8530VS

Vehicle Scale DigiTOL® Indicator Technical Manual

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INTRODUCTION

This publication is provided solely as a guide for individuals who have received Technical Training in servicing the METTLER TOLEDO product.

Information regarding METTLER TOLEDO Technical Training may be obtained by writing to:

METTLER TOLEDO Training Center
P.O. Box 1705
Columbus, Ohio 43216
(614) 438-4521

FCC NOTE

NOTE: This equipment has been tested and found to comply with the limits of the United States of America FCC rules for a Class A digital device, pursuant to Part 15 of the FCC Rules and the Radio Interference Regulations of the Canadian Department of Communications. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

IMPORTANT!

It is most important that the correct part number is used when ordering parts. Parts orders are machine processed, using only the part number and quantity as shown on the order. Orders are not edited to determine if the part number and description agree.

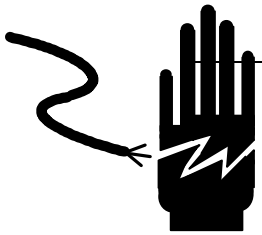
METTLER TOLEDO RESERVES THE RIGHT TO MAKE REFINEMENTS OR CHANGES WITHOUT NOTICE.

This manual describes the operation of the Model 8530VS DigiTOL Indicator with revision level 02 program. The software revision level is determined by viewing the power-up display of the Model 8530VS when power is first applied to the unit. The program number [137788] will be displayed followed by the revision level of the program [L 02]. If the number displayed as the revision level is less than [L 02], this technical manual will describe certain features which your unit will not contain. An earlier version of this programming manual PM 8530 I00 will correctly describe the previous revision level.

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

ALWAYS take proper precautions when handling static sensitive devices.



WARNING

ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM.

DO NOT connect or disconnect a load cell scale base to the equipment with power connected or damage will result.

CAUTION

REMOVE POWER FROM THE 8530 AND WAIT A MINIMUM OF 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESSES FROM PCB'S OR LOAD CELL AS DAMAGE MAY RESULT.

DO NOT allow untrained personnel to operate, clean, inspect, maintain, service, or tamper with this equipment.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

SAVE this manual for future reference.

Call METTLER TOLEDO for parts, information, and service.

CONTENTS

1. GENERAL DESCRIPTION

The Model 8530 DigiTOL Indicator, Factory Number 8530-0005, is intended for use with vehicle scale bases containing **DigiTOL POWER CELLS**. The 8530 is compatible with the DigiTOL Power Cells used in the DigiTOL TRUCKMATE and RAILMATE vehicle scales, Models 7260, 7562, 7531, 7541, 7560, 7360, 7565 and the 760 DC. The 8530-0005 **IS NOT** intended for use with analog load cells or single DigiTOL Load Cells. The Model 8530-0005 is provided in a dust tight, die cast aluminum enclosure that is suitable for most industrial applications.

1.1 Standard Features

- Operator input via a tactile feedback, 20 position membrane keyboard.
- Display of either gross or net weight on a seven digit, seven segment, blue-green, fluorescent display with 0.7" high digits.
- The 8530 provides keyboard calibration, setup and shift adjustment. Shift adjustment can be performed as sectional pairs or for individual cells.
- Span, zero, and shift adjust calibration data can be printed, recalled and entered from the keyboard in the setup mode.
- The 8530 supports pound (lb), kilogram (kg) or ton (t) weight units.
- The 8530 supports lb/kg switching.
- Keyboard entered tare and/or pushbutton autotare are supported. Additive, chain tare is supported for repeated keyboard entered tare weight.
- Time and date, consecutive numbering, setpoint data, numeric ID, and stored tare weight data are stored in battery backed memory to prevent loss of data during a power outage.
- A digital filter provides a more stable weight reading in the presence of vibration.
- Auto zero maintenance (AZM) automatically compensates for small changes in gross zero.
- The pushbutton zero function is available to permit the operator to compensate for changes in gross zero. Pushbutton zero is limited to either ±2% or ±20% of programmed scale capacity as selected in setup.
- Auto zero capture at power up is available, over a range of either ±2% or ±10 of programmed scale capacity as selected in setup. Display or output of weight data is inhibited until zero has been captured after a power loss.
- The 8530 continuously tests its internal circuitry and the DigiTOL® load cells. Comprehensive error reporting assists in troubleshooting malfunctions.
- Over capacity blanking can be programmed independently of scale capacity, up to 5 increments above programmed scale capacity.
- The 8530 provides a motion (unstable weight) detector, selectable from ±0.5 increments to ±3 increments. AZM, pushbutton zero, tare and print functions are inhibited when the weight display is unstable.
- The 8530 provides 100, battery backed, memory addresses that can be used for temporary or permanent stored tare weights and can also be used to accumulate weight data. A four digit consecutive numbering counter is provided for each memory address.
- The 8530 provides the ability to configure up to 10 of the 100 memory address for use as commodity registers. Each commodity register has a conversion factor, an eight digit accumulator, a four digit number of loads counter, and a nine character description field.
- The JN serial port provides RS-232C and 20mA current loop, bidirectional serial communication interfaces with demand or continuous data output formats.

- When a serial port is programmed for the continuous mode, a fixed format message with weight and status information is output every display update. The continuous output mode is intended for remote display, setpoint, or real time computer interfacing applications.
- The demand mode output has three flexible ticket formats available that are compatible with METTLER TOLEDO Printers, Models 8806, 8845, 8856, 8860 and 8865. The inbound and outbound ticket formats use the 100 memory address for stored tare weights. The quick print ticket format permits printing without using the scale memory.
- Print interlock prevents printing multiple copies of the same transaction. If print interlock is enabled, the weight on the scale must return to zero and a new weight be placed on the scale before printing can occur.
- Time, date, consecutive numbering, 2 digit memory address, 6 digit user ID, and 12 digit numeric ID data fields can be printed in any of the three ticket formats.
- The 8530 provides a conversion factor to permit conversion to alternate units of measure that are not otherwise supported by the 8530. The conversion factor and description are entered in setup and can be printed in any of the three ticket formats.
- Single ASCII character serial input commands are accepted for every key on the 8530 keyboard. ASCII control characters are also accepted to lock or unlock the keyboard and to blank or unblank the display.
- The 8530 provides a scale accumulator selectable for net, gross or displayed weight with consecutive numbering, and a date duration record to record all transactions over the scale.
- The 8530 provides four, single speed, setpoint cutoff outputs when combined with the METTLER TOLEDO Model 3015 Setpoint Controller. This requires the use of a serial port.

1.2 Optional Features

- The optional JW port provides a second, bidirectional RS-232C serial interface with demand or continuous format output mode.

Note: Only one of the two ports JN or JW can be configured for demand mode output. Both ports JN and JW can be configured for continuous mode output.

2. SYSTEM DESCRIPTION

The 8530 provides an unregulated +22 VDC supply for DigiTOL® Power Cells. DigiTOL® load cells contain an analog load cell, an analog to digital converter (A/D), and a microprocessor to handle the A/D conversion, error detection and digital communication with the 8530.

2.1 Major Components

1 - Transformer: Steps down the AC power to lower voltages for use by the PCB's and DigiTOL® Load Cells.

2 - Main PCB: Contains the DC power supplies, control logic, serial I/O ports, single fluorescent display, keyboard interface and Power Cell interface.

3 - EPROM and Carrier: Contains the software that controls the operation of the 8530.

4 - Keyboard: Provides an operator interface for functions such as tare, print, clear, test units selection, accumulation and calibration/setup.

2.2 Digitol Power Cell Scale System Description

The 8530 uses a two wire, multi-drop, RS-485, Master/Satellite network to communicate with the Power Cells. Data communication takes place over two wires identified as COM A and COM B. The data lines are wired in parallel from the 8530 to all Power Cells in the system.

2.2.1 Power Cell

Each Power Cell performs an A/D conversion and internal diagnostic self test and then waits for the 8530 to request data from that particular Power Cell. Each Power Cell has an internal resolution of 100,000 counts. Each Power Cell stores the address that was assigned to it in setup and outputs data only when the 8530 requests data.

The 8530 requests a data transmission from the Power Cell fifteen times per second. An **[E8 XX]** error code (where XX = Power Cell address) will be displayed if a Power Cell does not respond to a request for data from the 8530.

Two generations of Power Cells have been produced. The first generation are referred to as NMOS Power Cells. The latest generation, CMOS Power Cells, require lower power and may be applied in areas where explosion hazards exist, if combined with barriers and are properly installed. Refer to section 3.2 of this manual for further explanations.

2.2.2 Pit Power Supply (NMOS Power Cells Only)

The pit power supply converts the +22 VDC supply from the 8530 to the +18.5 VDC and +8.5 VDC required by NMOS Power Cells. The pit power supply also supplies cable termination points for up to six Power Cells. Pit power supply expanders are added to supply additional cable termination points for systems that require more than six Power Cells.

2.2.3 Auxiliary Power Supply

The dual channel auxiliary power supply provides power when the 8530 is used with more than 10 NMOS Power Cells. The auxiliary power supply is not required for CMOS vehicle scales.

3. SPECIFICATIONS

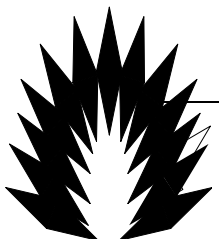
3.1 Environment

The 8530 operating temperature range is from -10 to 45 °C (14 to 113 °F) at 10 to 95% relative humidity, noncondensing. The 8530 storage temperature range is from -40 to 70 °C (-40 to 158 °F) at 10 to 95% relative humidity, noncondensing. Span and zero temperature coefficients are determined by the DigiTOL® Load Cell. The 8530-0005 must not be used in wet or extremely dusty environments.

3.2 Hazardous Areas

The NMOS Power Cell is not intrinsically safe and MUST NOT be used in areas classified as Hazardous by the National Electrical Code (NEC) because of combustible or explosive atmospheres. The CMOS Power Cell combined with the intrinsic safety barrier is designed for use in hazardous areas. The 8530-0005 MUST be located in the nonhazardous area if used with the CMOS Power Cell and intrinsic safety barrier.

Contact METTLER TOLEDO at (800) 786-5123 for more information about hazardous area applications. Refer to the 0917-0198 CMOS Intrinsic Safety Barrier installation instruction manual and the DigiTOL® Hazardous Area Wiring Diagram, TC100442, for installation and troubleshooting information for Hazardous Area CMOS weighbridge applications.



WARNING

The Model 8530 DigiTOL® Indicator is not intrinsically safe! DO NOT use the Model 8530 in locations classified as HAZARDOUS by the National Electrical Code (NEC) because of combustible or explosive atmospheres.

3.3 Standards Compliance

The Model 8530 is listed with U.L. to meet specifications 114, Office Appliances and Equipment.

The Model 8530 is certified by C.S.A. to meet standard C22.2 No. 143-1975, Office Machines.

The Model 8530 meets or exceeds the FCC docket 80-284 for radiated and conducted emissions. The Model 8530 also meets the VDE 0871 class B specifications for radiated and conducted emissions.

The Model 8530 has received NTEP (National Type Evaluation Program) Certificate of Conformance number 88-259 and may be used in legal-for-trade applications as Class III L device.

3.4 Power Requirements

The 8530 requires clean AC power with a true earth ground for reliable operation. The power line for the 8530 must not be shared with equipment that generates line noise (such as motors, relays, heaters, copy machines, etc.). If adverse power conditions exits, a power line conditioner may be required.

The 8530 meets the NIST H-44, Canadian Gazette Part 1 and OIML-SP7/SP2 line voltage variation specifications. The 8530-0005 operates on 120 VAC (+10%, -15%) at a line frequency of 60 Hz (±2%). Maximum power consumption is 75 watts.

Line Voltage Variation Specification	AC Line Voltage			Line Frequency in Hz		
	Min	Nom	Max	Min	Nom	Max
NIST H-44	100	120	130	59.5	60	60.5
Canadian	108	120	132	58.2	60	61.2
OIML-SP7/SP2	102	120	132	58.8	60	61.2

Table 3-1 Line Variation Specifications

3.5 Radio Frequency Interference

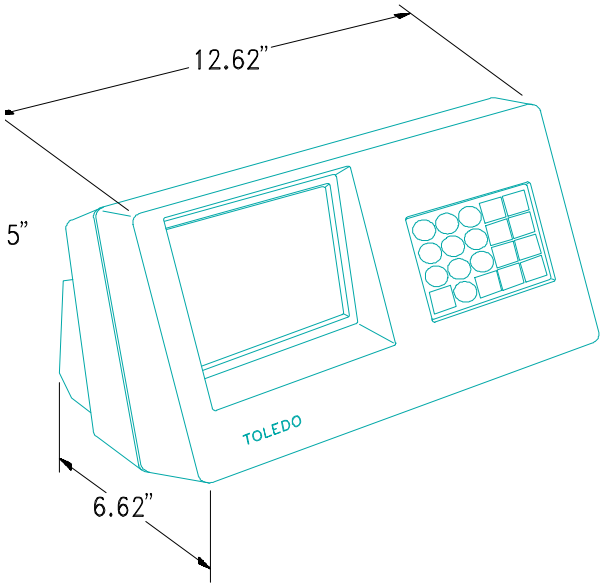
The 8530 meets U.S.A., Canadian and VDE 0871 class B requirements for RFI susceptibility specifications as listed with a maximum change of one displayed increment.

Specification	Frequencies in MHz	Field Strength
U.S.A.	27, 169 and 464	3 volts/meter
Canadian	27 and 464	4 watts at 2 meters
VDE 0871 class B	27, 144, 169 and 464	3 volts/meter

Table 3-2 RFI Susceptibility

3.6 Appearance And Dimensions

The 8530-0005 is a charcoal black painted, two piece, die cast aluminum desk mount enclosure. The 8530-0005 is 8.25" (210 mm) high, 12.62" (321 mm) wide and 6.62" (168 mm) deep and weighs 13 lb (5.9 kg).



3.7 Jn Printer Port

The 8530 provides the JN bidirectional serial port with RS-232C and 20 mA current loop interfaces. The JN port provides two modes of operation, demand and continuous. The demand mode output has three flexible ticket formats available that are compatible with METTLER TOLEDO Printers, Models 8806, 8845, 8856, 8860 and 8865.

3.7.1 Continuous Output

The Toledo® continuous format output is transmitted after every display update, 15 times per second. The continuous output is available from 1200 to 9600 baud. Refer to Section 6.6 for a complete description of the continuous mode output.

3.7.2 Demand Mode Output

The inbound and outbound ticket formats use the 100 memory addresses for stored tare weights. The quick print ticket format permits printing without using the scale memory. Demand output is disabled when the 8530 is blanked under zero or over capacity, in a "motion" condition or if displaying expanded weight.

The demand output is subject to print interlock if enabled. The data output is available from 300 to 9600 baud and can include expanded print format as well as an optional checksum character. Refer to Section 6.5 for a complete description of the demand mode output.

3.7.2.1 Quick Print Output

The quick print ticket format is output when a print request occurs, either by pressing the **PRINT** key, or when a remote print request is received, or by the Autoprint function. The quick print ticket format is configured in setup step **[74]**.

3.7.2.2 Inbound Ticket Output

The inbound ticket format is output when a weight is stored in memory. The inbound ticket format is configured in setup step **[76]**.

3.7.2.3 Outbound Ticket Output

The outbound ticket format is output when a stored weight is recalled from memory. The outbound ticket format is configured in setup step **[78]**. Data is accumulated in the scale register, If accumulation is enabled. If the memory address used is a permanent register then data is also accumulated in the memory address.

3.7.3 Remote ASCII Control Input

Refer to section 6.7 for a complete description of remote ASCII control character input.

The 8530 will accept single ASCII characters into the serial port for all keys on the 8530 keyboard. In addition the 8530 will also accept characters to lock or unlock the keyboard and blank or unblank the display. This feature permits remote operation of the 8530.

3.8 Optional JW Setpoint Port

The optional JW interface KOP provides a second bidirectional serial port with RS-232C and RS422 interfaces. The JW port provides two modes of operation, demand or continuous.

3.8.1 Demand Mode

The optional JW port can be selected to a demand mode output identical to the JN port.

Note: Only one serial port (either JN or JW) can be programmed for demand mode output, the other serial port must be configured for continuous (or host for JW port).

3.8.2 Continuous Mode

The optional JW port can be selected to the continuous mode identical to the continuous mode output of the JN port.

3.8.3 JW Port ASCII Control Input

The optional JW port can accept single ASCII character commands identical to the ASCII input capability of the JN port.

4. INSTALLATION INSTRUCTIONS

4.1 Preliminary Inspection

Inspect the shipping container and scale for loose or damaged parts. If any damage is found, immediately notify the freight carrier. The 8530-0005 Indicator is shipped with the following components:

Model 8530-0001 Desk Enclosure Indicator
Model 8530 Technical Manual, TMVS8530 I00
Model 8530 Operators Manual, OMVS8530 I02
Blank Key Overlay, PN 12281100A, Qty 4
Capacity Label, PN 13659500A
Quality Feedback Card
AC Line Cord, PN 10944500A
DE-9-P Load Cell Connector, PN 11759900B Load Cell
Connector Shell, PN 12538400A
5" of Embossed Copper Tape, PN 154360001

4.1.1 Open the Enclosure

Open the enclosure by removing the four screws from the corners of the rear cover. Be careful not to damage the keyboard when removing the front cover. Verify that all internal harnesses are securely fastened. Install any optional K.O.P. at this time.

4.1.2 Main PCB Preparations

Remove the insulating paper from between the battery and battery clip on the 8530 Logic PCB. Refer to Figure 4-1 for battery location. Be careful not to touch the metal surface of the battery as corrosion caused by acids from your skin can cause the battery to fail.

If ASCII control characters are to be input to the JN serial port then jumper W6 must be set to match the JN port interface used. If ASCII control characters are to be received into the 20 mA current loop input then jumper W6 must be IN (shorting the two pins together). If ASCII control characters are to be received into the RS-232C interface then jumper W6 must be OUT (not shorting the two pins together). Refer to Figure 4-1 for jumper location.

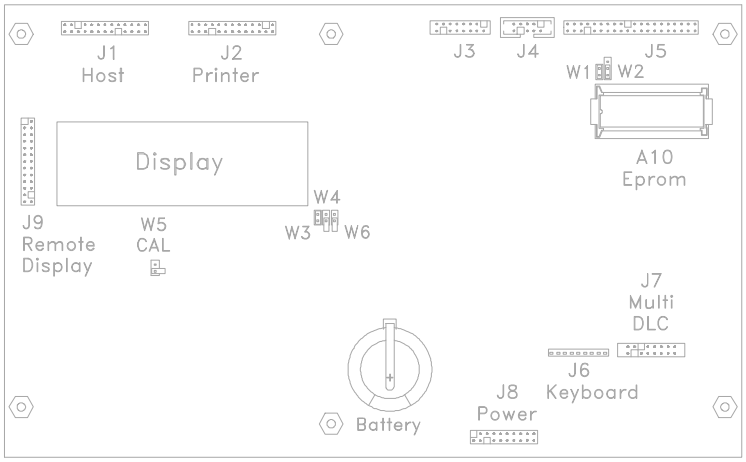


Figure 4-1 Main PCB, Battery, and Jumper W6 Location

4.1.3 Terminate External Cables

CAUTION

The 8530-0005 is compatible with vehicle scale bases containing DigiTOL Power Cells only. The 8530 is compatible with the DigiTOL Power Cells used in the DigiTOL TRUCKMATE and RAILMATE vehicle scales, Models 7260, 7360, 7531, 7541, 7560, 7562, 7565 and the 760 DC.

DO NOT connect the 8530-0005 to analog load cells or single DigiTOL Load Cell bases such as the Models 1996, 1997, 2096, 2097, 2196, 2197 or to the DigiTOL Power Module used in the DigiTOL Floor Scale Model 2157. Damage to load cell or the 8530 Main PCB may result.

REMOVE AC POWER FROM THE 8530 AND WAIT A MINIMUM OF 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESSES FROM PCB'S OR LOAD CELLS AS DAMAGE MAY RESULT.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

4.1.3.1 Terminate Load Cell Cable

Verify that the Multiple DLC harness, part number 131613 00A, has been installed between the external load cell harness and the multi DLC connector J7 on the 8530 Main PCB. Refer to Figure 4-1 for connector J7 location.

If the Single DLC harness, part number 131612 00A, is installed between the external load cell harness and the single DLC connector J3 on the 8530 Main PCB then remove the single DLC load cell harness and install the multi DLC harness between the external load cell harness and connector J7 on the 8530 Main PCB. The 8530 Main PCB must be removed to access the external load cell harness.

Refer to the weighbridge installation manual for weighbridge and home run cable wiring information.

4.1.3.2 Terminate JN Printer Port Interface Cable

Refer to section 6.3 for interface cable termination instruction if JN printer port is used.

4.1.3.3 Terminate JW Host Port Interface Cable

Refer to section 6.4 for interface cable termination instruction if JW host port is used.

4.1.4 New Scale Installation Notes

When installing a new scale refer to the installation manual supplied with the DigiTOL® weighbridge.

Once the weighbridge is physically installed, configure the 8530 according to the recommended setup parameters in the quick setup reference chart in Section 4.2.3. Refer to the indicator setup section of the weighbridge installation manual for the correct scale capacity, increment size and number of Power Cells.

After the 8530 has been configured, perform the Power Cell addressing procedure, setup step **[04]**. If problems occur during the addressing procedure then refer to the troubleshooting procedure in Section 7 of this manual.

Once the load cells have been successfully addressed, let the 8530 warm up for 30 minutes and record the raw count output of each Power Cell using setup step **[99]**. Refer to the indicator setup section of the weighbridge installation manual for maximum raw count deviation and final shimming instructions if necessary. Record and save the Power Cell raw count output readings after final shimming is completed, for future use.

Once the 8530 has been configured, the Power Cells have been addressed and correct Power Cell shimming has been verified, the scale is now ready for calibration. Perform sectional pair shift adjust, step **[18]**, with either a weight cart or the rear axles of your test truck. Immediately after shift adjust is completed, before you exit the setup mode, perform the calibration procedure, step **[19]** using the same weight used for shift adjust. Once the shift adjust and scale calibration have been performed successfully the first time, the shift adjust and scale calibration steps can be accessed independently without causing a problem.

Note: Steps **[18]** and **[19]** must be performed in order without leaving the setup mode, for first time installations. Do not perform the calibration procedure, step **[19]**, unless the shift adjust procedure, step **[18]**, has been successfully performed at least once. Do not perform the zero or span adjust, steps **[21]** or **[22]**, unless the calibration procedure, step **[19]**, has been successfully performed at least once.

After the shift adjust and calibration procedures, steps **[18]** and **[19]**, have been performed, exit the setup mode and verify weighing performance. Some installations may require individual load cell shift adjust to eliminate side to side errors.

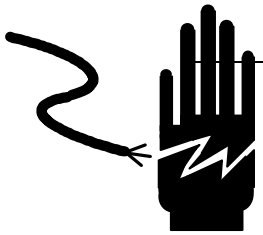
If individual cell adjust is required, then select individual cell adjust, setup step **[02 1]**, and repeat the shift adjust procedure, step **[18]**. A weight cart or a large fork lift truck that can concentrate the weight directly over the load cell or section being adjusted will be much more effective during shift adjustment than the rear axle of a test truck.

If step **[18]** is unable to reduce shift errors to within required limits then use the manual shift adjust procedure, step **[96]**, to bring the shift errors within tolerance.

RECORD AND SAVE the calibration data from step **[97]** once scale calibration is completed. If the 8530 Main PCB fails and is replaced then the calibration data from step **[97]** can be reentered into the new Main PCB at step **[97]** and the scale will not require calibration.

Note: The complete setup of the 8530 can be printed by pressing the **PRINT** key any time the 8530 is displaying the double dash **[--]**, prompt in setup.

4.2 PROGRAMMING AND CALIBRATION



WARNING

ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TEST, AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

4.2.1 Keyboard Functions During Setup

The keyboard is redefined during setup as while in the setup mode.

Numeric The numeric keys (0 - 9) are used to enter data as required.

1 Press the **1** key to access a sequence or to select (YES).

0 Press the **0** key to select (NO) or to skip a step. The **0** key is also used to display the next selection when a menu of choices is presented.

CLEAR Press the **CLEAR** key to erase the current value and permit reentry of data. Press the **CLEAR** key twice to exit print field setup steps.

ENTER Press the **ENTER** key to accept the displayed selection and to advance to the next setup step.

PRINT Press the **PRINT** any time double dashes **[--]** are on the display to print setup parameters. The **PRINT** key is also used in step **[97]** to print just the calibration parameters.

ZERO Press the **ZERO** key to accept the displayed selection and back up to the previous setup step.

4.2.2 Access the Setup Mode

Remove AC power from the 8530. Place the W5 jumper (marked CAL) to the IN position (shorting the two pins together), on the 8530 Logic PCB. Refer to Figure 4-1 for W5 jumper location. Apply AC power to the 8530. After the power up display tests and the software part number and revision level is displayed, the 8530 enters the setup mode. Double dashes **[--]** are displayed indicating the 8530 is in the setup mode.

Note: DO NOT remove the W5 (CAL) jumper or remove power from the 8530 while it is in setup mode, unless the 8530 is at the double dash **[--]** display. If the setup mode is exited incorrectly, the 8530 may display an **[E3]** error code on power up. Refer to Section 7.3.3 of this manual for clearing error codes.

4.2.3 Setup Quick Reference Chart

STEP	DESCRIPTION	SELECTIONS
00	**SCALE GROUP**	
02	Shift Adjust Mode	0 = Independent DLC ***1 = Sectional Pairs***
03	Number of Load Cells	
04	Auto Address Load Cells	
10	**CALIBRATION GROUP**	
11	Calibration Units	0 = kilograms ***1 = pounds*** 2 = tons
13	Autorange Selection (*)	***1 = Single Range Mode*** 2 = Double Range Mode 3 = Triple Range Mode
14	Scale Capacity (*)	
15	High Range Increment Size (*)	
16	Mid Range Increment Size	
17	Low Range Increment Size	
18	Shift Adjust Procedure	
19	Calibration	
20	**ZERO AND FILTERING GROUP**	
21	Zero Adjustment	
22	Span Adjustment	
23	AZM Range (*)	0 = Disable AZM 1 = AZM Within ±0.5 Division 2 = AZM Within ±1.0 Division ***3 = AZM within ±3 Divisions***
24	Zero Capture at Powerup	0 = Disable Powerup Zero Capture **1 = Zero Capture ±2% Capacity** *2 = Zero Capture ±10% Capacity*
25	Pushbutton Zero Range (*)	0 = Disable Pushbutton Zero **1 = Zero Within ±2% of Capacity** *2 = Zero within ±20% of Capacity*
26	Motion Detection (*)	0 = Disable Motion Detection 1 = ±0.5 Increments 2 = ±1.0 Increments 3 = ±2 Increments ***4 = ±3 Increments***
27	Display Filtering	0 = Disable Filtering 1 = Light Filtering 2 = Light-Medium Filtering 3 = Medium Filtering ***4 = Medium-Heavy Filtering*** 5 = Heavy Filtering
28	Overcapacity Blanking (*)	
29	Accumulation Mode	0 = Accumulator disabled ***1 = Accumulate Net Weight*** 2 = Accumulate Gross Weight
30	**TARE GROUP**	
31	Tare Mode	0 = Disable Tare 1 = Autotare Only ***2 = Autotare and Keyboard tare***
32	Tare Interlock (*)	*0 = Disable Tare Interlocks* **1 = Enable Tare Interlocks**
33	Manual Tare Entry Mode	***0 = Manual Tare All Ranges*** 1 = Manual Tare, Low Range Only
34	Autoclear Tare	***0 = Disable Autoclear Tare*** 1 = Enable Autoclear Tare
35	Gross/Net Switching	0 = Gross/Net key Disabled ***1 = Gross/Net key Enabled***
36	Function Key Enable	0 = All Functions Disabled ***1 = All Functions Except Setpoint*** 2 = All Functions Enabled
37	Memory Key	0 = Memory Disabled ***1 = Memory Enabled***
38	Weight Conversion Factor	
39	Conversion Description	
40	**JN PORT GROUP SELECTION**	
41	Output Data Format	0 = Continuous Output ***1 = Demand Output***
42	Baud Rate	***9600***
43	Parity Selection	0 = 7 Data Bits, No Parity Bit 1 = 7 Data Bits, Odd Parity Bit ***2 = 7 Data Bits, Even Parity Bit*** 3 = 8 Data Bits, No Parity Bit
44	Checksum	***0 = Disable Checksum*** 1 = Enable Checksum
45	Stop Bits	***1 = 1 stop bit*** 2 = 2 stop bits
46	Alphanumeric Print Field 1	
47	Alphanumeric Print Field 2	
48	Alphanumeric Print Field 3	
49	Alphanumeric Print Field 4	

Recommended default selections are shown in ***Italics***.

4.2.3 Setup Quick Reference Chart (Continued)

STEP	DESCRIPTION	SELECTIONS
50	**JW PORT GROUP SELECTION**	
51	Port Output	***0 = Continuous output*** 1 = Demand output
52	Baud Rate	***4800***
53	Parity Bit	0 = 7 Data Bits, No Parity Bit 1 = 7 Data Bits, Odd Parity Bit ***2 = 7 Data Bits, Even Parity Bit*** 3 = 8 Data Bits, No Parity Bit
54	Checksum Enable	***0 = No checksum*** 1 = Checksum enable
55	Stop Bits	***1 = 1 stop bit*** 2 = 2 stop bits
57	RS422 Transmitter Control	Must be set to a 1
60	**PRINT DEMAND GROUP SELECTION**	
61	Autoclear Tare After Print	0 = Disable Autoclear ***1 = Enable Autoclear***
62	Print Interlock/Auto Print	***0 = Demand Print*** 1 = Single Print 2 = Auto Print
63	Minimum Print Increments	***0 = No minimum*** 1 = 10 increments 2 = 100 increments 3 = 500 increments
64	Net Sign Corrected Printing	0 = Normal Net Weight Printing ***1 = Net Sign Corrected Printing***
65	Enable "STX"	0 = To Disable "STX" ***1 = To Enable "STX"***
66	Function 9 Access Print Setup	0 = Disable F9 Access to Ticket Setup ***1 = Enable F9 Access to Ticket Setup***
68	Printed Weight Units	0 = No Weight Units 1 = Power-up Units Only ***2 = Power-up/Conversion Units***
69	Demand Output Time Delay	***0.0 Seconds***
71	Autoclear ID after Quickprint	0 = Disable Autoclear ***1 = Enable Autoclear***
72	Increment CN after Quickprint	0 = CN after Outbound Print ***1 = Increment CN after Quickprint***
73	Time/Date Format Selection	1 = MM DD YY HH:MM 2 = DD.MM.YY HH:MM 3 = YY MM DD HH:MM ***4 = HH:MM PM MM DD YY***

STEP	DESCRIPTION	SELECTIONS
74	Quick Print Ticket Format	
75	Line Feeds after Quick Print	
76	Inbound Ticket Format	
77	Line Feeds after Inbound	
78	Outbound Ticket Format	
79	Line Feeds after Outbound	
80	**INTERNATIONAL GROUP SELECTION**	
82	lb/kg Switching	***0 = lb/kg switching Disabled*** 1 = lb/kg Switching Enabled
83	Power-Up Weight Units	0 = Power-Up in kg ***1 = Power-Up in lb***
84	Measured Weight	***0 = Print weights without brackets*** 1 = Print weights with brackets
85	Manual Tare Weight Legend	0 = No Tare Weight Legend 1 = Print (PT) after manual tare ***2 = Print (TRH) after manual tare***
86	Remote ASCII Input	***0 = Disabled*** 1 = Enabled
87	Remote Pulse Input	**0 = Pulse input Disabled** *1 = Print output on pulse* 2 = Zero scale on pulse 3 = Tare scale on pulse 4 = Remote clear command 5 = Blank display 6 = Lock keyboard
88	Net Zero Cursor	***0 = Zero cursor, gross zero only*** 1 = Zero cursor, gross and net zero
89	Tare in Permanent Registers	***0 = Disabled*** 1 = Enabled
89A	Inbound Tare in Permanent Reg.	***0 = Disabled*** 1 = Enabled
90	**DIAGNOSTIC GROUP**	
91	Manual Load Cell Addressing	
92	Replacement Load Cell Auto Addressing	
93	Single Section/Cell Auto Shift Adjust	
94	Temporarily Reset Shift Values to a 1	
95	Expanded Display Mode	***0 = Normal Weight Display Mode*** 1 = Display Minor Increments
96	Manual Shift Adjust	
97	Short Cut Calibration	
98	Load Default Parameters	
99	Display Load Cell Raw Counts	

Recommended default selections are shown in ***Italics***.

[00] ACCESS POWER CELL CONFIGURATION AND ADDRESSING

Enter the digits "0" then "0" to access this group. The 8530 begins at step **[02]** and advances though step **[04]**

[02 1] Shift Adjust in Sectional Pairs

Power Cells can be shift adjusted either in sectional pairs or individually. Sectional parts shift adjust is faster and simpler than individual shift adjust. Individual shift adjust is used in installations that have excessive side to side shift errors.

Press:

0 - Select Individual Power Cell Shift Adjust
1 - Select Sectional Pairs Shift Adjust

Note: Shift adjust MUST be set to sectional pairs **[02 1]** if the 8530 is used with more than 16 Power Cells.

[03 10] Number of Power Cells in Scale Base

Enter the total number of Power Cells used in the weighbridge. The 8530 can operate with a maximum of 24 Power Cells maximum. If more than 16 power cells are used the 8530 MUST be configured for sectional pairs shift adjust. The Auxiliary Power Supply must be installed if more than 10 Power Cells are used.

[04] Automatic Power Cell Addressing

Before a Power Cell can be used in a scale base the Power Cell MUST have a unique address programmed into it. All new load cells are sent from the factory with a default address of 240. Step **[04]** automatically prompts the technician through the addressing procedure for all of the load cells in the scale base. Automatic Power Cell addressing is begun with all Power Cells disconnected. Refer to the indicator setup section of the weighbridge installation manual for the correct location of Power Cell addresses in the weighbridge.

Press:

0 - To skip Power Cell addressing
1 - To access Power Cell addressing

Note: Power Cell addressing is normally performed during initial installation ONLY! Addresses are stored in the Power Cell. Power Cells do not need to be readdressed if the 8530 Logic PCB is replaced or the software is upgraded. Once a Power Cell has been successfully addressed it should never need to be addressed again. **IF A POWER CELL THAT HAS BEEN OPERATING IS NO LONGER COMMUNICATING, DISPLAYING AN [E8] ERROR, THEN DO NOT TRY TO READDRESS THE POWER CELL. THE PROBLEM IS MOST LIKELY DUE TO A BAD CABLE, A DEFECTIVE POWER CELL, OR A DEFECTIVE 8530 LOGIC PCB**. If a Power Cell has lost its address, then the Power cell is defective and **MUST** be replaced. The only reason to readdress a working Power Cell is if you wish to move it to a different location in the weighbridge.

The procedure for auto assigning Power Cell addresses is as follows:

Power down the 8530 and verify that all Power Cells are disconnected from the scale base. Place the W5 CAL jumper on the 8530 Logic PCB to the IN position, (shorting the two pins together), and apply power to the 8530. Press the **0** key twice, the 8530 display will then show **[02 1]**. Press the **ENTER** key two times until the 8530 is displaying **[04]**. Press the **1** key to access cell addressing. The 8530 will display **[04 1]** briefly and then display **[Add 1]**. At this time connect load cell #1 to the scale and press the **ENTER** key.

The 8530 then displays **[LC 1]** while load cell #1 is being addressed. If the load cell is successfully addressed the 8530 will then display **[Add 2]** to prompt the technician to connect load cell #2 and repeat the addressing procedure. This procedure is repeated until all remaining load cells have been addressed.

If the 8530 is unable to communicate with a load cell during the addressing procedure an **[E8 XX]** error code is displayed, (XX = load cell that was not addressed). Press the **CLEAR** key to clear the error code and reset the 8530 back to the **[--]** display. Refer to Section 7.3 of this manual for troubleshooting information.

Once the source of the cell communication problem is corrected then remove power to the 8530 and connect all load cells that have already been successfully addressed. Enter the setup mode and restart step **[04]**. The 8530 will check for the presence of correctly addressed load cells. When the 8530 detects a missing load cell address, this display will hold on **[04 XX]** (XX = next load cell to be addressed) for a few seconds then display **[Add XX]** to prompt the technician to connect load cell XX and continue the addressing procedure. This procedure is then repeated until all cells have been addressed.

[10] ACCESS SCALE CALIBRATION GROUP

Enter the digits "1" then "0" to access this group. The 8530 begins at step **[11]** and advances though step **[19]**. Step **[12]** is skipped.

[11 0] WEIGHT UNITS

Select the weight units the 8530 will use during calibration and for display of weight.

Selection	Weight Units	Units Symbol
0	kilograms	kg
1	pounds	lb
2	tons	t

[13 1] AUTORANGE® SELECTION

The 8530 can be programmed for one, two or three display increment sizes. Enter the number of weight display ranges the 8530 is to use: **[1]**, **[2]**, or **[3]**. Refer to section 5.9 for a detailed description of Autorange® operation.

Press:

1 - Select Single Range Mode
2 - Select Dual Range Mode
3 - Select Triple Range Mode

Notes:

1: Steps **[16]** and **[17]** are skipped when step **[13 1]** is selected.
2: Step **[17]** is skipped when step **[13 2]** is selected.

[14] [XXXXXX] SCALE CAPACITY

Enter the total scale capacity **[XXXXXX]** in the weight units selected in step **[11]**. Refer to the indicator setup section of the weighbridge installation manual and the data plate of the weighbridge to verify the capacity selection. Enter the desired capacity using the digits on the numeric keyboard of the 8530 then press the **ENTER** key. Press the **CLEAR** key to clear the display if an error is made during entry.

[15 X0] HIGH RANGE INCREMENT SIZE

The 8530 displays the current increment size and decimal point selection of the high range increment size. If the displayed data is not correct, press the "0" key until the desired decimal point position is displayed then press the increment size digit (either "1", "2" or "5") on the keyboard to terminate the entry. This will

select both the decimal position and increment size in one step. The standard increment size for vehicle scales is 20 lb, 10 kg, or 0.01 t. If Autorange® is being used with a combination rail/truck scale then select a high range increment size of 50 lb, 20 kg, or 0.02 t.

Press:

0 - Toggles the display through all available decimal point positions.
1 - Selects an increment size of 1 after the decimal point has been selected.
2 - Selects an increment size of 2 after the decimal point has been selected.
5 - Selects an increment size of 5 after the decimal point has been selected.

[16 X0] MID RANGE INCREMENT SIZE

The display will show the increment size and decimal point position of the mid range increment size used when the 8530 was last calibrated. If the displayed data is not correct, use the procedure described for setup step **[15]** to select a new mid range increment size.

[17 X0] LOW RANGE INCREMENT SIZE

The display will show the increment size and decimal point position of the low range increment size used when the 8530 was last calibrated. If the displayed data is not correct, use the procedure described for setup step **[15]** to select a new low range increment size.

[18] ACCESS AUTO SHIFT ADJUST

Shift adjustment is used to compensate for differences in weight readings as a load is applied at different positions on the scale platform. For new installations, drive the test truck across the weighbridge three to five times in both directions to seat the Power Cells and receivers before performing the shift adjust procedure.

To perform auto shift adjust:

If the 8530 is not in the setup mode, power it down. Place the W5 CAL jumper on the 8530 Logic PCB to the IN position (shorting the two pins together) and apply power. The 8530 will then display **[--]**. After pressing the **1** key then the **8** key, the 8530 will display **[18 0]**.

Press:

0 - Skip shift adjust procedure.
1 - Access shift adjust procedure.

The 8530 then displays **[E SCL]**. Verify the scale is empty and press the **ENTER** key.

The 8530 then counts down from **[16 CAL]** to **[01 CAL]** as zero reading is recorded.

The 8530 then displays **[SEC 01]**. Center the test cart (or rear axle of the test truck) over section 1 (Power Cells 1 and 2). Make sure the test cart or truck axle is centered from side to side over the section. After coming to a complete stop on the section, release the brakes. If the truck rolls, put the truck in gear and shut off the engine rather than holding position with the brakes. Wait 15 seconds after the truck stops moving to let the weighbridge settle, then press the **ENTER** key.

The 8530 then counts down from **[16 CAL]** to **[01 CAL]** as the weight reading for section 1 is recorded.

The 8530 then displays **[SEC 02]**. Reposition the test cart (or test truck) over section 2 (Power Cells 3 and 4) and continue as before. Repeat this procedure for each section in the weighbridge.

Notes: Some installations may require individual load cell shift adjust to eliminate side to side errors. If individual cell adjust is required, then select individual cell adjust, setup step **[02 1]**, and repeat the shift adjust procedure, step **[18]**. If individual cell adjust is used the 8530 will prompt for **[CELL XX]** instead of **[SEC XX]** (XX = Power Cell or section number). Place the test cart directly over the Power Cell specified. A weight cart or a large fork lift truck that can concentrate the weight directly over

the load cell or section being adjusted will be much more effective during shift adjustment than the rear axle of a test truck.

If step **[18]** is unable to reduce shift errors to within required limits then use the manual shift adjust procedure, step **[96]**, to bring the shift errors within tolerance. Problems with shift adjustment are usually caused by: a mechanical bind in the weighbridge, an incorrectly shimmed weighbridge, or an insufficient concentration of the test weight over the section or Power Cell during shift adjust.

[19] ACCESS FULL CALIBRATION PROCEDURE

Full calibration is used to set the initial zero reference and to set span. Full calibration can be performed either with a known vehicle weight or with certified test weights. If a known vehicle weight is used for full calibration, then span adjust, step **[22]**, should be performed with certified test weights.

Note: For new installations this step MUST be performed immediately after performing shift adjust, step **[18]**, for the first time. Do not exit the setup mode or power down the 8530 without first performing a full calibration, step **[19]**, or else the shift adjust data calculated in step **[18]** will be lost and an error code will be displayed. Full calibration is not required for subsequent shift adjust procedures, after a full calibration has been successfully performed at least once.

To perform full calibration:

If the 8530 is not in the setup mode, power it down. Place the W5 CAL jumper on the 8530 Logic PCB to the IN position (shorting the two pins together) and apply power. The 8530 will then display **[--]**. After pressing the **1** key then the **9** key, the 8530 will display **[19 0]**.

Press:

0 - Skip calibration procedure.
1 - Access calibration procedure.

[E SCL] EMPTY SCALE

Remove all weights from the scale platform then press the **ENTER** key. The display then counts down from 16 to 1 as a zero reference weight is recorded for the scale.

[Add Ld] ADD LOAD

Drive test truck or place test weights on the scale platform. Press the **ENTER** key.

[.] ENTER TEST WEIGHT VALUE

Enter the known weight of the test truck or the value of the test weights, using the numeric keys on the 8530 keyboard. Press the **ENTER** key to terminate entry. The test weight value entered must agree with the increment size used by the scale. The display then counts down from 16 to 1 while span is recorded.

[CAL d] CALIBRATION DONE

This prompt is displayed for a few seconds to indicate that calibration was successful, then the display returns to the **[--]** prompts.

[20] ACCESS FILTERING, AZM GROUP

Enter the digits "2" then "0" to access this group. The 8530 begins at step **[21]** and advances though step **[29]**.

Note: Steps **[21]** and **[22]** can't be accessed until the 8530 has been calibrated with step **[19]** and is displaying weight when the setup is entered.

[21] ZERO ADJUSTMENT

Press:

0 - Skip zero adjustment.
1 - Record the current weight as the new zero reference.

[22] SPAN ADJUSTMENT

This step adjusts the span reference recorded in step **[19]**. Place a known test weight on the scale platform before entering the setup mode.

Press:

0 - Skip span adjustment.
1 - Access span adjust. Enter the value of the weight on the scale and press the **ENTER** key. Span adjust value entered must agree with the increment size of the scale.

[23 3] AUTO ZERO MAINTENANCE (AZM)

AZM removes small changes in zero caused by temperature change or build up of material on the platform. This step selects the range of weight around zero that AZM operates in. AZM will adjust for zero changes at the rate of 0.03 increments per second when the weight is within the AZM range. AZM will operate up to total weight equal to the pushbutton zero range selected in setup step **[25]**, ±2% or ±20% of scale capacity.

Selection	AZM Range	Legal-For-Trade Applications
0	AZM Disabled	Not Applicable
1	±0.5 Increment	Animal, Food and Retail Scales
2	±1 Increment	All other Industrial Scales
3	±3 Increment	Vehicle Scales

[24 1] AUTO ZERO CAPTURE AT POWER UP

If this step is enabled, the 8530 will attempt to capture zero at power up. Flashing **[E E E]** or **[-E E E]** is displayed if the 8530 is unable to capture zero.

Press:

0 - Disable Auto Zero Capture at Power Up
1 - Enable Auto Zero Capture, limited to ± 2% of Scale Capacity
2 - Enable Auto Zero Capture, limited to ± 10% of Scale Capacity

Note: USA and Canadian legal-for-trade applications limit zero capture at power up to ±2%.

[25 1] PUSHBUTTON ZERO RANGE

Pushbutton zero recaptures the center of zero reference. This function is used to compensate for material build up on the scale. Zero capture is inhibited if the scale is in motion.

Press:

0 - Disable Pushbutton Zero
1 - Enable Pushbutton Zero Capture, limited to ± 2% of Scale Capacity
2 - Enable Pushbutton Zero Capture, limited to ± 20% of Scale Capacity

Note: Canadian legal-for-trade applications are limited to ±2% pushbutton zero operation.

[26 4] MOTION DETECT WINDOW

The Model 8530 includes a stability detector (weight in motion) which requires three successive weight readings within the motion detect window for a "no motion" signal. Zero, tare and demand mode printing are inhibited during motion. Vehicle scales use selection 4, ±3 increments

Press:

0 - Motion Detect Disabled, not legal-for-trade.
1 - Motion Detected for weight change greater than ±0.5 Increment.
2 - Motion Detected for weight change greater than ±1 Increment.
3 - Motion Detected for weight change greater than ±2 Increment.
4 - Motion Detected for weight change greater than ±3 Increment.

[27 4] DISPLAY FILTERING RATE

The Model 8530 has a low pass, multi-pole vibration filter that is selectable for various conditions. The display settling time is slowed as heavier filtering is selected. Valid selections are from 0 (no filtering) to 5 (very heavy filtering).

[28] [XXXXXX] OVERCAPACITY BLANKING VALUE

Enter the weight value **[XXXXXX]** at which the 8530 indication will blank over capacity. Press the **ENTER** key to accept entry. Legal-for-trade applications must not exceed 105% of scale capacity. Default selection is capacity plus five increments.

[29 0] SCALE ACCUMULATOR

The scale accumulator adds the selected weight data to the 12 digit accumulator and increments the number of loads consecutive numbering counter when an outbound ticket is printed. If step **[72]** is enabled, then data is accumulated when a quick print ticket is printed.

Press:

0 - Accumulator Disabled
1 - Accumulate Net Weight
2 - Accumulate Gross Weight

Note: The **FUNCTION** key must be enabled, setup step **[36 1]** or **[36 2]**, and print interlock or autoprint must be selected, setup step **[62 1]** or **[62 2]**, to permit accumulation. Units switching should be disabled, setup step **[82 0]**, when accumulation is used.

[30] TARE AND DISPLAY TIMER GROUP

Enter the digits "3" then "0" to access the tare and display group. The 8530 begins at step **[31]** and advances through step **[39]**.

[31 2] Tare Mode

Tare is used to subtract the empty weight of the container or vehicle from the gross weight on the scale. Tare is inhibited if the scale is in motion. Refer to Section 5 for tare explanation.

Press:

0 - Tare Disabled.
1 - Pushbutton Tare Enabled, Keyboard Tare Disabled.
2 - Pushbutton Tare Enabled, Keyboard Tare Enabled.

[32 0] TARE INTERLOCKS

Tare interlocks meet legal-for-trade requirements by including the following restrictions:

Tare weights can be cleared only at gross zero. Tare can only be entered when the scale is the gross mode. Keyboard tare can be entered only at gross zero. Previous tare values must be cleared before a new tare value can be entered. Multiple or chain tares are inhibited.

Press:

0 - Disable Tare interlocks.
1 - Tare interlock enabled.

Note: Disable tare interlocks for setpoint or filling applications.

[33 0] KEYBOARD TARE IN LOW RANGE ONLY

Press:

0 - Keyboard tare is allowed up to total (high range) scale capacity.
1 - Keyboard tare may not exceed the low weight range capacity.

[34 0] AUTOCLEAR TARE

Press:

0 - Disable Autoclear Tare.
1 - Tare is automatically cleared when weight on the scale returns to within ±0.25 increments of gross zero.

[35 1] GROSS/NET SWITCHING

Gross/net switching permits the operator to display the gross weight on the scale without losing the current tare weight. Press the **GROSS/NET** key to toggle the display between the gross and net weight.

Press:

0 - Disable **GROSS/NET** key.
1 - Enable **GROSS/NET** key.

Note: **GROSS/NET** key is disabled if Autorange® is selected, step **[13 2]** or **[13 3]**.

[36 1] FUNCTION KEY ENABLE

This step selects the functions that can be accessed through the Function mode during normal operation. Time, date, setpoints, consecutive numbering, and report printing can only be accessed by using the **FUNCTION** key.

Press:

0 - Disable **FUNCTION** key.
1 - Enable **FUNCTION** key for all Functions Except Setpoints.
2 - Enable **FUNCTION** key for all Functions.

[37 1] MEMORY KEY

The **MEMORY** key is used to modify permanent records. The permanent records can be used for permanent stored tare weights, for accumulation by ID number or both.

Press:

0 - Disable **MEMORY** key.
1 - Enable **MEMORY** key.

[38] [1.000000] CONVERSION FACTOR PROGRAMMING

The conversion factor is used for conversion to alternate units not supported by the 8530, for example: bushels of wheat or corn, yards of concrete, etc. The converted value is equal to the weight reading multiplied times the conversion factor.

Press the **ENTER** key if you do not wish to modify the conversion factor. The 8530 will then accept the displayed conversion factor and advance to the converted value decimal point selection prompt.

To change the conversion factor press the **CLEAR** key.

[------.-] Select Conversion Factor Decimal Point

This selection determines the number of digits to the right of the decimal point in the conversion factor value.

Press:

0 - Moves the decimal point one position to the left.
1 or **ENTER** - Accepts displayed decimal point position and advances to conversion factor value entry.

[.] Enter Conversion Factor Value

Enter the conversion factor value using the numeric keys on the keyboard. Press the **ENTER** key when finished.

[2] Enter Converted Value Decimal Point Selection

Enter the desired number of digits that are to be printed to the right of the decimal point for the converted value. Valid selections are from zero to six.

[39] CONVERSION FACTOR DESCRIPTION

The conversion factor description can contain up to 12 ASCII characters, selected from the alphanumeric character coding Table 4-1. The conversion factor description can be printed in any of the demand format tickets (inbound, outbound or quickprint).

Press:

0 - Skip Conversion Factor Description Programming and return to double dash **[--]**.
1 or **ENTER** - Access Conversion Factor Description Programming.

[000000] Enter First Three Character Codes

The first three character codes of the conversion factor description are now displayed. Type in new character codes if desired. Press the **ENTER** key to accept the displayed values. Press the **CLEAR** key to erase the entered character data and permit the data to be typed in again. Repeat this process for each of the four groups of three characters until the desired conversion factor description has been entered. A character code 00 will terminate the description, no characters are printed after a 00 character.

Code	Printed Character	ASCII Value
01	(Space)	20
02	!	21
03	"	22
04	#	23
05	$	24
06	%	25
07	&	26
08	'	27
09	(	28
10	)	29
11	*	2A
12	+	2B
13	,	2C
14	-	2D
15	.	2E
16	/	2F
17	0	30
18	1	31
19	2	32
20	3	33
21	4	34
22	5	35
23	6	36
24	7	37
25	8	38
26	9	39
27	:	3A
28	;	3B
29	<	3C
30	=	3D
31	>	3E
32	?	3F
33	@	40

Code	Printed Character	ASCII Value
34	A	41
35	B	42
36	C	43
37	D	44
38	E	45
39	F	46
40	G	47
41	H	48
42	I	49
43	J	4A
44	K	4B
45	L	4C
46	M	4D
47	N	4E
48	O	4F
49	P	50
50	Q	51
51	R	52
52	S	53
53	T	54
54	U	55
55	V	56
56	W	57
57	X	58
58	Y	59
59	Z	5A
60	[	5B
61	\	5C
62	]	5D
63	^	5E
64	_	5F
65	`	60
66	a	61

Code	Printed Character	ASCII Value
67	b	62
68	c	63
69	d	64
70	e	65
71	f	66
72	g	67
73	h	68
74	i	69
75	j	6A
76	k	6B
77	l	6C
78	m	6D
79	n	6E
80	o	6F
81	p	70
82	q	71
83	r	72
84	s	73
85	t	74
86	u	75
87	v	76
88	w	77
89	x	78
90	y	79
91	z	7A
92	<BEL>	07
93	<SO>	0E
94	<SI>	0F
95	<DC1>	11
96	<DC2>	12
97	<DC3>	13
98	<DC4>	14
99	<ESC>	1B

Table 4-1 Alphanumeric Character Codes

[40] JN PORT GROUP

Enter the digits "4" then "0" to access the JN port group. The 8530 begins with step **[41]** and advances through step **[49]**.

[41 1] OUTPUT DATA FORMAT

The JN port supplies two modes of data output, demand or continuous. Demand output is one of the three ticket formats (inbound, outbound or quick print) and is output when a print request is made either by means of the **PRINT** key, autoprint function or by an external print request. The standard continuous format is output every A/D update.

Press:

0 - Select Continuous Format Output
1 - Select Demand Mode Output

[42 9600] Baud Rate

Select the desired baud rate for the JN port by toggling through the available selections using the **0** key. When the desired baud rate is displayed, press the **1** key or the **ENTER** key to accept the selection. Baud rate selections are: 300, 1200, 2400, 4800 and 9600.

[43 2] DATA BITS, PARITY BIT

Select the desired data format for the JN port. METTLER TOLEDO products normally use 7 data bits, even parity.

Press:

0 - 7 Data Bits, No Parity Bit
1 - 7 Data Bits, Odd Parity Bit
2 - 7 Data Bits, Even Parity Bit
3 - 8 Data Bits, No Parity Bit

Note: 7 data bits, even parity is required for Models 307, 8806 and 8860 printers to operate.

[44 0] CHECKSUM

Checksum is used to detect errors in the transmission of data. Checksum is defined as the 2's complement of the seven low order bits of the binary sum of all characters preceding the checksum character, including the <STX> and <CR> character. The checksum calculation for multiple lines of data includes the <LF> character from the previous line of data.

Press:

0 - Disable Checksum
1 - Enable Checksum

[45 1] STOP BITS

Press:

1 - Select 1 stop bit.
2 - Select 2 stop bits.

[46] ALPHANUMERIC FIELD 1

The 8530 provides four custom programmable alphanumeric fields that can be printed on any of the demand format tickets, (inbound, outbound or quickprint). The alphanumeric fields can contain up to 24 ASCII characters. For valid alphanumeric fields, refer to the character coding Table 4-1, located in setup step **[39]** description.

Press:

0 - Skip Alphanumeric Field Programming and advance to next step.
1 or **ENTER** - Access Alphanumeric Field Programming.

[000000] Enter First Three Character Codes

The first three character codes of the alphanumeric field are now displayed. Type in new character codes if desired. Press the **ENTER** key to accept the displayed values. Press the **CLEAR** key to erase the entered character data and permit the data to be typed in again. Press the **CLEAR** key twice to exit the character entry mode.

Repeat this process for each of the eight groups of three characters until the desired alphanumeric field has been entered. A character code of 00 will terminate the alphanumeric field, no further characters are printed after a 00 character.

Note: Alphanumeric fields 2, 3 and 4 are programmed using the same procedure as alphanumeric field 1, setup step **[46]**.

[47] ALPHANUMERIC FIELD 2

Press:

0 - Skip Alphanumeric Field Programming and advance to next step.
1 or **ENTER** - Access Alphanumeric Field Programming.

[48] ALPHANUMERIC FIELD 3

Press:

0 - Skip Alphanumeric Field Programming and advance to next step.
1 or **ENTER** - Access Alphanumeric Field Programming.

[49] ALPHANUMERIC FIELD 4

Press:

0 - Skip Alphanumeric Field Programming and advance to next step.
1 or **ENTER** - Access Alphanumeric Field Programming.

[50] JW PORT GROUP

Enter the digits "5" then "0" to access the JW port group. The 8530 begins with step **[51]** and advances through step **[55]**.

[51 0] OUTPUT DATA FORMAT

The JW port supplies two modes of data output: demand and continuous. Refer to step **[41]** description.

Press:

0 - Select Continuous Format Output
1 - Select Demand Mode Output

Note: The 8530 will only permit one of the two serial ports to be configured for demand mode output. Both ports can be configured for continuous mode without any conflict.

[52 4800] Baud Rate

Select the desired baud rate for the JW port by toggling through the available selections using the **0** key. When the desired baud rate is displayed, press the **1** key or the **ENTER** key to accept the selection. Baud rate selections are: 300, 1200, 2400, 4800 and 9600.

[53 2] DATA BITS, PARITY BIT

Select the desired data format for the JW port. METTLER TOLEDO products normally use 7 data bits, even parity.

Press:

0 - 7 Data Bits, No Parity Bit
1 - 7 Data Bits, Odd Parity Bit
2 - 7 Data Bits, Even Parity Bit
3 - 8 Data Bits, No Parity Bit

Note: 7 data bits, even parity is required for Models 307, 8806 and 8860 printers to operate.

[54 0] CHECKSUM

Checksum is used to detect errors in the transmission of data. Checksum is defined as the 2's complement of the seven low order bits of the binary sum of all characters preceding the checksum character, including the <STX> and <CR> character. The checksum calculation for multiple lines of data includes the <LF> character from the previous line of data.

Press:

0 - Disable Checksum
1 - Enable Checksum

[55 1] STOP BITS

Press:

1 - Select 1 stop bit.
2 - Select 2 stop bits.

[60] DEMAND MODE OUTPUT GROUP

Enter the digits "6" then "0" to access the demand mode output group. The 8530 begins with step **[61]** and advances through step **[79]**. Steps 67 and 70 are skipped.

[61 1] AUTOCLEAR TARE AFTER PRINT

Press:

0 - Tare is retained after printing, tare must be manually cleared.
1 - Tare is automatically cleared after printing.

[62 0] PRINT INTERLOCK/AUTOPRINT

Print interlock prevents repeat printing. If enabled, print interlock requires that the weight on the scale return to zero (or below the minimum print selection) and then settle to a weight greater than the minimum print selection before a subsequent print request is acted on.

Autoprint causes a print request to occur every time the weight on the scale settles on a positive value larger than the minimum print selection. **DO NOT USE AUTOPRINT WITH A MINIMUM PRINT SELECTION OF 0 AS THIS WILL CAUSE ERRATIC OPERATION OF AUTOPRINT.**

Press:

0 - Normal Print
1 - Select Print Interlock
2 - Select Autoprint

[63 0] MINIMUM PRINT

The displayed weight must exceed the minimum print selection to allow a print function to occur. Minimum print also controls resetting autoprint and print interlock.

Press:

0 - No Minimum Print
1 - Minimum Print = 10 Increments
2 - Minimum Print = 100 Increments
3 - Minimum Print = 500 Increments

NOTE: Minimum print must be set to a non-zero value for autoprint to operate properly.

[64 1] NET SIGN CORRECTION

This step allows storage of a gross weight as well as a tare weight in the tare register. When the stored tare weight is larger than the weight currently on the scale, the printer output is rearranged so that the larger value is the gross weight, the smaller value is the tare weight and the net weight is positive. The display will show a negative value but the data printed is a positive net weight.

Press:

0 - Net sign correction is disabled.
1 - Net sign correction is enabled.

[65 1] ENABLE STX CHARACTER

Normally, demand mode output has an ASCII Start of Text <STX> character as the beginning of the data transmission. The leading <STX> character can be inhibited for application that are not compatible with the <STX> character. The <STX> character is required for use with Mettler-Toledo Printers Models 307, 8806 or 8860.

Press:

0 - Do not send <STX> character.
1 - Send the <STX> character.

[66 1] FUNCTION 9 ACCESS TO TICKET SETUP

The 8530 permits access to some of the setup steps by pressing the **FUNCTION** key, the **9** key, and then entering the four digit password. Function 9 access of setup does not require the setup jumper be installed. If step 66 is enabled, the Function 9 access will include the conversion factor, conversion factor description, and the demand mode ticket formats (quickprint, inbound and outbound). The setup steps always accessible by Function 9 are:

[46] - Alphanumeric Field 1
[47] - Alphanumeric Field 2
[48] - Alphanumeric Field 3
[49] - Alphanumeric Field 4

[71] - Autoclear ID after Print (Quickprint)
[73] - Time and Date Format
[75] - Extra Lines after Quickprint Ticket
[77] - Extra Lines after Inbound Ticket
[79] - Extra Lines after Outbound Ticket

Press:

0 - Function 9 access to setup limited to steps listed above.
1 - Function 9 access to setup includes steps listed above plus the steps listed below.

[37] - Memory key Enable
[38] - Conversion Factor
[39] - Conversion Factor Description

[74] - Quickprint Ticket Format
[76] - Inbound Ticket Format
[78] - Outbound Ticket Format

[68 2] PRINTED WEIGHT UNIT DESCRIPTION

Press:

0 - No weight units description printed.
1 - Print display weight units description
2 - Print display weight units and conversion descriptions.

[69 0.0] DEMAND MODE OUTPUT TIME DELAY

This step adds a time delay (selectable from 0.0 to 2.5 seconds) between each line of demand mode data output. The time delays are provided to prevent overflow of the input buffer of a printer when large tickets or reports are printed at baud rates faster than 300 baud. If erratic printing occurs then increase the value in this step until the problem is corrected.

Enter the two digit value for the time delay desired, then press the **ENTER** key. Valid time delay values are from 0.0 to 2.5 seconds. The leading 0 must be entered for time delays values smaller than 1.0 seconds.

[71 1] AUTOCLEAR ID AFTER QUICKPRINT

Press:

0 - Quickprint user ID must be manually cleared.
1 - Quickprint user ID is automatically cleared after a quickprint.

[72 1] CONSECUTIVE NUMBERING INCREMENTED AFTER QUICKPRINT

Press:

0 - Consecutive numbering is not affected by quickprint.
1 - Consecutive numbering is incremented after a quickprint.

[73 4] Time/Date Format Selection

This step selects the formats that time and date are printed. Date is entered in Function 7 in the format selected here. Time is always entered in Function 6 as 24 hour military time.

Date Format Time Format

Press:

1 - MM DD YY HH:MM (24 hour format)
2 - DD.MM.YY HH:MM (24 hour format)
3 - YY MM DD HH:MM (24 hour format)
4 - MM DD YY HH:MM PM (12 hour format)

[74] ACCESS QUICKPRINT TICKET FORMAT

Press:

0 - Skip quickprint ticket format programming.
1 - Access quickprint ticket format programming.

FUNCTION - Relocate existing ticket format position on printout.

[RRCCVV] EDIT PRINT FIELDS (Displayed if **1** key is pressed at **[76]** prompt.

Ticket format can have up to 24 print field entries. Each print field entry consists of a six digit value **[RRCCVV]**. The "RR" and "CC" values define where the print field will be printed. The "RR" value is the number of rows or lines down from the top of ticket. The "CC" value is the number of columns or characters from the left edge of ticket. The "VV" value is the literal text field or variable date field to be printed. Refer to Table 4-2 for print field definitions. Items printed inside double quote marks "" are literal text fields and are printed exactly as shown in Table 4-2. Variable print fields are replaced with the actual value of the variable selected. Both literal text fields and variable data fields can be repeated as many times as desired in the ticket format.

Enter a print field of **[000001]** to terminate the ticket. Any print fields after a **[000001]** entry are not printed. If you don't want a particular ticket format to print (inbound, outbound or quickprint) then enter a print field of **[000001]** as the first print fields. Incorrect entries can be corrected by pressing the **CLEAR** key once then reentering the print field. Press the **CLEAR** key twice to exit the print field setup mode.

Code	Literal Text or Variable Field	Length
01	"GROSS"	5
02	"TARE"	4
03	"NET"	3
04	"TIME"	4
05	"DATE"	4
06	"VEHICLE"	7
07	"ID"	2
08	"NO."	3
09	"CN"	2
10	"CONVERSION FACTOR"	17
11	Gross Weight	9 to 15
12	Tare Weight	9 to 15
13	Net Weight	9 to 12
14	Time	8
15	Date	8
16	Memory Address	2
17	User ID	6
18	Quick Print User ID	12
19	Consecutive Number	6
20	Conversion Factor	7
21	Converted Gross Weight	8 to 21
22	Converted Tare Weight	8 to 21
23	Converted Net Weight	8 to 21
24	Displayed Weight	9 to 15
25	Converted Displayed Weight	8 to 21
26	Stored Inbound Memory Address	2
27	Stored Inbound User ID	6
30	"BRUTO"	5
31	"TARA"	4
32	"NETO"	4
33	"BRUTTO"	6
34	"TARAR"	5
35	"NETTO"	5
36	"NUMBER"	6
37	"CUSTOMER"	8
38	"PRODUCT"	7
39	Conversion Factor Description	12
40	"INBOUND"	7
41	"OUTBOUND"	8
42	"WEIGHT"	6

Table 4-2 Print Fiel

Code	Literal Text or Variable Field	Length
46	Alphanumeric Field 1	24
47	Alphanumeric Field 2	24
48	Alphanumeric Field 3	24
49	Alphanumeric Field 4	24
50	"LIQUIDO"	7
51	"DATA"	4
52	"HORA"	4
53	"VEICULO"	7
54	"NR" 2	
55	"NC" 2	
56	"FACTO DE CONVERSA"	17
57	"KONDE"	5
58	"NUMMER"	6
59	"PRODUKT"	7
60	"TID" 3	
61	"DATA"	4
62	"BIL" 3	
63	"ANTAL"	5
64	"UHRZEIT"	7
65	"DATUM"	5
66	"KFZ-NR"	6
67	"KENNZEICHEN"	11
68	"FORTL NC"	8
70	"T" 1	
71	"t" 1	
72	"CU YD"	5
73	"BU" 2	
74	"BRL" 3	
75	"GAL" 3	
83	Commodity Net Weight	8
84	Commodity Description	9
85	Commodity Conversion Factor	8
86	Commodity Memory Address	2
87	Commodity User ID	6
92	BEL (07h)	1
93	SO (0Eh)	1
94	SI (OFh)	1
95	DC1 (11h)	1
96	DC2 (12h)	1
97	DC3 (13h)	1
98	DC4 (14h)	1
99	ESC (1Bh)	1

Print Field Definition Notes:

Double quote marks "" around literal text fields are not printed.

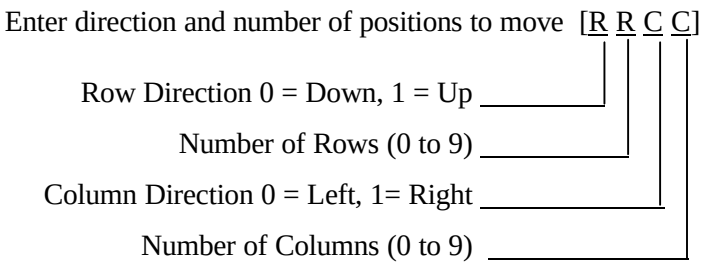
The gross, tare, net and displayed weight print fields are 9 characters in length. If weight units are printed, setup step **[68 1 or 2]**, then the fields will be 11 or 12 characters long to accommodate the lb, kg, or t legend. The inbound stored weight field will add a (1) legend printed after it which increases the total length to 15 characters.

The converted gross, tare, net and displayed weight fields are 8 characters in length. If converted description is printed, setup step **[68 2]** then the fields will be lengthened by from 2 to 13 characters to accommodate the commodity description.

[0000] RELOCATE TICKET FORMAT (Displayed if **FUNCTION** key is pressed at **[74]** prompt.

Once a complete ticket format has been entered and step **[74]** has been exited, the position of the entire ticket format can be adjusted up, down, left or right on the paper without having to reenter all print field entries. This is done by accessing setup step **[74]** and pressing the **FUNCTION** key.

The 8530 then displays the **[0000]** prompt. The 8530 is waiting for you to enter a four digit number "RRCC" that will tell the 8530 how far and in what direction you want the ticket to be moved on the paper.



[75 24] LINE FEEDS AFTER QUICKPRINT TICKET

Enter the desired number of additional blank lines to be output after the end of the quickprint ticket. Valid selections are from 00 to 99. Press the **ENTER** key to accept the displayed value. This step is primarily used with the 8843 document printer to advance the paper out of the printer far enough to permit the form to be torn off. An entry of "00" is normally used with the 8806 ticket printer.

[76 0] ACCESS INBOUND TICKET FORMAT

The inbound ticket format is printed when a vehicle weight is stored in memory. Refer to setup step **[74]** description for print field entry procedure.

[77 23] LINE FEEDS AFTER INBOUND TICKET

Enter the desired number of additional blank lines to be output after the end of the inbound ticket. Valid selections are from 00 to 99. Press the **ENTER** key to accept the displayed value. Refer to setup step **[75]** description.

[78 0] ACCESS OUTBOUND TICKET FORMAT

The outbound ticket format is printed when a vehicle weight is stored in memory. Refer to setup step **[74]** description for print field entry procedure.

[79 23] LINE FEEDS AFTER OUTBOUND TICKET

Enter the desired number of additional blank lines to be output after the end of the outbound ticket. Valid selections are from 00 to 99. Press the **ENTER** key to accept the displayed value. Refer to setup step **[75]** description.

[80] INTERNATIONAL GROUP

Enter the digits "8" then "0" to access the demand mode output group. The 8530 begins with step **[81]** and advances through step **[89A]**.

[81 0] ANALOG AND DISPLAY VERIFY

European legal-for-trade applications require analog and display verification. The display test continuously checks the display segments for proper functioning. An **[E5]** error code is displayed if the display verify test is failed. The analog verify test is a check on the analog to digital converters in the Power cells. The analog verify test is performed every four hours, an **[E6]** error code is displayed if the analog verify test is failed.

Press:

0 - Disable analog/display verify tests.
1 - Enable analog/display verify tests.

[82 0] lb/kg UNITS SWITCHING

Press:

0 - Disable lb/kg switching
1 - Enable lb/kg switching

Notes:

1: lb/kg switching is inhibited until zero has been captured after power up.
2: lb/kg switching should be disabled for accumulation, setpoint or scale memory applications.

[83 1] POWERUP WEIGHT UNITS

Press:

0 - Select kg powerup weight units.
1 - Select lb powerup weight units.

[84 0] MEASURED WEIGHT BRACKETED PRINTING

European legal-for-trade applications require a leading "<" and a trailing ">" bracket around printed weights if the weight is an actual measured value rather than a keyboard "hand" entered value. If both the gross and tare weight values are actual, measured values then the net weight field will also have brackets printed around it.

0 - Disable Measured Weight Brackets.
1 - Enable Measured Weight Brackets.

[85 0] PRINT "PT" FOR KEYBOARD ENTERED TARE

Certain export legal-for-trade applications require printing the abbreviation "TRH" after keyboard "hand" entered tare weights and the abbreviation "NETC" after net weights that result from keyboard entered tare. German legal-for-trade applications use the abbreviation "PT" to indicate hand (keyboard) entered tare.

0 - No Tare Weight Legend
1 - Print "PT" after hand entered tare.
2 - Print "TRH" after hand entered tare.

[86 0] REMOTE ASCII INPUT CHARACTER

Both the JN and JW ports on the 8530 can be use to accept ASCII control characters to emulate every key on the 8530 keyboard. Command characters are also to lock the keyboard and blank the display. Refer to Table 4-3 for ASCII characters the 8530 will respond to.

Note: The W6 jumper on the 8530 Main PCB MUST be (OUT), not shorting the pins together, for the RS-232 interface of the JN serial port to accept ASCII characters.

Press:

0 - Disable ASCII input for both JN and JW port.
1 - Enable ASCII input for both JN and JW port.

ASCII Character	Key Equivalent or Function
A	**lb/kg**
B	Blank Display
C	**Clear**
E	**Enter**
F	**Function**
I	**ID**
L	Lock Keyboard
M	**Memory**

ASCII Character	Key Equivalent or Function
N	**Gross/Net**
P	**Print**
T	**Tare**
U	Unlock Keyboard
W	Display Weight
Z	**Zero**
0	0
1	1

ASCII Character	Key Equivalent or Function
2	**2**
3	**3**
4	**4**
5	**5**
6	**6**
7	**7**
8	**8**
9	**9**

Table 4-3 Remote ASCII Serial Input Commands

Note: Keyboard equivalents to the ASCII characters in Table 4-3 are printed in **Bold**.

[87 1] CONTACT CLOSURE INPUT

The JN port 20 mA current loop input can be used as a contact closure input for a remote zero, tare clear, blank display or lock keyboard command. The contact closure input is a momentary contact (0.3 to 3 seconds) for remote print, zero, tare, clear selections. The blank display and lock keyboard functions occur as long as the contact closure input is made. The contact closure input must be disabled for ASCII character input on the JN port, **[86 1]**.

Number	Contact Closure Input Selection	Contact Type
0	Input Disabled.	None
1	Remote print command.	Momentary
2	Remote zero command.	Momentary
3	Remote tare command.	Momentary
4	Remote clear command.	Momentary
5	Blank display.	Maintained
6	Lock keyboard.	Maintained

Refer to Section 6.3.2. for wiring information on the contact closure input.

[88 0] NET ZERO CURSOR

Press:

0 - Zero cursor is illuminated at gross zero only.
1 - Zero cursor is illuminated at both gross and net zero.

Notes: US and Canadian legal-for-trade applications require zero cursor at gross zero only. Australian legal-for-trade applications require zero cursor at gross and net zero.

[89 0] STORED TARE WEIGHTS IN PERMANENT SCALE MEMORIES

Press:

0 - Permanent registors are for accumulation only, no tare weights in permanent registers.
1 - Permanent registers are for stored tare weights and accumulation.

[89A 0] INBOUND STORED WEIGHT IN PERMANENT MEMORIES

Step **[89A]** controls whether permanent registers can be used to store inbound tare weights.

If this step is enabled, then the inbound weight can be stored in the same permanent register used for data accumulation. Permanent registers used for inbound stored weight operation must be created with a stored tare value of 0.

If this step is disabled, then an inbound weight can only be stored in a temporary memory address, outbound data can be accumulated into any permanent register with a stored tare value of 0.

Press:

0 - Disable Storing Inbound Weight in Permanent Registers
1 - Enable Storing Inbound Weight in Permanent Registers

Note: Step **[89A]** is skipped if stored tare weights in permanent registers is disabled, setup step **[89 0]**.

[90] DIAGNOSTICS GROUP

The steps in the diagnostics group are accessed individually. The diagnostics group includes steps **[91]** through **[99]**. Enter the digits of the specific step you wish to access. The diagnostic steps are normally accessed only during initial installation or in the event of a malfunction.

[91] MANUALLY ADDRESSING AN INDIVIDUAL POWER CELL

Step **[91]** is used to manually force an address into a Power cell that already has been addressed. Step **[91]** can also be used to clear the addresses of all Power cells to the factory default address of 240. An **[E8]** error code is displayed if step **[91]** is unsuccessful in addressing a Power cell.

With the 8530 displaying **[--]**, Press the **9** then the **1** key. The 8530 then displays **[91]**.

Press:

0 - To skip manual Power cell addressing and return to double dash display, **[--]**.
1 - To access manual Power cell addressing and advance to the **[LC OFF]** display.

[LC OFF] LOAD CELL POWER OFF

When **[LC OFF]** displayed, the 8530 has removed all power to the Power cells. Disconnect all Power cells except the Power cell that is to be readdressed. Press the **ENTER** key.

[CELL] ENTER CELL ADDRESS

Enter the new address (from 01 to 24) for the Power cell. Enter an address of **[00]** to readdress the power cell to the default factory address of 240.

Note: If step **[91]** is accessed with more than one Power cell connected, the Power cell with the current highest address is readdressed. If **[00]** is entered for a new address at the **[CELL]** display prompt, then all Power cells connected to the 8530 are readdressed to the default factory address of 240.

[LC OFF] LOAD CELL POWER OFF

When **[LC OFF]** is displayed, the 8530 has removed all power to the Power cells. If finished with addressing Power cells then reconnect all Power cells. Press the **ENTER** key. The 8530 will then return to the double dash **[--]** prompt. If more Power cells are to be addressed then reenter **[91]**.

Note: Power Cell addressing is normally performed during initial installation ONLY! Addresses are stored in the Power Cell. Power Cells do not need to be readdressed if the 8530 Logic PCB is replaced or the 8530 software is upgraded. Once a Power Cell has been successfully addressed it should never need to be addressed again. If a Power Cell has lost its address, then the Power cell is defective and **MUST** be replaced. The only reason to readdress a working Power Cell is if you wish to move it to a different location in the weighbridge.

IF A POWER CELL THAT HAS BEEN OPERATING IS NO LONGER COMMUNICATING, DISPLAYING AN [E8] ERROR, DO NOT TRY TO READDRESS THE POWER CELL. THE PROBLEM IS MOST LIKELY DUE TO A BAD CABLE, A DEFECTIVE POWER CELL, OR A DEFECTIVE 8530 LOGIC PCB.

[92] AUTOMATIC ADDRESSING A REPLACEMENT POWER CELL

This step is used to address a replacement Power Cell. This step automatically addresses a new (default address of 240) Power Cell to the same address as the Power Cell that is being replaced. This step will work correctly only if there is only one Power cell to be replaced and if the replacement Power Cell has an address of 240. If more than one Power cell is to be replaced or the replacement Power Cell has already been addressed then use step **[91]** to manually address the replacement Power cell.

With the 8530 displaying **[--]**, Press the **9** then the **2** key. The 8530 then displays **[92]**.

Press:

0 - To skip automatic Power cell addressing and return to double dash display, **[--]**.

1 - To access automatic Power cell addressing and advance to the **[LC OFF]** display.

[LC OFF] LOAD CELL POWER OFF

When **[LC OFF]** is displayed, the 8530 has removed all power to the Power cells. Disconnect the defective Power cell and connect the replacement Power cell.

Press the **ENTER** key. The 8530 applies power to the Power cells. The 8530 then checks for a missing cell address. Once the 8530 has identified the missing Power cell address it then programs the address into the replacement Power Cell. After the replacement Power Cell has been installed and addressed then perform step **[93]**, for the replacement Power cell.

[93] AUTOMATIC SINGLE SECTION SHIFT ADJUST

Individual automatic shift adjust provides the ability to perform a shift adjust for a single section (or individual Power Cell if individual cell shift adjust mode has been selected, step **[02 0]**). Shift adjust does not require the use of certified test weights, but the load used must be concentrated directly over the section or cell for best results.

With the 8530 displaying **[--]**, Press the **9** then the **3** key. The 8530 then displays **[93]**.

Press:

0 - To skip automatic single section shift adjust and return to double dash display, **[--]**.
1 - To access automatic single section shift adjust procedure.

[SEC] or [CELL] ENTER SECTION OR CELL TO BE SHIFT ADJUSTED

Enter the section or Power cell address to be shift adjusted and press the **ENTER** key.

[E SCL] EMPTY SCALE

Remove all weights from the scale platform then press the **ENTER** key. The display then counts down from 16 to 1 as a zero reference weight is recorded for the scale.

[LOAD XX] PLACE THE TEST LOAD OVER SECTION OR CELL TO BE SHIFT ADJUSTED

Place the load to be used for the shift adjustment directly over the specified section or Power cell and press the **ENTER** key. The display then counts down from 16 to 1 as a weight reading is recorded.

[LOAD XX] PLACE THE TEST LOAD OVER COMPARISON SECTION OR CELL

Place the load to be used for the shift adjustment directly over a known section or Power cell and press the **ENTER** key. The display then counts down from 16 to 1 as a weight reading is recorded.

[E SCL] EMPTY SCALE

Remove all weights from the scale platform then press the **ENTER** key. The display then counts down from 16 to 1 as the zero reference weight is verified. The 8530 then returns to the double dash display **[--]**.

The section or cell has now been shift adjusted. Exit the setup mode and retest the weighbridge for shift errors. If shift errors persist then the test weight you are using during the shift adjust may not by concentrated sufficiently over the sections or cell. Verify that the raw count output of the individual Power cells is within the range specified in the indicator setup section of the weighbridge installation manual for maximum raw count deviation. Perform final shimming as described in the weighbridge installation manual if necessary and repeat the shift adjust procedure as necessary.

[94 0] TEMPORARILY RESET SHIFT CONSTANTS

This step permits you to observe the weighbridge weighing performance as though no shift adjust compensation had been performed. Using this function does not erase the actual shift adjust coefficients they are simply not used while this step is enabled. If power is cycled to the 8530 or if calibration is attempted, step **[19]**, then this step is automatically disabled.

With the 8530 displaying **[--]**, Press the **9** then the **4** key. The 8530 then displays **[94 0]**.

Press:

0 - Normal operation, shift adjust coefficients are used.
1 - Test mode enabled, shift coefficients are not used.

[95 0] DISPLAY EXPANDED COUNTS

This step gives access to an expanded display. The number displayed is equal to the number of increments that would normally be displayed times ten. For example a displayed weight of 10,000 lb is actually 500, 20 lb increments (500 X 20 = 10,000). If step 95 is enabled and 10,000 lb is placed on the weighbridge then the 8530 would display 5000 with each count being equal to 2 lb.

With the 8530 displaying **[--]**, Press the **9** then the **5** key. The 8530 then displays **[95 0]**.

Press:

0 - Display normal weight.
1 - Display increments times ten.

[96 0] MANUAL SHIFT ADJUST

Manual shift adjust is used as a last resort to remove shift errors that the automatic shift adjust, steps **[18]** or **[93]**, can't eliminate. Problems with shift adjustment are usually caused by: a mechanical bind in the weighbridge, an incorrectly shimmed weighbridge, or an insufficient concentration of the test weight over the section or Power Cell during shift adjust.

With the 8530 displaying **[--]**, Press the **9** then the **6** key. The 8530 then displays **[96 0]**.

Press:

0 - Skip manual shift adjust and return to double dash display, **[--]**.

1 - Enable manual shift adjust and return to double dash display, **[--]**.

Note: The shift adjust procedure is performed in the normal weight mode. The manual shift adjust procedure is a trial and error method of adjusting the shift compensation. The procedure may have to be repeated several times in order to achieve the desired weight reading. Each time the procedure is repeated, enter a different value for the **[LOAD A]** prompt. Once the **[LOAD B]** value has been entered, it is not necessary to re-enter it. When the 8530 prompts for **[LOAD B]**, press the **ENTER** key.

Manual Shift Adjust Procedure:

To use manual shift adjust, enter the setup mode and enable manual shift adjust, step **[96 1]**, then exit the setup mode. Once the setup mode is exited, the 8530 will display expanded weight at ten times the normal resolution, (displayed weight resolution will be by 2 lb increments if 8530 is programmed for 20 lb increments).

Place the test weight over the section or cell to be adjusted. The weight value displayed is the **LOAD B** value used during the shift adjust procedure, record this number.

Press the **FUNCTION** key then the **0** key.

[SEC] or [CELL] ENTER SECTION OR CELL TO BE SHIFT ADJUSTED

Enter the section number or Power cell address to be shift adjusted and press the **ENTER** key.

[LOAD A] ENTER THE TARGET WEIGHT VALUE

Enter the desired target value (actual weight of the test weight on the weighbridge), and press the **ENTER** key.

[LOAD B] ENTER THE ORIGINAL INCORRECT WEIGHT VALUE

Enter the original weight value displayed when the test weight was first placed on the weighbridge, then press the **ENTER** key.

After a few seconds the 8530 will display a new weight reading which will be closer to the correct weight.

If a mistake is made during entry, press the **ZERO** key to back-up a step. Pressing the **ZERO** key at the **[CELL]** or **[SEC]** display to abort the manual shift adjust procedure.

Note: The manual shift adjust procedure may not totally correct the shift error on the first attempt. If the displayed weight value is still out of tolerance after performing the manual shift adjust, repeat the manual shift adjust procedure until the weight reading is correct.

Once the shift adjustment is completed, enter the setup mode and disable manual shift adjustment, step **[96 0]**. The 8530 will then display **[SA CAL]**. Press the **1** key to permanently store the new shift constants. If you press the **0** key at this point the changes made with manual shift adjustment are lost and the shift constants will revert back to their previous values.

After the manual shift adjust procedure is completed, it may be necessary to recalibrate the scale as span or zero may have been affected. Verify that all sections weigh within tolerance and then recalibrate the scale using step **[19]** if necessary.

Manual Shift Adjust Example:

Displayed value with weight concentrated over section 1 is equal to 13458 lb. The target value (actual test weight value) is equal to 13500 lb, with a resulting error of 42 lb.

Press the **FUNCTION** key then the **0** key.

Enter **01** for section number followed by the **ENTER** key.

After **[LOAD A]** is displayed, enter "13500", and press the **ENTER** key.

After **[LOAD B]** is displayed, enter "13458", and press the **ENTER** key.

The adjusted weight is now displayed. If the displayed weight did not reach the desired target value of 13500, then repeat the procedure and enter a larger value for the **[LOAD A]** value. If the displayed weight is over the desired target value then repeat the procedure and enter a smaller **[LOAD A]** value.

[97] ACCESS SHORT CUT CALIBRATION DATA

This step provides direct access to the span, zero, and shift adjust coefficients. In the event the 8530 Main PCB is replaced, the 8530 can be recalibrated by entering the previously recorded short cut calibration data. **SHIFT ADJUST AND RECALIBRATION WITH TEST WEIGHTS IS NOT REQUIRED**, if the short cut calibration data is entered into a replacement 8530 Main PCB.

With the 8530 displaying **[--]**, Press the **9** then the **7** key. The 8530 then displays **[97]**.

Press:

0 - Skip Short Cut Calibration and return to double dash **[--]** display.
1 - Access Short Cut Calibration Display and or Modify.

PRINT - Print Short Cut Calibration Values.

[97A] DISPLAY SPAN VALUE

[X.XXXXXX]

The span value is displayed. Enter a new value if desired. Press the **ENTER** key to accept the displayed value.

[97B] DISPLAY ZERO VALUE

[XXXXXXX]

The zero offset value is displayed. Enter a new value if desired. Press the **ENTER** key to accept the displayed value.

[SEC 01] or [CELL 01] DISPLAY SHIFT VALUE FOR SECTION 01 OR POWER CELL 01

The shift adjust value for section 01 is displayed, (or for cell 01 if individual cell adjust is selected, step **[02 0]**). Enter a new value if desired. Press the **ENTER** key to accept the displayed value.

[SEC XX] or [CELL XX] DISPLAY SHIFT VALUE FOR LAST SECTION OR POWER CELL

The shift adjust value for the next section (XX) is displayed, (or for cell (XX) if individual cell adjust is selected, step **[02 0]**). Enter a new value if desired. Press the **ENTER** key to accept the displayed value. Each time the **ENTER** key is pressed this step is repeated for each section or cell in the weighbridge.

[SA CAL] SAVE CALIBRATION DATA ?

Press the **1** key to permanently store the entered calibration data. If you press the **0** key at this point all calibration values entered are lost and the calibration data will revert back to their previous values.

[98 0] LOAD DEFAULT PARAMETERS

If this step is enabled, the default "factory" settings will replace the current setup parameters. Items marked with an "*" are not affected by step **[98]** and will retain their current values.

With the 8530 displaying **[--]**, Press the **9** then the **8** key. The 8530 then displays **[98 0]**.

Press:

0 - Bypass load default parameters
1 - Advance to **[LOAd]** prompt

[LOAd] ARE YOUR SURE YOU WANT TO LOAD DEFAULT PARAMETERS?

Press:

0 - A second chance to bypass load default parameters

1 - Load default parameters as listed in Table 4-4.

Default Parameters					
Parameter	**Value**	**Parameter**	**Value**	**Parameter**	**Value**
02	*	36	1	68	2
03	*	37	1	69	0.0
04	*	38	0		
				71	1
11	*	41	1	72	1
13	*	42	9600	73	4
14	*	43	2	74	*
15	*	44	0	75	*
16	*	45	1	76	*
17	*			77	*
		51	0	78	*
23	3	52	4800	79	*
24	2	53	2		
25	2	54	0	81	*
26	4	55	1	82	1
27	1	56	2	83	*
28	*	57	0	84	0
29	1			85	2
		61	1	86	1
31	2	62	0	87	0
32	0	63	0	88	0
33	0	64	1	89	1
34	0	65	1	89A	0
35	1	66	1		

Table 4-4 Load Default Parameters

Note: Items marked with a * are not effected by load default parameters, setup step **[98]**.

[99] DISPLAY RAW COUNT OUTPUT OF INDIVIDUAL POWER CELLS

This step displays the raw count output of individual Power cells. Step **[99]** is used to verify that the 8530 is communicating with individual Power cells and to determine that the Power cells have been shimmed correctly. An error code is displayed if the 8530 is unable to communicate with the specified Power cell.

With the 8530 displaying **[--]**, Press the **9** then the **9** key. The 8530 then displays **[99]**.

Enter the address of the Power cell you wish to view (01 to 24) then press the **ENTER** key. The raw count output of the cell is then displayed. Press the **ENTER** key to display the raw count output of the next cell. Press the **CLEAR** key to return to the double dash **[--]** display. If a cell address of 00 is entered, the 8530 will return to the double dash **[--]** display.

Note: It is highly recommended that the raw count output of each cell be recorded after installation is completed. This data can be very useful troubleshooting information if a weighing problem occurs later.

4.3 FINAL INSTALLATION INSTRUCTIONS

4.3.1 Record Setup Parameters

Once the 8530 has been configured and calibrated then it is important to record the Power cell raw count outputs at step [99], and either record or print out all setup and calibration parameters. The setup and calibration parameters can be printed out, if a printer is connected to the 8530, by pressing the PRINT key with the 8530 displaying the double dash [--] prompt.

Save the raw count outputs and setup and calibration information for future use.

4.3.2 Remove the Setup Jumper

Remove the shorting block from the CAL jumper W5. Place the shorting block back on 1 of the two pins of jumper W5.

4.3.3 Close the Enclosure

Carefully secure the front cover to the rear cover with the four screws in the corners of the rear cover. Be careful not to pinch the keyboard tail between the front and rear covers. **DO NOT** over tighten the cover screws when reinstalling them.

5. OPERATING INSTRUCTIONS

5.1 DISPLAY

5.1.1 Display Description

The 8530 has a gray display lens with a seven digit, blue-green, seven segment, vacuum fluorescent display. Cursors are provided for function, zero, lb, kg, gross, net and tare.

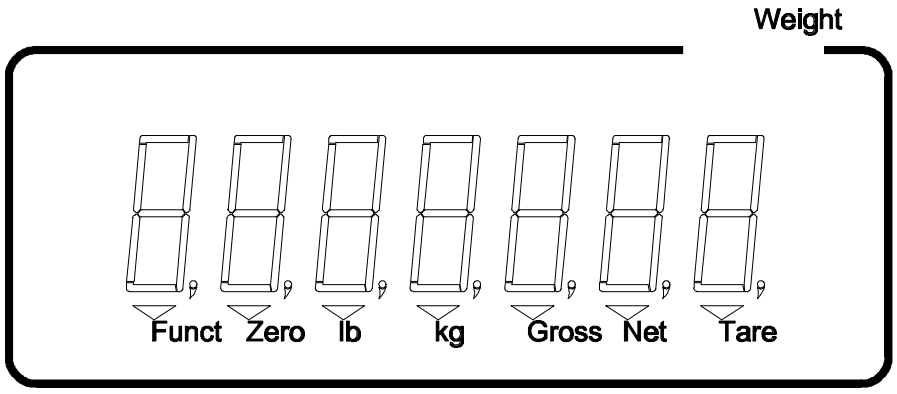


Figure 5-1 Weight Display and Cursors

5.1.2 Display Cursors

Funct - The Function cursor illuminates to indicate that the **FUNCTION** key has been pressed.

Zero - The Zero cursor illuminates to indicate that the weight on the scale is within ±0.25 increments of gross zero and that the 8530 is in the gross weight mode. If net zero cursor is enabled, step **[88 1]**, then the zero cursor also indicates when the weight on the weighbridge is within ±0.25 increments of gross or net zero.

lb - The lb cursor illuminates to indicate a that pound weight units are in use and that the weight on the scale is stable.

kg - The kg cursor illuminates to indicate that kilogram weight units are in use and that the weight on the scale is stable.

Gross - The Gross cursor illuminates to indicate that a gross weight value is being displayed.

Net - The Net cursor illuminates to indicate that a tare has been entered and that a net weight is being displayed.

Tare - The Tare cursor illuminates to indicate that a tare weight is being displayed. The tare cursor is illuminated when displaying the stored tare value of a permanent register.

5.2 KEYBOARD

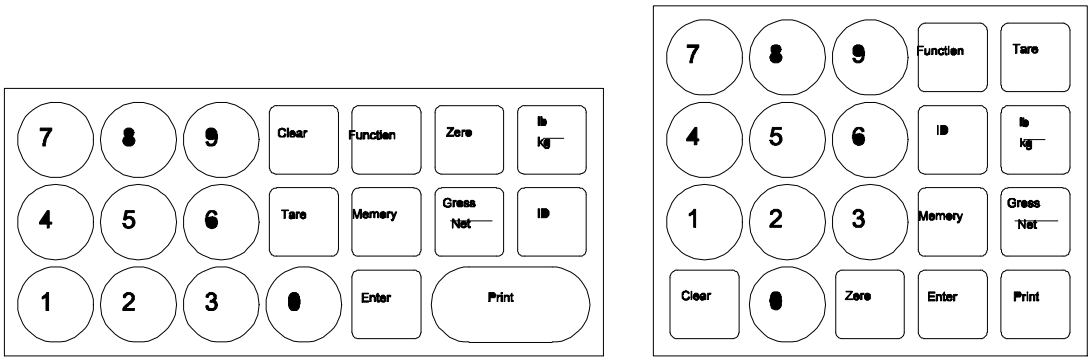


Figure 5-2 Rack and Desk Versions Keyboard Layout

CLEAR - The **CLEAR** key is used to clear a tare weight and return to gross weight mode. The **CLEAR** key also erases incorrect data entries and permits reentry of data.

ENTER - The **ENTER** key is used to terminate numeric data entry for consecutive numbering, time, date and setpoints. The **ENTER** key is also used to terminate an inbound or outbound transaction and print an inbound or outbound ticket.

ID - The **ID** key is used to begin an inbound or outbound transaction. The **ID** key is also used to enter a quickprint user ID.

GROSS/NET - The **Gross/Net** key is used to toggle between net and gross weight display. This key has no affect if the 8530 is in the gross weight mode.

lb/kg - The **lb/kg** key toggles the 8530 between pound and kilogram weight units, if lb/kg switching is enabled, step **[82 1]**. The increment size and decimal point of the displayed weight are adjusted to the nearest equivalent when switching between units. For example: 20 lb increment size changes to 10 kg, and 50 lb increment size changes to 20 kg.

MEMORY - The **MEMORY** key is used to edit the permanent scale memories.

Numeric - The numeric keys are used to enter numeric data for tare, ID, time, date,

Digits (0-9) - setpoints, special functions, and other numeric entries.

PRINT - The **PRINT** key is used to request a quickprint ticket output. If the weight on the scale is unstable when a print request occurs, the print request is saved and a ticket is printed when the weight on the scale is stable. The **PRINT** key is also used to printout the setup parameters in the setup mode.

TARE - The **TARE** key is used to request that the 8530 take an autotare. The 8530 will not take an autotare if the weight on the scale is unstable or at gross zero. The **TARE** key is also used to terminate a keyboard (numeric) tare entry. The least significant digit (LSD) of a keyboard tare entry must correspond to the displayed increment size of the 8530 or else the tare value entered is not accepted. If tare interlocks are enabled, step **[32 1]**, then a keyboard tare can only be entered at gross zero.

ZERO - The **ZERO** key is used to capture a new center of zero reference. The weight on the scale must be stable and within the pushbutton zero range (either ±2% or ±20% of the full scale capacity, as selected in setup step **[25]**) for a zero reference to be captured.

5.3 POWERUP SEQUENCE

The 8530 performs internal self tests on memory devices, display drivers and load cell communication during the power up procedure. At powerup the 8530 displays the following prompts in the order listed.

- The top segments of all seven display digits are illuminated for a second.
- The software part number, **[134621]** is displayed for a second.
- The revision level of the software is displayed for a second. For example: **[L02]** is the revision level displayed for the 2nd revised version of the software.
- All segments of all seven display digits **[8888888]** are illuminated for a second.
- All cursors are illuminated.
- All decimal points are illuminated.
- The 8530 will display **[E E E]** or **[-E E E]** while attempting to capture zero. Once zero is successfully captured the 8530 displays weight. If autozero capture and tare interlocks are disabled, the 8530 will display the current weight without attempting to capture zero.

Note: Zero MUST be captured after powerup before demand mode data output can occur. This requirement is not eliminated by disabling autozero capture or tare interlocks.

5.4 FUNCTION KEY DESCRIPTIONS

Several of the 8530's special features are accessed by pressing the **FUNCTION** key followed by one of the numeric keys. Refer to Table 5-1.

Keys	Description
FUNCTION 0	Access Manual Shift Adjust
FUNCTION 1	Enter Setpoint 1
FUNCTION 2	Enter Setpoint 2
FUNCTION 3	Enter Setpoint 3
FUNCTION 4	Enter Setpoint 4
FUNCTION 5	Enter Consecutive Numbering
FUNCTION 6	Enter Time
FUNCTION 7	Enter Date
FUNCTION 8	Display Available Memory
FUNCTION 9	Access Setup by Password

Table 5-1 Function Key Definitions

5.4.1 FUNCTION 0 - Manual Shift Adjust

To access the manual shift adjust procedure press the **FUNCTION** key and then the **0** key. Refer to Section 4.2.4, setup step **[96]**, for manual shift adjust procedure description.

5.4.2 FUNCTION 1 THROUGH FUNCTION 4 - Display/Change Setpoint Data

To display the setpoint value press the **FUNCTION** key and then the number of the setpoint to be displayed, (1 through 4). The 8530 will then display the current value of the setpoint for five seconds.

If you wish to change the displayed setpoint value, enter a new setpoint value while the 8530 is displaying the current setpoint value. Press the **ENTER** key to accept the displayed setpoint value and return to the weight display mode.

Note: The least significant digit of the setpoint value entered must match the increment size selected in setup. If the setpoint value entered does not match the scale increment size then the setpoint entry is ignored.

5.4.3 FUNCTION 5 - Display/Change Consecutive Numbering (CN)

To display the consecutive numbering counter press the **FUNCTION** key and then the **5** key. The 8530 will then display the current CN value for five seconds.

If you wish to change the displayed consecutive numbering value, enter a new CN value while the 8530 is displaying the current CN value. Press the **ENTER** key to accept the displayed CN value and return to the weight display mode.

5.4.4 FUNCTION 6 - Display/Set Time

To display the current time, press the **FUNCTION** key and then the **6** key. The 8530 will then display the current time for five seconds.

If you wish to change the time, enter the new value while the 8530 is displaying the current time. Time is entered in a 24 hour format "HHMM". For example: 2:35 PM would be entered as "1435". Press the **ENTER** key to accept the displayed time and return to the weight display mode.

5.4.5 FUNCTION 7 - Display/Change Date

To display the current date, press the **FUNCTION** key and then the **7** key. The 8530 will then display the current date for five seconds.

If you wish to change the date, enter the new value while the 8530 is displaying the current date. Date is entered in the date format selected in setup step **[73]**. Press the **ENTER** key to accept the displayed date and return to the weight display mode.

5.4.6 FUNCTION 8 - Display Available Memory

To display the number of available memory registers, press the **FUNCTION** key and then the **8** key. The 8530 will then display the remaining unused memory registers for 5 seconds.

5.4.7 FUNCTION 9 - Password Access to Setup Parameters

The 8530 provides access to several of the data output setup steps without having to open the 8530 enclosure and use the W5 (CAL) jumper. Step **[66]** provides access to additional setup steps if enabled, step **[66 1]**. Setup steps **[46]**, **[47]**, **[48]**, **[49]**, **[71]**, **[73]**, **[75]**, **[77]** and **[79]** are always accessible by means of **FUNCTION 9**. Setup step [37], [38], [39], [74], [76] and [78] are also accessible by means of **FUNCTION 9** if setup step **[66 1]**.

For password access to data output setup parameters press the **FUNCTION** key and then the **9** key. The 8530 then displays **[9 ----]**. Enter the four digit password using the numeric keys. Refer to Appendix D for the password. After the password is entered the double dash **[--]** prompt is displayed. Enter the two digit number of the setup step desired.

Note: Access to a group of setup steps is not possible when using password access. Enter the number of the specific setup step you wish to access at the double dash **[--]** prompt.

5.5 PROGRAMMING SCALE MEMORY (COMMODITY/PERMANENT REGISTERS)

Any of the 100 memory addresses can be used for a permanent register. The permanent registers can be used for permanent stored tare weights, to accumulate weight data by ID, or as a commodity register. Permanent registers must be enabled, step **[89 1]**, and the **MEMORY** key must be enabled, step **[37 1]** in order to create or modify permanent registers.

A permanent stored tare weight can be modified manually by entering the tare weight from the keyboard or by saving the current weight on the scale into the permanent stored tare.

Each permanent register created, reduces by one, the number of available temporary registers for storing inbound vehicle weights. A permanent register can be used to store an inbound weight if step **[89A 1]** is enabled, the permanent register has a stored tare weight of zero, and the inbound weight is stored using the ID of the permanent register.

Commodity and Permanent Registers can be created by using either the memory address (00 to 99) or the user ID (100 to 999,999). If a register is created using the user ID then the 8530 will assign the register to the next available memory address.

The operator can access permanent registers in the weigh mode either by the memory address (00 to 99) or by the user ID (100 to 999,999) associated with that permanent register.

5.5.1 Commodity Registers

The 8530 can have up to ten commodity registers. Each commodity register provides a conversion factor to permit conversion of weight to user defined units of measurement. The commodity registers also provide a converted weight accumulator, a nine character description field and a number of loads consecutive numbering counter.

The commodity registers can be used with quickprint if in the net weight mode, with temporary storage inbound/outbound weighing, or permanent stored tare one pass weighing.

Follow the procedure listed next to create or modify a commodity register. Several of the steps will have different instructions depending on whether you are creating a new commodity register or editing an existing commodity.

Procedure to Create or Edit Commodity Register

1. Press the **MEMORY** key. The 8530 then displays:

[LOC] Enter User ID or Memory Address, Required Entry

2. Enter the user ID (100 to 999,999) or memory address (00 to 99) you wish to configure as a commodity register. Press the **ENTER** key to accept the entry.

[id6] Access User ID

3. This prompt indicates that the following field is for the entry of user ID. Press the **ENTER** key to advance to the next prompt.

[000000] Enter User ID, Optional Entry

4a. If you created a commodity by memory address and wish to be able to access the commodity by means of a user ID then enter a user ID (100 to 999,999) followed by the **ENTER** key. The 8530 will not accept a user ID that is in use by another commodity or permanent register. Press the **CLEAR** key or press the **ENTER** key with all zeros displayed if you don't want user ID access to this commodity.

4b. If your are editing an existing commodity, the current user ID is now displayed. Enter a new user ID from 100 to 999,999 if desired. The 8530 will not accept a user ID that is in use by another commodity or permanent register. Press the **ENTER** key to accept the displayed value. Press the **CLEAR** key if you don't want user ID access to this commodity.

[Cd] Commodity Register?

5. The 8530 is asking if this register is to be a commodity register. Press the **1** key to create a commodity register. This prompt is not displayed if editing an existing commodity register or if the ten commodities permitted have already been created.

[Cd FAC] Commodity Conversion Factor

6. This prompt is displayed to identify that the following field is for the commodity conversion factor. The conversion factor is used for conversion of weight to units not supported by the 8530, for example: bushels of wheat or corn, yards of concrete, etc. The converted value is the weight reading multiplied times the conversion factor.

[1000000] Enter Commodity Conversion Factor

7. To enter a new conversion factor press the **CLEAR** key. Press the **ENTER** key if you don't wish to modify the conversion factor. The 8530 will then accept the displayed conversion factor and advance to step 10.

[------.-] Select The Conversion Factor Decimal Point

8. This selection determines the number of digits to the right of the decimal point in the conversion factor value. Press the **0** key to move the decimal point one position to the left. Press the **ENTER** key to accept the displayed decimal point position.

[.] Enter Conversion Factor Value

9. Enter the conversion factor value using the numeric keys on the keyboard. Press the **ENTER** key to accept the displayed value.

[2] Enter The Converted Value Decimal Point Selection

10. Enter the desired number of digits that are to be printed to the right of the decimal point for the converted value. Valid selections are from zero to six.

[ACC] Display Accumulated Weight Data

11. This prompt is displayed to identify that the following field is the accumulated weight data. Press the **ENTER** key to advance to the next prompt.

[0] Enter Accumulated Weight

12. This step lets you enter a starting value for the accumulator if desired. Press the **ENTER** key to accept the displayed value and advance to the next prompt.

[ACC -] Accumulate Positive or Negative Weight

13. Press the **0** key or the **ENTER** key to accumulate positive weight. Press the **1** key to accumulate negative weight.

[LOAD] Display Number of Loads Consecutive Numbering Counter

14. This prompt is displayed to identify that the following field is the number of loads counter. Press the **ENTER** key to advance to the next prompt.

[0] Enter Number of Loads, Consecutive Numbering Counter

15. This step lets you enter a starting value for the number of loads counter, if desired. Press the **ENTER** key to accept the displayed value.

[Cd dESC] Commodity Description

16. The conversion factor description can contain up to 9 ASCII characters, selected from the alphanumeric character coding Table located in Appendix B of this manual.

[000000] Enter First Three Character Codes

17. The first three character codes of the conversion factor description are now displayed. Type in new character codes if desired. Press the **ENTER** key to accept the displayed values. Press the **CLEAR** key to erase the entered character data and permit the data to be typed in again.

Repeat this process for the second and third group of characters. A character code of 00 terminates the description, no characters are printed after a 00 character. After the third group of characters has been entered the 8530 returns to the weight mode.

Code	Printed Character	ASCII Value
01	(Space)	20
02	!	21
03	"	22
04	#	23
05	$	24
06	%	25
07	&	26
08	'	27
09	(	28
10	)	29
11	*	2A
12	+	2B
13	,	2C
14	-	2D
15	.	2E
16	/	2F
17	0	30
18	1	31
19	2	32
20	3	33
21	4	34
22	5	35
23	6	36
24	7	37
25	8	38
26	9	39
27	:	3A
28	;	3B
29	<	3C
30	=	3D
31	>	3E
32	?	3F
33	@	40

Code	Printed Character	ASCII Value
34	A	41
35	B	42
36	C	43
37	D	44
38	E	45
39	F	46
40	G	47
41	H	48
42	I	49
43	J	4A
44	K	4B
45	L	4C
46	M	4D
47	N	4E
48	O	4F
49	P	50
50	Q	51
51	R	52
52	S	53
53	T	54
54	U	55
55	V	56
56	W	57
57	X	58
58	Y	59
59	Z	5A
60	[	5B
61	\	5C
62	]	5D
63	^	5E
64	_	5F
65	`	60
66	a	61

Code	Printed Character	ASCII Value
67	b	62
68	c	63
69	d	64
70	e	65
71	f	66
72	g	67
73	h	68
74	i	69
75	j	6A
76	k	6B
77	l	6C
78	m	6D
79	n	6E
80	o	6F
81	p	70
82	q	71
83	r	72
84	s	73
85	t	74
86	u	75
87	v	76
88	w	77
89	x	78
90	y	79
91	z	7A
92	<BEL>	07
93	<SO>	0E
94	<SI>	0F
95	<DC1>	11
96	<DC2>	12
97	<DC3>	13
98	<DC4>	14
99	<ESC>	1B

Table 5-2 Alphanumeric Character Codes

5.5.2 Permanent Registers

Permanent registers can be used for permanent stored tare weight to permit one pass weighing. The loaded vehicle is driven on the scale, the tare weight is recalled from the permanent register and an outbound ticket is printed. Accumulation of weight data can be by vehicle and/or by commodity. This mode is appropriate for applications where the user is able to use known tare weights (ie. a fleet of vehicles or a captive train of rail cars).

An existing permanent stored tare weight can be modified manually by entering the tare weight from the keyboard or by saving the current weight on the scale into the permanent stored tare.

Permanent registers that are created with a stored tare weight of zero, can be used for accumulation by ID. This mode permits the operator to combine inbound/outbound weighing by using temporary memory with accumulation of weight data into a permanent register.

Follow the procedure listed next to create or modify a permanent register. Several of the steps will have different instructions depending on whether you are creating a new permanent register or editing an existing permanent register.

Procedure to Create or Edit A Permanent Register

1. Press the **MEMORY** key. The 8530 then displays:

[LOC] Enter User ID or Memory Address, Required Entry

2. Enter the user ID (100 to 999,999) or memory address (00 to 99) you wish to configure as a permanent register. Press the **ENTER** key to accept the entry.

[id6] Access User ID

3. This prompt indicates that the following field is for the entry of user ID. Press the **ENTER** key to advance to the next prompt.

[000000] Enter User ID, Optional Entry

4a. If you created a permanent register by memory address and wish to be able to access the register by means of a user ID, enter a user ID (100 to 999,999) followed by the **ENTER** key. The 8530 will not accept a user ID that is in use by another commodity or permanent register. Press the **CLEAR** key or press the **ENTER** key with all zeros displayed if you don't want user ID access to this permanent register.

4b. If your are editing an existing register, the current user ID is now displayed. Enter a new user ID from 100 to 999,999 if desired. The 8530 will not accept a user ID that is in use by another commodity or permanent register. Press the **ENTER** key to accept the displayed value. Press the **CLEAR** key if you don't want user ID access to this register.

[Cd] Commodity Register?

5. The 8530 is asking if this register is to be a commodity. Press the **0** key. This prompt is not displayed if you are editing an existing permanent register that has a stored tare weight or if ten commodities have already been created.

[0] Enter Tare Weight

6a. If you are creating a new permanent register, enter the empty (tare) weight of the vehicle and press the **ENTER** key. If a tare weight of zero is entered, this register can be used to permit accumulation by ID with inbound/outbound weighing.

6b. If you are editing an existing permanent register, the current tare weight is now displayed. Enter a new tare weight if desired. Press the **ENTER** key to accept the displayed value and advance to the next prompt.

[ACC] Display Accumulated Weight Data

7. This prompt is displayed to identify that the following field is the accumulated weight data. Press the **ENTER** key to advance to the next prompt.

[0] Enter Accumulated Weight

8a. If you are creating a new permanent register, this step lets you enter a starting value for the accumulator if desired. Press the **ENTER** key to accept the displayed value and advance to the next prompt.

8b. If you are editing an existing permanent register, the current accumulated weight is displayed. Enter a new accumulated value if desired. Press the **ENTER** key to accept the displayed value and advance to the next prompt.

[ACC -] Accumulate Positive or Negative Weight

9. Press the **0** key or the **ENTER** key to accumulate positive weight. Press the **1** key to accumulate negative weight.

[LOAD] Display Number of Loads Consecutive Numbering Counter

10. This prompt is displayed to identify that the following field is the number of loads counter. Press the **ENTER** key to advance to the next prompt.

[0] Enter Number of Loads, Consecutive Numbering Counter

11a. If you are creating a new permanent register, this step lets you enter a starting value for the number of loads counter, if desired. Press the **ENTER** key to accept the displayed value and return to the weight mode.

11b. If you editing an existing permanent register, the current number of loads is displayed. Enter a new value if desired. Press the **ENTER** key to accept the displayed value and return to the weight mode.

Procedure to Replace The Stored Tare Weight Value in a Permanent Register

1. Press the **MEMORY** key.

[LOC] Enter User ID or Memory Address

2. Enter the user ID (100 to 999,999) or the memory address (00 to 99) of the permanent register to update. Press the **TARE** key to store the current weight on the scale into the permanent register tare field. Note the weight on the scale must be stable to store tare.

[id XX] Tare Weight Stored in Memory Address [XX]

Procedure to Delete an Existing Commodity or Permanent Register

1. Press the **MEMORY** key.

[LOC] Enter User ID or Memory Address

2. Enter the user ID (100 to 999,999) or the memory address (00 to 99) of the register to be deleted. Press the **ENTER** key to accept the entry.

[id6] Access User ID (6 digit)

3. Press the **CLEAR** key.

[del] Delete Register?

4. Press the **1** key to delete the register. Press the **0** key to retain the register. The 8530 then returns to the weight mode.

5.6 OPERATING SEQUENCES

The 8530 provides three modes of weighing operation: Inbound/outbound weighing using temporary registers to store the inbound weight, permanent stored tare weights for one pass weighing, and quickprint mode.

5.6.1 Inbound and Outbound, Temporarily Stored Vehicle Weight Mode

The inbound/outbound weighing mode is most commonly used with random, over the road haulers that are delivering or picking up product. The vehicle is weighed twice, once inbound and once outbound. The inbound weight is stored in a temporary register. When the outbound vehicle is weighed, the stored inbound weight is recalled from memory and used to calculate the net weight of the contents of the vehicle.

Net sign correction permits a temporary memory register to be used for both shipping and receiving. If net sign correction is enabled, setup step **[64 1]**, then the stored inbound weight can be either the full or the empty weight of the vehicle. When the inbound weight is recalled from memory, the 8530 will automatically select the

larger of the two weights (current weight on the scale or the inbound weight recalled from memory) as the gross weight. The smaller weight becomes the tare weight and the difference between the two is a positive net weight.

An inbound weight can be stored in a temporary register using either auto ID or user ID. In the auto ID mode the 8530 selects the next available temporary register and the operator must use the two digit memory address assigned by the 8530 to recall the inbound weight. In the user ID mode the operator enters a user ID (100 to 999,999), to select the temporary register the vehicle weight is stored in. Either the user ID or the memory address assigned by the 8530 can be used to recall the stored inbound weight.

The type of printer connected to the 8530 will normally determine if both inbound and outbound ticket formats are printed or if only the outbound ticket format is printed. If the Model 8806 ticket printer is used, then typically both the inbound and outbound ticket formats are printed. If the Model 8843 or 8844 Document printer is used, then typically only an outbound ticket format is printed.

Weight data can be converted to user defined alternate units by using the scale conversion factor, programmed as setup step **[38]**. Weight data can also be accumulated by ID into any permanent register that was created with a stored tare weight of zero. Both the memory address and user ID of the permanent register can be printed on the outbound ticket.

If commodity registers are used, then the operator is given an opportunity to select a commodity register to accumulate weight data into. The commodity description, memory address, user ID, and converted weight data can be printed on the outbound ticket.

5.6.1.1 INBOUND: Store Inbound With Auto ID Assignment

1. Drive the inbound vehicle on the scale. Press the **ID** key.

   [id] Enter Memory Location or User ID

2. Press the **ENTER** key.

   [id2 XX] Inbound Weight Stored at Memory Address XX

   [-P-] Printing Inbound Ticket

   The inbound weight is stored in the memory address XX (00 to 99) displayed in the **[id2 XX]** prompt.

   The **[-P-]** prompt is displayed while the inbound ticket is printed using the format entered in setup step **[76]**. The gross weight field is printed with a (1) after it to indicate this is the value stored in memory, if selected to print.

5.6.1.2 INBOUND: Store Inbound Weight With User ID

1. Drive the inbound vehicle on the scale. Press the **ID** key.

   [id] Enter Memory Location or User ID

2. Enter the vehicle number as a user ID, must be a number from (100 to 999,999). Press the **ENTER** key to accept the entry.

   [id2 XX] Inbound Weight Stored at Memory Address XX

   [-P-] Printing Inbound Ticket

   The inbound weight is stored in the memory address XX (00 to 99) displayed in the **[id2 XX]** prompt.

   The **[-P-]** prompt is displayed while the inbound ticket is printed using the format entered in setup step **[76]**. The gross weight field is printed with a (1) after it to indicate this is the value stored in memory, if selected to print.

5.6.1.3 OUTBOUND: Recall Inbound Weight, No Commodity, No Accumulation by ID

This sequence assumes that no commodity registers have been created.

1. Drive the outbound vehicle on the scale. Press the **ID** key.

   [id] Enter Inbound User ID or Memory Location

2. Enter either the memory address (00 to 99) or the user ID (100 to 999,999) the inbound vehicle was stored under. Press the **ENTER** key to accept the entry.

   [-P-] Printing Outbound Ticket

   The **[-P-]** prompt is displayed while the outbound ticket is printed using the format entered in setup step **[78]**. The weight field recalled from memory is printed with a (1) after it to indicate this was the value recalled from memory.

   The scale accumulator and number of loads counter (T-3 report) is updated, if accumulation is enabled.

5.6.1.4 OUTBOUND: Recall Inbound Weight, Use Commodity, No Accumulation by ID

This sequence assumes that a commodity register has been created.

1. Drive the outbound vehicle on the scale. Press the **ID** key.

   [id] Enter Inbound User ID or Memory Location

2. Enter either the memory address (00 to 99) or the user ID (100 to 999,999) the inbound vehicle was stored under. Press the **ENTER** key to accept the entry.

   [Cd] Enter Commodity Register User ID or Memory Location

3. If you wish to use a commodity register for this transaction then enter either the user ID (100 to 999,999) or the memory address (00 to 99) of the commodity register. The user ID or memory address entered **MUST** point to commodity register or the entry will be ignored. Press the **ENTER** key to accept the entry.

   If you don't wish to use a commodity register for this transaction then press the **ENTER** key with 8530 displaying the **[Cd]** prompt.

   [-P-] Printing Outbound Ticket

   The **[-P-]** prompt is displayed while the outbound ticket is printed using the format entered in setup step **[78]**. The weight field recalled from memory is printed with a (1) after it to indicate this is the value recalled from memory. Commodity description and converted weight values can be printed on the outbound ticket.

   The scale accumulator and number of loads counter (T-3 report) is updated, if accumulation is enabled.

   Converted weight data is accumulated and the number of loads counter is incremented in the commodity register selected at step 3, if accumulation is enabled.

5.6.1.5 OUTBOUND: Recall Inbound Weight, No Commodity, Accumulation by ID

This sequence assumes that accumulation is enabled, setup step **[29 1]**, a permanent register with a stored tare of zero has been created and that no commodity registers have been created.

1. Drive the outbound vehicle on the scale. Press the **ID** key.

   [id] Enter Inbound User ID or Memory Location

2. Enter either the memory address (00 to 99) or the user ID (100 to 999,999) the inbound vehicle was stored under.

3. Press the **TARE** key. The stored inbound weight is recalled from memory and the 8530 displays net weight.

4. Press the **ID** key.

[id] Enter Permanent Register User ID or Memory Location

5. Enter either the memory address (00 to 99) or the user ID (100 to 999,999) of the permanent register to accumulate weight data into. The permanent register **MUST** have a stored tare value of zero or an **[E42]** error code will be displayed. Press the **ENTER** key to accept the entry.

[-P-] Printing Outbound Ticket

The **[-P-]** prompt is displayed while the outbound ticket is printed using the format entered in setup step **[78]**. The weight field recalled from memory is printed with a (1) after it to indicate this is the value recalled from memory.

The scale accumulator and number of loads counter (T-3 report) is updated, if accumulation is enabled.

Weight data is accumulated and the number of loads counter is incremented in the permanent register selected, if accumulation is enabled.

5.6.1.6 OUTBOUND: Recall Inbound Weight, Use Commodity, Accumulate by ID

This sequence assumes that accumulation is enabled, setup step **[29 1]**, a permanent register with a stored tare of zero and a commodity register have been created.

1. Drive the outbound vehicle on the scale. Press the **ID** key.

[id] Enter Inbound User ID or Memory Location

2. Enter either the memory address (00 to 99) or the user ID (100 to 999,999) the inbound vehicle was stored under.

3. Press the **TARE** key. The stored inbound weight is recalled from memory and the 8530 will display net weight.

4. Press the **ID** key.

[id] Enter Permanent Register User ID or Memory Location

5. Enter either the user ID (100 to 999,999) or the memory address (00 to 99) of the permanent register to accumulate weight data into. The permanent register **MUST** have a stored tare value of zero or an **[E42]** error code will be displayed. Press the **ENTER** key to accept the entry.

[Cd] Enter Commodity Register User ID or Memory Location

6. If you wish to use a commodity register then enter either the user ID (100 to 999,999) or the memory address (00 to 99) of the commodity register. The user ID or memory address entered, **MUST** point to commodity register or the entry is ignored. Press the **ENTER** key to accept the entry.

If you don't wish to use a commodity register for this transaction then press the **ENTER** key with 8530 displaying the **[Cd]** prompt.

[-P-] Printing Outbound Ticket

The **[-P-]** prompt is displayed while the outbound ticket is printed using the format entered in setup step **[78]**. The weight field recalled from memory is printed with a (1) after it to indicate this is the value recalled from memory. Commodity description and converted weight values can also be printed on the outbound ticket.

The scale weight data accumulator and number of loads counter (T-3 report) is updated, if accumulation is enabled.

Weight data is accumulated and the number of loads counter is incremented in the permanent register selected at step 5, if accumulation is enabled.

5.6.2 Permanent Stored Tare Weight Registers

Permanent stored tare weight registers are normally used when the user has a fleet of vehicles with known empty (tare) weights and can use a fixed tare value. The loaded vehicle is driven on the scale, the tare weight is recalled by ID from memory and an outbound ticket is printed.

Weight data can be converted to user defined alternate units by using the scale conversion factor, programmed as setup step **[38]**. Weight data accumulation and the number of loads counter for the permanent memory register is updated when the stored tare weight is recalled from memory.

If commodity registers are used, then the operator is given an opportunity to select a commodity register to accumulate weight data into. The commodity description, memory address, user ID, and converted weight data can be printed on the outbound ticket.

5.6.2.1 Permanent Stored Tare Weights, No Commodity

This sequence assumes that no commodity registers have been created.

1. Drive the outbound vehicle on the scale. Press the **ID** key.

[id] Enter Permanent Register User ID or Memory Location

2. Enter either the memory address (00 to 99) or the user ID (100 to 999,999) of the permanent register the vehicle tare weight is stored in. Press the **ENTER** key to accept the entry.

[-P-] Printing Outbound Ticket

The **[-P-]** prompt is displayed while the outbound ticket is printed using the format entered in setup step **[78]**. The weight field recalled from memory is printed with a (1) after it to indicate this was the value recalled from memory.

Weight data is accumulated and the number of loads counter is incremented in the permanent register the tare weight was recalled from if accumulation is enabled.

The number of loads counter is incremented and weight data is added to the scale accumulator, if accumulation is enabled.

5.6.2.2 Permanent Stored Tare Weights, Use Commodity

This sequence assumes that a commodity register has been created.

1. Drive the outbound vehicle on the scale. Press the **ID** key.

[id] Enter Permanent Register User ID or Memory Location

2. Enter either the memory address (00 to 99) or the user ID (100 to 999,999) of the permanent register the vehicle tare weight is stored in. Press the **ENTER** key to accept the entry.

[Cd] Enter Commodity Register User ID or Memory Location

3. If you wish to use a commodity register for this transaction then enter either the user ID (100 to 999,999) or the memory address (00 to 99) of the commodity register. The user ID or memory address entered **MUST** point to commodity register or the entry will be ignored. Press the **ENTER** key to accept the entry.

If you don't wish to use a commodity register for this transaction then press the **ENTER** key with 8530 displaying the **[Cd]** prompt.

[-P-] Printing Outbound Ticket

The **[-P-]** prompt is displayed while the outbound ticket is printed using the format entered in setup step **[78]**. The weight field recalled from memory is printed with a (1) after it to indicate this is the value recalled from memory. Commodity description and converted weight values can be printed on the outbound ticket.

Weight data is accumulated and the number of loads counter is incremented in the permanent register the tare weight was recalled from if accumulation is enabled.

Converted weight data is accumulated and the number of loads counter is incremented in the commodity register selected, if accumulation is enabled.

5.6.3 Quickprint

Quickprint does not use stored inbound weight or permanent stored tare weight registers. Quickprint provides a way to print a ticket without effecting the scale accumulation or number of loads consecutive numbering counter.

Quickprint can be performed with one pass weighing where the known tare weight of the vehicle is entered using keyboard entered tare. Quickprint weighing can also be used with pushbutton tare for filling applications. Net sign correction can also be used with quickprint for both shipping and receiving operations.

The quickprint mode adds a twelve digit ID field that can be printed on any of the three ticket formats: inbound, outbound or quickprint. The quickprint ID is retained until cleared and can be reused without having to reenter the ID each time. The quickprint ID can also be configured to automatically clear after a quickprint ticket format has been printed.

Quickprint can be combined with outbound ticket printing for permanent register accumulation by ID

If a commodity register exists and the 8530 is displaying net weight, then the operator is given a chance to select a commodity register before printing the quickprint ticket.

5.6.3.1 Enter a Quickprint User ID

1. Press the **ENTER** key.

   [E] Quickprint ID Mode

2. Press the **ID** key.

   [123456] Digits One Through Six of the Quickprint ID

   [789012] Digits Seven Through Twelve of the Quickprint ID

   Digits 1 through 6 of the current quickprint ID are displayed for a few seconds. Digits 7 through 12 of the current quickprint ID are then displayed for a few seconds.

3. Enter a new value for the quickprint ID while the 8530 is displaying the current quickprint ID. If more than six digits of ID are entered then ID entered will scroll to the left as digits, seven through twelve are entered. The 8530 will abort the ID entry and return to the weigh mode if more than five seconds pass without a keyboard entry.

4. Press the **ENTER** key to accept the ID entry.

5.6.3.2 Quickprint, No Tare

1. Drive the vehicle on the scale. Press the **PRINT** key.

   [-P-] Printing Quickprint Ticket

   The **[-P-]** prompt is displayed while the quickprint ticket is printed using the format entered in setup step **[74]**.

5.6.3.3 Quickprint, Pushbutton Tare, No Commodity

This sequence assumes that no commodity registers have been created.

1. Drive the empty vehicle on the scale. Press the **TARE** key. The 8530 will then display net zero.

2. Load the vehicle.

3. Press the **PRINT** key.

[-P-] Printing Quickprint Ticket

The **[-P-]** prompt is displayed while the quickprint ticket is printed using the format entered in setup step **[74]**.

5.6.3.4 Quickprint, Keyboard Entered Tare, No Commodity

This sequence assumes that no commodity registers have been created.

1. Drive the loaded vehicle on the scale. Enter the known tare weight of the vehicle using the numeric keys on the keyboard. Press the **TARE** key. The net weight of the contents of the vehicle is then displayed.
2. Press the **PRINT** key.

[-P-] Printing Quickprint Ticket

The **[-P-]** prompt is displayed while the quickprint ticket is printed using the format entered in setup step **[74]**.

5.6.3.5 Quickprint, Pushbutton Tare, Commodity

This sequence assumes that a commodity register has been created.

1. Drive the empty vehicle on the scale. Press the **TARE** key. The 8530 will then display net zero.
2. Load the vehicle.
3. Press the **PRINT** key.

[Cd] Enter Commodity Register User ID or Memory Location

4. If you wish to use a commodity register for this transaction then enter either the user ID (100 to 999,999) or the memory address (00 to 99) of the commodity register. The user ID or memory address entered **MUST** point to commodity register or the entry will be ignored. Press the **ENTER** key to accept the entry.

   If you don't wish to use a commodity register for this transaction then press the **ENTER** key with 8530 displaying the **[Cd]** prompt.

[-P-] Printing Quickprint Ticket

The **[-P-]** prompt is displayed while the quickprint ticket is printed using the format entered in setup step **[74]**. Commodity description and converted weight values can be printed on the ticket.

Converted weight data is accumulated and the number of loads counter is incremented in the commodity register selected, if accumulation is enabled.

5.6.3.4 Quickprint, Keyboard Entered Tare, Commodity

This sequence assumes that a commodity register has been created.

1. Drive the loaded vehicle on the scale. Enter the known tare weight of the vehicle using the numeric keys on the keyboard. Press the **TARE** key. The net weight of the contents of the vehicle is then displayed.
2. Press the **PRINT** key.

[Cd] Enter Commodity Register User ID or Memory Location

3. If you wish to use a commodity register for this transaction then enter either the user ID (100 to 999,999) or the memory address (00 to 99) of the commodity register. The user ID or memory address entered **MUST** point to commodity register or the entry will be ignored. Press the **ENTER** key to accept the entry.

If you don't wish to use a commodity register for this transaction then press the **ENTER** key with 8530 displaying the **[Cd]** prompt.

[-P-] Printing Quickprint Ticket

The **[-P-]** prompt is displayed while the quickprint ticket is printed using the format entered in setup step **[74]**. Commodity description and converted weight values can be printed on the ticket.

Converted weight data is accumulated and the number of loads counter is incremented in the commodity register selected, if accumulation is enabled.

5.7 MEMORY REPORTS

The 8530 provides four printed reports to assist the operator in managing data stored in memory. The four reports available are:

5.7.1 T1 - Open Temporary Register Transaction Report

The T1 report lists all inbound stored weights that have not yet been recalled. The units field (lb)" in the First Weight column heading will be replaced with (kg) or (tons) as appropriate. A value of 000000 in the user ID field indicates that there is no user ID associated with the data entry and the location can only be accessed by auto id.

To print the T1 report, press the **FUNCTION** key, the **PRINT** key and then the **1** key.

To erase all inbound stored weights from memory, press the **FUNCTION** key, the **CLEAR** key and then **1** key. The 8530 will then display **[del 1]**. Press the **1** key to erase all inbound stored tare weights. Press the **0** key to retain current inbound stored tare weights.

```
          FIRST
 AUTO.  USER  WEIGHT
  ID     ID   (LB)
------ ------ ------
   0  000000  51420
   1  123456  85720
   2  654321  27000
   3  004002  35560
```

Figure 5-4 Example T1 Report Printout

5.7.2 T2 - Permanent Register Report

The T2 report lists all permanent records programmed in scale memory. The units field (lb)" in the weight heading will be replaced with (kg) or (tons) as appropriate. A value of 000000 in the user ID field indicates that there is no user ID associated with the data entry and the location can only be accessed by auto id.

To print the T2 report, press the **FUNCTION** key, the **PRINT** key and then the **2** key.

To erase accumulated data and reset # of loads counters to zero, press the **FUNCTION** key, the **CLEAR** key and then **2** key. The 8530 will then display **[del 2]**. Press the **1** key to erase accumulated data and reset # of loads counters. Press the **0** key to retain current accumulator data and # of loads counters.

```
 AUTO.  USER    WEIGHT (LB)
  ID     ID    TARE  ACCUMULATED # LOADS
```

```
----- ------ ------ ----------- -------
 90   6001     0      43240       3
 91   9002  35060     3004020     25
 92   1234     0      123580      7


TOTAL:     3170840     35
```

Figure 5-5 Example T2 Report Printout

5.7.3 T3 - Scale Accumulator Report

Weight data is accumulated in the scale accumulator on all outbound or one pass transactions. Setup step **[29]** determines what data is accumulated (gross, net or displayed weight). The # Loads counter increments every transaction that adds data to the scale accumulator. The 8530 also records the start and stop time for the time period over which the data is accumulated.

To print the T3 report, press the **FUNCTION** key, the **PRINT** key and then the **3** key.

To erase accumulated data and reset # of loads counter to zero, press the **FUNCTION** key, the **CLEAR** key and then the **3** key. The 8530 will then display **[del 3]**. Press the **1** key to erase accumulated data and reset # of loads counter. Press the **0** key to retain the current accumulator data and # of loads counter.

```
        TOTAL WEIGHT
# LOADS  (LB)          TIME PERIOD
-------  ------------  -----------------
   35      3170840  11 08 55-23 15 21
```

Figure 5-6 Example T3 Scale Accumulator Report

5.7.4 T4 - Commodity Table Report

The 8530 provides 10 commodity registers that permit table lists of the commodity records consecutively by their two digit ID number with the two digit ID number replaced by the 3-6 digit ID number if one is present. There can be a maximum of 10 commodity records.

To print the T4 report, press the **FUNCTION** key, the **PRINT** key and then the **4** key.

To erase accumulated data and reset # of loads counter to zero, press the **FUNCTION** key, the **CLEAR** key and then **4** key. The 8530 will then display **[del 4]**. Press the **1** key to erase accumulated data and reset # of loads counter. Press the **0** key to retain the current accumulator data and # of loads counter.

```
 COM.   COMMODITY   #     TOTAL    CONVER.
  #       NAME    LOAD   WEIGHT    FACTOR
-------  ---------  ----  ---------  --------
  10     CORN        15    1523480   0.01563
  21     WHEAT        9     871040   0.02749
12345    OATS        42   23140020   0.01832
```

Figure 5-7 Example T4 Commodity Report

5.8 BASIC WEIGHING CONCEPTS

This section explains some of the specialized terminology and concepts that are used in the weighing industry.

5.8.1 Zero

Zero is the empty weight of the scale platform or weighbridge. The gross zero reference is recorded during the calibration procedure.

Pushbutton Zero is a way for the operator to capture a new gross zero reference point. The weight on the scale must be stable and be within the pushbutton zero capture range, typically ±20 % of full scale capacity. The zero of the scale can change because of material buildup on the scale or because of temperature change.

Auto zero maintenance (AZM) is a way for the 8530 to gradually rezero itself in order to compensate for small changes in zero. Class IIIL, legal-for-trade vehicle scales use an AZM range of ±3 displayed increments about gross zero. AZM is active any time the weight on the scale is stable and is within the AZM range about gross zero.

5.8.2 Tare

Tare is the empty weight of the vehicle. Tare is normally used to determine the net weight of the contents of the vehicle. Tare is used in several different ways.

Autotare

An autotare is taken by pressing the **TARE** key with the empty vehicle on the scale. The 8530 then displays a zero weight with the net cursor illuminated. The vehicle is loaded and driven back on the scale. The 8530 then displays the net weight of the contents. If the **TARE** key is pressed with the 8530 in the net mode then the current weight on the scale becomes the new tare value. Tare interlocks inhibits replacement autotare.

Keyboard Tare

Keyboard entered tare is used when the empty weight of the vehicle is a known value. The known tare weight is entered using the numeric keys and the **TARE** key is pressed. The 8530 will then display the net weight of the contents of the vehicle.

Chain Tare

Chain tare is a rarely used mode of keyboard entered tare. If a tare is entered using the numeric keypad when the 8530 is already in the net weight mode then the tare value entered is added to the existing tare weight value. Tare interlocks inhibit this mode.

Tare Interlocks

Tare interlocks are a set of restrictions on how tare can be used that are required by some local weights and measures regulations. If tare interlocks are enabled, then the 8530 must be at gross zero to clear a tare weight or to enter a keyboard tare. Tare interlocks also prevent the 8530 from replacing an existing tare with a new autotare.

5.8.3 Sections

Vehicle scale weighbridges are normally divided up into what are called "sectional pairs" or sections. A section is a pair of load cells that are side by side in the weighbridge. For example the two load cells that are at one end of the scale make up a section. Refer to Figure 5-3. Sections are primarily a consideration when dealing with shift errors.

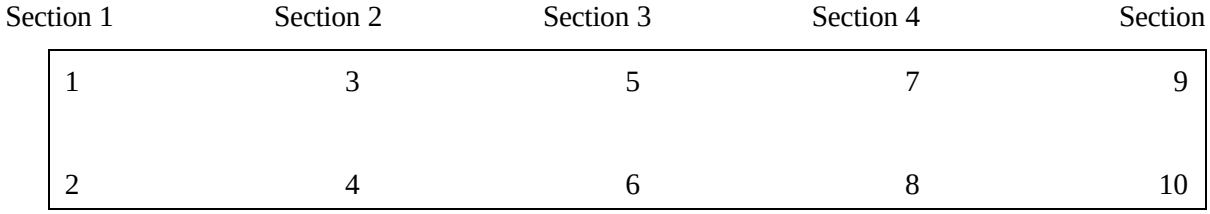


Figure 5-3 Load Cells and Sections in a Typical Vehicle Scale

5.8.4 Setpoints

Setpoints are on/off outputs that indicate whether the displayed weight on the scale is greater than or less than a preprogrammed weight value. Setpoints are typically used in material filling applications in order to fill a vehicle to a preset weight. The 8530 provides 4, single speed, setpoint capability. The 8530 does not provide discrete outputs. The setpoint information is coded into the continuous serial data output. In order to use the 8530 setpoint capabilities an additional piece of equipment that understands the continuous format data output is required. The METTLER TOLEDO Models 3015 Setpoint controller and the Model 9215 Batching controller are examples of devices that understand the continuous format data output and can convert the setpoint data into high level on/off outputs designed to control material feeders.

5.8.5 Inbound/Outbound Weighing

Vehicle scales are often used in an inbound/outbound mode of operation where the vehicle is loaded or unloaded at the users site. In the inbound/outbound mode the vehicle empty (tare) weight is not known so the vehicle must be weighed twice, once empty and once loaded. In the past this was normally done by printing the inbound weight, printing the outbound weight and then hand calculating the difference or net weight.

The 8530 simplifies inbound/outbound weighing by permitting the operator to store the inbound vehicle weight in memory and then recalling that weight at a later time. Once the inbound weight is recalled, the 8530 calculates the net weight and prints an outbound ticket.

5.8.6 Net Sign Correction

Net sign correction is a feature that permits the 8530 to be used for both shipping (inbound empty) and receiving (inbound loaded) operations. If net sign correction is enabled, the 8530 will swap the gross and tare weight field on the printed ticket, if necessary, so that the larger weight is the gross weight, the smaller weight is the tare weight, and the difference is always a positive net weight.

5.8.7 One Pass Weighing

One pass weighing is a mode where the user has a fleet of vehicles with known empty (tare) weight. The loaded vehicle is driven on the scale, the tare weight is recalled by ID and an outbound ticket is printed.

5.9 AUTORANGE OPERATION

Range switching occurs when the total number of displayed increments for a range is equal to the total number of displayed increments of the high range. Refer to the following autorange example, the 8530 is programmed as follows:

[11 0] Calibrate in pounds

[13 2] Dual range operation is selected.

[14] [400000] Scale Capacity

[15] [50] High Range Increment Size

[17] [20] Low Range Increment Size

Refer to equations 5-1 and 5-2 to calculate the largest weight that can be displayed in the lower ranges. Refer to the indicator setup section of the weighbridge installation manual for the correct scale capacity and minimum increment size selection.

$$\text{Low Range Capacity} = \frac{\text{Scale Capacity, Step [14]} \times \text{Low Range Increment Size, Step [17]}}{\text{High Range Increment Size, Step [15]}}$$

Equation 5-1 Low Range Capacity Calculation

$$\text{Mid Range Capacity} = \frac{\text{Scale Capacity, Step [14]} \times \text{Mid Range Increment Size, Step [16]}}{\text{High Range Increment Size, Step [15]}}$$

Equation 5-2 Mid Range Capacity Calculation

Display	Displayed Increment Size	Range Calculation Formula	Active Weight Range
Low Increment Range	20 lb	Capacity X Low Increment ¸ High Increment = Low Increment Range (400,000 X 20) ¸ 50 = 160,000 lb	0 lb to 160,000 lb
High Increment Range	50 lb	From Top of the Low Increment Range to Capacity	160,050 lb to 400,000 lb

Table 5-3 Autorange Operation Example

Note: Autorange® works on the displayed weight value. Once a tare is taken the net weight is displayed in the low increment size until the net weight exceeds the low increment range. If the gross, tare and net weight are not all in the same increment range then the total of the net and tare weight may not exactly equal the gross weight. Example: A tare weight of 46,020 lb is taken. The net weight of the contents of the vehicle is 180,050 lb. The total of the tare and net weight is 226,070 lb, which is an invalid increment size. The 8530 will use the valid increment size for the gross weight which in this case would be by 50 lb increments resulting in a printed gross weight of 226,100 lb. This value is the same gross weight that would be displayed if the tare weight was cleared.

6. INTERFACING AND I/O CONNECTORS

6.1 MAIN PCB CONNECTIONS AND JUMPERS

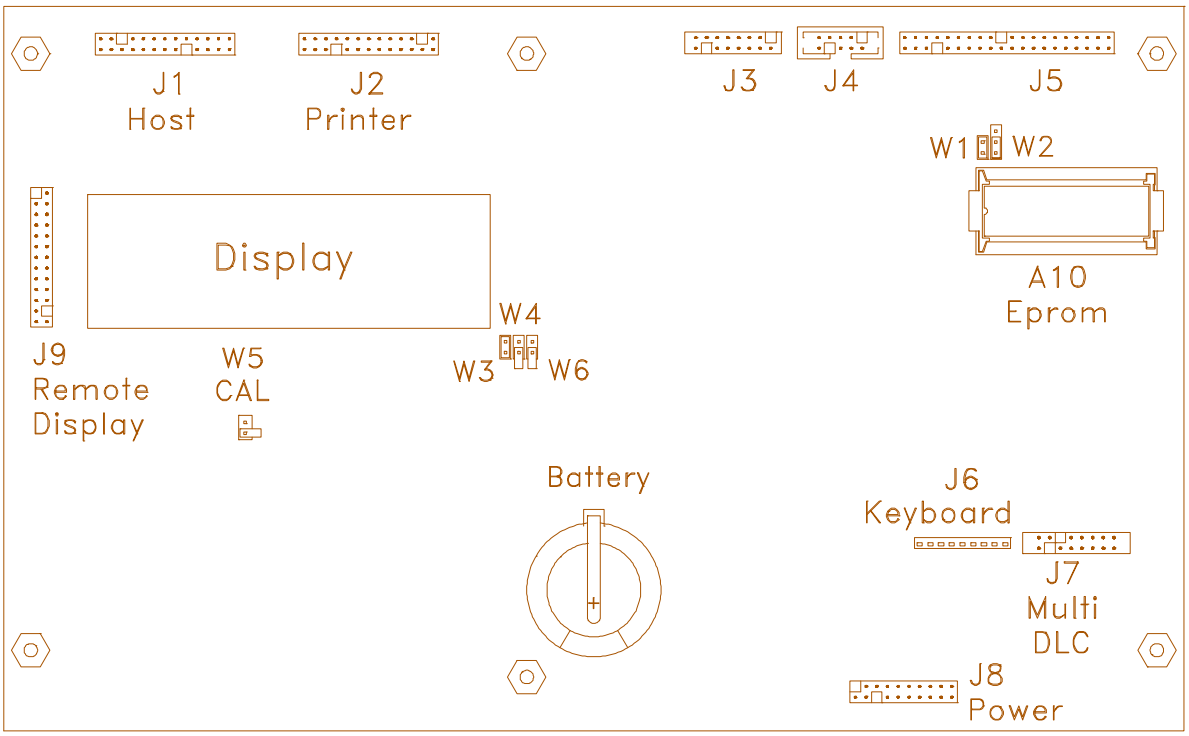


Figure 6-1 Main PCB

Main PCB Jumpers

W1 - OE Jumper (IN)

W2 - EPROM Select Jumper (2-3)

W3 - Filament Jumper (IN)

W4 - Comma Jumper (Out)
(Out) = Period for Decimal Point
(IN) = Comma for Decimal Point

W5 - Cal Jumper (Out)
(IN) = Access Setup Mode
(OUT) = Normal Operation

W6 - Receive Data Jumper (Out)
(IN) = Select 20 mA RxD
(OUT) = Select RS-232 RxD

Main PCB Connectors

J1 - JW Host Port
J2 - JN Printer Port
J3 - Single DLC (Not Used)
J4 - Keyboard/Barcode (Not Used)
J5 - Data Bus (Not Used)
J6 - Keyboard
J7 - Multi DLC
J8 - Power
J9 - Remote Display

6.2 LOAD CELL INTERCONNECT

CAUTION!

The 8530-0005 is compatible with vehicle scale bases containing DigiTOL® Power Cells only. The 8530 is compatible with the DigiTOL® Power Cells used in the DigiTOL® TRUCKMATE and RAILMATE vehicle scales, Models 7260, 7360, 7531, 7541, 7560, 7562, 7565 and the 760 DC.

DO NOT connect the 8530-0005 to analog load cells or single DigiTOL® Load Cell bases such as the Models 1996, 1997, 2096, 2097, 2196, 2197 or to the DigiTOL® Power Module used in the DigiTOL® Floor Scale Model 2157. Damage to load cell or the 8530 Main PCB may result.

REMOVE AC POWER FROM THE 8530 AND WAIT A MINIMUM OF 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESSES FROM PCB'S OR LOAD CELLS AS DAMAGE MAY RESULT.

Verify that the Multiple DLC harness, part number 131613 00A, has been installed between the external load cell harness and the multi DLC connector J7 on the 8530 Main PCB. Refer to Figure 6-1 for connector J7 location.

If the Single DLC harness, part number 131612 00A, is installed between the external load cell harness and the single DLC connector J3 on the 8530 Main PCB then remove the single DLC load cell harness and install the multi DLC harness between the external load cell harness and connector J7 on the 8530 Main PCB. The 8530 Main PCB must be removed to access the external load cell harness which is located behind the Main PCB.

The pinout of the external load cell connector J1, located on the rear of the 8530 enclosure is as follows. Refer to the weighbridge installation manual for weighbridge and home run cable wiring information.

J1 Pin #	Function	Color Code
1	COM A	Yellow
2	Ground	Green
3	Not Used	Not Used
4	COM B	Blue
5	+24 VDC	White
6	Ground	Brown
7	Ground	Black
8	+24 VDC	Red
9	+24 VDC	Orange

Table 6-1 J1 Power Cell Connector

6.3 JN SERIAL PORT

The 8530 JN serial port supplies 20 mA current loop (CL) and RS-232 interfaces for both input and output of serial data in either demand or continuous format output. The serial data format can be configured for 7 or 8 data bits, 1 selectable parity bit (even, odd or none) and either 1 or 2 stop bits. A selectable checksum character can be included in the data transmission to provide transmission error detection. Refer to Tables 6-2, 6-3 and 6-4 and Figure 6-2 for JN Port interconnect information. Refer to Section 8 for a list of printer cables and mating connectors.

Note: Only one of the serial ports, JN or JW, can be configured for demand mode output. Either or both of the ports can be configured for continuous mode output.

Both the 20 mA CL and RS-232 interfaces output data simultaneously and are usable at the same time. This allows the 8530 to send data to two different devices at the same time.

Serial ASCII command characters are accepted into either the RS-232 or the 20 mA CL interfaces. There is an ASCII character to duplicate the functions of every key on the 8530 keyboard. Characters are also accepted to lock or unlock the keyboard. Only one of the interfaces RS-232 or 20 mA CL can be used to receive ASCII characters.

The 20 mA CL input can be configured as a momentary contact input to provide a remote **CLEAR**, **PRINT**, **TARE** or **ZERO** key input. The 20 mA current loop input can also be configured for a maintained contact input to blank the display or lock the keyboard. This mode does not interfere with receiving ASCII characters into the RS-232 port.

6.3.1 JN Port Printer Interconnect

8530 JN Port	Signal Description	301 307	8806 8860	8860 WD	8843, 8844 8856, 8865
2	TxD RS-232C				3
3	RxD RS-232C				
7	Logic GND/-TxD 20 mA	6			7
8	+RxD 20 mA		11		
9	+20 mA Supply		16	H	
10	-RxD 20 mA		22		
13	+20 mA Supply				
22	+TxD 20 mA	7	18	K	
24	Logic Ground				
None	Jumpers	None	12-23	None	None

Table 6-2 JN Port Printer Interface Cable Interconnect

Printer Interface Cable Notes:

- The 8806/8860 pin numbers are for the 8806 printer and the desk version of the 8860 using the adapter plug supplied with the 8860. The 8860 WD pin letters are for the washdown version of the 8860 printer.
- The jumper shown between pins 12 and 23 must be installed in the 8806 end of the interface cable and remote pulse input must be enabled for the remote print button on the Model 8806 printer to operate.

8530 JN Port	Signal Description	8614 8616	8623	8617 9323 9325	9330	9360 *
		TB1	PN or PY	TB2	TB2	CH 2 or 4
2	TxD RS-232C					
3	RxD RS-232C					
7	Logic GND/-TxD 20 mA					
8	+RxD 20 mA				4	9
9	+20 mA Supply	2	8	8		8
10	-RxD 20 mA				2	22
13	+20 mA Supply	3				
22	+TxD 20 mA	1	10	9		10
24	Logic Ground					
None	Jumpers	None	None	W2-20 mA	None	None

Table 6-3 JN Port Accessory Interface Cable Interconnect

Accessory Interface Cable Notes:

- The W2 jumper shown for the Model 8617 Scoreboard Display, the Model 9323 BCD Convert and the Model 9325 Analog Output Converter is located on the serial interface PCB inside the accessory.
- Recommended JN port connection to the 9360 is by 20 mA current loop. Channels 2 and 4 on the 9360 supply 20 mA current loop.

8530 JN Port		PC Compatible Computer	
Pin	**Description**	**DB-25-S**	**DB-9-S**
2	TxD RS-232	3	2
3	RxD RS-232	2	3
7	Logic Ground	7	5
PC Interface Cable Jumpers		4 --¿ 5 --Ù 6 --¿ 8 --´ 20 --Ù	1 --¿ 4 --´ 6 --Ù 7 --¿ 8 --Ù

Table 6-4 JN Port Computer Interface Cable Interconnect

PC Compatible Interface Cable Notes:

- The jumpers shown in table 6-4 are located in the computer end of the interface cable.
- ASCII input must be enabled, setup step **[86 1]**, and jumper W6 on the 8530 Main PCB must be (OUT), not shorting the pins together, for bidirectional communication between the 8530 and the computer to work.

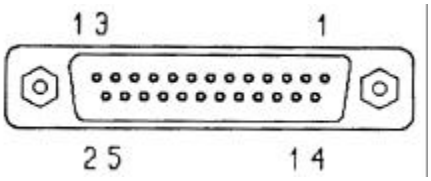


Figure 6-2 DB-25, JN Port Serial Connector

6.3.2 Remote Contact Closure Input

The JN port 20 mA RxD input can be used for a remote contact closure input for the function selected in setup step **[86 1]** if the W6 jumper on the 8530 Main PCB is (OUT). The contact closure input can be used as a remote **CLEAR**, **PRINT**, **TARE** or **ZERO** key if connected to a momentary contact pushbutton. The remote contact closure input can be used to blank the weight display or to lock the 8530 keyboard.

The remote pushbutton or switch can be located up to 2000 feet from the 8530. Use a shielded, twisted pair, data cable and ground the shield of the cable to the shell of the DB25 connector. Figure 6-3 details the remote contact closure input wiring.

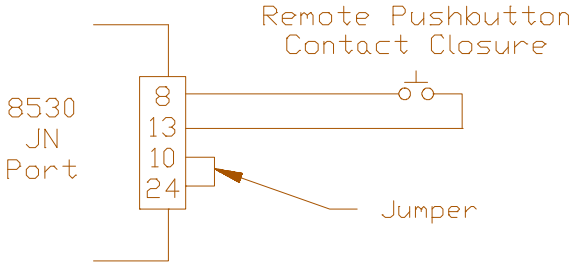


Figure 6-3 20 mA Remote Print Pushbutton

6.4 JW OPTION PORT

The optional JW port supplies RS-232 and RS-422 interfaces for both input and output of serial data in either the demand or continuous output format. The serial data format can be configured for 7 or 8 data bits, 1 selectable parity bit (even, odd or none) and either 1 or 2 stop bits. A selectable checksum character can be included in the data transmission to provide transmission error detection.

Refer to Tables 6-5, 6-6 and 6-7 and Figure 6-4 for JW Port interconnect information. Refer to Section 8 for a list of available interface cables and mating connectors.

Both the RS-232 and the RS-422 interface output data simultaneously and are usable at the same time. This permits the 8530 to send data to two different devices at the same time.

Serial ASCII command characters are accepted into either the RS-232 or the RS-422 interfaces. There is an ASCII character to duplicate the functions of every key on the 8530 keyboard. Characters are also accepted to lock or unlock the keyboard. Only one of the interfaces, RS-232 or RS-422, can be used to receive ASCII characters.

6.4.1 JW Port Printer Interconnect

8530 JW Port	Signal Description	8806 8860	8860 WD	8843, 8844 8856, 8865
2	TxD RS-232C	3	C	3
3	RxD RS-232C			
4	RTS RS-232C			
5	CTS RS-232C			
7	Logic GND	7	G	7
10	(+) RxD B RS-422			
11	(-) RxD A RS-422			
12	(+) TxD B RS-422			
13	(-) TxD A RS-422			
20	DTR			

Table 6-5 JW Port Printer Interface Cable Interconnect

Printer Interface Cable Notes:

- The 8806/8860 pin numbers are for the 8806 printer and the desk version of the 8860. DO NOT use the adapter plug supplied with the 8860 when using RS-232.

8530 JW Port	Signal Description	8617 9323 9325	9330	9360	
		TB2	TB2	Desk Mount Channels 1 or 3	Wall Mount Terminal Strips J20 or J24
2	TxD RS-232C				
3	RxD RS-232C				
4	RTS RS-232C				
5	CTS RS-232C				
7	Logic GND				
10	(+) RxD B RS-422			11	1
11	(-) RxD A RS-422			12	2
12	(+) TxD B RS-422	6	2	13	3
13	(-) TxD A RS-422	7	3	24	4
20	DTR				
None	Jumpers	W2: RS-485	None	None	None

Table 6-6 JW Port Accessory Interface Cable Interconnect

Accessory Interface Cable Notes:

- The W2 jumper shown for the Model 8617 Scoreboard Display, the Model 9323 BCD Convert and the Model 9325 Analog Output Converter is located on the serial interface PCB inside the accessory.
- Recommended JW port connection to the 9360 is by RS-422. Channels 1 and 3 on the 9360 supply RS-422.

8530 JW Port		PC Compatible Computer	
Pin	**Description**	**DB-25-S**	**DB-9-S**
2	TxD RS-232	3	2
3	RxD RS-232	2	3
7	Logic Ground	7	5
PC Interface Cable Jumpers		4 --¿ 5 --Ù 6 --¿ 8 --´ 20 --Ù	1 --¿ 4 --´ 6 --Ù 7 --¿ 8 --Ù

Table 6-7 JW Port Computer Interface Cable Interconnect

PC Compatible Interface Cable Notes:

- The jumpers shown in table 6-7 are located in the computer end of the interface cable.
- ASCII input must be enabled, setup step **[86 1]**, for bidirectional communication between the 8530 and the computer to work.

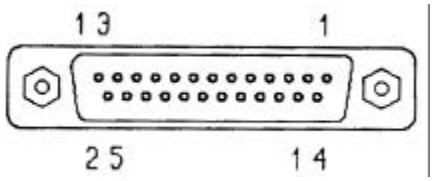


Figure 6-4 DB-25, JN Port Serial Connector

6.5 DEMAND MODE OUTPUT DATA FORMAT

Demand mode output occurs any time an inbound, outbound or quickprint ticket format is printed. Demand output is inhibited when the scale is "in motion" or when the weight is under gross zero or over capacity. If the demand output is inhibited because of motion or a over capacity or under zero condition, the print request will be stored and acted upon as soon as the 8530 is no longer inhibited to output data. Demand mode output can also be inhibited by minimum print and print interlock.

6.5.1 Print Field Notes

Each line of a demand mode transmission begins with an ASCII <STX> character, hex value 02, if <STX> character output is enabled. A leading <STX> character is required by the Model 8806 and 8860 printers.

Each line of data ends with an ASCII <CR> character, hex value 0D, a checksum character (if checksum is enabled), and an ASCII <LF> character, hex value 0A.

Checksum is defined as the 2's complement of the seven low order bits of the binary sum of all characters preceding the checksum character, including the <STX> and <CR> character. The checksum calculation for multiple lines of data includes the <LF> character from the previous line of data.

All weight data fields are padded with leading spaces to nine characters in length. A negative net weight is indicated by a minus character before the most significant digit of the weight value. For example a weight of -34.5 is output with four leading spaces: $^{S}{}_{P}{}^{S}{}_{P}{}^{S}{}_{P}{}^{S}{}_{P}$-34.5 ($^{S}{}_{P}$ = Space).

If weight units printing is enabled then each weight data field will have a two or three character weight unit legend after the nine digits of weight data.

A stored inbound weight field is printed with a **(1)** after it on both inbound and outbound ticket formats.

Tare and net weight fields are not printed if the 8530 is in the gross weight mode.

If bracketed printing is enabled, then all truly measured weight values (as opposed to hand entered values) are preceded by an ASCII < character and followed by an ASCII >.

If print weight expanded is enabled, an ASCII <SO> character, hex value 0E, is output before the net weight data field, or gross weight field if the 8530 is in the gross mode. An ASCII <SI> character is output at the end of each line of data if print weight expanded is enabled.

Time And Date Field: The time and date format is output as listed in Table 6-5.

Step [73] Selection	Time Output Format	Date Output Format
1	HH:MM	$MM^{S}_{P}DD^{S}_{P}YY$
2	HH:MM	DD.MM.YY
3	HH:MM	$YY^{S}_{P}MM^{S}_{P}DD$
4	$HH:MM^{S}_{P}PM$	$MM^{S}_{P}DD^{S}_{P}YY$

Table 6-8 Time and Date Output Formats

6.5.2 Print Interlock

When print interlock is enabled, only one print of a transaction is permitted. The weight on the scale must return to a net weight less than the minimum print value to reset the interlock. After the interlock has been reset, a single print of another transaction than the minimum print value is possible.

6.5.3 Autoprint

Autoprint enables the 8530 to automatically output a quickprint ticket format when the weight on the scale settles to no motion. The weight on the scale must be greater than the minimum print value. After an autoprint, the net weight on the scale must return to a weight value less than the minimum print value to reset the autoprint feature. The **PRINT** key is disabled when autoprint is enabled.

6.5.4 Net Sign Correction

Net sign correction enables the Model 8530 to store a tare value which is greater than the gross weight on the scale and print a positive net weight. This is done by swapping the gross and tare weight values so that the larger value is the gross weight and the smaller value is the tare weight. Net sign correction only effects demand mode data output. The displayed weight and continuous data output will still show a negative net weight value.

Net sign correction example:		Data output is:	
Weight on the scale =	35100 lb	64080 lb	
Tare weight entered =	64080 lb	35100 lb	TARE
Displayed weight =	-28980 lb	28980 lb	NET

6.6 CONTINUOUS OUTPUT MODE

The continuous output format is output every display update (approximately 15 per second). The continuous output format is fixed except for baud rate, parity and the selectable checksum character. The continuous output mode provides compatibility with Mettler-Toledo products that require real time weight data such as the Model 8614, 8616, 8617, 8623, 9323, 9325, and 9360 accessories.

Character	1	Status			Indicated Weight						Tare Weight						17	18
		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Data	STX	SWA	SWB	SWC	MSD	-	-	-	-	LSD	MSD	-	-	-	-	LSD	CR	CHK
Notes	A	B			C						D						E	F

Table 6-9 Continuous Format Output

Continuous Format Output Notes:

A - STX: ASCII start of text character, hex value 02.

B - SWA, SWB and SWC: Status Words A, B and C. Refer to Tables 6-10, 6-11 and 6-12.

C - Displayed Weight: Six digits of displayed weight. No decimal point in field.

D - Tare Weight: Six digits of tare weight data. No decimal point in field.

E - CR: ASCII carriage return, hex value 0D.

F - CHK: Optional Checksum character, 2's complement of the 7 low order bits of the binary sum of all characters prceding the checksum.

Function	Decimal Point Selection	Bit 2	Bit 1	Bit 0
Decimal Point or Dummy Zero	X00	0	0	0
	X0	0	0	1
	X	0	1	0
	0.X	0	1	1
	0.0X	1	0	0
	0.00X	1	0	1
	0.000X	1	1	0
	0.0000X	1	1	1

Function	Bit
Setpoint 1, Feeding = 0	3
Setpoint 2, Feeding = 0	4
Always a 1	5
Setpoint 3, Feeding = 0	6

Table 6-10 Status Word A Bit Definitions

Function	Bit
Gross/Net, Net = 1	0
Under Zero, Negative = 1	1
Overcapacity = 1	2
Motion = 1	3
lb/kg, kg = 1	4
Always a 1	5
Always a 0	6

Table 6-11 Status Word B Bit Definitions

Function	Bit
Always a 0	0
Always a 0	1
Always a 0	2
Print Request = 1	3
Setpoint 4, Feeding = 0	4
Always a 1	5
Always a 0	6

Table 6-12 Status Word C Bit Definitions

6.7 REMOTE ASCII CONTROL CHARACTER INPUT

The JN or the JW port of the 8530 will accept a single, upper case, ASCII character for each key on the 8530 keyboard. In addition, characters are accepted to lock and unlock the keyboard or to blank and unblank the display. Refer to Table 6-13 for valid ASCII command characters.

The parity and baud rate of the data input are the same as selected for data output. The ASCII command character must be a single character. Do not send a Carriage Return <CR> or a Line Feed <LF> character after the command character or erratic operation of the 8530 may result.

ASCII Character	Keyboard Equivalent or Function
A	**lb/kg**
B	Blank Display
C	**Clear**
E	**Enter**
F	**Function**
I	**ID**
L	Lock Keyboard
M	**Memory**
N	**Gross/Net**
P	**Print**
T	**Tare**
U	Unlock Keyboard

ASCII Character	Keyboard Equivalent or Function
W	Display Weight
Z	**Zero**
0	**0**
1	**1**
2	**2**
3	**3**
4	**4**
5	**5**
6	**6**
7	**7**
8	**8**
9	**9**

Table 6-13 Remote ASCII Serial Input Commands

Note: Keyboard equivalents to ASCII character commands in Table 6-13 are printed in **Bold**.

7. PREVENTIVE MAINTENANCE

This section provides instructions and procedures for maintenance of the 8530, as well as a troubleshooting guide to aid in the correction of malfunctions.

7.1 REQUIRED TOOLS AND SUPPLIES

The following items and common hand tools are recommended for maintenance and repair.

Multiple DigiTOL® Simulator 0964-0033
Soft, Lint Free, Cleaning Cloth

Static Wrist Strap

7.2 CLEANING

use any type of industrial solvent or the finish of the unit may be damaged. Do not spray cleaner directly onto the unit.

7.3 TROUBLESHOOTING PROCEDURES

If problems occur, record as much information as possible about the symptoms the scale is exhibiting before attempting to repair the scale. Perform the troubleshooting tests described next in the order listed to determine the cause of the malfunction. Always check power supply voltages before replacing any components in the scale. If the 8530 is displaying an error code then record the error code and refer to Section 7.3.3.

7.3.1 AC Power and Ground Tests

(102 to 130 VAC). Operation with line voltage outside this range may damage the 8530 Main PCB or transformer. AC line voltages close to these minimum or maximum values indicate a marginal power

Check for AC voltage between neutral and ground on the AC input. Neutral to ground voltages greater than 0.1 VAC indicate that the ground supplied to the 8530 is low quality. The 8530 requires a high quality, true

ground. Refer to the weighbridge installation manual for proper grounding procedures.

electrician correct the AC power. In cases of low or high line voltage a power line conditioner may be required to correct the adverse power condition.

7.3.2 Cabling and External Equipment Tests

Visually inspect all inter
replace the damaged cable and retest the scale. Disconnect all nonessential external equipment (printers, computers, remote displays, remote contact closure input) and retest the scale. If the problem is corrected

7.3.3 Error Codes

If an error code is displayed, disconnect AC power to the 8530, wait 15 seconds then reconnect AC power before performing the corrective measures recommended in Table 7-1.

listed and retest between measures. Check the 8530 power supplies before replacing the 8530 Main PCB. A malfunctioning 8530 Main PCB could be due to an incorrect power supply voltage.

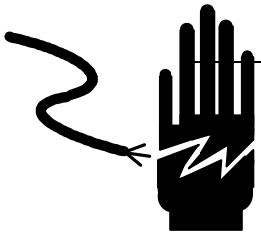
Error	Error Description	Corrective Measures
E1	Fatal Rom Error	1. Replace EPROM and Carrier. 2. Replace Main PCB.
E2	Fatal Internal RAM Error	1. Replace Main PCB.
E3	Corrupt SETUP Memory Error	1. Enter setup and reprogram. 2. Replace Main PCB.
E4	Fatal External RAM Error	1. Replace Main PCB.
E5	Display Verify Error	1. Replace Main PCB.
E6 XX	Analog verify failure in Power Cell XX	1. Recalibrate scale. 2. Check pit power supply voltages. 3. Check load cell cable XX. 4. Replace Power Cell XX.
E7 XX	Data format error, Power Cell XX	1. Recalibrate scale. 2. Replace load cell. 3. Replace Main PCB.
E8 XX	No communication with Power Cell XX	1. Check pit power supply voltages. 2. Check COM A and COM B voltages. 3. Check 8530 Power Supply Voltages. 3. Check all load cell cables. 4. Check 8530 Main PCB with Power Cell Simulator. 5. Replace Main PCB. 6. Replace Power Cell XX.
E9 XX	Power Cell XX is out of range	1. Check weighbridge for mechanical bind. 2. Check for load cell cable damage. 3. Check pit power supply voltages. 4. Replace Power Cell XX.
E10 XX	RAM error in Power Cell XX	1. Recalibrate scale. 2. Replace load cell. 3. Replace Main PCB.
E11 XX	ROM error in Power Cell XX	1. Replace load cell. 2. Replace Main PCB.
E13 XX	NOVRAM error in Power Cell XX	1. Check pit power supply voltages. 2. Check load cell cable XX. 3. Replace Power Cell XX. 4. Replace Main PCB.
E14	Battery Backed Ram Memory Lost	1. Replace Battery 2. Check 8530 Power Supply Voltages. 3. Replace Main PCB.

Table 7-1 Error Codes

Error	Error Description	Corrective Measures
E16	Math Overflow Error	1. Enter setup and reprogram. 2. Replace Main PCB.
E21	Incorrect scale capacity	Press **CLEAR** key, then enter correct capacity.
E24	Illegal high range division	Press **CLEAR** key, then enter correct division size.
E25	Illegal mid range division	Press **CLEAR** key, then enter correct division size.
E26	Illegal low range division	Press **CLEAR** key, then enter correct division size.
E27	Illegal Overcapacity Entry	Press **CLEAR** key, enter legal overcapacity value.
E32	Insufficient Test Weight	1. Verify correct capacity has been entered. 2. Use more test weight.
E34	Test weight larger than capacity	Press **CLEAR** key, test weight must be less than 105% of capacity. Verify correct capacity has been entered
E35	Incorrect Test Weight Increment	Press **CLEAR** key, test weight value entered must match the increment size entered in setup.
E36	Insufficient Counts or Build to small for load cell capacity	1. Press **CLEAR** key to clear. 2. Check weighbridge for mechanical bind. 3. Verify correct capacity and increment size has been entered. 4. Check shift adjust values in setup step **[97]**, if shift adjust values = to 0 then step **[18]** must be performed. 5. Recalibrate with larger test weight. 6. Check pit power supply voltages. 7. Verify that raw count output of Power Cells increases as weight is applied to the weighbridge. 8. Replace Main PCB.
E37	Calibration Checksum Error	1. Recalibrate 8530. 2. Check 8530 Power Supply Voltages. 3. Replace Main PCB.
E38	Poor build for counting	1. Press **CLEAR** key to accept current build 2. Or recalibrate with larger capacity.
E40 XX	Bad Record at Memory Address XX	Press **CLEAR** key, bad record is automatically erased.
E41	Stored weight in wrong weight units. (lb/kg)	Operator is attempting to perform an operation with stored tare weights or accumulation and the weight units have changed from lb to kg or vice versa. Press the lb/kg to return to original weight units and repeat the store operation.
E42	Can't recall tare in net mode	Operator is attempting to recall a stored tare weight with the 8530 in the net weight mode. Either select a permanent register with a stored tare weight of zero or clear the tare before attempting to recall a stored tare weight.
E43	Invalid accumulation	Net weight accumulation is selected, step **[29 1]** and operator is attempting to accumulate in the gross weight mode.
E50	Illegal Power Cell Command	1. Verify AC power and ground. 2. Check 8530 Power Supply Voltages. 3. Replace Main PCB.
E E E or -E E E	Scale not zeroed	1. Press **ZERO** key. 2. Check weighbridge for mechanical bind. 3. Recalibrate scale.

Table 7-1 Error Codes Continued

7.3.4 Main PCB Voltage Checks



WARNING

ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TEST, AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

The transformer assembly provides AC and DC power supply voltages to the 8530 Main PCB. The 8530 Main PCB converts the AC and DC power supply voltages from the transformer assembly into the power

All DC voltages listed are measured with respect to logic ground, (black meter lead connected to V1 on the 8530 Main PCB). Refer to Table 7-2 and Figure 7-1. The Power Cell supply voltage is not regulated and weighbridge and the AC line voltage. The DC voltage values are based on an AC power line voltage from 103 to 130 VAC.

	Description	Minimum		Maximum AC Ripple	Plus Meter Lead	
+24 VDC	Raw Supply +22		+28.5 VDC	0.2 VAC		1
+22 VDC		+16.5 VDC	+28 VDC		V4	2
	+5 Logic Supply	+4.7	+5.25 VDC	0.01 VAC		3
+5 VDC B		+4.75 VDC	+5.25 VDC		+C32	4
	Raw +5 Supply + RS-232 Supply		+14 VDC	0.2 VAC		5
-12 VDC		-10 VDC	-14.5 VDC		A1-Pin 1	6
	Display Supply	-33 VDC		0.02 VAC	-CR26	
Battery	RAM Memory		+3 VDC	0.02 VAC		8
COM A		+1.9 VDC	+2.7 VDC		V2	9
	Data Line	+1.9 VDC		N.A.	V3	

Table 7-2 Main PCB DC Power Supply Voltage Checks

Main PCB DC Power Supply Voltage Notes:

1 - **+24 VDC**: Raw Power Cell supply voltage, measured at top end of resistor R41.

2 - **+22 VDC**: Power Cell supply voltage, measured at left end of V4. The +22 volt supply is switched off during cell addressing, setup steps **[04]**, **[91]** and **[92]**.

3 - **+5 VDC A**: Regulated control logic supply, measured at positive end of capacitor C31.

4 - **+5 VDC B**: Regulated display logic supply, measured at positive end of capacitor C32.

5 - **+12 VDC**: + RS-232 and raw +5 VDC supply, measured at pin 14 of IC A1.

6 - **-12 VDC**: - RS-232 Supply, measured at pin 1 of IC A1.

7 - **-37 VDC**: Display voltage, measured at negative end of diode CR26.

8 - **Battery**: Battery Backed RAM Memory, measured at positive terminal of battery with AC power disconnected.

9 - **COM A and COM B:** The COM A and COM B data lines are toggling between ground and +5 VDC at 375,000 times per second. The COM line will measure approximately 2.3 VDC. The actual voltage measured is not critical, the important thing is that the COM lines are the same and are not high or low. If one of the COM lines is high or low, disconnect the home run cable from the J1 connector on the rear of the 8530 indicator and retest. If the COM voltages are still incorrect with the home run cable disconnected, the 8530 Main PCB is defective.

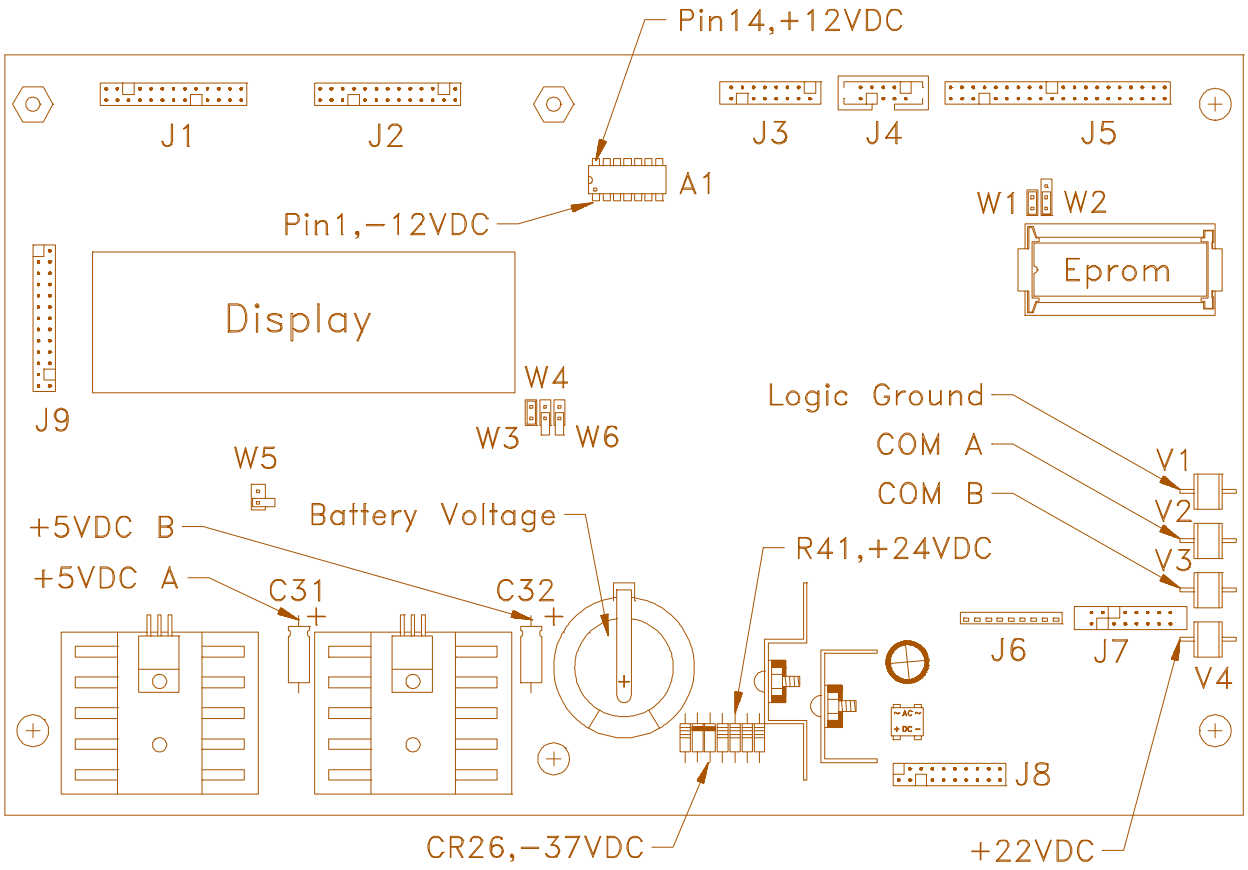
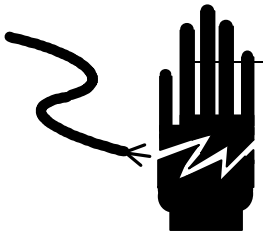


Figure 7-1 8530 Main PCB Test Points

7.3.5 Transformer Assembly Power Supply Tests

If any of the Main PCB DC voltages listed in Section 7.3.4.1 are missing or incorrect, or if the 8530 display is totally blank, check the AC transformer voltages. The transformer assembly supplies three AC supply voltages and the raw +24 VDC Power Cell supply to the 8530 Main PCB. All AC supply voltage checks are measured across the pins indicated in Table 7-4 and Figures 7-2 and 7-3.



WARNING

ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THIS EQUIPMENT. EXERCISE CARE WHEN MAKING CHECKS, TEST, AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

CAUTION!

Do not apply AC power to the 8530 with the transformer assembly unplugged from the J8 connector on the 8530 Main PCB. The 22,000 mF capacitor in the Transformer Assembly will be charged and will retain a charge after the AC power is disconnected.

If this situation occurs, measure the DC voltage across the 22,000 mF capacitor. Wait for the charge on the capacitor to totally dissipate before plugging the Transformer Assembly back into the J8 connector on the 8530 Main PCB.

Damage to the 8530 Main PCB could occur if the Transformer Assembly is plugged into the J8 connector on the 8530 Main PCB while the 22,000 mF capacitor is still charged.

Voltage	Acceptable Voltage		Plus Meter Lead	Minus Meter Lead	Notes
	Minimum	Maximum			
9.5 VAC	8 VAC	11 VAC	J8-14	J8-11	1
9.5 VAC	8 VAC	11 VAC	J8-16	J8-11	
37 VAC	30 VAC	40 VAC	J8-1	J8-3	2
1.7 VAC	1.4 VAC	1.8 VAC	J8-6	J8-12	3
1.7 VAC	1.4 VAC	1.8 VAC	J8-8	J8-12	
17 VAC	14 VAC	19 VAC	CR1-AC	CR1-AC	4

Table 7-4 Transformer Assembly AC Voltage Checks

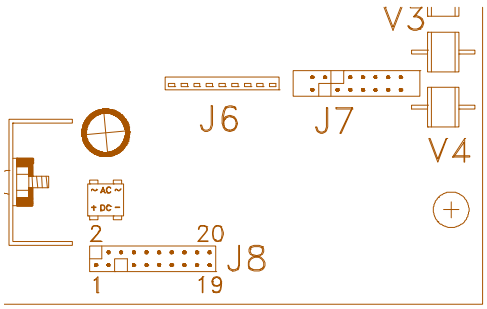


Figure 7-2 Main PCB J8 Connector

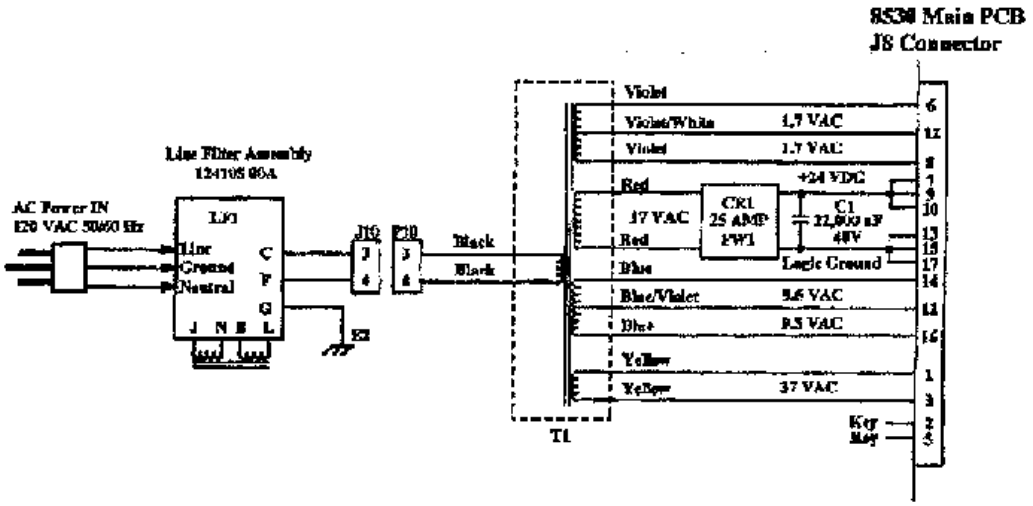


Figure 7-3 Transformer Assembly Wiring Schematic

Transformer AC Voltage Checks Notes:

1 - **9.5 VAC**: Raw AC supplies for the ±12 VDC supplies, measured across pins 14 and 11, and across pins 16 and 11, of the J8 connector on the 8530 Main PCB.

2 - **37 VAC**: Raw AC supply for the -37 VDC display supply, measured across pins 1 and 3 of the J8 connector on the 8530 Main PCB.

3 - **1.7 VAC**: Filament voltages for display tube, measured across pins 6 and 12, and across pins 8 and 12, of the J8 connector on the 8530 Main PCB.

4 - **17 VAC**: Raw AC supply for the +24 VDC Power Cell supply, measured across the AC terminals of the bridge rectifier CR1, located behind the 8530 Main PCB. Check the 17 VAC power supply only if the +24 VDC Power Cell supply is missing or incorrect.

7.3.6 Power Cell Weighbridge Troubleshooting

There are two types of Power Cells used in DigiTOL® weighbridges, the NMOS Power Cell and the CMOS Power Cell. The CMOS Power Cell is a new type of cell that can operate directly from the +22 VDC supply from the 8530 and does not require the Pit Power Supply PCB. The NMOS Power Cell can not be used in CMOS weighbridges that do not have the Pit Power Supply PCB.

The CMOS Power Cells can also be used with the Intrinsic Safety Barrier, Model Number 0917-0198, in areas classified as Hazardous by the National Electrical Code (NEC) because of combustible or explosive atmospheres. **The 8530 indicator MUST be located in the nonhazardous area if used with the CMOS**

Power Cell and the intrinsic safety barrier. Refer to the 0917-0198 CMOS Intrinsic Safety Barrier installation instruction manual and the DigiTOL® Hazardous Area Wiring Diagram, TC100442, for troubleshooting information.

The 8530 communicates with the Power Cells using a master/satellite, two wire, half duplex, multi-drop communication protocol at 375,000 baud. The 8530 is the master and the Power Cells are satellites that transmit data only when the 8530 requests data. The COM A and COM B data lines from the 8530 are wired in parallel, to all Power Cells. A shorted data line can result in **[E8]** error codes for some or all Power Cells in the weighbridge.

7.3.6.1 NMOS Weighbridges (Pit Power Supply PCB)

The home run cable from the 8530 terminates in the weighbridge at the Pit Power Supply PCB. The Pit Power Supply converts the +22 VDC Power Cell supply from the 8530 into the +18.5 VDC and +8.5 VDC power supplies required by NMOS Power Cells. The Pit Power Supply has connections for six Power Cells. Weighbridges with more cells use the Pit Power Supply Expander PCB to provide more Power Cell connections.

All DC voltages listed are measured with respect to logic ground, (black meter lead connected to pin 5 of Terminal strip J6 on the Pit Power Supply PCB). The +22 VDC Power Cell supply voltage is not regulated, and the measured value is determined by the number of Power Cells in the weighbridge, the AC line voltage, and the length of the home run cable. The DC voltage values are based on an AC power line voltage from 103 to 130 VAC. Refer to Table 7-5 and Figure 7-4 for test points.

Voltage	Description	Acceptable DC Voltage		Maximum AC Ripple	Plus Meter Lead	Notes
		Minimum	Maximum			
+22 VDC	Power Cell Supply	+16 VDC	+28 VDC	0.2 VAC	J6-Pin 1	
+8.5 VDC	Cell Logic Supply	+7.5 VDC	+9 VDC	0.2 VAC	J1-Pin 4	1
+18.5 VDC	Cell Analog Supply	+17 VDC	+19 VDC	0.2 VAC	J1-Pin 3	
COM A	Data Line	+1.9 VDC	+2.7 VDC	N.A.	J6-Pin 8	2
COM B	Data Line	+1.9 VDC	+2.7 VDC	N.A.	J6-Pin 7	
Chassis Ground	Chassis Ground	-1 VDC	+1 VDC	1 VAC	Ground Pad	3

Table 7-5 Pit Power Supply PCB Voltage Checks (NMOS)

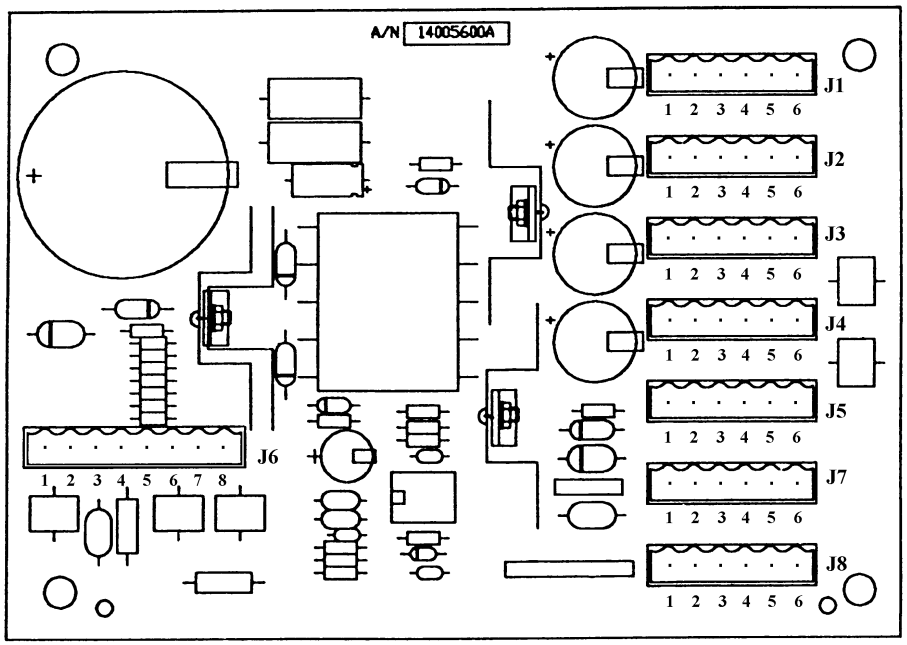


Figure 7-4 Pit Power Supply PCB

Pit Power Supply Voltage Checks Notes:

1 The Pit Power Supply is short circuit protected. If the +8.5 or +18.5 VDC power supplies are shorted to ground, the Pit Power Supply PCB will shut down to prevent damage. When the short is removed the power supply voltage will come back. If the +8.5 or the +18.5 VDC power supply voltages are missing or very low, disconnect all Power Cells and cell cables from the Pit Power Supply and retest. If the missing power supply voltage is now ok, reconnect one Power Cell and cable at a time to find the fault.

2 The COM A and COM B data lines are toggling between ground and +5 VDC at 375,000 times per second. A voltmeter will measure the average voltage of the COM line which should be about 2.3 VDC. The actual level of the voltage measured is not critical, the important thing is that the COM lines are the same and are not high or low. If one of the COM lines is high or low, then disconnect all of the Power Cells and load cell cables from the Pit Power Supply and measure the COM line voltages again. If the COM line voltages tested ok at the 8530 Main PCB but are bad with the Pit Power Supply connected , the Pit Power Supply is probably defective.

The Pit Power Supply includes surge voltage suppression devices on the power supply lines and on the COM A and COM B data lines to protect the Power Cells and 8530 from lightning induced surge voltages. The surge suppression devices can fail by shorting to chassis ground. Testing the Pit Power Supply PCB requires a digital multimeter that has a diode test setting.

A good Pit Power Supply will measure as an open circuit between the COM lines and chassis ground when using the diode test setting on a digital multimeter. Reverse the polarity of the meter leads and recheck between the COM lines to chassis ground. The result should be the same as the open circuit reading. If the diode test setting on your digital multimeter shows a measurable resistance between chassis ground and either of the COM A or COM B data lines, the Pit Power Supply is defective.

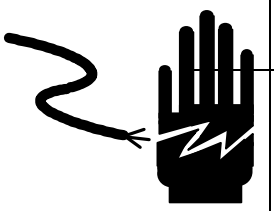
3 An excessive voltage between chassis ground and logic ground (greater than 1.5 volts) can cause a problem with intermittent **[E8]** error codes. This condition is aggravated by connecting to the RS-232 interface on either the JN or JW serial port. Voltage between chassis ground and logic ground is typically caused by leakage between the +18.5 VDC supply and chassis ground. Disconnect any external equipment from the 8530 and disconnect all Power Cells and cell cables from the Pit Power Supply and retest. Reconnect one Power Cell and cable at a time to find the source of the chassis ground to logic ground voltage.

7.3.6.1.1 Modification Required If NMOS Weighbridged

Model 8530 Digital Indicators shipping after 1994 include a Regulator PCB, Part Number 145068 00A, (mounted behind the main PCB) to regulate the supply voltage to the CMOS power cells.

Please **be advised** that if you are installing a new 8530, which includes the Regulator PCB, in a single cell or NOMS Power Cell application, **You MUST disconnect the Regulator PCB and bypass it.**

To bypass the Regulator PCB:



WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE SERVICING OR REMOVING THE FUSE.

1 Remove the Main PCB. Be sure to remove power first.

2 Separate the plugs connecting the harness which is connected to J2 (labeled Powercell) on the Regulator PCB, and the loadcell harness, J1, going to the 9 pin connector at the rear (bottom for Wall Mount) of the unit.

3 Disconnect the harness from J7 on the Main PCB. If the scale base is a single cell digital base, install the single cell wiring harness, part number *131612 00A to J3 of the Main PCB. If the scale is an NMOS Multi-cell scale, install the Multi-cell harness, Part Number *A131613 00A to J7 of the Main PCB.

4 Connect the other end of the harness installed in Step 3 to the loadcell harness, J1, going to the 9 pin connector at the rear (bottom for Wall Mount) of the unit.

Note: * indicates harness is packed with the indicator from the Factory.

Note: When installing the High Precision Interface Kit, Part Number A135948 00A (0917-0188) it will be necessary to completely remove the Regulator PCB completely.

7.3.6.2 CMOS Weighbridge (Nonhazardous Area Version Only)

CMOS Power Cell Weighbridges use a Connector PCB in place of the Pit Power Supply. The home run cable from the 8530 terminates at terminal strip J8 of the Connector PCB. The Connector PCB has terminations for six CMOS Power Cells. Weighbridges with more than six cells add a second or third Connector PCB in a daisy chain fashion with terminal strip J1 of the first Connector PCB wired to terminal strip J8 on the next Connector PCB.

All DC voltages are measured with respect to logic ground (terminal strip J2-GND on the Connector PCB). The DC voltage values listed in Table 7-6 are based on an AC power line voltage from 103 to 130 VAC. Refer to Table 7-6 and Figure 7-5 for test points.

Voltage	Description	Acceptable DC Voltage		Maximum AC Ripple	Plus Meter Lead	Notes
		Minimum	Maximum			
+22 VDC	Power Cell Supplies: +VA, +VB and +VC	+16 VDC	+28 VDC	0.2 VAC	J2-VA J3-VB J4-VC	1
COM A	Data Line	+0.8 VDC	+2.7 VDC	N.A.	J2-A	2
COM B	Data Line	+0.8 VDC	+2.7 VDC	N.A.	J2-B	
Ground	Chassis Ground	-1 VDC	+1 VDC	1 VAC	J2-CGND	3

Table 7-6 Connector PCB Voltage Checks (CMOS)

Note: Intrinsically Safe versions use a reduced Power Cell supply voltage that will typically measure between 8.0 to 10.5 VDC. Intrinsically Safe versions Power Cell COM A and COM B data line voltages typically measure around 0.5 VDC with 6 Power Cells connected to a home run cable.

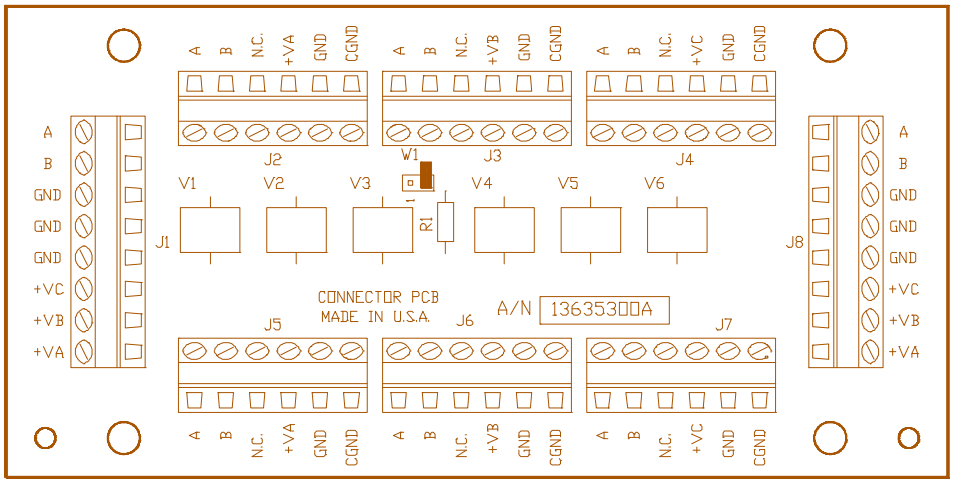


Figure 7-5 CMOS Power Cell Connector PCB Test Points

CMOS Power Cell Connector PCB Voltage Checks Notes:

1 The +22 VDC Power Cell Supply voltage is split into three, +22 VDC supply lines +VA, +VB and +VC. Each +22 VDC power supply is wired and measured independently.

2 The COM A and COM B data lines are toggling between ground and +5 VDC 375,000 times per second. The average DC voltage measured between the COM lines and ground for the CMOS Power cells varies with the number of Power Cells in the system. COM line voltage will vary from 2.5VDC (with no cells connected) to 0.8 VDC, with 12 cells connected). The COM A and COM B voltage will drop with each successive load cell plugged into the system. The actual level of the voltage measured is not critical, the important thing is that the COM lines are close to the same value and are not high or low.

If one of the COM lines is high or low, disconnect all of the Power Cells and load cell cables from the Connector PCB and measure the COM line voltages again. If the COM line voltages tested ok at the 8530 Main PCB but are bad with the Connector PCB connected, the Connector PCB is probably defective.

The Connector PCB includes surge voltage suppression devices on the power supply lines and on the COM A and COM B data lines, to protect the Power Cells and 8530 from lightning induced surge voltages. The surge suppression devices can fail by shorting to chassis ground. To test the Connector PCB requires a digital multimeter with a diode test setting. A good Connector PCB will measure as an open circuit between the COM lines and chassis ground when using the diode test setting on a digital multimeter. Reverse the polarity of your meter leads and recheck between the COM lines to chassis ground. You should get the same open circuit reading. If the diode test setting on your digital multimeter shows a measurable resistance between chassis ground and either of the COM A or COM B data lines, the Connector PCB is defective.

3 An excessive voltage between chassis ground and logic ground can cause a problem with intermittent **[E8]** error codes. This condition is aggravated by connecting to the RS-232 interface on either the JN or JW serial port. Voltage between chassis ground and logic ground is typically caused by leakage between the +22 VDC supply and chassis ground. Disconnect any external equipment from the 8530 and disconnect all Power Cells and cell cables from the Connector PCB and retest. Reconnect one Power Cell and cable at a time to find the source of the chassis ground to logic ground voltage.

7.3.7 Troubleshooting Intermittent Power Cell [E8] Error Codes

A reoccurring problem with intermittent E8 error codes displayed on the 8530 display may result from several different problems. Listed below are suggestions to assist you in eliminating intermittent E8 error codes.

1 Visually inspect all load cell cables and load cell connectors for damage. Flex the load cell cable where the cable comes out of the load cell connector and observe the 8530 for errors. Any load cell cable that is bent very sharply at the load cell connector may be damaged internally. Verify that all load cell connectors are clean and greased and show no signs of corrosion. A damaged load cell cable may also result in intermittent **[E9]** error codes as well as **[E8]** error codes.

2 Verify that all cable wiring is tightly terminated at j-box terminal strips. Gently pull on individual wires and tighten any loose terminal strip screws in the pit power supply and pit supply expanders. Check for corrosion on cable wiring.

3 For NMOS Power Cells check the +18.5 VDC, +8.5 VDC power supplies from the pit power supply. The pit power supply is short circuit protected and DC output voltages turn off automatically if a short occurs. The output voltages turn back on automatically when the short is removed. For CMOS Power Cells check the +22 VDC power supply to the Connector PCB.

4 Disconnect ALL external equipment such as scoreboards, printers, computers, etc. from the 8530 and determine if the intermittent E8 error codes are eliminated. Connection of the 8530 communication ports to external equipment can result in intermittent E8 error codes. Data cables routed in the same conduit as AC power lines can cause erratic operation and **[E8]** error codes to be displayed on the 8530. There is another possible problem with external equipment connected to the 8530 by means of the RS-232 or RS-422/485 interfaces:

Most computers and printers connect logic ground to chassis ground. The 8530 is designed with a floating logic ground for increased protection from lightning damage. When the RS-232 interface of the 8530 is connected to a computer that connects logic ground to chassis ground this also connects the logic ground of the 8530 to chassis ground. This logic ground to chassis ground connection can cause intermittent "E8" errors in the 8530.

Note: Connecting the logic ground of the 8530 to chassis ground will degrade the lightning immunity of the 8530.

If the RS-232 or RS-422/485 interfaces are the cause of the **[E8]** error codes or if there is a history of lightning related damage, an optical isolator should be installed between the 8530 and the external device. Contact technical support at 1-(800)-786-0040, for optical isolator recommendations for RS-232 or RS-422/485 interfacing. The JN Port 20 mA current loop interface is optically isolated and does not require additional isolation.

5 Measure between the COM A to ground and COM B to ground. The COM lines toggle between 0 and +5 VDC. A typical DVM will read between 1.9 VDC and 2.7 VDC between a COM line and ground for NMOS Power Cells (0.8 to 2.7 for CMOS Power Cells) when the 8530 and Power Cells are communicating properly. If one of the COM lines is disconnected from the 8530, a common symptom is a constant **[E8]** error code for a particular cell which suddenly changes to a constant **[E8]** error code for a different cell.

If one of the COM lines is "dead" (sitting solid at a voltage near 0 VDC or +5 VDC) and is not toggling, then the 8530 Main PCB may be defective. A "dead" COM line can also be caused by a damaged pit power supply (applies to NMOS load cell systems only), a shorted cell cable or a damaged cell. Try disconnecting part of the scale from the indicator (example: disconnect the expander PCB) and see if the "dead" COM line voltage becomes active.

6 For NMOS applictions, check the +22 VDC supply from the 8530 at the pit power supply terminal strip TB6. If the +22 VDC supply is below +16.5 VDC then refer to the weighbridge installation manual for the maximum cable length allowed for the scale base used. Also verify the AC line voltage. Low AC line voltage can cause intermittent **[E8]** error codes. Large office machines such as photocopiers or refrigerators can cause a low line voltage if powered from the same AC power source as the 8530. A constant voltage AC

power source should be installed if low AC line voltage is detected. Contact technical support at 1-(800)-786-0040 for constant voltage power source recommendations.

7.3.8 Other Problems

Operational or data output problems may be due to incorrect setup. Verify setup parameters, jumper selections and operating procedures as described in Sections 4 and 5 of this manual. If the problem is with data output, verify that the interconnect cable is wired correctly. Refer to Section 6.3 and 6.4.

Malfunctions in the 8530 can often be located most quickly by parts substitution. Verify all indicator power supply voltages as described in Section 7.3.4 before replacing any components in the 8530. Refer to the Interconnect Diagram in Section 10. for additional troubleshooting information.

A printed circuit board believed to be defective can be checked by replacing it with a known good PCB and observing whether the problem is corrected. Do not automatically program the replacement PCB like the suspect PCB as the problem could be caused by a programming error. Refer to Section 4 for programming information.

Use a properly grounded static wrist strap when handling PCBs. Use an antistatic bag to store both the new and the suspect PCB. Once the problem is corrected, reinstall all replaced PCBs, one at a time and retest. This step will eliminate replacing good PCBs.

Exchange PCBs or sub-assemblies are available from your authorized METTLER TOLEDO representative.

7.4 MAIN PCB REPLACEMENT

Open the enclosure by removing the four screws from the corners of the rear cover. Be careful not to damage the keyboard when removing the front cover.

Remove the Main PCB by removing the six phillips head PCB retaining screws. Remove the two display mask standoffs.

Near the right top edge of the Main PCB there is an EPROM and chip carrier. It is designated by a red adhesive label on top of the IC (integrated circuit) with the part number *13462100A on it. Grasp the ends of the carrier assembly and lift the carrier and EPROM from the mating socket on the PCB.

Install the EPROM and chip carrier assembly into the replacement Main PCB. Remove the white insulator card from the battery holder. Verify Main PCB jumper settings.

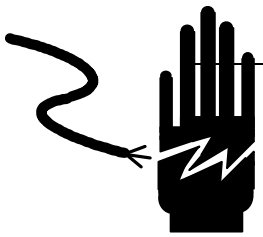
Reinstall the Main PCB into the 8530 enclosure and seal the enclosure.

7.5 BATTERY BACKED RAM

Time and date, inbound stored tare weights, permanent register, accumulated data and the ticket format setup data is stored in battery backed RAM to prevent loss of data if AC power is removed.

If the 8530 loses battery backed data when the AC power is removed, the lithium battery may have failed. Refer to Section 7.3.4 for battery voltage test points.

7.5.1 Battery Replacement Procedure



WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE SERVICING OR REMOVING THE FUSE.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

Open the enclosure by removing the four screws from the corners of the rear cover. Be careful not to damage the keyboard when removing the front cover.

Put on the rubber gloves provided with the lithium battery kit. The gloves are to protect the battery surface from oils and acids from your skin. The conductive surface of the battery MUST be kept clean or the battery will fail prematurely.

Carefully slide the battery out of the holder. Slide the replacement battery into the holder. Be sure to install the new battery with the plus side of the battery showing. Be careful not to contaminate the surface of the new battery.

Enter the setup mode and re-program the 8530. All ticket formats, setup steps **[74]**, **[76]**, and **[78]** will be lost. All stored tare weights, accumulated data, commodity or permanent registers will be lost.

8. SPARE PARTS, CONNECTORS, OPTIONS

8.1 RECOMMENDED SPARE PARTS

It is recommended that these spare parts be kept in stock in order to keep downtime to a minimum. Contact your local authorized METTLER TOLEDO service representative. In addition to the items listed, an 8530 Parts Catalog, part number PC008530 I00, should be ordered to have on hand for replacement of items not listed.

Part Number	Description	Qty.
134604 00A	Main PCB	1
134623 00A	Eprom and Carrier	1
130119 00A	Keyboard Assembly	1
134054 00A	Replacement Lithium Battery (RAM memory backup)	1
112509 00A	Fuse, 1 A, Slow Blow	1

8.2 MATING CONNECTORS

Connector	Part Number	Factory Number
J1 Load Cell Connector Kit	125819 00A	0917-0017
J1 Load Cell Pigtail Adapter	TA100357-C	N.A.
Serial I/O Connector JN, JW	128881 00A	0917-0144

8.3 PRINTER INTERCONNECT CABLES

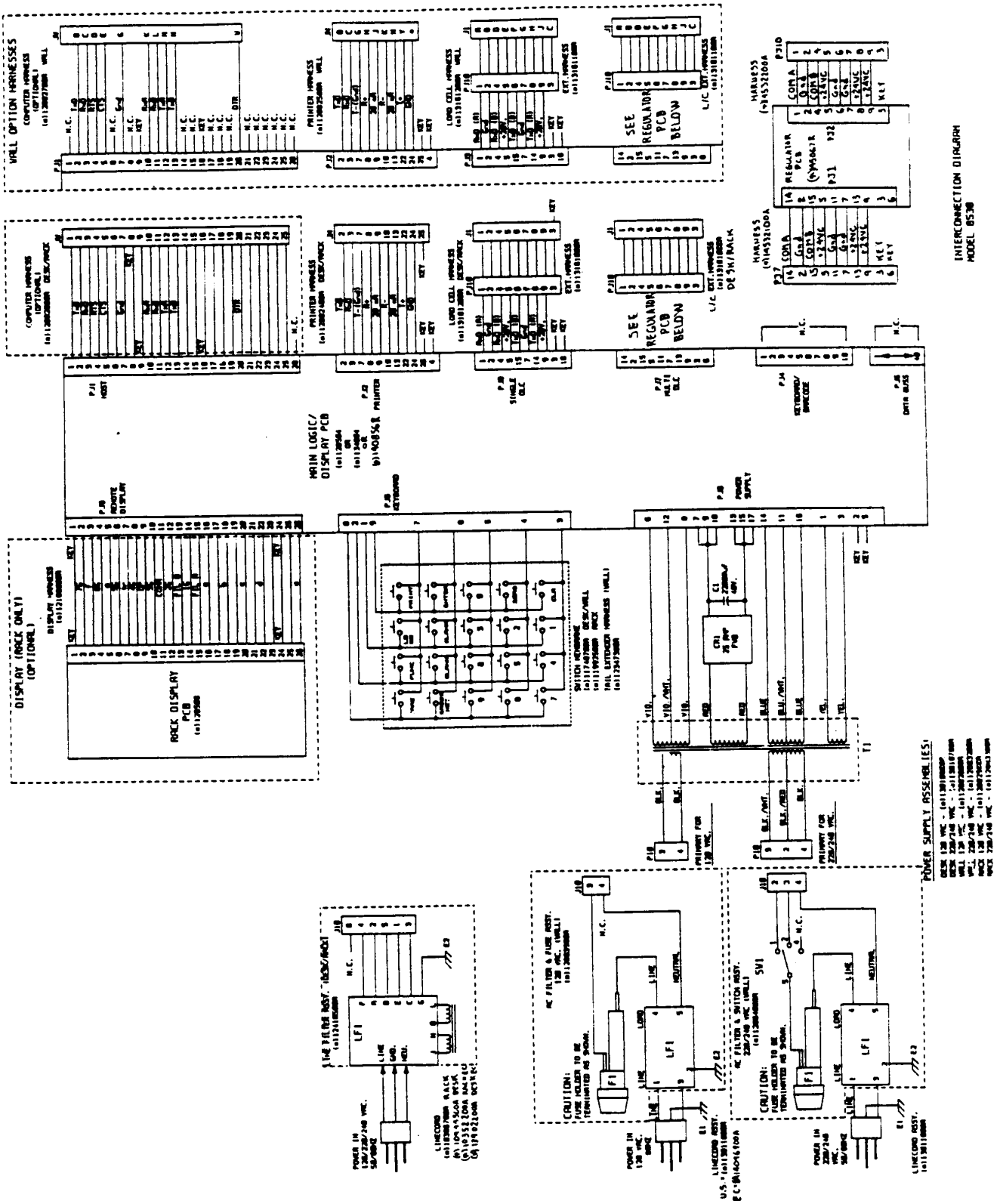
Printer Model	Length	Part Number	Factory Number
307	6'	119714 00A	0900-0191
	20'	119715 00A	0900-0199
8806	6'	115544 00A	0900-0136
8860 Desk Version	20'	115545 00A	0900-0137
8844 (20 mA)	6'	138219 00A	0900-0290
8806, 8844, 8856 (RS-232)	6'	128220 00A	0900-0214
8860 Wash Down	25'	125058 00A	0900-0293

8.4 OPTIONAL ACCESSORIES

Option Description	Part Number	Factory Number
JW Serial Port	130109 00A	0917-0146
Base Mounting Plate	124159 00A	0901-0178
Panel Mounting KOP	133149 00A	0917-0201

Note: Part numbers listed may have a letter prefix

9. INTERCONNECT DIAGRAM



METTLER TOLEDO
Scales & Systems
350 West Wilson Bridge Road
Worthington, Ohio 43085-2273

P/N: 14708700A

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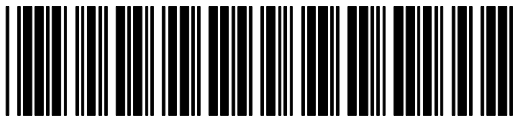

14708700A