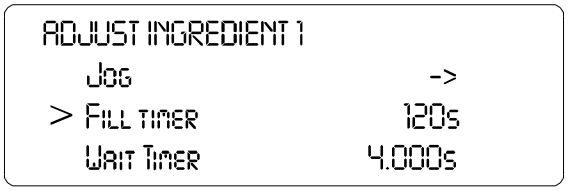


FIG. 4-31 FILL TIMER PARAMETER

Step 2. You can press the right or left button to increase or decrease the Fill time or press the Clear button to clear the current entry and use the alphanumeric key pad to enter the new Fill Timer parameter. In our example we used 120 seconds.
Step 3. Press the Enter button to set the entry.

Wait Timer Parameter

About Wait Timer

The Wait Timer parameter is the time after a fill/dispense cycle you want the system to wait in order to allow the system to settle and calculate the fill/dispense weight to see of the fill/dispense is within the Target Window before moving

onto another fill/dispense function. To shut off the Wait Timer set the parameter to 0.

PARAMETER:WAIT TIMER
RANGE: 0-999.9
DEFAULT: 2.00

Step 1. Press the down arrow button until the cursor is in front of Wait Timer. (See Fig. 4-32)

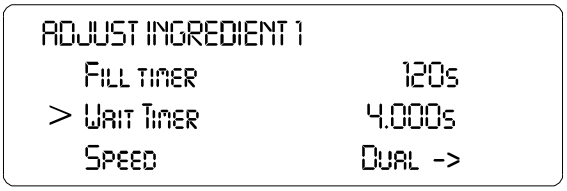


FIG. 4-32 WAIT TIMER PARAMETER

Step 2. Press the Clear button to clear the current entry.
Step 3. Use the alphanumeric key pad to enter the new Wait Timer parameter. In our example we used 4.000 seconds.
Step 4. Press the Enter button to set the entry.

Speed Parameter

About the Speed Parameter

The Speed Parameter sets the Fill/Dispenser to a Dual Speed Filler/Dispenser (Fast & Slow) or a Single Feed Filler/Dispenser. Set this parameter based on what your process requires.

PARAMETER:SPEED PARAMETER
RANGE: DUAL/SINGLE SPEED
DEFAULT: SINGLE

Step 1. Press the down arrow button until the cursor is in front of Speed. (See Fig. 4-33)

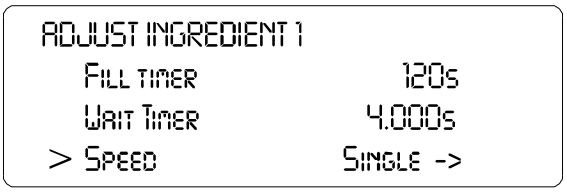


FIG. 4-33 SPEED PARAMETER

Step 2. Press the right or left arrow button to toggle between Dual Speed and Single Speed.

- If you select Single Speed, press the Enter button. The Discharge Time Menu appears. (See Fig. 4-34)

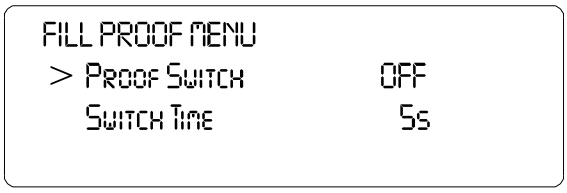


FIG. 4-34 FILL PROOF MENU

1. Press the right or left arrow buttons to toggle between OFF and ON.
2. Press the Enter button to set the entry.
3. Press the down arrow until the cursor is in front of Switch time.
4. Use the right or left arrow buttons to increase or decrease the Switch Time. In our example we used 5 seconds. The Switch Time is the time set to sense that a switch, gate, valve is open.
5. Press the Enter button to set the entry.
6. Press Exit to return the Adjust Ingredient 1 Menu.

- If you select Dual Speed, press the enter button. The Dual Speed Filler/Dispenser Menu appears. (See Fig. 4-35)

FIG. 4-35 DUAL SPEED FILLER MENU

1. Fast Weight - Press the right or left arrow to increase or decrease the weight.
2. Press the down arrow until the cursor is in front of Auto Fast Adj. Press the right or left arrow buttons to toggle between ON and OFF
3. Press the down arrow until the cursor is in front of Mode - Press the right or left arrow buttons to toggle between Sequential or Simultaneous.
4. Press the down arrow until the cursor is in front of Fill Proof Menu. (See Fig. 4-36)

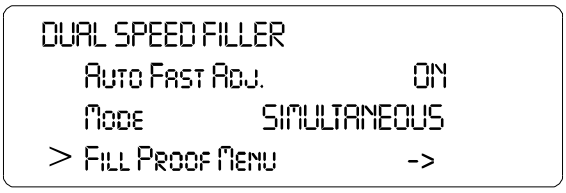


FIG. 4-36 DUAL SPEED FILLER/FILL PROOF MENU

5. Press the Enter button, the Fill Proof Menu appears. (See Fig. 4-37)

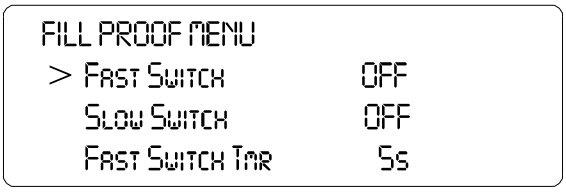


FIG. 4-37 FILL PROOF MENU

6. Set the Fast Switch - Press the right or left arrow buttons to toggle between OFF and ON.
7. Press the down arrow until the cursor is in front of Slow Switch.
8. Set the Slow Switch - Press the right or left arrow buttons to toggle between OFF and ON.
9. Press the down arrow until the cursor is in front of Fast Switch Tmr (Timer).
10. Press the right or left arrow buttons to increase or decrease the Fast Switch Timer. This is the time you want the Fast Switch to remain on.
11. Press the Enter button to set the entry.
12. Press the down arrow until the cursor is in front of Slow Switch Tmr (Timer). (See Fig. 4-38)

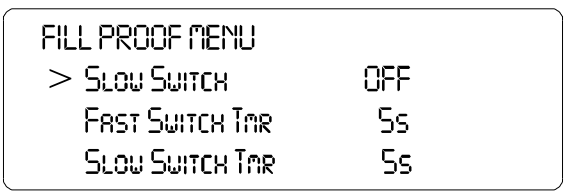


FIG. 4-38 FILL PROOF MENU

13. Press the right or left arrow buttons to increase or decrease the Slow Switch Timer. This is the time you want the Slow Switch to remain on.
14. Press the Enter button to set the entry.
15. Press the Exit button to return to the Dual Speed Filler Menu.
16. Press the Exit button to return to the Adjust Ingredient 1 Menu. (See Fig. 4-39)

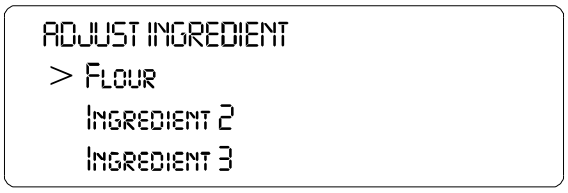


FIG. 4-39 ADJUST INGREDIENT/INGREDIENT 1 SET TO FLOUR

Step 3. If this is the only ingredient you are configuring, press the Exit button to return to the Configuration Menu.

Step 4. If there are more ingredients used in this process, or you want to set up ingredients for other processes, press the down arrow until the cursor is in front of Ingredient 2. (See Fig. 40)

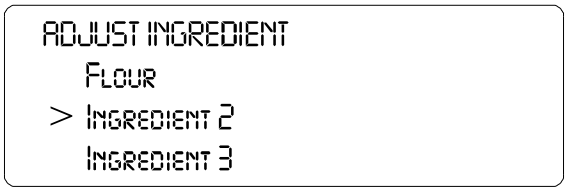


FIG. 4-40 SETTING PARAMETERS FOR INGREDIENT 2

Step 5. Press the Enter button and repeat the configuration process until you have configured all the ingredients you want for your process(es). You can set up to 12 ingredients.

Instrument Configuration

The Instrument Configuration process sets up the instrument to operate as a scale and the setup for the operating parameters required for your filling/dispensing process. This includes setting WAVERSAVER®, Scale Capacity, Units of Measure, Motion tolerance and other instrument parameters required for your Filling/Dispensing process. Here is where the permanent parameters are entered. All the parameters configured except the communications parameters, (IP Address etc.) are stored in the Secure Memory Module (SMM).

Step 1. In the Configuration Menu, press the down arrow until the cursor is in front of SETUP. (See Fig. 4-41)

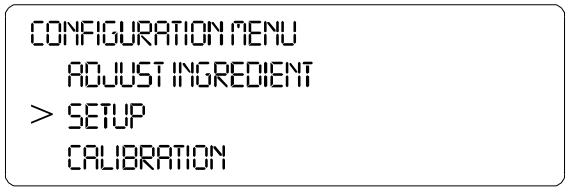


FIG. 4-41 CONFIGURATION MENU/SETUP

Step 2. Press the Enter button. The SETUP MENU appears with the cursor in front of Operator ID. (See Fig. 4-42)

Operator ID

About Operator ID

The Operator ID is the ID of the user who is going to operate the Filler/Dispenser or service the instrument. Select three letters or numbers or any combination of the two that adequately identifies the user. We have provided some examples below for your assistance. The Operator ID is used in connection with the security level of the user.

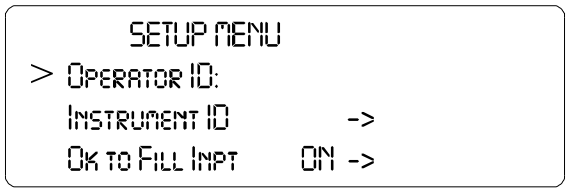


FIG. 4-42 SETUP MENU/OPERATOR ID

Step 1. Use the alphanumeric key pad to enter your Operator ID or press the Clear button to clear the previous entry and use the alphanumeric key pad to enter you Operator ID.
Step 2. A Operator ID is three (3) characters long and can consist of alphanumeric characters.

Some examples of Operator IDs:

- Joe
- 312
- J15
- JD7

Step 3. Press the Enter button to set the entry.

Instrument ID

About Instrument ID

The Instrument ID parameter is used to provide specific identification for a Filler/Dispenser. This is extremely important when using several Filler/Dispensers in a process. A unique Instrument ID allows you to identify one instrument from another. The Instrument ID is also useful when setting up the ingredients for a filling/dispensing process.

PARAMETER:INSTRUMENT ID
RANGE: 19 CHARACTERS
DEFAULT: HARDY FILLER OR HARDY DISPENSER

Step 1. Press the down arrow until the cursor is in front of Instrument ID. (See Fig. 4-43)

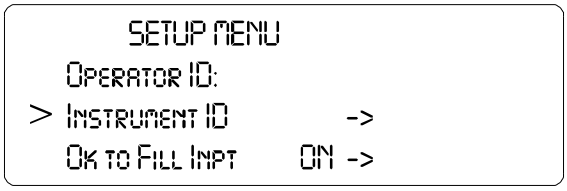


FIG. 4-43 INSTRUMENT ID PARAMETER

Step 2. Press the Enter button. The Instrument ID Menu appears. (See Fig. 4-44)

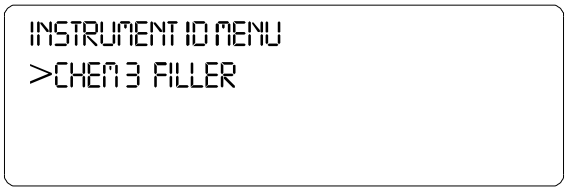


FIG. 4-44 INSTRUMENT ID MENU/CHEM 3 FILLER

Step 3. Press the Clear button to clear the current entry.
Step 4. Use the alphanumeric buttons to enter a new Instrument ID. It is important to be as descriptive as you can in 19 characters. In our example we identified the instrument as the Chemical 3 Filler. This that this is the 3rd Chemical Filler in a process.
Step 5. Press the Enter button to set the entry.
Step 6. Press the Exit button to return to the SETUP MENU.
Step 7. Press the down arrow until the cursor is in front of OK to Fill Inpt. (See Fig. 4-45)

OK to Fill Input Parameter

About OK to Fill Input Parameter

The OK to Fill Input Parameter is user selectable and is one of the alarm settings. When the OK to Fill Input Parameter is on, the instrument Auto Tares the scale and resets and starts the Fill/Dispense timer. If for any reason the instrument cannot detect the OK to Fill input before the OK to Fill timer times out, the Not OK to Fill Alarm appears.

PARAMETER:OK TO FILL INPUT PARAMETER
RANGE: ON/OFF
DEFAULT: ON

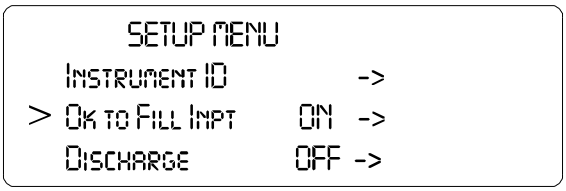


FIG. 4-45 OK TO FILL INPUT PARAMETER

Step 1. Press the right or left arrow buttons to toggle between ON and OFF.
Step 2. If you have turned the OK to Fill ON, press the Enter button. The OK TO FILL MENU appears. (See Fig. 4-46)

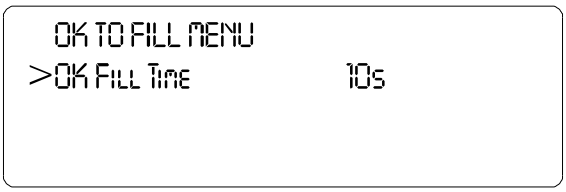


FIG. 4-46 OK TO FILL MENU/SETTING OK TO FILL TIMER

PARAMETER:OK TO FILL TIMER
RANGE: 0-999
DEFAULT: 10 SECONDS

Step 3. Press the right or left arrow buttons to increase or decrease the OK to Fill Time. In our example we set the timer for 10 seconds.
Step 4. Press the Enter button to set the entry.
Step 5. Press the Exit button to return to the SETUP MENU.

NOTE: If you toggle the Ok to Fill to OFF, the OK to Fill Menu will not appear.

Step 6. Press the down arrow until the cursor is in front of Discharge. (See Fig. 4-47)

Discharge Parameters

About the Discharge Parameters

If your process requires you to discharge from the filled vessel you need to turn on the Discharge function. If you turn the Discharge ON, the Discharge Menu will display and you can select between Auto Discharge, OK to Discharge, Proof Switch Alarm, Switch Timer and/or the Aux (Auxiliary) Device Timer. The Aux (Auxiliary) Device Timer turns on a vibrator feeder or other device if the Not OK to Discharge Alarm occurs. If you select OFF the Discharge Menu does not display. Make sure you set the Zero Tolerance to determine when the fill vessel is empty (i.e. completed the discharge).

PARAMETER:DISCHARGE
RANGE: ON/OFF
DEFAULT: OFF

PARAMETER:AUTO DISCHARGE
RANGE: ON/OFF
DEFAULT: OFF

PARAMETER:OK TO DISCHARGE
RANGE: ON/OFF
DEFAULT: OFF

PARAMETER:PROOF SWITCH
RANGE: ON/OFF
DEFAULT: OFF

PARAMETER:SWITCH TIMER
RANGE: 0-99
DEFAULT: 5 SECONDS

PARAMETER:AUX DEVICE TIMER
RANGE: 0-99
DEFAULT: 10 SECONDS

NOTE: The description for these parameters is located in the HI 3010 User Guide.

Step 1. To select Discharge press on the left or right arrow buttons to toggle Discharge ON or OFF. (See Fig. 4-47)

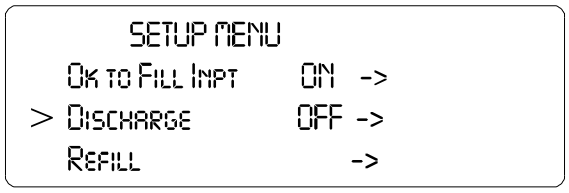


FIG. 4-47 SETUP MENU/DISCHARGE PARAMETER

Step 2. With Discharge toggled ON, Press the Enter button. The Discharge Menu appears with the cursor in front of Auto-Discharge. (See Fig. 4-48)

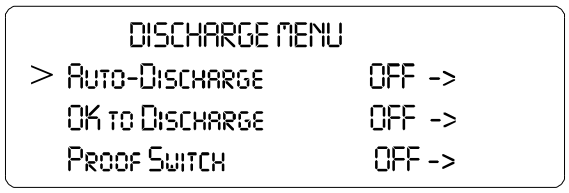


FIG. 4-48 DISCHARGE MENU/AUTO-DISCHARGE

Step 3. Press the right or left arrow buttons to toggle Auto-Discharge ON or OFF.
Step 4. Press the Enter button to set the entry.
Step 5. Press the down arrow until the cursor is in front of OK to Discharge. (See Fig. 4-49)

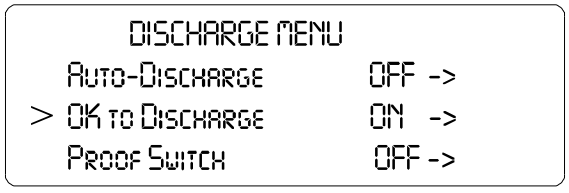


FIG. 4-49 DISCHARGE MENU/OK TO DISCHARGE

Step 6. Press the right or left arrow buttons to toggle the OK to Discharge ON or OFF.
Step 7. If you toggle the OK to Discharge ON, press the Enter button. The OK to Discharge Menu appears. (See Fig. 4-50)

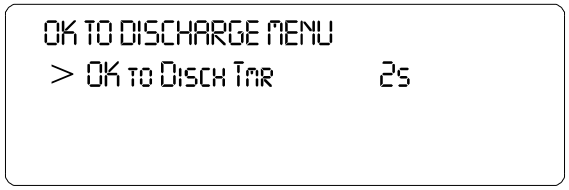


FIG. 4-50 OK TO DISCHARGE MENU

Step 8. Press the right or left arrow buttons to increase or decrease the OK to Discharge time.
Step 9. Press the Enter button to set the entry.
Step 10. Press the Exit button to return to the Discharge Menu.
Step 11. Press the down button until the cursor is in front of Proof Switch. (See Fig. 4-51)

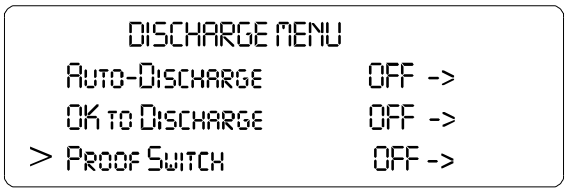


FIG. 4-51 DISCHARGE MENU/PROOF SWITCH

About Proof Switch

When you turn ON the Proof Switch, it senses the state of a physical actuator or a proximity sensor, for example, to determine if a gate is open or closed. If the gate is closed when it should be open or vice versa, an alarm is displayed that says “NO DISCHARGE PROOF ALARM” depending on how your system is configured.

Step 12. Press the right or left arrow buttons to toggle the Proof Switch OFF or ON.
Step 13. Press the Enter button to set the entry.
Step 14. Press the down arrow button until the cursor is in front of Switch timer. (See Fig. 4-52)

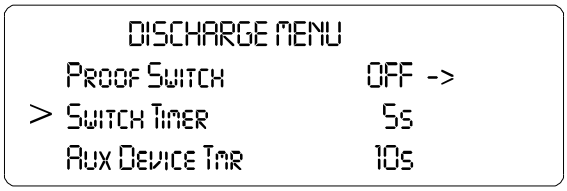


FIG. 4-52 DISCHARGE MENU/SWITCH TIMER

Step 15. Press the right or left arrow buttons to increase or decrease the time.
Step 16. Press the Enter button to set the entry.
Step 17. Press the down arrow button until the cursor is in front of Aux Device Tmr (Auxiliary Device Timer). (See Fig. 4-53)

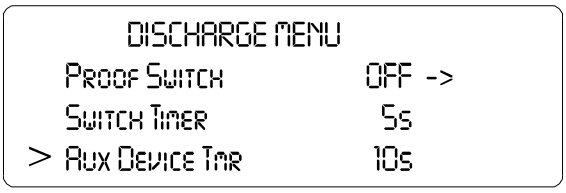


FIG. 4-53 DISCHARGE MENU/AUXILIARY DEVICE TIMER

About the Auxiliary Device Timer

An example of an Auxiliary Device is a vibrator for a feeder to correct bridging that can occur with some materials when being discharged from a vessel. The timer setting sets how long the Auxiliary Device should remain on until the bridging condition corrects itself. An Auxiliary Device can be any device you want to enable. The timer is set based on your process requirements.

Step 18. Press the right or left arrow buttons to increase or decrease the time you want the Auxiliary Device to operate.
Step 19. Press the Enter button to set the entry.
Step 20. Press the Exit button to return to the SETUP MENU.

Refill Parameters

About the Filler Refill Parameters

The Refill pertains to the vessel that is putting material into the filler vessel. This vessel must have enough material to complete one whole fill cycle of all the fill cycles depending on your application. The refill vessel will probably have level sensors indicating a high and low level. When you turn on the Refill the instrument sees the low level sensor, for example, that is calling for more material. It opens a gate or valve until the material level reached the high level sensor, at which time it closes the gate. If you turn on the Initial Refill, it will make sure that you have enough material at the first fill cycle. The Refill can operate at any time during filling to make sure that the refill vessel has enough material for a fill cycle(s).

NOTE: You must map the High and Low Level Sensors to the instrument.

PARAMETER:REFILL
RANGE: OFF/ON
DEFAULT: OFF

PARAMETER:INITIAL REFILL
RANGE: OFF/ON
DEFAULT: OFF

Step 1. Press the down arrow button until the cursor is in front of Refill. (See Fig. 4-54)

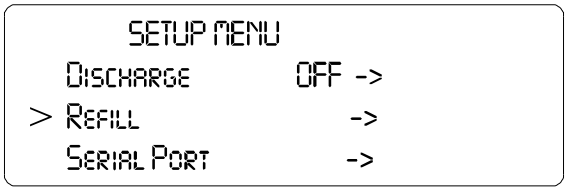


FIG. 4-54 SETUP MENU/REFILL

Step 2. Press the Enter button. The Refill Menu appears with the cursor in front of Refill. (See Fig. 4-55)

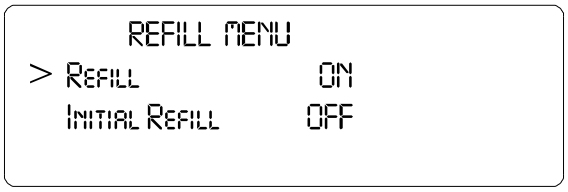


FIG. 4-55 REFILL MENU/REFILL

Step 3. Press the right or left arrow buttons to toggle between ON and OFF.
Step 4. Press the enter button to set the entry.
Step 5. Press the down arrow button to move the cursor in front of Initial Refill. (See Fig. 4-56)

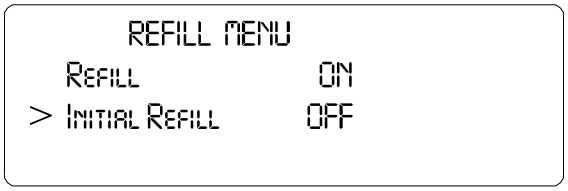


FIG. 4-56 REFILL MENU/INITIAL REFILL

Step 6. Press the right or left arrow button to toggle between OFF and ON.
Step 7. Press the Enter button to set the entry.
Step 8. Press the Exit button to return to the SETUP MENU.

About the Dispenser/IBC Refill Parameters

The Refill pertains to the Dispensing vessel and is actuated by the Refill Weight Parameter. The Dispense vessel must have enough material to complete one whole dispense cycle. If Refill is on, prior to starting a dispense cycle the instrument checks the weight in the vessel. If the weight in the vessel is below the Refill Weight it initializes the Refill function and refills the vessel to the preset Refill Weight, then starts the dispense cycle(s). The Refill must occur in a preset

period of time by setting the Refill Duration parameter. If the Refill takes more time than the preset Refill Duration the dispense is paused and an alarm appears. In addition to the Refill parameters you can set the Proof Switch to ON to determine that the refill gate or valve is open. The Switch Time sets the time it takes for the Proof Switch valve or gate to open If the time exceeds the preset Switch Time an alarm appears saying that the Proof Switch did not open.

PARAMETER:PROOF SWITCH
RANGE: OFF/ON
DEFAULT: OFF

PARAMETER:SWITCH TIME
RANGE: 0-99 SECONDS
DEFAULT: 5 SECONDS

PARAMETER:REFILL WEIGHT
RANGE: 0.01 - 999999
DEFAULT: 1000.0

PARAMETER:REFILL DURATION
RANGE: 0-99 SECONDS
DEFAULT: 60 SECONDS

Step 1. Press the down arrow button until the cursor is in front of Refill. (See. Fig. 4-57)

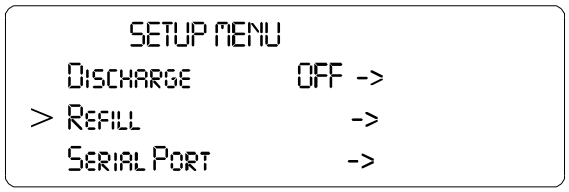


FIG. 4-57 SETUP MENU/REFILL

Step 2. Press the Enter button. The Refill Menu appears with the cursor in front of Refill. (See Fig. 4-58)

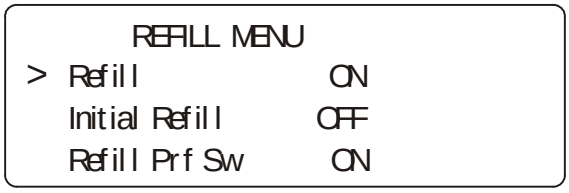


FIG. 4-58 REFILL MENU/REFILL

Step 3. Press the right or left arrow buttons to toggle between ON and OFF.
Step 4. Press the enter button to set the entry.
Step 5. Press the down arrow button to move the cursor in front of Initial Refill. (See Fig. 4-59)

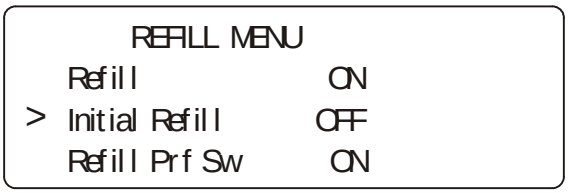


FIG. 4-59 REFILL MENU/INITIAL REFILL

Step 6. Press the right or left arrow button to toggle between OFF and ON.
Step 7. Press the Enter button to set the entry.
Step 8. Press the down arrow button to move the cursor in front of Refill Prf Sw. (See Fig. 4-60)

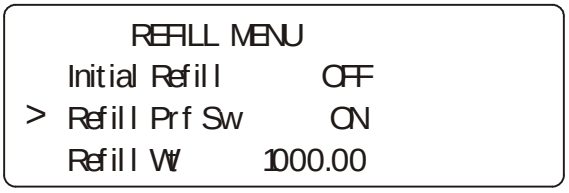


FIG. 4-60 REFILL MENU/SETTING REFILL PROOF SWITCH

Step 9. Press the right or left arrow buttons to toggle between ON and OFF.
Step 10. Press the Enter button to set the entry.
Step 11. Press the down arrow button to move the cursor in front of Refill Sw Timer. (See Fig. 4-61)

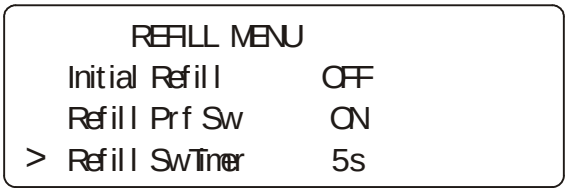


FIG. 4-61 REFILL MENU/SETTING REFILL SWITCH TIMER

Step 12. Press the left or right arrow button to select the Refill Switch time.
Step 13. Press the Enter button to set the entry.
Step 14. Press the down arrow button to move the cursor in front of Refill Wt. (See Fig. 4-62)

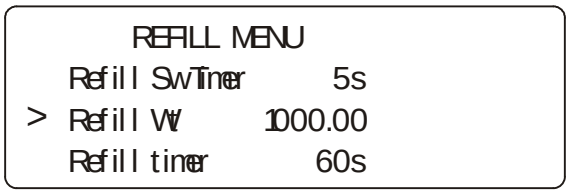


FIG. 4-62 REFILL MENU/SETTING REFILL WEIGHT

Step 15. Press the Clear button to clear the entry. Use the Alphanumeric keypad to enter the new Refill Weight.
Step 16. Press the Enter button to set the entry.
Step 17. Press the Down arrow to move the cursor in front of Refill Timer. (See Fig. 4-63)

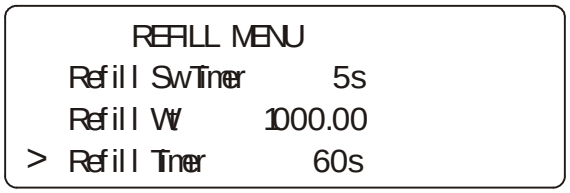


FIG. 4-63 REFILL MENU/SETTING REFILL TIMER

Step 18. Press the right or left arrow button to increase or decrease the Refill time.
Step 19. Press the Enter button to set the entry.
Step 20. Press the Exit to return to the Main Menu.

Serial Port Parameters

About the Serial Port Setup Parameters

The Serial Port Parameters are set to operate the Printer which can print out the status of a fill/dispense. The Printer prints:

- Date and time of the Fill/Dispense
- Instrument ID
- Ingredient ID
- Each Amount Required
- Number of Fills/Dispenses Requested
- User ID
- Time each fill began
- Amount Requested per fill/dispense cycle
- Actual amount received per fill/dispense cycle
- Alarms that occurred and times
- Acceptance or Rejection of a fill/dispense and time
- Total Number of Cycles
- Total Weight of the Fill/Dispense

The Printer provides a hard copy of a fill/dispense. You can also select whether you want the Auto Print function which will automatically print the results after every fill/dispense. Check you Printer User Guide or Technical Manual to determine the parameters for your printer. If you don't have the Printer User guide or Technical Manual, check with your Network Administrator for the parameter settings.

PARAMETER:BAUD RATE
RANGE: 300, 1200, 2400, 4800, 9600, 19200
DEFAULT: 9600

PARAMETER:PARITY
RANGE: NONE, ODD, EVEN
DEFAULT: NONE

PARAMETER:DATA BITS
RANGE: 7 OR 8
DEFAULT: 8

PARAMETER:AUTO PRINT
RANGE: ON/OF
DEFAULT: OFF

Step 1. Press the down arrow until the cursor is in front of Serial Port. (See Fig. 4-64)

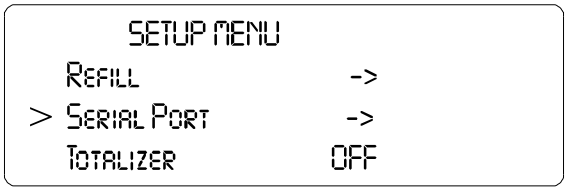


FIG. 4-64 SETUP MENU/SERIAL PORT

Step 2. Press the Enter button. The Serial Port Menu appears with the cursor in front of Print Port. (See Fig. 4-65)

FIG. 4-65 SERIAL PORT MENU/PRINTER PORT SETUP

Step 3. Press the Enter button. The Printer Port Menu appears. (See Fig. 4-66)

FIG. 4-66 PRINTER PORT MENU/BAUD RATE

Step 4. Press the right or left arrow buttons to select the Baud Rate. The Selections are:

- 300
- 1200
- 2400
- 4800
- 9600
- 19200

Step 5. Press the Enter button to set the entry.
Step 6. Press the down arrow button until the cursor is in front of Parity. (See Fig. 4-67)

FIG. 4-67 PRINTER PORT MENU/PARITY

Step 7. Press the right or left arrow buttons to select Parity. The Selections are:

- NONE
- ODD
- EVEN

Step 8. Press the down arrow until the cursor is in front of Data Bits. (See Fig. 4-68)

FIG. 4-68 PRINTER PORT MENU/DATA BITS

Step 9. Press the right or left arrow buttons to select the Data Bits you want. The Selections are:

- 8
- 7

Step 10. Press the enter button to set the entry.
Step 11. Press the down arrow until the cursor is in front of Auto Print. (See Fig. 4-69)

FIG. 4-69 PRINTER PORT MENU/AUTO PRINT

Step 12. Press the right or left arrow buttons to toggle between OFF or ON.
Step 13. Press the Enter button to set the entry.
Step 14. Press the Exit button two (2) times to return to the SETUP MENU.

Totalizer Parameter

About the Totalizer Parameter

Setting the Totalizer to ON sets the Totalizer function for all 12 ingredients. This function calculates the total amount of material by weight that was used during the fill. You can also Clear the Totalizer either for each ingredient or for all ingredients.

PARAMETER:TOTALIZER
RANGE: ON/OFF
DEFAULT: OFF

PARAMETER:CLEAR TOTALIZER
RANGE: 0-12 INGREDIENTS
DEFAULT: INGREDIENT 1

Step 1. Press the down button until the cursor is in front of Totalizer. (See Fig. 4-70)

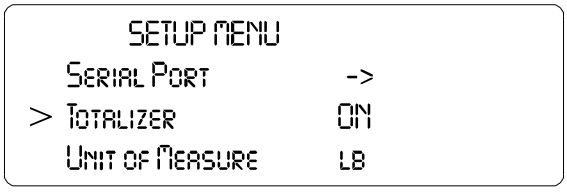


FIG. 4-70 SETUP MENU/TOTALIZER

Step 2. Press the right or left arrow buttons to toggle between OFF or ON.
Step 3. If you select ON, you have turned on the Totalizer for all 12 ingredient selections.

Step 4. To clear the Totalizer for all 12 ingredients or for each individual ingredient press the Enter button. The Totalizer Menu appears. (See Fig. 4-71)

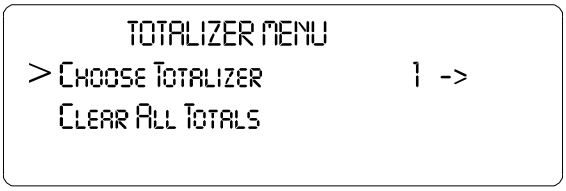


FIG. 4-71 TOTALIZER MENU/CHOOSING INGREDIENT TOTALIZER NUMBER

Step 5. Press the left or right arrow buttons to select the Ingredient Totalizer you want to view.
Step 6. Press the Enter button. The Totalizer Number Menu appears with the cursor in front Total Wt. (See Fig. 4-72) In our example we selected Ingredient Totalizer #1.

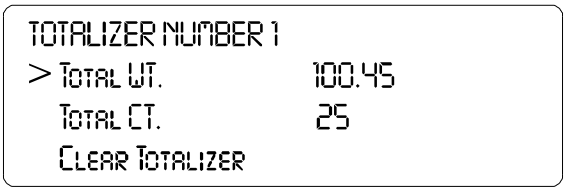


FIG. 4-72 TOTALIZER NUMBER MENU

Step 7. Total WT. and Total CT. are read only.
Step 8. To Clear the Totals for Ingredient Number 1:

- Press the down arrow until the cursor is in front of Clear Totalizer.
- Press the Enter button. The Total WT and Total CT entries turn to 00.00.

Step 9. Press the Exit button to return to the Totalizer Menu.
Step 10. To clear all totals for all 12 ingredients, press the down arrow until the cursor is in front of Clear All Totals. (See Fig. 4-73)

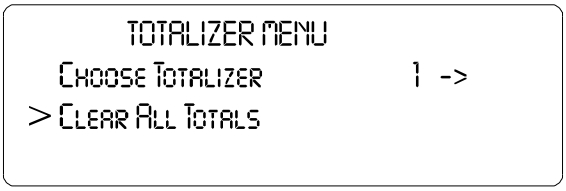


FIG. 4-73 CLEARING ALL TOTALS FOR ALL 12 INGREDIENTS

Step 11. Press the Enter button. All totals are cleared.
Step 12. Press the Exit button to return to the SETUP MENU.

Unit of Measure Parameters

About Unit of Measure

The Unit of Measure Parameter sets the scale to either English or Metric units. The Selections are:

- Pounds (lb)
- Ounces (oz)
- Kilograms (kg)
- Grams (g)

NOTE: Changing the units of measure converts all parameter settings to the selected units.

PARAMETER:UNIT OF MEASURE
RANGE: LB, KG. OZ, G
DEFAULT: LB

Step 1. Press the down arrow button until the cursor is in front of Unit of Measure. (See Fig. 4-74)

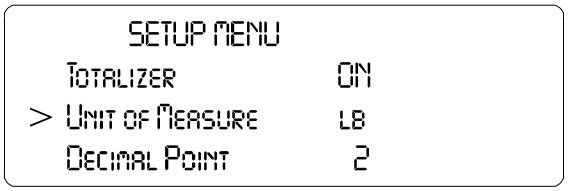


FIG. 4-74 SETUP MENU/UNIT OF MEASURE

Step 2. Press the right or left arrow buttons to make your selection.
Step 3. Press the Enter button to set the entry.

Decimal Point Parameter

About the Decimal Point Parameter

The Decimal Point Parameter is set to determine the resolution you want for a fill/dispense. Here you set the location of the decimal point for the weight resolution. The higher the number the farther to the left the decimal point moves and the higher the resolution of the scale. It is important to note that setting the resolution does effect the overall accuracy of the instrument. Increasing the number of decimal points increases the overall accuracy of the instrument.

PARAMETER:DECIMAL POINT
RANGE: 0-6
DEFAULT: 2

Step 1. Press the down arrow button until the cursor is in front of Decimal Point. (See Fig. 4-75)

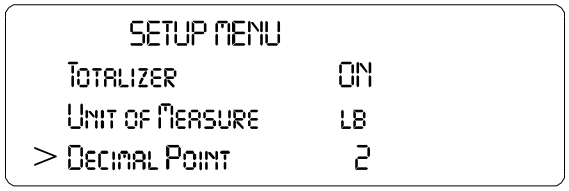


FIG. 4-75 SETUP MENU/DECIMAL POINT

Step 2. Press the right or left arrow buttons to make your selection.
Step 3. Press the Enter button to set the entry.

Total Decimal Point Parameter

About the Total Decimal Point Parameter

The Total Decimal Point Parameter sets the decimal point for the Totalizer. The higher the number the farther to the left the decimal moves and the higher the resolution of the scale.

PARAMETER:TOTAL DECIMAL POINT
RANGE: 0-6
DEFAULT: 0

Step 1. Press the down arrow button until the cursor is in front of the Total Decimal Pt. (See Fig. 4-76)

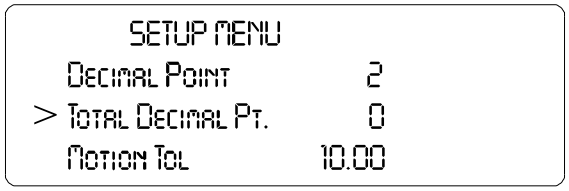


FIG. 4-76 SETUP MENU/TOTAL DECIMAL POINT

Step 2. Press the right or left arrow buttons to make your selection.
Step 3. Press the Enter button to set the entry.

Motion Tolerance Parameter

About Motion Tolerance

Motion is the amount of allowable deviation between consecutive readings before a weighment is accepted as being complete. Setting Motion Tolerance establishes the amount of deviation you can allow in your particular fill/dispense process. The base motion number can be calculated by using the following formula:

Base Motion Number = (Total Load Cell Capacity/10,000) x 3

NOTE: Motion Tolerance must be greater than or equal to the Graduation Sizes. Our recommendation is three (3) graduation sizes.

PARAMETER:MOTION TOLERANCE
RANGE: .000001 - 999999
DEFAULT: 10

Step 1. Press the down arrow button until the cursor is in front of Motion Tol (Tolerance). (See Fig. 4-77)

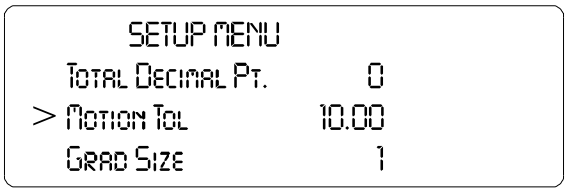


FIG. 4-77 SETUP MENU/MOTION TOLERANCE

Step 2. Press the Clear button to clear the current entry.
Step 3. Use the alphanumeric key pad to enter the new tolerance value.
Step 4. Press the Enter button to set the entry.

Zero Tolerance Parameter

About the Zero Tolerance Parameter

The Zero Tolerance parameter sets the weight units from zero that will be accepted as zero by the instrument. You can also turn on Auto Zero tolerance and set the Auto Zero Tolerance parameter and time. The Auto Zero Tolerance time setting sets the time it should take to Auto Zero the scale.

NOTE

The amount of weight zeroed off is cumulative. The zero command will fail if the current gross weight plus any previously zeroed amount exceeds the zero tolerance.

About the Auto Zero Tolerance Parameter

If ON, Auto Zero automatically zeros the empty scale to gross zero in the pre-set time before the OK to Fill becomes active. When OK to Fill is activated it tares the scale to Net zero.

PARAMETER:ZERO TOLERANCE
RANGE: .000001-999999
DEFAULT: 10.0

PARAMETER:USE AUTO ZERO TOLERANCE
RANGE: OFF/ON

DEFAULT: OFF

PARAMETER:AUTO ZERO TIME
RANGE: .01-9.99 SECONDS
DEFAULT: 1.00 SECOND

Step 1. Press the down button until the cursor is in front of Zero Tolerance. (See Fig. 4-78)

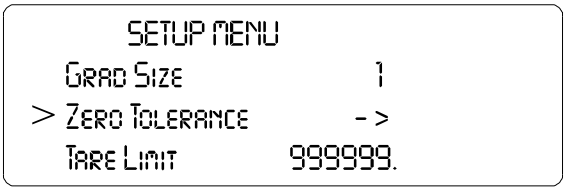


FIG. 4-78 SETUP MENU/ZERO TOLERANCE

Step 2. Press the Enter button. The Zero Tolerance Menu appears with the cursor in front of Zero Tolerance. (See Fig. 4-79)

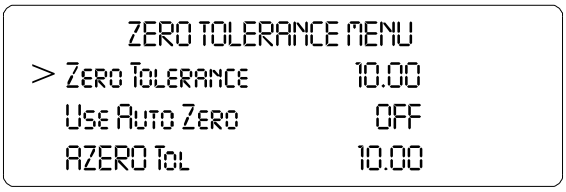


FIG. 4-79 ZERO TOLERANCE MENU/ZERO TOLERANCE

Step 3. Press the Clear button to clear the current value.
Step 4. Used the alphanumeric key pad to enter the new Zero Tolerance value.
Step 5. Press the Enter button to set the entry.

NOTE: Zero Tolerance should be set if you are going to use the Discharge Function. Setting the zero tolerance sets the parameter that indicates when a vessel is empty after discharging a fill.

Step 6. Press the down arrow button until the cursor is in front of Use Auto Zero. (See Fig. 4-80)

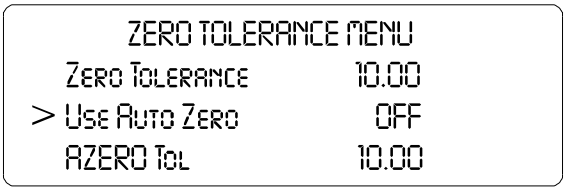


FIG. 4-80 ZERO TOLERANCE MENU/USE AUTO ZERO

Step 7. Press the right or left arrow buttons to toggle between OFF or ON.
Step 8. Press the Enter button to set the entry.
Step 9. Press the down arrow button until the cursor is in front of AZERO Tol. (See Fig. 4-81)

FIG. 4-81 ZERO TOLERANCE MENU/AUTO ZERO TOLERANCE

Step 10. Press the Clear button to clear the current value.
Step 11. Use the alphanumeric key pad to enter the new Auto Zero Tolerance value.
Step 12. Press the Enter button to set the entry.
Step 13. Press the down arrow button until the cursor is in front of Auto Zero Time. (See Fig. 4-82)

FIG. 4-82 ZERO TOLERANCE MENU/AUTO ZERO TIME

Step 14. Press the Clear button to clear the current value.
Step 15. Use the alphanumeric key pad to enter the new time.
Step 16. Press the Enter button to set the entry.
Step 17. Press the Exit button to return to the SETUP MENU.

Tare Limit Parameter

About the Tare Limit Parameter

The Tare Limit Parameter limits the amount of automatic tare. Tare is the artificial zeroing of the weight hopper so that a new weight can be displayed. Also, the action of adjusting out the know weight of the container from the total indicated weight, so that the indicator reads net weight directly.

PARAMETER:TARE LIMIT
RANGE: .000001-999999
DEFAULT: 999999

Step 1. Press the down arrow until the cursor is in front of Tare Limit. (See Fig. 4-83)

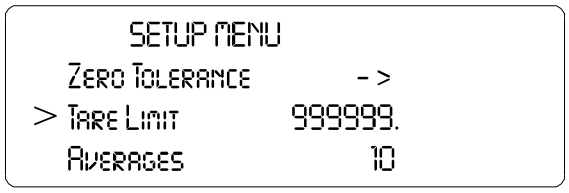


FIG. 4-83 SETUP MENU/TARE LIMIT

Step 2. Press the Clear button to clear the current entry.
Step 3. Use the alphanumeric key pad to enter the new Tare Limit value.
Step 4. Press the Enter button to set the entry.

Averages Parameter

About the Averages Parameter

This setting is to aid in ignoring the effects of material impact. If material is not entering or exiting the scale evenly, weight fluctuations can be seen. Applications requiring very quick weight readings should reduce this setting to it's minimum. If the weight is unstable due to material impacting, increase the averages. This sets the number of weight readings that will be used to compute the displayed weight. The average is a sliding average so that a new average is available for display at every reading.

The Filler/Dispenser does 55 updates per second which translates to an update approximately every 20 milliseconds. If you average enough weight readings the weight loss or gain remains smooth. If you average the weight too much you can cause over filling. Here is an example of 5 averages reading 5 Engineering Units (EU):

20ms	20ms	20ms	20ms	20ms
0	0	0	0	5
0	0	0	5	5
0	0	5	5	5
0	5	5	5	5
5	5	5	5	5
1	2	3	4	5 = 5 EU in 100ms

TABLE 4-1: 5 AVERAGES READING 5 EU

PARAMETER:AVERAGES
RANGE: 1-250
DEFAULT: 1

Step 1. Press the Down arrow until the cursor is in front of Averages. (See Fig. 4-84)

FIG. 4-84 SETUP MENU/AVERAGES

Step 2. Press the right or left arrow buttons to increase or decrease the number of averages.
Step 3. Press the Enter button to set the entry.

Scale Capacity Parameter

About the Scale Capacity Parameter

If this value is exceeded by 5% a HI indication appears on the front display. Communications to and from optional devices are not effected. This value is the nominal operating capacity of the scale. (It is recommended that you use the default parameter)

PARAMETER:SCALE CAP
RANGE: .000001-999999
DEFAULT: 999999

Step 1. Press the Down arrow button until the cursor is in front of Scale Cap. (See Fig. 4-85)

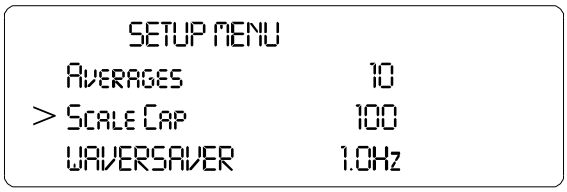


FIG. 4-85 SETUP MENU/SCALE CAPACITY

Step 2. Press the Clear button to clear the current entry.
Step 3. Use the alphanumeric key pad to enter the new Scale Capacity value.
Step 4. Press the Enter button to set the entry.

The WAVERSAVER® Parameter

About the WAVERSAVER Parameter

Typically, mechanical noise (from other machinery in a plant environment) is present in forces larger than the weight forces trying to be detected. The Filler/Dispenser is fitted with WAVERSAVER® technology which eliminates the

effects of vibratory forces present in all industrial weight control and measurement applications. By eliminating the factor of vibratory forces the Filler/Dispenser is capable of identifying the actual weight data. WAVERSAVER® enables the Filler/Dispenser to distinguish between actual weight data and mechanical noise, both of which are typically transferred to the Filler/Dispenser by the load cell signal. WAVERSAVER® can be configured to ignore noise with frequencies as low as 0.25 Hz. One of four higher additional cut off frequencies may be selected to provide a faster instrument response time. The function is user selectable and can be turned off.

PARAMETER:WAVERSAVER®
RANGE: .25 HZ, .50 HZ, 1.0 HZ, 3.50 HZ, 7.50 HZ, OFF
DEFAULT: 1.00 HZ

Step 1. Press the Down arrow button until the cursor is in front of WAVERSAVER®. (See Fig. 4-86)

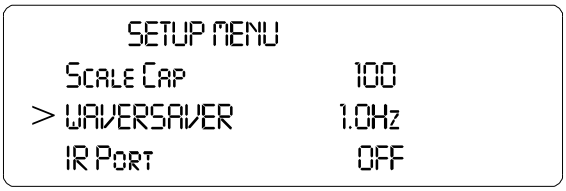


FIG. 4-86 SETUP MENU/WAVERSAVER

Step 2. Press the right or left arrow buttons to select the setting or turn WAVERSAVER off.
Step 3. Press the Enter button to set the entry.

Set Clock Parameter

About Setting the Clock

You set the Hour, Minutes, Month, Day and Year parameters here. The settings are important when printing out the fill/dispense data. These settings are the time stamps for the alarms and fills/dispenses. The Timezone setting is used to date the e-mails that are sent from the instrument in Greenwich Mean Time (GMT).

PARAMETER:HOURS
RANGE: hh (01-24)
DEFAULT: NONE

PARAMETER:MINUTES
RANGE: mm (01-60)
DEFAULT: NONE

PARAMETER:MONTH
RANGE: Jan. thru Dec.
DEFAULT: NONE

PARAMETER:DAY
RANGE: dd (01-31)
DEFAULT: NONE

PARAMETER:YEAR
RANGE: yyyy (2001, 2002, 2003)
DEFAULT: NONE

PARAMETER:TIMEZONE
RANGE: -12 TO +12
DEFAULT: -8

Step 1. Press the Down arrow button until the cursor is in front of Set Clock. (See Fig. 4-87)

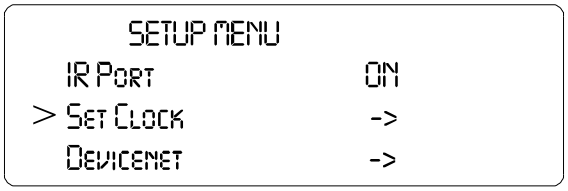


FIG. 4-87 SETUP MENU/SET CLOCK

Step 2. Press the Enter button. The Clock Setup Menu appears with the cursor in front of Set Hours. (See Fig. 4-88)

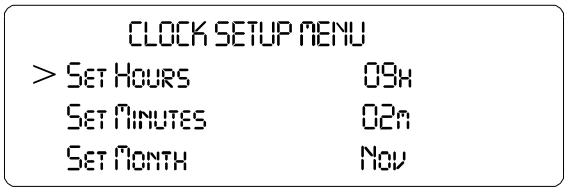


FIG. 4-88 CLOCK SETUP MENU/SET HOURS

Step 3. Press the right or left arrow buttons to change the Hours setting.
Step 4. Press the Enter button to set the entry.
Step 5. Press the Down arrow button until the cursor is in front of Set Minutes.
Step 6. Press the right or left arrow buttons to change the Minutes setting.
Step 7. Press the Enter button to set the entry.
Step 8. Press the Down arrow button until the cursor is in front of Set Month. (See Fig. 4-89)

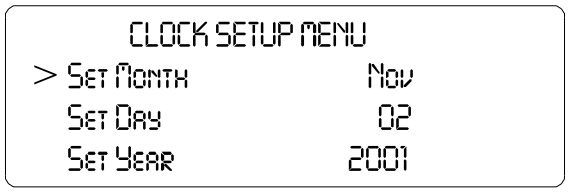


FIG. 4-89 CLOCK SETUP MENU/SET MONTH

Step 9. Press the right or left arrow buttons to change the Month setting.
Step 10. Press the Enter button to set the entry.
Step 11. Press the Down arrow button until the cursor is in front of Set Day.
Step 12. Press the right or left arrow buttons to change the Day setting.
Step 13. Press the Enter button to set the entry.
Step 14. Press the Down arrow button until the cursor is in front of Set Year.
Step 15. Press the right or left arrow buttons to change the Year setting.
Step 16. Press the Enter button to set the entry.
Step 17. Press the Down arrow button until the cursor is in front of Timezone. (See Fig.4-90)

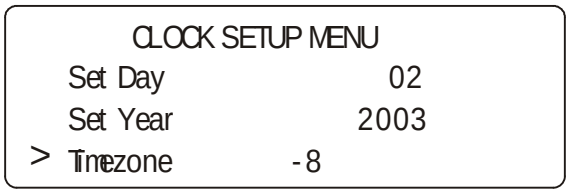


FIG. 4-90 CLOCK SETUP MENU/SET GMT

About Timezones (Greenwich Mean Time)

There are 25 integer World Time Zones from -12 through 0 (GMT) to +12. Each one is 15° of longitude as measured East and West from the Prime Meridian of the World which is at Greenwich, England. Some countries have adopted non-standard time zones, usually a 30 minute offset.

Each Time Zone is measured relative to Greenwich, England. Civilian designations (which are used for all HI 3000 Series Instruments) are typically three letter abbreviations (e.g. EST) for most time zones. Below is a list of the abbreviated time zones with the GMT time adjustment. You will see the time zone ranges in the e-mail header. Use Table 4-2 to determine your time zone and to set the Timezone for the HI 3010 Filler/Dispenser/IBC.

GMT	Civilian Time Zones	Cities
GMT	GMT: Greenwich Mean UT: Universal UTC: Universal Co-ordinated WET: Western Europe	London, England Dublin, Ireland Edinburgh, Scotland Reykjavik, Iceland Casablanca, Morocco
EAST OF GREENWICH		
+1	CET: Central Europe	Paris, France Berlin, Germany Amsterdam, Holland Brussels, Belgium Vienna, Austria Madrid, Spain Rome, Italy Bern, Switzerland Oslo, Norway
+2	EET: Eastern Europe	Athens, Greece Helsinki, Finland Istanbul, Turkey Jerusalem, Israel Harare, Zimbabwe
+3	BT: Baghdad	Kuwait Nairobi, Kenya Riyadh, Saudi Arabia Moscow. Russia
+3:30		Tehran, Iran
+4		Abu Dhabi, UAE Muscat Tblisi Volgograd Kabul
+4:30		Afghanistan
+5		
+5:30		India
+6		
+6:30		Cocos Islands
+7		
+8	CCT: China Coast	Shanghai, China Hong Kong, China Beijing, China
+9	JST: Japan Standard	Tokyo, Japan Osaka, Japan Taipei, Taiwan
+9:30	Australian Central Standard	Darwin, Australia Adelaide, Australia
+10	GST: Guam Standard	
+10:30		Lord Howe Island
+11		
+11:30		Norfolk Island

TABLE 4-2: GREENWICH TIME ZONES (GMT)

GMT	Civilian Time Zones	Cities
+12	IDLE: International Date Line East NZST: New Zealand Standard	Wellington, NZ Fiji Marshall Islands
+13		Rawaki Island
+14		Line Islands
WEST OF GREENWICH		
-1	WAT: West Africa	Azores Cape Verde Islands
-2	AT: Azores	
-3		Brasilia, Brazil Buenos Aires, Argentina Georgetown, Guyana
-3:30		Newfoundland
-4	AST: Atlantic Standard	Caracas, Venezuela La Paz
-5	EST: Eastern Standard	Bogota, Colombia Lima, Peru New York, NY, USA
-6	CST: Central Standard	Chicago, Illinois, USA Mexico City, Mexico Saskatchewan, Canada
-7	MST: Mountain Standard	Phoenix, Arizona Denver, Colorado
-8	Pacific Standard	Seattle, Washington Portland, Oregon San Francisco, CA
-9	YST: Yukon Standard	
-10	AHST: Alaska-Hawaii Standard CAT: Central Alaska HST: Hawaii Standard	Anchorage, Alaska Honolulu, Hawaii
-11	NT: Nome	Nome, Alaska
-12	IDLW: International Date Line West	

TABLE 4-2: GREENWICH TIME ZONES (GMT)

Step 18. Check Table 4-2 for the time zone you are in.
Step 19. Press the right or left arrow until the correct time zone appears. For example Pacific Standard Time is -8.
Step 20. Press the Enter button to set the entry.
Step 21. Press the Exit button to return to the SETUP MENU.

DeviceNet Parameters

About the DeviceNet Parameters

DeviceNet is a low-level network designed to connect the Filler/Dispenser to higher-level controllers such as PCs, PLCs or embedded controllers.The DeviceNet Network is an open, global industry-standard communication network designed to provide an interface through a single cable from a programmable controller or PC directly to all HI 3000 Series products as well as smart devices such as sensors, push buttons, motor starters, simple operator interfaces, drives and other weight modules. With DeviceNet the user can monitor or control multiple applications from one display and allows 3rd party I/O to be easily added to any system. You no longer have to hard-wire each device to an I/O module or I/O block. The network also provides access to the intelligence present in the instruments for superior diagnostics and troubleshooting to help increase system up time. The DeviceNet network lets you monitor your plant-floor devices from a central location and reconfigure them as your needs change or service them as required. You can, for example, configure the Filler/Dispenser modules for different applications.

PARAMETER:DEVICENET BAUD RATE
RANGE: 125K, 250K, 500K
DEFAULT: 125K

PARAMETER:DEVICENET NODE ADDRESS
RANGE: 0-64
DEFAULT: 0

Step 1. Press the Down arrow until the cursor is in front of DeviceNet. (See Fig. 4-91)

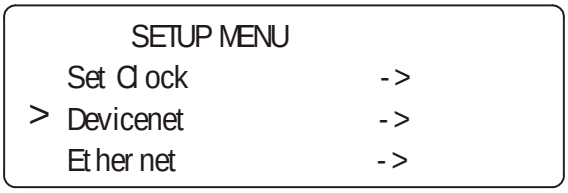


FIG. 4-91 SETUP MENU/DEVICENET

Step 2. Press the Enter button. The DeviceNet Menu appears with cursor in front of Baud Rate. (See Fig. 4-92)

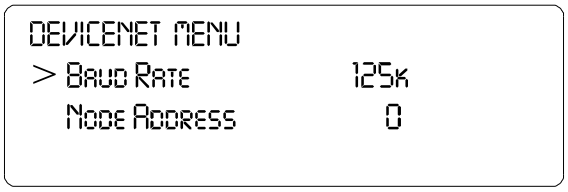


FIG. 4-92 DEVICENET MENU/BAUD RATE

Step 3. Press the right or left arrow buttons to select the Baud Rate you want.

NOTE: Check with your Network Administrator for the Baud Rate if you don't know the correct Baud Rate.

Step 4. Press the Enter button to set the entry.
Step 5. Press the Down arrow until the cursor is in front of Node Address. (See Fig. 4-93)

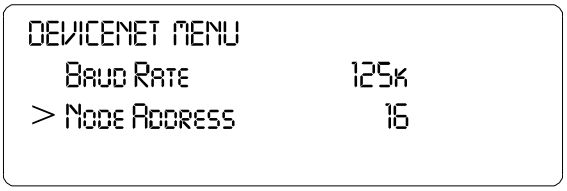


FIG. 4-93 DEVICENET MENU/NODE ADDRESS

Step 6. Press the right or left arrow buttons to select the Node Address.
Step 7. Press the Enter button to set the entry.
Step 8. Press the Exit button to return to the SETUP MENU.

Ethernet Parameters

About the Ethernet Parameters

All Filler/Dispensers are designed with a selectable 10/100 base T Ethernet connection which links your PC to an embedded server in the instrument. You can connect to an instrument via the Internet, Intranet, Extranet, or VPN (Virtual Private Network). Your computer must have an ethernet card and cable with an RJ45 connector to connect to the instrument. Once connected you can transfer data, monitor, map and configure any of the instruments from your web browser from any location in your plant or enterprise. Help Dialogs are also available to assist when performing setup or troubleshooting of an instrument. In addition the browser connects you to the Hardy Web Site which connects the user to a full range of customer service and support. File downloads from your control room are a snap. No more hauling devices to download files to an instrument. Should you want to download a file or monitor the instrument from your laptop at the site, simply connect a short cable from the lap top to the Ethernet connect at the rear panel of the instrument to transfer files, monitor or configure the instrument. No matter where you are, if you are connected to our instrument you can configure and troubleshoot the HI 3010 Filler/Dispenser.

About IP Addresses

An IP address consists of 32 bits. It is composed of two parts:

- The Network Number
- The Host Number

By convention, the address is expressed as four decimal numbers separated by periods, such as "200.1.2.3" representing the decimal value of each of the four bytes. Valid addresses thus range from 0.0.0.0 to 255.255.255.255, a total of about 4.3 billion addresses.

It is recommended that you leave the Mask, Gate and DNS settings alone. Contact your Network Administrator if you need to set these parameters.

PARAMETER:ETHERNET
RANGE: 0.0.0.0 - 255.255.255.255
DEFAULT: 192.168.110.1

Step 1. Press the Down arrow button until the cursor is in front of Ethernet. (See Fig. 4-94)

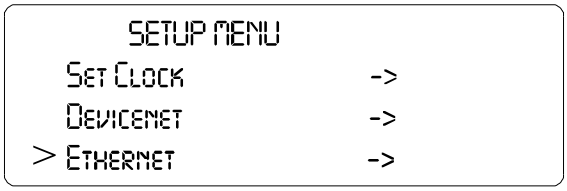


FIG. 4-94 SETUP MENU/ETHERNET

Step 2. Press the Enter button. The Ethernet Menu appears with the cursor in front of the IP Address. (See Fig. 4-95)

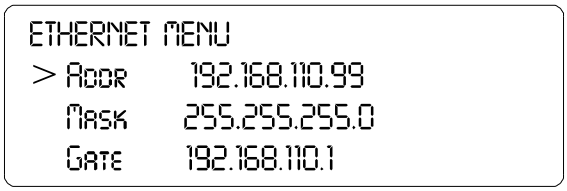


FIG. 4-95 ETHERNET MENU/IP ADDRESS WITH DEFAULT IP ADDRESS

Step 3. Press the Clear button to clear the address.

NOTE: Figure 4-96 has the Default IP address. You must change this address when starting the instrument for the first time.

Step 4. Use the alphanumeric key pad to enter the new address. Remember there must be a period between each port of the address. (e.g. 186.245.263.12)
Step 5. This is the only parameter you need to change. If you need to change the other parameters, contact your Network Administrator for assistance.
Step 6. Press the Enter button to set the entry.
Step 7. Press the Exit button to return to the SETUP MENU.

Step 8. Press the Exit button to return to the Standby Display.

This Completes the Configuration of the Instrument from the Front Panel

Configuring the Filler/Dispenser from the Web Browser

The Filler/Dispenser allows the user to configure the instrument from their Web Browser. It does not make any difference which browser you use. The only requirement is an Ethernet Card, RJ45 connectors on each end of an Ethernet Cable which is connected between to the Ethernet card in your computer and to the RJ45 connection at the rear panel of the Filler/Dispenser. See the HI 3000 Series Operation and Installation Manual, Section Cabling/Installation for installation and setup instructions.

Step 1. Open your Web Browser.
Step 2. Type in the Instruments IP address in the Address field of your browser. For example: “http://159.236.456.25” (See Fig. 4-96) Do not enter the quotation marks.
Step 3. Once the IP address is entered, press Enter on your computer keyboard. The System Web page appears and you are ready to use the instrument via the Ethernet. (See Fig. 4-97)

FIG. 4-96 ENTER IP ADDRESS IN BROWSER ADDRESS FIELD

FIG. 4-97 SYSTEM WEB PAGE

Step 4. Click on Configuration. (See Fig. 4-97) The Configuration Web Page appears. (See Fig. 4-98)

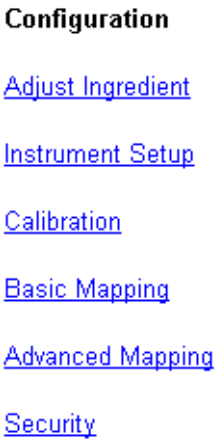


FIG. 4-98 CONFIGURATION WEB PAGE

Configuring Ingredients from the Browser

About Configuring Ingredients

You will notice that the Instrument # is displayed on the Web page. You can configure from 1 - 12 Ingredients from the Browser. Each ingredient can be given an Ingredient Name, Set Tolerance (Discrete or Percent), Target Weight, and Pre-act. You can also configure the Gate Time, Jog On Time and several other parameters. All these settings insure that each ingredient is exactly configured to deliver the exact amount of material for your filling process. The parameter ranges are the same when setting the instrument from the Front Panel.

Step 1. Click on Adjust Ingredient. The Configuration - Adjust Ingredient Page appears. (See Fig. 4-99)

FIG. 4-99 CONFIGURATION - ADJUST INGREDIENT WEB PAGE

Step 2. Click on the Ingredient Number pull down menu. (See Fig. 4-100)

Step 3. Move the cursor over the Ingredient number you want to adjust. When the cursor hovers above an ingredient the ingredient is highlighted.

Step 4. With the cursor over the Ingredient number, click on the selection.

Step 5. Click on the Edit Ingredient Button. The second page of the Adjust Ingredient web pages appears. (See Fig. 4-101)

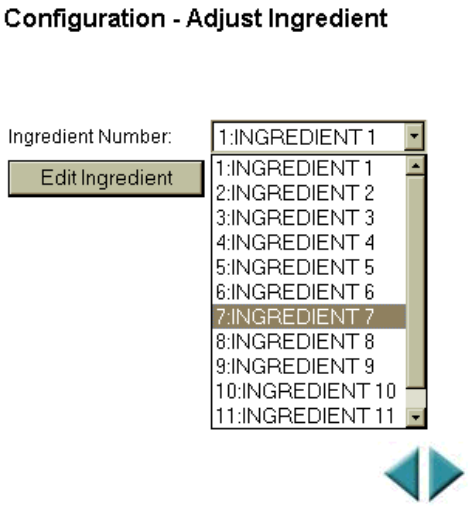


FIG. 4-100 EDIT INGREDIENT PULL DOWN MENU

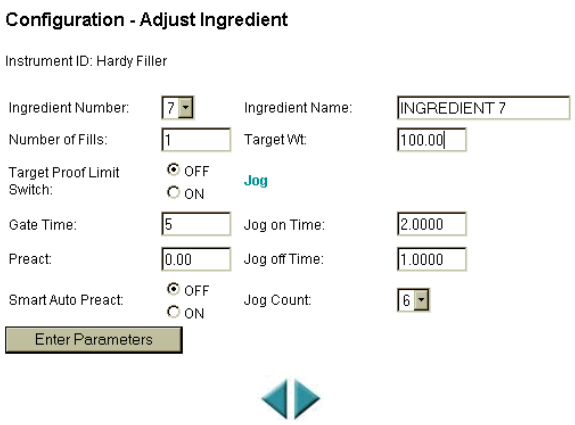


FIG. 4-101 CONFIGURATION - ADJUST INGREDIENT

Step 6. Lets stop a moment and look at this page (See Fig. 4-101). You see the Instrument ID in the upper left hand corner of the graphic. The “Hardy Filler” tells us that the instrument is a filler. If it was a Dispenser it would say “Hardy Dispenser” or if it was an IBC Dispenser it would say “Hardy IBC Dispenser”. The Browser gets this information from each instrument. You also see two arrows towards the bottom of the page. These are navigation arrows. To go forward click on the right arrow. To go back, click on the left arrow.

Step 7. You also see Ingredient Number: 7 which we selected in the previous web page. You can continue with this ingredient number or you can change to another ingredient by clicking on the pull down menu and selecting another ingredient number.

Changing the Ingredient Name

Click in the Ingredient Name: field. Click and hold the left button down while moving the cursor over the Ingredient name so that the Ingredient name is completely highlighted. (See Fig. 4-102)

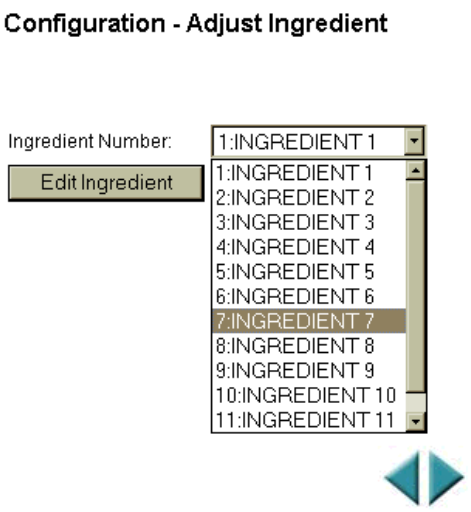


FIG. 4-102 CONFIGURATION - PULL DOWN MENU

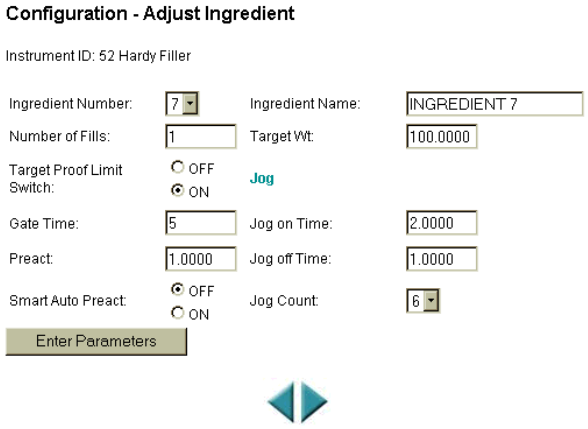


FIG. 4-103 CONFIGURATION - ADJUST INGREDIENT

Step 8. You also see Ingredient Number: 7 which you selected in the previous web page. (See Fig. 4-103) You can continue with this ingredient number or you can change it by opening the pull down menu again on this page and selecting another Ingredient number.

Changing the Ingredient Name

Click in the Ingredient Name: field. Click and hold the left button down while moving the cursor over the Ingredient name so that the Ingredient name is completely highlighted. (See Fig. 4-104)

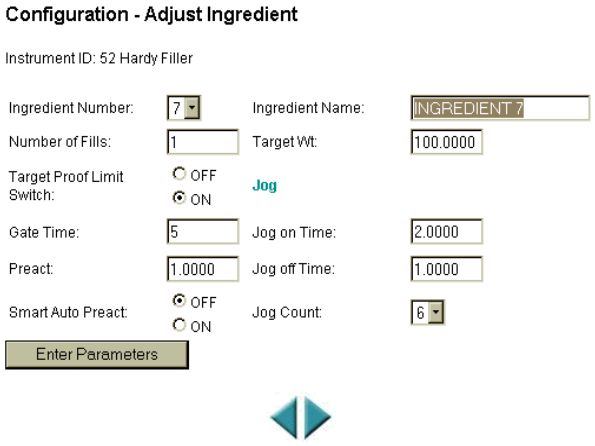


FIG. 4-104 CONFIGURATION/INGREDIENT NAME CHANGE

Step 9. Type in the new name. In our example we typed “Flour”. (See Fig. 4-105)

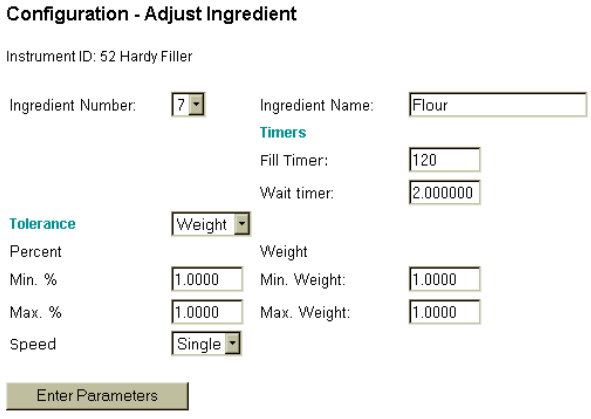


FIG. 4-105 CONFIGURATION/INGREDIENT NAME - FLOUR

Step 10. Click on the Number of Fills. Double click in the field so that the value is completely highlighted.

Step 11. Type in the number of fills you want for this ingredient.

Step 12. Click in the Target Wt. field. Click and hold the left button down while moving the cursor over the Target weight value so that the Target weight is completely highlighted.

Step 13. Type in the Target Weight you want for this ingredient.
Step 14. To turn On the Target Proof Limit Switch, click in the “ON” radio button or to turn off the Target Proof Limit Switch Click, click in the “Off” radio button.
Step 15. If you turned the Target Proof Switch ON you need to set the Gate Time.
Step 16. Double click in the Gate Time field to highlight the value.
Step 17. Type in the new Gate Time parameter. The Gate Time parameter is the time it takes for a proof switch to detect that a Gate Opened or Closed. If the time to open or close exceeds the Gate Time setting, a gate not open or gate not closed alarm appears in the front panel of the instrument and on the Monitor Page of the Web Browser.
Step 18. Double click in the Preact field to highlight the current value.
Step 19. Type in the new Preact Value.
Step 20. To turn on the Smart Auto Preact function, click in the ON radio button.
Step 21. To set the Jog on Time:

- Double click in the Jog on Time field.
- Type in the new time parameter.

Step 22. To set the Jog off time:

- Double click in the Jog off Time field.
- Type in the new time parameter.

Step 23. To set the Jog count

- Click on the Jog Count pull down menu. (See Fig. 4-106)

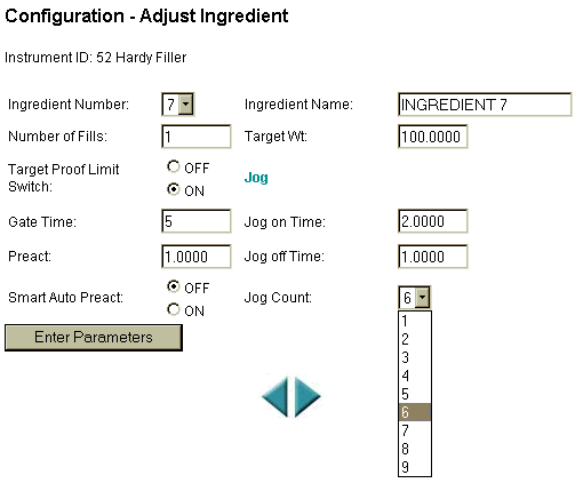


FIG. 4-106 SETTING JOG COUNT

- Click on the jog count you want for your process.

Step 24. Now that you have set all the parameters on this web page, click on the Enter Parameters button to set the entries.

Step 25. Click on the right arrow at the bottom of the Web page to go to the next page of the Adjust Ingredient setup parameters. (See Fig. 4-107)

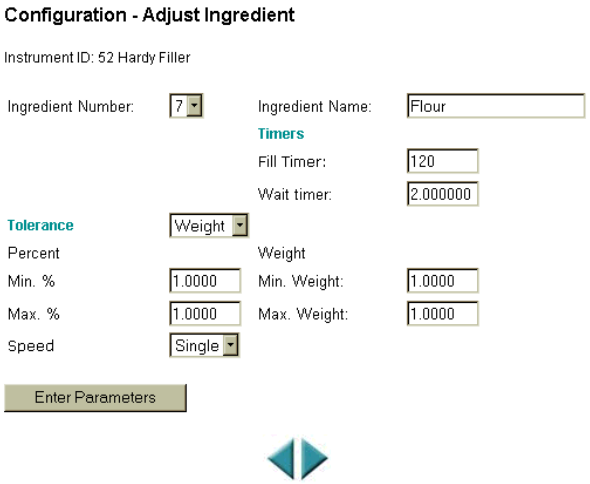


FIG. 4-107 ADJUST INGREDIENT 7 PAGE 2

Step 26. Here again the Ingredient Number and the new ingredient name Four are automatically selected.
Step 27. Double click in the Fill Timer field. Enter the new Fill Time parameter.
Step 28. Double click in the Wait Timer field. Enter the new Wait time parameter.
Step 29. Click on the Target Weight “Tolerance” pull down menu to select Weight or Percentage for the Tolerance setting. (See Fig. 4-108) Click on Weight or Percentage to select the parameter.

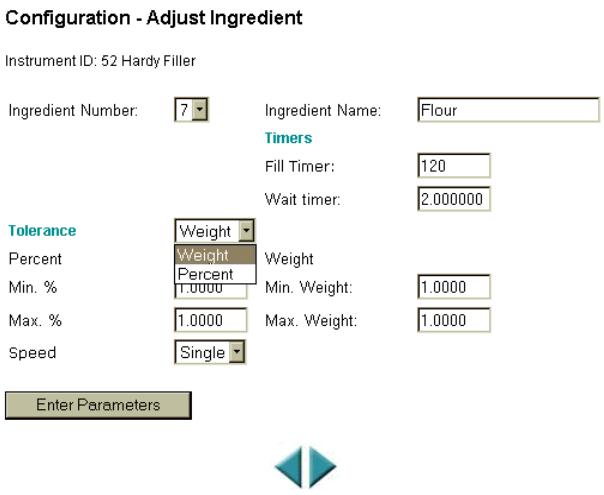


FIG. 4-108 TARGET WEIGHT TOLERANCE PULL DOWN MENU

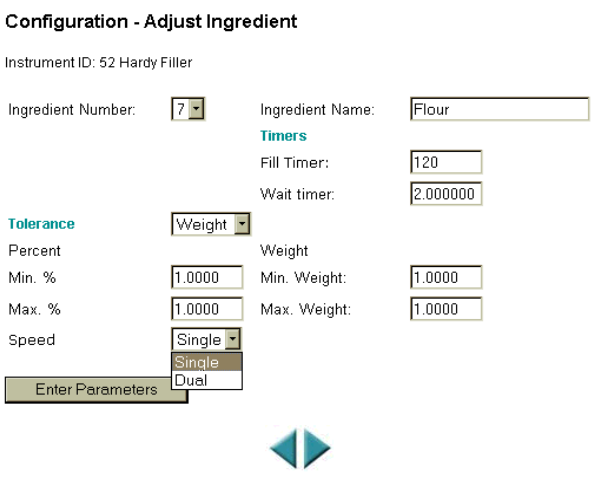


FIG. 4-109 SPEED SELECTION

Step 30. If you choose weight:

- Double click in the Min. Weight field and enter the new Minimum target weight tolerance.
- Double click in the Max. Weight field and enter the new Maximum target weight tolerance.

Step 31. If you choose percentage:

- Double click in the Min. percent (%) field and enter the new Minimum target weight tolerance.
- Double click in the Max. percent (%) field and enter the new Maximum target weight tolerance.

Step 32. Click on the Speed pull down menu to select Single or Dual Speed. (See Fig. 4-109)

Step 33. Click on the Enter Parameters button to set the entries.

Step 34. If you have more than one ingredient you want to configure, go back to the previous page and select a new ingredient and repeat the Ingredient Adjustment procedures. Continue this process until all the ingredients you want to use in this fill have been configured.

The Browser Ingredient Setup is Complete

Instrument Setup from the Browser

Step 1. From the Configuration page click on Instrument Setup. (See Fig. 4-110) The Instrument Setup page appears. (See Fig. 4-111)

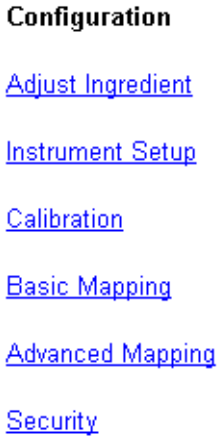


FIG. 4-110 CONFIGURATION PAGE/SELECT INSTRUMENT SETUP

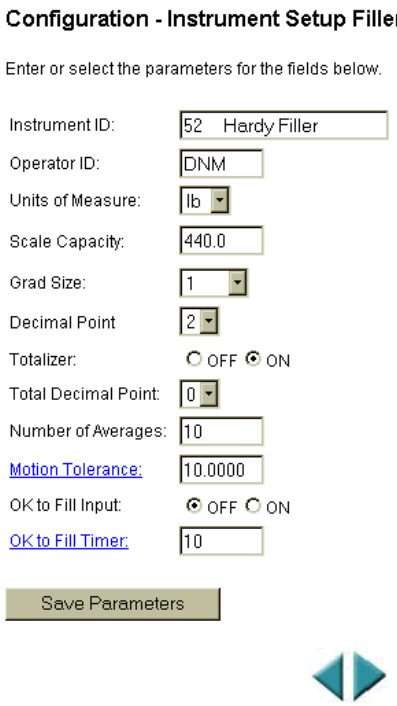


FIG. 4-111 INSTRUMENT SETUP FILLER

Step 2. To change the Instrument ID, double click in the Instrument ID field and enter the new ID.

Step 3. To change the Operator ID, double click in the Operator ID field and enter the new ID. Remember you are limited to three characters.

Step 4. To select the Units of Measure, click on the Units of Measure pull down menu. (See Fig. 4-112)

Step 5. Click on the units you want for your process.

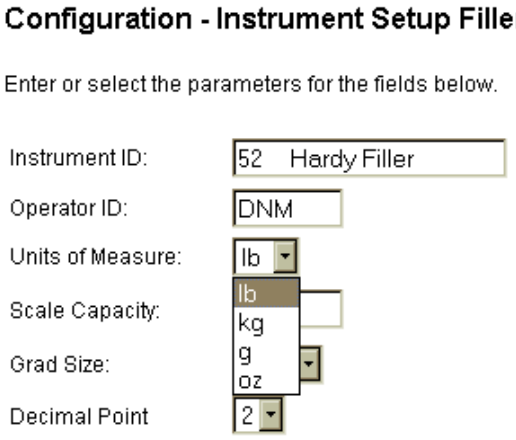


FIG. 4-112 UNITS OF MEASURE

Step 6. To set the Scale Capacity, double click in the Scale Capacity field and enter the scale capacity of the scale you are using in your process.

Step 7. To set the Grad Size:

- Click on the Grad Size pull down menu. (See Fig. 4-113)
- Click on the Grad Size you want for your process.

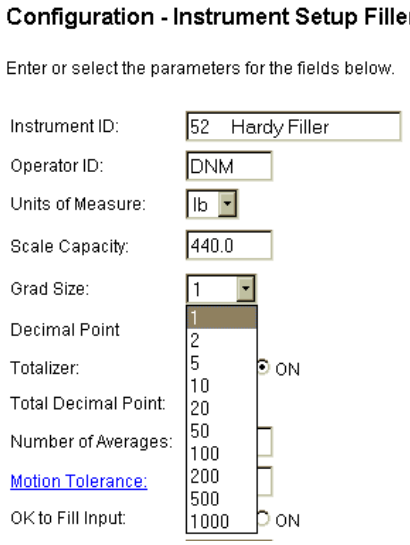


FIG. 4-113 INSTRUMENT SETUP/SELECTING GRAD SIZE

Step 8. To set the Decimal Point position:

- Click on the Decimal Point pull down menu. (See Fig. 4-114)
- Click on the Decimal Point position you want for your process.

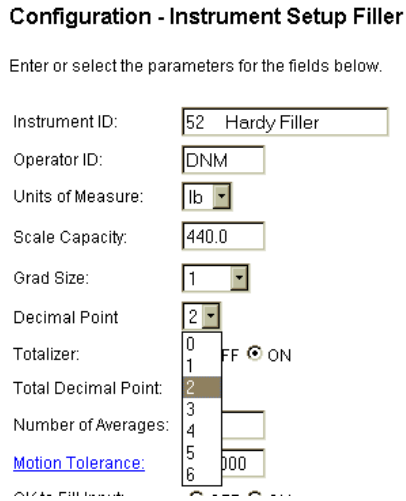


FIG. 4-114 INSTRUMENT SETUP/SELECTING THE DECIMAL POINT POSITION

Step 9. To turn ON the Totalizer click in the On radio button. To turn OFF the Totalizer click in the OFF radio button.

Step 10. To set the Total Decimal Point Position:

- Click on the Total Decimal Point pull down menu. (See Fig. 4-115)
- Click on the Total Decimal Point position you want for your process.

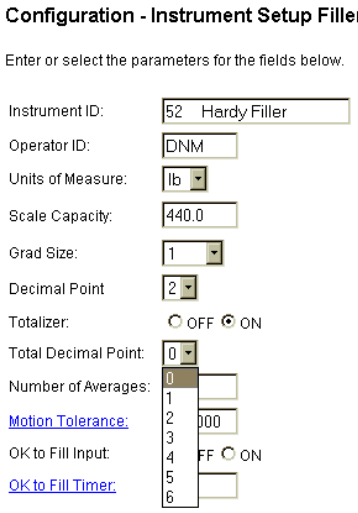


FIG. 4-115 INSTRUMENT SETUP/SETTING TOTAL DECIMAL POINT POSITION

Step 11. To set the Motion Tolerance, double click in the Motion Tolerance field and enter the new Motion Tolerance parameter.

Step 12. To turn the OK to Fill Input ON, click in the OK to Fill Input ON radio button. To turn the OK to Fill Input OFF, click in the OK to Fill Input OFF radio button.

Step 13. To adjust the OK to Fill Timer, double click in the OK to Fill Timer field and enter the new time.

Step 14. Click on the Set Parameters button to set the entries.

Step 15. Click on the right arrow at the bottom of the page to go to Instrument Setup page 2. (See Fig. 4-116)

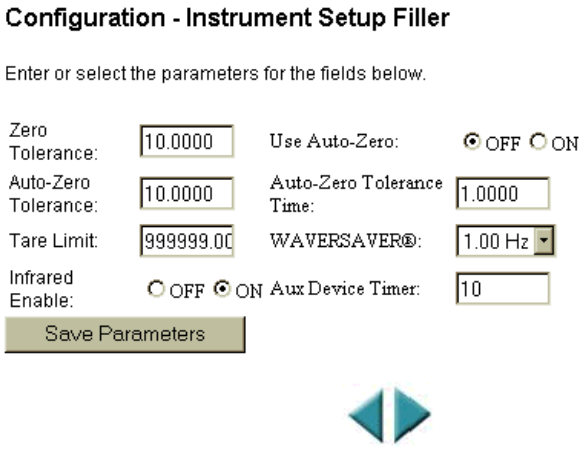


FIG. 4-116 INSTRUMENT SETUP/PAGE 2

Step 16. To set the Zero Tolerance, double click in the Zero Tolerance field and enter a new Zero Tolerance parameter.

Step 17. To turn ON Use Auto-Zero (Tolerance) click in the Use Auto-Zero ON radio button. To turn OFF Use Auto-Zero (Tolerance) click in the Use Auto-Zero OFF radio button.

Step 18. To set the Auto - Zero Tolerance, double click in the Auto - Zero Tolerance field and enter a new Auto - Zero Tolerance parameter.

Step 19. To set the Auto - Zero Time, double click in the Auto - Zero Time field and enter a new Auto - Zero Time parameter.

Step 20. To set the Tare Limit, double click in the Tare Limit field and enter a new Tare Limit parameter.

Step 21. To set WAVERSAVER®:

- Click on the WAVERSAVER pull down menu. (See Fig. 4-117)
- Click on the WAVERSAVER setting you want for your process.

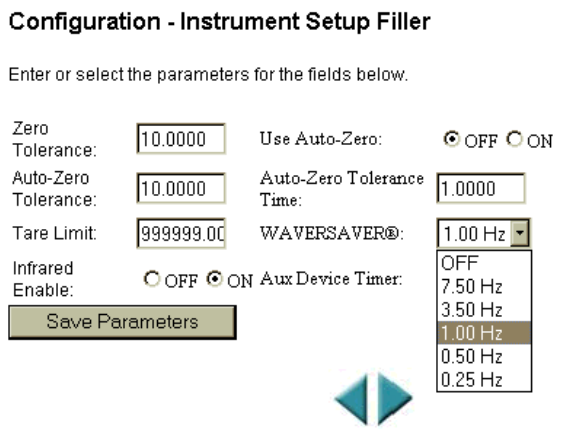


FIG. 4-117 INSTRUMENT SETUP PAGE 2/SETTING WAVERSAVER

Step 22. To set the entries for page 2, click on the Save Parameters button.

Step 23. Click on right arrow at the bottom of the page. The Refill and Discharge Setup page appears. (See Fig. 4-118)

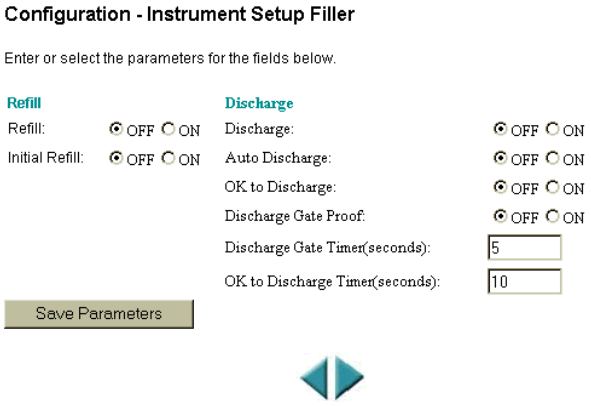


FIG. 4-118 INSTRUMENT SETUP/REFILL AND DISCHARGE PAGE

Refill Parameters

Step 1. To turn ON Refill click in the Refill ON radio button. To turn OFF Refill click in the Refill OFF radio button.

Step 2. To turn ON Initial Refill click in the Initial Refill ON radio button. To turn OFF Initial Refill click in the Initial Refill OFF radio button.

Discharge Parameters

Step 1. To turn ON Discharge click in the Discharge ON radio button. To turn OFF Discharge click in the Discharge OFF radio button.

Step 2. To turn ON Auto Discharge click in the Auto Discharge ON radio button. To turn OFF Auto Discharge click in the Auto Discharge OFF radio button.

Step 3. To turn ON OK to Discharge click in the OK to Discharge ON radio button. To turn OFF OK to Discharge click in the OK to Discharge OFF radio button.

Step 4. To turn ON Discharge Gate Proof Switch, click in the Discharge Gate Proof ON radio button. To turn OFF Discharge Gate Proof Switch, click in the Discharge Gate Proof OFF radio button.

Step 5. To set the Discharge Gate Timer, double click in the Discharge Gate Timer field and enter the new time.

Step 6. To set the OK to Discharge Timer, double click in the OK to Discharge Timer field and enter the new time.

Step 7. To set the Refill and Discharge parameters click on the Save Parameters button.

Step 8. Click on the right arrow at the bottom of the page.

Step 9. The Serial Port Setup page appears. (See Fig. 4-119)

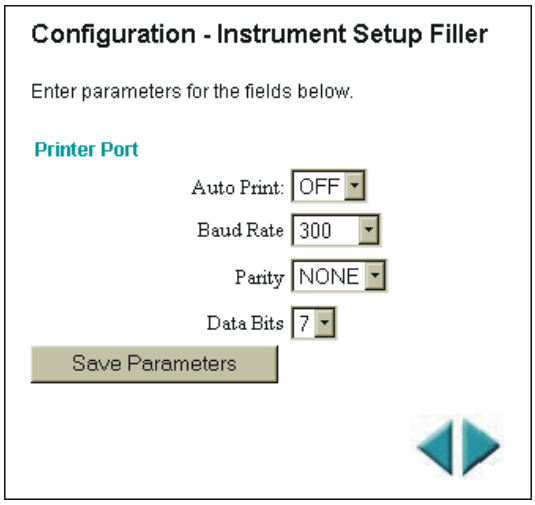


FIG. 4-119 INSTRUMENT SETUP/PRINTER PORT

Serial Port Parameters

Step 1. To select the Serial Port device:

- Click on the Serial port pull down menu. (See Fig. 4-120)
- Click on the Serial Port device you want for your process. For our example we selected the Printer Port.

Step 2. To turn ON Auto Print click on the pull down menu and click on ON. To turn OFF Auto Print click on the pull down menu and click on OFF.

Step 3. To select the Baud Rate:

- Click on the Baud Rate pull down menu. (See Fig. 4-120)
- Click on the Baud Rate you want for your process.

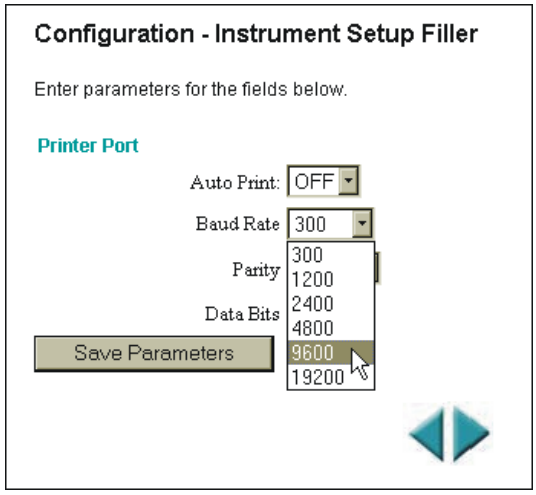


FIG. 4-120 INSTRUMENT SETUP/SERIAL PORT

Step 4. To select the Parity:

- Click on the Parity pull down menu. (See Fig. 4-121)
- Click on the Parity you want for your process.

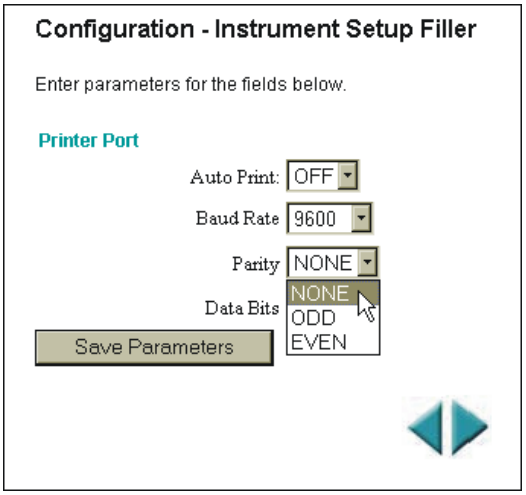


FIG. 4-121 PRINTER PORT SETUP/PARITY

Step 5. To select the Data Bits:

- Click on the Data Bits pull down menu. (See Fig. 4-122)
- Click on the Data Bits you want for your process.

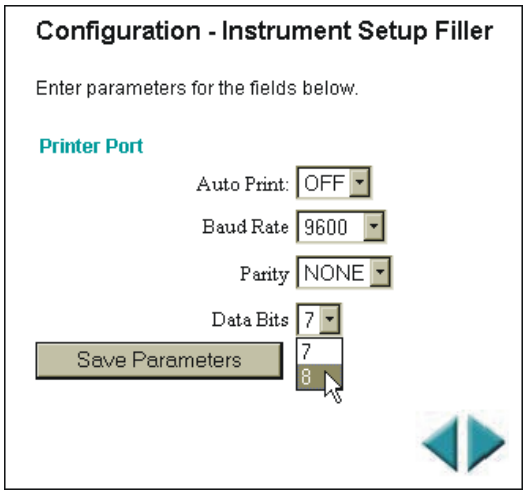


FIG. 4-122 PRINTER PORT SETUP/DATA BITS

Step 6. Click on the Save Parameters button to set the entries.

Step 7. Click on the right button. The Set Date/Clock page appears. (See Fig. 4-123)

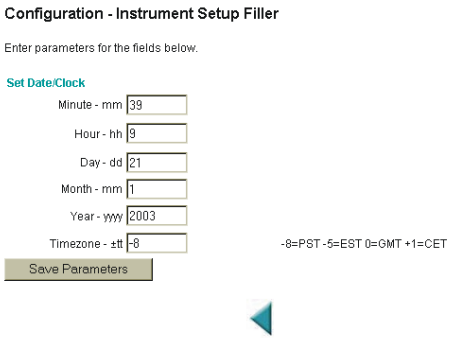


FIG. 4-123 INSTRUMENT SETUP/SET DATE/SET CLOCK/SET TIMEZONE

Set Date/Clock Parameters

Step 1. Double click in the Minute-mm field. Enter the current minutes.

Step 2. Double click in the Hour-hh field. Enter the current minutes.

Step 3. Double click in the Day-dd field. Enter the current day.

Step 4. Double click in the Month-mm field. Enter the current month.
Step 5. Double click in the Year-yyyy field. Enter the Current year.
Step 6. Double click in the Timezone field. Check Table 4-2 Civilian Time Zones, GMT on page 40 for the time zone you are in. Enter the correct Greenwich Mean Time value. Don't forget to enter the positive (+) or negative (-) sign. For our example we used the default time zone which is -8 or PST (Pacific Standard Time).
Step 7. Click on the Save Parameters button to save the settings.

The Browser Instrument Setup is Complete

Options Configuration

Smart Diagnostics (-SD) Card Configuration from the Front Panel

NOTE: For Installation instructions, go to Chapter 3 - Installing the Smart Diagnostics Card.

Step 1. From the Main Menu press the Setup/3 button. The Configuration Menu appears.
Step 2. Press the Down Arrow button until the cursor is in front of Options. (See Fig. 124)

```
CONFIGURATION MENU
   CALIBRATION          ->
>  OPTIONS              ->
   I/O MAPPING          ->
```

FIG. 4-124 CONFIGURATION MENU/SELECTING OPTIONS

Step 3. Press the Enter button. The Options Menu appears. (See Fig. 125)

```
OPTIONS
   Controlnet I/O       ->
   Profibus I/O         ->
>  Smart Diag. Ctrl.    ->
```

FIG. 4-125 OPTIONS/SELECTING SMART DIAGNOSTICS CONTROL

Step 4. Press the down arrow button until the cursor is in front of Smart Diag. Ctrl. (See Fig. 125)
Step 5. Press the Enter button. The Smart Diagnostics Card Menu appears. (See Fig. 126)

```
S.D. CARD MENU
>  Channel 1          OFF
   Channel 2          OFF
   Channel 3          OFF
```

FIG. 4-126 SMART DIAGNOSTICS CARD MENU/ CHANNELS 1,2,3

Step 6. Press the right arrow button to toggle between ON and OFF. In our example we enabled Channel 1. (See Fig. 127)

```
S.D. CARD MENU
>  Channel 1          ON
   Channel 2          OFF
   Channel 3          OFF
```

FIG. 4-127 SMART DIAGNOSTICS/ENABLING CHANNEL 1

Step 7. To see Channel 4, press the down arrow button until Channel 4 appears. (See Fig. 128)

```
S.D. CARD MENU
>  Channel 2          ON
   Channel 3          ON
   Channel 4          ON
```

FIG. 4-128 SMART DIAGNOSTICS CARD MENU/ CHANNEL 2,3,4

Step 8. Continue to enable the channels you want for your process.
Step 9. Press the Enter button to save the entries.
Step 10. Press the Exit button to return to the Main Menu.

Smart Diagnostics Card Configuration from the Web Browser

Step 1. From the Home Page click on Configuration. (See Fig. 129) The Configuration Page appears. (See Fig. 130)
Step 2. Click on Options. (See Fig. 130) The Configuration Options page appears. (See Fig. 131)

FIG. 4-129 HOME PAGE/SELECTING CONFIGURATION

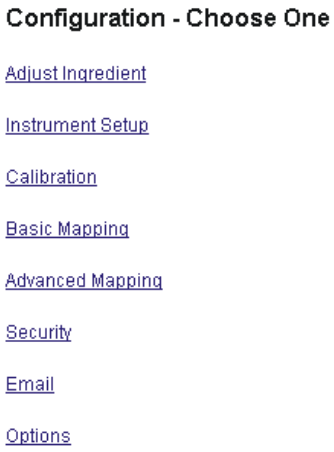


FIG. 4-130 CONFIGURATION PAGE/SELECT OPTIONS

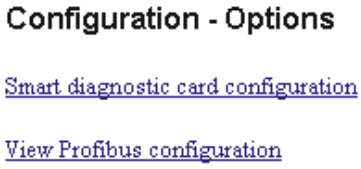


FIG. 4-131 CONFIGURATION OPTIONS/ SELECTING SMART DIAGNOSTICS CARD CONFIGURATION

Step 3. Click on Smart diagnostic card configuration. (See Fig. 64) The Configuration/Smart Diagnostics Card appears. (See Fig. 132)

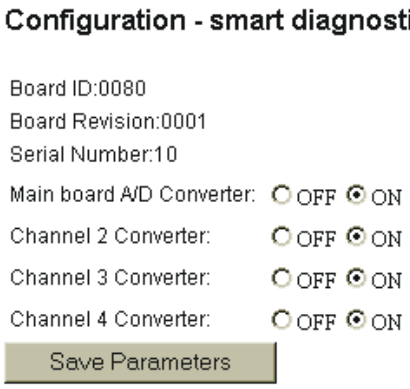


FIG. 4-132 SMART DIAGNOSTIC CARD CONFIGURATION

Step 4. To enable the channels you want to use in your process, click on the radio buttons next to ON. (See Fig. 132) In our illustration we have actuated all 4 channels.

Step 5. To disable the channels click on the radio buttons next to OFF. (See Fig. 132)

Step 6. Click on the Save Parameters button to save the configuration.

NOTE: To use the Smart Diagnostics Option for troubleshooting a Filling/Dispensing/IBC system, go to Chapter 7 - Troubleshooting, Using Smart Diagnostics from the Front Panel.

CHAPTER 5: CALIBRATION

About Chapter 5

Chapter 5 pertains to the calibration procedures for the HI 3010 Filler/Dispenser. Alternatives to any procedures implied or explicitly contained in this chapter are not recommended. In order for the Filler/Dispenser to work properly, it must be calibrated prior to operation. Be sure to follow all the procedures completely to insure that the weights read by the Filler/Dispenser are accurate. It is very important that the user and service personnel be familiar with the procedures contained in this chapter, before installing or operating the HI 3010 Filler/Dispenser.

Getting Started

The HI 3010 Filler/Dispenser can be calibrated two ways. The first is the Hardy C2® Second Generation calibration which requires no test weights. Hardy C2® Calibration is one of the Core Technologies. We will describe the C2 Calibration process in this chapter. The second calibration technique is called the traditional calibration which requires certified test weights. It is important to note that the procedures contained in this section either explicitly stated or implied should be followed to guarantee the performance of the instrument. Alternatives to the procedures listed here are not recommended.

Before you can calibrate the instrument you first need to check to see if the system is ready to be calibrated.

Binding

Step 1. Due a visual check to see if the load cells have been installed so that nothing is binding the load cell or other parts of the weighing system. Make sure that nothing is draped over the scale or vessel such as a hose, electrical cord, tubes or other objects.

CAUTION: BINDING ON A SCALE/VESSEL OR LOAD CELL DOES NOT ALLOW THE LOAD CELL FREE VERTICAL MOVEMENT AND MAY PREVENT THE INSTRUMENT FROM RETURNING TO THE ORIGINAL ZERO REFERENCE POINT.

Step 2. Check to see that the load cell is mounted so that 100% of the load (Vessel with Contents) vertically passes through the load cell. (See Fig. 5-1)

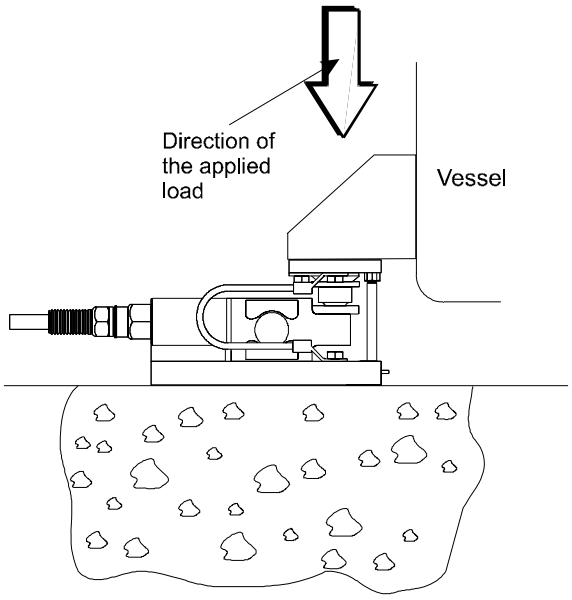


FIG. 5-1 PROPERLY INSTALLED LOAD CELL WITH NO BINDING

Electrical Check Procedures

Step 1. Check to see that there is power to the controller.

a. If there is power to the controller The front panel display should be lit.
b. If the display appears with a value the unit is ready for calibration.

Step 2. Check to see that all communication and power cables are securely fastened to the connectors on the rear panel.

C2 Calibration From the Front Panel

Step 1. Press the Setup/3 button. The Configuration Menu appears. (See Fig. 5-2)
Step 2. Press the down arrow until the cursor is in front of CALIBRATION. (See Fig. 5-2)
Step 3. Press the Enter button. The CALIBRATION Menu appears with the cursor in front of CAL TYPE C2. (See Fig. 5-3)

NOTE: If the cursor is in front of CAL TYPE TRAD, press the left or right arrow buttons until CAL TYPE C2 appears.

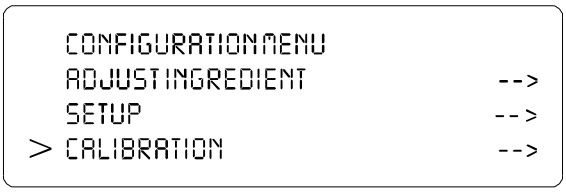


FIG. 5-2 CONFIGURATION MENU/SELECTING SETUP

FIG. 5-3 CALIBRATION MENU/C2 CAL

CAUTION: FOR HARDY ADVANTAGE AND ADVANTAGE LITE C2 LOAD CELLS YOU MUST SELECT 0-3MV/V ONLY. SELECTING OTHER SENSOR TYPES WILL CREATE INCORRECT WEIGHT READINGS.

There are four (4) Sensor Type choices:

- 0-3mV/V - **C2 Load Sensors Only**
- ± 3mV/V - Non C2 Load Sensors
- 0-120mV/V - LVDT Type Load Sensors
- ± 120mV/V - LVDT Type Load Sensors

Step 4. Press the down arrow until the cursor is in front of Sensor Type.

Step 5. If the Sensor Type reads anything other than 0-3mV/V, use the left or right arrow to select 0-3mV/V.

Step 6. Press the down arrow until the cursor is in front of Cal Type. (See Fig. 5-4)

Step 7. If TRAD is visible press the right or left arrow until C2 appears.

FIG. 5-4 CALIBRATION/SELECTING CAL TYPE

Step 8. Press the Enter button. The C2 CAL Sub-menu appears. (See Fig. 5-5)

FIG. 5-5 C2 CALIBRATION SUB-MENU

Step 9. The Load Sensor number is a read only field. It tells you how many load sensors are connected to the instrument.

Step 10. Press the down arrow button to move the cursor in front of the Ref Point. (See Fig. 5-6)

a. The Reference Point is the total live load that is currently on the scale.
b. If you have nothing on the scale the Ref Point is 0. If you have 5 lbs live load on the scale the Ref Point is 5.

NOTE: Normally the scale system is clean and ready to receive product. This step establishes the gross zero reference.

FIG. 5-6 ENTERING THE REFERENCE POINT

Step 11. Press the Clr (Clear) button to clear the entry.

Step 12. Use the alphanumeric key pad to enter the weight that is currently on the scale, typically zero.

Step 13. Press the down arrow button until the cursor is in front of Gravity. (See Fig. 5-7)

About The Gravitation Correction Factor

Objects weigh less (about 0.5%) at the equator then they weigh at each pole because the force of gravity is less at the equator then at the North or South Pole. This is due in part to the effect of the earth's rotation and the shape of the earth at the equator. Therefore objects at the equator are 21 Km further from the Earth's center than objects at the poles. For example if you weigh 100 pounds at the North Pole on a spring scale you weigh 99.65 pounds at the equator. Depending on the latitude of your location you would weigh somewhere in between. For those who need the gravity correction factor you can set it here. The table below shows the gravitation correction factor. In various

cities around the world. Mexico City (1.002102) is the lowest and Oslo (0.998726) and Helsinki (1.001405) are the highest.

Table 1: Gravity Correction Factors

CITY	GRAV. ACCEL	CITY	GRAV. ACCEL
Amsterdam	0.999369	Los Angeles	1.001028
Athens	1.000684	Madrid	1.000461
Auckland NZ	1.000782	Manila	1.000461
Bangkok	1.002392	Mexico City	1.002102
Brussels	0.999503	New York	1.000433
Buenos Aires	1.001004	Oslo	0.998726
Calcutta	1.00191	Ottawa	1.000007
Cape Town	1.00104	Paris	0.999048
Chicago	0.99922	Rio de Janeiro	1.001884
Copenhagen	0.999075	Rome	1.000326
Nicosia	1.00093	San Francisco	1.000702
Jakarta	1.002631	Singapore	0.99877
Frankfurt	0.999579	Sydney	1.00104
Istanbul	1.000406	Taipei	1.001741
Havana	1.001872	Tokyo	1.000886
Helsinki	1.001405	Vancouver BC	0.999653
Kuwait	1.001405	Washington DC	1.000601
Lisbon	1.000615	Wellington NZ	0.999399
London	0.999445	Zurich	0.999821

In general if your location is between the 45th parallel and the equator the gravity correction is greater than 1.0. Because the gravity is less at these attitudes you are adding, for example 1.006 for an error that is .06%. For locations between the 45th parallel and the North or South Pole your correction factor is less than 1.0, for example .9994 for an error that is -.06%.

NOTE: You must perform a C2 Calibration after setting the Gravity Correction factor or the correction factor won't work.

NOTE: If you do not want to set the Gravity Correction Factor go to Step 14.

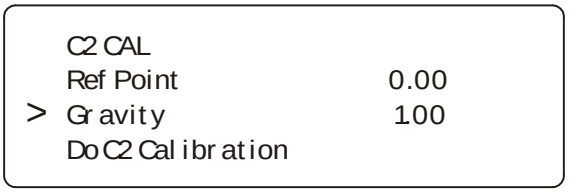


FIG. 5-7 GRAVITY CORRECTION FACTOR

Step 14. Press the Clear button to clear the entry. (See Fig. 5-8)

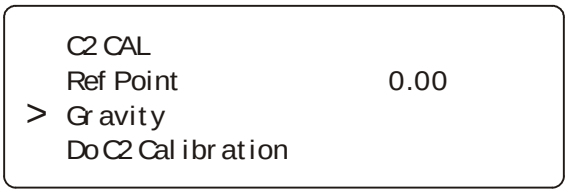


FIG. 5-8 GRAVITY/CLEARING ENTRY

Step 15. From the Gravity Corrector Factors table select the city correction factor closest to your location.

Step 16. Use the keypad to enter the selected value. In our example we entered 1.002102 which is the correction factor for Mexico City. (See Fig. 5-9)

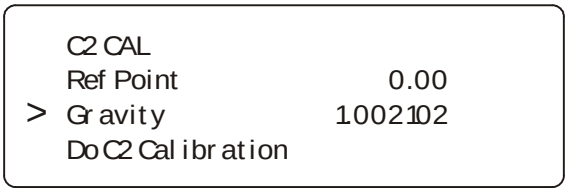


FIG. 5-9 GRAVITY CORRECTION FACTOR/ MEXICO CITY

Step 17. Press the Enter button to save the setting.

Step 18. Press the down arrow button to move the cursor in front of Do C2 Calibration. (See Fig. 5-10)

Step 19. Wait 15 seconds for the scale to settle.

Step 20. Press the Enter button to complete the Calibration.

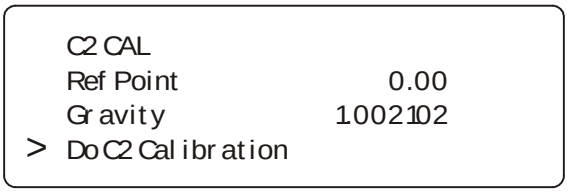


FIG. 5-10 DO C2 CALIBRATION

Step 21. A “function OK” momentarily appears on the screen indicating the calibration was successful

- A message that says “Function Error” means that the calibration was not successful. Check Chapter 7 - Troubleshooting of this manual for corrective action.
- Another message may occur which is: Security Violation. This means that the User does not have the security level required to do a calibration.

Step 22. Press the Exit button until you return to the Standby display.

Step 23. C2 calibration is complete.

C2 Calibration From the Web Page

Step 1. On the Filler/Dispenser Home Page Click on Configuration. (See Fig. 5-11) The Configuration page appears. (See Fig. 5-12)

FIG. 5-11 CONFIGURATION MENU/SELECTING SETUP

FIG. 5-12 CONFIGURATION PAGE

Step 2. Click on Calibration. The Calibration Sub-menu appears. (See Fig. 5-13)

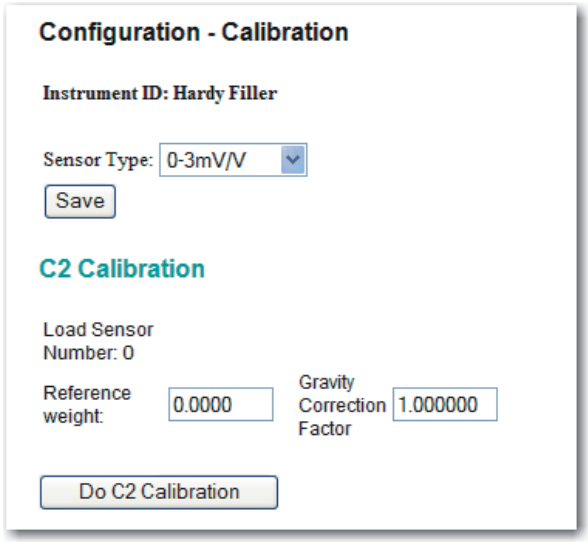


FIG. 5-13 C2 CALIBRATION SUB-MENU

Step 3. The Load Sensor number is a read only field. It tells you how many load sensors are connected to the instrument. If this number does not reflect with the actual number of load sensors go to Chapter 7 - Troubleshooting.

Step 4. To choose the type of sensor for this instrument click on the pull down list next to Sensor Type. (See Fig. 5-14)

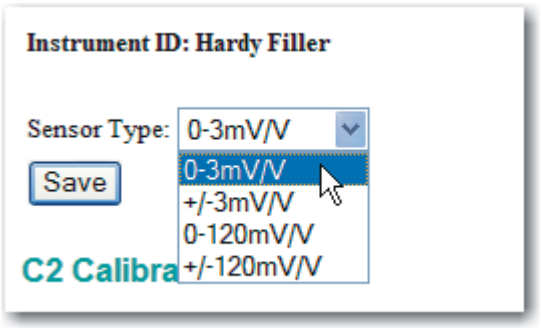


FIG. 5-14 SENSOR TYPE PULL DOWN LIST

Step 5. Click on the Sensor type you are using for this application. In our example we selected 0-3mV/V sensors.
Step 6. Click on the Save button to save the selection.
Step 7. To enter the Reference Weight click in the Reference Weight field. (See Fig. 5-15)

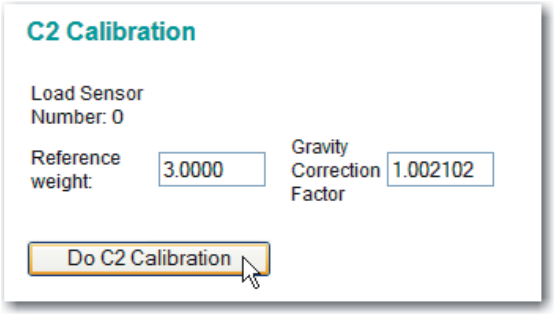


FIG. 5-15 C2 CALIBRATION/ENTERING REFERENCE WEIGHT

NOTE: The Reference Point 3.000 is for demonstration purposes only. The recommended Reference Point should be 0.000.

a. The Reference Point is the total weight that is currently on the scale.
b. If you have nothing on the scale the Ref Point is 0. If you have 5 lbs on the scale the Ref Point is 5.

Step 8. To clear the entry, move the cursor over the current reference weight which highlights the weight value.
Step 9. Use your keyboard to type in the new value. In our example we entered 3.00. (See Fig. 5-15)

NOTE: If you do not want to enter a Gravity Correction Factor go on to Step 14.

Step 10. To enter the Gravity Correction Factor, get the factor value from the Gravity Correction Factors table on pages 58 and 59.
Step 11. Double click in the Gravity Correction Factor field. (See Fig. 5-14)
Step 12. Type in the value. In our example we entered 1.002102 which is the Gravity Correction Factor for Mexico City.
Step 13. Enter the value you selected from the table
Step 14. Click on the Do C2 Calibration button.
Step 15. A page telling you that the C2 Calibration completed OK appears. (See Fig. 5-15)

FIG. 5-16 CAL COMPLETED OK

Step 16. Click on "Back" to return to the Calibration page.
Step 17. Click on "Home" to return to the Filler/Dispenser Home page.
Step 18. C2 calibration is complete.

Traditional Calibration From the Front Panel

About Traditional Calibration

Traditional Calibration is the method of calibration that uses test weights. We recommend that the test weights total 80 to 100% of the scale live load capacity.

Step 1. Press the Setup/3 button. The Configuration Menu appears. (See Fig. 5-16)

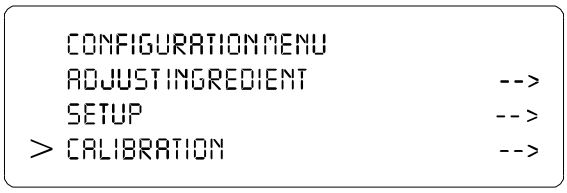


FIG. 5-17 CONFIGURATION MENU/CALIBRATION

Step 2. Press the down arrow until the cursor is in front of CALIBRATION. (See Fig. 5-17)
Step 3. Press the Enter button. The CALIBRATION Menu appears with the C2 Cal Type. (See Fig. 5-18)

NOTE: If the CALIBRATIN MENU appears with Cal Type, TRAD go to Step 5.

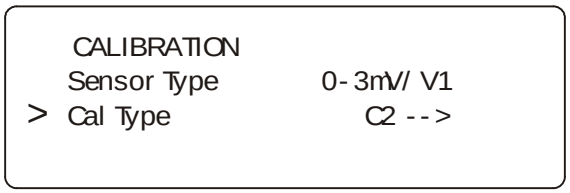


FIG. 5-18 CALIBRATION MENU

Step 4. Press the Right or Left arrow buttons to select Traditional Calibration. (See Fig. 5-19)

FIG. 5-19 CALIBRATION/TRADITIONAL

Step 5. Press the Enter Button. The Traditional Cal Menu appears with the cursor in front of Zero Value. (See Fig. 5-19)

FIG. 5-20 TRADITIONAL CALIBRATION/ZERO VALUE

Step 6. Traditional Calibration requires a zero point and the physical placement of test weights on the scale. To Set the Zero Value:

- Remove all weight "live load" from the scale. The Zero Value should be 0.00.

CAUTION: THE SCALE MUST BE EMPTY.

- Wait 12 seconds or more.

NOTE: Zero Ct. is read only and is used to Troubleshoot the instrument.

Step 7. Press the Down arrow button until the cursor is in front of the Do Trad Cal. (See Fig. 5-21)

FIG. 5-21 DO TRADITIONAL CALIBRATION/ZERO

Step 8. Press the Enter button to do the Zero Calibration. If "Function OK" appears the Zero Calibration is complete If an ERR number appears go to Chapter 7, Troubleshooting for more information.

Step 9. Press the Down arrow button until the cursor is in front of Span Value. (See Fig. 5-22) To Set the Span Value:

FIG. 5-22 TRADITIONAL CALIBRATION/SPAN VALUE

- Place a certified test weight on the scale.
- Use the alphanumeric key pad to enter the value of the test weight. (If a 10 lb.weight is used, enter 10).

NOTE: Ideally the test weight used for the span should be the highest weight that will be measured in the application.

- Wait 12 seconds or more.

Step 10. Press the Down arrow button until the cursor is in front of the Do Trad Cal. (See Fig. 5-23)

FIG. 5-23 TRADITIONAL CALIBRATION/SPAN

Step 11. Press the Enter button to do the Span Calibration. If "Function OK" appears the Span Calibration is

complete If an ERR number appears go to Chapter 7, Troubleshooting for more information.

Step 12. End of Calibration

Traditional Calibration From the Web Page

Step 1. On the Filler/Dispenser Home Page Click on Configuration. (See Fig. 5-24) The Configuration page appears. (See Fig. 5-25)

FIG. 5-24 CONFIGURATION MENU/SELECTING SETUP

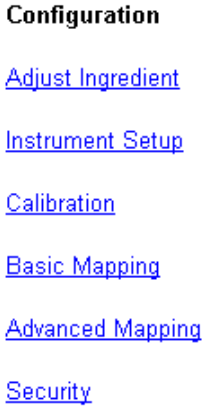


FIG. 5-25 CONFIGURATION PAGE

Step 2. Click on Calibration. The Calibration Sub-menu appears. (See Fig. 5-25)

Step 3. Select the Sensor type connected to this instrument.

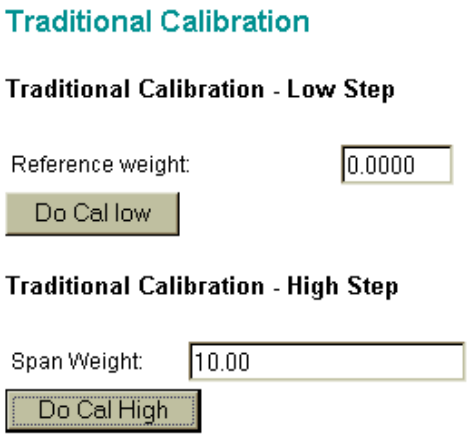


FIG. 5-26 CALIBRATION SUB-MENU

Step 4. If the Traditional Calibration - Low Step Reference is any value other than 0.0000 go to Step 5 otherwise go to Step 10.

Step 5. To clear the entry, move the cursor over the current Reference Weight which highlights the weight value.

Step 6. Use your keyboard to type in the new 0.0000 (See Fig. 5-25)

Step 7. Wait 12 seconds or more.

Step 8. Click on the Do Cal Low button.

Step 9. A page telling you that the Do Cal Low Calibration completed OK. (See Fig. 5-26)

FIG. 5-27 CAL LOW COMPLETED OK

Step 10. Click on "Back" to return to the Calibration page.

Step 11. Place a certified test weight on the scale.

Step 12. To enter the Span Weight click in the Span Weight field. (See Fig. 5-25)

Step 13. To clear the entry, move the cursor over the current Span Weight which highlights the weight value.

Step 14. Use you keyboard to type in the new value. In our example we entered 10.00. (See Fig. 5-25)

Step 15. Wait 12 seconds or more.

Step 16. Click on the Do Cal High button.

Step 17. A page telling you that the Do Cal High Calibration completed OK. (See Fig. 5-28)

FIG. 5-28 CAL HIGH COMPLETED OK

Step 18. Click on “Home” to return to the Filler/Dispenser Home page.
Step 19. Traditional calibration is complete.

CHAPTER 6: MAPPING

About Mapping

Mapping is a simple process where you connect an input (Source) to an output (Destination). The HI 3010 has four output Relays and five Input Contacts. You can also map parameter values to and from these outputs and inputs. The benefit of Mapping is that it requires no programming.

NOTE: The HI 3000 Series Operation and Installation Manual provides additional mapping help.

NOTE: Data is handled based on the method used writing data to the unit. If data is written using the Command Interface (See Below) the data is interpreted based on the displayed units. However, if data is directly mapped into the unit, the unit assumes lbs (pounds) and converts the entered data to the displayed units.

Mapping to an HI 3010 with a pre-2.3 Firmware Version

HI 3010's with firmware versions older than 2.3 send UDP packets with data at fixed locations. Some of these words correspond to words contained in the 2.3+ version, Hardy Control-Link Table as shown below:

2.3 Word	Pre 2.3 Contents
0	HI0, digital inputs
1	HI1, Status Word
2	HI2, State Machine Output Word 0
3	HI3, Alarms Word 0
4	HI4, Alarms Word 1
5&6	Gross Wt., Floating Point
7&8	Net Wt., Floating Point
9	Packet Sequence Number

TABLE 6-1: HI 3010

Therefore a version 2.3+ HI 3010 can pick up Gross Wt from a pre-2.3 HI 3010 node, let's say Node 7 from 7FI5. Net Weight at 7FI7. State Machine output word HI2 at 7SI2. Alarm word 0 at 7SI3.

Mapping to an Output Relay

In English we might say: "Connect the Ingredient Fast Fill Command to Relay Output #1.

- Relay Output #1 is the Destination.
- Fast Fill is the Source.

In Assignment Statement form this mapping would look like this:

- Destination = Source or
- Output Relay #1 = Fast Fill

From the Web Browser let's go through the process:

Step 1. From the Filler/Dispenser Home Page click on Configuration. (See Fig. 6-1) The Configuration Page appears. (See Fig. 6-2)

FIG. 6-1 HOME PAGE/SELECTING CONFIGURATION

Step 2. Click on Mapping Setup. (See Fig. 6-2) The Configuration Mapping Setup Page appears. All the pull down menus include all the Destinations for the HI 3010. (See Fig. 6-3)

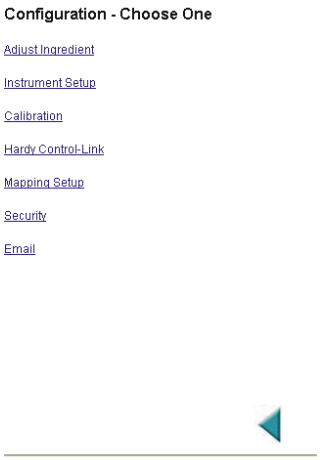


FIG. 6-2 CONFIGURATION PAGE/SELECTING MAPPING SETUP

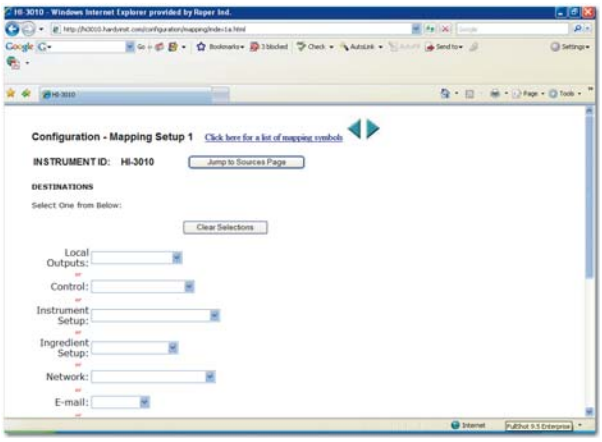


FIG. 6-3 CONFIGURATION MAPPING SETUP 1/ SELECTING A DESTINATION

Step 3. Let's take a moment to take a look at this page.

- Local Outputs include the 4 Output Relays.
- Control includes parameters that control the filling or dispensing which includes the following which is only a partial list:

  1. OK to Fill,
  2. OK to Discharge
  3. Start
  4. Stop

- Instrument Setup include parameters for setting up the instrument itself and includes the following which is only a partial list:

  1. Auto Zero On
  2. Tare Value
  3. Zero Tolerance
  4. Discharge On

- Ingredient Setup include parameters for setting up the ingredients to fill or dispense, and includes the following which is only a partial list:

  1. Max Weight.
  2. Min Weight
  3. Fill Time
  4. Wait Time

- Network includes the network outputs for Hardy Control Link, ControlNet, DeviceNet, Profibus etc. which is only a partial list.

  1. Hardy Control-Link Text Out
  2. Hardy Control-Link Int Out
  3. DeviceNet Text Out
  4. DeviceNet Int Out

- E-Mail includes E-Mail Outputs such as:

  1. Send E-Mail
  2. Custom Text

- Calibration includes calibration parameters:

  1. Zero Weight
  2. Span Weight

- Scratchpad which are empty registers you can do whatever you want with.

NOTE: The lists above do not include all the parameters. For a list of all the parameters and their addresses please see Appendix A.

Step 4. Back to our example. We want to select Output Relay #1 as our destination. Click on the Local Outputs pull down menu. (See Fig. 6-4)

Step 5. Click on Output Relay. After you click on Output Relay it is selected and a Number and a Select button appear to the right of the Local Outputs pull down menu. (See Fig. 6-4)

Step 6. To select Output Relays from 1 - 4, double click in the text box and type in the Output Relay number you want. In our example we selected Output Relay #1. (See Fig. 6-4)

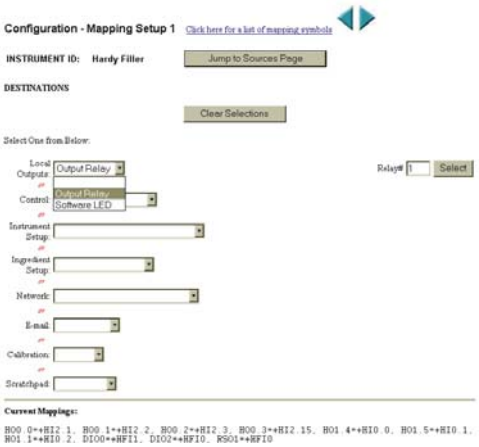


FIG. 6-4 LOCAL OUTPUT/SELECTING OUTPUT RELAY #1

Step 7. Click on the Select button to the right of the Relay #1 text box. An address appears in the Current Mappings text box below. You will have to scroll

down to see it. In our example we selected Output Relay #1 which has an address of: HO0.0. An equal "=" sign also appears.

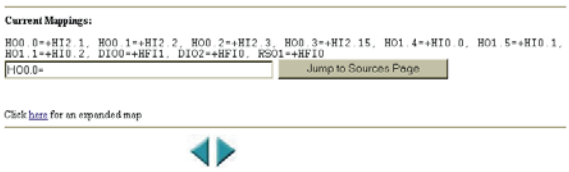


FIG. 6-5 OUTPUT RELAY #1 ADDRESS HO0.0

Step 8. You have now selected the Destination.

Step 9. Click on the Jump to Sources Page button to select the Source you want for this destination. (See Fig. 6-5) The Configuration, Mapping Setup 2 page appears. (See Fig. 6-6)

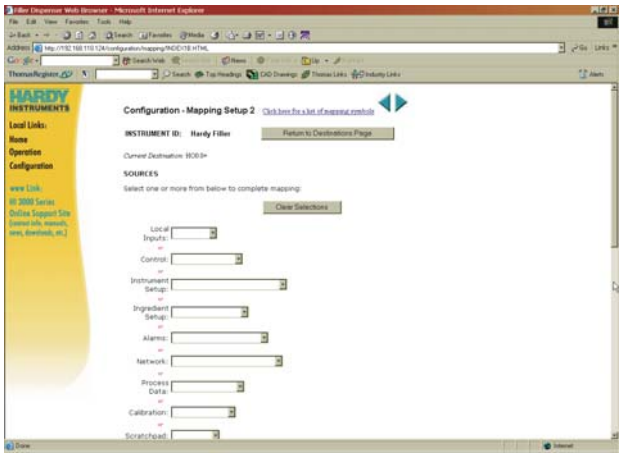


FIG. 6-6 CONFIGURATION - MAPPING SETUP 2

Step 10. Let's take a moment to look at this page.

- Local Inputs include the 5 input contact closures provided by the HI 3010.
- Control includes the following which is only a partial list:

  1. Slow Fill
  2. Fast Fill
  3. Refill
  4. Discharge

- Instrument Setup includes parameters for setting up the instrument itself and includes the following which is only a partial list:

  1. Zero Tolerance
  2. Auto Zero Tolerance
  3. Waversaver
  4. Tare Limit Value

- Ingredient Setup include parameters for setting up the ingredients to fill or discharge, and includes the following which is only a partial list:

  1. Auto Preact On
  2. Fills
  3. Fill Time
  4. Slow Gate Time

- Alarms includes all the alarms for filling and discharging and includes the following which is only a partial list:

  1. Motion
  2. Lost OK to Fill
  3. ADC Error
  4. Lost OK to Dispense

- Network includes the network outputs and inputs for Hardy Control Link, ControlNet, DeviceNet, Profibus etc. which is only a partial list.

  1. Hardy Control-Link Short In
  2. Hardy Control-Link Int Out
  3. DeviceNet Text Out
  4. DeviceNet Int In

- Process Data includes data parameters such as the following:

  1. Gross Weight
  2. Net Weight
  3. Totalizer Total Weight
  4. Totalizer Cycles Weight

- Calibration includes calibration parameters:

  1. Zero Weight
  2. Span Weight
  3. Calibration Type

- Scratchpad which are empty registers you can do whatever you want with.

NOTE: The lists above do not include all the parameters. For a list of all the parameters and their addresses please see Appendix A.

Step 11. Back to our example. We want to select Fast Fill which is a control parameter. Click on the Control pull down menu. (See Fig. 6-7)

Step 12. Click on “Fast Fill”. A Select button appears to the right of the Control pull down menu. (See Fig. 6-8)

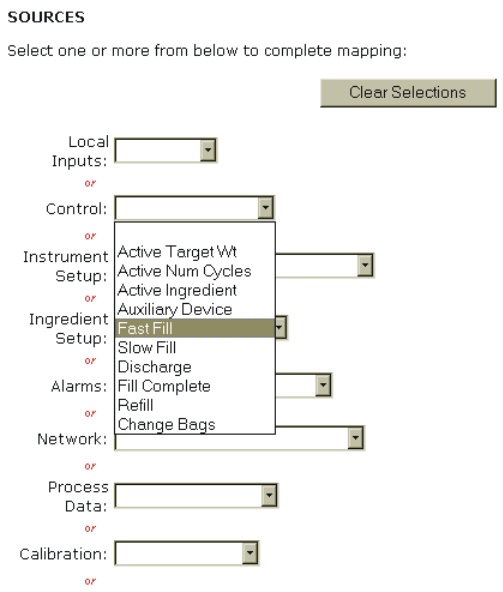


FIG. 6-7 CONTROL PULL DOWN MENU/ SELECTING FAST FILL

FIG. 6-8 SELECTING FAST FILL SOURCE

Step 13. Click on the Select button to select Fast Fill as the Source. (See Fig. 6-8)

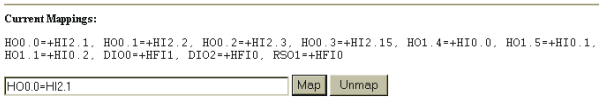


FIG. 6-9 MAPPING IS COMPLETE

Step 14. The Assignment Statement is complete. You will now see in the Current Mappings text box: HO0.0=HI2.1 (See Fig. 6-9)

Step 15. Click on the Map button. You have now mapped Fast Fill to Output Relay #1. Notice that the new mapping is included in the list of current mappings. (See Fig. 6-10)

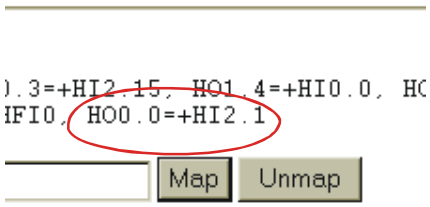


FIG. 6-10 MAPPED FAST FILL TO OUTPUT RELAY #1

Example #2 Mapping to an Input

There are 5 contact closure inputs designed into the HI 3010. You want to map Input Contact #4 to OK to Fill. Our Assignment Statement is:

- Destination = Source
- Ok to Fill (HO1.4) = Input #4 (HI0.3)

Step 1. On the Configuration - Mapping Setup 1 page click on the Control pull down menu. (See Fig. 6-11)

FIG. 6-11 DESTINATIONS/SELECTING OK TO FILL

Step 2. Click on Ok to Fill. A Select button appears. (See Fig. 6-11)

Step 3. Click on the Select button. (See Fig. 6-11)

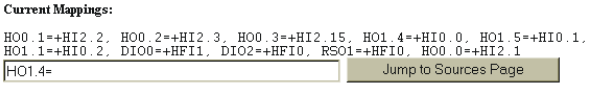


FIG. 6-12 OK TO FILL (HO1.4) SELECTED AS A DESTINATION

Step 4. Click on the Jump to Sources Page button. The Configuration - Mapping Setup 2 page appears. (See Fig. 6-13)

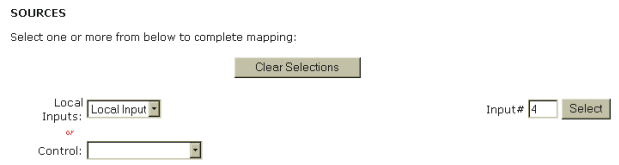


FIG. 6-13 CONFIGURATION - MAPPING SETUP #2 PAGE/SELECTING LOCAL INPUT #4 AS THE SOURCE

Step 5. Click on the Local Inputs pull down menu. Click on Local Inputs. An Input# text box appears with a Select button to the right. (See Fig. 6-13)

Step 6. Double Click in the Input# text box and type in the number 4.

Step 7. Click on the Select button.

Step 8. The Mapping Assignment Statement is complete. (See Fig. 6-14) OK to Fill (HO1.4) = Input contact #4 (HI0.3)

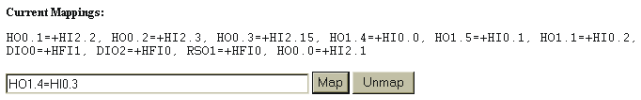


FIG. 6-14 COMPLETED ASSIGNMENT STATEMENT

Step 9. Click on the Map button. The Input Contact #4 is now mapped to Ok to Fill.

Mapping Multiple Sources

Now that you know how to map a single source to a destination we can move onto multiple sources mapping. Lets say you want to energize or de-energize Output Relay #3 if the filling process might experience an overfill or a slow gate stuck shut alarm. The overfill alarm means that the fill resulted in excess ingredient(s). The slow gate stuck shut alarm means the fill gate is stuck closed. You want one Output Relay to energize or de-energize if either one of these conditions exists. Lets map the multiple sources to Output Relay #3.

Our Assignment Statement looks like this:

Destination = Source 1 + Source 2

Output Relay #3 = Overfill Alarm + Slow Gate Stuck Shut Alarm

In this Assignment Statement we use a boolean operator. “+” in boolean Assignment Statements mean “or”. This means that if either the Overfill Alarm “or” the Slow Gate Stuck Shut Alarm occur, Relay #3 will be energized or de-energized, depending on what you want the relay to do. Here’s the process:

Step 1. From the Configuration - Mapping Setup #1 page, click on the Local Output pull down menu and select Output Relay. (See Fig. 15)

Step 2. In the Relay# text field type number 3. (See Fig. 6-15)

FIG. 6-15 MAPPING SETUP #1 PAGE/SELECTING OUTPUT RELAY #3

Step 3. Click on the Select button to select the Destination - Output Relay #3.

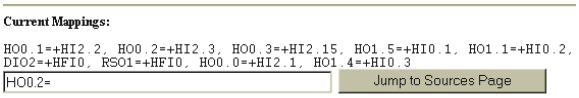


FIG. 6-16 OUTPUT RELAY #3 (HO0.2) ENTERED IN THE ASSIGNMENT STATEMENT AS A DESTINATION

Step 4. Click on the “Jump to Sources Page” button. (See Fig. 6-16) The Mapping Setup #2 Page appears. (See Fig. 6-17)

FIG. 6-17 ALARMS/SELECTING OVERFILL ALARM

Step 5. Click on the Alarms pull down menu. Select Overfill. (See Fig. 6-17)

Step 6. Click on the Select button to the right of the Alarms pull down menu. (See Fig. 6-17) The Overfill Alarm address appears in the Assignment Statement to the right of the equals sign which means it is a Source. (See Fig. 6-18)

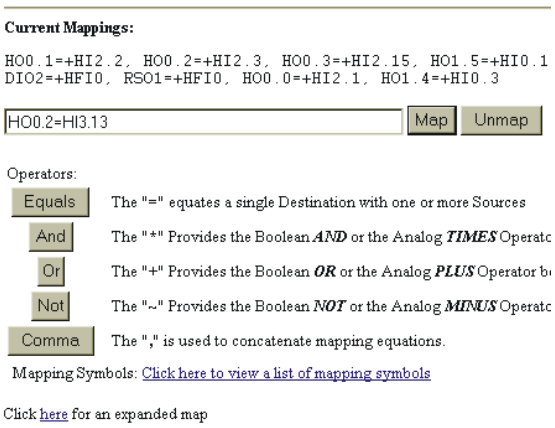


FIG. 6-18 OVERFILL ALARM (HI3.13) ENTERED IN THE MAPPING ASSIGNMENT STATEMENT

Step 7. To add another Source to the Assignment Statement and make it a Boolean "or" Statement, click on the Or button below the Assignment Statement. A "+" plus sign appears to the right of the Overfill Address. (See Fig. 6-19)

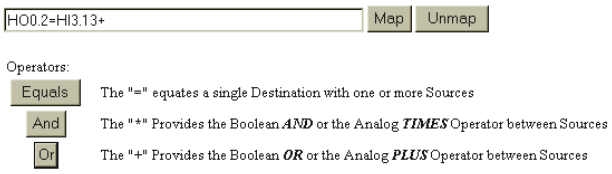


FIG. 6-19 ADDING BOOLEAN "OR" TO THE ASSIGNMENT STATEMENT

Step 8. Click on the Alarms pull down menu. (See Fig. 6-20)

Step 9. Click on Slow Gate Shut Alarm.

FIG. 6-20 ALARMS/SELECTING SLOW GATE SHUT ALARM

Step 10. Click on the Select button to the right of the Alarms pull down menu to add the "Slow Gate Shut Alarm" to the Assignment Statement. (See Fig. 6-21)

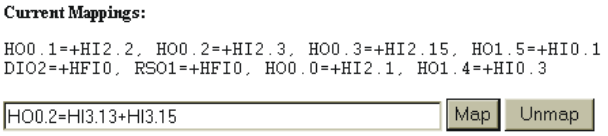


FIG. 6-21 SLOW GATE SHUT (HI3.15) ADDED AS THE SECOND SOURCE TO THE ASSIGNMENT STATEMENT

Step 11. Click on the Map button to save the mapping. The multiple source map appears in the Current Mappings listing. (See Fig. 6-22)

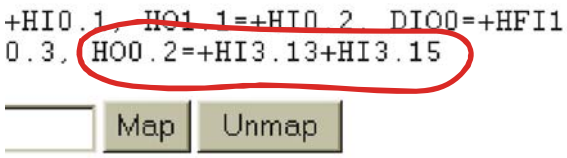


FIG. 6-22 MULTIPLE SOURCE MAP

Step 12. You have now mapped multiple sources to a single destination.

Simple Network Mapping

Mapping to a Network Output

If you want to send data to a PLC or other HI 3000 instrument you need to map the data to a network output. Here is the process:

Step 1. From the Configuration - Mapping Setup #1 page, click on the Network pull down menu and select DeviceNet Int Out. (See Fig. 6-23)

FIG. 6-23 NETWORK/SELECTING DEVICENET INT OUT

Step 2. Double click in the Word text box and type in the number 2.

Step 3. Click on the Select button to set the Destination. The DeviceNet Int Out address appears on the left side of the Assignment Statement. (See Fig. 6-24)

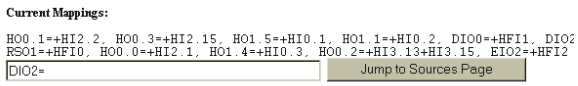


FIG. 6-24 DEVICENET INT OUT (DIO2) SET AS DESTINATION

Step 4. Click on the “Jump to Sources Page” button. The Configuration - Mapping #2 page appears.

FIG. 6-25 PROCESS DATA/SELECTING GROSS WEIGHT

Step 5. Click on the Process Data pull down menu. (See Fig. 6-25)
Step 6. Click on Gross Wt. (See Fig. 6-25)
Step 7. Click on the Select button to enter Gross Wt as the source of the Assignment Statement.
Step 8. The Gross Wt address appears on the right side of the Assignment Statement. (See Fig. 6-26)

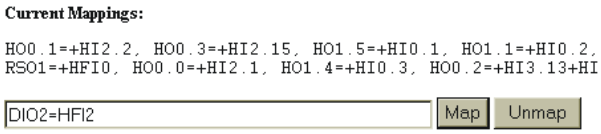


FIG. 6-26 ASSIGNMENT STATEMENT MAPPING GROSS WEIGHT (HF12) TO DEVICENET INT OUT (DIO2)

Step 9. The Gross Weight is now available to the PLC via the DeviceNet Scanner.

Mapping a Network Input to a Local Output

If you want a PLC to send instructions to an HI 3010 you will have to map the local Output to a network input. Here is the process:

NOTE: Keep in mind that the network input on the HI 3010 will be the source for the PLC output. This enables the PLC to send instructions to the network input on the HI 3010 and in turn to the HI 3010 output.

Step 1. From the Configuration - Mapping Setup #1 page, click on the Local Outputs pull down menu and select Output Relay. (See Fig. 6-27)

FIG. 6-27 LOCAL OUTPUT/SELECTING OUTPUT RELAY #2

Step 2. Double click in the Relay# field and type the number of the relay you want. In our example we selected Relay #2.
Step 3. Click on the Select button to select Output Relay #2 as the Destination for the left side of the Assignment Statement. (See Fig. 6-28)

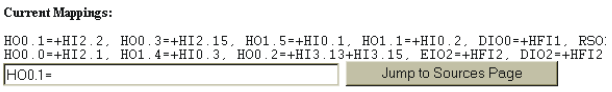


FIG. 6-28 OUTPUT RELAY #2 (HO0.1) SET AS DESTINATION

Step 4. Click on the “Jump to Sources Page” button. The Configuration - Mapping #2 page appears.
Step 5. Click on the Network pull down menu. (See Fig. 6-29)

FIG. 6-29 NETWORK/SELECTING DEVICENET BOOLEAN IN

Step 6. The best choice for a source is a Boolean network selection. In our example we selected “DeviceNet Boolean In”. However you can select any of the Network Sources. When you select a non-Boolean source you are creating a mixed map. Go to the Mixed Mapping Section below for more information.
Step 7. Double click in the Word text field and put in the word number. Double click in the Bit text field and enter the bit number. In our example we selected Word 2, bit 1. (See Fig. 6-30)

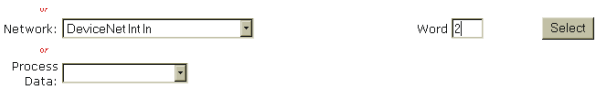


FIG. 6-30 NETWORK/SELECTING NON-BOOLEAN DEVICENET INT IN

Step 8. Click on “DeviceNet Boolean In” or “DeviceNet Int In” to select it as the Source for the Assignment Statement. (See Fig. 6-31)

Step 9. Click in the Word text box and type in the number “2”.

Step 10. Click on the Select button to save the source.

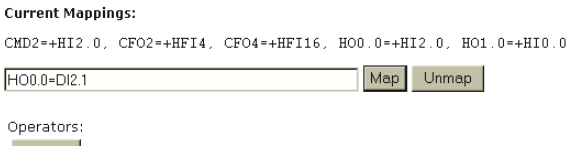


FIG. 6-31 ASSIGNMENT STATEMENT MAPPING DEVICENET BOOLEAN IN (DI2.1) TO OUTPUT RELAY #2 (HO0.1)

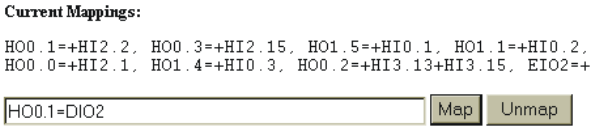


FIG. 6-32 ASSIGNMENT STATEMENT MAPPING DEVICENET INT IN (DIO2) TO OUTPUT RELAY #2 (HO0.1)

Step 11. Click on Map to save the mapping. (See Fig. 6-33)

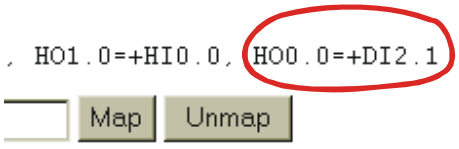


FIG. 6-33 DEVICENET BOOLEAN IN MAPPED TO OUTPUT RELAY #2

Step 12. Now whatever is sent to DeviceNet Boolean In (DI2.1) or Devicenet Int In (DIO2) from the Network will be sent to Output Relay #2.

Unmapping

Step 1. Click and hold your mouse over the Current Mappings and highlight the mapping you want to delete

FIG. 6-34 HIGHLIGHTING CURRENT MAPPING

FIG. 6-35 COPY TO THE MAP TEXT FIELD

FIG. 6-36 REMOVING MAPPING

More Advanced Mapping

This section is for those who have some or a lot of experience Addressing I/O (mapping) or for those who want more information as to how the mapping works locally and on the network. We go into much more detail as to how the mapping works and include instructions for Boolean, Analog, Mixed and Special Command mapping procedures.

Mapping is similar to Addressing I/O’s in a PLC except there are no predefined mappings in the HI 3000 Series Instruments and you are not mapping the physical location of an I/O module terminal to a bit location in the processor, you are actually mapping values or states in memory to another memory location. This difference is important to understand and will be explained later in this chapter. In order to understand Mapping we first need to define some of the terms and understand the structure of an Assignment Statement.

In short mapping is nothing more than assigning data from an address (Source) to another address (Destination) to be used by the controller in ways that meet your process requirements. Since the HI 3010 does not have any predefined Addressed I/O you are free to Address I/O in any fashion that meets your needs.

Glossary of Mapping Terms

Assignment Statement - The assignment statement is an order to the computer to change the value stored in the variable (Memory Address) on the left-hand side of the assign-

ment operator (i.e. the = sign). For example: i = a + b, means get the value stored in “a” and add it to the value stored in “b” and store the sum value at memory address “i”. The left hand side of the operator sign (=) is the address where you want the values on the right hand side of the operator sign (=) to be stored.

Destination - This is the destination memory address to which data will be moved. Left Hand Side

I/O Interface - The section of the instrument that communicates with the “outside world”.

Input Contact - Inputs interface selector switches, push buttons, limit switches and other sensors to the HI 3010. Each input has an address associated with it which describes the physical location that the input device is connected to.

Input Image Table - A data table containing addressed memory where the states of the input devices and parameter values are stored. The state of each input device is transferred to the input image table from the input point during the I/O scan.

Local Mapping - This is mapping within an HI 3010 Filler/ Dispenser module, primarily mapping internal memory locations of parameter values or device states to locations in the local Input Image Table or Output Image Table.

Network Mapping - This is mapping between the master and slave devices in the case of a DeviceNet, ControlNet, RIO or Profibus network. Hardy Control Link network mapping is mapping between nodes on the network.

NOTE: It is important to understand that you cannot perform mapping functions on one HI 3000 Series Instrument from another HI 3000 Series instrument. You must map the memory locations in each instrument separately. More will said about this later.

Node Number - This is the physical address of a device in a network.

Output Relay - Outputs interface indicators, motor starters, solenoids, and other actuators from the HI 3010. Each output has an address associated with it. The address describes the physical location that the output device is connected to.

Output Image Table - The data table containing addressed memory where the desired state of the output devices and parameter values are stored. The desired state or parameter value of each output is transferred from the output image file to the output point during the I/O scan.

Source - This is the memory address of the data you want to move to the destination. Right Hand Side

Rules for Hardy Control Link Mapping

Some rules for Hardy Link Mapping:

- Input Contacts (5 total) can only be a Source.
- Output Relays can be a Source and a Destination.

Local Input

Inputs interface with selector switches, push buttons, limit switches and other sensors connected to the HI 3010. When the firmware is initiated it assigns the physical input contact to a memory address (Remember Inputs can only be a Source when mapping). (See Source definition in the Glossary of Mapping Terms)

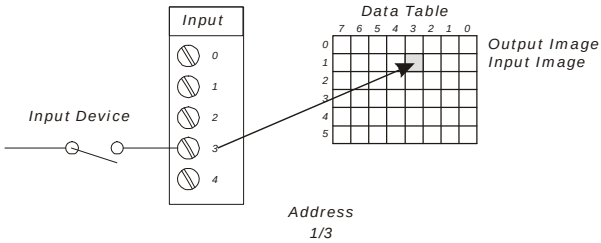


FIG. 6-37 INPUT FUNCTION

- Each input has an address associated with it.
- The address describes the physical location that the input device is connected to.
- The address also describes the Input Image Table location where the STATE of the input device is stored.
- The state of each input is transferred to the Input Image File from the input point during the I/O scan every 1/55th of a second. (See Fig. 6-37)
- When you are mapping an Input to some other Destination you are assigning the value in the Input Image Table (for that Input) to an Address in the Output Image Table.
- For example: **OK TO FILL = Contact closure input #5** means assign the state (Open (0) or Closed (1)) of Contact #5, contained in the Contact Closure input #5 memory address, in the Input Image Table and move it to the OK TO FILL address in the Output Image Table. (See Fig. #6-38)

Local Output

Outputs interface with indicators, motor starters, solenoids, and other actuators connected to the HI 3010. Remember Outputs can be a Destination and a Source. (See Destination definition in the Glossary of Mapping Terms)

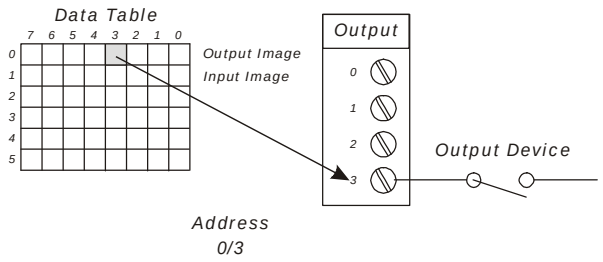


FIG. 6-38 OUTPUT FUNCTION

- Each output has an address associated with it.
- This address describes the physical location that the output device is connected to.
- This address also describes the data table location where the desired state of the output device is stored.
- The desired state of each output is transferred from the output image table to the output point during the I/O Scan every 1/55th of a second. (See Fig. 6-38)
- For Example: **Relay out #3 = FAST FILL** means assign the desired state (Open (0) or Closed (1)) located at the Fast Fill Address in the input image table and move it to the Relay out #3 address in the Output Image Table. (See Fig. 6-38)

Volatile and Non-Volatile Memory

It is important to understand that the data stored in the Output and Input Image Tables is stored in volatile memory. This means, when you power off you lose the data. The Addressing I/O (Mapping) is saved in non-volatile memory and is not lost when you power off.

A Definition of Mapping

Mapping (Addressing I/O) is the same as using an Assignment Statement. The Destination is located on the left hand side of the equals (=) sign and is a memory address (variable). The Source is the data located on the right hand side of the equals (=) sign at a memory address. So when you refer to the right hand side of the Assignment Statement you are referring to the data only and not the address even though the address is listed.

- Memory Address (Variable) = Data (Values, states)

The equals (=) sign assigns the data on the right side of the Assignment Statement to the Memory Address on the left side of the Assignment Statement.

This is exactly what you are doing when you map a source to a destination.

The things that can be mapped are organized into Input Image Tables and Output Image Tables, which are arrays of variables (i.e. memory locations of a certain size based on the type assigned to the variable) with addresses where data is stored.

A table is called an “output” image table if the items in the table are permitted to be on the left hand side of an Assignment Statement. The Output variables are also further identified by the first two letters of the variable:

- HO - Hardy Output Image Table
- DO - DeviceNet Output Image Table
- RO - RIO Output Image Table
- CO - ControlNet Output Image Table or Profibus Output Image Table.

NOTE: You won’t use ControlNet and Profibus at the same time so they can both use the same tables.

If the items in the table are only permitted on the right hand side of an Assignment Statement, we call it an “input” image table:

- HI - Hardy Input Image Table
- DI - DeviceNet Input Image Table
- RI - RIO Input Image Table
- CI - ControlNet Input Image Table or Profibus Output Image Table.

For example, the digital inputs on the Filler/Dispenser are found in an input image table, as are the items in the DeviceNet input image table.

The HI 3010 scans through the I/O image tables 55 times a second and reads any values that are contained in the tables. If there is nothing stored in the tables the controller does nothing with it. If there are state values or other values stored in the tables, the firmware processes the data and outputs it to an output device or the screen.

Local Mapping Example

Local Mapping Output

You hardwired a Valve Actuator to Output Relay #1. When the Filling process gets an OK to Fill the Filler changes the Fast Fill value (which is stored in the Input Image Table) from 0 to 1 which means, close the output relay to begin a fast fill. You need to map the Fast Fill to Output Relay #1.

The Destination is Output Relay #1 a State value that is located in the Output Image Table at Address HO0.0.

The source is the Fast Fill value that is stored in the Fast Fill memory address (HI2.1) in the Input Image Table. Do not confuse the value with the address.

So now you have a Destination Address to which you can assign the Source value.

My Assignment Statement is:

HO0.0 = HI2.1

Output Relay = Fast Fill

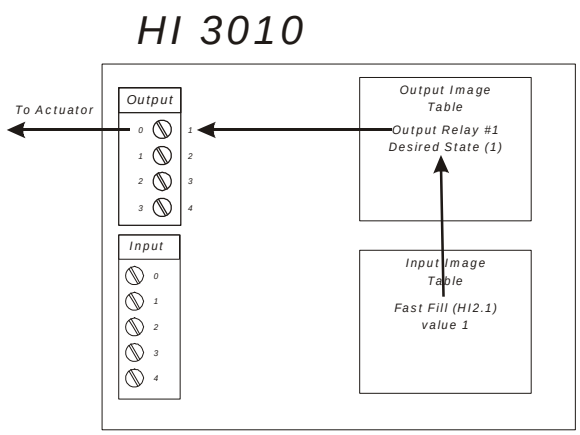


FIG. 6-39 MAPPING THE FAST FILL TO OUTPUT RELAY #1

As the instrument scans the Input Image Table it sees the new state value (close = 1) for the Fast Fill which was set by the instrument's firmware. It takes the new state value (1) and sends it to the Output Relay #1 address on the Output Image Table and sets the desired state for the relay to 1 which simultaneously closes the relay that opens the actuator for a valve to begin a Fast Fill.

Network Input

PLC's also have Input Image Tables and Output Image Tables. The HI 3010 is a node in a total network and you assign the HI 3010 Filler/Dispenser a node address so the Network scanner can identify the instrument.

WARNING: YOU CANNOT ASSIGN THE SAME ADDRESS TO TWO DIFFERENT NODES. THE PLC CANNOT DETERMINE WHICH NODE IT IS COMMUNICATING WITH. THIS CAN RESULT IN PROPERTY DAMAGE OR PERSONAL INJURY.

The Network scanner, scans each node's Output Image Table to read the values that are located there. If there are values in the nodes' Output Image Table it reads the values to the PLC's Input Image Table which makes the data available to the PLC for processing.

Here again you can assign the data in the node's output image table to an address in the PLC input image Table. So if you want the net weight to be displayed in the PLC's output (screen) you have already assigned the Net Weight value located in the Input Image Table to the Output Image Table. The PLC Scanner reads the Net Weight value in the nodes's Output Image Table and moves the value to a word location in the Input Image Table on the PLC. The Input Image Table Net Weight value is then output let's say to the PLC screen.

Network Output

When the Network Scanner writes values to the nodes it does this by taking the data located in the PLC Output Image Table and writes the values to another nodes' Input Image Table. Once the value is in the node's Input Image Table it becomes a source and can be mapped to any destination in the HI 3010. (See Fig. 6-40)

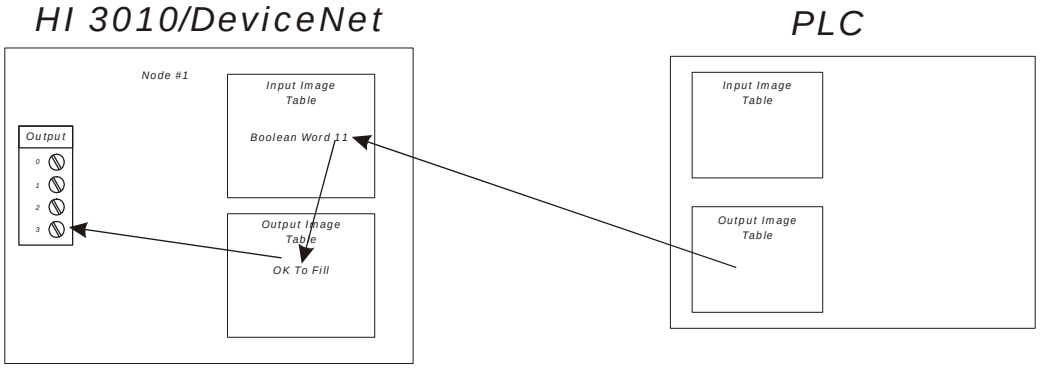


FIG. 6-40 DEVICENET OUTPUT

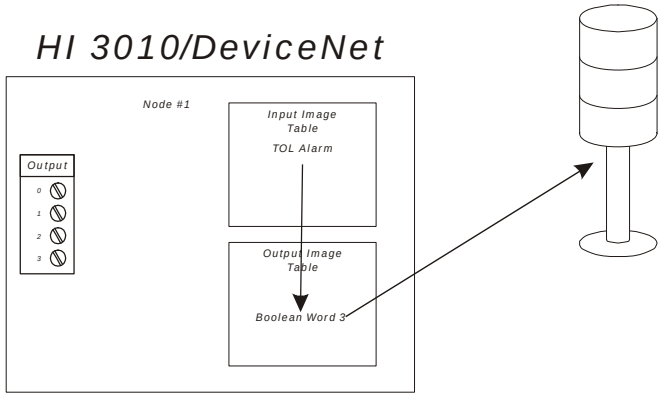


FIG. 6-41 DEVICENET OUTPUT

Hardy Control Link Network Mapping

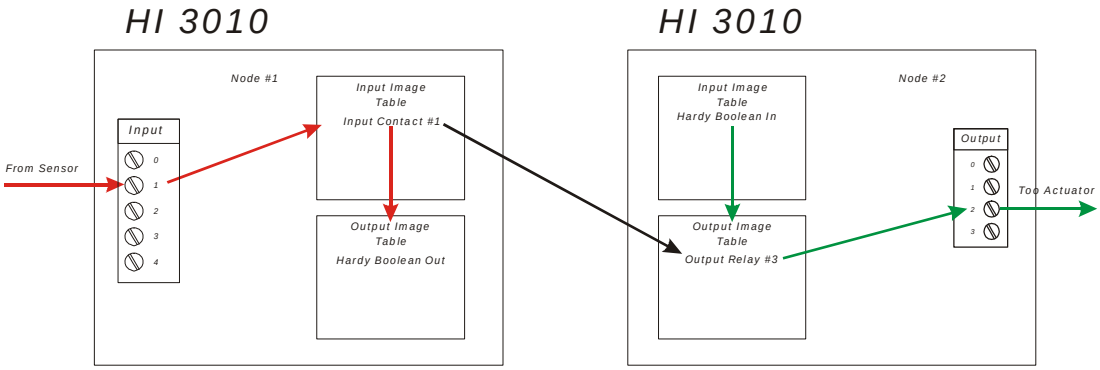
If an HI 3010 Node #1 does not have any Output Relays available, you can select another node's Output Relay. HI 3010, Node #2 has an output relay available. This requires that you first map Node #1 and Node #2 separately so that the input contact in Node #1 can be mapped directly to the Output Relay in Node #2. (See Fig. 6-42)

Step 2. You need to set up communication between Node #1 and Node #2. You can do this by going to the HI 3010 Web Page, select Configuration, select Hardy Control-Link. For complete instructions to setup communications between instruments go to the HI 3000 Installation and Operation manual, Hardy Control-Link Ethernet Network, Setting Node Addresses for HI 3000 Series Instruments from the Browser.

Step 3. At node #2 you need to map the Output Relay #3 state value, in the Output Image Table to the Hardy Boolean In address in the Input Image Table. (See Fig. 6-42 Green Arrows)

Step 4. At node #1 you need map Input Contact #1 in the Input Image Table to Hardy Boolean Out in the Output Image Table. (See Fig. 6-42 Red Arrows)

Step 5. Now that you have set up the local mapping for Node #1 and Node #2 and Node #1 is communicating with Node #2 you can map the Input Contact at Node #1 directly to the Output Relay at Node #2. (See Fig. 6-42 Black Arrow)



Mapping an Input to an Output Relay on Another HI 3010

FIG. 6-42 HARDY CONTROL LINK NETWORK MAPPING

Boolean Mapping

A Boolean variable is a variable that can have the value 0 (FALSE) or 1 (TRUE). In the HI 3010 Filler/Dispenser there are 3 boolean operations supported:

- AND - The symbol for “AND” in a Boolean Assignment Statement is “*”.
- OR - The symbol for “OR” in a Boolean Assignment Statement is “+”.
- NOT - the symbol for “NOT” in a Boolean Assignment Statement is “~”.

The Boolean image tables are arrays of short (2 byte) integers. An individual Boolean variable in the image table is located by its word offset and its bit offset. Boolean image tables are given 2 letter names as follows:

- DI is the DeviceNet input image table.
- DO is the DeviceNet output image table.
- HI is the Hardy input image table.
- HO is the Hardy output image table.
- RI is RIO input image table.
- RO is RIO output image table.

The RIO input and output images tables are mapped to physical external devices using RSLogix. DeviceNet and ControlNet input and output image tables are mapped to physical external devices using Rockwell Software’s RS NetWorx. The Hardy input and output image tables have pre-defined meanings for certain bits within the tables.

NOTE: Make sure you use RS NetWorx for DeviceNet and RS NetWorx for ControlNet. They are two different applications.

A Boolean variable is addressed with the syntax below:

[tablename][word offset].[bit offset]

Example:

DI0.3 is bit #3 in the DeviceNet input table, word #0.

Analog Mapping

An analog variable is one that can have many different values. The HI 3010 Filler/Dispenser supports float, 16 bit integer, and 32 bit integer analog variable types.

There are three (3) analog operations supported. The symbols are the same as the Boolean operations, but with different meanings.

- Multiply - The symbol for “Multiply” is “*”.
- Add - The symbol for “Add” is “+”.
- Negate - the symbol for “Negate” is “~”.

Analog tables are given 3 letter names as follows:

DFI, DFO, DSI, DSO, DII, DIO all refer to DeviceNet tables, where the item is a float, a short integer, or a 32 bit integer depending on the second letter in the table name. HFI is a table of Hardy defined floating point numbers.

An analog variable is addressed with the syntax below:

[tablename][word offset]

The offset is an offset in words in the case of the DeviceNet tables. The offsets in Hardy tables have various predefined meanings.

- HFI0 - is Gross Weight
- HFI1 - is Net Weight

- . . . . other offsets to be determined.

When an analog Assignment Statement is evaluated, all value types get converted to float. The final result is then converted to the type of the LHS (Left Hand Side).

Mixed Mapping

It is permissible to have analog variables appear in Boolean Assignment Statements and to have Boolean variables in analog Assignment Statements. (We call a mixed Assignment Statement "Boolean" if its LHS (**L**eft **H**and **S**ide of the = sign) is a Boolean term, and "Analog" if its LHS is an analog term) The interpretation is as follows:

A Boolean variable in an analog Assignment Statement is converted to 1.0 or 0.0.

An Analog variable in a Boolean Assignment Statement is TRUE if it is greater than zero (0) and FALSE if it is less than or equal to zero (0).

For Example:

You want to change the state (actuate) of a relay when the Net Weight exceeds a fixed amount (value).

Special (Command) Mapping)

Command Interface consists of:

- 16 bit words
- Word 0 Command #
- Word 1 Parameter ID
- Words 2&3 Data.

The commands defined are the following:

WRITEINTEGER, command number 0x1000
The WRITEINTEGER command is used to set the value of integer valued parameters.
Command data:
2 bytes: PARAMETER NUMBER: the number (PARAMID) of the parameter to write.
4 bytes: PARAMETER VALUE: what to set the parameter to.

Data returned by the HI 3010: 8 bytes, echoing the WRITEINTEGER command.

WRITEFLOAT, command number 0x1001
The WRITEFLOAT command is used to set the value of float valued parameters.
Command data:
2 bytes: PARAMETER NUMBER: the number (PARAMID) of the parameter to write.
4 bytes: PARAMETER VALUE: what to set the parameter to.

Data returned by the HI 3010: 8 bytes, echoing the WRITEFLOAT command.

WRITESTRING, command number0x1002
The WRITESTRING command can be used to set the value of any parameter.
Command data:
2 bytes: PARAMETER NUMBER: the number (PARAMID) of the parameter to write.
Variable number of bytes: a zero terminated ASCII string, giving the value to set the parameter to.

Data returned by the HI 3010: 8 bytes, echoing the first 8 bytes of the WRITESTRING command.

READINTEGER 0x2000
READFLOAT 0x2001
These commands are used to read the value of integer or float parameters.
Command data:
2 bytes: PARAMETER NUMBER: the number (PARAMID) of the parameter to read.

Data returned by the HI 3010: 8 bytes. The first 4 bytes echo the command, and the next 4 contain the value of the parameter.

Setting up the command interface in mapping:
Use an Assignment Statement of the form
CMD0 = (in_table)*(out_table)
In_table is an input image table, defining where the command is written.
Out_table defines where the reply data is written.

Example:

CMD0 = DI0.0*DO0.0

This Assignment Statement says the command will be written to the DeviceNet input image table, at word offset 0, and the reply data is written to the DeviceNet output image table, at word offset zero.

It is legal to omit the Out_table.

Example:

CMD0=DI3.0

This assignment statement says that the command will be written to the DeviceNet input image table, at word offset 3, but no reply data will be written.

Command Interface

Parameter Numbers, Code Explanations and Valid Ranges

CAUTION: THESE VALUES AND EXPLANATIONS CAN CHANGE. ALWAYS CHECK ON THE HARDY WEB SITE FOR THE NEWEST COMMAND INTERFACE LIST BEFORE USING THE COMMAND INTERFACE.

NOTE: Data is handled based on the method used writing data to the unit. If data is written using the Command Interface (See Below) the data is interpreted based on the displayed units. However, if data is directly mapped into the unit, the unit assumes lbs (pounds) and converts the entered data to the displayed units.

Parameter Number (Hexadecimal)	Code Explanation	Valid Range
0001	Operator ID	DFD
0002	Instrument ID	Max. 19 characters
0003	OK to Fill Timer	0-999
0004	WAVERSAVER®	0 = None 5 = .25 Hz 4 = .50 Hz 3 = 1.0 Hz 2 = 3.50 Hz 1 = 7.50 Hz
0005	Number of Averages	1-250
0006	Zero Tolerance	0.000001-999999
0007	Units of Measure	0 = lb, 1 = Kg, 2 = g 3 = oz
0008	Decimal Point	0-5
0009	Total Decimal Point	0-5
000A	Grad Size	0=1, 1=2, 2=5, 3=10, 4=20, 5=50, 6=100, 7=200, 8=500, 9=1000
000B	Print Total	1 = YES, 0 = NO
000C	Auto Print	1 = YES, 0 = NO
000D	Motion Tolerance	.01-999999
000E	Auto-Zero Tolerance	.000001-999999
000F	Capacity	.000001-999999

TABLE 6-2: PARAMETER NUMBER, CODE EXPLANATION AND VALID RANGES

Parameter Number (Hexadecimal)	Code Explanation	Valid Range
0010	Infrared Enable	1 = ON, 0 = OFF
0011	Active Target Weight	.000001-999999
0012	Active Num Cycles	0 = cont., or 1-999999
0013	OK to Fill Input	1 = YES, 0 = NO
0014	Discharge	1 = YES, 0 = NO
0015	Auto Discharge	1 = YES, 0 = NO
0016	OK to Discharge	1 = YES, 0 = NO
0017	Aux Device Time	0-999
0018	Discharge Gate Proof	1 = YES, 0 = NO
0019	Discharge Gate Timer (seconds)	0-99
001A	Use Auto-Zero	1 = YES, 0 = NO
001B	Auto-Zero Tolerance Time	.01-9.99
001C	Tare Limit	999999.0000
0022	Refill	1 = YES, 0 = NO
0023	Initial Refill	1 = YES, 0 = NO
0024	OK to Discharge Timer (seconds)	0-999
002A	Baud Rate	0 = 300 1 = 1200 2 = 2400 3 = 4800 4 = 9600 5 = 19200
002B	Parity	0 = None 1 = Odd 2 = Even
002C	Data Bits	0 = 7 bits 1 = 8 bits
0038	Proof Switch	1 = YES, 0 = NO
0039	Gate Timer (seconds)	0-99
003B	Refill Weight	.000001-999999
003C	Refill Duration Timer	0-999
003D	Auto-Tare time	5.0000
0200	Reference Weight	0.000001-999999 (Read Only)

TABLE 6-2: PARAMETER NUMBER, CODE EXPLANATION AND VALID RANGES

Parameter Number (Hexadecimal)	Code Explanation	Valid Range
0201	Span Weight	0.000001-999999 (Read Only)
0204	Cal Type	0 = C2 1 = Traditional Hard Calibration (Read Only)
0280	Serial Number	14 (Read Only)
0281	Model Number	HI 3010 (Read Only)
0282	Program Part Number	0650-0xxx-01 (Read Only)
0283	Firmware Revision	1.X.XX (Read Only)
02F0	NO Assignment Statements Defined	HFO0=+HF12, DFO0=+HF13, HO0.0=+HI2.1 (Read Only)

TABLE 6-2: PARAMETER NUMBER, CODE EXPLANATION AND VALID RANGES

Ingredients 1-12 are duplicates and are addressed and formatted as follows:

- ppss:

  Where pp is the prefix for the ingredient number. (HEX)

  Where ss is the suffix ingredient parameter. (HEX)

	Prefix:
Ingredient Number 1	03ss
Ingredient Number 2	07ss
Ingredient Number 3	0Bss
Ingredient Number 4	0Fss
Ingredient Number 5	03ss
Ingredient Number 6	17ss
Ingredient Number 7	1Bss
Ingredient Number 8	1Fss
Ingredient Number 9	23ss
Ingredient Number 10	27ss
Ingredient Number 11	2Bss
Ingredient Number 12	2Fss

Suffix	Code Explanation	Valid Range
pp01	Ingredient Name	ONE (19 Characters)

TABLE 6-3: INGREDIENTS 1-12

Suffix	Code Explanation	Valid Range
pp02	Total	.0000001-999999
pp03	Cycles	0-9999 (Current Count Read Only)
pp04	Fills	0-9999 (Fill Cycles Menu)
pp05	Speed	0 = Single 1 = Dual
pp06	Target Weight	0.000001-999999
pp07	Preact	0.0000001-999999
pp08	Auto Preact	1 = YES 0 = NO
pp09	Target Min/Max	0 = Weight 1 = Percentage
pp0A	Max. Weight	0.000000-999999
pp0B	Min. Weight	0.000000-999999
pp0C	Max.%	0.00000-99.9
pp0D	Min.%	0.00000-99.9
pp0E	Jog ON time	0.00000-99.9
pp0F	Jog Count	0-9
pp10	Jog Off Time	0.1-99.9
pp11	Fill time	0-999
pp12	Wait Timer	0.00000-999.9
pp13	Mode	0 = Sequential 1 = Simultaneous
pp14	Fast Target Weight	0.000001-999999.00
pp15	Auto Fast	1 = YES 0 = NO
pp16	Fast Gate Time	0-99
pp17	Fast Limit Switch	1 = YES 0 = NO
pp18	Slow Limit Switch	1 = YES 0 = NO
pp19	Slow Gate Time	0-99

TABLE 6-3: INGREDIENTS 1-12

Mapping From the Front Panel

Mapping assigns controllable Inputs and Outputs to any point on a Local Controller. Mapping can be done from the Front Panel or the Browser.

A Control Output can be mapped (Assigned) to a Local Relay.

For example:

For a 1 to 1 Configuration - If “OK to Fill” is the destination, the source can be “Input 1”. When the HI 3010 Filler/Dispenser receives an “OK to Fill” signal, Input 1 is activated which might stop a motor from starting, a gate from opening etc. You need to select “OK to Fill” as the Destination and Input 1 as the source.

Step 1. Press the Setup/3/DEF button once. The Configuration Menu appears with the cursor in front of “ADJUST INGREDIENT” (Default).
Step 2. Press the down or up arrow buttons to move the cursor in front of I/O Mapping. (See Fig. 6-43)

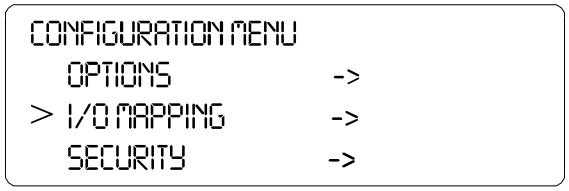


FIG. 6-43 CONFIGURATION MENU/I/O MAPPING

Step 3. Press the Enter button. The Basic I/O Mapping Menu appears. (See Fig. 6-44) The List you see is a list of Destinations. We need to map the Destination (OK to Fill) to the Source (Input 1)
Step 4. Press the down arrow button until the cursor is in front of OK to Fill. (See Fig. 6-44)

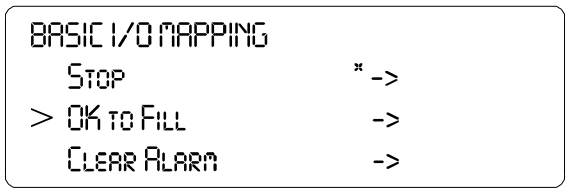


FIG. 6-44 BASIC I/O MAPPING/OK TO FILL SELECTION

Step 5. “OK to Fill” Menu appears. (See Fig. 45)

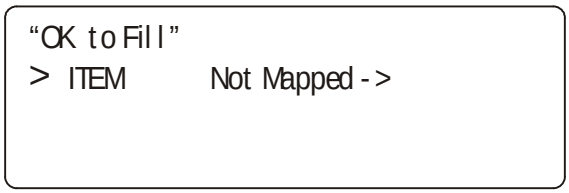


FIG. 6-45 OK TO FILL MENU/ITEM NOT MAPPED

Step 6. Press the Enter button. The Item Selection Menu appears with a list of sources. (See Fig. 6-46)

FIG. 6-46 ITEM SELECTION MENU/NOT MAPPED SELECTED

Step 7. Press the up or down arrow button to until the cursor is in front of Input 1. (See Fig. 47)

FIG. 6-47 ITEM SELECTION MENU/INPUT 1 SELECTED

Step 8. Press the Enter button to map Input 1 to “OK to Fill”.
Step 9. Press the Exit button to return to the OK to Fill Menu. (See Fig. 6-48) Notice that Input 1 appears in place of Not Mapped.

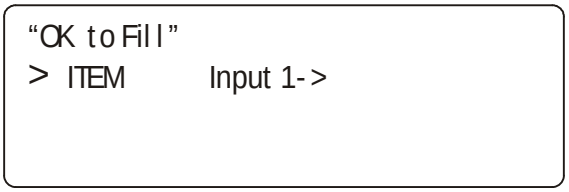


FIG. 6-48 OK TO FILL MENU/INPUT 1 MAPPED

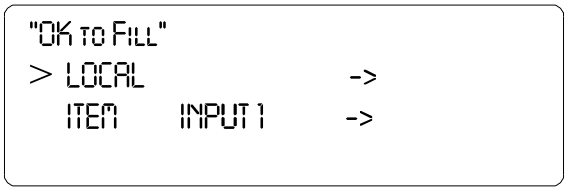


FIG. 6-49 OK TO FILL/SOURCE MAPPED

Step 10. Press Exit to get back to the Basic I/O Mapping Menu. Notice that an asterisk (*) has been added to

the right arrow indicating that OK to Fill is mapped to something. (See Fig. 6-50)

Step 11. To Map other items repeat steps 1-8 for those items you want to map.

FIG. 6-50 OK TO FILL MAP INDICATION

Step 12. To check what Items are mapped to which Input or what Outputs are mapped to which Item, just go to the Basic I/O Mapping Menu, select the Destination you want to see and press Enter. The mapped data is readily available.

Unmapping Procedures for Front Panel

Step 1. To Unmap Items go to the Basic I/O Mapping Menu.

Step 2. Press the up or down arrow buttons until the cursor is in front of the Item you want to unmap. In our example we used “OK to Fill”.

Step 3. Press the Enter button. The “OK to Fill” Menu appears. (See Fig. 6-51)

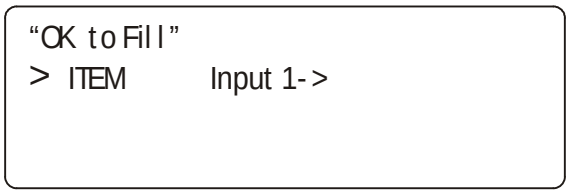


FIG. 6-51 OK TO FILL MENU/INPUT 1 MAPPED

Step 4. Press the Enter button. The Item Selection Menu appears with the cursor in front of Not Mapped (Default). (See Fig. 52)

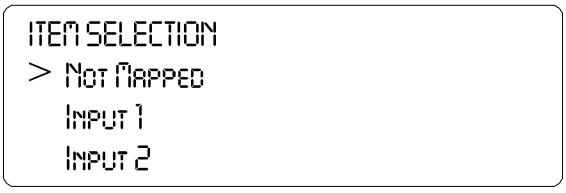


FIG. 6-52 ITEM SELECTION/SELECTING NOT MAPPED

Step 5. Press the enter button to set the entry.

Step 6. Press the Exit button to return to the OK to Fill Menu. (See Fig. 6-53)

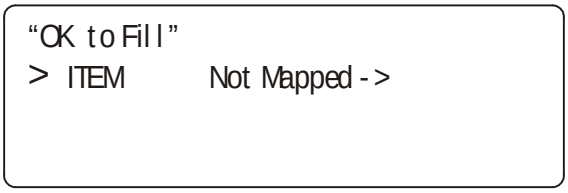


FIG. 6-53 OK TO FILL MENU/ITEM UNMAPPED

Step 7. Press on the Exit button to return to the Basic I/O Mapping Menu. (See Fig. 6-54) Notice that the asterisk no longer appears. This tells you that the item is unmapped.

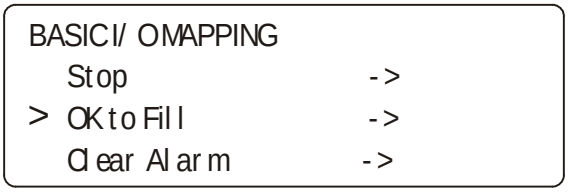


FIG. 6-54 BASIC I/O MAPPING/OK TO FILL UNMAPPED

Step 8. If you want to unmap more items just repeat steps 1-7.

Mapping a Hardy Control-Link Network to a ControlNet/DeviceNet/Profibus Network

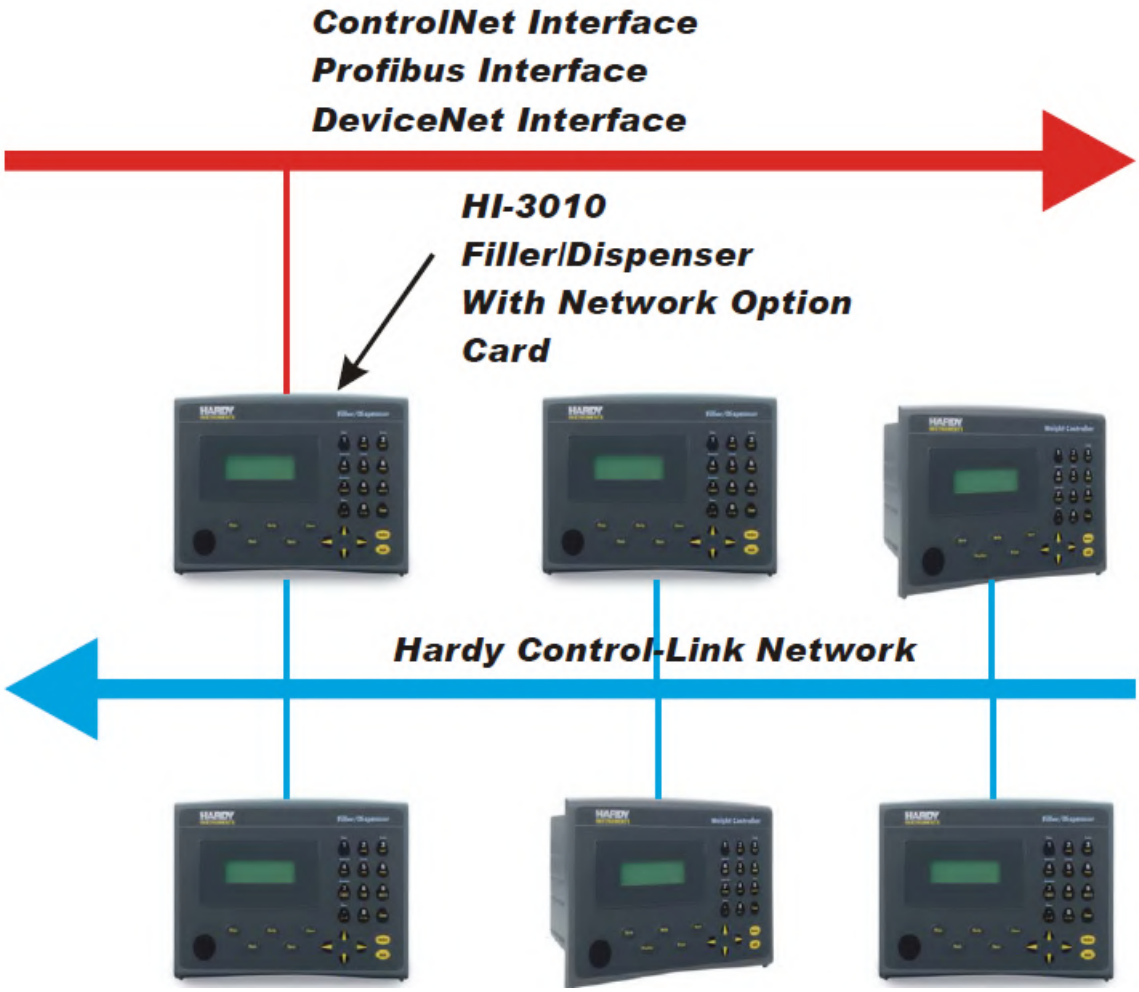


FIG. 6-55 HARDY CONTROL-LINK NETWORK CONNECTED TO A CONTROLNET/DEVICENET/PROFIBUS NETWORK

The Hardy HI 3000 Series of controllers are designed to save you money. To connect a Hardy Control-Link Network to a ControlNet/DeviceNet/Profibus Network simply purchase one of the Hardy HI 3000 Series Network Interface Option Cards and install it in the instrument that you want to directly connect to the other network. You can map to this instrument from all the other instruments on the Hardy Control-Link Network, rather than buy a separate network card for each instrument. (See Fig. 6-55)

Step 1. Determine into which Instrument you want to install the Network option card.

Step 2. Install the network card. See the HI 3000 Installation and Operation manual, Cabling and Installation Section.

Step 3. Connect the network cables from the designated HI 3000 Series Instrument and begin mapping to that instrument from either the Hardy Control-Link Network or the ControlNet/DeviceNet/Profibus Network.

CHAPTER 7: TROUBLESHOOTING

About Chapter 7

Chapter 7 consists of all the procedures for troubleshooting the electrical, mechanical and firmware elements of the HI 3010 Filler/Dispenser in the event of a malfunction. Included in Chapter 7 is a comprehensive flow chart to provide a road map for troubleshooting an entire Filler/Dispenser system, including load cells and cabling.

For help with networking, card options, security, and Email, see the HI 3000 Series Operation and Installation Manual.

Disassembly and Reassembly Notes and Cautions

- Always disconnect the power cord before disassembling.

WARNING: FAILURE TO DISCONNECT THE POWER CORD BEFORE DISASSEMBLING MAY CAUSE PERSONAL INJURY AND/OR PROPERTY DAMAGE.

- Make sure that any disassembly is done in a clean, well ventilated, properly controlled static environment.
- Always make sure that the assemblies and sub-assemblies are well supported and insulated when doing any repairs on the Filler/Dispenser.
- Place small fasteners, connectors and electrical parts in closed containers so as not to lose parts during reassembly.
- Read all the disassembly instructions before any disassembly begins. Be sure that you are familiar with the procedures. If any of the instructions for disassembly are unclear, contact Hardy Instruments, Technical Support Department for additional information and assistance.
- Do not disconnect any electrical plug, connector or terminal unless an identification tag is present or one is attached. Always note where the connector or plug was attached to the electrical component or wiring harness.
- Always install complete hardware groups (Screws, Washers, Lock Washers, Spacers, Etc.) back to the original point of removal.
- Always replace broken or damaged modules or hardware immediately!
- Always check to be sure that no loose parts are sitting on printed circuit boards or electrical connectors or wires when disassembling or reassembling.
- Always protect printed circuit boards from electrostatic discharge (ESD). Always use approved ESD wrist straps and anti-static pads.
- Always perform a final inspection after completing any reassembly to be sure that all fasteners are tight, all connectors are secure and there are no loose parts on any of the printed circuit boards in the Filler/Dispenser.
- Always follow proper safety procedures when working on or around the Filler/Dispenser.

Error Messages

!A/D Failure Error! - Internal Electronics Error, Retry.
!A/D Convert Error! - Load Cells input out of range.
!Motion Error! - Check Settings and Retry
!Trad Cal Error! - Error occurred during calibration, re-calibrate.
!C2 Cal Error! - Error occurred during calibration, re-calibrate.
!Too Lo Error! - Verify that the load cell signal level is 0-15 mV.
!Too Hi Error! - Verify that the load cell signal level is 0-15 mV.
!No C2 Sensor! - Instrument did not detect a C2 Load Sensor
!CAL Failed! - Not enough counts between Zero and Span.

List of Alarms

Not OK to FILL Alarm

- - - - - ALARM CONDITION - - - - -

- If it is NOT OK TO FILL, an alarm appears in the display. (See Fig.7-1)

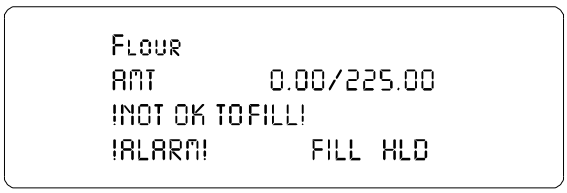


FIG. 7-1 NOT OK TO FILL

1. The Operator needs to determine why it is NOT OK to FILL by checking for problems with the electrical and /or mechanical systems.
2. Once the problem has been fixed, push the Clear button to clear the

Alarm. The Filler/Dispenser begins filling.

NOTE: The OK to Fill Timer has a preset time to determine if it is OK to Fill. If the OK to Fill times out, it means that the preset time is too short for the process and the NOT OK to FILL Alarm appears with no real alarm conditions. You may need to reset the timer if it appears that no electrical or mechanical reason for the alarm is determined. The OK to FILL timer may be set incorrectly for your process. See the HI 3010 Service Manual for Instructions on setting the OK to FILL Timer.

Lost OK to Fill Alarm

- - - - - ALARM CONDITION - - - - -

During the filling process, conditions may develop that cause the Filler/Dispenser to lose the OK to FILL during Fast Fill or Slow Fill. When this occurs an alarm appears that says LOST OK TO FILL. (See Figs. 7-2 & 7-3)

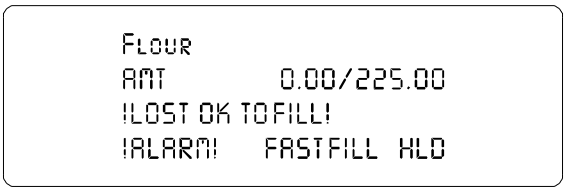


FIG. 7-2 LOST OK TO FILL ALARM/FAST FILL

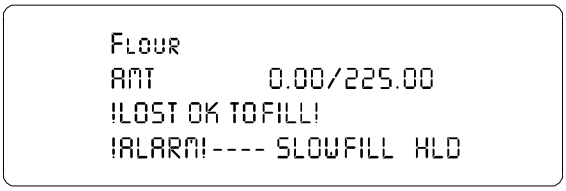


FIG. 7-3 LOST OK TO FILL ALARM/SLOW FILL

1. The Operator needs to determine why the system LOST OK to FILL by checking for problems with the electrical and /or mechanical systems.
2. Once the problem has been fixed, push the Clear button to clear the Alarm. Press the Start button, the Filler/Dispenser resumes filling from where it stopped. Press Stop to Halt.

Fast Gate Did Not Open Alarm

- - - - - ALARM CONDITION - - - - -

- If the Fast Fill Gate is not open at the time you want to fill, the FAST GATE DID NOT OPEN alarm appears on the display. (See Fig. 7-4)

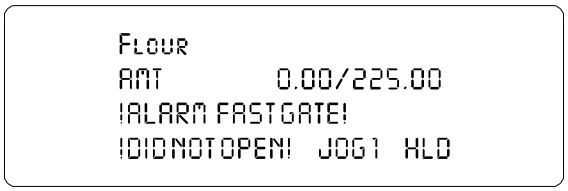


FIG. 7-4 FAST FILL GATE DID NOT OPEN ALARM

1. Determine why the Fast Fill Gate did not open and correct the problem.
2. Press the Clear button to clear the alarm. The RESUME FILLING FAST display appears. (See Fig. 7-5)

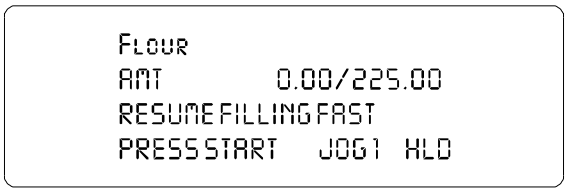


FIG. 7-5 RESUME FILLING FAST DISPLAY

3. Press the Start button to resume fast fill.

Fast Gate Did Not Close Alarm

- - - - - ALARM CONDITION - - - - -

- If the Fast Fill Gate does not close at the end of a fill, the FAST GATE DID NOT CLOSE alarm appears on the display. (See Fig. 7-6)

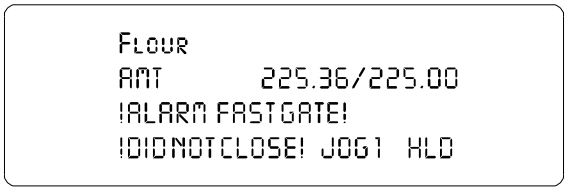


FIG. 7-6 FAST GATE DID NOT CLOSE

1. Determine why the Fast Fill Gate did not close and correct the problem.
2. Press the Clear button to clear the alarm. The RESUME FILLING FAST display appears. (See Fig. 7-7)

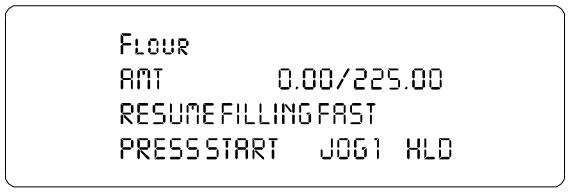


FIG. 7-7 RESUME FILLING FAST DISPLAY

3. Press the Start button to resume fast fill.
4. If the target weight is NOT within the target window and you do not have the JOG function turned ON, the fill is not accepted and an UNDER FILL! or OVER FILL alarm appears depending on the alarm condition.

Slow Gate Did Not Open Alarm

- - - - - ALARM CONDITION - - - - -

- If the Slow Fill Gate is not open at the time you want to slow fill, the SLOW GATE DID NOT OPEN alarm appears on the display. (See Fig. 7-8)

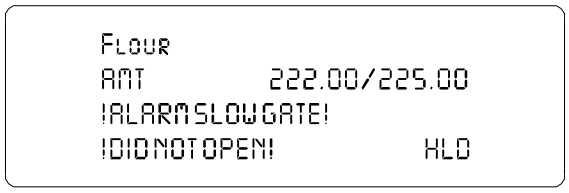


FIG. 7-8 SLOW GATE DID NOT OPEN ALARM

1. Determine why the Slow Fill Gate did not open and correct the problem.
2. Press the Clear button to clear the alarm. The “RESUME FILLING SLOW” display appears. (See Fig. 7-9)

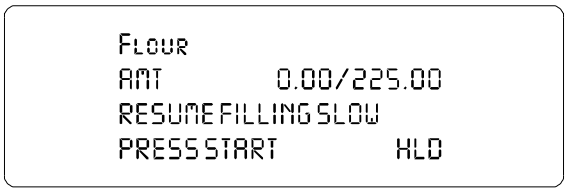


FIG. 7-9 RESUME FILLING SLOW

3. Press the Start button to resume slow filling.

Slow Gate Did Not Close Alarm

- - - - - ALARM CONDITION - - - - -

- If the Slow Fill Gate does NOT close, the SLOW GATE DID NOT CLOSE alarm appears on the display. (See Fig. 7-10)

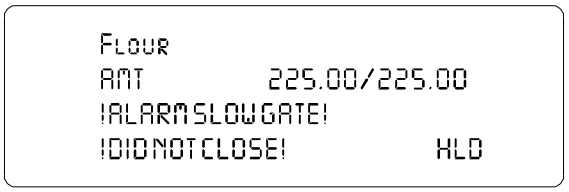


FIG. 7-10 SLOW GATE DID NOT CLOSE ALARM

1. Determine why the slow Fill Gate did not close and correct the problem.
2. Press the Clear button to clear the alarm. The Wait Timer display appears. (See Fig. 7-11

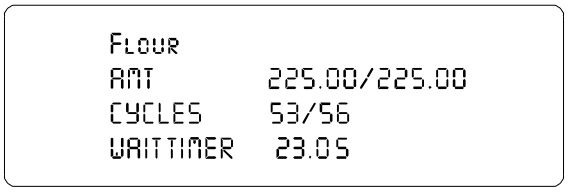


FIG. 7-11 WAIT TIMER DISPLAY

3. If the fill is within the target window and you do not have the Discharge Function turned ON (See Discharge Function above), the instrument returns to the Waiting On Display, repeats the motion check, autozeros, autotares and/or checks the OK to Fill processes and begins fill cycle number 2, then 3, 4 and so on. (See Fig. 7-11)

4. If the fill is within the target window and it is the last fill cycle of a fill sequence, the instrument goes to Standby and the Standby Display appears. (See Fig. 7-12)

Other Wait Displays that can appear are as follows:

- Waiting for Motion to settle.
- Waiting for Log Off to expire.
- Waiting for fill/dispense to continue.

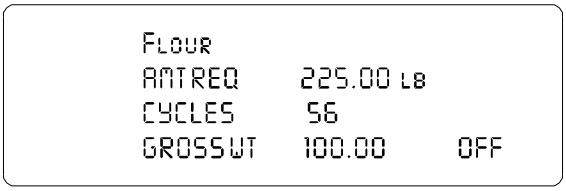


FIG. 7-12 WAIT DISPLAY

Underfill /Overfill Alarm

- - - - - ALARM CONDITION - - - - -

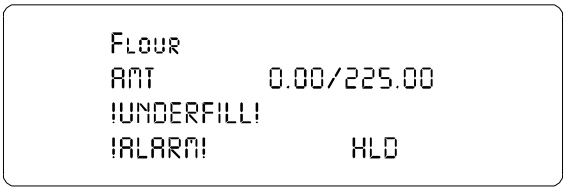


FIG. 7-13 UNDERFILL ALARM

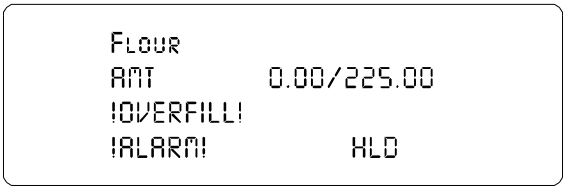


FIG. 7-14 OVERFILL ALARM

- OVERFILL ALARM, press the Clear button to clear the alarm. The Accept the Fill display appears.(See Fig. 7-15) At this time you can:

  1. Accept the fill by pressing the START button.
  2. Physically remove some of the material until it meets the target window requirements and then press the START button.
  3. The instrument returns to the Waiting On Display, repeats the motion check, autozeros, autotares and/or checks the OK to Fill processes and begins fill cycle number 2.

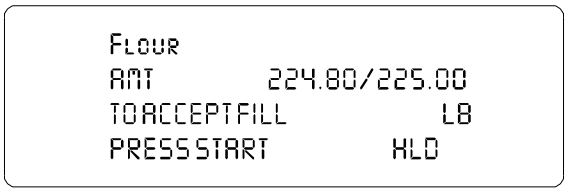


FIG. 7-15 ACCEPT FILL DISPLAY

- UNDERFILL ALARM, press the Clear button to clear the alarm, the Accept the Fill display appears. At this time you can:
  1. Accept the fill by pressing the START button.
  2. Physically add some of the material until it meets the target window requirements and then press the START button.
  3. The instrument returns to the Waiting On Display, repeats the motion check, autozeros, autotares and/or checks the OK to Fill processes and begins fill cycle number 2.

- If the gain in weight is NOT within the target window and the JOG function is turned ON the Filler/Dispenser automatically does the following:

  1. If the out of target window is an OVERFILL the OVER FILL alarm appears. Clear the alarm using the same procedures for the OVERFILL Alarm in the previous section.
  2. If the out of target window is an UNDER FILL, the Jog ON display appears.
  3. If Jog is off you will get a wait display until the amount is satisfied.

Dispense Alarms

Over Refill Alarm

- - - - - ALARM CONDITION - - - - -

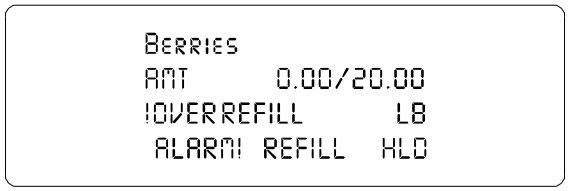


FIG. 7-16 OVER REFILL ALARM

- If the Refill exceeds the Refill High set point or exceeds the capacity of the vessel the OVER REFILL ALARM appears. (See Fig. 7-16)
  1. Correct the Over Refill condition.
  2. Press the Clear button to clear the alarm. The Dispense Standby display appears. (See Fig. 7-17)

Refill Timeout Alarm

- - - - - ALARM CONDITION - - - - -

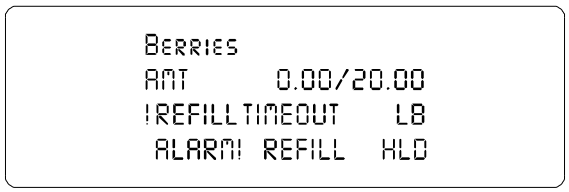


FIG. 7-17 REFILL TIME-OUT ALARM

- If the time taken to Refill exceeds the Refill Time-out parameter which is set during configuration, the Refill Time-out Alarm appears. For setup information check the HI 3010 Service Manual.
  1. Check to see why the refill took too long. If there is an obstruction, or excessive material bridging, etc. correct the problem.
  2. If the Refill Time-out was set incorrectly. Use your HI 3010 Service Manual and reset the Refill Time-out parameter.
  3. Press the Clear button to clear the alarm. The Dispense Standby display appears. (See Fig.7-18)

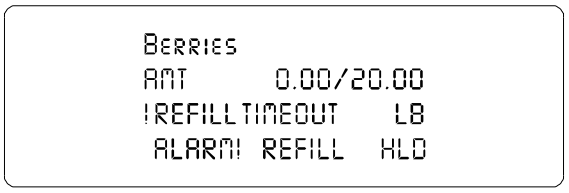


FIG. 7-18 DISPENSE STANDBY DISPLAY

Not OK to Dispense Alarm

- - - - - ALARM CONDITION - - - - -

- If it is NOT OK TO DISPENSE, an alarm appears in the display. (See Fig. 7-19)

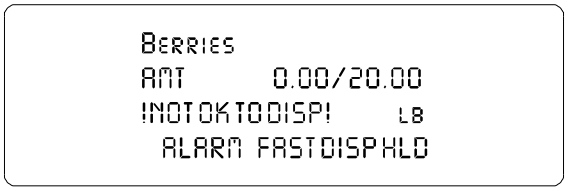


FIG. 7-19 NOT OK TO DISPENSE

1. The Operator needs to determine why it is NOT OK TO DISPENSE by checking for problems with the electrical and /or mechanical systems.
2. Once the problem has been fixed, push the Clear button to clear the Alarm. The Filler/Dispenser begins dispensing.

NOTE: The OK to DISPENSE Timer has a preset time to determine if it is OK to Dispense. If the OK to Dispense times out, it means that the preset time is too short for the process and the NOT OK to DISPENSE Alarm appears with no real alarm condition. You may need to reset the timer if it appears that no electrical or mechanical reason for the alarm is determined. The OK to DISPENSE timer may be set incorrectly for your process. See the HI 3010 Service Manual for Instructions on setting the OK to DISPENSE Timer

Lost OK to Dispense Alarm

- - - - - ALARM CONDITION - - - - -

- During the dispensing process, conditions may develop that cause the Filler/Dispenser to lose the OK to DISPENSE during Fast Dispense or Slow Dispense. When this occurs an alarm appears that

says LOST OK TO DISPENSE. (See Figs. 7-20 & 7-21)

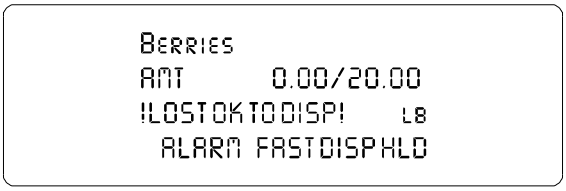


FIG. 7-20 LOST OK TO DISPENSE ALARM/FAST DISPENSE

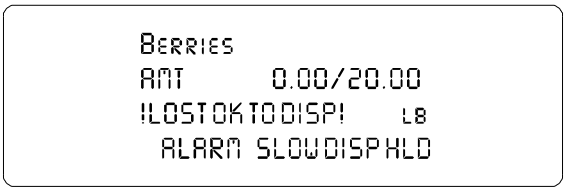


FIG. 7-21 LOST OK TO DISPENSE ALARM/SLOW DISPENSE

1. The Operator needs to determine why the system LOST OK to DISPENSE by checking for problems with the electrical and /or mechanical systems.
2. Once the problem has been fixed, push the Clear button to clear the Alarm. The Filler/Dispenser resumes dispensing from where it stopped.

Fast Gate Did Not Open Alarm

- - - - - ALARM CONDITION - - - - -

- If the Fast Dispense Gate is not open at the time you want to dispense, the FAST GATE DID NOT OPEN alarm appears on the display. (See Fig. 7-22)

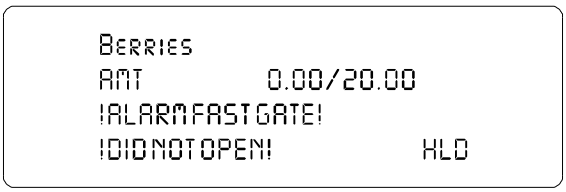


FIG. 7-22 FAST DISPENSE GATE DID NOT OPEN ALARM

1. Determine why the Fast Dispense Gate did not open and correct the problem.
2. Press the Clear button to clear the alarm. The RESUME DISPENSING? display appears. (See Fig. 7-23)

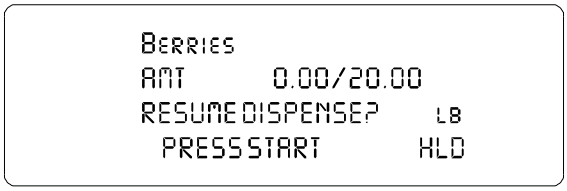


FIG. 7-23 RESUME DISPENSING FAST DISPLAY

- Press the Start button to resume dispense. (See Fig. 7-24)

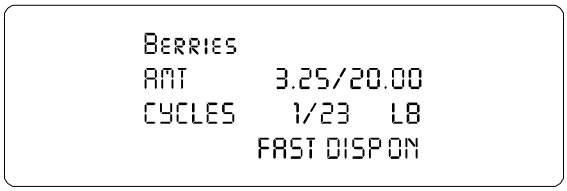


FIG. 7-24 FAST DISPENSE ON

Fast Gate Did Not Close Alarm

- - - - - ALARM CONDITION - - - - -

- If the Fast Dispense Gate does not close at the end of a cycle, the FAST GATE DID NOT CLOSE alarm appears on the display. (See Fig. 7-25)

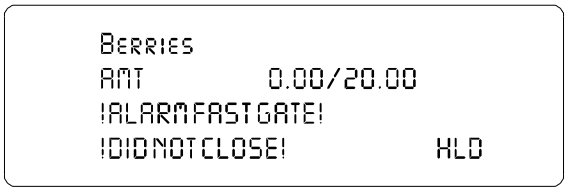


FIG. 7-25 FAST GATE DID NOT CLOSE

1. Determine why the Fast Dispense Gate did not close and correct the problem.
2. Press the Clear button to clear the alarm. The RESUME DISPENSE? display appears. (See Fig. 7-26)

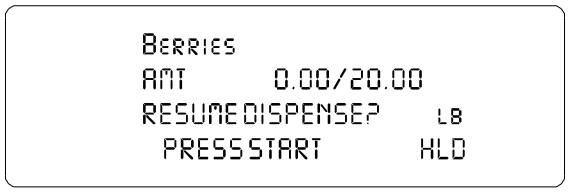


FIG. 7-26 RESUME DISPENSE? DISPLAY

- Press the Start button to resume dispense.

Slow Gate Did Not Open

- - - - - ALARM CONDITION - - - - -

- If the Slow Dispense Gate does NOT open, the SLOW GATE DID NOT OPEN alarm appears on the display. (See Fig. 7-27)

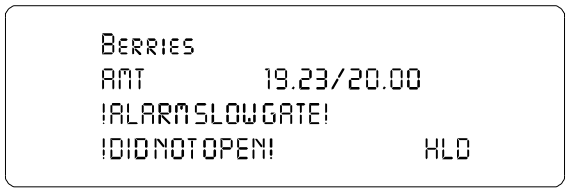


FIG. 7-27 SLOW GATE DID NOT OPEN ALARM

1. Determine why the Slow Dispense Gate did not open and correct the problem.
2. Press the Clear button to clear the alarm. The wait timer display appears. (See Fig. 7-28)

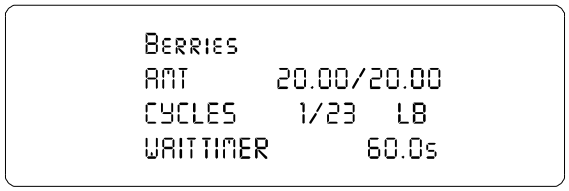


FIG. 7-28 WAIT DISPLAY

Slow Gate Did Not Close

- - - - - ALARM CONDITION - - - - -

- If the Slow Dispense Gate does NOT close, the SLOW GATE DID NOT CLOSE alarm appears on the display. (See Fig. 7-29)

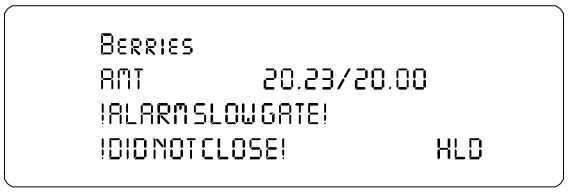


FIG. 7-29 SLOW GATE DID NOT CLOSE ALARM

1. Determine why the Slow Dispense Gate did not close and correct the problem.
2. Press the Clear button to clear the alarm. The wait timer display appears. (See Fig. 7-30)

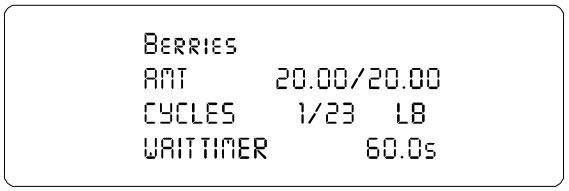


FIG. 7-30 WAIT DISPLAY

Under Dispense/Over Dispense Alarms

- - - - - ALARM CONDITION - - - - -

- If the target weight is NOT within the target window and you do not have the JOG function turned ON, the dispense is not accepted and an UNDERDISPENSE or OVERDISPENSE alarm appears depending on the alarm condition. (See Fig. 7-31 & 7-32)

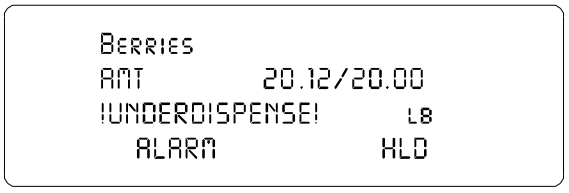


FIG. 7-31 UNDERDISPENSE ALARM

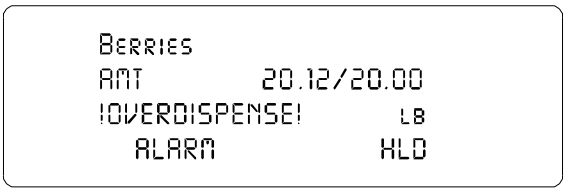


FIG. 7-32 OVERDISPENSE ALARM

- OVERDISPENSE ALARM, press the Clear button to clear the alarm. The Accept the Dispense display appears. (See Fig. 7-33) At this time you can:
  1. Accept the dispense by pressing the START button.
  2. Physically remove some of the material until it meets the target window requirements and then press the START button.
  3. The instrument returns to the Waiting ON display, repeats the motion check, autotares and/or checks the OK to Dispense processes and begins dispense cycle number 2. (See Fig. 7-33)

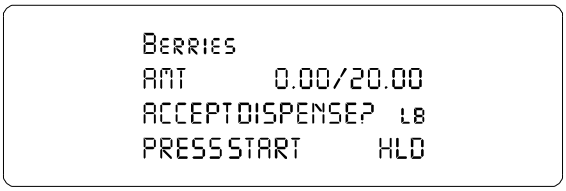


FIG. 7-33 ACCEPT DISPENSE DISPLAY

- UNDERDISPENSE ALARM, press the Clear button to clear the alarm, the Accept the Dispense display appears. At this time you can:
  1. Accept the dispense by pressing the START button.
  2. Physically add some of the material until it meets the target window requirements and then press the START button.
  3. The instrument returns to the Waiting On Display, repeats the motion check, autotares and/or checks the OK to Dispense processes and begins dispense cycle number 2
  4. The instrument checks to see if the gate of the vessel opens.

IBC/Dispense Alarms

Change IBC Alarm

- - - - - ALARM CONDITION - - - - -

- If there is still no motion. An alarm telling you to Change IBC appears. (See Fig. 7-34)

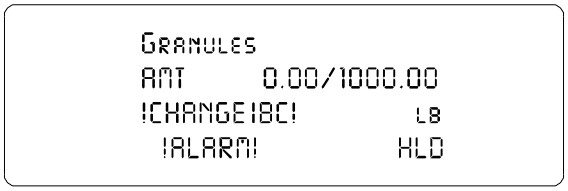


FIG. 7-34 CHANGE IBC ALARM

Jog Alarms

Jog Gate Did Not Open Alarm

- - - - - ALARM CONDITION - - - - -

- The instrument checks to see if the gate of the vessel opens. If the gate DID NOT open a JOG GATE DID NOT OPEN ALARM appears on the display and the Filler/Dispenser is placed in a hold state. (See Fig. 7-35)

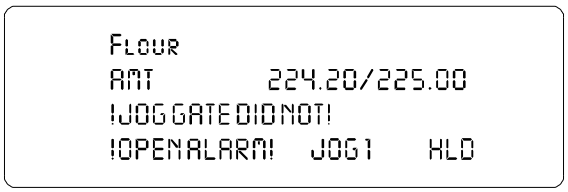


FIG. 7-35 JOG GATE DID NOT OPEN ALARM

1. Check to see why the gate did not open. Correct the problem. Press on the Clear button to clear the alarm. (See Fig. 7-36)

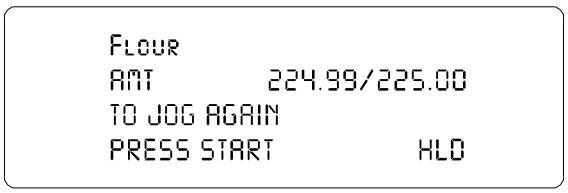


FIG. 7-36 TO JOG AGAIN PRESS START DISPLAY

2. The Jog sequence resumes from where the Jog left off when it was paused.

Jog Gate Did Not Close Alarm

- - - - - ALARM CONDITION - - - - -

- You might experience a JOG GATE DID NOT CLOSE ALARM! also. If the JOG gate does not close the alarm appears. (See Fig. 7-37)

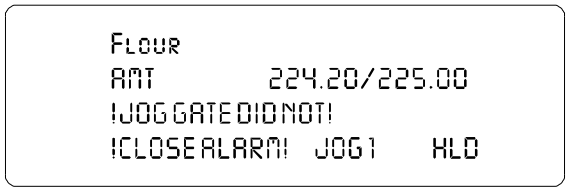


FIG. 7-37 JOG GATE DID NOT CLOSE ALARM

1. Check to see why the gate did not close. Correct the problem. Press on the Clear button to clear the alarm.
2. The Jog sequence resumes from where the Jog left off when it was paused. (See Fig. 7-38)
3. The Filler/Dispenser goes through one JOG sequence that was previously set up. (See Fig. 7-38 & 7-39)

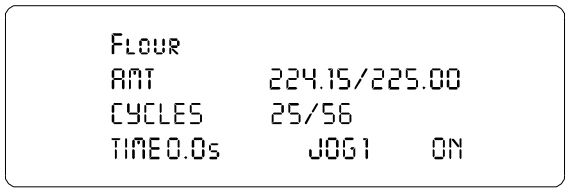


FIG. 7-38 JOG 1 DISPLAY

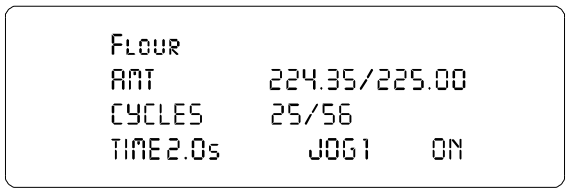


FIG. 7-39 JOG DISPLAY/JOG 1 2.0 SECONDS

4. The instrument continuously checks to see if the gain in weight is within the target window. If it is the fill process continues to another procedure. (See Fig.7-40)

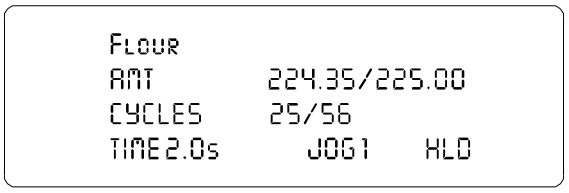


FIG. 7-40 JOG DISPLAY/COMPLETED ONE JOG SEQUENCE CHECKING WEIGHT

5. You can pause the JOG cycle by pushing the Stop button once at any time during the JOG cycle. The JOG Hold display appears. (See Fig. 7-41)

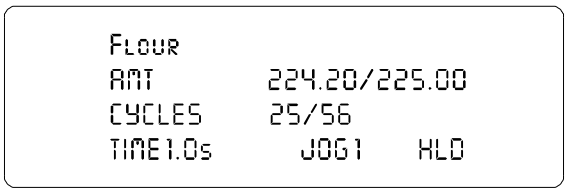


FIG. 3-41 JOG PAUSED 1.0 SECOND INTO THE JOG SEQUENCE

6. If the gain in weight is still NOT within the target window, the instrument automatically continues through the preset JOG sequences until the target window is reached and then continues on to another procedure.

Jog Count Alarm

- - - - - ALARM CONDITION - - - - -

- If the JOG sequences are completed and an UNDERFILL condition still exists, a JOG count alarm appears telling you that you have used up the JOGs for this sequence. (See Fig. 7-42)

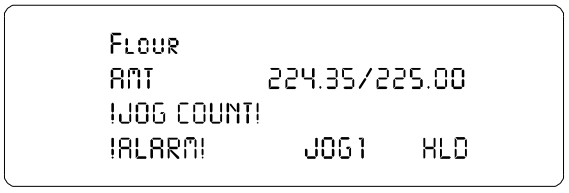


FIG. 7-42 JOG COUNT ALARM

1. Press the Clear button to clear the alarm.

2. The JOG display reappears asking you if you want to start the JOG sequence again. (See Fig. 7-43)

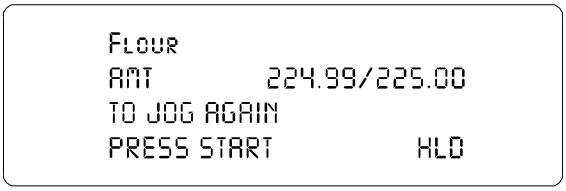


FIG. 7-43 JOG DISPLAY/JOG AGAIN

3. If you want the instrument to JOG again, press the Start button to repeat the JOG sequence.
4. If you DO NOT want the instrument to JOG again, press the Stop button. The instrument goes to the Fill ON menu if there are more cycles to complete or the Standby Menu if the JOG was on the last cycle.

Discharge Alarms

Not OK to Discharge Alarm

- - - - - ALARM CONDITION - - - - -

- If the instrument determines that it is NOT OK to Discharge, a Not OK to discharge alarm appears. (See Fig. 7-44)

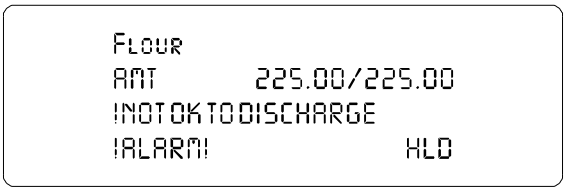


FIG. 7-44 NOT OK TO DISCHARGE ALARM

1. Check to see what is causing the Not OK to discharge alarm to appear.
2. Correct the problem.
3. Press the Clear button to clear the alarm. The Awaiting Command to Discharge display appears.

Discharge Gate Did Not Open Alarm

- - - - - ALARM CONDITION - - - - -

- If the instrument determines that the discharge gate did not open, the DISCHARGE GATE DID NOT OPEN alarm appears. (See Fig. 7-45)

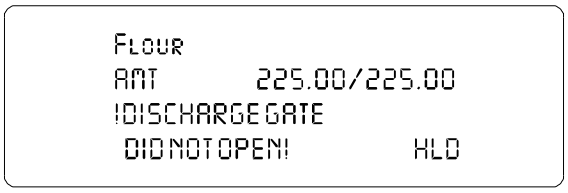


FIG. 7-45 DISCHARGE GATE DID NOT OPEN ALARM

1. Check to see what is preventing the discharge gate from opening.
2. Correct the problem.
3. Press the Clear button to clear the alarm. The Awaiting Command to Discharge display appears.

Clogged Gate Alarm

- - - - - ALARM CONDITION - - - - -

- If during the discharge the discharge gate becomes clogged, and the Auxiliary is turned OFF, the CLOGGED GATE ALARM appears. (See Fig. 7-46)

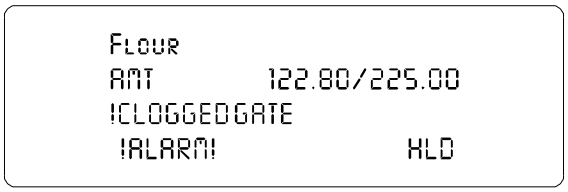


FIG. 7-46 CLOGGED DISCHARGE GATE ALARM

- If the Auxiliary is turned ON, the clogged gate alarm appears if the auxiliary time elapses and the discharge weight equals zero, within the zero tolerance setting. The CLOGGED GATE ALARM appears. (See Fig. 7-46)

Step 1. When the discharge is complete, the instrument closes the discharge gate and returns to the Fill On display or the Standby Display depending on the filling cycle.

Discharge Gate Did Not Close Alarm

- - - - - ALARM CONDITION - - - - -

- If the Discharge gate does not close, a DISCHARGE GATE DID NOT CLOSE ALARM appears. (See Fig. 7-47)

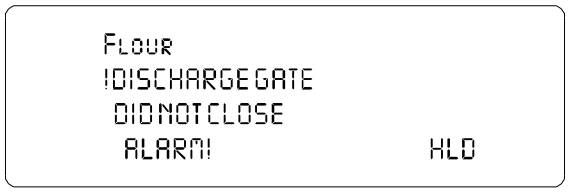
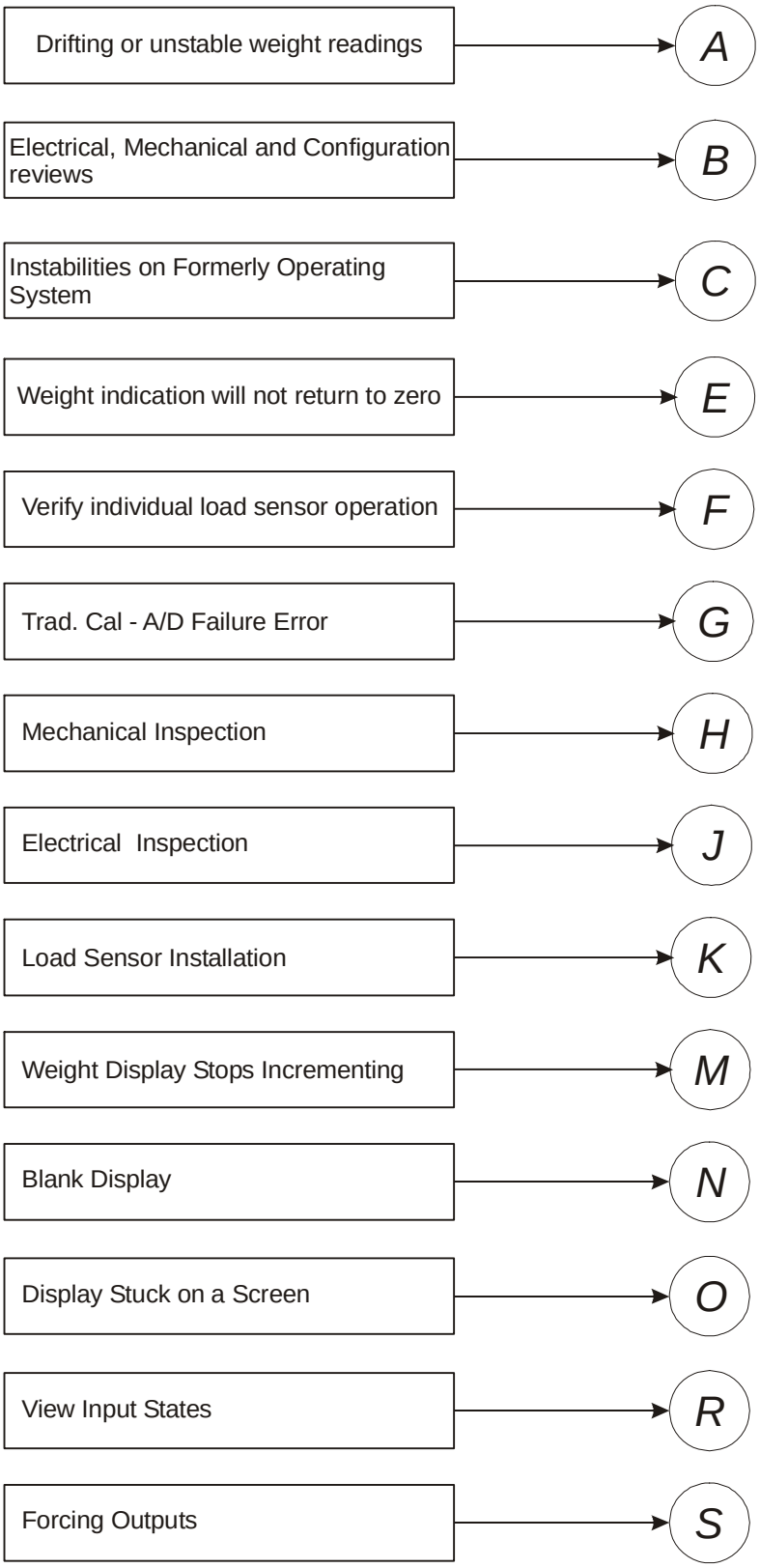


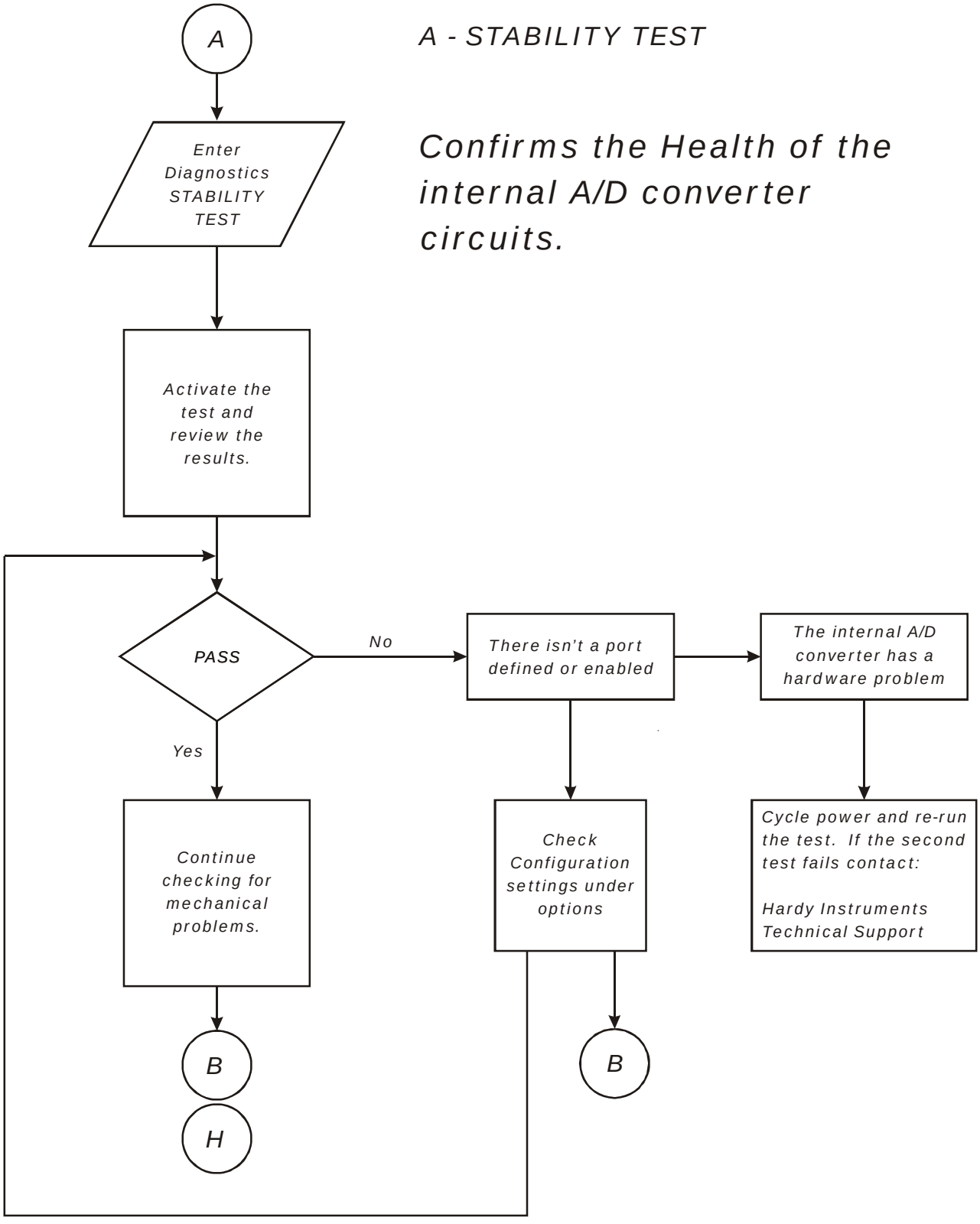
FIG. 7-47 DISCHARGE GATE DID NOT CLOSE ALARM

1. Check to see what is preventing the discharge gate from closing.
2. Correct the problem.
3. Press the Clear button to clear the alarm.
4. The instrument returns to the Fill On display or the Standby Display depending on the filling cycle.

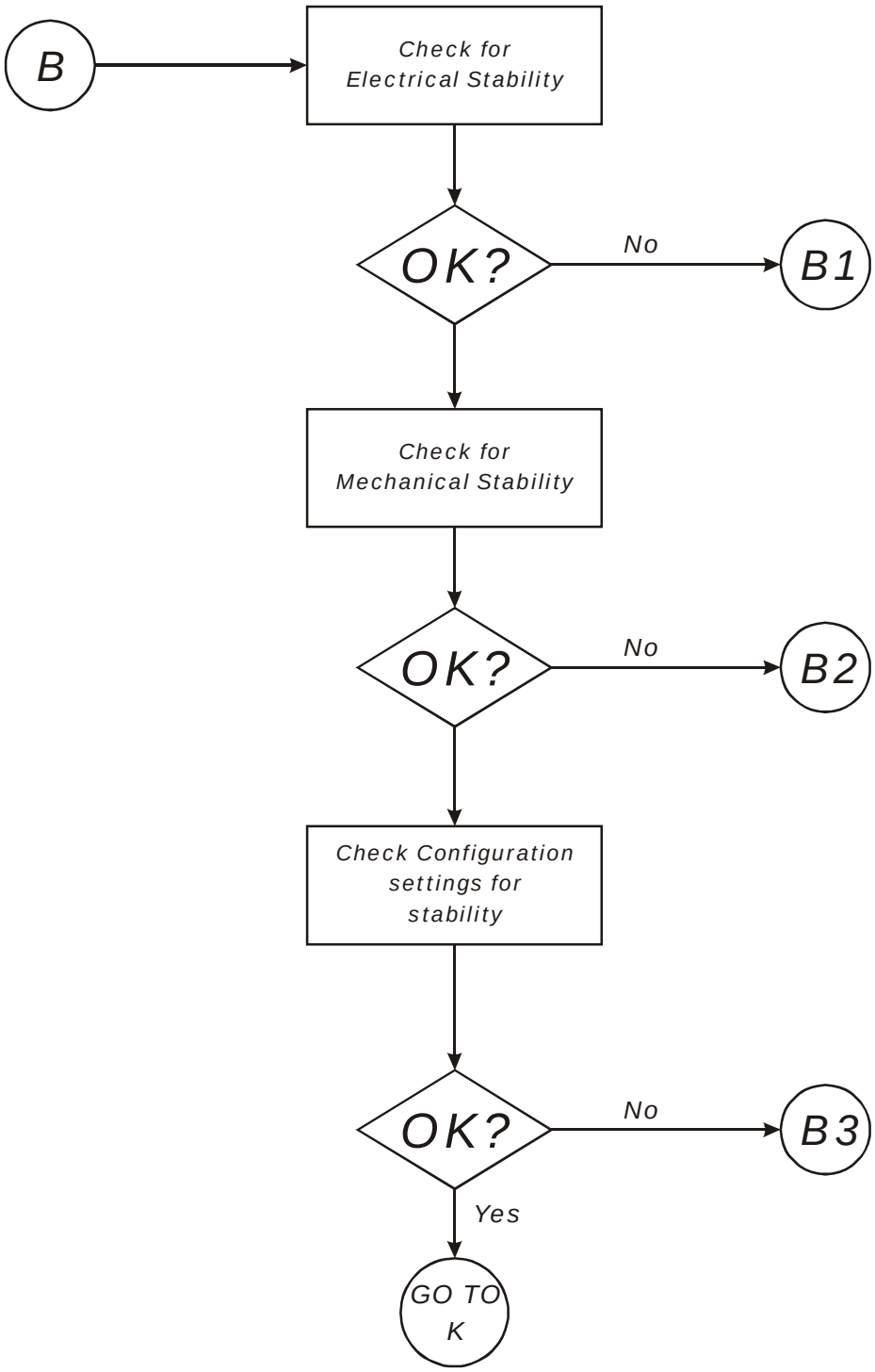
General Troubleshooting Flow Chart Index



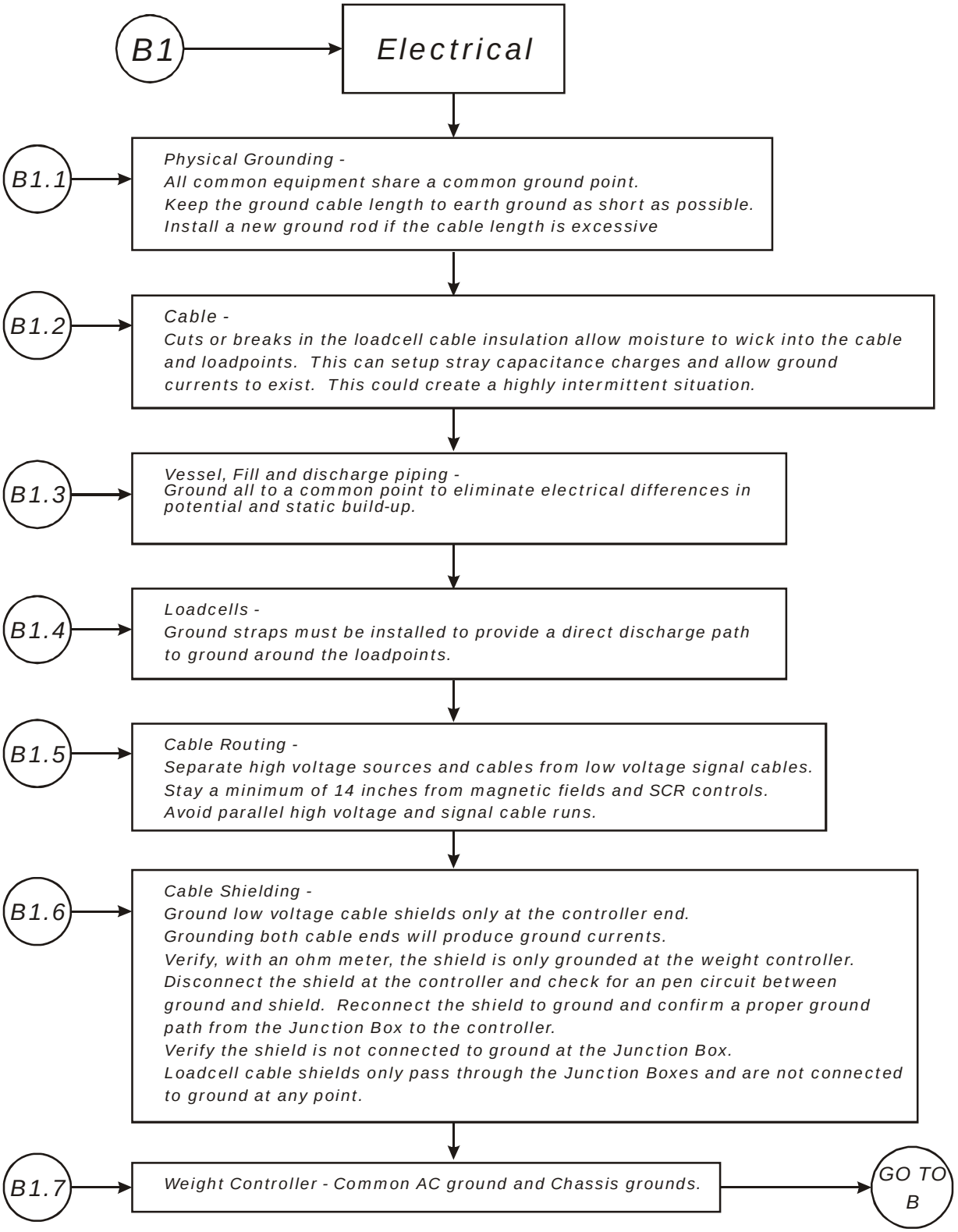
A - Guidelines for Instabilities on Formerly Operating Systems



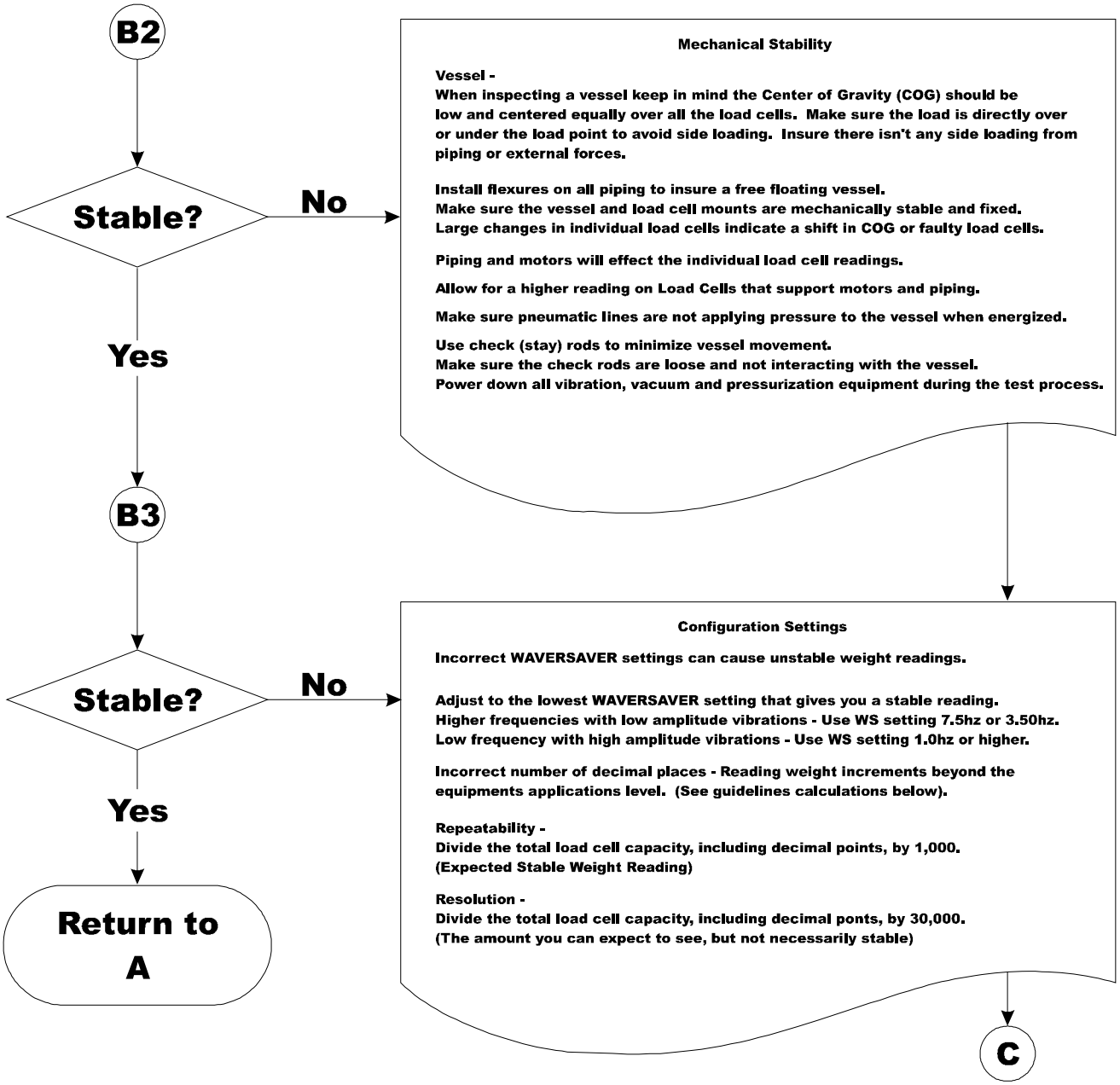
B - Guidelines for Instabilities on Formerly Operating Systems (Cont'd)



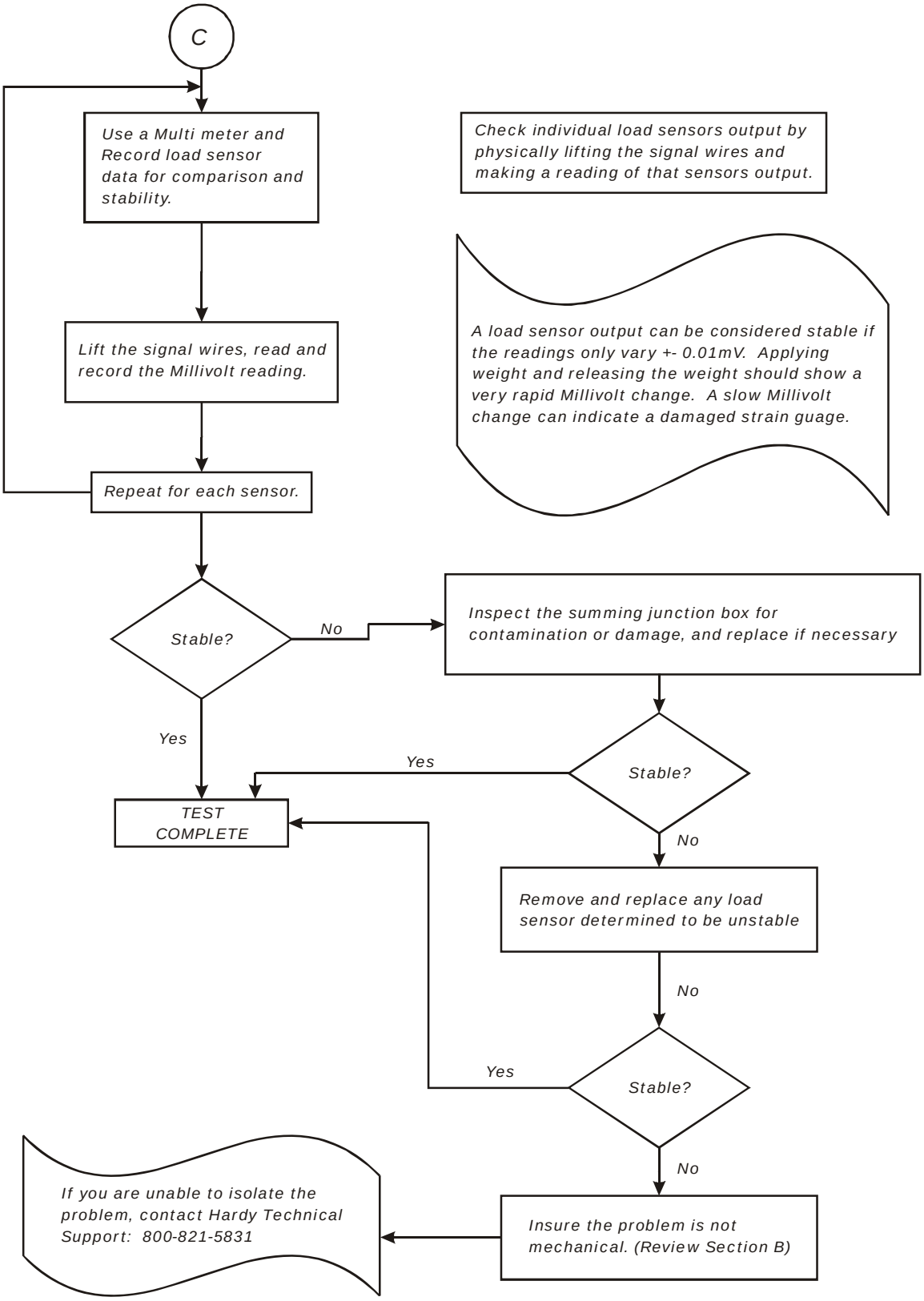
B1 - Guidelines for Instabilities on Former Operating Systems (Cont'd)



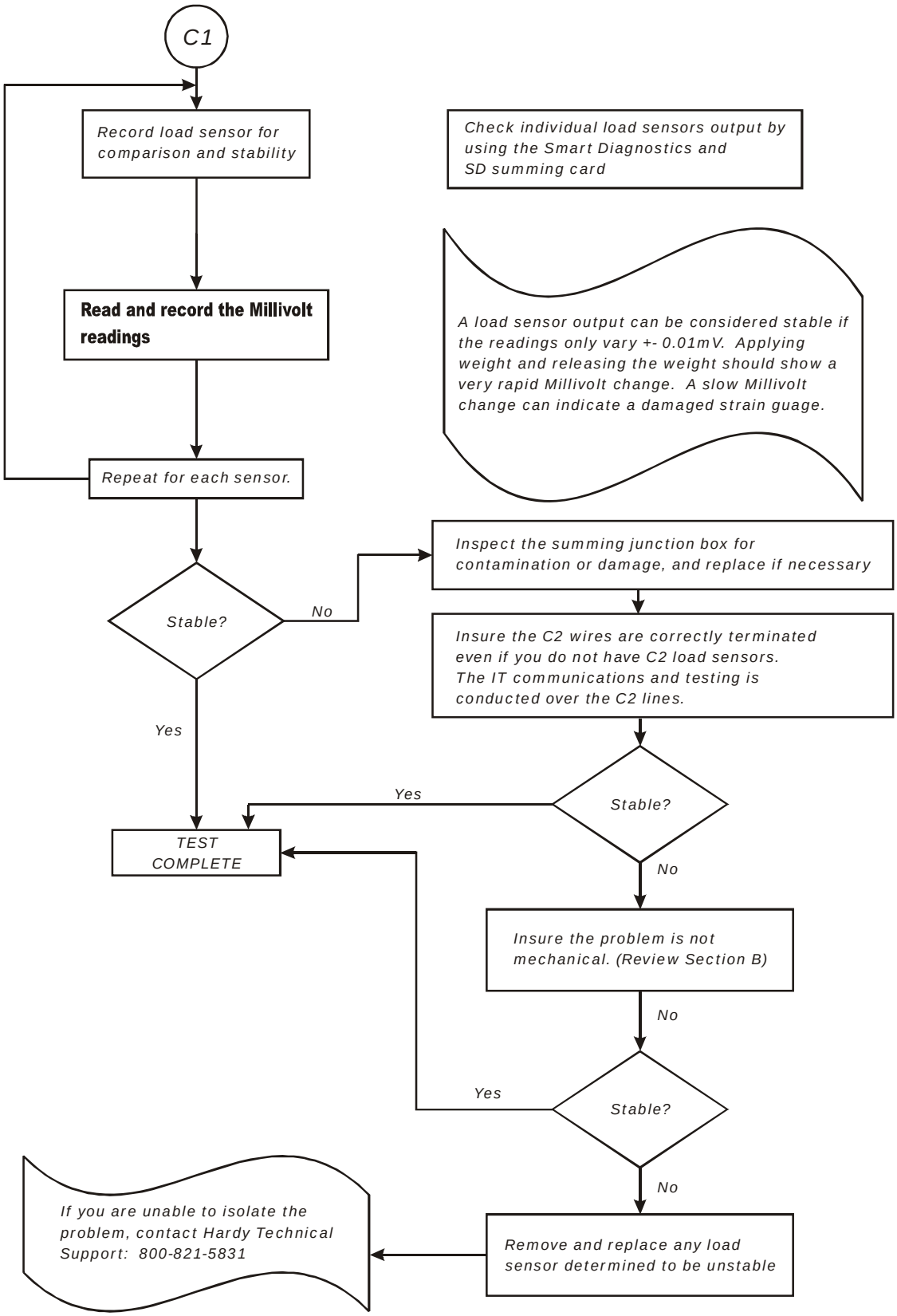
B2 - Guidelines for Instabilities on Formerly Operating Systems: Mechanical Stability and Configuration Settings.



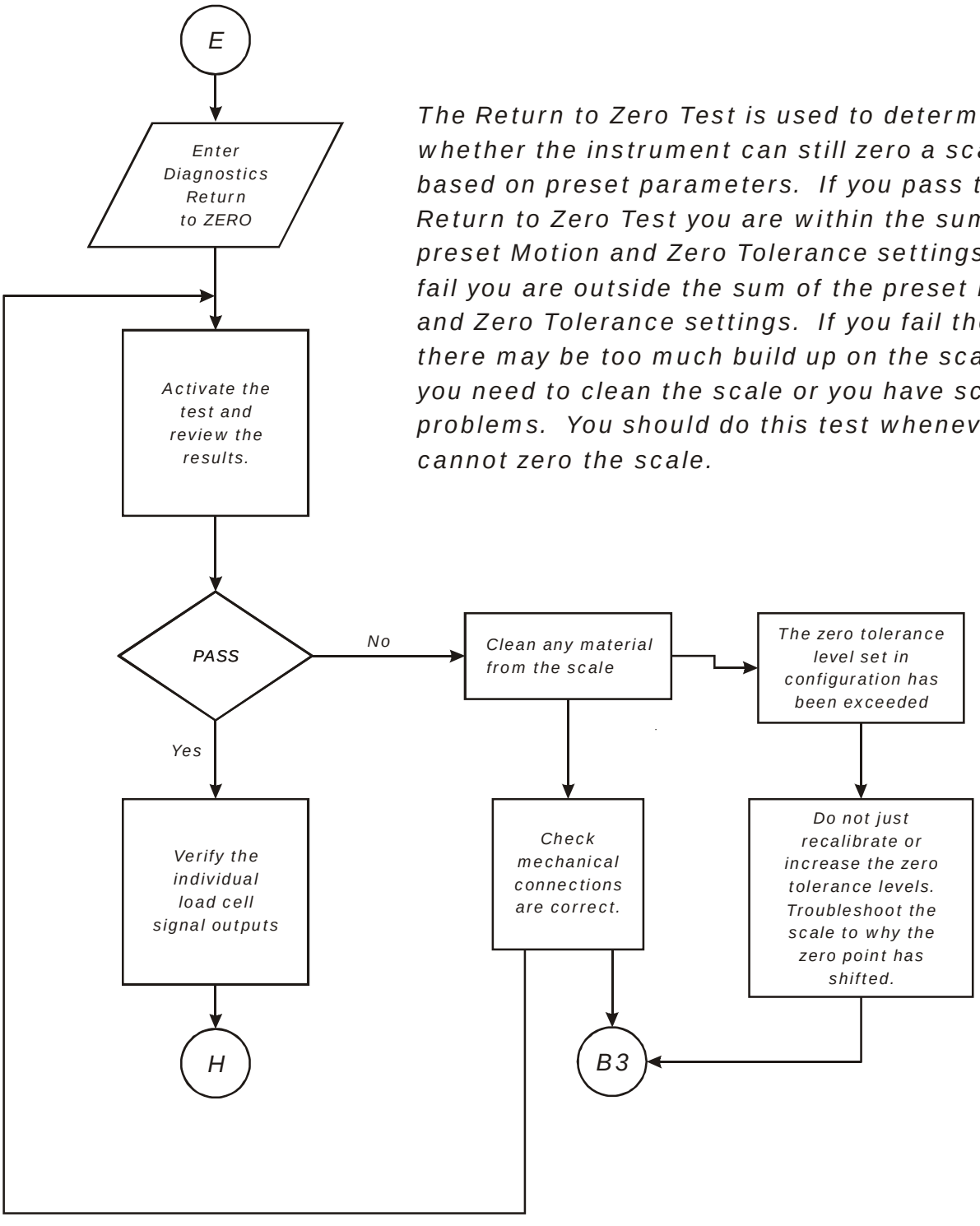
C - Guidelines for Instabilities on Formerly Operating Systems



C1 - Guidelines for Instabilities on formerly operating systems with Smart Diagnostics

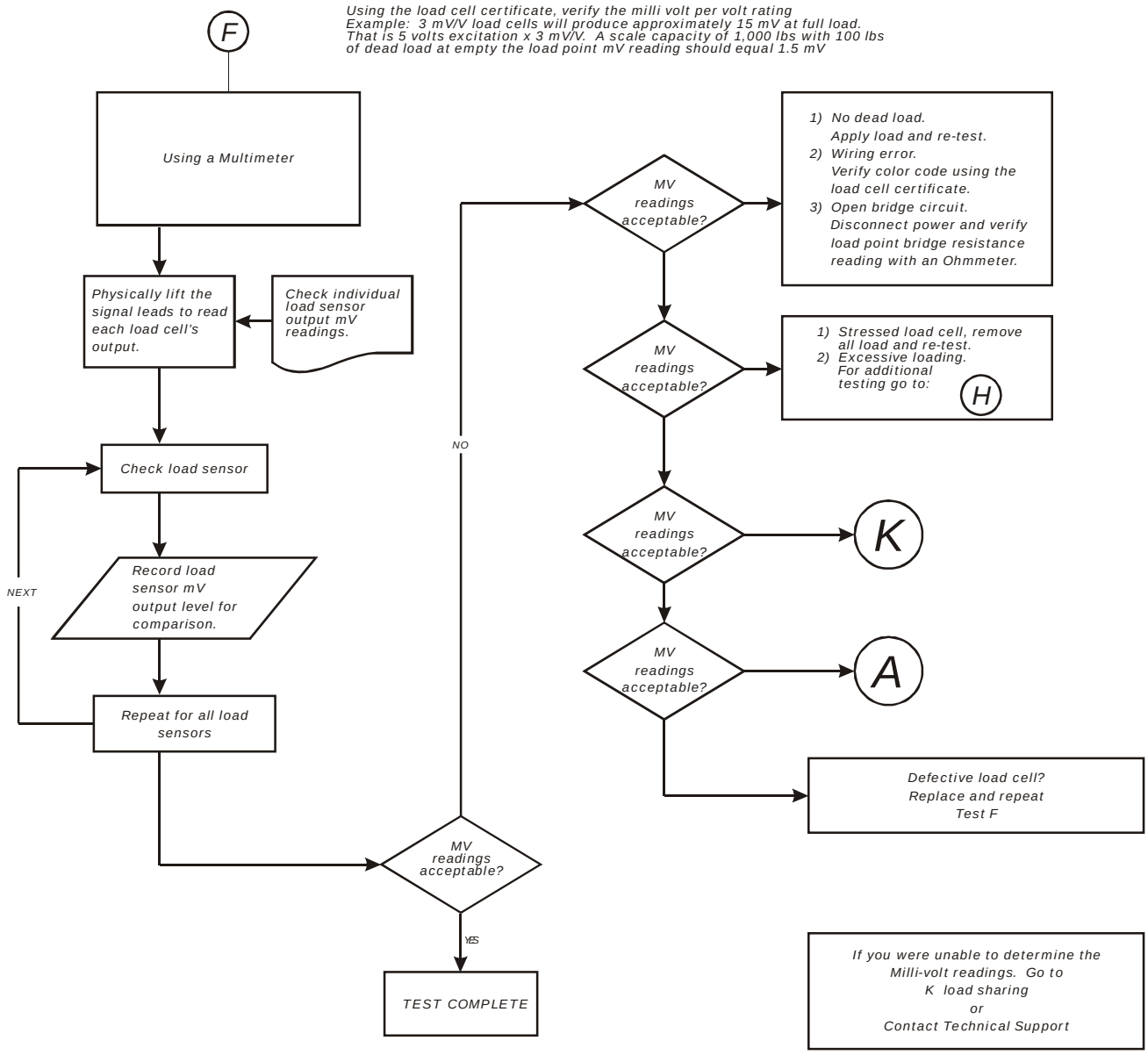


E - Non-Return to Zero

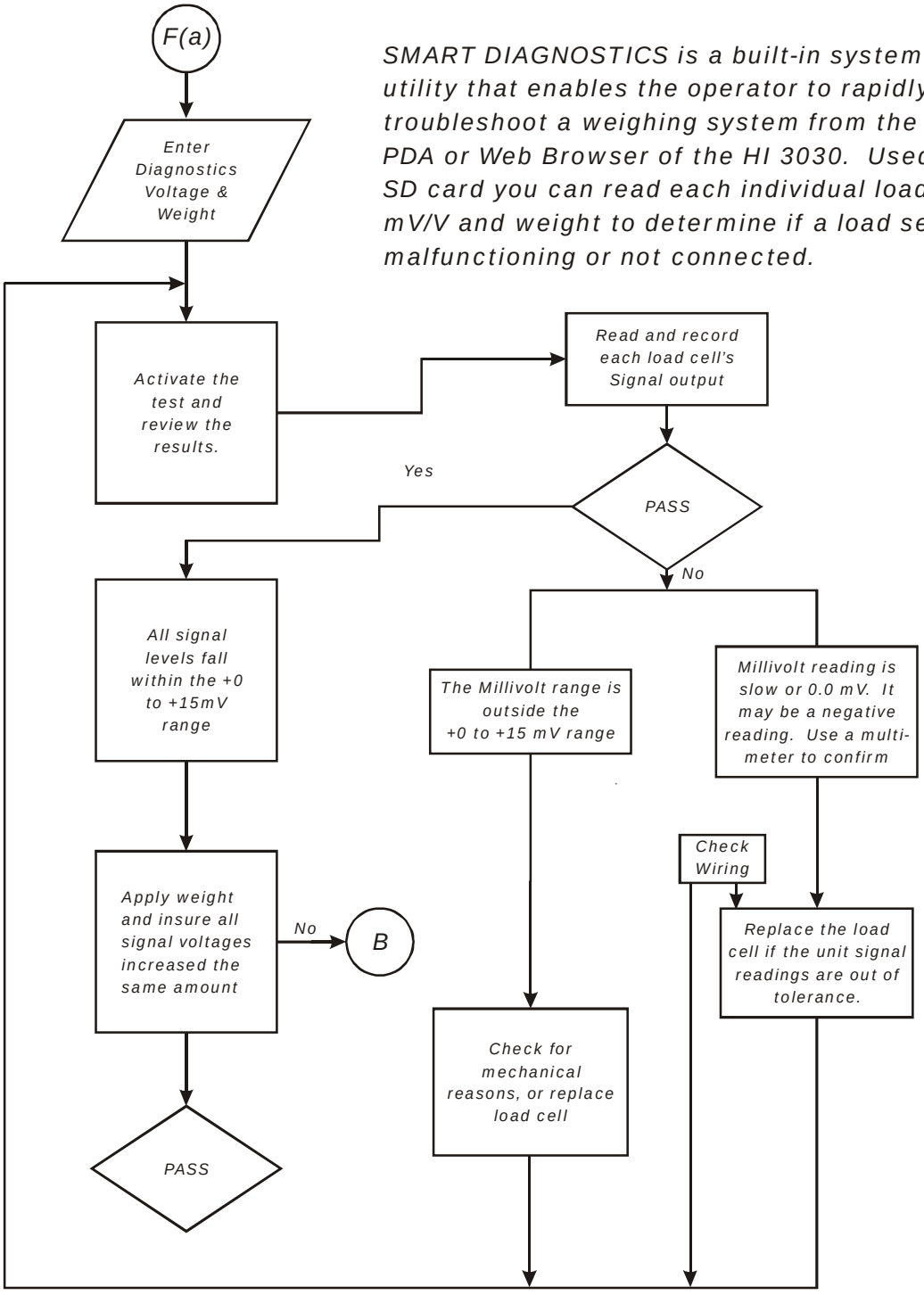


The Return to Zero Test is used to determine whether the instrument can still zero a scale based on preset parameters. If you pass the Return to Zero Test you are within the sum of the preset Motion and Zero Tolerance settings. If you fail you are outside the sum of the preset Motion and Zero Tolerance settings. If you fail the test there may be too much build up on the scale and you need to clean the scale or you have scale problems. You should do this test whenever you cannot zero the scale.

F - Verify Individual Load Cell Milli-Volt Readings

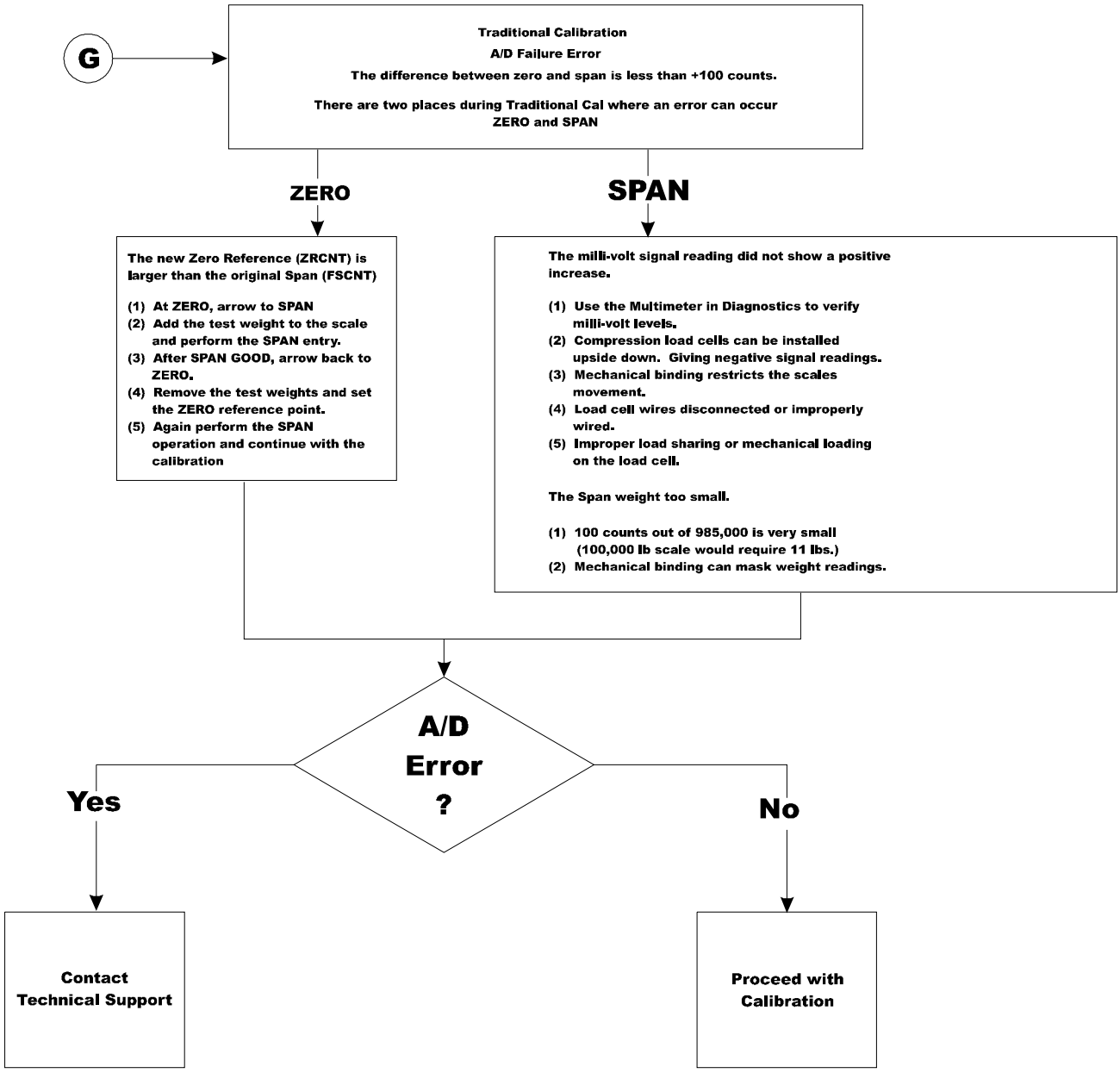


F(a) - Verify Individual Load Cell Readings Using Smart Diagnostics

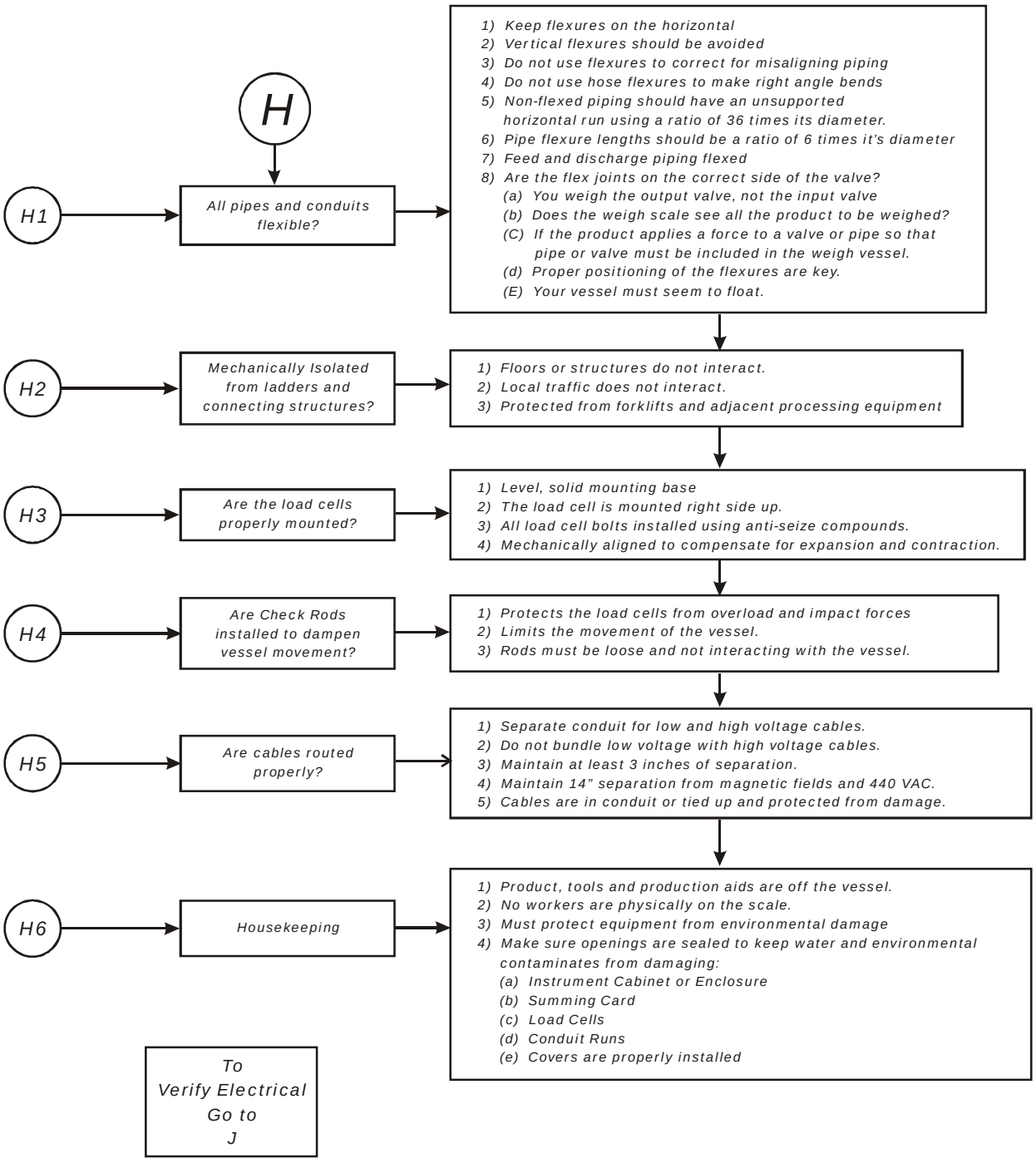


SMART DIAGNOSTICS is a built-in system diagnostics utility that enables the operator to rapidly troubleshoot a weighing system from the front panel, PDA or Web Browser of the HI 3030. Used with an HI SD card you can read each individual load cell in mV, mV/V and weight to determine if a load sensor is malfunctioning or not connected.

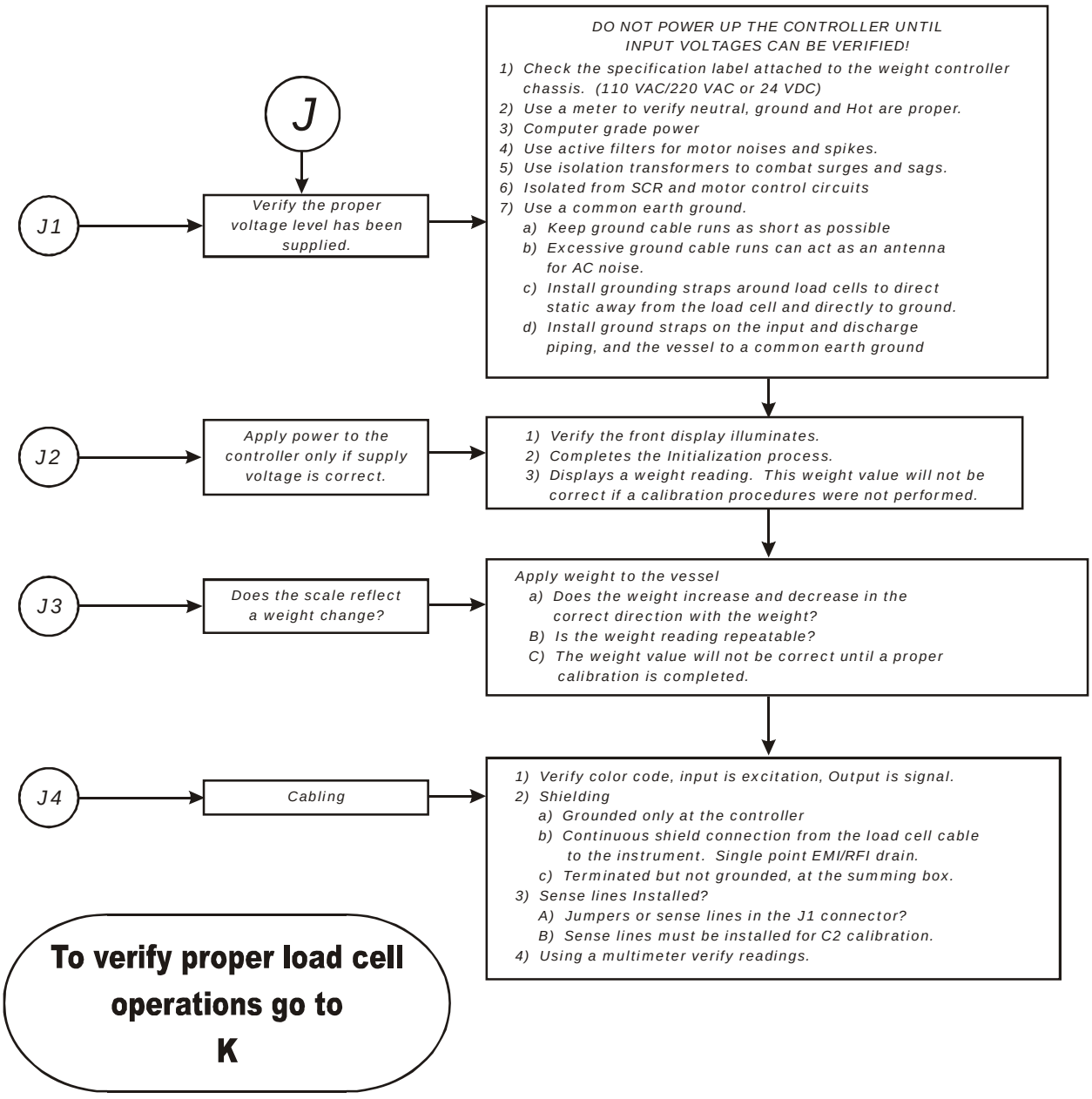
G - A/D Failure Error



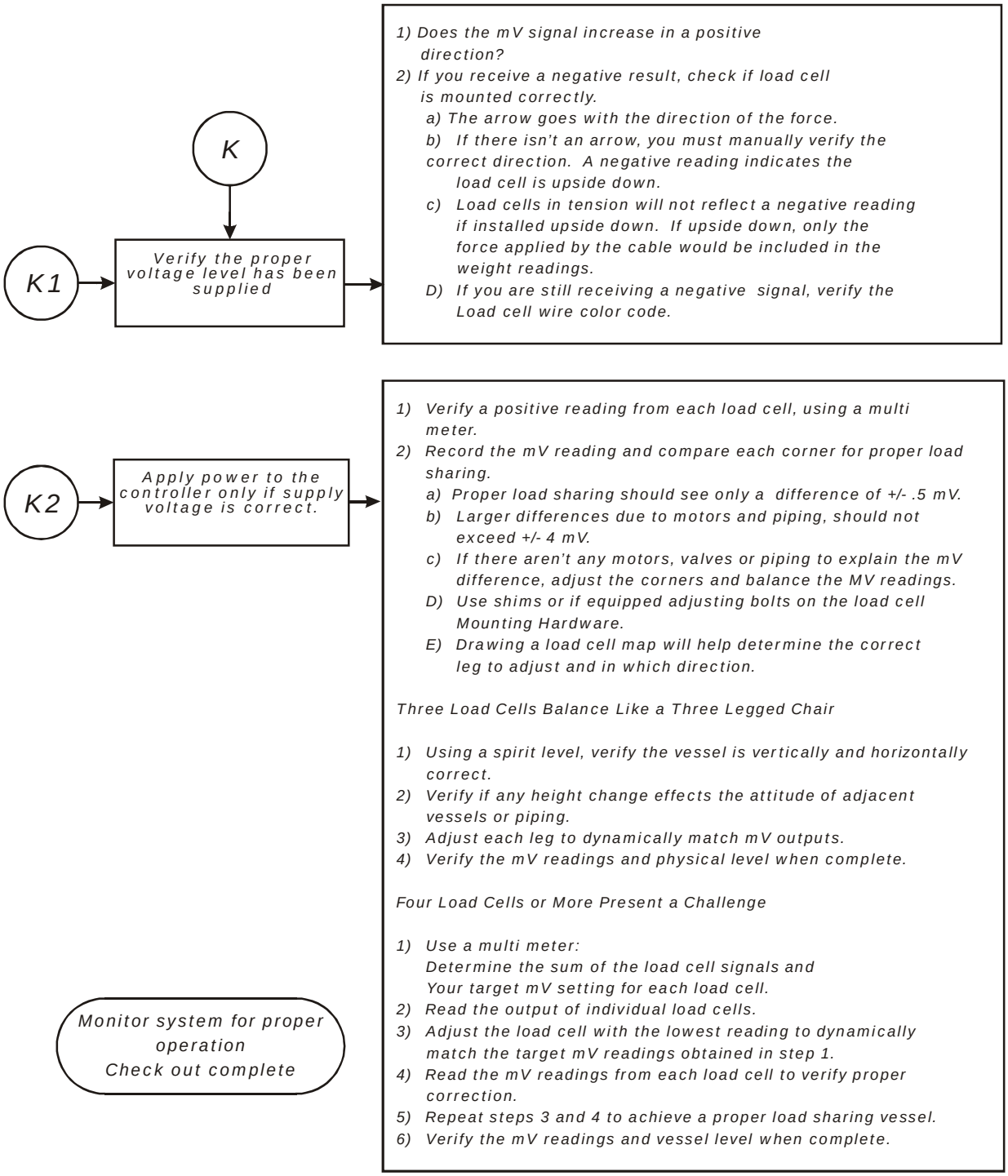
H - Mechanical Inspection



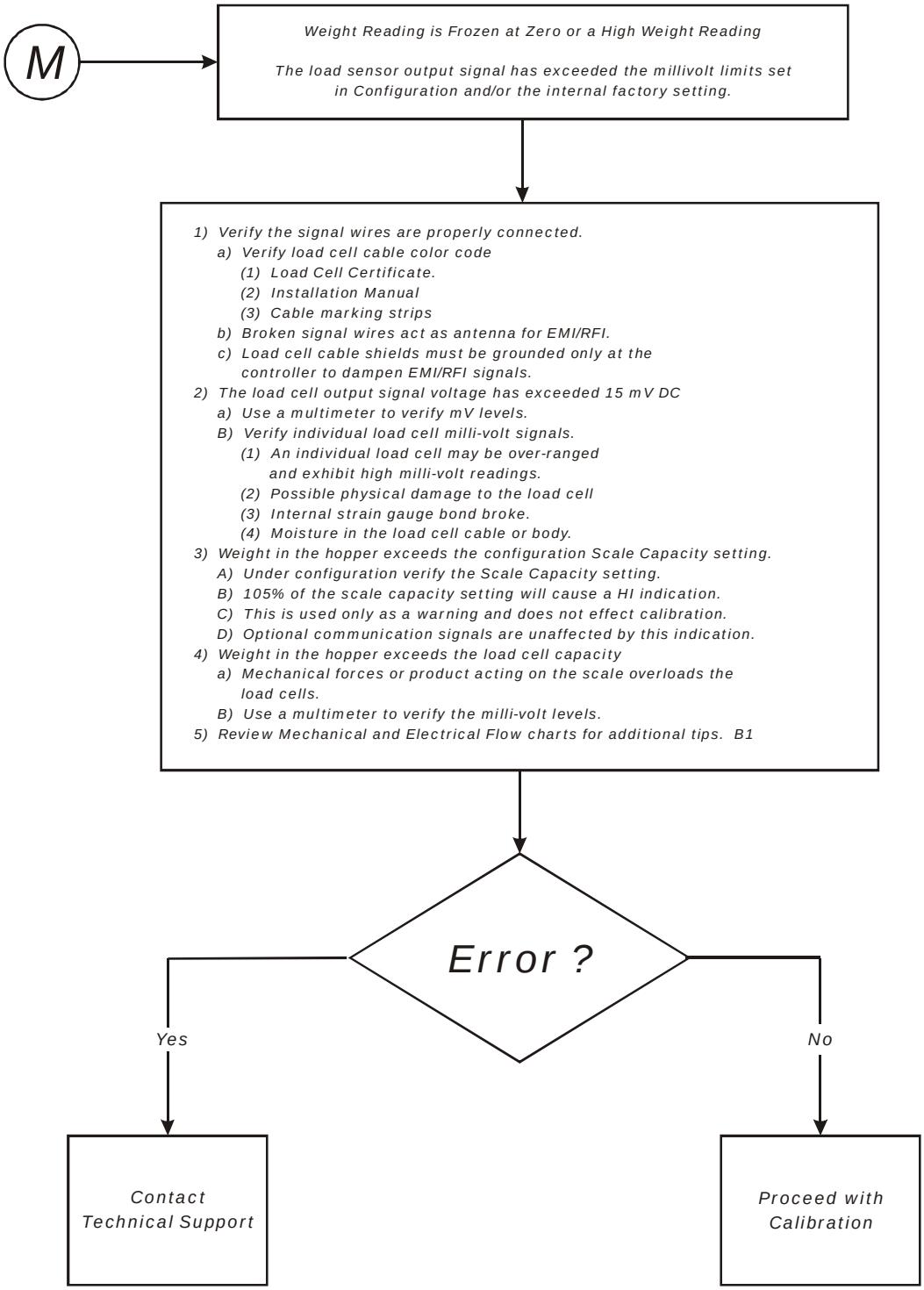
J - Electrical Inspection



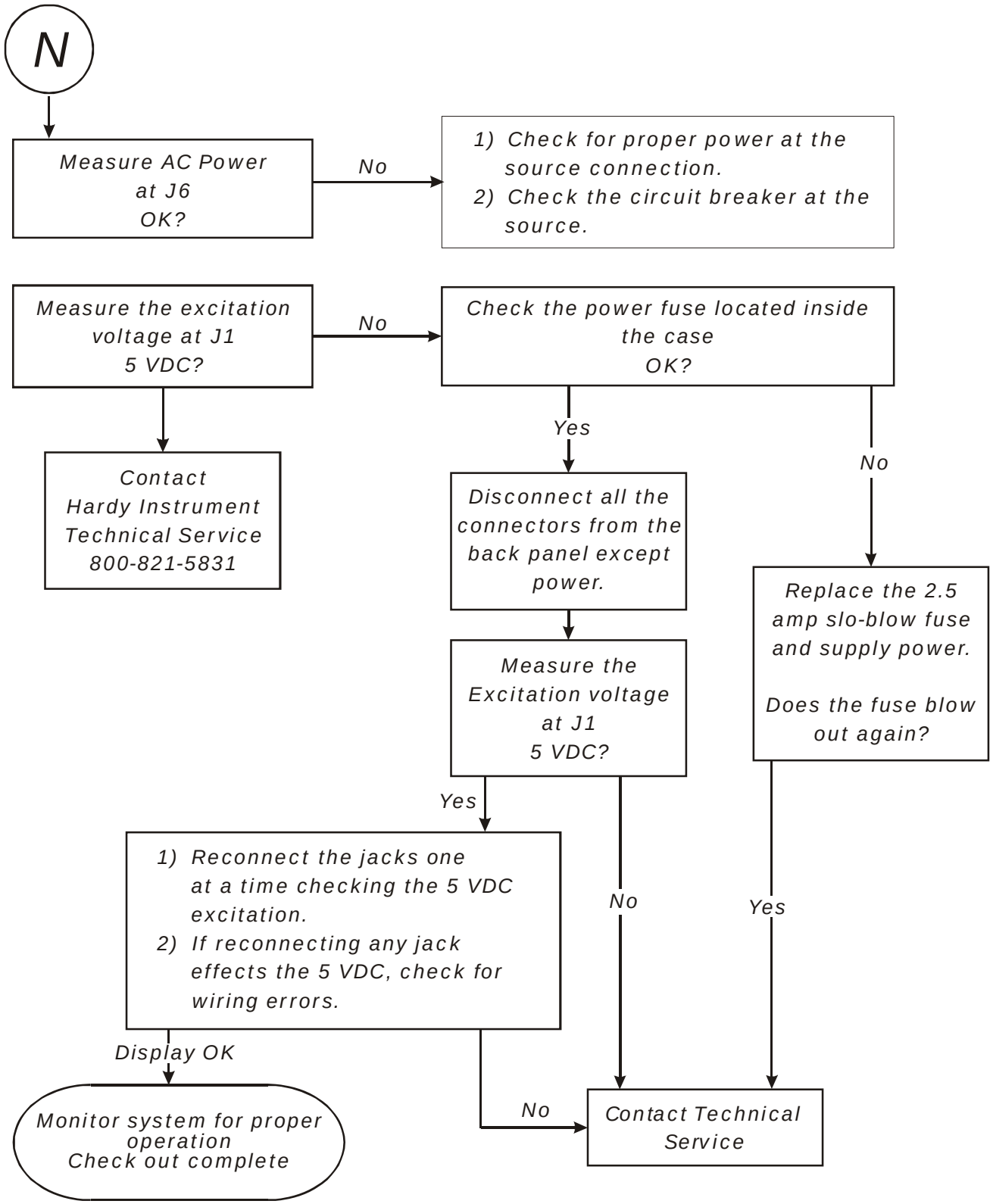
K - Load Sharing and Load Sensor Checkout



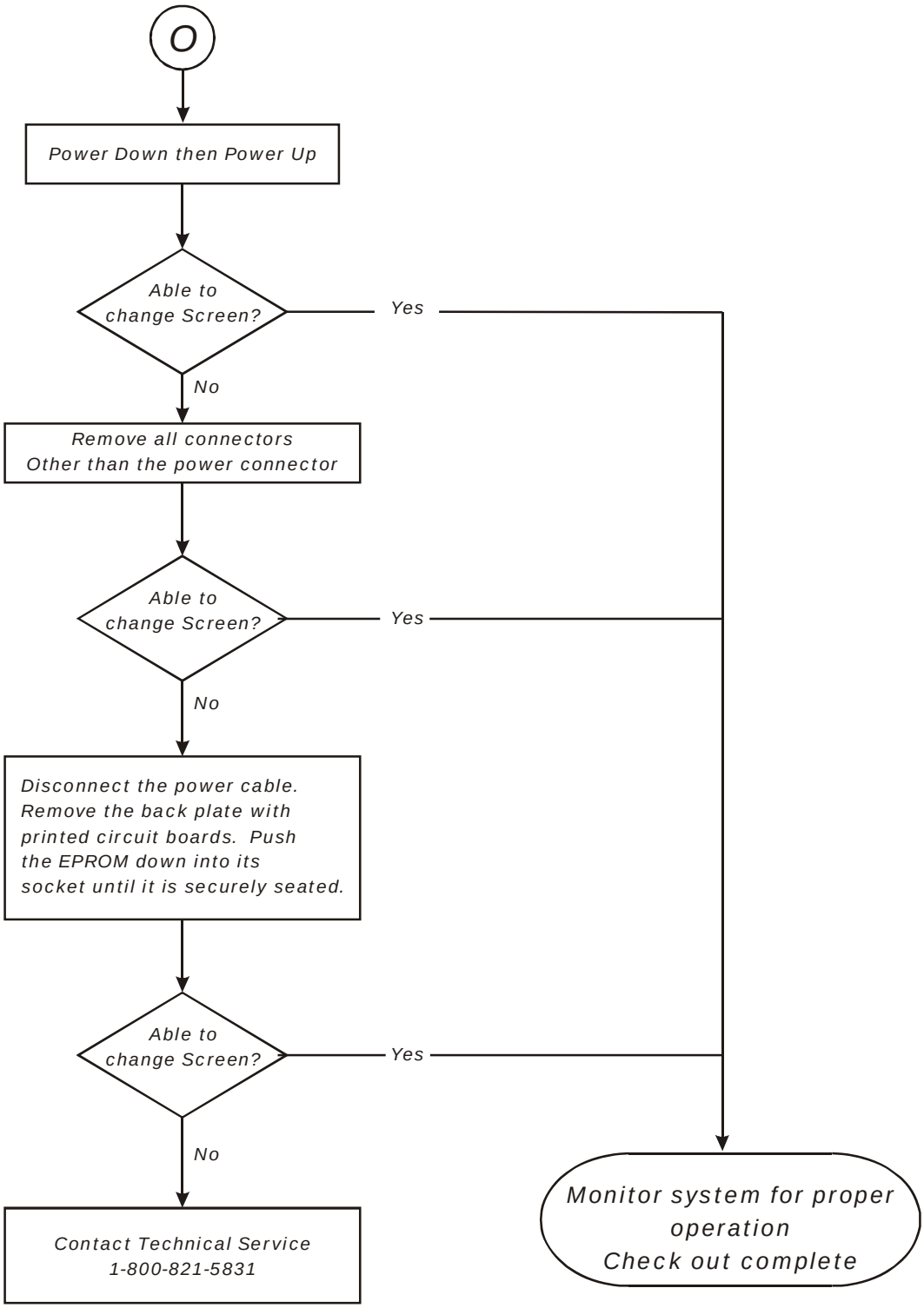
M - Weight Reading Stops Incrementing



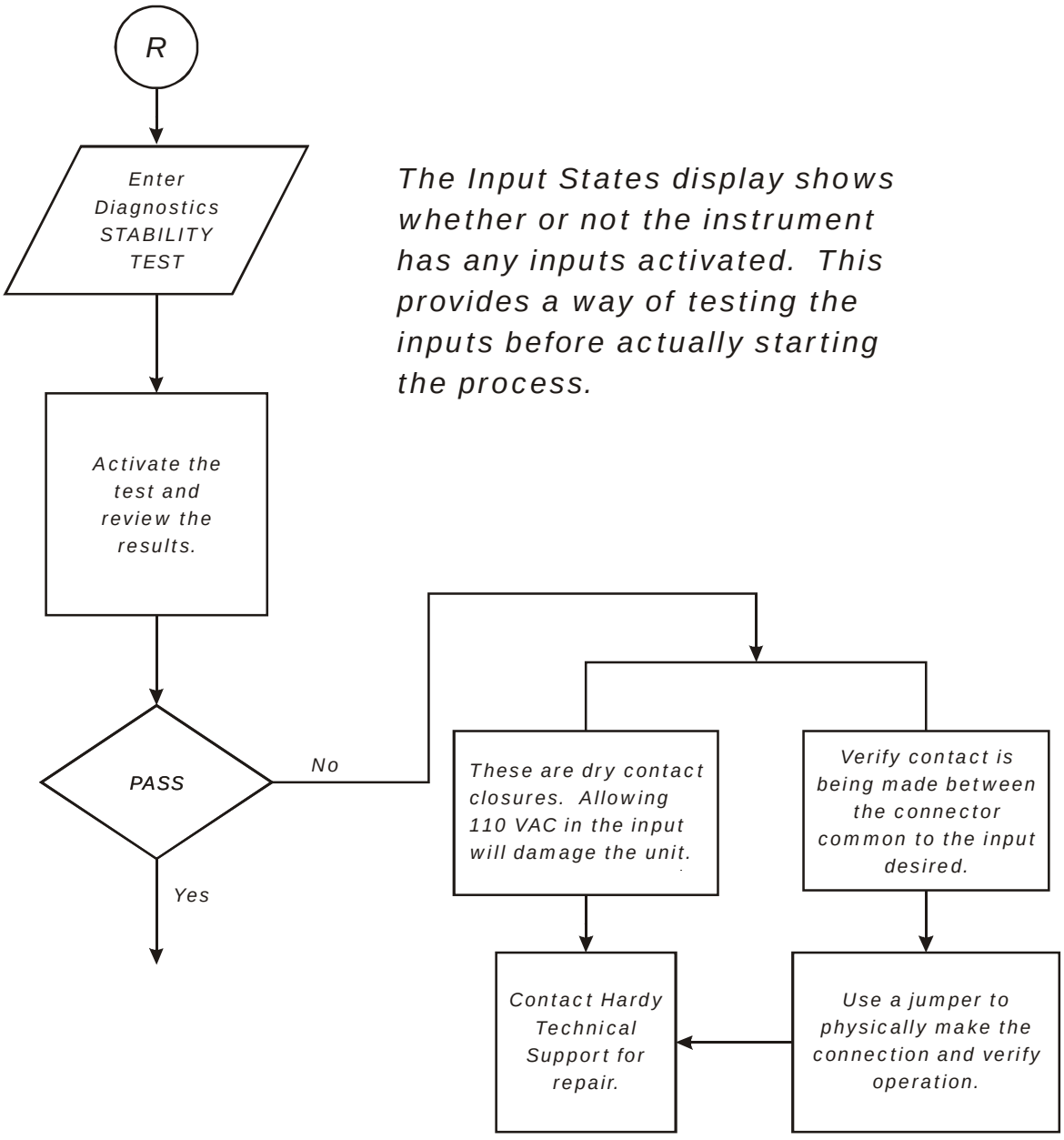
N - Blank Screen



O - Display Stuck on a Screen

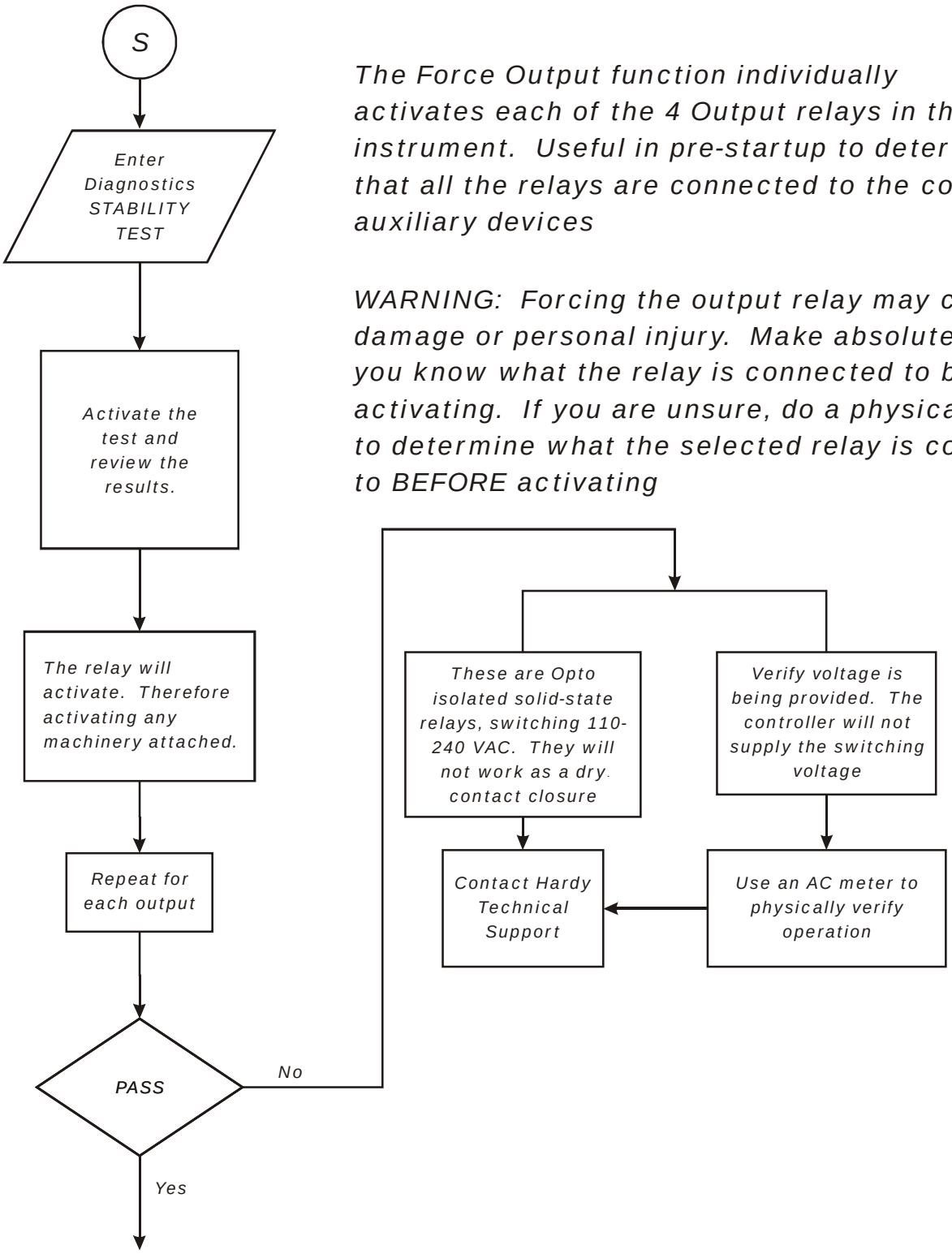


R - View Input States



The Input States display shows whether or not the instrument has any inputs activated. This provides a way of testing the inputs before actually starting the process.

S - Forcing Outputs



The Force Output function individually activates each of the 4 Output relays in the instrument. Useful in pre-startup to determine that all the relays are connected to the correct auxiliary devices

WARNING: Forcing the output relay may cause damage or personal injury. Make absolutely sure you know what the relay is connected to before activating. If you are unsure, do a physical check to determine what the selected relay is connected to BEFORE activating

System Integrity Check and Fault Determination From the Front Panel

To determine if an instrument or cabling problem exists, verify the basic operation of the system by performing the following system checks.

Diagnostics

About Diagnostics

The Diagnostics menus enable the technician to get a more complete view of how the Filler/Dispensing/IBC system is working. For example you can check to see the last Calibration, the type of calibration and when the last Calibration was performed. You can view the Data List Display for the Serial Number assigned to the instrument or Program Part Number. You can also check the last graduation size, Units selected, Operator ID, Analog Options and more information about the configuration of the instrument you are checking. You can get information about the Load Sensors such as Output Sensitivity, Hysteresis, Sensitivity of each individual Load Sensor. Many of the Menu Items will allow you to change them. If a Menu Item has an asterisk (*) in front of it then you can change this item. The Diagnostic Menus allow you to perform a Self Test which provides the total scale input to the instrument such as mV and Weight, mV/V and Weight and mV/V for the units selected (i.e. lbs, kg, oz, g).

Checking the Device Data List

The Device Data List is a list of all the parameters that were set for the ingredient you are currently using and the instrument parameters that have been set for this instrument.

Step 1. From the Standby Display press the Test/9 button. The Test and Data Menu appears with the cursor in front of Device Data List. (See Fig. 7-48)

FIG. 7-48 TEST AND DATA MENU/SELECTING DEVICE DATA LIST

Step 2. Press the Enter button. The Device Data List Display appears with the cursor in front of Instrument ID. (See Fig. 7-49)

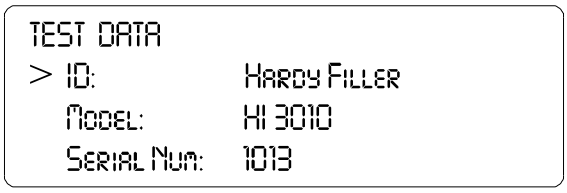


FIG. 7-49 TEST DATA DISPLAY/INSTRUMENT ID - MODEL NUMBER - S/N

Step 3. Here you can view the Instrument ID, Model Number and Instrument Serial Number of the instrument. This is a read only display. To change any of the parameters you will have to go to the Setup Menu/Instrument ID.

Step 4. Press the down arrow button until the next three parameters appears. (See Fig. 7-50)

FIG. 7-50 TEST DATA DISPLAY/PROGRAM VERSION/LAST CAL TYPE

Step 5. These are read only displays. The information is important:

- PP# = Program Part Number. This is the part number of the firmware. To order additional copies of the firmware you will need this number. This is also additional information available to a service technician for troubleshooting.
- Often a technician needs to know the program version to determine if the correct version is being used. A Hardy Technical Support Technician will ask what version of software you are currently using to determine the source of a problem. You can find the version here.
- The Last Cal Type will tell you what Calibration was done on the instrument. This is important when you are not getting the readings you configured the instrument for.

Step 6. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-51 & 7-52)

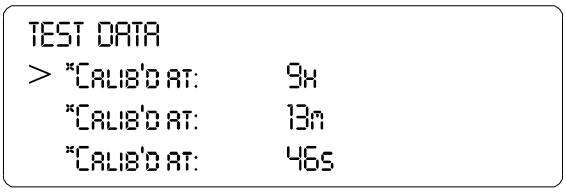


FIG. 7-51 TEST DATA/LAST CALIBRATION TIME

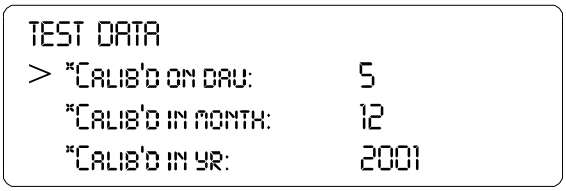


FIG. 7-52 TEST DATA/LAST CALIBRATION DAY/ MONTH/YEAR

- The Last Cal time is important to determine if the instrument needs calibration to correct a problem with the scale. If a calibration has not been done for a long time it is time to re-calibrate the instrument.

Step 7. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-53)

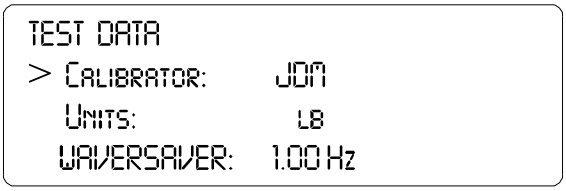


FIG. 7-53 TEST DISPLAY/CALIBRATOR - UNITS - WAVERSAVER®

Step 8. The Calibrator is read only. However you can change the Units and the WAVERSAVER settings from this menu.

Step 9. Press the up or down arrow until the cursor is in front of *Units.

- This display shows the last selected Unit. Press the left or right arrow buttons to select the Units you want. The selections are lbs, kg, oz, g.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 10. Press the up or down arrow until the cursor is in front of *WAVERSAVER. This display shows the last WAVERSAVER selection.

- Press the left or right arrow buttons to select the WAVERSAVER selection you want.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter.

Step 11. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-54)

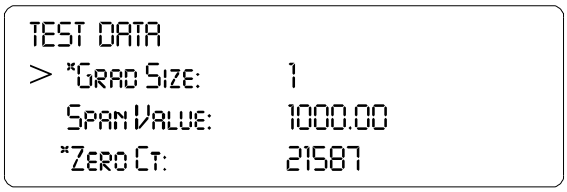


FIG. 7-54 TEST DATA DISPLAY/GRADUATION SIZE - SPAN VALUE - ZERO COUNT

Step 12. The Span Value is read only. The Graduation Size and Zero counts are for the last calibration only. The *Grad (Graduations) and *Zero Count can be changed.

Step 13. Press the up or down arrow until the cursor is in front of *Grad.

- This display shows the last selected Graduation size. Press the left or right arrow buttons to select the Units you want. The selections are 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 14. Press the up or down arrow until the cursor is in front of Span Value. The Span Value is the value entered for the last calibration only.

Step 15. Press the up or down arrow until the cursor is in front of *Zero Count.

- Changing the Zero Count can nullify your calibration.
- The Zero Count is the stored A/D counts on the last calibration zero.
- To clear the Zero Count press the Clr (Clear) button.

NOTE: Zero counts must be less than Span counts.

- Press the Enter button to set the entry.

- Press the down arrow to move to the next parameter you want to view or change.
- If you get an error during calibration, change Zero Count to 500,000 to clear the calibration error, then recalibrate.

Step 16. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-55)

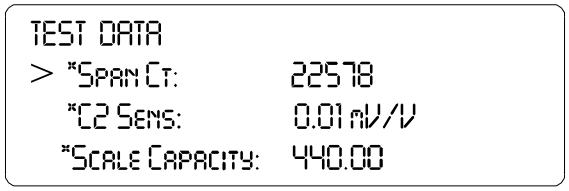


FIG. 7-55 TEST DATA DISPLAY/SPAN COUNT - C2 SENSITIVITY - SCALE CAPACITY

Step 17. *Span Count, *C2 Sensitivity, *Scale Capacity can all be changed.

Step 18. Press the up or down arrow until the cursor is in front of *Span Count.

- Changing the Span Count can nullify your calibration.
- The Span Count are the A/D counts on the last C2 (full scale) or Traditional (Span) calibration.
- To clear the Span Count press the Clr (Clear) button.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.
- Change the Span Count to a large number to clear calibration errors, then re-calibrate.
- Span Counts must be larger than the zero counts.

Step 19. Press the up or down arrow until the cursor is in front of *C2 Sensitivity.

- The C2 Sensitivity is the full scale output sensitivity of C2 load sensor measured at the factory.
- To change the sensitivity press the Clr (Clear) button.
- Use the alphanumeric key pad and enter the sensitivity specifications that comes with new load sensors and enter the full scale output sensitivity of the C2 load sensors.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 20. Press the up or down arrow until the cursor is in front of *Scale Capacity.

- The Scale Capacity is the weight capacity of the scale being used in this Filler/Dispenser/IBC application.
- To change the Scale Capacity press the Clr (Clear) button.
- Use the alphanumeric key pad to enter a new the full scale capacity.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 21. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-56)

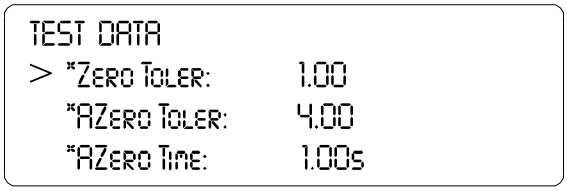


FIG. 7-56 TEST DATA DISPLAY/ZERO TOLERANCE - AUTO ZERO TOLERANCE - AUTO ZERO TIME

Step 22. *Zero Tolerance, *Auto Zero Tolerance, *Auto Zero time can all be changed from this menu.

Step 23. Press the up or down arrow until the cursor is in front of *Zero Tolerance.

- The Zero Tolerance is the variance in gross weight to declare that a discharge is complete in a Filler operation.

NOTE: Dispenser and IBC use timed discharges.

- To clear the Zero Tolerance press the Clr (Clear) button.
- Use the alphanumeric key pad and enter the new Zero Tolerance.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 24. Press the up or down arrow until the cursor is in front of *Auto Zero Tolerance.

- The Auto Zero Tolerance are the allowable units from calibration zero to zero at start, when Auto Zero Tolerance is ON.
- To change the Auto Zero Tolerance press the Clr (Clear) button.
- Use the alphanumeric key pad and enter the new Auto Zero Tolerance.

- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 25. Press the up or down arrow until the cursor is in front of *Auto Zero Time.

- The Auto Zero Time is the maximum number of seconds that it takes the Auto Zero to complete.
- To change the Auto Zero Time press the right or left arrow buttons to increase or decrease the time.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 26. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-57)

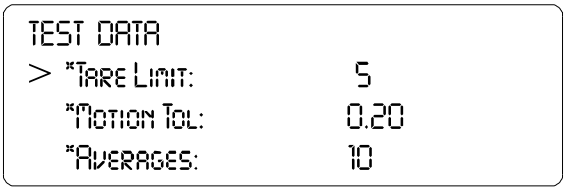


FIG. 7-57 TEST DATA DISPLAY/TARE LIMIT - MOTION TOLERANCE - AVERAGES

Step 27. *Tare Limit, *Motion Tolerance, *Averages can all be changed from this menu.

Step 28. Press the up or down arrow until the cursor is in front of *Tare Limit.

- The Tare Limit is the maximum net weight value that can be reduced (tared) to zero.
- To clear the Tare Limit press the Clr (Clear) button.
- Use the alphanumeric key pad and enter the new Tare Limit.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 29. Press the up or down arrow until the cursor is in front of *Motion Tolerance.

- The Motion Tolerance is the allowable deviation between consecutive weight readings, to confirm filling or dispensing is active.
- To change the Motion Tolerance press the Clr (Clear) button.
- Use the alphanumeric key pad and enter the new Motion Tolerance.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 30. Press the up or down arrow until the cursor is in front of *Averages.

- The Averages is the Number of weight readings used to compute displayed weight.
- To change the Averages press the Clr (Clear) button.
- Use the alphanumeric key pad and enter the new Averages.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 31. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-58)

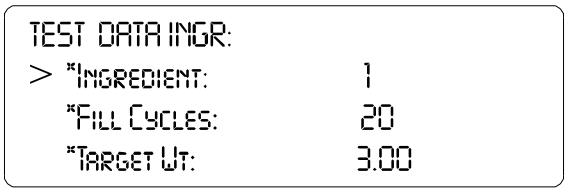


FIG. 7-58 TEST DATA INGREDIENT DISPLAY/ INGREDIENT - FILL CYCLES - TARGET WEIGHT

Step 32. *Ingredient, *Fill Cycles and *Target Weight can be changed from this menu.

Step 33. Press the up or down arrow until the cursor is in front of *Ingredient.

- To select the ingredient press the right or left buttons until the ingredient you want to view or change appears.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 34. Press the up or down arrow until the cursor is in front of *Fill Cycles.

- The Fill Cycles are the number of fills to complete one cycle.
- Press the right or left buttons to increase the number of fills per cycle.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 35. Press the up or down arrow until the cursor is in front of *Target Weight.

- The Target Weight is the weight you want for each fill.
- To change the Target Weight press the Clr (Clear) button.
- Use the alphanumeric key pad and enter the new Target Weight.
- Press the Enter button to set the entry.
- Press the down arrow to move to the next parameter you want to view or change.

Step 36. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-59)

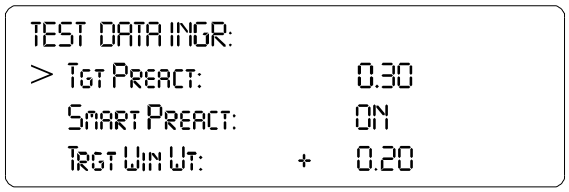


FIG. 7-59 TEST DATA INGREDIENT DISPLAY/TARGET PREACT - SMART PREACT - TARGET WINDOW (WT+)

Step 37. Target Preact, Smart Preact and Target Window Weight (+) are read only.

- The Target Preact is the value below which a target gate will close.
- Smart Preact is a self adjusting or automatic preact and the user can turn this function ON or OFF.
- The Target Window (Wt) + is the Target Window tolerance above the Target Window expressed in Weight.

Step 38. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-60)

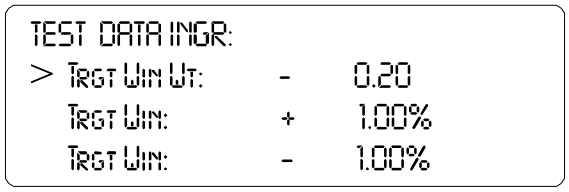


FIG. 7-60 TEST DATA INGREDIENT DISPLAY/TARGET WINDOW (WT-) - TARGET WINDOW (WT%+) -TARGET WINDOW (WT%-)

Step 39. Target Window Weight (-) - Target Window Weight (%+) - Target Window Weight (%-) are read only.

- The Target Window (Wt) - is the Target Window tolerance below the Target Window expressed in Weight.
- The Target Window (Wt%+) is the Target Window tolerance above the Target Window expressed in Percentage.
- The Target Window (Wt-) is the Target Window tolerance below the Target Window expressed in Percentage.

Step 40. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-61)

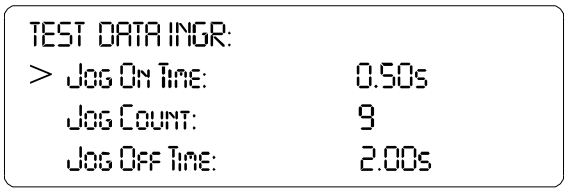


FIG. 7-61 TEST DATA INGREDIENT DISPLAY/JOG ON TIME - JOG COUNT - JOG OFF TIME

Step 41. Jog On time - Jog Count - Jog Off Time are read only.

- Jog on Time - This is the amount of time the feeder will operate in seconds.
- The Jog Count - This is the number of jogs allowed before an alarm is set.
- Jog Off Time - This is the amount of time after a Jog before the net weight is checked.

Step 42. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-62)

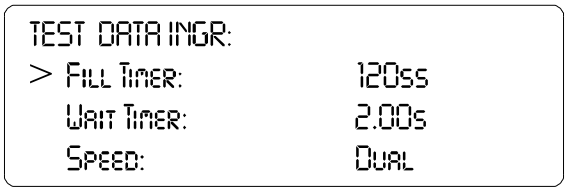


FIG. 7-62 TEST DATA INGREDIENT DISPLAY/FILL TIMER - WAIT TIMER - SPEED

Step 43. Fill Timer - Wait Timer - Speed are read only.

- Fill Timer - The time in seconds it takes to complete a fill before an alarm is set.
- Wait Timer - The time in seconds after a fill the instrument waits before net weight is read.

- Speed - The speed selected for this Ingredient either Single or dual.

Step 44. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-63)

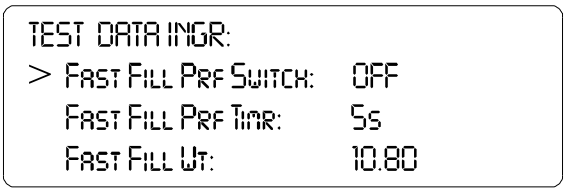


FIG. 7-63 TEST DATA INGREDIENT DISPLAY/FAST FILL PROOF SWITCH - FAST FILL PROOF TIMER - FAST FILL WEIGHT

Step 45. Fast Fill Proof Switch - Fast Fill Proof Time - Fast Fill Weight are read only.

- Fast Fill Proof Switch - Proof switch for the fill feeder is either ON or OFF.
- Fast Fill Proof Timer - If the Fast Fill Proof Switch is ON, the set time it takes for the switch to safely open or close.
- Fast Fill Weight - If Dual Speed is selected the weight set point in which the fast gate closes.

Step 46. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-64)

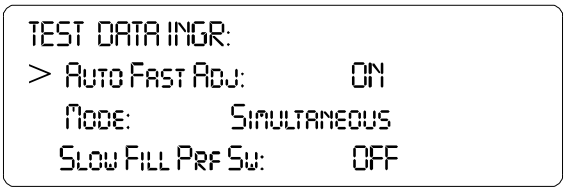


FIG. 7-64 TEST DATA INGREDIENT DISPLAY/ AUTO FAST ADJUST - MODE - SLOW FILL PROOF SWITCH

Step 47. Auto Fast Adjust - Mode - Slow Fill Proof Switch are read only.

- Auto Fast Adjust - If Dual Speed is selected it adjusts the Fast Weight value. this value is the preact weight from the target weight where the fast feed shuts off. Preact is the pre-activation point where the valve closes to account for in flight material and valve de-activation timing.
- Mode - If Dual Speed is selected it and Auto Fast Adjust is ON shows which fill mode has been selected, Simultaneous or Sequential.
- Slow Fill Proof Switch - If Dual Speed is selected and Auto Fast is ON this menu item indicates if the Slow Fill Feeder Switch is On or Off.

Step 48. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-65)

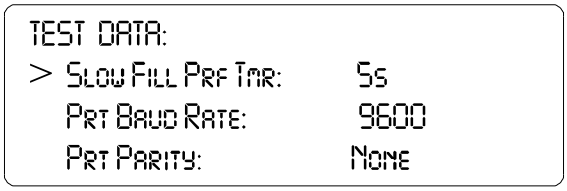


FIG. 7-65 TEST DATA DISPLAY/SLOW FILL PROOF TIMER - PRT BAUD RATE - PORT PARITY

NOTE: Slow Fill Proof Timer is the last item in the Test Data Ingredient Menus.

Step 49. Slow Fill Proof Timer - Printer Baud Rate -Printer Parity are read only.

- Slow Fill Proof Timer - If the Slow Fill Proof Switch is ON, the set time it takes for the switch to safely open or close.
- Printer Baud Rate - Indicates the Baud Rate for the printer.
- Printer Parity - Indicates the parity setting for the printer (Odd, Even, None).

Step 50. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-66)

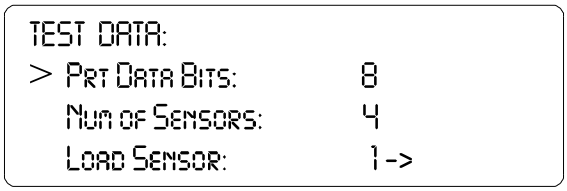


FIG. 7-66 TEST DATA DISPLAY/PRINTER DATA BITS - NUMBER OF LOAD SENSORS - LOAD SENSOR

Step 51. Printer Data Bits - Number of Sensors -Load Sensor are read only however you can select a load sensor to view.

- Printer Data Bits - Indicates the Data Bit setting for the printer.

- Number of Sensors - The number of sensors detected by the instrument in the Filling/Dispensing system.

    1. Load Sensor -The instrument will read C2 load sensors certification information only.
    2. The instrument displays sensor number 1 as a default.
    3. If you want to look at the certified specifications for other load sensors press the up or down arrows to move the list of sensors. The instrument can detect a maximum of 8 sensors.
    4. To view the certified sensor information which is read from the C2 chip, do the following:

        a. Press the Enter button. The Load Sensor Display appears. (See Fig. 7-67)

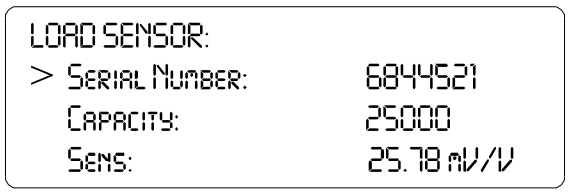


FIG. 7-67 LOAD SENSOR DISPLAY/SERIAL NUMBER - CAPACITY - SENSITIVITY (MV/V)

        b. Serial Number - This is the serial number of the selected load sensor.
        c. Capacity - the maximum weighing capacity of the load sensor.
        d. Sensitivity - Sensitivity specification of the load sensor set at the factory.
        e. Press the down arrow until the remainder of the load sensor specifications appear. (See Fig. 7-68)

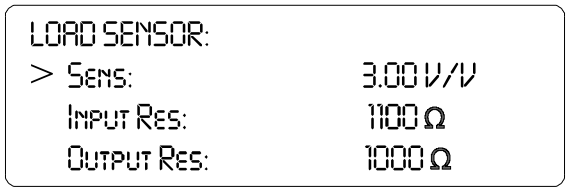


FIG. 7-68 SENSITIVITY - INPUT RESISTANCE - OUTPUT RESISTANCE

        f. Input Resistance - This is the Certified Input Resistance from the certification done by the factory.
        g. This is the Certified Output Resistance from the certification done by the factory.

Step 52. Press the down arrow button until the next three menu items are displayed. (See Fig. 7-69)

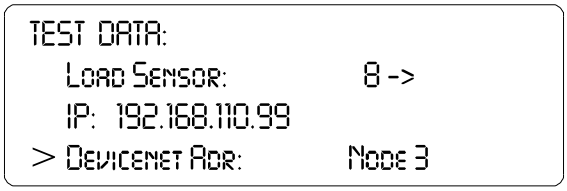


FIG. 7-69 TEST DATA DISPLAY/LOAD SENSOR - IP ADDRESS - DEVICENET ADR

Step 53. IP Address - Devicenet Address are read only.

- IP - Lists the IP address for this instrument. The address listed in Fig. 5-69 is the default IP address of an instrument right from the factory.
- Devicenet Address - Lists the address of the Node Address of the instrument you are checking.

Step 54. Press the Exit button to return to the Test Data Display.

Step 55. Press the Exit button to return to the Test and Data Menu. (See Fig.7-70)

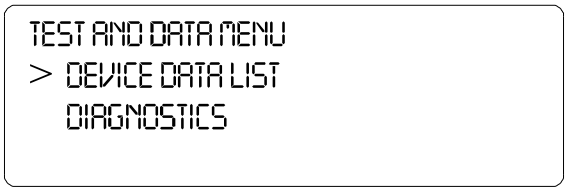


FIG. 7-70 TEST AND DATA MENU

Diagnostics

Voltage & Weight Displays

Step 1. Press the down arrow until the cursor is in front of Diagnostics. (See Fig. 7-71)

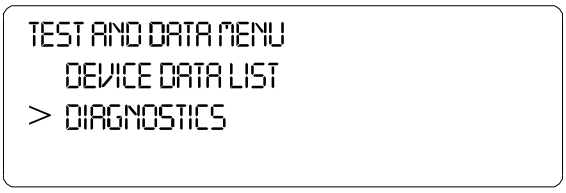


FIG. 7-71 TEST AND DATA MENU/SELECTING DIAGNOSTICS

Step 2. Press the Enter button. The Diagnostics Display appears with the cursor in front of Voltage & Weight. (See Fig. 7-72)

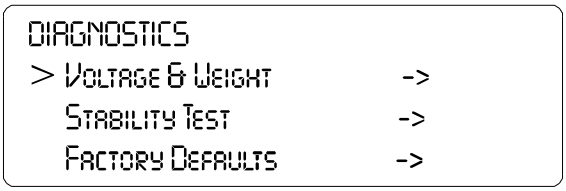


FIG. 7-72 DIAGNOSTICS DISPLAY/SELECTING VOLTAGE & WEIGHT

Step 3. To see the Voltage and Weight Press the enter button. The Choose Display screen appears. (See Fig. 7-73)

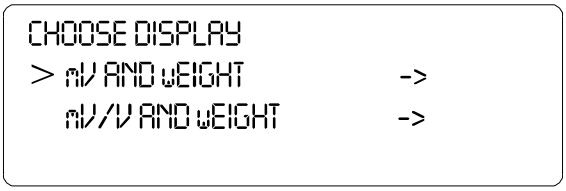


FIG. 7-73 DIAGNOSTICS DISPLAY/CHOOSE DISPLAY SCREEN

Step 4. Press on the up or down arrow buttons to select the display you want to see.

Step 5. With the cursor in front of mV and Weight, Press the Enter button. The mV and Weight display appears. (See Fig. 7-74)

FIG. 7-74 MILLIVOL.T AND WEIGHT READING

- The mV and Weight is a coarser reading than the mV/V and Weight. The reading is sufficient to balance the corners of your scale.
- This reading allows you to determine if the problem is in the instrument (internal) or in a load sensor(s) (external). The specification range for the Filler/Dispenser is 0-15 mV. If you are getting a reading outside this range the problem is probably the load cell (electrical). If you are getting a reading between 0-15 mV the reading is normal.

Step 6. Press the Exit button to return to the Choose Display screen.

Step 7. Press the up or down arrow buttons until the cursor is in front of mV/V and Weight.

Step 8. Press the Enter button. The mV/V and Weight Display appears. (See Fig. 7-75)

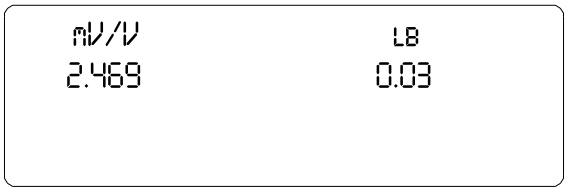


FIG. 7-75 MILLIVOLT/VOLT AND WEIGHT READING

- This reading is a higher resolution reading to a 10th of a microvolt. Use this reading to determine if the load cell is working correctly.
- You can also use this reading to determine which load sensor is malfunctioning by looking at each load sensor to determine any problems (e.g. creep) in the millivolt reading. Multiply the mV/V reading by the sense voltage to get a mV reading with 3 decimals points.
- Converting mV/V to mV use this formula:

5 x mV/V = mV

Step 9. Press the Exit button to return to the Choose Display.

Step 10. Press the Exit button to return to the Diagnostics Display.

Stability Test

The Stability Test switches a fixed signal into the analog to digital convertor, and calculates the mean squared variation from the average reading, using 100 samples.
The test passes if the mean squared variation is less than 5.0, and the average reading is between 30237 and 36955.

Step 1. Press the up or down arrow buttons until the cursor is in front of Stability Test. (See Fig.7-76)

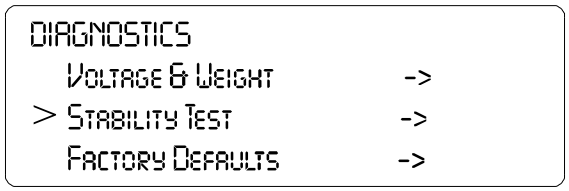


FIG. 7-76 DIAGNOSTICS DISPLAY/SELECTING STABILITY TEST

Step 2. Press the Enter button. The Information display appears “SYS. STABILITY TEST, PRESS ENTER TO START”. (See Fig. 7-77)

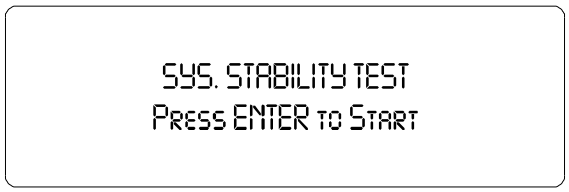


FIG. 7-77 STABILITY TEST DISPLAY

Step 3. Press the ENTER button to perform the stability test.

- If the instrument passes the Stability Test the Pass display appears. (See Fig. 7-78) This means that the Mean Squared Variation is less than 5.0 and the average reading is between 30237 and 36955. In short the instrument is working fine.

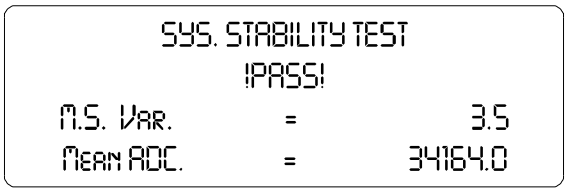


FIG. 7-78 SYSTEM STABILITY TEST DISPLAY/ PASS

- If the instrument does not pass the Stability Test the Fail display appears. (See Fig. 7-79) This means that the Mean Squared Variation is greater than 5.0 and/or the average reading is not between 30237 and 36955. This test examines the internal electronics and not the load cells input signal.

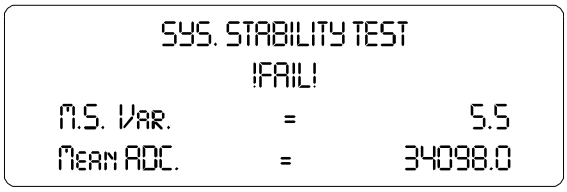


FIG. 7-79 SYSTEM STABILITY TEST DISPLAY/FAIL

NOTE: In our example we show that the Means squared variation is greater than 5.0 but the average reading is within tolerance.

1. Disconnect the power cord and reconnect the power cord to restart the instrument.
2. Repeat the Stability test.
3. If the instrument Fails the Stability Test again, contact Hardy Instruments Inc., Technical Support for assistance.

Step 4. Press the Exit button to return to the Diagnostics display.

Factory Defaults

CAUTION: IF YOU CHOOSE FACTORY DEFAULTS ALL DATA WILL BE LOST! MAKE ABSOLUTELY SURE THAT THIS IS WHAT YOU WANT TO DO BEFORE CHOOSING THIS OPTION. DO NOT USE THIS FUNCTION IN AN EFFORT TO CORRECT ANY MALFUNCTIONS IN THE OPERATION OF THE INSTRUMENT.

Step 1. Press the up or down arrow buttons until the cursor is in front of Factory Defaults. (See Fig. 7-80)

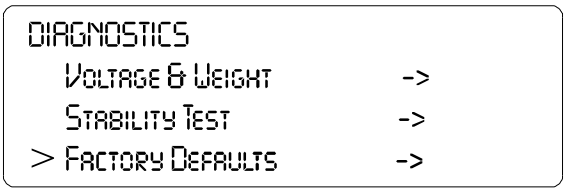


FIG. 7-80 DIAGNOSTICS DISPLAY/FACTORY DEFAULTS

- Resetting the Default Parameters is used when you want to change the instrument from a Filler to a Dispenser or an IBC dispenser and vice versa.
- It is required that the security access to this menu is High (HI).

Step 2. Press the Enter button. The Factory Defaults display appears. (See Fig. 7-81)

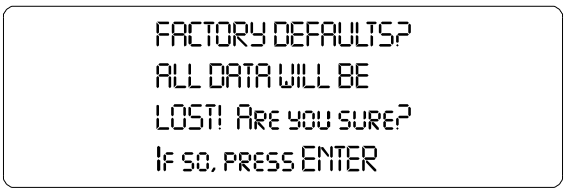


FIG. 7-81 FACTORY DEFAULTS DISPLAY

Step 3. Press the Exit button if you do not want to set the Factory Defaults. The Diagnostics display reappears.

Step 4. Press the Enter button if you want to set the Factory Defaults.

Step 5. A display appears telling you to Please Wait.

Step 6. When the Defaults are set you briefly see a display that says Function OK. (See Fig. 7-82) The Choose Instrument display automatically appears. (See Fig. 7-83)

FIG. 7-82 FUNCTION OK DISPLAY

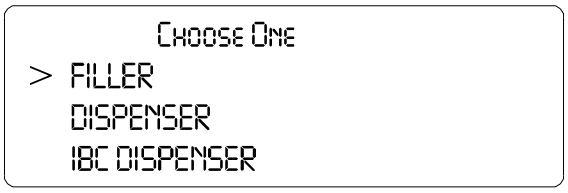


FIG. 7-83 INSTRUMENT SELECTION DISPLAY

Step 7. Press the down arrow button until the cursor is in front of the instrument you want.

Step 8. Press the Enter button to select the Instrument. The defaults are set for that instrument.

Return to Zero Test

The Return to Zero Test is used to determine whether the instrument can still zero a scale based on preset parameters. If you pass the Return to Zero Test you are within the sum of the preset Motion and Zero Tolerance settings. If you fail you are outside the sum of the preset Motion and Zero Tolerance settings. If you Fail the test there may be too much build up on the scale and you need to clean the scale or you have scale problems. You should do this test whenever you cannot zero the scale.

Step 1. Press the up or down arrow buttons until the cursor is in front of Return to Zero. (See Fig. 7-84)

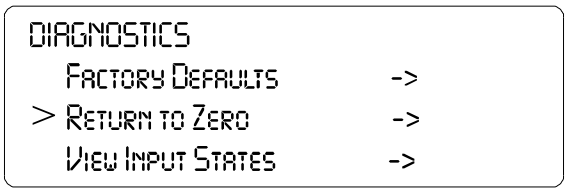


FIG. 7-84 DIAGNOSTICS DISPLAY/SELECTING RETURN TO ZERO TEST

Step 2. Press the Enter button. The Return to Zero Test display appears. (See Fig. 7-85)

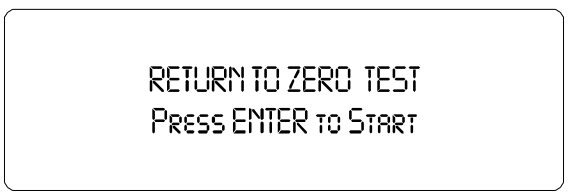


FIG. 7-85 RETURN TO ZERO TEST DISPLAY

Step 3. To perform the test press the Enter button. In a few seconds a display appears telling you if the instrument has passed or failed.

- If you Pass the Test the Pass display appears. (See Fig. 7-86)

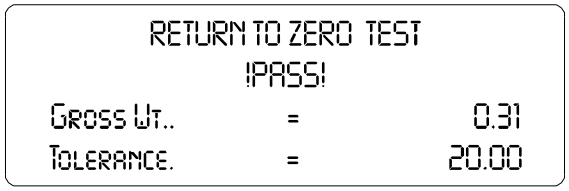


FIG. 7-86 RETURN TO ZERO TEST/PASS

- If instrument Fails the test the Fail display appears. (See Fig. 7-87) You may need to do the following:

  1. Check the scale for excess material.
  2. Check your Motion and Zero Tolerance settings. They might be set too low for your process.

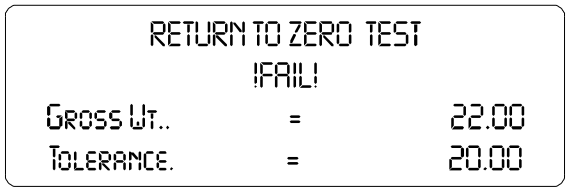


FIG. 7-87 RETURN TO ZERO/FAIL

Step 4. Press the Exit button to return to the Diagnostics display.

View Input States

The Input States display shows whether or not the instruments has any inputs activated. A 1 means the input is active and a 0 means it is not.

Step 1. Press the up or down arrow buttons until the cursor is in front of View Input States. (See Fig. 7-88)

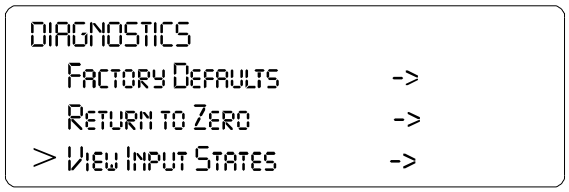


FIG. 7-88 DIAGNOSTICS/VIEW INPUT STATES

Step 2. Press the Enter button. The Input States display appears. (See Fig. 7-89)

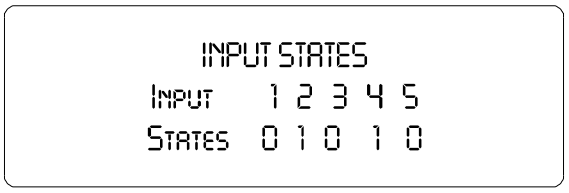


FIG. 7-89 INPUT STATES DISPLAY/INPUT 2 AND 4 ACTIVE

Step 3. Press the Exit button to return to the Diagnostics display.

Force Outputs

WARNING: FORCING THE OUTPUT RELAY MAY CAUSE DAMAGE OR PERSONAL INJURY. MAKE ABSOLUTELY SURE THAT YOU KNOW WHAT THE RELAY IS CONNECTED TO BEFORE ACTIVATING. IF INSECTARY DO A PHYSICAL CHECK TO DETERMINE WHAT THE SELECTED RELAY IS CONNECTED TO BEFORE ACTIVATING.

The Force Outputs function individually activates each of the 4 Output relays in the instrument. Useful in pre-startup to determine that all the relays are connected to the correct auxiliary devices.

Step 1. Press the up or down arrow buttons until the cursor is in front of Force Outputs. (See Fig. 7-90)

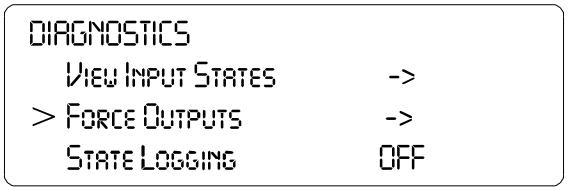


FIG. 7-90 DIAGNOSTICS DISPLAY/FORCE OUTPUTS

Step 2. Press the Enter button. A WARNING display appears. (See Fig. 7-91)

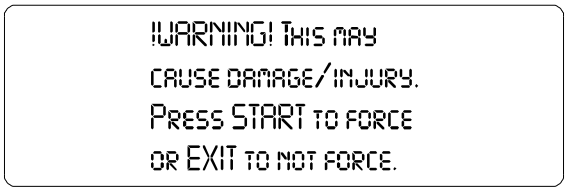


FIG. 7-91 WARNING FOR FORCE OUTPUTS

Step 3. If you are not sure if this is what you want to do or got here by mistake, press the Exit button.

Step 4. If you are absolutely sure that this is what you want to do press the Start button. The Output Relay display appears with the cursor in front of Output Relay #1. (See Fig. 7-92)

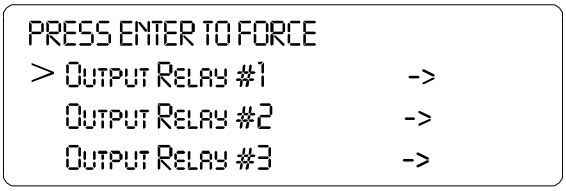


FIG. 7-92 OUTPUT RELAY DISPLAY/SELECTING OUTPUT RELAY #1

Step 5. To select another Output Relay, press the up or down arrow buttons until the cursor is in front of the Output Relay you want to force. (See Fig. 7-93)

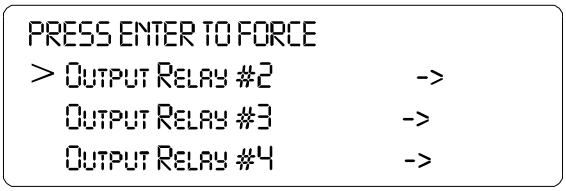


FIG. 7-93 OUTPUT RELAY DISPLAY/SELECTING OUTPUT RELAY #2

Step 6. Press the Enter button to activate the output relay you have chosen. The Output Relay Forced Closed display appears. (See Fig. 7-94)

- All the output relays on the instrument are Normally Open so activation will close the relay.

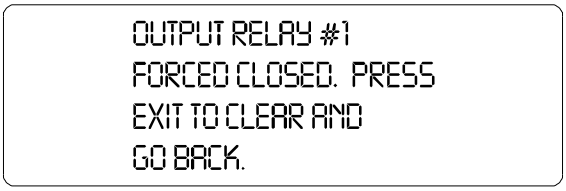


FIG. 7-94 OUTPUT RELAY #1 FORCED CLOSED DISPLAY

Step 7. Press the Exit button to return to the Output Relay Display.

- If you want to select another Output Relay do so now.
- If you do not want to select another Output Relay, press the Exit button to return to the Diagnostics display.

Step 8. Press the Exit button again to return to the Diagnostics display.

State Logging

The State Logging function is user selectable and when on, prints the various states the Filler/Dispenser goes through in a fill. This will give you a written record of the states the instrument went through during a Fill or Dispense. This is useful information when troubleshooting the instrument and your process.

Step 1. Press the up or down arrow buttons until the cursor is in front of States Logging. (See Fig. 7-95)

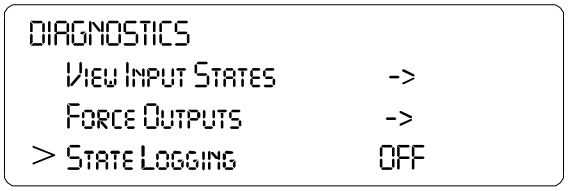


FIG. 7-95 DIAGNOSTICS DISPLAY/SELECTION STATE LOGGING - OFF

Step 2. Use the left or right arrow buttons to toggle between ON and OFF. If you want to a written record of the states during a fill or dispense toggle the State Logging function ON. (See Fig. 7-96)

NOTE: It is a good idea to turn off Auto print. If Auto Print is turned ON you will get the fill information plus the Logged States and it can get confusing.

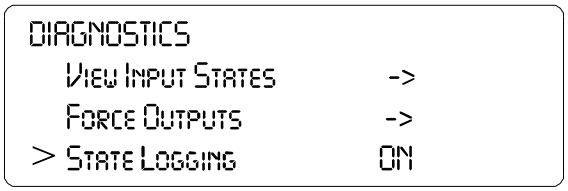


FIG. 7-96 DIAGNOSTICS DISPLAY/STATE LOGGING - ON

Step 3. Each time a state change occurs the State Logging function will print out the Time in hours, minutes, and seconds of the change state and the name of the state.

Step 4. Press the Enter button to set the entry.

Step 5. Press the Exit button until you return to the Standby Display.

Using Solid State Relays with Light Loads (Optional Set Relays)

About Solid State Relays With Light Loads

There have been installations where solid state relays have been used and failed to shut off a solenoid or relay when de-energized. The actual problem comes from the internal snubbing network in parallel with the Silicon Controlled Rectifier (SCR) which does the actual switching. This network presents an impedance of 30K ohms, which means with 120 volts across, it will pass 4mA of AC current.

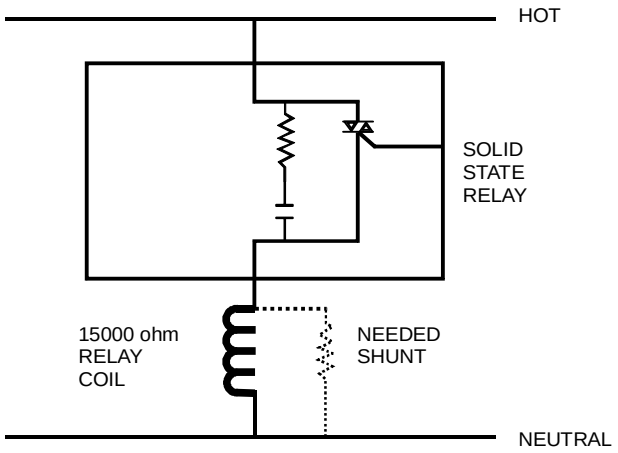


FIG. 7-97 SCR SWITCHING LOAD CIRCUIT

1. The SCR itself presents no leakage current. Some solid state relay manufactures specify 20mA minimum load. This is based on the presumption a relay or solenoid will drop out with only 4mA through it, which is not always true. That may not be true. When switching a light load with a solid state relay across the line, you must look at the rated drop-out current of the load, and if it is less than 4mA it may not turn off. The solution is to put a loading resistor in parallel with the light load, to be sure leakage current is sufficiently shunted away from the coil.
2. Assume a load like a relay with a coil of 15,000 ohms and of 5% of nominal drop-out. When the solid state relay is off, there will still be 1/3 of the line voltages across the relay, so it will not drop out. For the relay to have 5% of the line across it, it and a parallel shunt resistor must be 20 times less resistance than the 30K snubbing network, or 1.5K ohms. Use less than a 1.67K ohm parallel resistor and now total load is below 1.5K ohm or 80mA.

System Integrity Check and Fault Determination From the Web Browser

Diagnostics

Diagnostics is used to troubleshoot the Filler/Dispenser. A complete Troubleshooting Guide is available in the Service Manual. What is important for Operational purposes is to be able to see the information about this instrument. (See Fig. 7-98)
Setting Default Settings is also useful to operators.

Step 1. Click on Diagnostics. The Diagnostics Page appears. (See Fig. 7-98)

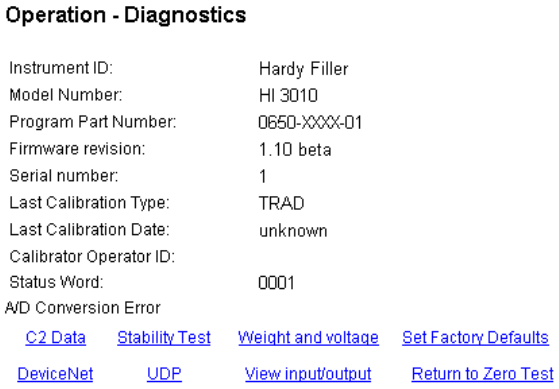


FIG. 7-98 OPERATION/DIAGNOSTICS

Step 2. Click on “Set Factory Defaults”. The Set Factory Defaults page appears. (See Fig. 7-99)

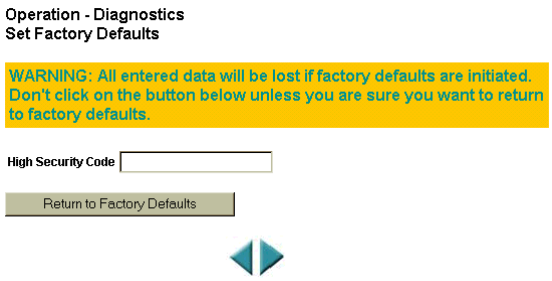


FIG. 7-99 SET FACTORY DEFAULTS

WARNING: ANY AND ALL DATA WILL BE LOST IF FACTORY DEFAULTS ARE INSTALLED. THIS, INCLUDES EVERY PARAMETER THAT WAS CHANGED FOR INGREDIENTS, IP

ADDRESS, EVERYTHING. THE INSTRUMENT IS RETURNED TO THE CONDITION IT WAS RIGHT FROM THE FACTORY.

Step 3. Enter the High Security Code Number.
Step 4. Click on the Return to Factory Defaults button.
Step 5. The Confirmation Page appears. (See Fig. 7-100) The page informs you that all Factory default have been set and asks you to select what type of instrument you want this instrument to be.
Step 6. Click on the pull down menu and select the type of instrument you want this instrument to be.

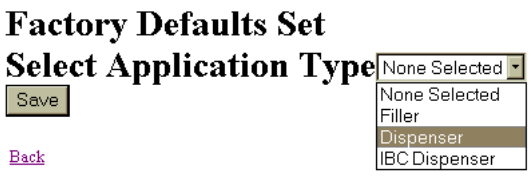


FIG. 7-100 FACTORY DEFAULTS SET/SELECT APPLICATION TYPE

NOTE: This procedure is useful when you want to convert the instrument from a filler to a dispenser or IBC dispenser and vice versa.

Step 7. Click on the Save button to set the factory defaults for the application you selected.
Step 8. Click on "Back" to return to the previous page. The previous page appears.
Step 9. Click on the left arrow to return to the Operation Diagnostics page.
Step 10. Click on Home to return to the Filler/Dispenser Home Page.

Smart Diagnostics

Using Smart Diagnostics From the Front Panel

Step 1. Press the Test/9 button. The Test and Data Menu appears. (See Fig. 7-101)

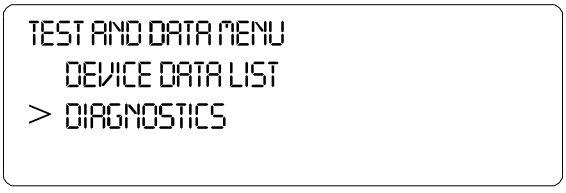


FIG. 7-101 TEST AND DATA MENU/SELECTING DIAGNOSTICS

Step 2. Press the down arrow until the cursor is in front of Diagnostics. (See Fig. 7-102)

Step 3. Press the Enter button. The Smart Diagnostics Display appears with the cursor in front of Voltage & Weight. (See Fig. 7-103)

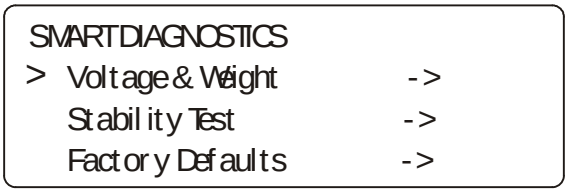


FIG. 7-102 SMART DIAGNOSTICS DISPLAY/ SELECTING VOLTAGE & WEIGHT

Step 4. Smart Diagnostics enables you to read total or individual load sensor's Millivolt, Millivolt/Volt or Weight Reading.

- The mV reading is a coarser reading than the mV/V or Weight. The mV reading is sufficient to balance the corners of your scale or vessel.
- These readings allow you to determine if the problem is in the instrument (internal) or in a load sensor(s) (external). The specification range for the instrument is 0-15 mV. If you are getting a reading outside this range (15.5 mV, 3.1 mV/V Maximum or any negative values) the problem is exterior to the Instrument (most likely improper wiring). If you are getting a reading between 0-15 mV the reading is normal.

Step 5. To view the total Millivolt readings for all the load sensors that are connected to the scale, press the up or down arrow buttons until the cursor is in front Voltage & Weight.
Step 6. Press the Enter button. The total millivolt reading for the scale appears. (See Fig. 103)

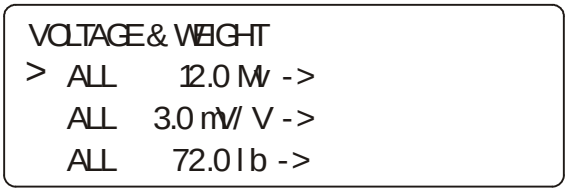


FIG. 7-103 TOTAL MILLIVOLT READING

NOTE: The values listed here are for illustration purposes only. Your readings will be different.

Step 7. To view individual millivolt readings for individual load cells:

- Press the Down or Up Arrow button until the cursor is in front of ALL/mV. (See Fig. 103)
- Press The Enter button. The individual Channel/millivolt readings appear. (See Fig. 104)

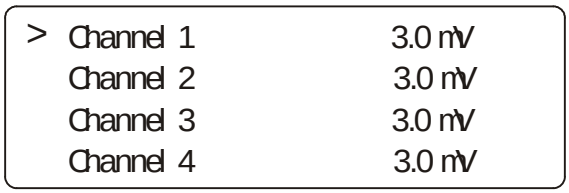


FIG. 7-104 INDIVIDUAL CHANNEL DISPLAY/MILLIVOLTS

- If all the load sensor readings are 0.00 mV there is something wrong between the HI 3000 and the load sensors. The cable(s) is disconnected or something is wrong. It is not transmitting the Millivolt readings to the instrument.
- If you do not get a reading for one or possibly two or more load sensors (Channel 3 for example reads 0.00 mV or the millivolt reading is either larger or smaller than it should be) and you know that the Load Sensors are connected to the instrument, the individual load sensor cable is disconnected from the load sensor or the load sensor is malfunctioning.
- With this information you can quickly determine what the problem is and where it is located either from the Front Panel or Web Browser.
- If the Millivolt readings are not fine enough to determine the problem select the Millivolt/Volt readings.

Step 8. Press the Exit button to return to the Totals Display. (See Fig. 105)

Step 9. To read the Millivolt/Volt reading for finer troubleshooting, press the down arrow until the cursor is in front of the Millivolt/Volt (mV/V) reading for the selected scale. (See Fig. 105)

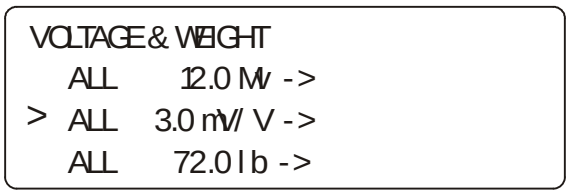


FIG. 7-105 TOTAL MILLIVOLT/VOLT READING

Step 10. Press the Enter button. The Scale Millivolt/Volt for individual Scale Load Sensor readings display appears. (See Fig. 7-106)

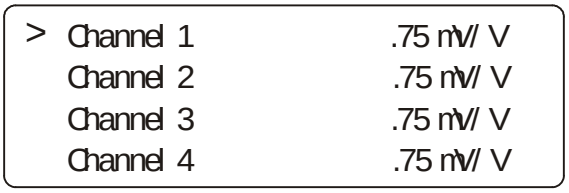


FIG. 7-106 INDIVIDUAL MILLIVOLT/VOLT DISPLAY

- If all the load sensor readings are 0.00 mV/ V there is something wrong between the HI 3000 Series instrument and the load sensor. The cable is disconnected or something is wrong such that it is not transmitting the Millivolt/Volt readings to the instrument.
- If you do not get a reading for one or possibly two or more load sensors (Channel 3 for example reads 0.00 mV/V or the millivolt/Volt reading is either larger or smaller than it should be) and you know that the Load Sensors are connected to the instrument, the individual load sensor cable is disconnected from the instrument or the load sensor is malfunctioning or the cable is broken.
- With this information you can quickly determine what the problem is and where it is located either from the Front Panel or Web Browser.
- If the Millivolt/Volt readings are not fine enough to determine the problem select the Weight readings.

Step 11. Press the Exit button to return to the Totals Display. (See Fig. 7-107)

Step 12. To read the Weight reading for finer troubleshooting, press the down arrow until the cursor is in front of the Weight (lb, kg, gr, oz) reading total for the scale. (See Fig. 7-107)

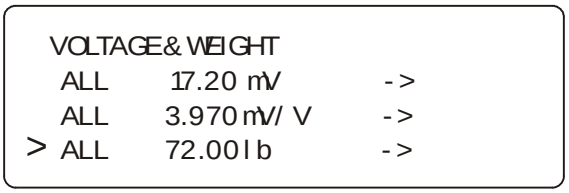


FIG. 7-107 SCALE WITH TOTALS/WEIGHT (LB) SELECTED

Step 13. Press the Enter button. The Scale Weight for the individual Scale Load Sensor display appears. (See Fig. 7-108)

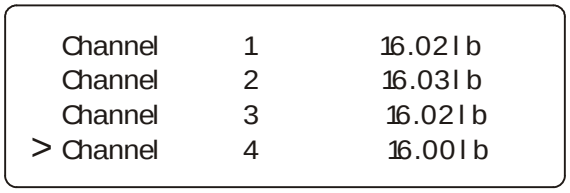


FIG. 7-108 INDIVIDUAL WEIGHT DISPLAY

- If you do not get a reading from one of the load sensors, either the cable to the load sensor is disconnected or the load sensor is malfunctioning.
- If one of the load sensors is reading higher or lower than the other load sensors in your system and you know that you calibrated the instrument and cornered the scale, there is something wrong with the load sensor.
- If one of the load sensors is reading higher or lower than the other load sensors and you do not know if the scale has recently been calibrated, re-calibrate the scale then check the Voltages and Weights again.

Stability Test

The Stability Test switches a fixed signal into the analog to digital convertor, and calculates the mean squared variation from the average reading, using 100 samples.
The test passes if the mean squared variation is less than 5.0, and the average reading is between 30237 and 36955.

NOTE: Before performing the Stability Test check to see if all the Channels have been enabled from the Web Browser.

Step 1. Press the up or down arrow buttons until the cursor is in front of Stability Test. (See Fig.7-109)

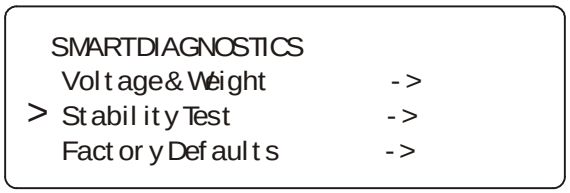


FIG. 7-109 DIAGNOSTICS DISPLAY/SELECTING STABILITY TEST

Step 2. Press the Enter button. The Information display appears “SYSTEM STABILITY TEST, PRESS ENTER TO START”. (See Fig. 7-110)

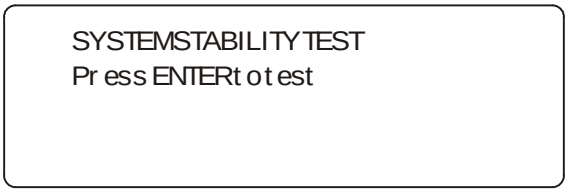


FIG. 7-110 STABILITY TEST DISPLAY

Step 3. Press the ENTER button to perform the stability test. The display indicates Testing. (See Fig. 7-111)

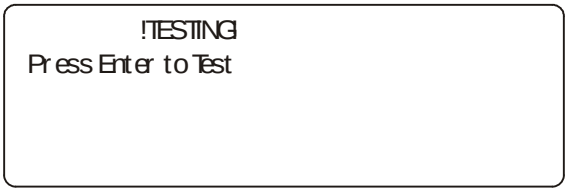


FIG. 7-111 STABILITY TEST/TESTING DISPLAY

- The results of the Stability Test are displayed for this scale as PASS. (See Fig. 7-112) This means that the Mean Squared Variation is less than 5.0 and the average reading is between 30237 and 36955. In short the instrument is working fine.

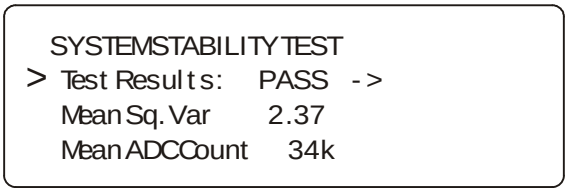


FIG. 7-112 SYSTEM STABILITY TEST DISPLAY/ PASS

- The test results shown are for all four Channels. If you want to see the results for each individual channel, press the down or up arrow buttons until the cursor is in front of Test Results: PASS. Press the Enter button to see the test results per channel. (See Fig. 7-113)

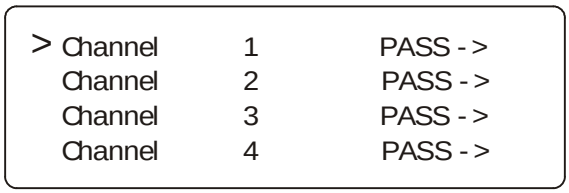


FIG. 7-113 TEST RESULTS PER CHANNEL

- To see the individual results for Channel 1, press the up or down arrow buttons until the cursor is in front of the channel you want to view. Press the Enter button to see the individual Stability Test results for the selected Channel, in our example Channel 1. (See Fig. 114)

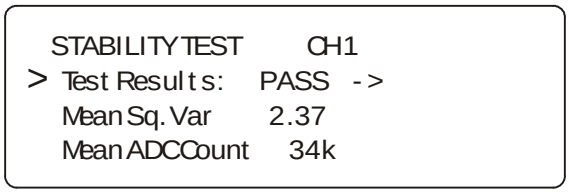


FIG. 7-114 TEST RESULTS FOR CHANNEL 1

- If the channel does not pass the Stability Test the FAIL display appears. This means that the Mean Squared Variation is greater than 5.0 and/or the average reading is not between 30237 and 36955. This test examines the internal electronics and not the load cells input signal.
- The test results shown are for all four Channels. If you want to see which channel(s) failed the test, press the down or up arrow buttons until the cursor is in front of Test Results: FAIL. Press the Enter button to see the test results per channel. (See Fig. 7-116) In our example channel 3 failed.
- To see the results of the failed channel, use the up or down arrow buttons until the cursor is in front of Channel 3. Press the Enter button to see the individual results for Channel 3.

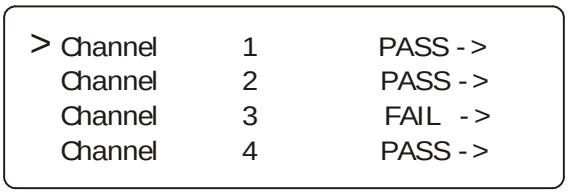


FIG. 7-115 STABILITY TEST RESULTS/CHANNEL 3 FAILED

NOTE: If the result for a Channel shows N/A it means that this channel is inactive.

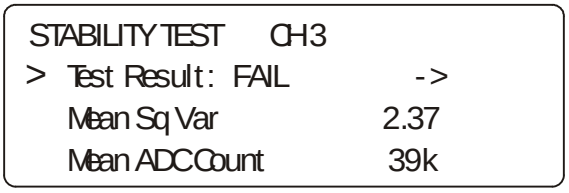


FIG. 7-116 STABILITY TEST RESULTS/CHANNEL 3 MEAN ADC COUNT IS OUT

- The Stability Test display a Mean ADC count is outside the range of 30237 and 36955. Now you know which channel is not reading correctly. Do the following:

  1. Disconnect the power cord and reconnect the power cord to restart the instrument.
  1. Repeat the Stability test.
  2. If a channel Fails the Stability Test again, contact Hardy Instruments Inc., Technical Support for assistance.

Step 4. Press the Exit button to return to the Diagnostics display.

Using Smart Diagnostics From the Web Browser

Step 1. From the Home Page click on Operation. (See Fig. 7-117) The Operation Choose One page appears. (See Fig. 7-118)

FIG. 7-117 HOME PAGE/SELECTING OPERATION

Step 2. Click on Diagnostics. (See Fig. 7-118) The Operation-Diagnostics Page appears with the four (4) scales listed. (See Fig. 7-119)

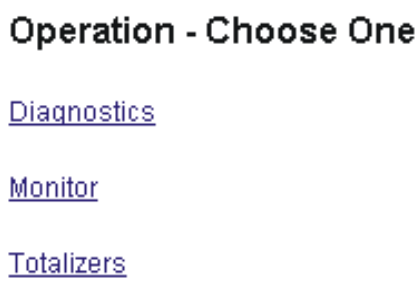


FIG. 7-118 OPERATION - CHOOSE ONE/SELECTING DIAGNOSTICS

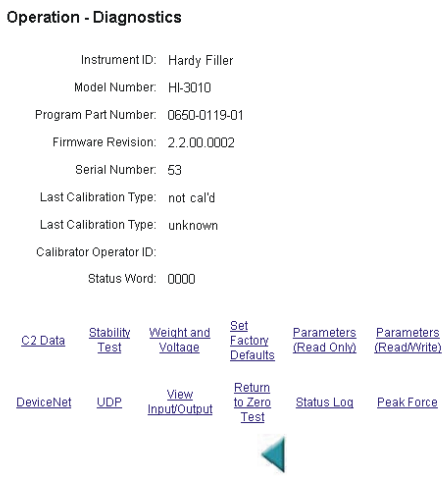


FIG. 7-119 OPERATION - SMART DIAGNOSTICS

Step 3. Click on Weight and Voltage. (See Fig. 7-119) The Operation/Diagnostics - Weight & Voltage page appears with all four (4) channels (Inputs) with the Sense Voltages, Millivolts, Millivolts/Volt, A/D counts and Gross Weight displayed. (See Fig. 7-120)

NOTE: To differentiate between a unit with regular diagnostics and Smart Diagnostics (-SD) option card, the regular diagnostics has only one input. Smart Diagnostics has 4 inputs.

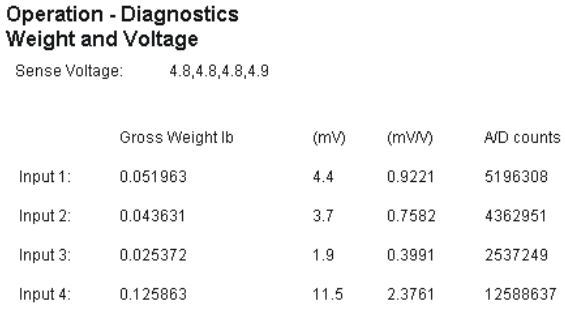


FIG. 7-120 OPERATION - SMART DIAGNOSTICS/ WEIGHT AND VOLTAGE PAGE

NOTE: The values expressed here are for illustration purposes only. Your values will be different.

NOTE: The Weight and Voltage Web page shows all the Weight, Voltage and A/D values at once. So if you want to save time use the Web Browser, Smart Diagnostics, Weight and Voltage Page for troubleshooting.

- The mV reading is a coarser reading than the mV/V or Weight readings. The mV reading is sufficient to balance the corners of your scale or vessel.
- These readings allow you to determine if the problem is in the instrument (internal) or in a load sensor(s) (external). The specification range for the Weight Controller is 0-15 mV. If you are getting a reading outside this range (15.5 mV, 3.1 mV/V Maximum or any negative values) the problem is exterior to the Instrument (most likely improper wiring). If you are getting a reading between 0-15 mV the reading is normal.

Step 4. Check the results:

- If any or all the load sensor readings are 0.00 there is something wrong between the HI 3000 and the load cells. The cable(s) is disconnected or something is wrong with the such that it is not transmitting the readings to the HI 3000 instrument.
- If you do not get a reading for one or possibly two or more load sensors (Sensor 3 for example reads 0.00 or the reading is either larger or smaller than it should be) and you know that the Load Sensors are connected to the instrument, the individual load sensor cable is disconnected from the instrument, broken cable or the load sensor is malfunctioning.

Step 5. With this information you can quickly determine what the problem is and where it is located either from the Web Browser, Front Panel.

Step 6. To return to the Operation Smart Diagnostics Page, click on the back arrow at the bottom of the page.

Overview of Typical Load Cell System

1. The typical system consists of one or more load cells/points, a summing junction box, and an HI 3010 controller. (See Figure 7-121).

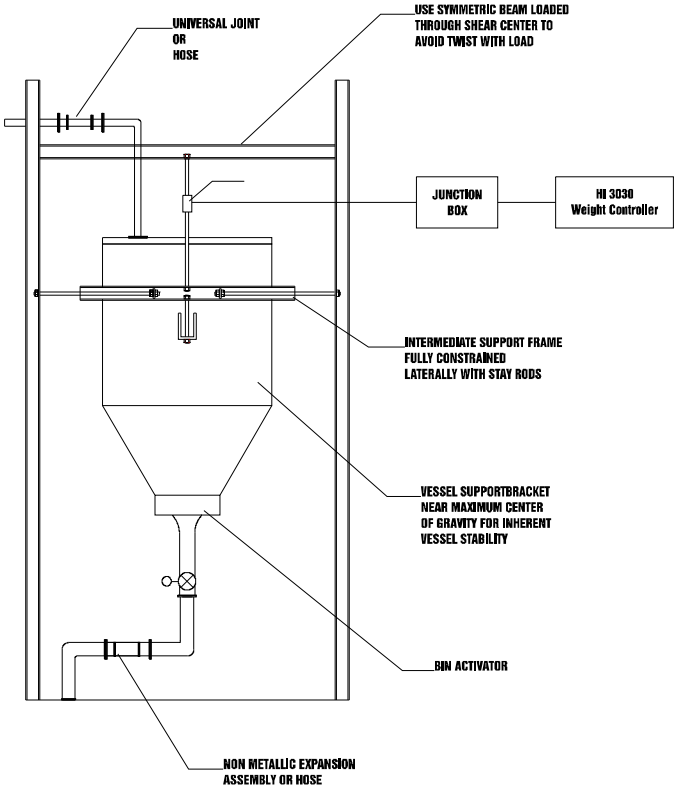


FIG. 7-121 TYPICAL LOAD CELL SYSTEM

2. Load Cell/Sensor/Point - is a strain gauge based force transducer, which generates an electrical signal proportional to the load applied to the scale. Load cells/points can be used any place a person needs to measure pressure, load, or torque. This can be accomplished by either Tension or Compression type load cells/points. The load cell/point takes as an input the 5 volts DC Excitation Voltage generated by the HI 3010, and depending upon how much weight is applied to the scale, generates a millivolt output (proportional to the weight, 0-10mv DC for 2mv/V load cells/points or 0-15mv DC for 3mv/V load cells/points).
3. Weight Controller - is part of the HI 3010 instrument which, among other functions, is used to power the load cell(s)/point(s), take the millivolt sig-

nal output from the load cell(s)/ point(s), and digitize, interpret, communicate and display the results as a weight indication.

Troubleshooting The Network Connections and Configuration with the "Ping" Tool

Step 1. The Ping Tool is used from the root directory of the PC. Get to the Root directory. The Root Directory is the “C:/” Prompt.
Step 2. If you do not know how to get to the Root Directory, check you Operating System User Guide or Manual for information on how to get to the root directory.

Selecting the module by number for Testing

NOTE: You can only ping from the PC you cannot ping from an instrument.

Step 1. Type PING <space>IP address of the instrument you want to test. For Example:

C:/PING 192.168.110.99

- In our example we used the default address for all HI 3000 Series Instruments. The IP address you are testing will be different.

Step 2. Press the Enter key on the PC.
Step 3. The PING utility starts sending out 56 signals and 64 signals should return if the unit is functioning correctly.

- If the instrument or network are configured incorrectly and cables are loose or not connected correctly, nothing prints out after the first line. Do the following:

  1. Check the Network cables and connectors to be sure they are tightly fastened and the correct cables for this application.
  2. Check the configuration to be sure that the instrument is configured correctly. (See Configuration IP Address in Chapter 6)
  3. Check the Ethernet card to be sure that is securely seated and that it is functioning correctly.

- If the unit is configured correctly and the Ethernet card is functioning correctly and the cables are the correct ones for this application and are securely fastened, 64 signals should be returned and the print out will reflect this fact.

NOTE: NOTE: The Ping utility continues to send out signals (pings) until you exit the Ping Tool.

- Simultaneously press the <Ctrl> key and the letter <C> key to stop the signals.

Exiting the Root Directory

Step 1. Type exit at the root directory prompt.
C:/exit
Step 2. Press the Enter key.

About Solid State Relays With Light Loads

There have been installations where solid state relays have been used and failed to shut off a solenoid or relay when de-energized. The actual problem comes from the internal snubbing network in parallel with the Silicon Controlled Rectifier (SCR) which does the actual switching. This network presents an impedance of 30K ohms, which means with 120 volts across, it will pass 4mA of AC current.

SCR SWITCHING LOAD CIRCUIT

The SCR itself presents no leakage current. Some solid state relay manufactures specify 20mA minimum load. This is based on the presumption a relay or solenoid will drop out with only 4mA through it, which is not always true. That may not be true. When switching a light load with a solid state relay across the line, you must look at the rated drop-out current of the load, and if it is less than 4mA it may not turn off. The solution is to put a loading resistor in parallel with the light load, to be sure leakage current is sufficiently shunted away from the coil.

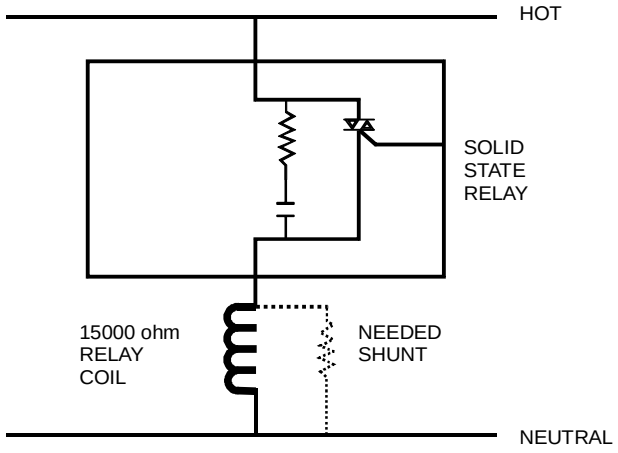


FIG. 7-122 SCR SWITCHING LOAD CIRCUIT

Assume a load like a relay with a coil of 15,000 ohms and of 5% of nominal drop-out. When the solid state relay is off, there will still be 1/3 of the line voltages across the relay, so it will not drop out. For the relay to have 5% of the line across it, it and a parallel shunt resistor must be 20 times less resistance than the 30K snubbing network, or 1.5K ohms. Use less than a 1.67K ohm parallel resistor and now total load is below 1.5K ohm or 80mA.

General Policies and Information

With over 70 years of industrial weighing experience and products in the field, Hardy Instruments continues to design, manufacture, install and support Hardy products worldwide. The following paragraphs describe Hardy's customer support services and equipment warranty.

NOTE: Before returning any product to Hardy Instruments, call the Technical Service Department listed below for a Return Authorization Number. Have your company name, address, telephone, equipment model number, S/N, and a brief description of the problem ready to give to him. In addition, please have Appendix A completed and ready to FAX to us before calling.

FOR FURTHER INFORMATION CONTACT:

Technical Service Manager
Hardy Instruments, Inc.
9440 Carroll Park Drive, Suite 150, San Diego, CA 92121
Telephone: (858) 278-2900
FAX: (858) 278-6700
Web Site: http://www.hardyinst.com
E-Mail: hardysupport@hardyinst.com

Ordering Replacement Parts

Contact the Hardy Instruments Sales Department to order replacement parts and option boards. Have your equipment model number and serial number ready.

System Support

Technical Service is provided as follows:

- New system start-up: Ensure that the installation is checked and correct; instruments are calibrated, and operators trained.

1. Service: Engineers are trained and qualified to provide on-site installation, calibration, and maintenance.
2. On-site training: A Hardy Support Representative can be scheduled to train your operations and maintenance personnel. This can be as simple as basic load cell theory or as complete as troubleshooting techniques which allow you to service your equipment.

Warranty

A warranty problem may be handled by returning the product to the factory for repair or replacement under warranty.

DICTIONARY OF MAPPING SYMBOLS

Map Dictionary:

CMD0 - Specifies input and output locations for the command interface

e.g. CMD0=DSI25*DSO20
Unit will look for commands starting at DeviceNet input word 25 and send acknowledgement to output word 20
Please distinguish between digit zero "0", and upper-case letter "O".

HI, HSI - Hardy Input Table

Bit "y" of word "x" in table is specified as: HIx.y
16-bit word "x" in table is specified as: HSIx

HSI0 = Digital Inputs Word
HI0.0 = Digital Input 1
HI0.1 = Digital Input 2
HI0.2 = Digital Input 3
HI0.3 = Digital Input 4
HI0.4 = Digital Input 5
HSI1 = Instrument-Status Word
HI1.0 = A/D error
HI1.1 = A/D failure
HI1.5 = Real time clock failure
HI1.6 = In Motion
HI1.8 = NVR Failure
HI1.9 = Infrared Failure
HSI2 = Filler/Dispenser Outputs, bits HI2.0 - HI2.15
HI2.0 = Auxiliary Device
HI2.1 = Fast Fill or Fast Dispense
HI2.2 = Slow Fill or Slow Dispense
HI2.3 = Discharge
HI2.4 = Fill Complete or Dispense Complete
HI2.5 = Refill
HI2.6 = Change Bags
HI2.15 = Any Alarm
HSI3 = Filler/Dispenser Outputs, bits HI3.0 - HI3.15
HI3.0 = AutoZero Failed or Bag Change Alarm
HI3.1 = Discharge Gate clogged or Refill Timeout
HI3.2 = Discharge Gate Stuck Open
HI3.3 = Discharge Gate Stuck Shut
HI3.4 = Feed Timeout
HI3.5 = Fast Gate Stuck Open
HI3.6 = Fast Gate Stuck Shut
HI3.7 = Lost OK-to-Fill or Lost OK-to-Dispense
HI3.8 = Jog Count Alarm
HI3.9 = Jog Gate Stuck Open
HI3.10 = Jog Gate Stuck Shut
HI3.11 = Not OK to Discharge
HI3.12 = Not OK to Fill or Not OK to Dispense
HI3.13 = Overfill or Over-Dispense
HI3.14 = Slow Gate Stuck Open
HI3.15 = Slow Gate Stuck Shut

HSI4 = Filler/Dispenser Outputs, bits HI4.0 - HI4.15
HI4.0 = Tare Limit alarm or Over-Refill
HI4.1 = Underfill or Under-Dispense
HI4.2 = Disp Gate Open at Refill
HI4.3 = Refill Stuck Open
HI4.4 = Refill Stuck Shut
HI4.5 = Tare Timeout
HI4.6 = Insufficient Material
HI4.7 = Imbalance

HSI5 = Command Status Word. This 16-bit word holds the result status of mapped commands.
HSI5.15 = Command Status Data Valid bit. Set when the rest of the status bits are valid.
HSI6 = Watchdog Word. Each bit represents the corresponding node(bit0=Node0 etc.) sending data. Five seconds after the last data packet arrives form any node, its bit is set to zero.

HO - Hardy Output Table

HO0.0 = Output Relay 1
HO0.1 = Output Relay 2
HO0.2 = Output Relay 3
HO0.3 = Output Relay 4
HO0.7 = Software LED

HO2.0 = Do C2 Calibration
HO2.1 = Do Traditional Calibration Low (Zero weight)
HO2.2 = Do Traditional Calibration High (Span weight)
HO2.3 = Clear All Totalizers
HO2.4 = Clear Totalizer 1
HO2.5 = Clear Totalizer 2
HO2.6 = Clear Totalizer 3
HO2.7 = Clear Totalizer 4
HO2.8 = Clear Totalizer 5
HO2.9 = Clear Totalizer 6
HO2.10 = Clear Totalizer 7
HO2.11 = Clear Totalizer 8
HO2.12 = Clear Totalizer 9
HO2.13 = Clear Totalizer 10
HO2.14 = Clear Totalizer 11
HO2.15 = Clear Totalizer 12
HO3.0 = Send Custom Email 0
HO3.1 = Send Custom Email 1
HO3.2 = Send Custom Email 2
HO3.3 = Send Custom Email 3
HO3.4 = Send Custom Email 4
HO3.5 = Send Custom Email 5

HO3.6 = Send Custom Email 6
HO3.7 = Send Custom Email 7
HO3.8 = Send Custom Email 8
HO3.9 = Send Custom Email 9
HSO - Hardy Short Output table. A table of 16-bit integers.

NOTE: HSO is a distinct table, and does not refer to HO in any way.

HSO0 = Cycles Ordered for Active Ingredient, 0=continuous
HSO1 = Ingr. 1 Speed. 0=single, 1=dual
HSO2 = Ingr. 2 Speed
HSO12 = Ingr. 12 Speed
HSO13 = Ingr. 1 Fills or Dispenses
HSO24 = Ingr. 12 Fills or Dispenses
HSO25 = Ingr. 1 Auto Preact On. 0=no, 1=yes
HSO36 = Ingr. 12 Auto Preact On
HSO37 = Ingr. 1 Tolerance Selection, 0=weight 1=percent
HSO48 = Ingr. 12 Tolerance Selection
HSO49 = Ingr. 1 Jog Count (max permitted jogs)
HSO60 = Ingr. 12 Jog Count
HSO61 = Ingr. 1 Fill or Dispense Time (s) (max allowed time for operation)
HSO72 = Ingr. 12 Fill or Dispense Time (s)
HSO73 = Ingr. 1 Auto Fast On. 0=no, 1=yes (automatic adjustment of fast wt for dual-speed units)
HSO84 = Ingr. 12 Auto Fast On
HSO85 = Ingr. 1 Fast Gate Time (s). (max time for fast gate proof sw to verify gate operation)
HSO96 = Ingr. 12 Fast Gate Time (s)
HSO97 = Ingr. 1 Fast Proof Switch On. (0=don't use fast gate proof sw, 1=use proof sw)
HSO108 = Ingr. 12 Fast Proof Switch On.
HSO109 = Ingr. 1 Slow Proof Switch On. (0=don't use slow gate proof sw, 1=use proof sw)
HSO120 = Ingr. 12 Slow Proof Switch On.
HSO121 = Ingr. 1 Slow Gate Time (s). (max time for slow gate proof sw to verify gate operation)
HSO132 = Ingr. 12 Slow Gate Time (s).
HSO133 = OK-to-Fill/OK-to-Dispense timer (s). (max time to wait for OK-to-Fill signal)
HSO134 = Totalizer On. (0=no, 1=yes.)
HSO135 = Auto Print On. (0=no, 1=yes.)
HSO136 = OK-to-Fill Input. (0=don't wait for OK-to-Fill, 1=do wait for it.)
HSO137 = Discharge Enable. (0=don't enter discharge sequence, 1=enter discharge sequence)
HSO138 = AutoDischarge Enable. (0=wait for Discharge command, 1=discharge without waiting for command)
HSO139 = OK-to-Discharge Enabled. (0=don't wait for OK-to-Discharge input, 1=wait for it)
HSO140 = Auxiliary Device time (s). (max time allowed for Auxiliary Device operation)
HSO141 = Discharge Proof On. (0=don't wait for Discharge Proof Sw., 1=wait for it)
HSO142 = Discharge Gate Timer (s). (max time for discharge proof sw to verify gate operation)
HSO143 = Use Auto Zero. (0=don't auto zero, 1=auto zero when within autozero range of zero)
HSO144 = Refill On. (0=do not attempt refill, 1=refill when needed)
HSO145 = Initial Refill On. (0=do not attempt refill, 1=refill before operation)
HSO146 = Active Ingredient Number. (1=ingr 1, 2=ingr 2, 12=ingr 12)
HSO147 = WAVERSAVER setting. (0=Off, 1=7.5Hz, 2=3.5Hz, 3=1.0Hz, 4=0.5Hz, 5=0.25Hz)
HSO148 = Calibration Type. (0=Traditional, 1=C2, -1=not calibrated)

HFI - Hardy Float Input Table

HFI0 = Gross Weight lb
HFI1 = Net Weight lb
HFI2 = Gross Weight
HFI3 = Net Weight
HFI4 = Tare Weight lb
HFI5 = weight Fraction 1 (with =SD board, fraction of wt currently on input 1)
HFI6 = weight Fraction 2 (with =SD board, fraction of wt currently on input 2)
HFI7 = weight Fraction 3 (with =SD board, fraction of wt currently on input 3)
HFI8 = weight Fraction 4 (with =SD board, fraction of wt currently on input 4)
HFI9 = capacity

HFO - Hardy Float Output Table

HFO0 - user-defined floating point variable, saved in non-volatile RAM
HFO1 - user-defined floating point variable, saved in non-volatile RAM
HFO2 - user-defined floating point variable, saved in non-volatile RAM
HFO3 - user-defined floating point variable, saved in non-volatile RAM
HFO4 - user-defined floating point variable, saved in non-volatile RAM
HFO5 - user-defined floating point variable, saved in non-volatile RAM
HFO6 - user-defined floating point variable, saved in non-volatile RAM
HFO7 - user-defined floating point variable, saved in non-volatile RAM
HFO8 - Active Target Weight
HFO9 - Ingr.1 Target Wt
HFO10 - Ingr.2 Target Wt
HFO20 - Ingr.12 Target Wt
HFO21 - Ingr.1 Preact Wt
HFO32 - Ingr.12 Preact Wt
HFO33 - Ingr.1 Max Wt (Tolerance in wt, above target wt)
HFO44 - Ingr.12 Max Wt
HFO45 - Ingr.1 Min Wt (Tolerance in wt, below target wt)

HFO56 - Ingr.12 Min Wt
HFO57 - Ingr.1 Max % (Tolerance in %, above target wt)
HFO68 - Ingr.12 Max %
HFO69 - Ingr.1 Min % (Tolerance in %, below target wt)
HFO80 - Ingr.12 Min %
HFO81 - Ingr.1 Jog On Time (s)
HFO92 - Ingr.12 Jog On Time (s)
HFO93 - Ingr.1 Jog Off Time (s)
HFO104 - Ingr.12 Jog Off Time (s)
HFO105 - Ingr.1 Wait Time (s)
HFO116 - Ingr.12 Wait Time (s)
HFO117 - Ingr.1 Fast Target Wt (wt below target wt where dual unit switches to slow feed)
HFO128 - Ingr.12 Fast Target Wt
HFO129 - Zero Tolerance (wt near zero that can be taken as zero)
HFO130 - Auto Zero Tolerance (wt near zero that can be zeroed)
HFO131 - Calibration Low Wt (wt used for "zero" of calibration)
HFO132 - Calibration Span Wt (wt used for "span" of traditional calibration)
HFO133 - AutoZero Tolerance Time (time allowed for autozeroing)
HFO134 - Tare Limit (max wt that can be tared off)

HTO - Hardy Text Output Table

HTO0 - Operator ID (max 3 chars)
HTO1 - Instrument ID (max 19 chars)
HTO2 - Custom Text0 (max 20 chars)
HTO3 - Custom Text1 (max 20 chars)
HTO11 - Custom Text9 (max 20 chars)
HTO12 - Ingredient 1 Name (max 19 chars)
HTO23 - Ingredient 12 Name (max 19 chars)
HTI - Hardy Text Input Table
HTI0 - Calibrator ID (max 3 chars)
HTI1 - Model Number (max 20 chars)
HTI2 - Program Part Number (max 20 chars)
HTI3 - Firmware Revision Number (max 20 chars)
HII - Hardy Integer Input Table
HII0 - Serial Number
HII1 - Totalizer0 Cycles
HII12 - Totalizer11 Cycles
HDI - Hardy Double Input Table
HDI0 - Totalizer0 Wt
HDI11 - Totalizer11 Wt

DI, DO, DFI, DFO, DSI, DSO, DII, DIO, DTI, DTO - DeviceNet tables.

DeviceNet tables contain 125 16-bit words.

DI, DO = DeviceNet input/output, addressed as bits
DFI, DFO = DeviceNet input/output, addressed as floats
DSI, DSO = DeviceNet input/output, addressed as 16 bit integers
DII, DIO = DeviceNet input/output, addressed as 32 bit integers
DTI, DTO = DeviceNet input/output, addressed as text

RI, RO, RFI, RFO, RSI, RSO, RII, RIO, RTI, RTO - RIO (Allen-Bradley® Remote I/O tables). Used if you have an RIO option card.
The RIO table is 64 words long, of which the first 32 are mapped to and from the network.
The rest is used as a scratchpad area for short commands.

NOTE: The block transfer area immediately follows discrete area, and depends on rack size selected.

RI, RO = RIO input/output, addressed as bits
RFI, RFO = RIO input/output, addressed as floats
RSI, RSO = RIO input/output, addressed as 16 bit integers
RII, RIO = RIO input/output, addressed as 32 bit integers
RTI, RTO = RIO input/output, addressed as text

CI, CO, CFI, CFO, CSI, CSO, CII, CIO, CTI, CTO - Communications Network tables. Used if you have a Communications option card.

The Communications Input table is 125 words long.
The Communications Output table is 127 words long, but the first two words are reserved, if ControlNet.
otherwise, 125 words long.

CI, CO = Communications Network input/output, addressed as bits
CFI, CFO = Communications Network input/output, addressed as floats
CSI, CSO = Communications Network input/output, addressed as 16 bit integers
CII, CIO = Communications Network input/output, addressed as 32 bit integers
CTI, CTO = Communications Network input/output, addressed as text

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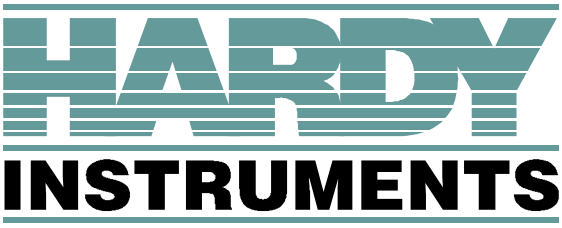

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