



748P

WEIGHT INDICATING INSTRUMENT

TECHNICAL/OPERATION MANUAL

INTRODUCTION

This manual contains information describing the installation, calibration and operation of the Model 748P Weight Indicating Instrument. It is intended to be used as a guide to the operation of your Model 748P Weight Indicating Instrument.

LIST OF FIGURES

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FCC COMPLIANCE STATEMENT

WARNING! This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions in this manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

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PRECAUTIONS

Before using this instrument, read this manual and pay special attention to all "WARNING" symbols:



IMPORTANT



**ELECTRICAL
WARNING**

SERIAL NUMBER _____
DATE OF PURCHASE _____
PURCHASED FROM _____

RETAIN THIS INFORMATION FOR FUTURE USE

EUROPEAN DECLARATION OF CONFORMITY

Manufacturer: Cardinal Scale Manufacturing Company
PO Box 151
203 East Daugherty
Webb City, Missouri USA

Telephone No. 417.673.4631

Fax No. 417.673.5001

Product: Non-automatic Weight Indicating Instrument
Model Number 748P and 748L
Serial Number EXXX01-XXX

The undersigned hereby declares, on behalf of Cardinal Scale Manufacturing Company of Webb City, Missouri, that the above-referenced product, to which this declaration relates, is in conformity with the provisions of:

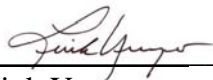
European Standard EN45501 and the equivalent International
Recommendation OIML R76, edition 1992
Report No. DANAK-192035

European Standard EN5022/1994 (CISPR22/1993) Electromagnetic
Emissions
Report No. DANAK-192645

Council Directive 90/384/EEC (20 June, 1990) on the Harmonization
of the Laws of the Member States relating to non-automatic weighing
systems as amended by:

Council Directive 93/68/EEC (22 July, 1993)

The Technical Construction File required by this Directive is maintained at the corporate headquarters of Cardinal Scale Manufacturing Company, 203 East Daugherty, Webb City, Missouri.



Link Yeager
Director, Quality Assurance

SPECIFICATIONS

Power Requirements	115 VAC 60 Hz @ 0.07A (optional 230 VAC 50/60 Hz @ 0.03A)
Enclosure Size	NEMA 4X: 12 3/8"W x 7 1/4"H x 4"D
Operating Environment ..	Temperature: 14° to 104° F or -10° to +40° C Humidity: 90% non-condensing (maximum)
Display	Standard: 6-digit, 1" high, 7-segment LCD with 30 element bar graph display. <u>Optional</u> : 6-digit, 0.8" high, 7-segment LED with 30 element bar graph display
Sensitivity	0.45 uV/division (0-3.3 mV/V input), class III
Signal Input Range	1.0 mV min. to 50 mV max. (including dead load boost)
Transducer Excitation	12 VDC
Number of Load Cells	14 each, 350 OHM cells maximum
Load Cell Cable Length ..	150 feet maximum. Consult factory for other requirements 30 feet maximum without sense lines
Resolution	1 part in 20,000 displayed. 1 part in 100,000 internal
Capacities	1,000 to 10,000 divisions commercial. Up to 20,000 divisions non-commercial
Tare Capacity	5 digits maximum
Division Value	1 to 9 x 10, 1, 0.1, 0.01, 0.001 and 0.0001
Sample Rate	1 to 12 samples per second selectable
Auto Zero Range	0.5 or 1 through 9 divisions
Weighing Units	Pounds only, kilograms only, pounds/kilograms, tons only, or metric tons only
Keyboard	Membrane type with 30 color-coded keys

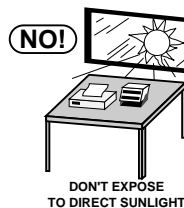
Standard Features:

- Year 2000 compliant Time and Date with selectable date format (mm/dd/yy or dd/mm/yy).
- Six (6) digits of numeric identification.
- Single speed, digital fill control with up to eight (8) independent preset weight comparators with automatically adjusted trim, logic-level outputs, and status display.
- Keyboard or push button tare function.
- Gross, tare, net conversion.
- Programmable bar graph operation displays weight or preset weight comparator status.
- Test key performs display test and internal tests.
- Truck storage for 200 trucks or 200 accumulators with IDs.
- RS232/20mA printer port with selectable baud rate for printers.
- Five (5) custom ticket formats.
- Bi-directional RS232/20mA interface with selectable baud rate can be used to control indicator remotely.
- SMA level 2 compliant serial communications.
- Multi interval feature with selectable parameters.
- Programmable print format.
- Consecutive number printing.
- Gross and net weight accumulators

Optional Features:

- Relay output for connection of peripherals to be controlled by preset weight comparators.
- Optional I/O board includes:
 - Analog output with 0-10 VDC and 4-20 MA output.
 - BCD output with status lines.
 - Eight (8) optically-isolated programmable inputs.

INSTALLATION



GIMBAL MOUNTING

The Model 748P Weight Indicating Instrument is housed in a NEMA 4X stainless steel wall or desk-mount enclosure.

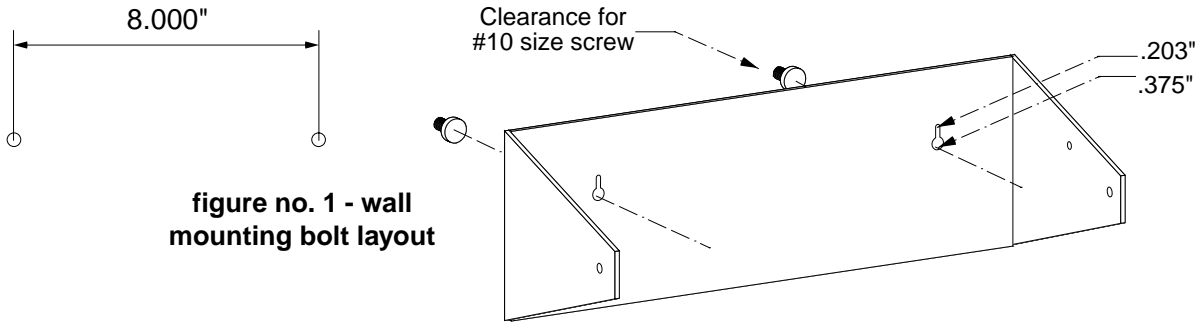


figure no. 1 - wall mounting bolt layout

The 748P gimbal may be mounted on a desktop or other smooth, flat, horizontal surface or may be mounted on a wall. Refer to figure no. 1 for a layout of wall-mounting bolts. If wall mounted, make certain that the mounting surface is strong enough to support the instrument. The mounting location should be where the display is easily viewed while being close enough to provide the operator easy access to the keyboard. Carefully lay out the mounting hole locations, then drill and install the anchor bolts. Attach the gimbal to the wall and securely tighten the retaining bolts.

LOAD CELL CONNECTION



CAUTION! Disconnect any external load cell power supply before connecting load cells to the instrument. Failure to do so will result in permanent damage to the instrument.

Remove the ten (10) screws securing the back panel to the main housing, then loosen the cable gland connector for the load cell. This gland connector is located on the rear panel of the enclosure. Refer to figure no. 4 for an illustration of the connector layout.

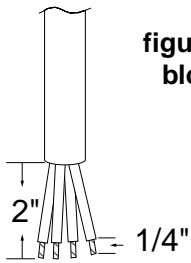
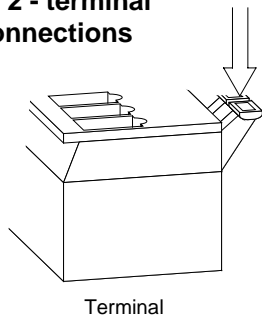


figure no. 2 - terminal block connections



Slip the single cable from the load cell or load cell junction box through the gland connector and into the enclosure. Remove 2" of the outer insulation jacket then remove 1/4" of insulation from each of the four (4) wires and shield without sense leads or six (6) wires and shield with sense leads (refer to figure no. 3). Connect each of the wires to terminal block P1 as shown in figure no. 4. To terminate a wire, first press down on the release bar for the terminal, insert the wire into the terminal opening then allow the release bar to return to its original position, locking the wire in place. Repeat the

procedure until all of the wires are in place. **NOTE!** If the sense leads are NOT used, you must install plug-in jumpers at J1 and J3 adjacent to the terminal block. These jumpers attach the sense leads to the excitation leads. If sense leads ARE used (as in motor truck scales), these plug-in jumpers should be positioned on one plug-in pin only or removed and stored for later use.

LOAD CELL CONNECTIONS WITH OVER 30 FEET OF CABLE

For installations with over 30 feet of cable between the indicator and the load cells, sense wires should be used. The sense wires must be connected between the +SENS, -SENS terminals on the indicator and the +EXCITATION, -EXCITATION wires of the load cells or the +SENS, -SENS terminals of the load cell trim board or the section seal trim board. For the indicator to use the sense wires, the +SENS jumper J1 and the -SENS jumper J3 must be open (see figure no. 4).



CAUTION! When in parallel runs, locate Load Cell cables a minimum of 24" away from all AC wiring.

PRINTER CABLE INSTALLATION

Loosen the gland connector adjacent to the load cell cable gland connector and slip the printer cable through it and into the enclosure. Remove 2" of the outer insulating jacket from the cable, then remove 1/4" of insulation from each of the wires (refer to figure no.2). These wires are to be connected to terminal block P9 at the bottom edge of the printed circuit board. Refer to figure no. 4 for the location of the terminal block.

Note that the printer output can be either RS232 compatible or 20mA current loop. To terminate the wires, first press down the release bar on the terminal. Slip the wire into the terminal opening and release the bar to lock the wire in place.

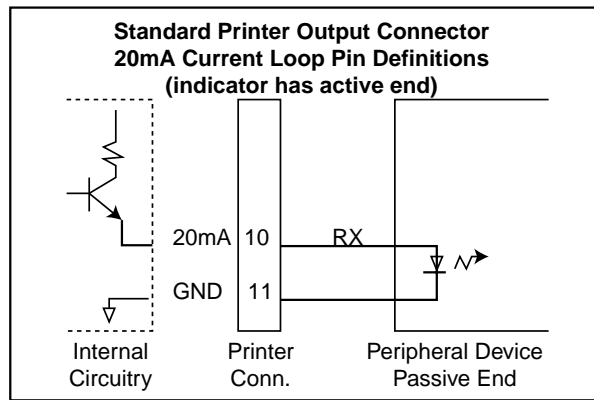


figure no. 3 - printer output connection

NOTE! *RS232 CTS handshake input is enabled during calibration or setup review.

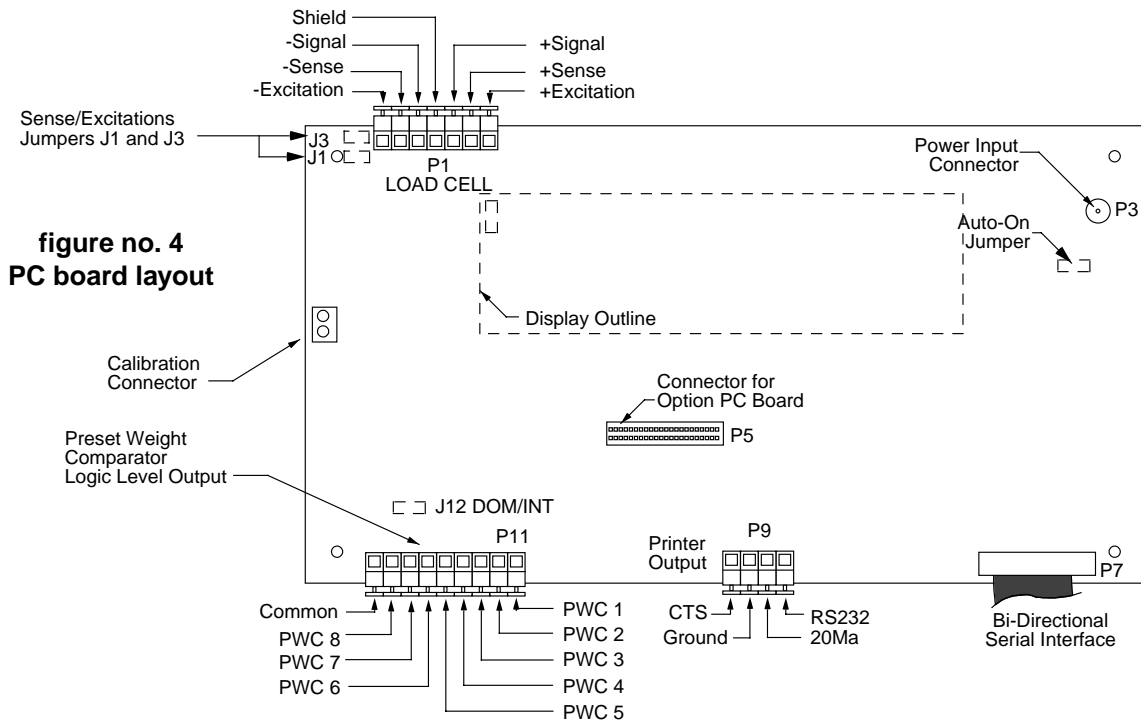


figure no. 4
PC board layout

NOTE! After all terminations have been made, remove the excess cable from the instrument enclosure and securely tighten each of the cable gland connectors. Do not over-tighten these connectors but make certain they are snug. DO NOT USE TOOLS! Tighten with fingers!

AUTO-ON

AUTO-ON jumper J7, when connected, will cause the indicator to power on automatically whenever power is applied to the power input connector. If power is lost momentarily and then reapplied, the indicator will turn on without pressing the **ON** key. See figure no. 4 for location.

DOMESTIC/INTERNATIONAL JUMPER (J12 DOM/INT)

Remove the jumper to comply with OIML requirements. The 748P will perform the following functions: 1. A "lamp test" will be performed on power-up.
2. The printout of keyboard tare will be designated as "PT."
3. The date format will be day/month/year.

SERIAL DATA FORMAT

The serial data formats are defined during the setup and review functions. At these times, the number of start, data and stop bits along with the baud rate is selected for the serial interface. Baud rates of 1200, 2400, 4800, 9600 and 19.2K baud are supported. Refer to CALIBRATION section, Configure Serial Port.

RECORD FORMAT

The information transmitted from the printer output port depends on the operation mode of the 748P at the time the **PRINT** key is pressed as well as the print format entered. Refer to the **CALIBRATION, PRINT** and **FUNCTION** key section of this manual for additional information on the programming of the printer output format. Two general formats transmitted are shown below.

GROSS WEIGHT MODE:	NET WEIGHT MODE:
*^CR ID^nnnnnn	*^CR ID^nnnnnn
*^CR hh:mm	*^CR hh:mm
*^CR mm/dd/yyyy**	*^CR mm/dd/yyyy**
	*^CR xxxxxx^LB^G
	*^CR xxxxxx^LB^T ^ (Man Wt)
	*^CR xxxxxx^LB^N

*Determined by tab settings

**Domestic - dd/mm/yyyy = international

where:

nnnnnn	= six (6) digits of numeric identification with leading zeros suppressed
hh	= hours (refer to Setup for information on 12 or 24 hour time format selection)
mm	= minutes (two (2) digits)
ss	= seconds (two (2) digits)
MM	= month (two (2) digits) (refer to Setup for information on date format selection)
dd	= day (two (2) digits)
yyyy	= year four (4) digits)
ID	= ASCII letters "I" and "D" to identify data as identification
LB	= ASCII letters "L" and "B" to identify weighing units as pounds. May also be KG for kilograms, OZ for ounces
xxxxxx	= six (6) numeric digits of weight with decimal point if required and leading zeros suppressed
G	= ASCII letter "G" for gross weight
T	= ASCII letter "T" for tare weight
N	= ASCII letter "N" for net weight
CR	= carriage return (followed by LF if Automatic Line Feeds was set to YES during setup)
^	= space (hex 20)
LF	= line feed

CONTINUOUS DATA OUTPUT

If, during setup and calibration, the answer to the prompt *5b400?* is NO, the weight data will be transmitted in the following format:

CRPzzzzzzDs^uu^m^ETX

If the prompt *5b400?* is answered YES, the weight data will be transmitted in the following formats:

Pxxxxx^UU^M^SS^CR (no decimal point in weight display)
PxxxxxD^UU^M^SS^CR (decimal point in weight display)

- where:
- CR - carriage return (hex 0D)
 - D - decimal point (embedded where necessary)
 - ETX - end of text (hex 03)
 - m - mode, lower case (g=gross, n=net)
 - M - mode, upper case (G=gross, N=net)
 - P - polarity (space if positive, - if negative)
 - s - status, lower case (m=motion, e=entry - input in progress, c=over capacity)
 - SS - status, upper case (CZ=center-of-zero, MO=motion, BZ=gross weight below zero, ee=entry - input in progress, OC=over capacity)
 - uu - units, lower case (lb, kg, tn, etc.)
 - UU - units, upper case (LG, KG, TN, etc.)
 - xxxxxx - weight with leading spaces
 - zzzzzz - weight with leading zeros
 - ^ - space

WEIGHT ON DEMAND

If the bi-directional serial has not been setup for continuous output, the 748P will respond to a weight request (ENQ).

The host device (computer) sends:

ENQ - (hex 05)

The 748P will respond:

Sxxxxxx^UU^M^CC^CR - if no decimal point in weight display.

SxxxxxD^UU^M^CC^CR - if decimal point in weight display.

- S - sign (space if weight is positive or a "--" if weight is negative)
- xxxxxx - six digits of weight with leading zeros suppression
- D - decimal point embedded in weight (if decimal point selected during calibration)
- UU - weighing units (lb or kg)
- M - weighing mode ("G" if displaying gross weight, "N" if displaying net weight)
- motion - space if there is no motion or an "M" if there is motion
- CC - weight status ("OC" if weight exceeds scale capacity, "BZ" if the weight is below zero, "MO" if there is motion)
- CR - carriage return (0Dhex)

BI-DIRECTIONAL SERIAL INTERFACE (Serial I/O)

The bi-directional serial interface for the 748P Weight Indicator is located on the printed circuit board. Note that because of the number of signals involved, there is no terminal block for the bi-directional serial interface. Rather, a 25-pin "D" connector has been provided for the interface. All terminations to this interface must be made to a mating connector (Cardinal part no. 6610-2047) plugged into the serial interface.

An RS232 20mA compatible bi-directional serial interface cable is located on the back of the PC board and may be used for various functions. It will accept serial commands* allowing the 748P to be controlled remotely. Figure no. 5 illustrates the pin layout for this connector.

* See SERIAL INPUT COMMANDS section for details.

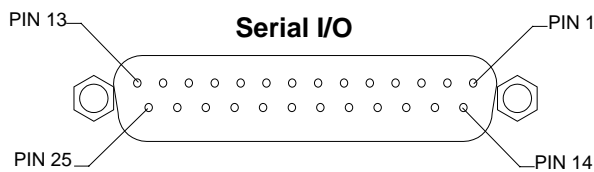
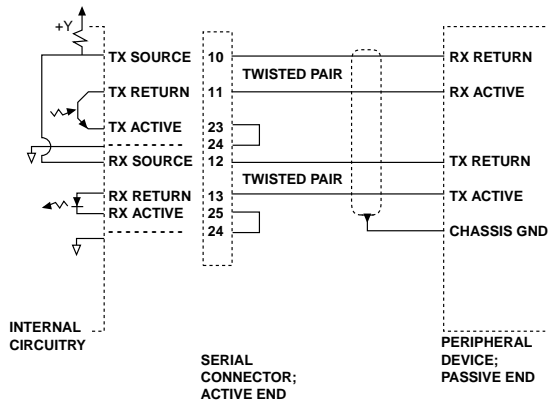


figure no. 5 - bi-directional interface

PIN NUMBER...	FUNCTION
7	GROUND
19	GROUND
2	Tx D
3	Rx D
11	Tx D RETURN
13	Rx D
RETURN	
10	Tx D SRC
12	Rx D SRC
23	Tx D ACTIVE
25	Rx D ACTIVE
24	GROUND
9	+5 VDC
6	+5 VDC

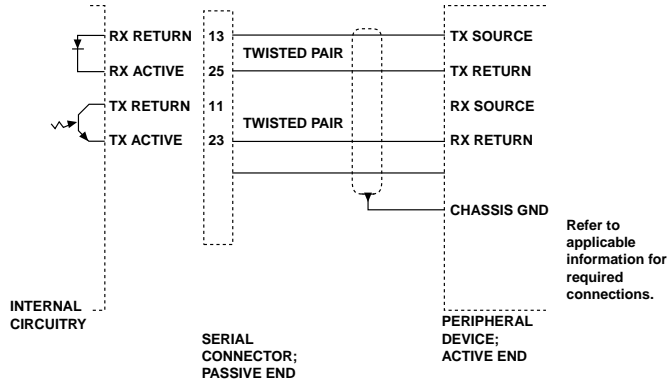


INTERCONNECT CABLE - Example A

CONNECTION DIAGRAM
for 20 mA
CURRENT LOOP OPERATION
Peripheral Device has
PASSIVE END of Current Loop
(standard enclosure only).

INTERCONNECT CABLE - Example B

CONNECTION DIAGRAM
for 20 mA
CURRENT LOOP OPERATION
Peripheral Device has
ACTIVE END of Current Loop
(standard enclosure only).



SERIAL INPUT COMMANDS

The second serial port on the 748P is a bi-directional port and can both receive and transmit serial data. It is possible to control the operation of the 748P by transmitting serial commands to the instrument via this serial port. This is accomplished by transmitting a command string which is then acted upon as if it were received from the instrument's keyboard. The basic format for this serial command is:

STX KeyCommand [SubCommand] [Weight Value] CKsum ETX

- where:
- STX - Start of Text (hex 02) MUST precede ALL serial commands.
 - KeyCommand - One of a table of predefined command functions. **Note:** All commands are subject to rejection just as commands from the keyboard.
 - SubCommand - Optional command parameter.
 - Weight Value - Optional weight value required by some Key Commands. **Note:** The weight value must meet the displayed division, capacity, and decimal point precision of the indicator.
 - CKsum - XOR checksum of command (*excluding* STX and ETX) **Note:** For instructions on how to calculate the checksum value, refer to the CHECKSUM CALCULATION section of this manual.
 - ETX - End of Text (hex 03) MUST terminate ALL serial commands.

The KeyCommand functions are:

- KeyCommand - 0
- Equivalent Keyboard Key - GROSS
- Function - Switch 748P to Gross Weight Mode
- Serial Command Format - STX0CKsumETX
- Hex Format to Transmit - 02H 30H 33H 30H 03H
- Equivalent Computer or Terminal Keys to press - Ctrl B 0 3 0 Ctrl C

- KeyCommand - 1
- Equivalent Keyboard Key - NET
- Function - Switch 748P to Net Weight Mode
- Serial Command Format - STX1CKsumETX
- Hex Format to Transmit - 2H 31H 33H 31H 3H
- Equivalent Computer or Terminal Keys to press - Ctrl B 1 3 1 Ctrl C

Key Command - 2
 Equivalent Keyboard Key - lb/kg
 Function - Toggle the 748P between Lb and Kg modes
 Serial Command Format - STX2CKsumETX
 Hex Format to Transmit - 2H 32H 33H 32H 3H
 Equivalent Computer or Terminal Keys to press - Ctrl B 2 3 2 Ctrl C

KeyCommand - 3
 Equivalent Keyboard Key - ON/ZERO
 Function - Zero the weight display
 Serial Command Format - STX3CKsumETX
 Hex Format to Transmit - 2H 33H 33H 33H 3H
 Equivalent Computer or Terminal Keys to press - Ctrl B 3 3 3 Ctrl C

KeyCommand - 4
 Equivalent Keyboard Key - PRINT
 Function - Initiate a print sequence at the printer serial port
 Serial Command Format - STX4CKsumETX
 Hex Format to Transmit - 2H 34H 33H 34H 3H
 Equivalent Computer or Terminal Keys to press - Ctrl B 4 3 4 Ctrl C

KeyCommand - 5
 Equivalent Keyboard Key - TARE
 Function - Enter a Tare weight value
 Serial Command Format - STX5xxxxxxCKsumETX
 (xxxxxx = the tare weight value)
 Hex Format to Transmit - 2H 35H xH xH xH xH xH xH¹ zzH² 3H
 Equivalent Computer or Terminal Keys to press - Ctrl B 5 xxxxxx zz³ Ctrl C

KeyCommand - 6
 Equivalent Keyboard Key - BAR
 Function - Enter the Bar Graph Starting (60) and Stop (61) weight values
 Serial Command Format - STX60xxxxxxCKsumETX
 (xxxxxx = the Bar Graph Starting Weight)
 STX61yyyyyyCKsumETX
 (yyyyyy = the Bar Graph Stop Weight)
 Hex Format to Transmit - 2H 36H 30H xH xH xH xH xH xH¹ zzH² 3H
 (Start weight command)
 2H 36H 31H yH yH yH yH yH yH² zzH² 3H
 (Stop weight command)
 Equivalent Computer or Terminal Keys to press - Ctrl B 6 0 xxxxxx zz³ Ctrl C
 (Start Weight command)
 Ctrl B 6 1 yyyyyy zz³ Ctrl C
 (Stop Weight command)

NOTE: This command will not change from the PWC to Bar Graph mode in the display. It must be manually selected.

KeyCommand - 7
 Equivalent Keyboard Key - PRESET
 Function - Enter the Preset or Trim weight value for one or all eight of the preset weight comparators
 Serial Command Format - STX7nxxxxxxCKsumETX
 n = the preset or trim weight comparator number (see below).
 (xxxxxx = the weight value for the corresponding preset number)
 Hex Format to Transmit - 2H 37H nH xH xH xH xH xH xH¹ zzH² 3H
 Equivalent Computer or Terminal Keys to press - Ctrl B 7 n xxxxxx zz³ Ctrl C

Preset and Trim values for “n.” Note values for “n” are in HEX.

1	set preset	1	7	set preset	4	D	set preset	7
2	set trim	1	8	set trim	4	E	set trim	7
3	set preset	2	9	set preset	5	F	set preset	8
4	set trim	2	A	set trim	5	G	set trim	8
5	set preset	3	B	set preset	6			
6	set trim	3	C	set trim	6			

NOTE: This command will not change from the Bar Graph to PWC mode in the display. It must be manually selected.

KeyCommand	- 8
Equivalent Keyboard Key	- none
Function	- Initiates an inquiry (ENQ) of the bi-directional I/O port. This command will cause the displayed weight to transmit out the serial I/O port.
Serial Command Format	- STX8CKsumETX
Hex Format to Transmit	- 2H 38H 33H 38H 3H
Equivalent Computer or Terminal Keys to press	- Ctrl B 8 3 8 Ctrl C
KeyCommand	- 9
Equivalent Keyboard Key	- none
Function	- Perform Push Button Tare function. This will set the GROSS weight as the TARE value and switch to the NET mode. NOTE: The setup parameter, <i>PbTAr</i> has no effect on this function
Serial Command Format	- STX9CKsumETX
Hex Format to Transmit	- 2H 39H 33H 39H 3H
Equivalent Computer or Terminal Keys to press	- Ctrl B 9 3 9 Ctrl C

- ¹ The xH xH xH xH xH xH and yH yH yH yH yH yH are the HEX equivalent of each character in the weight value. For example, if the weight value is 1234.1, the HEX equivalent is 31H 32H 33H 34H 2EH 31H.
- ² The zzH is the HEX equivalent of the CheckSum value. **NOTE:** For instructions on how to calculate the checksum value, refer to the CHECKSUM CALCULATION section of this manual.
- ³ Refer to an ASCII character code table of your computer or terminal for the corresponding key(s) to press for the HEX CheckSum value.

RESPONSES TO SERIAL COMMAND FUNCTIONS

The 748P will respond to every serial command received. The format will serve to indicate the manner in which the serial command was processed. The general format for the response to a serial command is:

	Response [RejectCode]
where: Response	- ACK if the command was processed NAK if the command was not processed
RejectCode	- If NAK was transmitted to show that the command was not processed, a code number will be transmitted to indicate the reason for rejection of the command
	0 - Unable to process command (i.e. Print command sent while weight was unstable)
	1 - Invalid Cksum (i.e. checksum incorrectly calculated)
	2 - Invalid Character Count (i.e. data length wrong, weight value exceeds scale capacity or wrong division value, etc.)
	3 - Invalid Decimal Point position (i.e. decimal point missing or in wrong location)
	4 - Invalid Command (i.e. improper command format or invalid KeyCommand)
	5 - Invalid Sub-Command (i.e. invalid tare weight, preset number, or preset weight, Bar graph start or stop weight)

CHECKSUM CALCULATION

The checksum (Cksum) for KeyCommands with SubCommands or weight values to be entered (5, 6, and 7) are calculated by XORing each byte of the command, *excluding* the STX and ETX characters. The CKsum is then entered as a two (2) byte ASCII representation of the calculated HEX value. For example:

TARE command (5): STX5xxxxxxCKsumETX (xxxxxx = tare weight value)
Tare Weight Value = 1234
CKsum = **1F** (35h, XOR 31h XOR 32h XOR 33h XOR 34h XOR 2eh)
String to send, 02h 35h 31h 32h 33h 34h 2eh 31h 3fh 03h

Single byte KeyCommands (0, 1, 2, 3, 4, 8 and 9) are NOT XORed, instead the transmitted CKsum is a two (2) byte ASCII representation of the HEX value of the command. For example:

GROSS command (0): STX030ETX
"0" = (30h)
Cksum = 30
String to send, 02h 30h 33h 30h 03h

PRINT command (4): STX434ETX
"4" = 4 (34h)
CKsum = 34
String to send, 02h 34h 33h 34h 03h

PRESET WEIGHT COMPARATOR

The 748P Preset Weight Comparator comes standard with Logic Level Outputs that can control solid state external devices. An optional relay assembly must be used to power AC powered devices. If your 748P is equipped with the optional feature, PWC relay assembly, be sure to follow the connection instructions under that section to prevent damage to your indicator.

PWC LOGIC LEVEL OUTPUT

To automatically switch external devices at up to eight preset weight values, connect solid state relays to the PWC OUTPUT connector P11 as shown in figure no. 6. When the displayed weight is equal to or greater than the preset weight (see KEYPAD FUNCTIONS: **PRESET** key), the PWC output changes from 0 volts dc to 5 volts dc and will drive solid state relay resistive loads of 200 ohms or greater.

To connect the control cable to the comparator outputs, first loosen the gland connector located on the bottom of the enclosure on your right side. Slip the cable through this connector and into the enclosure. Remove 2" of the cable insulating jacket then 1/4" of insulation from each of the wires. Refer to figure no. 2, then make the proper terminations on terminal block P11. To terminate a wire, first press the release bar for the terminal, insert the wire into the terminal opening, then allow the bar to return to its original position locking the wire in place.

PWC RELAY ASSEMBLY

To automatically control power to up to eight AC powered devices at programmed weight values, unplug the four-position screw terminal from the relay board and wire as shown in figure no. 6.

Two identical PWC relay boards are configurable for PWC's 1-4 or 5-8 by removable plug-in jumpers. The relay board(s) are mounted to the 748P enclosure bottom or back side of the enclosure or in an external junction box.

PWC Relay Assembly

- R4: 4 Relay Assembly
- R8: 8 Relay Assembly

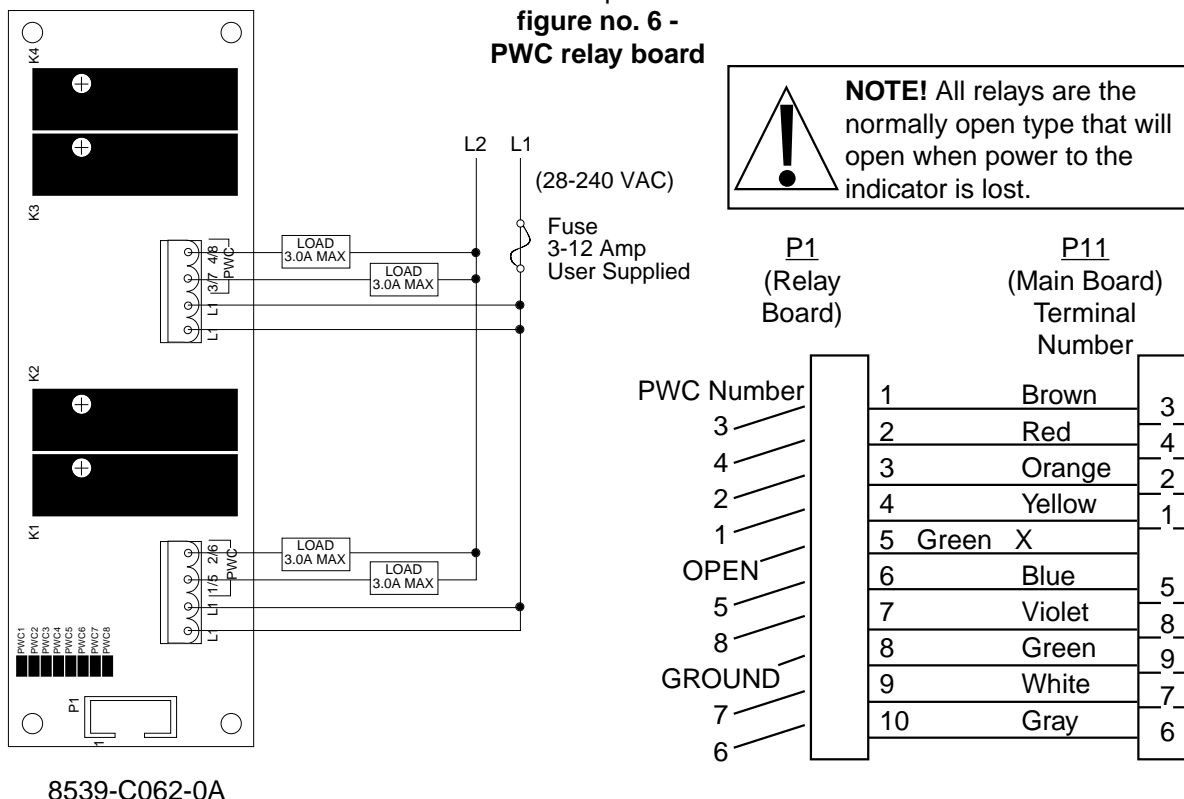
OUTPUT (closed) 28-240VAC @ 3A maximum for each plug-in relay.
CONTROL INPUT 5VDC @ 12mA from the 748P main pc board assembly P11
CONNECTION Removable plug-in screw terminals for up to 14 AWG wire.

The individual relays can be configured to be on (closed) or off (open) at weights under the preset weight and switch at the preset weight from on-to-off or off-to-on by setting the under weight condition to on or off during setup and calibration or setup review.

EXAMPLE: *Under* = on... PWC1 relay is on (closed) for weights under the preset weight and off (open) for weights equal to or over the preset weight.

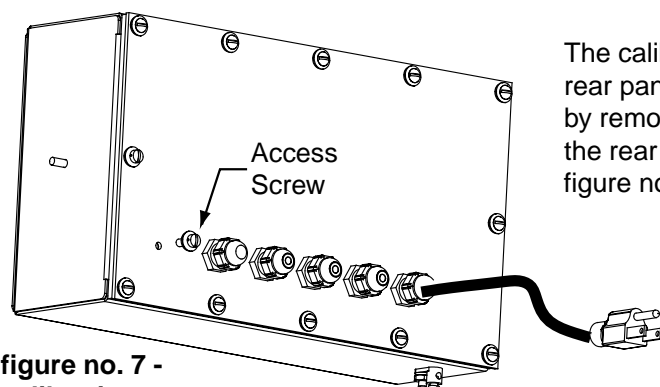
748P MAIN BOARD (P11) TO RELAY BOARD (WIRE) CONNECTION

Connect the PWC cable wires to the printed circuit board connector P11.



SETUP AND CALIBRATION

Your 748P indicator has been thoroughly tested and calibrated before being shipped to you. If you received the indicator attached to a scale, calibration is not necessary. If the 748P is being connected to a scale for the first time or recalibration is necessary for other reasons, proceed as indicated.



**figure no. 7 -
calibration access screw
location**

The calibration switch is located on the enclosure rear panel. You may gain access to this switch simply by removing the calibration switch access screw on the rear panel. The screw location is identified in figure no. 7.

Once you have located the calibration switch proceed with the calibration instructions. A summary of the calibration process is shown in graphical form at the end of this section.

CAUTION: The membrane keyboard is not to be operated with pointed objects (pencils, pens, fingernails, etc). Damage to keyboard resulting from this practice will NOT be covered under warranty.

0 = no 1 = yes

Press **OFF**. With a screwdriver or other tool inserted through the cal switch access hole on the rear panel, press the push button switch, then press **ON/ZERO** and release. When *int =* is displayed, release the push button switch. Pressing the **PRINT** key will advance to the *Pr t =* prompt.



CAUTION: When using the dual interval feature of the 748P, do not attempt to use a division value in the low range that is too small to provide adequate signal strength for stable operation of the instrument. Most scale installations will allow the smaller division to be 1/2 of the larger division value when the dual range feature is used.

The inherent sensitivity and capabilities of the 748P will allow you to select combinations that are beyond the practical limits of today's load cells for dependable, stable performance.

The appearance of such a situation will be instability in the lower range, while the higher range will operate as it should.

DUAL INTERVAL

dUAL

Press **ENTER** to show the current setting. Press **0** to disable or **1** to enable. Press **ENTER** to save the displayed setting. If dual interval is disabled (0 entered) advance to the **INTERVAL SETTING**, otherwise continue: (**NOTE:** If dual interval is selected and decimal point locations for both Intervals are not the same, the truck storage feature will be inhibited.)

LOW INTERVAL

Lo int

Press **ENTER** to show the current setting. Press **0** through **9** to enter the new Interval value and press **ENTER** to save it or to save the current value displayed. Values are 1 through 9, 10, 20, 30, 40, 50, 60, 70, 80 and 90. (Interval values other than 1, 2, 5, 10, 20 or 50 cannot be used in commercial applications.)

LOW DECIMAL POINT

Lo dP

Press **ENTER** to show the current setting. Press **0** through **4** to enter the desired decimal point location and press **ENTER** to save it or to save the current displayed setting. Must be the same as High Interval to be able to use Truck Storage.

0=XXXXXX 2=XXXX.XX 4=XX.XXXX

1=XXXXX.X 3=XXX.XXX

LOW CAPACITY

Lo CAP

Press **ENTER** to show the current setting. Press **0** through **9** to enter the new Low capacity value. Then press **ENTER** to save it or to save the displayed value.

HIGH INTERVAL

Hi int

Press **ENTER** to show the current setting. Press **0** through **9** to enter the new High interval value and press **ENTER** to save it or to save the current displayed setting. Available High interval values are 1 through 9, 10, 20, 30, 40, 50, 60, 70, 80 and 90. Interval values other than 1, 2, 5, 10, 20, or 50 cannot be used in commercial applications.

HIGH DECIMAL POINT

Hi dP

Press **ENTER** to show the current setting. Press **0** through **4** to enter the desired decimal point location and press **ENTER** to save it or to save the current setting. Must be the same as Low Decimal Point to be able to use Truck Storage.

0=XXXXXX 2=XXXX.XX 4=XX.XXXX

1=XXXXX.X 3=XXX.XXX

HIGH CAPACITY

H, CAP

Press **ENTER** to show the current setting. Press **0** through **9** to enter the new High capacity value. Then press **ENTER** to save it or to save the displayed value. **NOTE! High Capacity must be greater than Low Capacity and High Interval must be greater than Low Interval. ADVANCE TO WEIGHING UNITS.**

INTERVAL SETTING

int =

Press **ENTER** to show the current setting. Press **0** through **9** to enter the new Interval value and press **ENTER** to save it or to save the current setting. Available interval settings are 1 through 9, 10, 20, 30, 40, 50, 60, 70, 80 and 90. Interval values other than 1, 2, 5, 10, 20, or 50 cannot be used in commercial applications.

DECIMAL POINT SETTING

dp =

Press **ENTER** to show the current setting. Press **0** through **4** to enter the new decimal point location and press **ENTER** to save it or to save the current setting.

0=XXXXXX 2=XXXX.XX 4=XX.XXXX
1=XXXXX.X 3=XXX.XXX

CAPACITY

CAP =

Press **ENTER** to show the current setting. Press **0** through **9** to enter the new Capacity value. Then press **ENTER** to save it or to save the displayed setting.

NOTE! Capacity cannot exceed 999999.

WEIGHING UNITS

Units =

Press **ENTER** to show the current setting. Press **1** through **6** to enter the new weighing units and press **ENTER** to save it or to save the current displayed setting.

1=Pounds only 3=Pounds/Kilograms (powers up and Calibrates in Pounds)
2=Kilograms only 4=Kilograms/Pounds (powers up and Calibrates in Kilograms)
5=Tons (tn) only 6=Metric Tons (t) only

CALIBRATION

CALP

Press **ENTER** to show the current selection - either YES or NO. Press **0** to bypass the calibration process or press **1** to proceed. Press **ENTER** after making your selection. If NO is selected, the 748P will advance to the **ZERO TRACKING RANGE**.

"C" NUMBERS

C1 =

Press **ENTER** to show the current value of the C1 number. If the 748P was calibrated previously and you recorded the four (4) "C" numbers, you may enter the value for C1. By entering the "C" numbers previously recorded, you can return to that calibration setting without having to use test weights.* If you wish to use test weights for calibration, leave the C1 value unchanged and press the **ENTER** key.

STORE DEADLOAD VALUE

StodL =

If "C" numbers were entered, remove all weight from the scale, press **ENTER** then press **1** to display **YES**. Press **ENTER** to store the current scale weight as the deadload weight.

FIRST CALIBRATION WEIGHT



This is the first of two calibration weights: NO LOAD or ZERO and the TEST WEIGHTS or TEST LOAD. Press the **ENTER** key and the display will show \square for NO LOAD. If the first calibration weight is to be ZERO or NO LOAD, press the **ENTER** key again. If the first calibration weight is to be the TEST WEIGHTS, key in the total value of the

calibrated test weights. Place these test weights on the scale platform and press the **ENTER** key. After a few seconds, the display will show:

SECOND CALIBRATION WEIGHT



This is the second of two calibration weights. If the first weight (CAL 1) was zero, this weight should be equal to the test weight total. If, however, the first weight was the test weight total, then this weight should be zero. Press the **ENTER** key. The display will show \square . If this second

calibration weight is to be zero, make certain the scale platform is empty then press the **ENTER** key again. If this second calibration weight is to be the test load, use the numeric keys and enter the total of the calibrated test weights. Place the weights on the scale platform and press the **ENTER** key. After a few seconds the display will show:

* If any components have been changed that affect calibration and your scale is used in a commercial application and must be "Legal for Trade" you cannot use "C" numbers to re-calibrate.

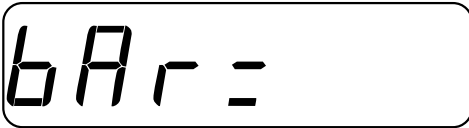
INVERT WEIGHT DISPLAY



This feature, when enabled, causes the indicator to display an increasing weight when the actual weight is decreasing. For example, an add mix hopper will actually display the maximum weight after the hopper is emptied.

Press the **ENTER** key to show the current setting for this feature. If a 1 (1 = YES) is displayed, the feature has been enabled, while a 0 (0 = NO) indicates the feature is disabled. Press the 1 key to change the setting to YES or the 0 key to change it to NO. Then press the **ENTER** key to save it or to save the current setting.

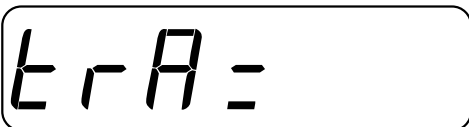
BAR GRAPH ENABLE/DISABLE



Press **ENTER** to show the current setting. Press 0 or 1 to enter the new setting and press **ENTER** to save it or to save the current setting. no (0) = Bar Graph readout is disabled YES (1) = Bar Graph readout is enabled.

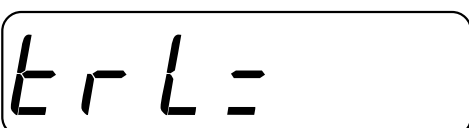
NOTE! If bar= is set to NO, the BAR key is also disabled and Error will display if the key is pressed.

ZERO TRACKING RANGE



Press **ENTER** to show the current setting. Press 0 through 9 to enter the new automatic zero tracking range. Then press **ENTER** to save it or to save the current setting. Allowable values are: 0.0 (disables Zero Tracking), .5 and 1 through 9.

4% ZERO RANGE



Press **ENTER** to show the current setting. Press 0 or 1 to enter the new limit for zero range. Then press **ENTER** to save it or to save the current setting.

no = Full Capacity (No Limit) YES = 4% of Scale Capacity

POWER-UP ZERO FEATURE



Press **ENTER** to show the current setting. Press **0** or **1** to enter the new setting and press **ENTER** to save it or to save the current setting.

no = No Re-Zero on Power-Up *YES* = Automatic Re-Zero on Power-Up

FILTERING

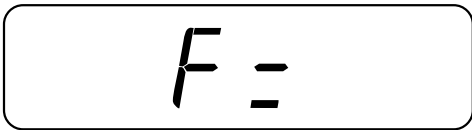


Press **ENTER** to show the current setting. Press **0** through **3** to enter the new filtering level. Then press **ENTER** to save it or to save the current filter setting.

0 = No Filtering *2* = Moderate Filtering
1 = Minimal Filtering *3* = Custom Filtering

If you selected 0, 1 or 2, advance to **MOTION RANGE**.

IF YOU SELECTED LEVEL 3 FILTERING

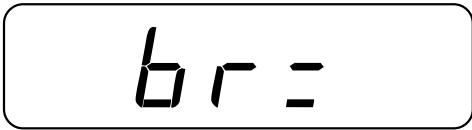


Press **ENTER** to show the current filter setting. Press **0** through **9** to enter the new filter value (1 to 16). The larger the number, the greater the effect. Then press **ENTER** to save it or to retain the current setting.

THEN:

Filter is the number of weigh samples that will be averaged before being displayed. If *F=6*, the weight value placed in the display will be the average of the last six (6) consecutive weigh samples.

BREAK RANGE



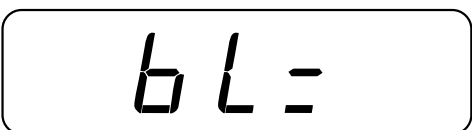
Press **ENTER** to show the current break range setting. Press **0** through **9** to enter the new break range (1 to 64). The larger the number the greater the weight change required to break out of the filtering. Press **ENTER** to save the new value or to save the current displayed value of break range.

MOTION RANGE



Press **ENTER** to show the current setting. Press **1** through **9** to enter the new value for the motion range. Weight changes greater than this number of divisions will indicate motion. Press **ENTER** to save the new setting or to save the current motion range setting.

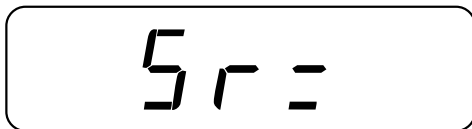
BLANK ON MOTION



Press **ENTER** to show the current setting. Press **0** or **1** to enter the new setting. Then press **ENTER** to save it or to save the current setting.

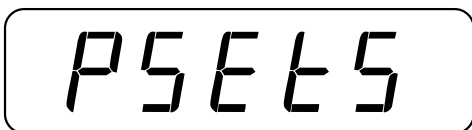
no = Do Not Blank Display On Motion *YES* = Blank Display On Motion

SAMPLE RATE



Press **ENTER** to show the current sample rate. Press **0** through **9** to enter the new Sample Rate (1 to 12 samples per second). Then press **ENTER** to save it or to save the current setting.

PRESET WEIGHT COMPARATORS



Press **ENTER** to show the number of presets. Press **0** through **9** to enter the new number of preset weight comparators. Then press **ENTER** to save it or to save the current setting. If the number of preset weight comparators is set to none (0 entered), advance to the DIGITAL FILL CONTROL setting, otherwise continue.

PWC OUTPUT STATE: UNDER PRESET WEIGHT VALUE

Undr1 =

If 1 or more presets were entered, this prompt will appear for each preset entered - the 1 position will indicate the PWC number. Press **ENTER** to show the current setting for the PWC output. *on* indicates that the PWC output is high (the PWC relay is on) at weights under or less than the preset weight and will switch to off (the PWC relay is off) at the preset weight and above. *oFF* indicates that the PWC output is low (the PWC relay is off) at weights under the preset weight and will switch to on (the PWC relay is on) at the preset weight and above. Press the **0** key for off and the **1** key for on.

DIGITAL FILL CONTROL

dfc

Press **ENTER** to show the current setting. Press **0** or **1** to enter the new setting. Then press **ENTER** to save it or to save the current setting.

o = Digital Fill Control disabled
1 = Digital Fill Control enabled

TRUCK STORAGE

trsto =

Press **ENTER** to show the current setting. Press **0** or **9** to enter the new setting. Press **ENTER** to save the new setting or to save the current setting. This question will not appear if Dual Ranging was selected and the decimal point setting for the High Interval differs from the decimal point setting for the Low Interval.

no = No Truck Storage *YES* = Truck Storage

PUSH BUTTON TARE

PbtAr =

Press **ENTER** to show the current setting. Press **0** or **1** to enter the new setting. Then press **ENTER** to save it or to save the current setting.

no = Numeric Tare *YES* = Push Button Tare Only

AUTO CLEARING OF TARE

CLtAr =

Press **ENTER** to show the current setting. Press **0** or **1** to enter the new setting. Then press **ENTER** to save it or to save the current setting. Clear tare on completion of the transaction (a negative net weight after display of a positive net weight).

no = No *YES* = Yes

PRINTER MODEL SELECTION

Prte =

Press **ENTER** to show the current printer model selection. Press **1** through **3** to enter the new printer model to be used. Then press **ENTER** to save it or to save the current selection. The selections are as follows:

1 = Standard Printer *3* = P220 (Eltron LP-2622 and LP-2642)
2 = P200 (Elton Companion Plus) *4* = P400 (Epson U590)
If you selected 1,2, or 3, advance to **PRINTER PORT BAUD RATE**.

ROTATE PRINT FEATURE

rtp =

Press **ENTER** to show the current SETTING. Press **0** or **1** to enter the new setting. Then press **ENTER** to save it or to save the current selection.

no = normal print output *YES* = rotate print output 180°

CONFIGURE SERIAL PORTS



Press **ENTER** to show the default setting (no). If you wish to configure or review the serial data ports, press the **1** key for YES, then press **ENTER** to continue. If you do not want to change or review the configuration of the serial port settings, press **0** for NO then press **ENTER** to continue. If you bypass this section, the 748P will advance to the **PRINTER TAB SETTINGS**.

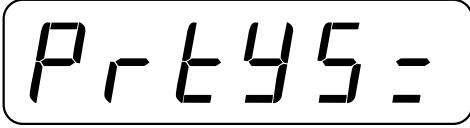
SERIAL PORT BAUD RATE



Press **ENTER** to show the current baud rate. Use the numeric keys to enter a new baud rate for the bi-directional serial post. Then press **ENTER** to save it or to save the current setting.

12 = 1200 Baud 48 = 4800 Baud
24 = 2400 Baud 96 = 9600 Baud 19 = 19.2K Baud

SERIAL PORT PARITY



Press **ENTER** to show the current setting. Press **0** through **1** to enter the new parity setting for the bi-directional serial port. Then press **ENTER** to save it or to save the current setting.

0 = No Parity 1 = Odd Parity 2 = Even Parity

SERIAL PORT DATA BITS



Press **ENTER** to show the current number of data bits. Press **7** or **8** to enter the new number of data bits for the bi-directional serial port. Then press **ENTER** to save it or to save the current setting.

SERIAL PORT STOP BITS



Press **ENTER** to show the current number of stop bits. Press **1** or **2** to enter the new number of stop bits for the bi-directional serial port. Then press **ENTER** to save it or to save the current setting.

CONTINUOUS SERIAL OUTPUT



Press **ENTER** to show the current setting. Press 0 or 1 to disable or enable the continuous output on the bi-directional serial port. Then press **ENTER** to save the current setting. A NO response will automatically select weight on demand. Weight is requested by receipt of a 05 (Hex) enq.

no = No Continuous Output YES = Continuous Output

If answered YES to Continuous Output, the display will prompt:



If SB-200A or SB-400A scoreboard is attached, answer YES. If not, answer NO. **NOTE:** If older style SB-200 scoreboard is attached, always answer NO.

PRINTER PORT BAUD RATE



Press **ENTER** to show the current baud rate. Use numeric keys to enter the new baud rate for the printer serial port. Then press **ENTER** to save it or to save the current setting.

12 = 1200 Baud 48 = 4800 Baud
24 = 2400 Baud 96 = 9600 Baud 19 = 19.2K Baud

PRINTER PORT PARITY

P r t y P =

Press **ENTER** to show the current parity setting. Press **0** through **2** to enter the new parity setting for the printer serial port. Then press **ENTER** to save it or to save the current setting.

□ = No Parity / = Odd Parity 2 = Even Parity

PRINTER PORT DATA BITS

b i t s P =

Press **ENTER** to show the current number of data bits. Press **7** or **8** to enter the new number of data bits for the printer serial port. Then press **ENTER** to save it or to save the current setting.

PRINTER PORT STOP BITS

S t o p P =

Press **ENTER** to show the current number of stop bits. Press **1** or **2** to enter the new number of stop bits for the printer serial port. Then press **ENTER** to save it or to save the current setting.

CONTINUOUS PRINTER OUTPUT

C o n t P =

Press **ENTER** to show the current setting. Press the **0** or **1** to enable or disable the continuous serial output on the printer serial port. A NO selection enables print switch operation. Then press **ENTER** to save it or to save the current setting.

n o = No Continuous Output Y E S = Continuous Output

If answered YES to Continuous Output, the display will prompt:

S b 4 0 0 P

If SB-200A or SB-400A scoreboard is attached, answer YES. If not, answer NO. **NOTE:** If older style SB-200 scoreboard is attached always answer NO.

CLEAR TO SEND (Printer Output Handshake)

C t S =

Press **ENTER** to show the current setting. Press **0** to disable or **1** to enable the Clear to Send (Printer Output Handshake) for the printer output. This feature can be used with printers that have small buffers to prevent data overrun. Press **ENTER** to save it or to save the current setting.

INHIBIT SERIAL DATA

i s n d

YES/NO to inhibit sending serial data during input. If yes, all serial output will stop while weight is not being displayed (i.e. while inputting id, tare, time, date, presets, bargraph or displaying the current tare value). **NOTE:** YES required for "Legal for Trade" applications.

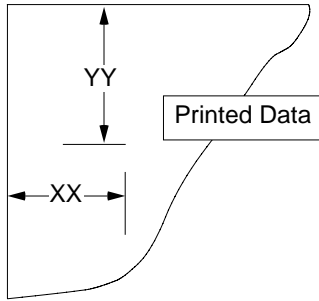
PRINTER TAB SETTINGS

t a b S P

Press **ENTER** and the display will show n o . If you wish to program or review the location of the printed data on the ticket, press the **1** key to change the display to Y E S . Otherwise leave the display at n o and press the **ENTER** key to bypass these settings. If Y E S , press the **ENTER** key

to continue the Printer Tab settings. If n o , advance to **CALIBRATION "C" NUMBERS** or to **CALDRC** if the option board is installed (see **CALIBRATION OF THE ANALOG OUTPUT**).

TAB SETTING (General Format Information)



The general format for the input is $A = YY.XX$ where A is the character identifying the data printed, YY is the number of lines down and XX is the number of spaces to the right.



NOTE! Enter 00 in either location, YY or XX , to disable the data from printing.

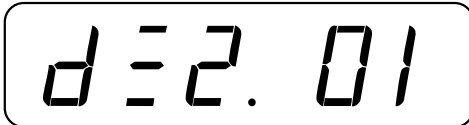
TEMPORARY TRUCK TABBING (if $t_{r5t0} = \text{YES}$)

Time (Clock) Location



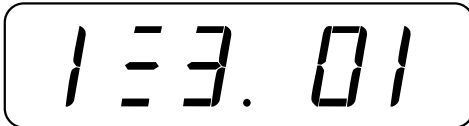
This display shows the current setting of the time (clock). Use the numeric keys to enter the new location then press **ENTER** to save it or to save the current setting.

Date Location



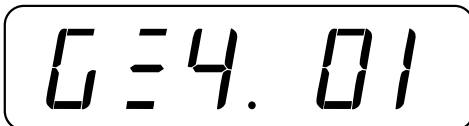
This display shows the current position of the date. If you do not wish to change it, press the **ENTER** key, otherwise use the numeric keys and enter the desired value, then press the **ENTER** key.

ID Location



This display shows the current position of the identification. If you do not wish to change it, press the **ENTER** key, otherwise use the numeric keys and enter the desired value, then press the **ENTER** key.

Gross Weight Location



This display shows the current position of the gross weight. If you do not wish to change it, press the **ENTER** key, otherwise use the numeric keys and enter the desired value, then press the **ENTER** key.

TIME PRINT LOCATION



This display shows the current setting for the location of the time (clock) printing. Use the numeric keys to enter the new location then press **ENTER** to save it or to save the current setting.

DATE PRINT LOCATION



This display shows the current position for printing of the date. If you do not wish to change it, press the **ENTER** key, otherwise use the numeric keys and enter the desired value, then press the **ENTER** key.

IDENTIFICATION PRINT LOCATION



This display shows the current position for printing of the identification. If you do not wish to change it, press the **ENTER** key, otherwise use the numeric keys and enter the desired value, then press the **ENTER** key.

CONSECUTIVE NUMBER PRINTING



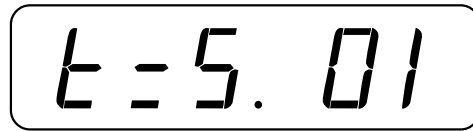
This display shows the current position for printing of the consecutive number. If you do not wish to change it, press the **ENTER** key, otherwise use the numeric keys to enter the desired value, then press the **ENTER** key.

GROSS WEIGHT PRINT LOCATION

A digital display showing the text "G=4.01" in a monospaced font.

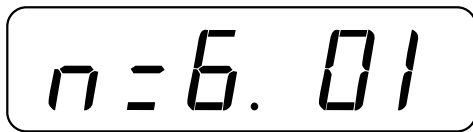
This display shows the current position for printing the gross weight. If you do not wish to change it, press the **ENTER** key, otherwise use the numeric keys and enter the desired value, then press the **ENTER** key.

TARE WEIGHT PRINT LOCATION

A digital display showing the text "T=5.01" in a monospaced font.

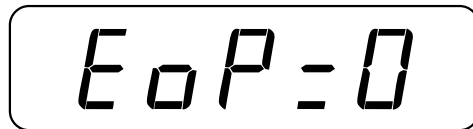
This display shows the current position for printing of the tare weight. If you do not wish to change it, press the **ENTER** key, otherwise use the numeric keys and enter the desired value, then press the **ENTER** key.

NET WEIGHT PRINT LOCATION

A digital display showing the text "N=6.01" in a monospaced font.

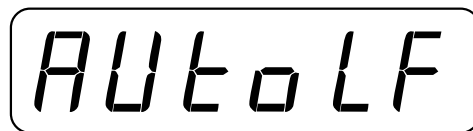
This display shows the current position for printing of the net weight. If you do not wish to change it, press the **ENTER** key, otherwise use the numeric keys and enter the desired value, then press the **ENTER** key.

FORM LENGTH

A digital display showing the text "EoP=0" in a monospaced font.

This display shows the number of line feeds executed after the last printed line. If the last printed line is 5 and the form length is 30 lines, enter 25, then press **ENTER**.

AUTOMATIC LINE FEEDS

A digital display showing the text "AUTO LF" in a monospaced font.

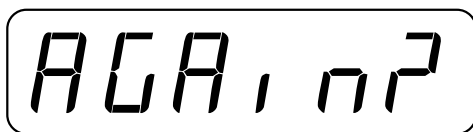
Data transmitted from the serial I/O port can be terminated with a single carriage return and either no line feed or a single line feed command. Press the **ENTER** key to view the current setting. An `o n` display means the data will be terminated with a carriage return AND a line feed, while an `o FF` display means the data will be terminated with a single carriage return only. Press the **1** key to change the setting to `o n` or the **0** key to change it to `o FF`. Once the proper setting is displayed, press the **ENTER** key to save it.

SAMPLE PRINT

A digital display showing the text "Printer?" in a monospaced font.

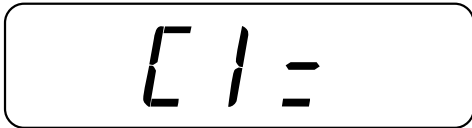
This display asks if you wish to have a sample print to verify the printed data locations. Press the **ENTER** key and the display will show `no`. If you do not want a sample print, press the **ENTER** key again. The **CALIBRATION "C"** **NUMBERS** will be displayed. If you do want a sample print, press the **1** key to change the display to `YES` then press the **ENTER** key. Make certain that the printer is on and ready to print first.

REPEAT PRINTER TAB SETTINGS

A digital display showing the text "AGA, n?" in a monospaced font.

This display asks if you wish to review and change the printer tab setting. Press the **ENTER** key and the display will show `no`. If you are satisfied with the settings, press the **ENTER** key again. If you wish to review or change any of the settings, press **1** to change the display to `YES` then press the **ENTER** key. The display will then return to the time print location.

CALIBRATION "C" NUMBERS OR CALDAC (see Calibration of the Analog Output)

A digital display showing the number 1 followed by an equals sign, enclosed in square brackets. The display is in a seven-segment font.A digital display showing the number 2 followed by an equals sign, enclosed in square brackets. The display is in a seven-segment font.A digital display showing the number 3 followed by an equals sign, enclosed in square brackets. The display is in a seven-segment font.A digital display showing the number 4 followed by an equals sign, enclosed in square brackets. The display is in a seven-segment font.

The display will show all four (4) calibration or "C" numbers. Each number may be up to three (3) digits in length. By recording these numbers you will be able to return the 748P to its present calibration settings without using test weights simply by entering the four (4) "C" numbers. Note that your scale is used in a commercial application for buying or selling, you may not use the "C" numbers. The "C" numbers may be reviewed during normal operation by pressing the **TEST** key.

CALIBRATION/SETUP COMPLETED

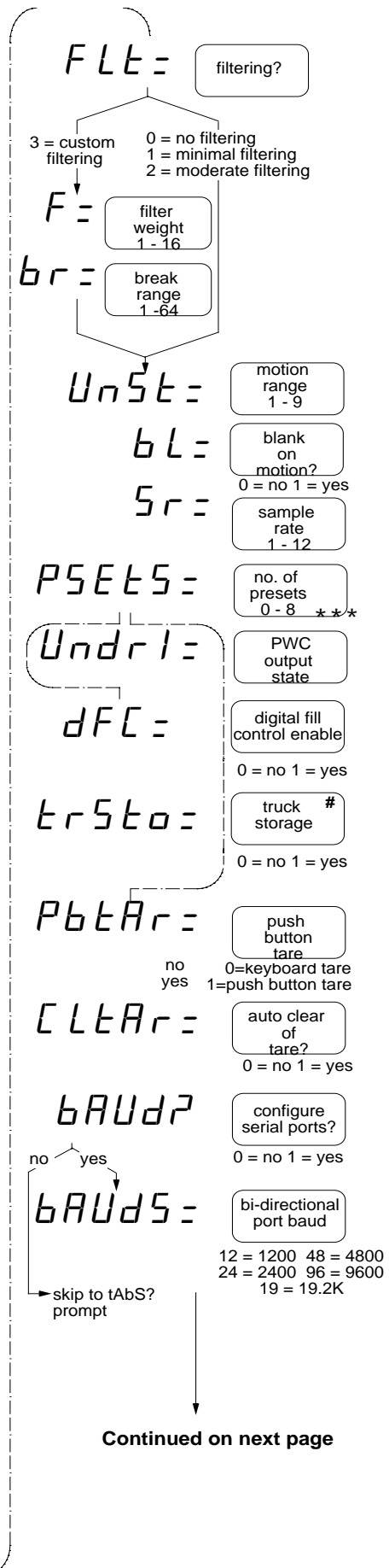
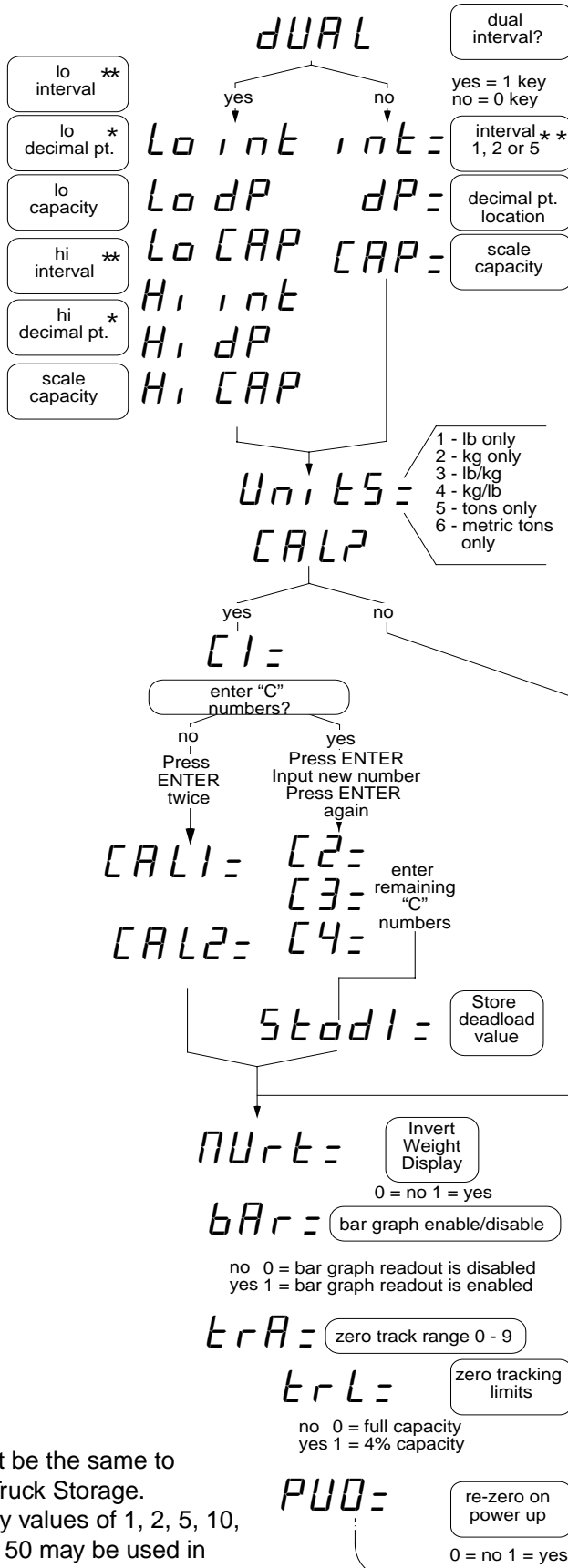
The indicator will reset, ready for operation. NOTE: The indicator can be turned off anytime during the calibration and setup procedure with all previous data retained.

FINE SPAN ADJUSTMENT

With power applied and displaying weight, depress and hold the calibration switch. Then press **0** to decrease span or **1** to increase span. Release the switch to return to normal operation.

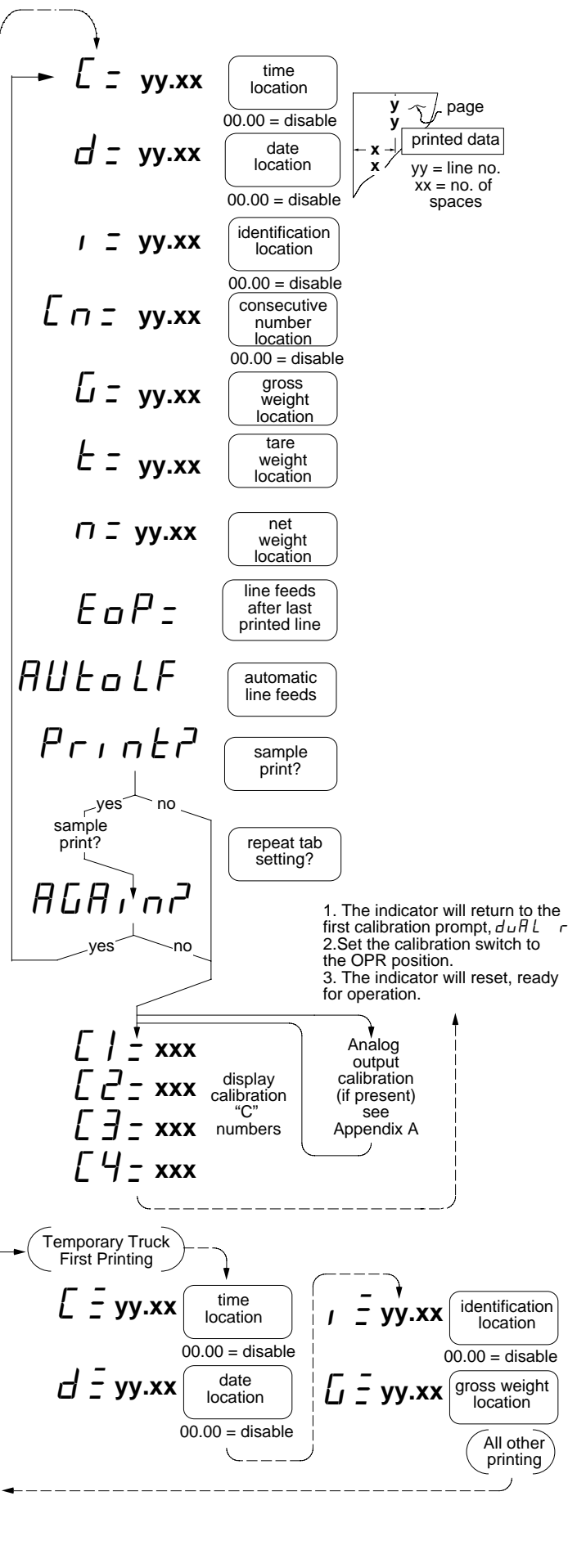
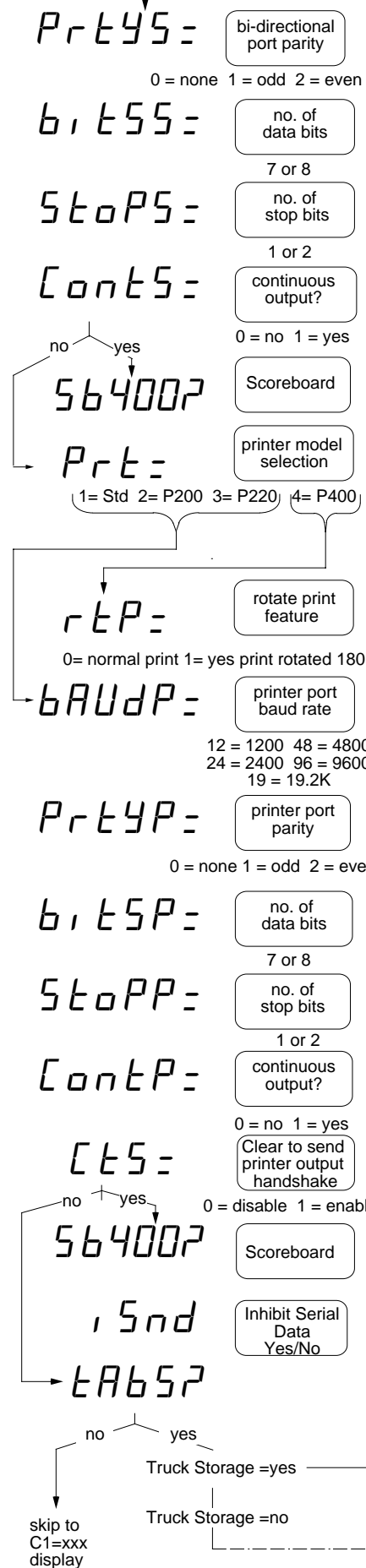
SETUP AND CALIBRATION BEGIN

1. Press OFF key
2. Set the calibration switch to the CAL position
3. Press the ON/ZERO key



*Must be the same to use Truck Storage.
**Only values of 1, 2, 5, 10, 20 or 50 may be used in commercial applications.
#Truck Storage is not allowed if Dual Interval and Decimal Point locations are not the same.
*** If the number of Preset Weight Comparators is zero (0), then DIGITAL FILL CONTROL is allowed.

continued from previous page



SETUP REVIEW

The 748P allows several operational parameters to be reviewed and changed without breaking the calibration seal. These operational parameters are:

- Power Up Zero Reset Enable/Disable
- Blank Display on Motion Enable/Disable
- Number of Preset Weight Comparators
- Digital Fill Control Enable/Disable
- Truck Storage Enable/Disable
- Automatic Clearing of Tare Enable/Disable
- Serial Data Port Configuration
 - Baud Rate
 - Parity
 - Number of Data Bits
 - Number of Stop Bits
 - Continuous Output
- Printer Model Selection
- CTS Enable/Disable
- Print Positions (tab settings)
 - Time
 - Date
 - Identification
 - Gross Weight
 - Tare Weight
 - Net Weight

To enable the Setup Review feature, first turn the 748P off by pressing the **OFF** key. Press and hold the **GROSS** key and press and release the **ON/ZERO** key. Release the **GROSS** key. The 748P will respond by showing the prompt for the selection of power-up zeroing ($P\overline{U}\overline{Z}$). Using the same procedure as described in the calibration section of this manual, make the required changes. A chart illustrating the basic procedure is included in the manual for a quick reference but refer to the CALIBRATION section for detailed information if in doubt.

NOTE: By pressing the **PRINT** key, setup review will jump to the $P\overline{r}\overline{t}$ prompt.

SETUP REVIEW

1. Press OFF key
2. Press and hold the F1 key
3. Press the ON/ZERO key

PUD: re-zero on power up
0 = no 1 = yes

UnSt:

bL: blank on motion?
0 = no 1 = yes

PSEtS: no. of presets 0 - 8

Undr1: PWC output state

dFC: digital fill control enable
0 = no 1 = yes

trSto: truck storage ?
0 = no 1 = yes

CLtAr: auto clear of tare?
0 = no 1 = yes

bAUd? configure serial ports?
0 = no 1 = yes

bAUdS: bi-directional port baud
12 = 1200 48 = 4800
24 = 2400 96 = 9600
19 = 19.2K

no | yes

skip to tAbS? prompt

PrtyS: bi-directional port parity
0 = none 1 = odd 2 = even

bitSS: no. of data bits
7 or 8

StoPS: no. of stop bits
1 or 2

ContS: continuous output?
0 = no 1 = yes

56400P Scoreboard

Prt: printer model selection
1 = Std 2 = P200 3 = P220 4 = P400

rtp: rotate print feature
0 = normal print 1 = yes print rotated 180°

bAUdP: printer port baud rate
12 = 1200 48 = 4800
24 = 2400 96 = 9600
19 = 19.2K

PrtyP: printer port parity
0 = none 1 = odd 2 = even

bitSP: no. of data bits
7 or 8

StoPP: no. of stop bits
1 or 2

ContP: continuous output?
0 = no 1 = yes
Clear to send printer output handshake

CLtS:

no | yes

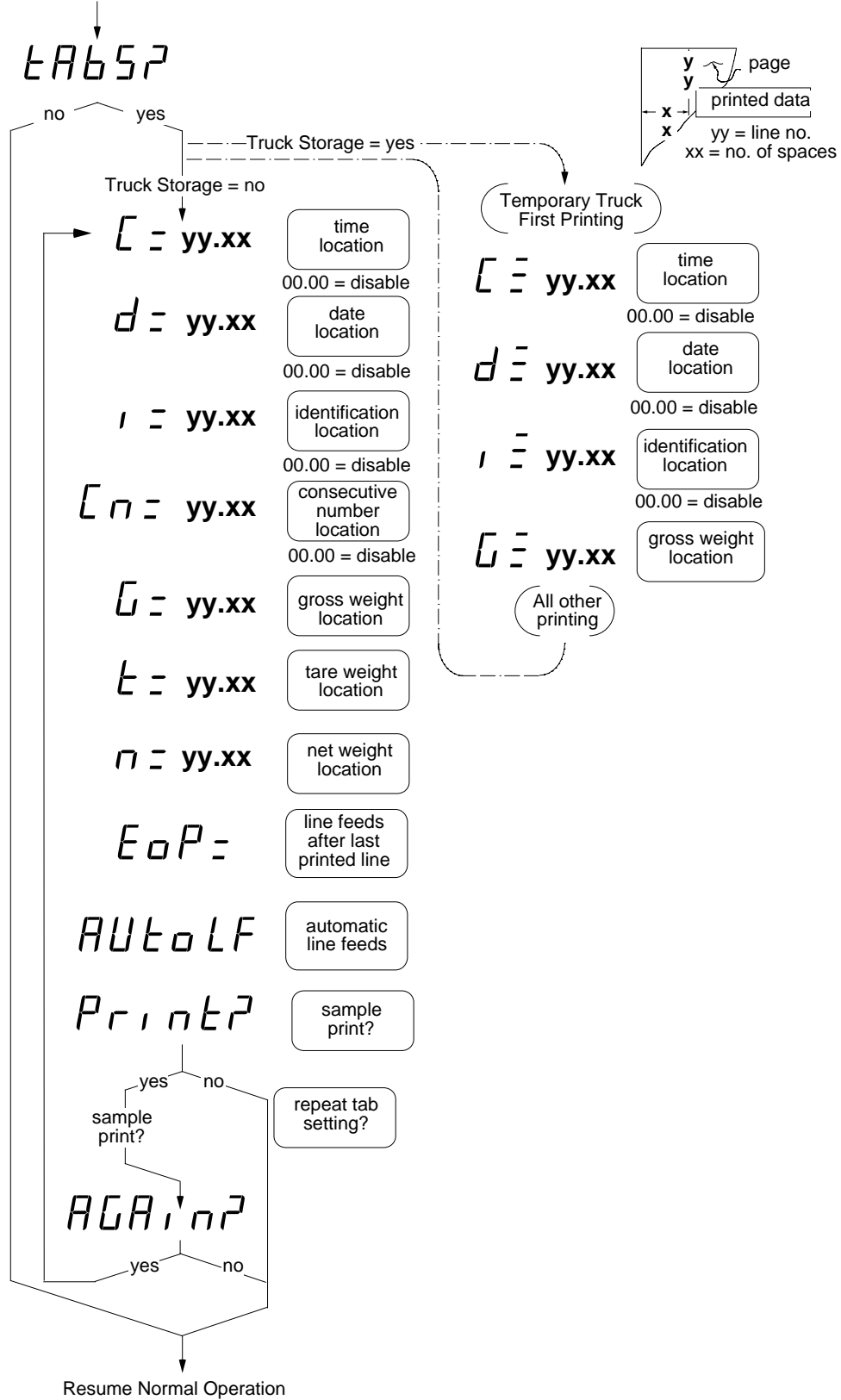
0 = disable 1 = enable

56400P Scoreboard

skip to tAbS? prompt

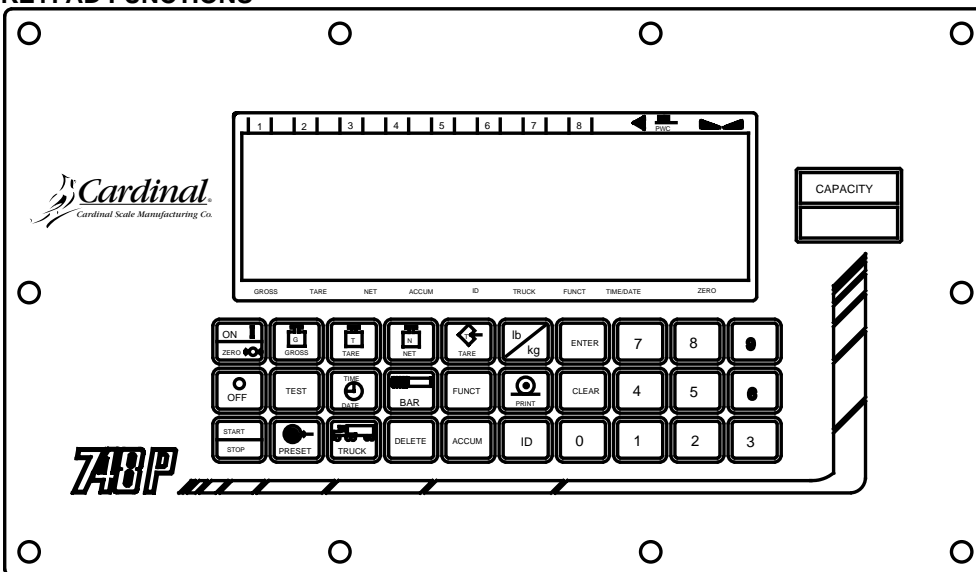
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OPERATION

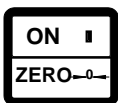
KEYPAD FUNCTIONS



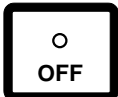
The 748P is equipped with a 30-key keypad. The keypad is used to enter commands and data into the instrument. This section describes each key along with its normal function. It is helpful to refer to the actual instrument while reading this section.

figure no. 8 keyboard layout

 The membrane keyboard is not to be operated with pointed objects (pencils, pens, fingernails, etc). Damage to keyboard resulting from this practice will NOT be covered under warranty.



ON-ZERO KEY - This key performs three (3) functions. Pressing it when the 748P is off will apply power to the instrument. Pressing it when the 748P is on will cause an immediate zeroing of the weight display up to the selected limit of 4% or 100% of the scale's capacity. This selection is made during the setup and calibration of the instrument. Pressing this key while in the Accum mode will reset the contents of the currently selected accumulator to zero.



OFF KEY - Pressing this key will turn the 748P off.



TEST KEY - The **TEST** key is used to conduct a test of all display elements. The test consists of six (6) cycles, each lasting two (2) seconds:

1. All horizontal segments and the left 1/3 of the bar graph will turn on (no annunciators).
2. All vertical segments and the center 1/3 of the bar graph will turn on (no annunciators).
3. All annunciators, decimal points and the right 1/3 of the bar graph will turn on.
4. All display elements off.
5. The calibration numbers (C1 - C4).
6. The model no. 748P and the software version X.X.

Following the display test, four (4) calibration numbers (C1, C2, C3 and C4) will be indicated in sequence. These numbers correspond to the settings of the setup parameters as well as the calibration setting of the indicator. It is a good idea to copy these numbers down and place them in a safe location AFTER completion of the calibration process.

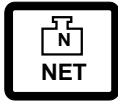


GROSS KEY - The **GROSS** key will cause the weight display to return to the Gross Weight mode. The *Gross* annunciator will be turned on.

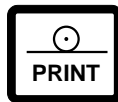


TARE KEY - There are two (2) **TARE** keys on the 748P. The top **TARE** key is used to momentarily display the stored tare value. The other **TARE** key is used to enter a new tare weight value. If the push button tare is enabled during setup and calibration, pressing the red **TARE** key will cause the current gross weight to be stored as the new tare weight and cause the weight display to change to the net weight display mode (*Net* annunciator turned on). If the push button tare feature was not enabled, pressing the red **TARE** key will cause the current value of the tare weight to be displayed (*Tare* annunciator turned on). The tare weight may be retained by pressing the **ENTER** key or may be changed by keying in the new tare weight value and pressing the **ENTER** key. You may also store the current gross weight as the new tare value by simply pressing the **GROSS** key then pressing the **ENTER** key. Once a tare weight has been entered the display will automatically change to the net weight display mode. **NOTE:** tare weights equal to or greater than the scale capacity cannot be entered.





NET KEY - Pressing the **NET** key will cause the 748P to enter the Net Weight Display mode (*Net* annunciator turned on). If a valid tare weight has not been entered, the 748P will ignore this command.



PRINT KEY - Pressing this key will initiate the transmission of weight data via the printer output port unless the continuous data feature of this port was enabled during setup and calibration. Note that the 748P will not respond to this command unless the weight display is stable and not less than zero. If displaying gross weight, the only weight printed is gross weight. If displaying net weight, the gross, tare, and net weights are printed. Pressing this key during calibration or review will step to the *bALUdP* prompt.



TIME-DATE KEY - Pressing the **TIME-DATE** key will display the current time. If the time displayed is correct, press **ENTER** to display the date. Note that the time is displayed in a 24 hour format with 12 added to all times after noon, i.e. 3 PM would be 1500. If the time displayed is incorrect, use the numeric keys to enter the correct time and press the **ENTER** key to reset the time and display the date. If the date displayed is correct, press the **ENTER** key to display the consecutive number. If the displayed date is incorrect, use the numeric keys to enter the correct date* and press the **ENTER** key to display the consecutive number. If the consecutive number displayed is correct, press the **ENTER** key to resume normal operation. If the consecutive number displayed is incorrect, use the numeric keys to enter the correct consecutive number (up to six (6) digits) and press the **ENTER** key to resume normal operation.

* Remember to enter the date in the same format (month-day-year or day-month-year) as was selected by the placement of the DOM/INT jumper on the printed circuit board. In the DOM setting, the date format is month-day-year.

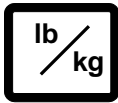
NOTE: The *Time-Date* annunciator will blink while the 748P is displaying the time or date and the *ID* annunciator will blink while displaying the consecutive number.



BAR KEY - The **BAR** key is used to control the operation of the 30-element bar graph display. If the bar graph is currently used to display the preset weight comparator status (*PWC* annunciator turned on), pressing this key will return the bar graph to a weight display mode (*PWC* annunciator turned off). In this weight display mode, the bar graph presents an analog representation of a preselected range of weight. If the *PWC* annunciator is off when the **BAR** key is pressed, (bar graph displaying weight), the 748P will allow entry of the bar graph start and stop weights.

Pressing the **BAR** key with the *PWC* annunciator off will result by showing *SEAL-*. Press the **ENTER** key to view the current value of weight where the analog display is to begin. If the weight is correct, press the **ENTER** key to save it, otherwise enter the correct start weight using the numeric keys and press the **ENTER** key to save the new value. The display will now show *SEOP-* which is the prompt for the stop weight or the right end of the bar graph display. Press the **ENTER** key to display the current value of stop weight. If the weight is correct, press the **ENTER** key, otherwise use the numeric keys to enter the new value of stop weights and press the **ENTER** key. The 748P will now resume normal operation using the new start and stop weight values for the bar graph display. Note that when the displayed weight equals the start weight, the left most bar graph element will turn on. As the weight increases, additional bar graph elements will be turned on until the stop weight is reached at which time the right most bar graph element will be turned on. Note that the start and stop weights may be any value but must be greater than zero and the stop weight must exceed the start weight.

With the *PWC* annunciator turned on, the bar graph elements are used to display the status of the preset weight comparators. When the displayed weight equals or exceeds the value of the weight preset, the two (2) bar graph elements directly beneath the corresponding preset number will be turned on. A maximum of eight (8) preset weight comparators are available.



lb/kg KEY - Pressing this key will change the weighing units to the alternate units if selected during the setup and calibration of the instrument. With pounds displayed (*lb* annunciator turned on) pressing this key will change the weight units to kilograms and the *kg* annunciator will be turned on. Note that this feature must be enabled during setup of the 748P.



PRESET KEY - This key performs two (2) functions. If the *PWC* annunciator is turned off when this key is pressed, the bar graph display mode will be changed to show preset weight comparator status and the *PWC* annunciator will be turned on. If the *PWC* annunciator is turned on when this key is pressed, it will allow the target weights for the presets to be entered. This display will show *P5EEx-* where *x* is the preset number and can range from 1 to 8 depending on the number of preset weight comparators enabled during setup of the 748P. Press the **ENTER** key to display the currently stored value of preset weight. If the weight is correct, press the **ENTER** key to advance to the Trim value. If the weight is incorrect, use the numeric keys to enter the correct weight then press the **ENTER** key to save it and advance to the Trim value. The display will then show *Ex-* which asks for the trim weight for the corresponding preset weight comparator. Note that the *x* in the display refers to the preset weight comparator number and will vary from 1 to 8. Press **ENTER** to display the stored value of trim. If the Trim value is correct, press the **ENTER** key again to save it. If not, use the numeric keys to enter the correct Trim value and press **ENTER** to save it and advance to the next preset weight comparator. Remember that the trim weight is used to compensate for material in transit and causes the preset to turn on when the displayed weight equals or exceeds the Preset weight value LESS its associated Trim weight value. Also remember that the preset is based on the displayed weight which can be either gross or net weight.

This procedure is repeated for each of the enabled preset weight comparators. During entry of preset and trim weights, the two bar graph elements corresponding to that preset weight comparator will flash. After all selected preset weight comparators have been reviewed, the 748P will return to normal operation. This procedure may be stopped by pressing **CLEAR** on *P5EEx-* prompt (i.e. after setting *P5EEx-*, press **CLEAR** to not ask for 4-8).



CLEAR KEY - The **CLEAR** key is used to clear an incorrect entry from the display. If an incorrect entry is made, press the **CLEAR** key and re-enter the correct value. Note that once the **ENTER** key has been pressed, the **CLEAR** key can no longer be used to correct that particular entry.



ENTER KEY - The **ENTER** key serves two (2) purposes. First, when reviewing setup parameters, pressing the **ENTER** key will cause the current setting of the parameter to be displayed. Second, the **ENTER** key is used to signal completion of the entry of data and causes the 748P to process the data entered.



TRUCK KEY - This key is used by the Truck Storage feature to enter truck ID's (identification numbers) and perform other truck storage functions.



DELETE KEY - This key is used by the Truck Storage feature to delete truck ID numbers.



ACCUMULATOR KEY - This key is used to display the contents of the 210 weight accumulators or the 200 truck accumulators, 8 material accumulators, and total gross and net weight accumulators.

To access the 200 ID accumulators, you must first disable Truck Storage in the 748P setup procedure (*ExEon*). The truck storage area of memory is now used to store ID numbers and printed weight accumulators. The first 200 ID numbers entered will be accumulated. Upon entry of the 201st ID, an error will not be displayed. When this occurs, simply use the **ID** key to set the ID before pressing the **PRINT** key. If only Gross weight is printed, the gross weight is added to the accumulator or, if the indicator is in the Net mode, the net weight will be added.

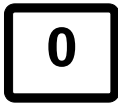
To make use of the material accumulators, you must enable the Digital Fill Control in the 748P setup (*dFc = 4E5*). Upon completing a fill operation, the 748P will automatically print a ticket and the weight (gross if in Gross Fill mode or net if in the Net Fill mode) will be added to the accumulator for the selected bin. Refer to the Digital Fill Control operation section of this manual for more information on this function.



Note! The Total Gross and Total Net accumulators are updated with every print command.



ID KEY - This key is used to display and enter identification numbers for use in printing and in the Truck Storage feature. If the Truck Storage feature was not enabled during the setup and calibration of the instrument, pressing this key will display the current setting of the identification number. If the displayed number is correct, press the **ENTER** key to retain it. If you choose to change the identification number, use the numeric keys to enter up to a six (6) digit identification number and press the **ENTER** key to save it. Note that the *ID* annunciator is turned on when the display is showing an identification number.



0 THROUGH 9 KEYS - These keys are used to enter numeric data during the setup and calibration as well as during normal operation of the instrument.



START/STOP KEY - This key is used by the Digital Control feature. It is used to signal the start of a filling operation. If the filling operation is already in progress, pressing this key will stop the filling operation.



FUNCTION KEY - This key is used to select the ticket print format. Pressing this key will display a prompt (*P r t :*) requesting the type of ticket print format to use. The operator inputs the desired print format number, then presses the **ENTER** key to complete the ticket selection. Pressing the **FUNCT** key a second time (without entering a print format number) will abort the print operation and return the 748P to normal operation. Note that when a print format is selected, it will remain active until changed by the operator.

The 748P allows five (5) programmable ticket print formats in addition to the standard Print Tab format. The programmable formats are designed on a PC using the Cardinal program *Visual Print*¹, then downloaded to the 748P. The available formats are:

<u>Format No.</u>	<u>Use</u>	<u>Programmed via</u>
0	standard print tab settings	keyboard
1	general use (default)	keyboard or PC
2	special use	keyboard or PC
3	special use	keyboard or PC
4	Truck Storage*	keyboard or PC
5	Digital Fill Control**	keyboard or PC

*Format 4 is a *Visual Print* format used exclusively by Truck Storage for temporary tickets. It cannot be selected by the operator using the **FUNCT** key. If this format has not been programmed, the 748P will use the last format selected by the **FUNCT** key.

Format 5 is a *Visual Print* format used exclusively by the Digital Fill Control program. It cannot be selected by the operator using the **FUNCT key. If this format has not been programmed, the 748P will use the last format selected by the **FUNCT** key.



NOTE! When the **PRINT** key is pressed (or a print command is executed by the Truck Storage or Digital Fill Control programs) the 748P will check the selected format to verify if it has been programmed. If it has not, the 748P will use print format 1 or, if format 1 is not available, format 0, the Print Tab Settings.

¹ For more information on Visual Print, refer to the Visual Print Programming and Operator manual.

ACCUMULATORS

To view the accumulators:

1. Press the **ACCUM** key. The display will show *HLL* - and flash the *ACCUM* annunciator.
2. Press the **ID**, **PRESET**, **GROSS**, or **NET** keys to select the type of accumulator to view.
To view a single ID accumulator, press the **ID** key. The display will show *id* -. Input the ID number to be viewed (1 - 999,999) and press the **ENTER** key. The accumulator value of the ID entered will be displayed or if the accumulator value is greater than (>) 999,999, *-DF* - will be displayed..

To view a single Preset accumulator, press the **PRESET** key. The display will show *bin* -. Input the bin number (1 - 8) and press the **ENTER** key. The accumulator value of the Preset entered will be displayed or if the accumulator value is greater than (>) 999,999, *-DF* - will be displayed.

To view the Gross or Net accumulators, press the appropriate key. The accumulator value will be displayed without any additional prompts or if the accumulator value is greater than (>) 999,999, *-DF* - will be displayed..

3. Press the **ENTER** key to return to normal operation.

To print a single ID accumulator

1. Press the **ACCUM** key. The display will show *HLL* - and flash the *ACCUM* annunciator.
2. Press the **ID** key.
3. Input the ID number (1 - 999,999) and press the **ENTER** key.
4. Press the PRINT key.
5. The accumulator value for the ID entered will be printed.
6. The indicator will return to normal operation when printing has been completed.

To print all active ID accumulators:

1. Press the **ACCUM** key. The display will show *HLL* - and flash the *ACCUM* annunciator.
2. Press the **ID** key. The indicator will display *LLL* - and flash the *ID* annunciator.
3. Press the **PRINT** key.
4. The accumulator values for ALL active ID's will be printed.
5. The indicator will return to normal operation when printing has been completed.

To zero a single ID accumulator:

1. Press the **ACCUM** key. The display will show *HLL* - and flash the *ACCUM* annunciator.
2. Press the **ID** key. The indicator will display *LLL* - and flash the *ID* annunciator.
3. Press the **0** key (0 = NO). The display will show *id* -.
4. Input the ID number (1 - 999,999) and press the **ENTER** key.
5. Press the **ZERO** key.
6. The accumulator values for ALL active ID's will be printed.
7. The indicator will return to normal operation when printing has been completed.

To zero all active ID accumulators:

1. Press the **ACCUM** key. The display will show *HLL* - and flash the *ACCUM* annunciator.
2. Press the **ID** key. The indicator will display *LLL* - and flash the *ID* annunciator.
3. Press the **ZERO** key.
4. The accumulator values for ALL active ID's will be printed.
5. The indicator will return to normal operation when printing has been completed.

To print a single Preset accumulator:

1. Press the **ACCUM** key. The display will show *HLL* - and flash the *ACCUM* annunciator.
2. Press the **PRESET** key. The indicator will display *LLL* - and flash the *BIN/PWC* annunciator.
3. Press the **0** key (0 = NO). The display will show *bin* -.
4. Input the bin (preset) number (1 - 8) and press the **ENTER** key.
5. Press the **PRINT** key.
6. The accumulator values for the preset (bin) entered will be printed.
7. The indicator will return to normal operation when printing has been completed.

To print all Preset accumulators:

1. Press the **ACCUM** key. The display will show *ALL :* and flash the *ACCUM* annunciator.
2. Press the **PRESET** key. The indicator will display *bin :* and flash the *BIN/PWC* annunciator.
3. Press the **PRINT** key.
4. The accumulator values for Presets (bins) will be printed.
5. The indicator will return to normal operation when printing has been completed.

To zero a single Preset accumulator:

1. Press the **ACCUM** key. The display will show *ALL :* and flash the *ACCUM* annunciator.
2. Press the **PRESET** key. The indicator will display *bin :* and flash the *BIN/PWC* annunciator.
3. Input the bin (preset) number (1 - 8) and press the **ENTER** key.
4. Press the **ZERO** key.
5. The accumulator values for the preset (bin) entered will be reset to zero.
6. The indicator will return to normal operation when printing has been completed.

To zero all Preset accumulators:

1. Press the **ACCUM** key. The display will show *ALL :* and flash the *ACCUM* annunciator.
2. Press the **PRESET** key. The indicator will display *bin :* and flash the *BIN/PWC* annunciator.
3. Press the **ZERO** key.
4. The indicator will display *ALL :*
5. Press the **ENTER** key.
6. The indicator will display *no.*
7. Press the **1** key for the *YES* prompt.
8. Press the **ENTER** key.
9. The accumulator values for Presets (bins) will be reset to zero.
10. The indicator will return to normal operation when printing has been completed.

To print the Gross Weight accumulator:

1. Press the **ACCUM** key. The display will show *ALL :* and flash the *ACCUM* annunciator.
2. Press the **GROSS** key. The indicator will display the gross weight accumulator value and flash the *GROSS* annunciator.
3. Press the **PRINT** key.
4. The value for the Gross Weight accumulator will be printed.
5. The indicator will return to normal operation when printing has been completed.

To zero the Gross Weight accumulator:

1. Press the **ACCUM** key. The display will show *ALL :* and flash the *ACCUM* annunciator.
2. Press the **GROSS** key. The indicator will display the gross weight accumulator value and flash the *GROSS* annunciator.
3. Press the **ZERO** key.
4. The value for the Gross Weight accumulator will be reset to zero.
5. The indicator will return to normal operation when printing has been completed.

To print the Net Weight accumulator:

1. Press the **ACCUM** key. The display will show *ALL :* and flash the *ACCUM* annunciator.
2. Press the **NET** key. The indicator will display the net weight accumulator value and flash the *NET* annunciator.
3. Press the **PRINT** key.
4. The value for the Net Weight accumulator will be printed.
5. The indicator will return to normal operation when printing has been completed.

To zero the Net Weight accumulator:

1. Press the **ACCUM** key. The display will show *ALL :* and flash the *ACCUM* annunciator.
2. Press the **GROSS** key. The indicator will display the gross weight accumulator value and flash the *NET* annunciator.
3. Press the **ZERO** key.
4. The Net Weight accumulator will be reset to zero.
5. The indicator will return to normal operation when printing has been completed.

ANNUNCIATORS

Note that annunciators are turned on to indicate that the display is in the mode corresponding to the annunciator label and that the annunciators flash on and off to indicate that the 748P is waiting for an input from the keyboard for the mode indicated by the flashing annunciator.

GROSS

The *GROSS* annunciator is turned on to indicate that the displayed weight is the gross weight.

TARE

The *TARE* annunciator is turned on to show that the displayed weight is the tare weight.

NET

The *NET* annunciator is turned on to show that the displayed weight is the net weight (gross weight less tare weight).

ZERO

The *ZERO* annunciator is turned on to indicate that the weight is within +/- 1/4 division of the center of zero.

ID

The *ID* annunciator is turned on to indicate that the value displayed is the identification number currently in use.

TRUCK

The *TRUCK* annunciator is used by the Truck Storage feature and is turned on to show that the indicator is performing a truck storage function. It is used in conjunction with the *ID* annunciator to indicate when a permanent ID number is to be entered.

TIME-DATE

The *TIME/DATE* annunciator is turned on when the display is showing either the time or date.

STABLE

The *STABLE* annunciator is identified with two (2) small triangle shapes and is turned on when the weight display is stable. This means that the change in successive weight samples is less than the motion limits selected during setup and calibration of the instrument.

BIN/PWC

The *PWC* annunciator is turned on to indicate that the bar graph elements under the numerals 1 through 8 to the left of the arrow are being used to indicate the preset weight comparator status. When this annunciator is turned off, the bar graph is used to present an analog representation of a selected portion of the weight range.

ACCUM

The *ACCUM* annunciator is turned on to indicate that the value displayed is the contents of the accumulator associated with the currently selected ID number.

FUNCT

The *FUNCT* annunciator is used by the Selectable Ticket Print Format feature and is turned on to show that the value displayed is the currently selected format.

1 THROUGH 8

These annunciators are actually part of the bar graph display elements. With the *PWC* annunciator turned on, two (2) bar graph display elements, located beneath each of the eight (8) preset weight numbers, are turned on to indicate that the displayed weight equals or exceeds the corresponding Preset weight comparator value less its Trim weight value.

TRUCK STORAGE OPERATION

Note that the truck storage feature must have been enabled during setup and calibration of the 748P to be operational. If it was not enabled the following functions CANNOT be performed. **NOTE:** The truck storage is disabled if the Dual Interval feature has been selected and the decimal point setting for the High Interval differs from the decimal point setting for the Low Interval.

WEIGH IN/WEIGH OUT OPERATION

Weigh in/weigh out operation is accomplished by enabling the TRKSTO option during Setup and Calibration and using Temporary Truck ID numbers. Do not use the Permanent Truck ID numbers for weigh in/weigh out operations.


TEMPORARY TRUCK ID NUMBERS

To Store a Temporary Truck Identification and Print a Ticket:

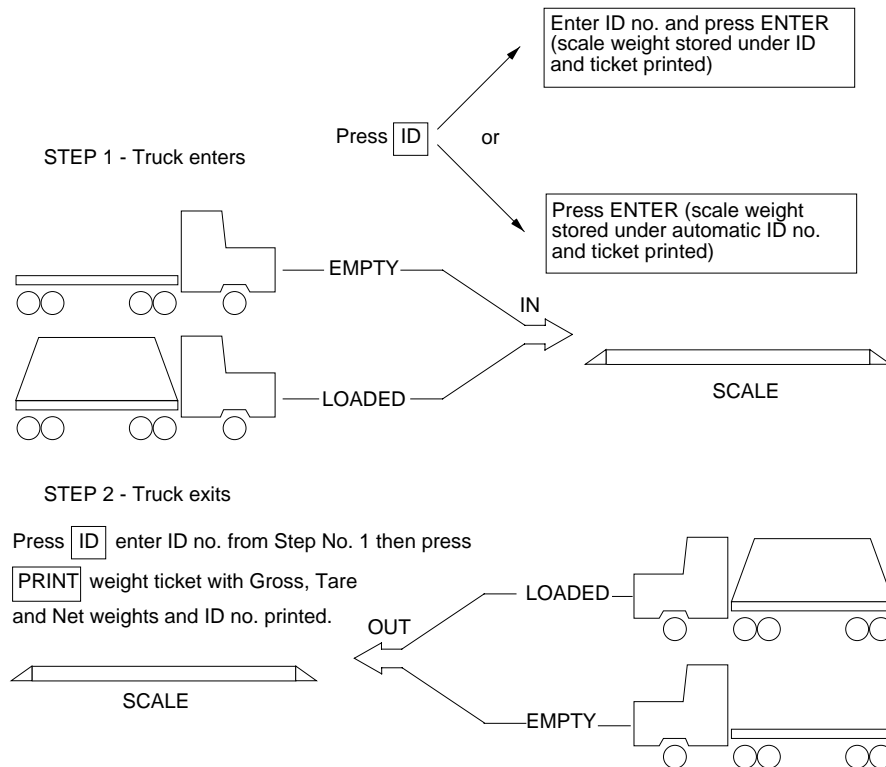
Press **ID**. The *ID* annunciator will flash. Enter up to a six (6)-digit identification number and press the **ENTER** key. The 748P will store the current scale weight under this identification number and print a ticket. If the display shows *ERROR*, the identification number entered already exists and you must enter a different number.

To Automatically Assign a Temporary Truck Identification Number:

Press **ID**. The *ID* annunciator will flash. Press **ENTER**. A temporary identification number will be assigned to the truck and the truck's weight stored. A temporary ticket showing the identification number and truck weight will be printed.



NOTE! Temporary identification numbers are used when the truck is not a regular visitor to the scale. If the truck is a frequent visitor to the scale, a permanent identification number should be assigned to the truck



PERMANENT TRUCK ID NUMBERS

To Add or Edit Permanent Truck Identification Numbers:

1. Press the **TRUCK** key. The *ID* and *TRUCK* annunciators will flash.
2. Enter up to a six (6)-digit identification number and press **ENTER**.
3. The display will show *5 E 0 -* and the *TRUCK* annunciator will flash.
4. Press the **ENTER** key to view the current value of weight stored, or the scale weight if no weight is stored, for this ID number. This weight value is the tare or empty weight of the truck.
5. If the displayed value is correct, press **ENTER** and proceed to step 7.
6. If the value displayed is incorrect, key in the correct weight value and press the **ENTER** key.
7. The display will now show *H C C -*.
8. Press **ENTER** to display the current value of the accumulator associated with the ID number.
9. If the displayed value is to remain unchanged, press **ENTER**.
10. To reset the accumulator to zero, press **CLEAR**.

To Print a Permanent Truck Identification Number:

1. Press the **TRUCK** key. The *TRUCK* and *ID* annunciators will flash.
2. Key in the desired identification number and press **PRINT**.
3. A ticket containing the stored weight and accumulated weight along with the ID number will be printed.
4. If the ID number entered does not exist, the display will flash *Error* and the 748P will return to normal operation.

To Delete a Permanent Truck Identification Number:

1. Press the **TRUCK** key. The *TRUCK* and *ID* annunciators will flash.
2. Enter the identification number to be deleted then press the **DELETE** key.
3. The ID number entered along with its associated accumulator will be deleted.
4. The display will then request the next ID number to be deleted.
5. Repeat step two (2) for all ID numbers to be deleted.
6. Press the **TRUCK** key to exit after all desired ID numbers have been deleted.

To Delete ALL Permanent Truck Identification Numbers:

1. Press the **TRUCK** key. The *TRUCK* and *ID* annunciators will flash.
2. Press the **CLEAR** key.
3. The display will show *ALL*, which asks if all ID numbers are to be deleted.
4. Press the **ENTER** key.
5. The display will show *no*.
6. To delete all ID numbers, press the **1** key to change the display to *YES*, then press **ENTER**.
7. If deleting all ID numbers is not desired, with the display showing *no*, press the **ENTER** key to return to the ID entry mode indicated by the flashing *TRUCK* and *ID* annunciators.
8. In either case, to exit and return to normal operation, press **TRUCK**.

To Clear All Accumulators:

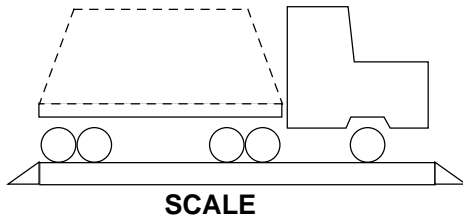
1. Press the **TRUCK** key. The *TRUCK* and *ID* annunciators will flash.
2. Press **ENTER** then press the **CLEAR** key.
3. The display will show *ALL* which asks if all accumulators are to be cleared.
4. Press **ENTER**.
5. The display will show *no*.
6. To clear all accumulators, press the **1** key to change the display to *YES*, then press **ENTER**.
7. If clearing all the accumulators is not desired, with the display showing *no*, press the **ENTER** key to return to the ID entry mode indicated by the flashing *TRUCK* and *ID* annunciators.
8. In either case, to exit and return to normal operation, press the **TRUCK** key.

To Print All Truck ID Numbers:

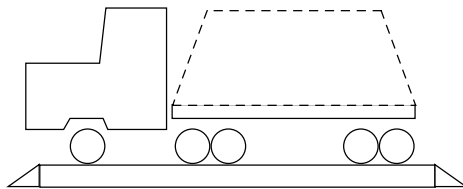
1. Press the **TRUCK** key. The *TRUCK* and *ID* annunciators will flash.
2. Press the **PRINT** key.
3. The display will show *Print* while the printer records all currently stored ID numbers.

PERMANENT ID NUMBER USE

Inbound - empty or loaded



Outbound - empty or loaded



Step 1- Enter truck permanent ID and tare weight.
Press **TRUCK**
Enter ID number to be assigned
Press **ENTER** - display shows *5 t o :*
Press **ENTER** to display value stored in memory or scale weight
Press **GROSS** to enter the scale weight or key-in value
Press **ENTER** - display shows *H C C :*
Press **ENTER** to show accumulator
Press **ENTER** to save or **CLEAR** to reset and press **ENTER**
Repeat step 1 for all permanent trucks.

Step 2 - Process trucks as required.
Truck pulls on scale
Press **ID**
Enter ID number assigned to truck (see step 1)
Press **PRINT**
Printer records gross, tare, net and accumulated new weights and ID number



NOTE! Regardless of whether the truck to be processed has a temporary or permanent ID number, it is processed in the same manner: Press **ID**, key-in ID number, press **PRINT**.

SINGLE SPEED, EIGHT BIN (presets) DIGITAL FILL CONTROL OPERATION

This standard feature of the 748P fills one ingredient up to a Preset Target weight limit minus a stored Trim weight. It can control relays to fill from eight separate bins but it can only fill one material at a time. Note that the Digital Fill Control feature must have been enabled during setup and calibration of the 748P to be operational.

To start a fill operation:

1. With the indicator in the Gross Weight mode (the *GROSS* annunciator on), press the **START/STOP** key.
2. The *BIN/PWC* annunciator will turn on and the weight display will show *b i n :*. Key-in the BIN (preset) number and press the **ENTER** key.
3. The display will change to *F i L L :*, the prompt for the stored target weight. Key-in the target weight and press the **ENTER** key. Note that the target weight is stored in non-volatile memory.
4. The display will change to *t r :*, the prompt for the stored trim weight, and press the **ENTER** key. Note that the trim weight adjust automatically and, like the target weight, is stored in non-volatile memory.
5. The display will change to *5 t A r t :*, the prompt to start the actual fill operation. Press the **1** key (1 = YES) to begin the operation, then proceed to step 7 or to abort the operation and start over, press the **0** key (0 = NO).
6. The *BIN/PWC* annunciator and the relay will turn on and the fill operation will begin.
7. The weight will increase to the preset value. When the displayed weight reaches the preset value, the relay is turned off.
8. When all motion stops the weight will be printed (if a printer is attached) and the *BIN/PWC* annunciator will turn off.
9. The trim weight will be recalculated and stored in non-volatile memory and the displayed weight value added to the BIN and GROSS or NET accumulators.

ERROR CODES

The 748P is equipped with software that indicates when an error in the operation takes place. The following lists the error code displays supported by the 748P along with their meaning. Should you encounter an error display, please refer to this list for the cause.

UnStb

Motion is present when trying to power up, print, zero or perform a push button tare function. CORRECTIVE ACTION: wait for a stable weight display (*STABLE* annunciator on) before performing any of these operations.

UnLoD

The weight on the scale exceeds the zero range when powering up. CORRECTIVE ACTION: remove the excess load then press the **ON/ZERO** key.

LoAd

The scale deadload is less than the zero range when powering up. CORRECTIVE ACTION: replace the scale platform or items normally on the scale then press the **ON/ZERO** key.

oF

The 748P is attempting to display a positive number greater than six (6) digits in length or a negative number of more than five (5) digits. CORRECTIVE ACTION: return to Gross Weight mode and review Tare value. May indicate miscalibration.

oL

The load on the scale exceeds the scale capacity plus nine (9) divisions. CORRECTIVE ACTION: remove the over capacity load from the scale platform. May indicate miscalibration.

CAlb

EEPROM checksum failure. CORRECTIVE ACTION: recalibrate with "C" numbers or weight.

Error

An invalid keypad entry was attempted:

- A. **PRINT** key pressed with a negative weight.
- B. **TARE** key pressed to enter a Push button tare value of zero or of a negative value.
- C. **ENTER** key pressed to enter a Tare weight value that exceeds the scale capacity.
- D. **ENTER** key pressed to enter a Tare weight value that is inconsistent with the scale's division value (i.e. attempt to enter a tare of 123 with scale divisions of 5).
- E. **ZERO** key pressed when the gross weight is outside the scale zero weight range.
- F. **lb/kg** key pressed to change to kilograms when the kilogram Tare weight value exceeds four (4) digits in length.
CORRECTIVE ACTION: determine which of the reasons for the error display is applicable and take the appropriate corrective action.

ErrAh

Analog Error High

1. The load cell input is above the range of the indicator.
CORRECTIVE ACTION: Check for improper load cell wiring, excessive load, and for output of 1 to 50mV.
2. Load cell or circuit failure. CORRECTIVE ACTION: consult your scale serviceman.

ErrAL

Analog Error Low

1. The load cell input is below the range of the indicator.
CORRECTIVE ACTION: Check for improper load cell wiring and for output of 1 to 50mV.
2. Load cell or circuit failure. CORRECTIVE ACTION: consult your scale serviceman.

Err1

A program checksum mismatch has been detected. CORRECTIVE ACTION: consult your scale serviceman.

Err2

An illegal write to the NOVRAM has been detected. CORRECTIVE ACTION: consult your scale serviceman.

Err3

Internal RAM failure. CORRECTIVE ACTION: consult your scale serviceman.

Err r

The RAM test has detected one or more failures in the external 748P RAM memory. CORRECTIVE ACTION: consult your scale serviceman.

no bbr

No battery-backed RAM. The time and date, zero dead load, DAC output calibration, and truck file data has been lost. Operation may proceed by pressing the **CLEAR** key and re-entering the lost data,

but the data will be lost when power is removed from the instrument. Consult your scale serviceman to replace the RAM and clock battery-backed IC.

CARE AND CLEANING

1. **DO NOT** submerge indicator in water, pour or spray water directly on instrument.
2. **DO NOT** use acetone, thinner, or other volatile solvents for cleaning.
3. **DO NOT** expose equipment to temperature extremes.
4. **DO NOT** place equipment in front of heating/cooling vents.
5. **DO** clean the indicator with a damp, soft cloth and mild non-abrasive detergent.
6. **DO** remove power before cleaning with a damp cloth.
6. **DO** provide clean AC power and adequate protection against lightning damage.
6. **DO** keep the surroundings clear to provide clean and adequate air circulation.

APPENDIX A OPTION BOARD (optional)

This appendix describes the installation of the optional I/O interfaces. This option consists of both a 0 to 10 volt and 4 to 20 MA analog output, a BCD output and eight (8) programmable inputs.

ANALOG OUTPUT

The analog output is a 12-bit (4,096 states) analog representation of the displayed weight. Connections are made via a terminal block on the back of the option board (see figure no. 9). The maximum load resistance for the current output is 500 ohms while the minimum load resistance for the voltage output is 2K ohms. Refer to figure no. 9 for the pin layout for the connector.

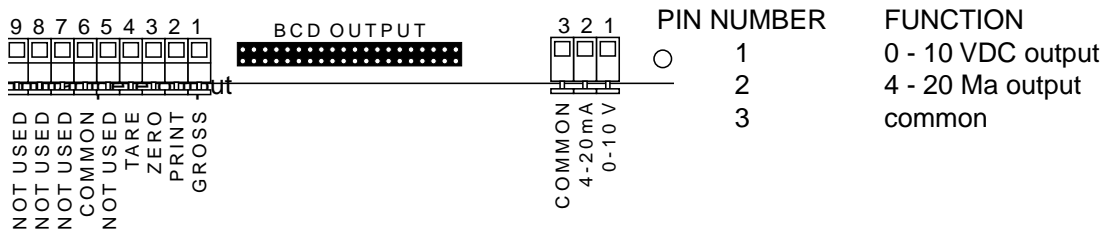
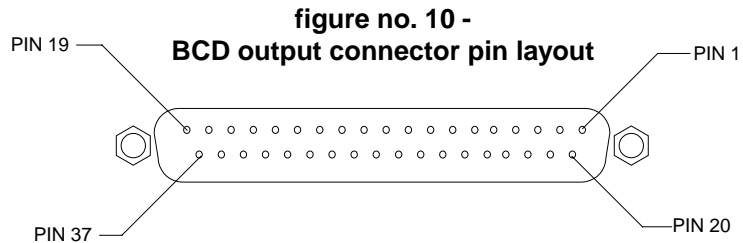



figure no. 9 - option board, rear view
8539-C012-1A

BCD OUTPUT

The BCD output provides a parallel logic-level BCD output of the displayed weight. Additional status signals are included. Connections are via a 37-pin "D" connector. Refer to figure no. 10 for the pin layout of this connector.



PIN NO.	FUNCTION	PIN NO.	FUNCTION	PIN NO.	FUNCTION
1	ground	8	800	15	gross*/net
20	ground	27	400	34	aux. out
2	800K	9	200	16	aux. in
21	400K	28	100	35	+polarity*
3	200K	10	80	17	data valid
22	100K	29	40	36	over cap.*
4	80K	11	20	18	print
23	40K	30	10	37	input spec.
5	20K	12	8	19	VCC out (200 OHM current limit)
24	10K	31	4		
6	8K	13	2		
25	4K	32	1		
7	2K	14	motion		
26	1K	33	lb*/kg		

 **NOTE!** * indicates a high level when function is true.

OPTICALLY ISOLATED INPUTS

Included with the I/O option are eight (8) programmable inputs that may be used to remotely (up to 100 feet) initiate various functions within the 748P. These inputs are accessed via a terminal block on the back of the option board (see figure no. 9). Four (4) of the inputs are defined while the remaining four (4) are available for special applications and will vary from application to application. Of the four (4) that are defined, one is for Zero, another is for Tare, the third is for Print, and the fourth is for Gross. Figure no. 9 illustrates the layout of this connector and identifies the inputs for Zero, Tare, Print and Gross. Remember that the input must be connected to Gnd to initiate the function.

PIN NUMBER	FUNCTION
1	Gross
2	Print
3	Zero
4	Tare
5	Not used
6	Common
7	Not used
8	Not used
9	Not used

CALIBRATION OF THE ANALOG OUTPUT

The analog output has been calibrated at the factory and should require no other adjustment. If, for some reason, it is found necessary or desirable to readjust this output, the procedure listed below may be used. Note that in order to calibrate the analog output, it is first necessary to enter the Calibration mode by gaining access to the calibration switch. Refer to the CALIBRATION section of this manual for additional information. When the 748P senses that the optional I/O board is present, it will cause the calibration sequence to include the steps necessary to calibrate the analog output. The following describes that process:

- Step 1 The display will show $CRLDAC$.
- Step 2 Press the **ENTER** key and the display will show NO. If you press **ENTER** at this point, the analog output calibration process will be ended. Press the **1** key to change the display to YES to proceed with Step 3 of the analog output calibration, or press the **0** key to change the display back to no. Press **ENTER**.
- Step 3 The display will show $bH \square$, the weight below zero for the analog output to be minimum (0 volts or 4 MA). Press **ENTER** to display the displayed setting. Press **ENTER** to store displayed setting, or enter the desired weight and press **ENTER**.
- Step 4 The display will show $dAC H-$, the maximum voltage to be output at capacity. Press **ENTER** to display the displayed setting. Press **ENTER** to store the displayed setting or enter the desired value 00.000 to 10.000 and press **ENTER**.

If the maximum voltage is known, the current output will be:

$$\text{Current} = \quad \times 16 + 4 \text{ (mA)}$$

If the maximum current is known, the $dAC H-$ setting will be:

$$dAC H- \quad \times 10 \text{ (volts)}$$

00.000	=	4.0mA
5.000	=	12.0mA
10.000	=	20.0mA

- Step 5 The display will show $dAC H+$. The voltage and current output will be set to the value entered in Step 4. Adjust the VOLTAGE potentiometer on the I/O board to set the voltage. The SPAN potentiometer may also be used at this time to adjust the current output. These adjustments are shown in figure no. 17. After the adjustment is complete, press the **ENTER** key.
- Step 6 The display will show $dAC L0$. The voltage output will be set to 0 volts and the current output set to 4 mA. Adjust the OFFSET potentiometer on the I/O board to set the voltage output to zero and/or the current output to 4 milliamperes. On completion, press **ENTER**.
- Step 7 The 748P will return to Step 1.

NOTE: Because of interaction between the OFFSET and SPAN adjustments, answer YES to Step 1 and repeat calibration until no further adjustment is necessary.

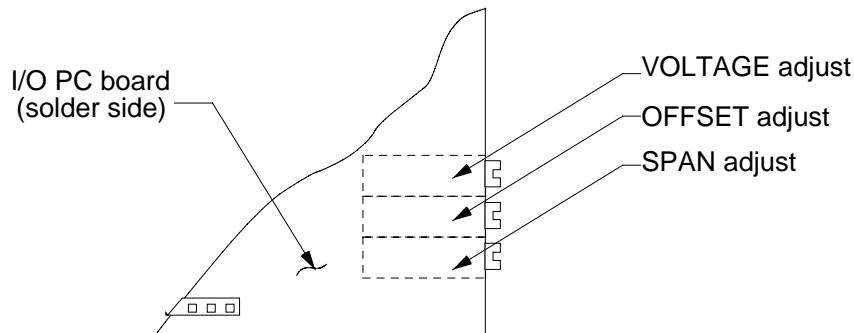
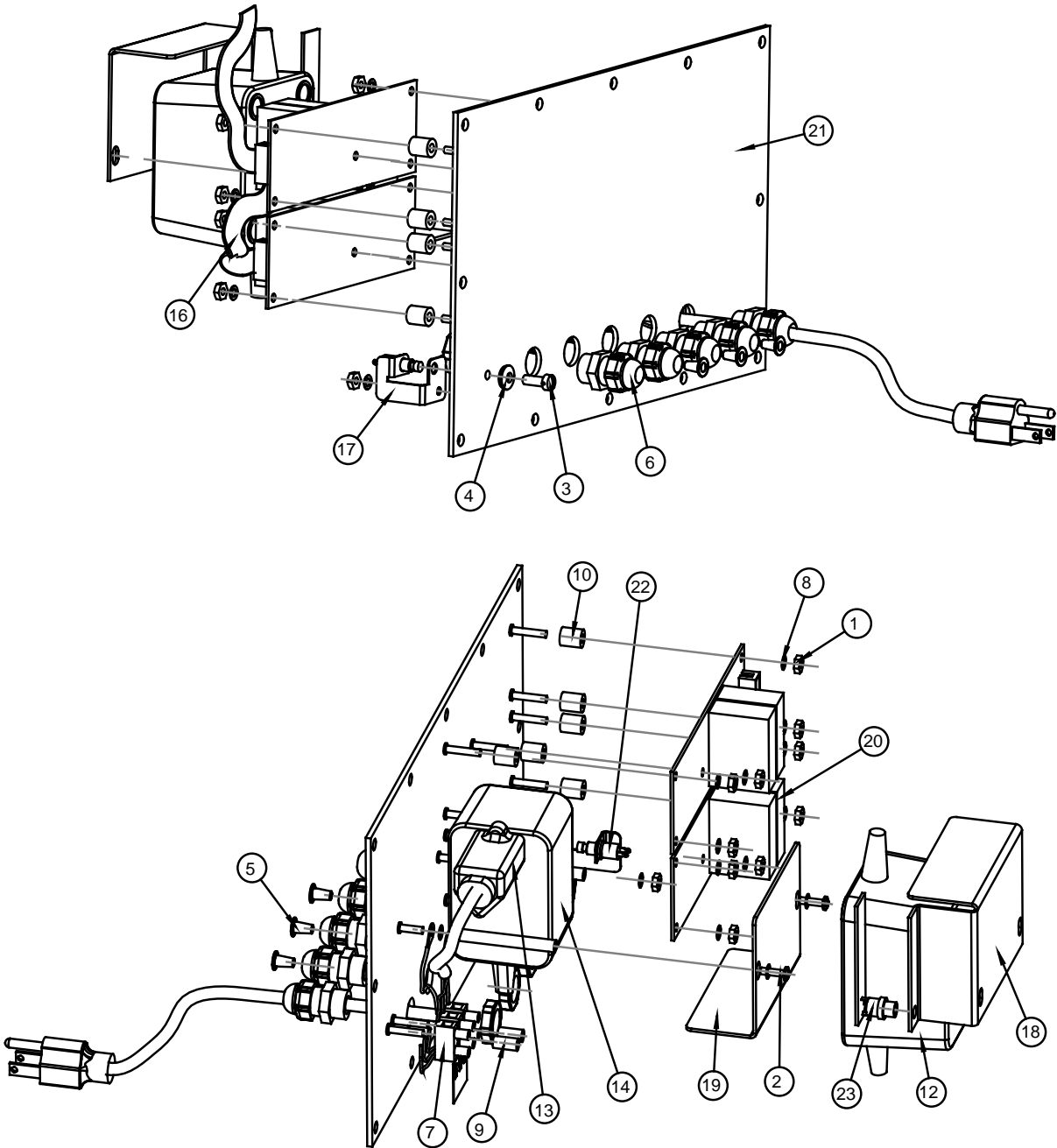


figure no. 11 - analog output calibration adjustment

APPENDIX B - PART IDENTIFICATION
figure no. 12 - enclosure rear panel

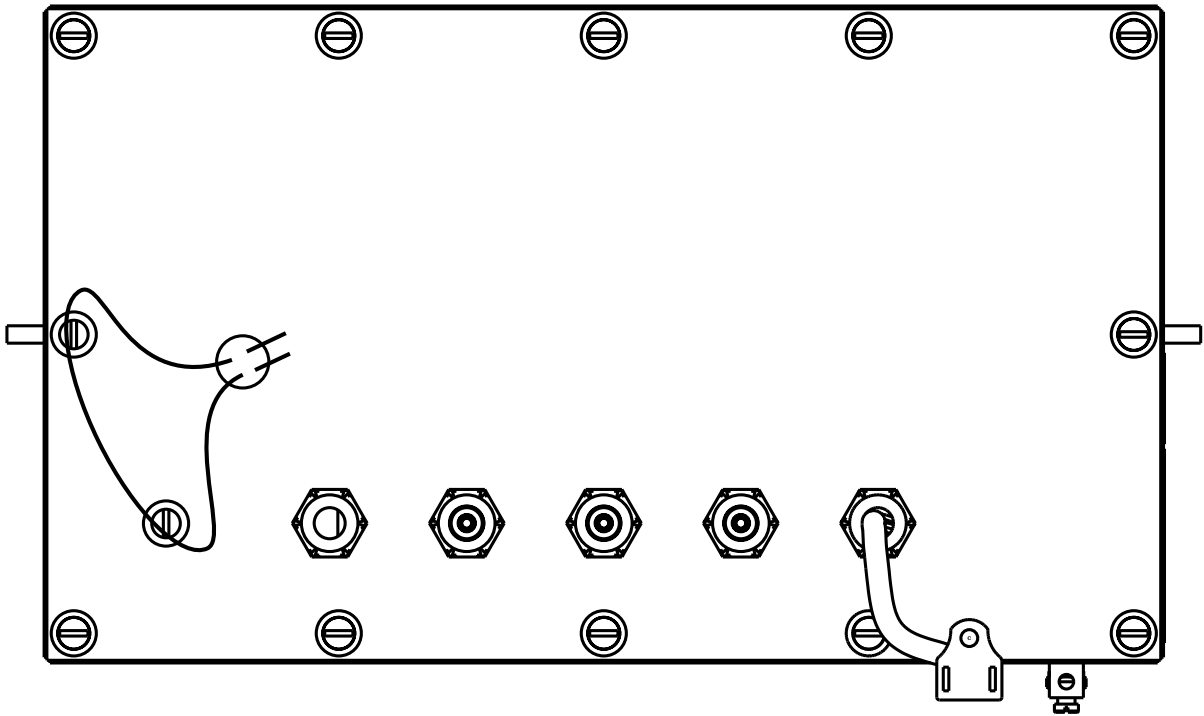


Item	Part No.	Description	Item	Part No.	Description
1	6013-0039	Hex nut #6-32	12	6800-1020	AC adapter 230 VAC/ 18 VDC @ 800MA
2	6021-0695	Screw pan head #6-32 x 1/2 PHMS	13	6980-1014	Power cord set 18/3 SVT
3	6021-1506	Screw fillister #10-32 x 500 x S.S.	14	728R124	AC adapter 115 VAC / 18 VDC @ 800 MA
4	6024-1081	Washer flat #10 neoprene backing S.S.	16	8539-B071-0A	Cable: 748 PWC relay
5	6540-1104	Plug, hole .173 - .240 red polyeth.	17	8539-B249-08	Bracket: calibration switch
6	6610-2248	Gland connector	18	8539-B253-08	Power supply cover (230 VAC)
7	6610-5080	Conn. barrier 12-POS 24 GA-TO-12 GA	19	8539-B257-08	Power supply cover (115 VAC)
8	6680-0004	Washer lock int. tooth #6 Z/P	20	8539-C062-0A	Assembly: PWC relay
9	6680-0020	Spacer (PCB) #6-32 x .500	21	8539-C248-0A	Weldment: enclosure, rear
10	6680-0121	Spacer (PCB) 7/16	22	8539-B053-0A	Assembly: cable, calibration switch
			23	8558-B028-1A	EMI filter board

APPENDIX C CALIBRATION SEAL INSTALLATION

If your Model 748P Weight Indicating Instrument is used in a commercial application it must be tested and sealed by your local weights and measurements official. The 748P is designed to accept a lead and wire security seal to prevent unauthorized access to the calibration adjustments. Installation of this seal differs with the type of enclosure. Refer to the following figures for details on the installation of these seals.

figure no. 13 -
security seal installation



748P Weight Indicating Instrument Technical/Operation Manual

Addendum for REV 1.5 and Greater

Changes to PRESET, START/STOP keys and Digital Fill Control Operation

This addendum is to inform users of function changes to the **PRESET** and **START/STOP** keys and the operation of the Digital Fill Control feature. This addendum should be used in addition to the *748P Technical/Operation Manual*. That manual should be consulted for information concerning the installation, setup, operation and service of this instrument.

PRESET KEY

This key performs three (3) functions.

1. If the *PWC* annunciator is turned off when this key is pressed, the bar graph display mode will be changed to show preset weight comparator status and the *PWC* annunciator will be turned on.
2. If the *PWC* annunciator is turned on when this key is pressed, it will allow the target weights for the presets to be entered. This display will show $P5Etx-$ where x is the preset number and can range from 1 to 8 depending on the number of preset weight comparators enabled during setup of the 748P.
 - A. Press the **ENTER** key to display the currently stored value of preset weight.
 - B. If the weight is correct, press the **ENTER** key to advance to the Trim value.
 - C. If the weight is incorrect, use the numeric keys to enter the correct weight then press the **ENTER** key to save it and advance to the Trim value.
 - D. The display will then show $tx-$, which asks for the trim weight for the corresponding preset weight comparator. Note that the x in the display, refers to the preset weight comparator number and will vary from 1 to 8.
 - E. Press **ENTER** to display the stored value of trim.
 - F. If the Trim value is correct, press the **ENTER** key to save it.
 - G. If it is not correct, use the numeric keys to enter the correct Trim value and press the **ENTER** to save it and advance to the next preset weight comparator.

Remember that the trim weight is to compensate for material in transit and causes the preset to turn on when the displayed weight equals or exceeds the Preset weight value LESS its associated Trim weight value. Also remember that the preset is based on the displayed weight which can be either gross or net weight.

This procedure is repeated for each of the enabled preset weight comparators. During entry of preset and trim weights, the two bar graph elements corresponding to that preset weight comparator will flash. After all selected preset weight comparators have been reviewed, the 748P will return to normal operation. This procedure may be stopped by pressing the **CLEAR** key on $P5Etx-$ prompt (i.e after setting $P5E3-$, press **CLEAR** to not ask for 4-8).

3. If the Digital Fill Control feature has been enabled (during setup and calibration) when this key is pressed, it will allow the stored Target and Trim weights for each BIN (Preset) number to be entered.
 - A. Press the **PRESET** key. The *BIN/PWC* annunciator will turn on and the display will show $bm-$.
 - B. Use the numeric keys to enter the BIN (Preset) number and press the **ENTER** key.
 - C. The display will then show $F#-$, the prompt for the stored Target Weight.
 - D. Use the numeric keys to enter the target weight and press the **ENTER** key.
 - E. The display will change to $tr-$, the prompt for the stored Trim Weight. Use the numeric keys to enter the trim weight and press the **ENTER** key.

This procedure is repeated for each BIN (Preset) number. During entry of Stored and Trim weights, the two bar graph elements corresponding to that BIN (preset) number will flash. After all BIN (Preset) numbers have been reviewed, the 748P will return to normal operation. This procedure may be stopped by pressing **CLEAR** on the $bm-$ prompt.

Note, the Target and Trim weights are stored in non-volatile memory.

748P Weight Indicating Instrument Technical/Operation Manual

Addendum for REV 1.5 and Greater

Changes to PRESET, START/STOP keys and Digital Fill Control Operation

START / START KEY

This key is used by the Digital Fill Control feature. It is used to signal the start of a filling operation. If the filling operation is already in progress, pressing this key will stop the filling operation.

SINGLE SPEED, EIGHT BIN (presets) DIGITAL FILL CONTROL OPERATION

This standard feature of the 748P fills one ingredient up to a Preset Target weight limit minus a stored Trim weight. It can control relays to fill from eight separate bins but it can only fill one material at a time. Note that the Digital Fill Control feature must have been enabled during setup and calibration of the 748P to be operational.

To start a fill operation:

1. With the indicator in the Gross Weight mode (the Gross annunciator on), press the **START/STOP** key.
2. The *BIN/PWC* annunciator will turn on and the weight display will show *bin*. Key-in the BIN (Preset) number and press the **ENTER** key.
3. The display will change to *Start* the prompt to start the actual fill operation. Press the **1** key (1=YES) to begin the operation or press the **0** key (0=NO) to abort the operation and start over.
4. The *BIN/PWC* annunciator and the relay will turn on and the fill operation will begin.
5. The weight will increase to the preset value. When the displayed weight reaches the preset value, the relay is turned off.
6. When all motion stops the weight will be printed (if a printer is attached) and the *BIN/PWC* annunciator will turn off.
7. The Trim Weight will be recalculated and stored in non-volatile memory and the displayed weight value added to the BIN accumulator.

748P Weight Indicating Instrument Technical/Operation Manual Addendum

Updates and Erratum in REV 1.7

This addendum is to inform users of changes to the Setup and Calibration procedure, erratum in the Setup and Calibration display prompts and the addition of a new Serial Command. Note, the erratum is only in REV 1.7 and has been corrected in REV 1.8. This addendum should be used in addition to the 748P Technical/Operation Manual. That manual should be consulted for information concerning the installation, setup, operation and service of this instrument.

Update, Page 15 - Selectable TARE Function

Changes have been made to Setup allowing the Tare function to be enabled or disabled. After the `tARE-` prompt, a new prompt, `tARE` will be displayed.

TARE FUNCTION



Press **ENTER** to show current setting. Press **0** or **1** to enter new setting.
Press **ENTER** to save new setting or to save the current setting.

`0` (0) = Tare Function disabled `1` (1) = Tare Function Enable

Note, that if NO is selected (Tare Function disabled) the `PbE-` (formerly `PbER-`) and `CLER-` prompts will not be displayed. The `PrE-` (Printer Model Selection) will be displayed next.

Erratum, Page 12 - Capacity Prompt

NOTE: This erratum applies only to instruments with REV 1.7 software and has been corrected in REV 1.8. You can verify the software revision level of your indicator by turning it off then back on. The model number and the REV will be displayed momentarily, then the display will change to the show weight.

`CRP-`, the display prompt for the Capacity of the scale was accidentally replaced with the incorrect prompt `LRD-`. The function remains the same and the instructions for the Capacity prompt as outlined in the manual should be followed. Again, only the display prompt was changed.

New Serial Command - WEIGHT On Demand and Consecutive Number

If the bi-directional serial has not been setup for continuous output, the 748P will respond to a request for weight and consecutive number by transmitting the computer formatted weight followed by the "#" character and the six digits of consecutive number.

The host device (computer) sends: CTRL T - (hex 14)

The 748P will respond:

Sxxxxx^UU^M^CC^#nnnnnCR - if no decimal point in weight display.

SxxxxxD^UU^M^CC^#nnnnnCR - if decimal point in weight display.

S	-	sign (space if weight is positive or a "--" if weight is negative)
xxxxxx	-	six digits of weight with leading zeros suppression
D	-	decimal point embedded in weight (if decimal point selected during calibration)
^	-	space (hex 20)
UU	-	weighing units (lb or kg)
M	-	weighing mode ("G" if displaying gross weight, "N" if displaying net weight)
motion	-	space if there is no motion or an "M" if there is motion
CC	-	weight status ("OC" if weight exceeds scale capacity, "BZ" if the weight is below zero, "MO" if there is motion)
#	-	ASCII character
nnnnn	-	six (6) digits of consecutive numeric with leading zeroes suppressed
CR	-	carriage return (hex 0D)

Note, The consecutive number must be set using the 748 keypad and will be incremented via the print function. Printer Tab Settings or Visual Print must be set to print the consecutive number.

748P Weight Indicating Instrument Technical/Operation Manual Addendum For Rev 2.1

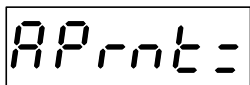
Changes to Digital Fill Control Operation and FUNCT Key

This addendum is to inform users of function changes to the Digital Fill Control feature and the **FUNCT** key. This addendum should be used in addition to the *748P Technical/Operation Manual*. That manual should be consulted for information concerning the installation, setup, operation and service of this instrument.

Page 15 - Selectable AUTO PRINT Function

Changes have been made to Setup allowing the Auto Print function to be enabled or disabled. If Digital Fill Control is enabled (dFC=1), after the *dFC* prompt, a new prompt, *APrint=* will be displayed.

AUTO PRINT FUNCTION



Press **ENTER** to show current setting. Press **0** or **1** to enter new setting.
Press **ENTER** to save new setting or to save the current setting.

n0 (0) = Auto Print Function disabled

Y55 (1) = Auto Print Function Enable

If YES is selected (Auto Print Function enabled), when the fill is completed and all motion stops, the weight will be printed (if a printer is attached).

If NO is selected (Auto Print Function disabled), when the fill is completed and all motion stops, the weight will not be printed automatically. If the operator desires a ticket, they must press the **PRINT** key.

Note, that manual print operation can be performed with either selection.

Page 29 – FUNCT Key (Function Key)

With the release of Rev. 2.1, the **FUNCT** Key can now be used to select all five (5) ticket print formats. Ticket formats 4 (for Truck Storage) and 5 (for Digital Fill Control) can now be selected by the operator the same as ticket formats 0 to 3.

Pressing the **FUNCT** key will display a prompt (*Prt=*) requesting the type of ticket print format to use. The operator inputs the desired print format number (0, 1, 2, 3, 4 or 5), then presses the **ENTER** key to complete the ticket selection. Pressing the **FUNCT** key a second time (without entering a print format number) will abort the print operation and return the 748P to normal operation. Note that when a print format is selected, it will remain active until changed by the operator.

Page 38 – OPTICALLY ISOLATED INPUTS

With the release of Rev. 2.1, if Digital Fill Control is enabled (dFC=1), Pin Number 1 is now a Remote Start/Stop. When connected to Gnd, this input will start a filling operation. If the filling operation is already in progress, it will stop the filling operation.



**748P SOFTWARE ADDENDUM
DIGITAL FILL CONTROL II**

October 9, 2000

Rev. 1.0

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INTRODUCTION

This 748P software is a modified version of the 748P Digital Fill Control feature. It allows for the selection of Single Speed or two types of Two Speed operation. The three (3) methods of operation are:

Single Speed

A B then B

A then B

The **Single Speed** fill operation uses A (fast) output only.

The **A B then B** method will begin the fill operation with both outputs (A and B) on with the A (fast) output turning off when the weight reaches the fast cut-off point ($FASL=$) and the B (slow) output remaining on until the weight reaches the slow cut-off point ($SLO=$). At the slow cut-off point, the B (slow) output will be turned off.

The **A then B** fill operation will begin with only the A (fast) output on until the weight reaches the fast cut-off point ($FASL=$). At the fast cut-off point, the A (fast) output will be turned off and the B (slow) output will be turned on. The B (slow) output will remain on until the weight reaches the slow cut-off point ($SLO=$). At the slow cut-off point, the B (slow) output will be turned off.

SETUP

PRESET WEIGHT COMPARATORS

The *PSELS* prompt and Preset Weight Comparators feature has been removed.

DIGITAL FILL CONTROL

The Digital Fill Control operation has been changed to allow the selection of Single Speed or two types of Two Speed operation or to be disabled.

At the *dFC* prompt, press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys enter the new setting, then press the **ENTER** key to save it. Allowable values are:

<i>dFC</i>	
0	Disabled
1	Single Speed - (uses preset #1 only)
2	A B then B - (uses preset #1 and #2, then preset #2 only)
3	A then B - (uses preset #1 then preset #2)

SETUP, Cont.

DIGITAL FILL CONTROL TARE

A new prompt $\underline{LArE=}$ has been added following the \underline{dFC} (Digital Fill Control) prompt. It is used to determine whether the fill operation is a Net or Gross weight operation. If the YES is selected for $\underline{LArE=}$, then the operation will be a Net fill operation. The weight on the scale will be “tared” (not included in the total), then the fill operation will begin. If the NO is selected for $\underline{LArE=}$, then the operation will be a Gross fill operation. The fill operation will begin with the weight on the scale included in the total.

Press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys, **0** (NO) or **1** (YES), enter the new setting, then press the **ENTER** key to save it.

Tare=yes

Net fill operation

Tare=no

Gross fill operation

TRUCK STORAGE

The $\underline{LrSto=}$ prompt and Truck Storage feature has been removed.

OPERATION

SINGLE SPEED OPERATION

This method of the 748P Digital Fill Control fills one ingredient up to a Preset Target weight limit minus a stored Trim weight. It controls a single relay (preset #1) to fill at one rate (fast). *Note that this Digital Fill Control feature must have been set to a “1” during setup and calibration of the 748P to be operational.*

To start a fill operation:

1. With the indicator in the Gross Weight mode (the Gross annunciator on), press the **PRESET** key.
2. The display will change to $\underline{Fill=}$, the prompt for the stored Target Weight. Press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys, enter the target weight and press the **ENTER** key. Note, the target weight is stored in non-volatile memory.
3. The display will change to $\underline{Lr=}$, the prompt for the stored Trim Weight. Press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys, enter the trim weight and press the **ENTER** key. Note, the trim weight adjusts automatically and like the target weight is stored in non-volatile memory.

OPERATION

SINGLE SPEED OPERATION (Cont.)

4. With the indicator in the Gross Weight mode (the Gross annunciator on), press the **START/STOP** key.
5. The BIN/PWC annunciator will turn on and the weight display will change to *start*= the prompt to start the actual fill operation. Press the **1** key (1=YES) to begin the operation, then proceed to step 7 *OR* to abort the operation and start over, press the **0** key (0=NO).
6. The two bar graph elements directly beneath Preset #1 will be turned on, the relay will turn on and the fill operation will begin.
7. The weight will increase to the *Fill* value. When the displayed weight reaches the *Fill* value, the relay and the two bar graph elements directly beneath Preset #1 will be turned off.
8. When all motion stops the weight will be printed (if a printer is attached) and the BIN/PWC annunciator will turn off.
9. The Trim Weight will be recalculated and stored in non-volatile memory and the displayed weight value added to the accumulator.

TWO SPEED, A B then B OPERATION

This method of the 748P Digital Fill Control fills one ingredient up to a Preset Target weight limit minus a stored Trim weight. It controls two relays (preset #1 and #2) to start the fill operation at a fast rate then to a slow rate before stopping. *Note that this Digital Fill Control feature must have been set to a "2" during setup and calibration of the 748P to be operational.*

To start a fill operation:

1. With the indicator in the Gross Weight mode (the Gross annunciator on), press the **PRESET** key.
2. The display will change to *fast*=, the prompt for the fast cut-off point weight. Press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys, enter the fast cut-off weight and press the **ENTER** key. Note, the fast cut-off weight is stored in non-volatile memory.
3. The display will change to *slow*=, the prompt for the slow cut-off point weight. Press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys, enter the slow cut-off weight and press the **ENTER** key. Note, the target weight is stored in non-volatile memory.

OPERATION

TWO SPEED, A B then B OPERATION (Cont.)

4. The display will change to $\underline{Tr=}$, the prompt for the stored Trim Weight. Press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys, enter the trim weight and press the **ENTER** key. Note, the trim weight adjusts automatically and like the target weight is stored in non-volatile memory.
5. With the indicator in the Gross Weight mode (the Gross annunciator on), press the **START/STOP** key.
6. The BIN/PWC annunciator will turn on and the weight display will change to $\underline{start=}$ the prompt to start the actual fill operation. Press the **1** key (1=YES) to begin the operation, then proceed to step 7 *OR* to abort the operation and start over, press the **0** key (0=NO).
7. The two bar graph elements directly beneath Preset #1 and Preset #2 will be turned on, the relays will turn on and the fill operation will begin
8. When the displayed weight reaches the fast cut-off point ($\underline{FAST=}$), the A relay and the two bar graph elements directly beneath Preset #1 will be turned off. The B relay will remain until the weight reaches the slow cut-off point ($\underline{SLO=}$).
9. At the slow cut-off point ($\underline{SLO=}$), the B relay will be turned off and the two bar graph elements directly beneath Preset #2 will be turned off.
10. When all motion stops the weight will be printed (if a printer is attached) and the BIN/PWC annunciator will turn off.
11. The Trim Weight will be recalculated and stored in non-volatile memory and the displayed weight value added to the accumulators.

OPERATION

TWO SPEED, A then B OPERATION

This method of the 748P Digital Fill Control fills one ingredient up to a Preset Target weight limit minus a stored Trim weight. It controls two relays (preset #1 and #2) to start the fill operation at a one rate then change to a different rate before stopping. *Note that this Digital Fill Control feature must have been set to a "3" during setup and calibration of the 748P to be operational.*

To start a fill operation:

1. With the indicator in the Gross Weight mode (the Gross annunciator on), press the **PRESET** key.
2. The display will change to *fast=*, the prompt for the fast cut-off point weight. Press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys, enter the fast cut-off weight and press the **ENTER** key. Note, the fast cut-off weight is stored in non-volatile memory.
3. The display will change to *slow=*, the prompt for the slow cut-off point weight. Press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys, enter the slow cut-off weight and press the **ENTER** key. Note, the target weight is stored in non-volatile memory.
4. The display will change to *tr=*, the prompt for the stored Trim Weight. Press the **ENTER** key to show the current value. If the setting displayed is acceptable, press the **ENTER** key again to save it. Otherwise, using the numeric keys, enter the trim weight and press the **ENTER** key. Note, the trim weight adjusts automatically and like the target weight is stored in non-volatile memory.
5. With the indicator in the Gross Weight mode (the Gross annunciator on), press the **START/STOP** key.
6. The BIN/PWC annunciator will turn on and the weight display will change to *start=* the prompt to start the actual fill operation. Press the **1** key (1=YES) to begin the operation, then proceed to step 7 *OR* to abort the operation and start over, press the **0** key (0=NO).
7. The two bar graph elements directly beneath Preset #1 will be turned on, the relay will turn on and the fill operation will begin
8. When the displayed weight reaches the fast cut-off point (*FAST=*), the A relay and the two bar graph elements directly beneath Preset #1 will be turned off.
9. Next, the two bar graph elements directly beneath Preset #2 and the B relay will be turned on. The B relay will remain until the weight reaches the slow cut-off point (*SLOW=*).

OPERATION

TWO SPEED, A then B OPERATION (Cont.)

10. At the slow cut-off point ($SLD=$), the B relay will be turned off and the two bar graph elements directly beneath Preset #2 will be turned off.
11. When all motion stops the weight will be printed (if a printer is attached) and the BIN/PWC annunciator will turn off.
12. The Trim Weight will be recalculated and stored in non-volatile memory and the displayed weight value added to the accumulators.

REMOTE START / STOP

This function has been added to the Digital Fill Control feature to start and stop a filling operation. Using Optically Isolated Input pin number 2, the filling operation can be remotely started and if already in progress, stopped. Remember that the input must be connected to Gnd to initiate the function.



WARNING!! This feature is not to be used for an Emergency Stop Button. It is to be used **ONLY** for remotely starting and stopping a filling operation. Failure to observe this warning may result in serious injury to the operator and/or other personnel.

