TRIMWEIGH III

Washdown Scale

Technical Manual and User's Guide

B16528700A
(10/03).00

METTLER TOLEDO is recognized around the world for manufacturing and marketing high quality scales and weighing systems. With roots tracing back to 1901, the company takes pride in its long established record of employing innovation, technology, and a close working relationship with its customers to meet the diverse needs of the global marketplace. METTLER TOLEDO's worldwide headquarters are in Greifensee, Switzerland.

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 calling or writing to:

METTLER TOLEDO
1900 Polaris Parkway
Columbus, Ohio 43240
(614) 438-4511

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This device complies with Part 15 of the FCC Rules and the Radio Interference Requirements of the Canadian Department of Communications. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. 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 or her own expense.

CUSTOMER FEEDBACK

Your feedback is important to us! If you have a problem with this product or its documentation, or a suggestion on how we can serve you better, please fill out and send this form to us. Or, send your feedback via email to: quality_feedback.mtwt@mt.com. If you are in the United States, you can mail this postpaid form to the address on the reverse side or fax it to (614) 438-4355. If you are outside the United States, please apply the appropriate amount of postage before mailing.

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		Part / Model Number:
		Serial Number:
		Company Name for Installation:
Phone Number: ( )	Fax Number: ( )	Contact Name:
E-mail Address:		Phone Number:

Please check the appropriate box to indicate how well this product met your expectations in its intended use?	
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We/Wir/Nous/Wij/Noi: **Mettler-Toledo, Inc.**
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Worthington, Ohio 43085
USA

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Model/Type: TWIII series

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Auquel se réfère cette déclaration est conforme à la (aux) norme(s) ou au(x) document(s) normatif(s).
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Waarnaar deze verklaring verwijst, aan de volende norm(en) of richtlijn(en) beantwoordt.
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Council directive on the harmonization of the laws of the Member states:	**standards:**	**Certificate number (if applicable)**
relating to non-automatic weighing instruments (90/384/EEC) amended by directive (93/68/EEC)	EN 45501 Article 1.2.a.	T6161
relating to electromagnetic compatibility (89/336/EEC) amended by directive (93/68/EEC; 92/31/EEC)	EN55022, A EN50081-1:1992	
relating to electrical equipment designed for use within certain voltage limits (73/23/EEC) amended by directive (93/68/EEC)	EN 60950	

Worthington, Ohio USA, November, 2002 **Mettler-Toledo, Inc.**

Darrell Flocken, Manager - Weights & Measures
Office of Weights and Measures

Important notice for verified weighing instruments in EC countries.

M

Weighing instruments verified at the place of manufacture bear the preceding mark on the packing label and a green M-sticker on the descriptive plate. They may be set to work immediately.

M

Weighing instruments that are verified in two steps have no green 'M' on the descriptive plate, bear the aforementioned identification on the packing label. The second step of the verification must be carried out by the Mettler-Toledo service approved or by the W&M authorities. Please contact your Mettler-Toledo organization.

The first step of the verification has been carried out in the manufacturing company. It comprises all tests according to EN 45501 – 8.2.2. in regards to scales with analog connection to the weighing platform, a weighing test according to EN 45501 – 3.5.3.3 must be carried out additionally. This test is not necessary if the terminal bears the serial number of the weighing platform.

16574300A according to EN 45014

Mettler-Toledo Inc.

Columbus, Ohio

Declaration of Conformance to SMA Standard
Year of Declaration 2003
Production Meets Type

We the manufacturer of

Model	Certificate and Number	Issued by
TWIII	NTEP CoC 02-124	NCWM

declare in our responsibility the conformance of the above listed models and types to the mentioned certificates and the requirements of the SMA standard.

This declaration becomes valid when the SMA Compliance Logo, having our name or trademark is applied to the device or its accompanying documentation.

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

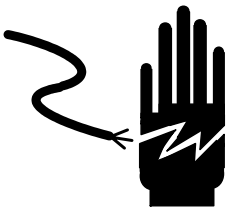
FOLLOW these instructions carefully.

SAVE this manual for future reference.

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

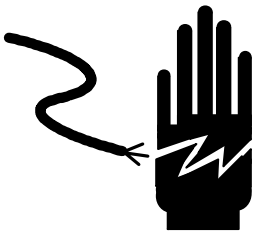
ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.



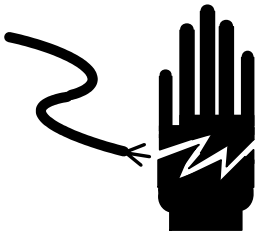
WARNING

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.



WARNING

FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.



WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE SERVICING OR CLEANING.

CAUTION

BEFORE CONNECTING/DISCONNECTING ANY INTERNAL ELECTRONIC COMPONENTS OR INTERCONNECTING WIRING BETWEEN ELECTRONIC EQUIPMENT ALWAYS REMOVE POWER AND WAIT AT LEAST THIRTY (30) SECONDS BEFORE ANY CONNECTIONS OR DISCONNECTIONS ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT OR BODILY HARM.

CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

CONTENTS

1 Introduction and Installation

This manual provides detailed information for installing, configuring, and servicing the TRIMWEIGH III scale.

Review all instructions and safety precautions carefully. All assembly and service procedures should be performed only by authorized personnel. If you encounter problems not covered in this manual, please contact your authorized METTLER TOLEDO representative.

Product Overview

The TRIMWEIGH III scale is a reliable, flexible checkweighing scale designed for simple weighing, over/under weighing, and weighing in washdown environments – including those in which the scale must be subjected to high pressure spray and/or high humidity.

The scale incorporates a hermetically sealed load cell for optimum performance in harsh washdown environments. The load cell also offers protection against cleaning agents and corrosives frequently found in food preparation and industrial environments.

The scale's base is designed to stand up to high-moisture environments, including heavy washdown or high humidity, and for easy cleaning. In addition, the TRIMWEIGH III scale 's terminal can be equipped with "butterfly" latches in order to achieve an IP69K level of protection against water ingress.

The TRIMWEIGH III is available with a standard 6-key keypad or an enhanced (18-key) keypad.

Model Configuration

TW	X	X	XXXX	XXX
TRIMWEIGH III Washdown Hermetic Scale	Terminal Mounting Option	Terminal Options	Capacity	Market Code Refer to Appendix 10
	1 = 305 mm (12 in) column	N = Numeric 6-key (IP69K)	006B = 6 kg/15 lb 9 in/229 mm base	
	2 = 495 mm (19.5 in) column	T = Numeric 6-key with toggle switch (IP69K)	015B = 15 kg/30 lb 12 in/305mm base	
	W = Wall-mount	K = Enhanced 18-key keypad (IP69K)	030B = 30 kg/60 lb 12 in/305 mm base	
		P = Enhanced keypad with toggle switch (IP69K)	060B = 60 kg/150 lb 12 in/305 mm base	
		A = Numeric 6-key keypad without sealing latches (IP65)	060L = 60 kg/150 lb 18 in/ 457 mm base	
		B = Numeric 6-key with toggle switch; no sealing latches (IP65)	150B = 150 kg/300 lb 18 in/ 457 mm base	
		C = Enhanced 18-key keypad without sealing latches (IP65)	060P = 60 kg/150 lb 18x24 in/457x610 mm base	
		D = Enhanced 18-Key Keypad with Toggle Switch, without sealing latches (IP65)	150P = 150 kg/300 lb 18x24 in / 457x610 mm base	

Example: TW1N006B019 is a TRIMWEIGH III scale with a 230 mm column and a 6-key keypad, and has a capacity of 6 kg (15 lb) for Canada.

Inspection and Contents Checklist

1. If the TRIMWEIGH III scale's shipping container appears damaged upon delivery, check inside for damage. File a freight claim with the carrier if necessary.
2. If the container was undamaged, unpack the container if you have not already done so. Lift the TRIMWEIGH III scale platter and then the TRIMWEIGH III scale base from the container and place them on a level, firm surface. Continue removing all contents of the container. Keep the original packing materials for future use.

WARNING

USE CAUTION WHEN LIFTING AND MOVING LARGE-SIZE SCALES. ATTEMPTING TO LIFT AND MOVE THE LARGE-SIZE BASES BY YOURSELF MAY RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

3. Make sure all components of the TRIMWEIGH III scale base are included in the package. Contact your METTLER TOLEDO representative if any components are missing. The shipping carton should contain:
   - Scale, including a terminal (indicator) attached to a column, and the base
   - Capacity sheet labels
   - Alternate legend labels
   - Operator card
   - TRIMWEIGH III Technical Manual and User's Guide
   - Adjusting wrench

Location

Before proceeding, determine the best location for the TRIMWEIGH III scale. Keep in mind the following conditions:

- **Vibration** – Vibration diminishes the TRIMWEIGH III scale's ability to measure accurately. Electrical machinery such as conveyors and presses can cause inaccurate and non-repeatable readings.
- **Level** – The TRIMWEIGH III scale may read inaccurately if it is not properly leveled. Choose a flat, level surface on which to place the TRIMWEIGH III scale and make sure it is level once it is set up.
- **Air Currents** – Moving air can cause a scale to read an additional force (additional weight) causing inaccurate and non-repeatable readings.
- **Temperature** – The TRIMWEIGH III scale is designed to continue functioning if temperatures change in the room in which it is located. However, if the TRIMWEIGH III scale is moved or subjected to a sudden temperature change, a warm-up period of approximately 30 minutes may be needed to ensure accurate readings.
- **Electrical Influences** – Electrical power supply fluctuations can affect performance. The TRIMWEIGH III scale should be set apart from equipment that generates electrical noise. "Clean" power should be used at all times.
- **Friction** – A scale cannot measure accurately if an object is rubbing or pressing against the platter. Leave ample clearance around the TRIMWEIGH III scale.
- **Moisture** – The TRIMWEIGH III scale is designed for use in wet environments.

Note: When provided with the optional latching clamps, the enclosure is designed to pass the IP69K level of water ingress protection. IP69K specifies the use of water protection against hot water (80° C) delivered at high pressure.

WARNING!

THIS SCALE IS NOT INTRINSICALLY SAFE! DO NOT USE IN AREAS CLASSIFIED AS HAZARDOUS BY THE NATIONAL ELECTRIC CODE (NEC) BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES.

Assembly and Connections

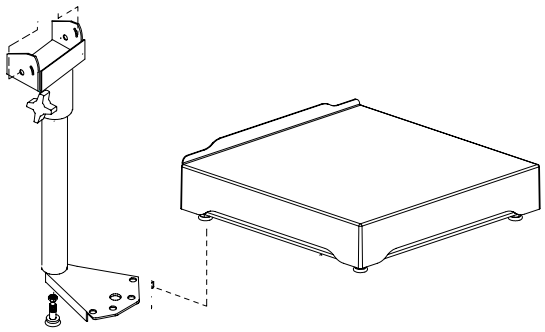
Set-up Procedures

WARNING

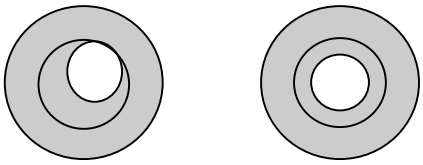
USE CAUTION WHEN LIFTING AND MOVING LARGE-SIZE SCALES. ATTEMPTING TO LIFT AND MOVE THE LARGE-SIZE SCALES WITHOUT ASSISTANCE MAY RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE.

Remove the TRIMWEIGH III scale from the shipping container if you have not already done so.

The terminal is already attached to the column so all you must do is attach the column to the base. Use the bolts and lock washers provided. Store any extra load cell cable in the terminal. Refer to the section entitled "Opening the Terminal" that follows.



Level the TRIMWEIGH III scale by turning the adjustable feet while using the level bubble inside of the TRIMWEIGH III scale base as a guide. When the level bubble is centered, the base is properly leveled. (Figure 2).

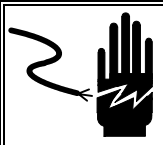


Bubble Not Centered **Bubble Centered**

Figure 2

Verify that all four of the base's feet touch the surface and the base does not rock or teeter on the column foot. Tighten the jam nuts on the feet to lock them in place. An adjusting wrench is provided.

Electrical Connections



WARNING

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

Opening the Terminal

To make the electrical connections, you must open the TRIMWEIGH III scale's terminal as follows:

- Release the butterfly latches by lifting each butterfly handle and turning each one counter clockwise.
- Insert the tip of a flat-blade screwdriver into one of the outer two slots on the bottom of the front panel assembly. ("A" on Figure 4 on the next page).
- Push in toward the enclosure. (You should hear a "pop" when the cover has been released.) Repeat for the other slots.
- After releasing the front panel, lift the bottom of the front panel out until it completely clears the enclosure.
- Raise the top of the front panel and it will clear the top clips. The cover will swing down, hinged by a wire cable at the bottom.

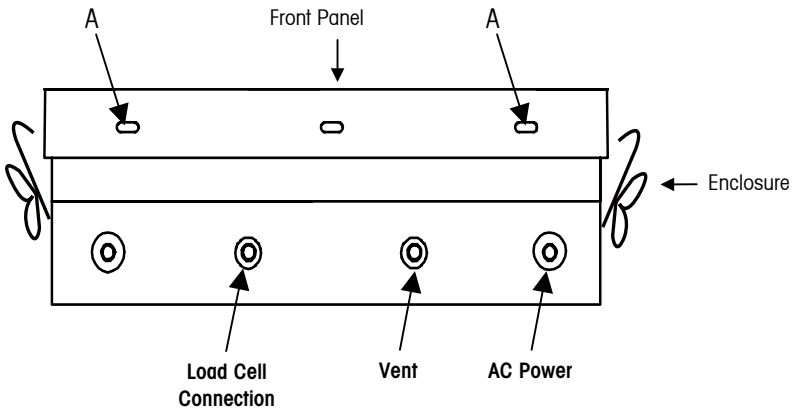


Figure 4

Connecting the Unit

- Pass the cables that enter the enclosure through the cable grip before connecting the wires.
- After the TRIMWEIGH III scale terminal is opened, you can make the electrical connections. (Refer to the sections that follow)
- Hang the front cover on the top clips then tighten the cable grip sufficiently to provide a water-tight seal around the cable. This will allow any internal cable slack to be received through the cable grip.
- Push the bottom of the front cover over the enclosure. A snap sound indicates the cover is in place. Squeeze the front cover to the enclosure at all four corners to verify that all four clips are properly engaged.
- After you have made all electrical connections and closed the TRIMWEIGH III scale terminal, you can calibrate and then program the TRIMWEIGH III scale.

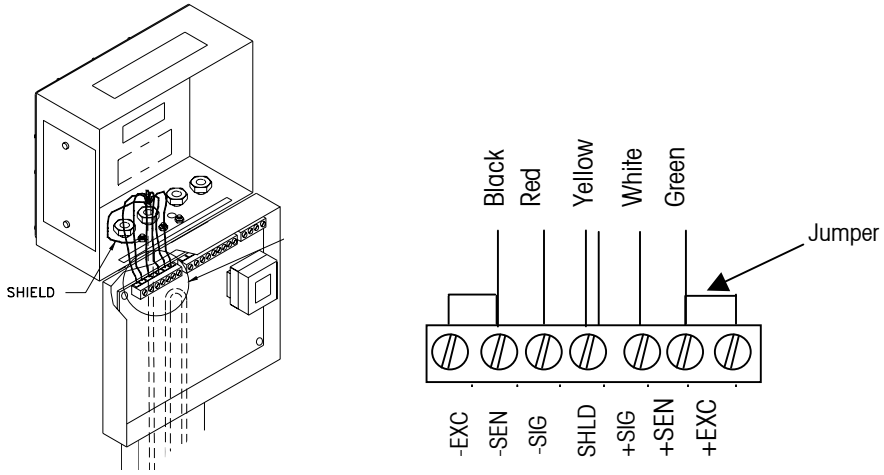


Figure 5

Cables

The TRIMWEIGH III scale is shipped with a standard 10-foot (three meter), four-conductor, 20-gauge load cell cable that is attached to the hermetically sealed load cell. Please note that the load cell cable is not replaceable. If the cable should be cut, the load cell must be replaced. During installation, take care to route the load cell cable in a fashion that it is protected against possible damage.

Power Requirements

The TRIMWEIGH III scale is provided with a (manually selectable) power supply which operates at 100/120/240 VAC +/- 10%. The supply operates with a line frequency of 49 to 63 Hz. Power consumption is 12 Watts maximum. Power is applied through a permanently attached line cord.

Note: A good ground connection is needed to minimize extraneous electrical noise pulses. The TRIMWEIGH III scale should not share power lines with noise-generating equipment. To confirm ground integrity, use a commercial branch circuit analyzer like an ICE model SureTest ST-1D. If adverse power conditions exist, a dedicated power circuit or power line conditioner may be required.

AC Power Cord Wiring

The TRIMWEIGH III scale is shipped with the power cord installed and the appropriate plug for the installing location, provided the appropriate country finish code was used when the TRIMWEIGH III scale was ordered.

The following charts show the wiring for the TRIMWEIGH III scale using the standard METTLER TOLEDO power cord.

Power Cord	Color Code	TB1
Neutral (Common)	Blue	Pin 1
Line (Hot)	Brown	Pin 2 Pin 3 Pin 4 100V 120V 230V
Ground	Green/Yellow	Chassis

Main PCB Serial Port

Serial I/O. The serial port is an RS-232 transmission port. It supports receipt of an ASCII command set which will cause the indicator to clear, tare, zero, print or change units. It can also be configured as an SICS Host Interface port.

Connections to the serial port are made using screw terminal strips. The wire size range for the instrument strips is 16 to 24 AWG.

COM1 RS-232. The receive (input) port of COM1 may be used to accept simple serial commands when programmed for either demand or continuous output modes. The commands duplicate the functions of the front panel push buttons, including:

< C > Clear

< T > Tare

< Z > Zero

< P > Print

< S > Send (same as Print)

< U > Switch Units

All other ASCII characters are ignored, which permits the use of termination characters following the command such as <CR> or <LF>. NOTE: The < > characters are used for clarity and must not be transmitted.

The following diagram and table describe the TRIMWEIGH III scale's terminal block TB2 COM1 pin-to-pin cable connections to METTLER TOLEDO devices using an RS-232 cable. Maximum recommended cable length for RS-232 communications is 50 feet (15.24 meters).

Instrument COM1 Terminal TB2		
1	TXD	RS-232 Transmit Data Output
2	RXD	RS-232 Receive Data Input
3	GND	Signal Ground

Main PCB Discrete I/O Wiring

Discrete I/0. The TRIMWEIGH III scale has one discrete input and three discrete outputs available. The discrete input can be used to remotely activate one of the function keys on the terminal. The discrete outputs can be used for weighment status in the Over/Under mode. The discrete port terminal block (TB2) allows access to the discrete input and output signals. Refer to Figure 6.

Input. The discrete input can be programmed to activate any of the following functions: Tare, Zero, Print, Select (Units). To use the discrete input, an external switch, relay contact or logic device must be connected to TB2 between terminals 8 and 9. Terminal 8 is the logic ground. Terminal 9 is a low true, CMOS level input device. The discrete input logic levels are: Low = 0.0 - 0.8 VDC, High = 3.5 - 5.0 VDC. The cable length must be limited to 10 feet (3m).

Outputs. Discrete outputs can be used for remote indications or process control signals. The discrete outputs are low true, CMOS logic signals. Each can source or sink a maximum of 8mA. The discrete outputs are located on TB2 at the following locations: the UNDER signal is on Terminal 5; the ACCEPT signal is on Terminal 6; the OVER signal is on Terminal 7. The discrete outputs are 'on'. Sink current until the programmed threshold is reached. When the discrete outputs are 'off' the signal is driven to a logic high state.

A 5 VDC supply with a maximum rated current of 115mA is provided on TB2 terminal 4. This supply can be used with the active low logic signals above to activate a remote discrete device such as an LED, relay, or optical coupler. When connecting an LED, place a 470 ohm resistor in series to limit the current to 8mA.

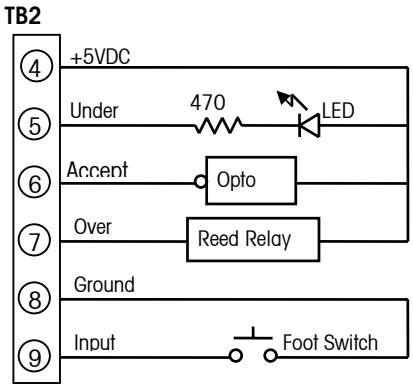


Figure 6

Main PCB Switches, Jumpers, Fuse

Switch S1

Switches and jumpers on the Main PCB should be set as follows (see Figure 7).

1 Setup/Calibration Enable = On

Approved Normal Operation = Off

2 Display Comma Tail = On

3 Not Used (Must be Off)

4 Test Mode (Must be Off)

Jumper W1

Install W1 jumper on both pins for all models.

2mV/V ■ ■

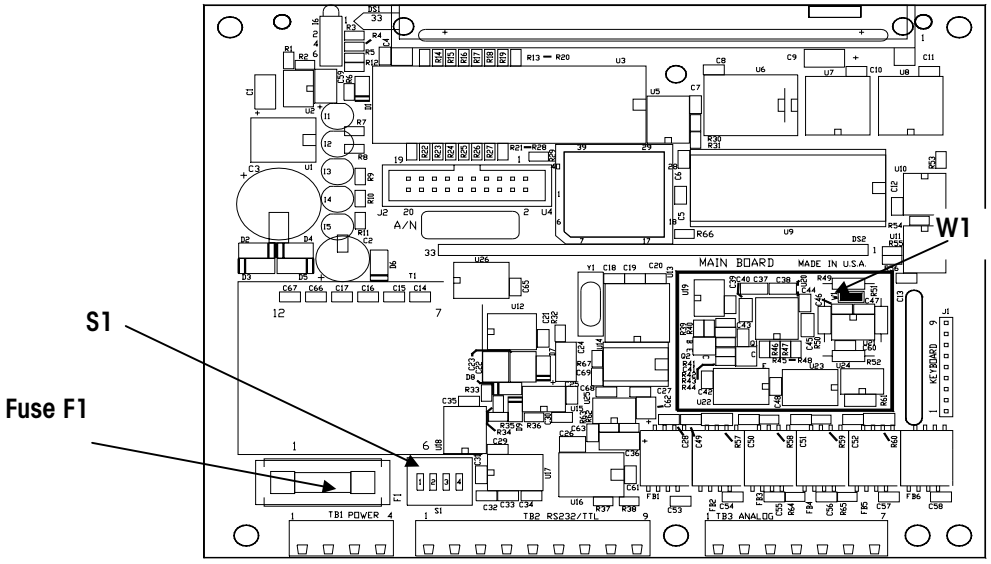


Figure 7

Calibration

1. Allow a 30-minute warm-up before calibrating.
2. Refer to the Appendix for recommended capacity and increment size.
3. Exercise the TRIMWEIGH III scale by adding and removing full capacity weight before calibration.
4. To guarantee reliable service from <u>any</u> scale, a regular calibration schedule should be implemented. In addition, the TRIMWEIGH III scale should always be calibrated after repairs of any type are performed.

Installation Without Calibration

The TRIMWEIGH III scale is calibrated at the factory to the builds shown in the following table. To begin accurate weighing without on-site calibration, enter the appropriate Geo Code at programming block for the installation site. The Geo Codes can be found in the Appendix. You need to know the latitude and elevation of the installation site.

	North America (NTEP)	Export (OIML)
006B	10 x 0.002 lb	6 x 0.002 kg
015B	25 x 0.005 lb	15 x 0.005 kg
030B	50 x 0.01 lb	30 x 0.01 kg
060B	100 x 0.02 lb	60 x 0.02 kg
060L	100 x 0.02 lb	60 x 0.02 kg
150B	250 x 0.05 lb	150 x 0.05 kg

Scale Build Determination

Each capacity of the TRIMWEIGH III scales can be calibrated to various builds depending on the weighing unit and desired resolution.

MODEL	TW1N006B	TW2N015B	TW2N030B	TW2N060B	TW2N060L	TW2N150B
Max. Capacity	6 kg/15 lb	15 kg/ 30 lb	30 kg/60 lb	60 kg/150 lb		150 kg/300 lb
Min. Grad. (eMIN)	0.001 kg/ 0.002 lb	0.002 kg/ 0.005 lb	0.005 kg/ 0.01 lb	0.01kg/ 0.02 lb		0.02 kg 0.05 lb
Resolution	Up to 5000 divisions (NTEP) Legal-for-Trade / Up to 10,000 divisions non-Legal-for-Trade					
Recommended Build (NTEP)*	5 x 0.001 kg 10 x 0.002 lb	10 x 0.002 kg 25 x 0.005 lb	25 x 0.005 kg 50 x 0.01 lb	50 x 0.01 kg 100 x 0.02 lb		100 x 0.02 kg 250 x 0.05 lb
Recommended Build (OIML)	6 x 0.002 kg	15 x 0.005 kg	30 x 0.01 kg	60 x 0.02 kg		150 x 0.05 kg

*Factory Default

The following tables provide guidelines for capacities and increment sizes for the TRIMWEIGH III scale. These tables can be used when the unit selected is the primary unit of measure.

NOTE: The builds listed here are not necessarily available when unit switching is used. When using unit switching, refer to the information in the Appendix to determine the appropriate increment size and scale build.

Note: In the charts, NA denotes Not Applicable.

006B

Units	Low Res. Build	Standard Build	High Res. Build
lb	15 x 0.005	10 x 0.002	10 x 0.001
kg	6 x 0.002	5 x 0.001	NA
g	6000 x 2	5000 x 1	5000 x 0.5
oz	150 x 0.05	NA	160 x 0.02
lb-oz*	9.375 x 0.05	7.5 x 0.02	NA
ozt	200 x 0.1	200 x 0.05	200 x 0.02
dwt	4000 x 2	4000 x 1	4000 x 0.5

015B

Units	Low Res. Build	Standard Build	High Res. Build
lb	30 x 0.01	25 x 0.005	20 x 0.002
kg	15 x 0.005	10 x 0.002	10 x 0.001
g	15000 x 5	10000 x 2	10000 x 1
oz	400 x 0.2	500 x 0.1	500 x 0.05
lb-oz	25 x 0.1	18.75 x 0.05	NA
ozt	400 x 0.2	400 x 0.1	400 x 0.05
dwt	5000 x 5	8000 x 2	8000 x 1

030B

Units	Low Res. Build	Standard Build	High Res. Build
lb	60 x 0.02	50 x 0.01	50 x 0.005
kg	30 x 0.01	25 x 0.005	20 x 0.002
g	30000 x 10	25000 x 5	20000 x 2
oz	1000 x 0.5	800 x 0.2	800 x 0.1
lb-oz	50 x 0.2	37.5 x 0.1	NA
ozt	500 x 0.5	800 x 0.2	800 x 0.1
dwt	15000 x 5	12000 x 2	16000 x 2

060B/060L

Units	Low Res. Build	Standard Build	High Res. Build
lb	150 x 0.05	100 x 0.02	100 x 0.01
kg	60 x 0.02	50 x 0.01	50 x 0.005
g	60000 x 20	50000 x 10	50000 x 5
oz	1600 x 0.5	NA	2000 x 0.2
lb-oz	93.75 x 0.5	NA	NA
ozt	1500 x 0.5	NA	1600 x 0.2
dwt	30000 x 10	30000 x 5	20000 x 2

150B

Units	Low Res. Build	Standard Build	High Res. Build
lb	300 x 0.1	250 x 0.05	200 x 0.02
kg	150 x 0.1	150 x 0.05	100 x 0.02
g	150000 x 50	100000 x 20	100000 x 10
oz	4000 x 1	NA	4000 x 0.5 oz
lb-oz	250 x 1	NA	250 lb x 0.5

NOTE: When calibrating in pounds-ounce mode, the TRIMWEIGH III scale capacity and test weight must be entered in whole ounces and not in pounds.

Capacity (lb oz)		Calibration Capacity (oz)
7 lb	8.0 oz	120
9 lb	6.0 oz	150
18 lb	12.0 oz	300
25 lb	0.0 oz	400
37 lb	8.0 oz	600
50 lb	0.0 oz	800
75 lb	0.0 oz	1200
93 lb	12.0 oz	1500
125 lb	0.0 oz	2000
250 lb	0.0 oz	4000

2

Programming Information

Before programming and calibrating the TRIMWEIGH III scale, review the following information on the various scale modes, operating states, data entry instructions, and other important topics. Do not attempt to operate the TRIMWEIGH III scale until programming and calibration have been completed.

Terminology

Gross and Net

Gross - The TRIMWEIGH III scale is in the **gross state** when a tare has not been taken. The full weight of the items on the TRIMWEIGH III scale is shown on the display.

Net - The TRIMWEIGH III scale is in the **net state** after a tare has been taken. Only the weight of the items added after the tare will be displayed and the net cursor will be lit.

Operating Modes

Indicator Mode - In **Indicator mode**, the TRIMWEIGH III scale operates as a normal scale. You may weigh products on the platform in either the gross or net state, and printing is possible. The Over/Under LEDs are not functional in this mode.

Over/Under Mode - **Over/Under mode** is used when checkweighing products. A product is placed on the TRIMWEIGH III scale and compared to a target weight. The display can be programmed to show full gross weight or the difference from the target weight. The LEDs for Over, Under and Accept can be enabled to help operators determine if the product is within a preprogrammed tolerance of the target weight.

Setup Mode - **Setup mode** is used for making programming selections to suit specific applications.

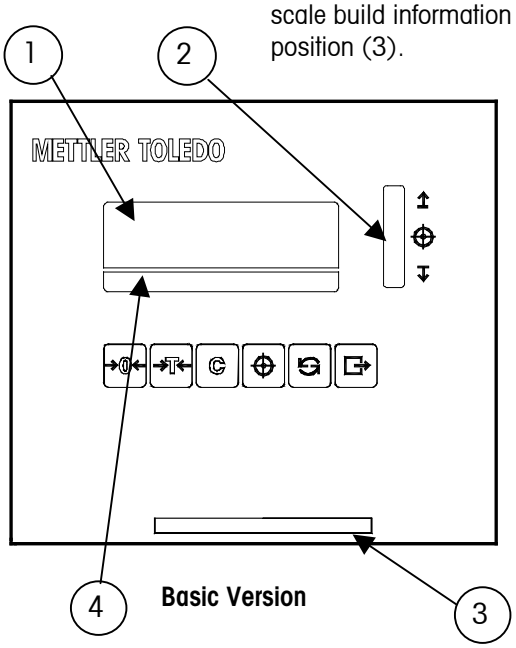
Memory Recall Mode - When recalling a target from memory, **Memory Recall mode** must be accessed by pressing the **TARGET** key on the TRIMWEIGH III scale.

Display

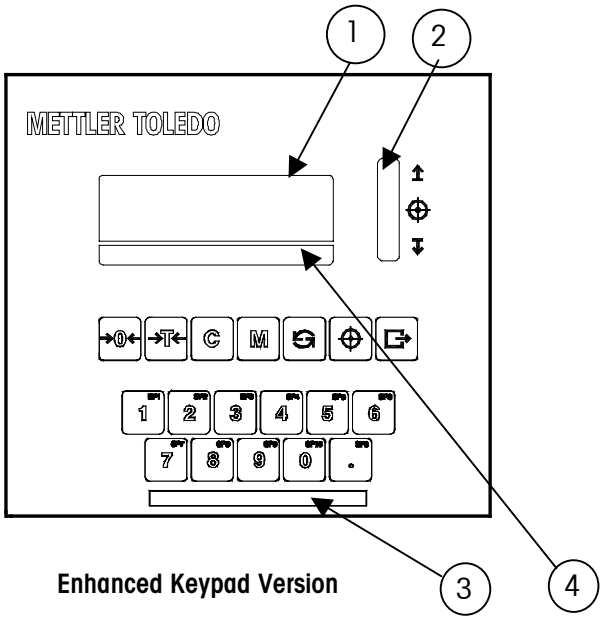
The TRIMWEIGH III scale uses two types of displays on the front panel:

- The large, vacuum fluorescent display (1) indicates gross or net weight and provides cursors that light up above the legend panel (4) to indicate certain scale modes.
- To the right, a line of multi-colored LED's (2) provides quick operator feedback for over/under mode.

Either front panel can be ordered with the toggle switch option. The toggle switch can be set to act as any desired keypad function (i.e., tare, zero, and so on.) Decals containing scale build information are provided and should be placed on scale's front panel in position (3).



Basic Version



Enhanced Keypad Version

Description of Legends

Below the display area are legends which are defined as follows:

>0< **Center of Zero** - When illuminated, this indicates that the TRIMWEIGH III scale is within +/- 1/4d of the center of zero increment.

B/G **Gross** - The TRIMWEIGH III scale is in the gross state; tare not taken.

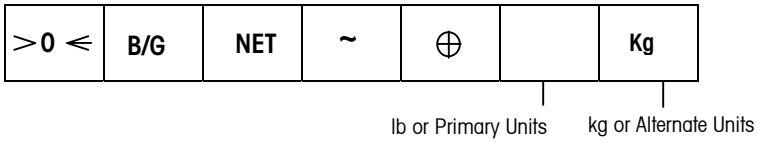
NET **Net** - The TRIMWEIGH III scale is in net state. A tare has been taken.

~ **Motion** – Weight is not stable.

⊕ **Target** – The TRIMWEIGH III scale is in the over/under mode.

lb **Pound** weight units are currently displayed.

kg **Kilogram** weight units are currently displayed.



Additional Legend(s)

Additional decals are included with the TRIMWEIGH III scales and can be added to the legend panel for specific applications.

%	g	oz	ozt	t	ton	dwt	lb-oz	lb	

% **Percent** - Percent weighing has been selected. The current display is represented as a percent of target. It is placed over the alternate unit legend when enabled in setup mode.

g **Grams** - Gram weight units are currently displayed. The gram decal is placed over the appropriate legend when programmed as primary or secondary units in setup mode.

oz **Ounces** - Ounce weight units are currently displayed. The ounce decal is placed over the appropriate legend when programmed as primary or secondary units in setup mode.

ozt **Troy ounces** - Troy ounce weight units are currently displayed. The troy ounce decal is placed over the appropriate legend when programmed as primary or secondary units in setup mode.

t **Ton** - Not used.

ton **Metric Ton** - Not used.

dwt **Pennyweight** - Pennyweight weight units are currently displayed. The pennyweight decal is placed over the appropriate legend when programmed as primary or secondary units in setup mode.

lb-oz **Pounds and ounces** - Pound and ounce weight units are currently displayed and separated by a space on the display. The lb-oz decal is placed over the primary units legend when calibrated in lb-oz units. The alternate legend should be covered with a blank label if not used.

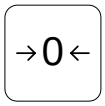
lb **Pounds** - Pound weight units are currently displayed. Used only on international versions (if needed).

( ) **Blank** - May be placed over any unused weight legend.

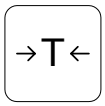
These decals should not be placed on the outer surface of the overlay as they may come off during washdown. To apply a decal:

1. Open the instrument. Remove the main logic board from the cover.
2. Slide the legend plate up and out of the pocket between the overlay and the front cover.
3. Apply the decal to the legend plate at the appropriate location.
4. Slide the modified legend plate back into the pocket behind the overlay.
5. Re-assemble the instrument.

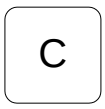
Key Functions for Operation



The **ZERO (0)** key is used to compensate for small changes in weight when the platform is empty. To zero the indication of weight, press **ZERO**.

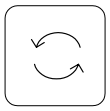


In Indicator mode, the **TARE (T)** key is used to subtract the weight of an object on the TRIMWEIGH III scale from subsequent indications of weight.

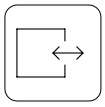


The **CLEAR (C)** key is used to clear a previously entered tare value. When you press **CLEAR**, the indication of weight will return to the gross mode, showing the total weight of the objects on the TRIMWEIGH III scale platform. Note: If 'Tare Interlock' is enabled, platform must be empty.

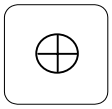
The **MEM** or Memory **(M)** key is used to access target weight values. Operator access to these values must be enabled in the Setup mode. (Available only in enhanced keypad version.)



The **UNITS** or **SELECT** key allows you to switch between primary and secondary weighing units. Also used for selecting and editing targets/zones.



The **PRINT** key is used to initiate a serial output of the weight data. Also used to accept selected targets.

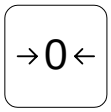


The **TARGET** key is used to recall a stored target and to set a "quick shot" target. It also functions as the **M** key above.

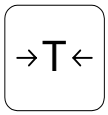
Note: The toggle switch option may be setup to perform any of these functions. Refer to step F4.1 in Chapter 3.

Key Functions for Programming

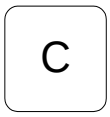
Once you are in setup mode, the following keys are used to configure the program blocks. Main program blocks are displayed as [F1], [F2], and so on. Program sub-blocks are displayed as [F1.1], [F5.8.2], and so on.



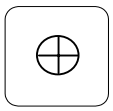
Backs up to the previous program block.



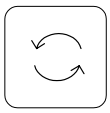
Not used.



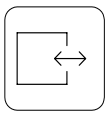
Resets a numeric data entry value to zero. Allows programmer to skip to the end of setup when pressed at a main program block.



Not used.



Increments the numeric data entry digit. Allows the programmer to view the next option or item in a selection list. Acts as a "change" or **SELECT** key.



Accepts/terminates a data entry and advances to the next program block. Acts as the **ENTER** or **YES** key.

On the standard scale, each digit must be edited using the **SELECT** or **ENTER** keys. The display will identify the active digit with an apostrophe at the upper right of the digit. Press the **ENTER** key to accept the active digit and move the apostrophe to the next digit. Press the **SELECT** key to increment the active digit.

Note: The TRIMWEIGH III scale is available with an enhanced keypad which makes entry of numeric data for items such as the scale capacity, increment size, target values, and zones much easier. On the standard models, each digit must be edited using the **SELECT** or **ENTER** keys. The display will identify the active digit with an apostrophe at the upper right of the digit. Press the **ENTER** key to accept the active digit and move the apostrophe to the next digit. Press the **SELECT** key to increment the active digit.

Entering Setup Mode

All programming and calibration is done in the Setup mode. To enter Setup mode:

- Open the TRIMWEIGH III scale terminal as described in Chapter 1.
- Close SW1-1. (It can remain closed if terminal security is not required.) Then close the terminal.
- Simultaneously press and release the **PRINT** and **ZERO** keys.
- F1 is displayed.

Exiting Setup

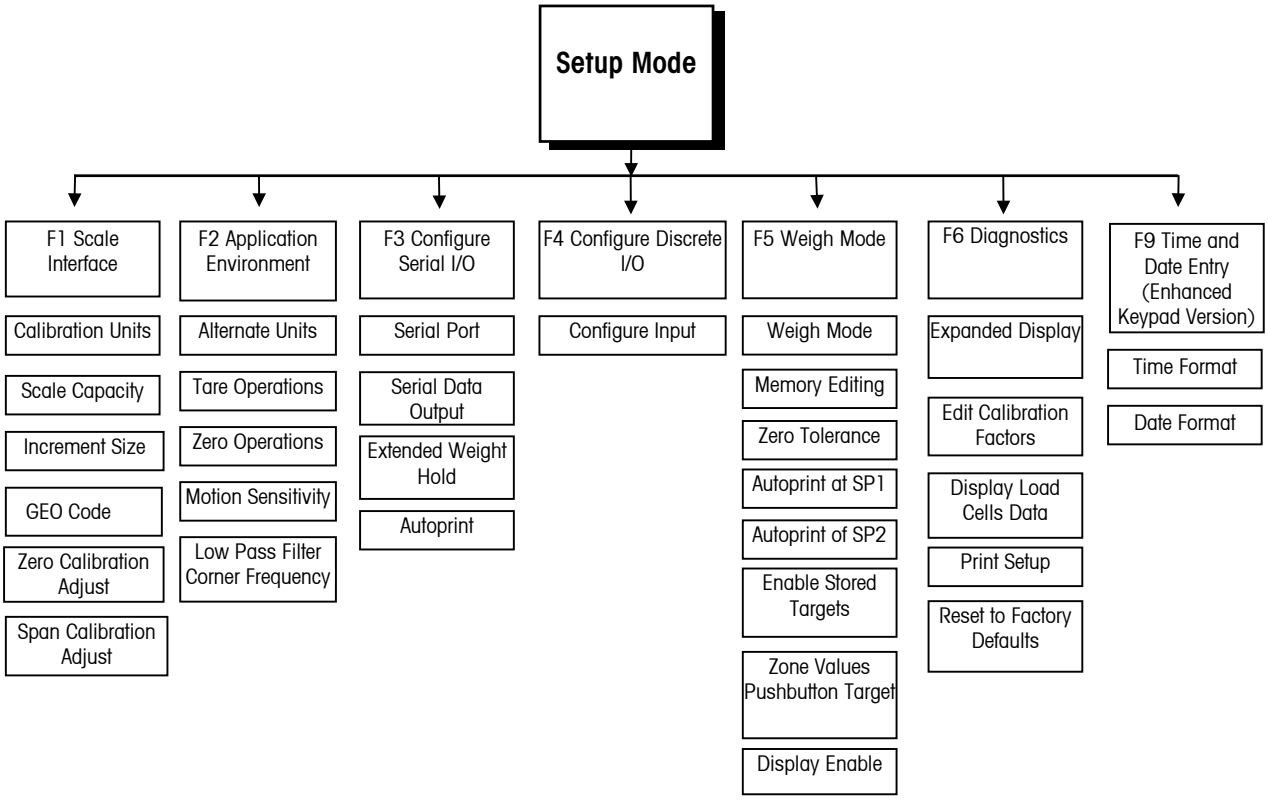
To exit setup and return to a normal operating mode after programming the TRIMWEIGH III scale:

- Press **PRINT** until a major program block (such as [F2] is shown.
- Press **CLEAR** to advance to the [CALOFF] display.
- Press **PRINT**. The TRIMWEIGH III scale will exit setup and return to the normal operation mode. At this point, the switch SW1-1 can be turned off to prevent you from re-entering the setup mode.

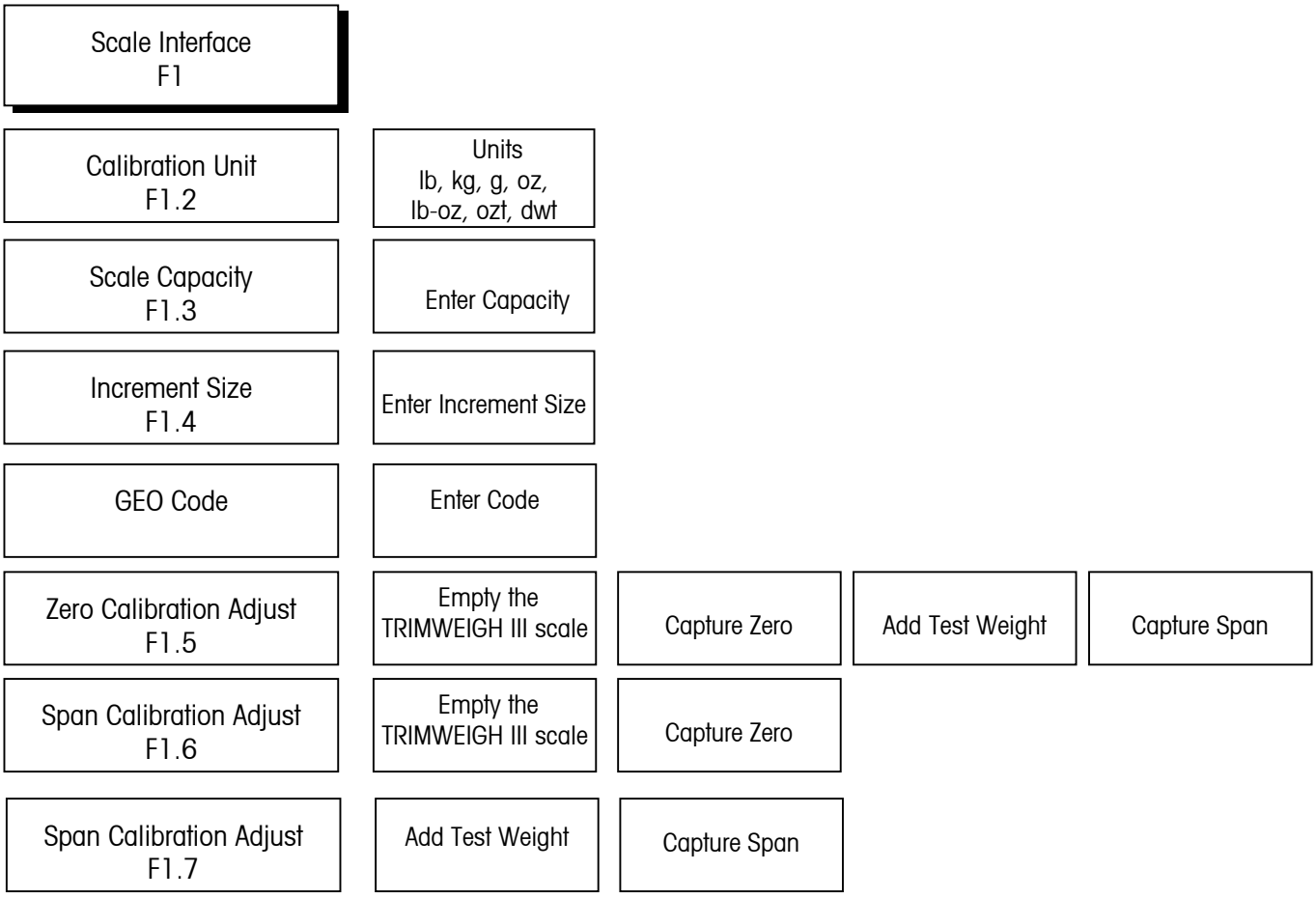
3 Programming

Programming Overview

The following diagram provides an overview of the TRIMWEIGH III scale's program blocks and the sub-blocks within each.



F1 Scale Interface Program Block



NOTE: There is no F1.1 in the TRIMWEIGH III scale Interface program block.

[F1] Scale Interface.

Press SELECT to skip this block. Press **ENTER** to continue.

F1.2 Calibration Units

[F1.2 X] CALIBRATION UNITS: Enter the value for X that corresponds to the type of test weights that will be used for calibration.

X = 1	lb
X = 2	kg
X = 3	g
X = 4	oz
X = 5	lb-oz
X = 6	ozt
X = 7	dwt
X = 8	t (Not supported)
X = 9	ton (Not supported)

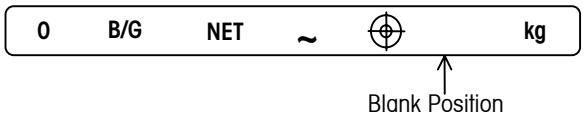
The TRIMWEIGH III scale provides a wide selection of primary and alternate weight units. **Primary Units** is selected in Step F1.2 as the **Calibrated Unit**. **Alternate Units** is selected in Step F2.1. If neither the primary or alternate unit is lb or kg, the left cursor (blank position) is used to indicate the primary unit and the right cursor (kg position) to indicate the alternate unit. Alternate unit decals are provided.

Example:

The TRIMWEIGH III scale is calibrated using "kg" test weights and is switchable to "g". "kg" is the primary unit and "g" is the alternate unit. The "g" overlay would be placed over the blank on the TRIMWEIGH III scale terminal's display lens.

The decals should be applied as follows:

- If one of the selected units is lb, the other legend overlay should be placed over "kg" and the lb overlay should be placed in the blank position.
- If one of the selected units is kg, the other legend overlay should be placed over the blank position.



NOTE: To access the legend label:

- Remove the AC power.
- Open the enclosure.
- Remove the controller PCB.
- Remove the legend plate from the bottom of the display window.
- After adding the legend label, reassemble in reverse order.

F1.3 Scale Capacity

[F1.3] SCALE CAPACITY

[XXXXXX] Current scale capacity, available for Numeric Entry editing. Scale capacities from 1 to 500,000 are permitted.

INCREMENT SIZE	LOAD CELL SCALE CAPACITY RANGE	
	1000d	10000d
0.001	1	10
0.002	2	20
0.005	5	50
0.01	10	100
0.02	20	200
0.05	50	500
0.1	100	1000
0.2	200	2000
0.5	500	5000
1	1000	10000
2	2000	20000
5	5000	50000
10	10000	100000
20	20000	200000
50	50000	500000

INCREMENT SIZE	MINIMUM BUILD		MAXIMUM BUILD	
	Capacity (lb-oz)	Capacity Entry	Capacity (lb-oz)	Capacity Entry
0.02 oz	1 lb - 4.00 oz	20 oz	9 lb - 15.00 oz	159 oz
0.05 oz	3 lb - 2.00 oz	50 oz	9 lb - 15.00 oz	159 oz
0.1 oz	6 lb - 4.0 oz	100 oz	62 lb - 8.0 oz	1000 oz
0.2 oz	12 lb - 8.0 oz	200 oz	99 lb - 6.0 oz	1590 oz
0.5 oz	31 lb - 4.0 oz	500 oz	99 lb - 6.0 oz	1590 oz
1 oz	62 lb - 8 oz	1000 oz	625 lb - 0 oz	10,000 oz
2 oz	125 lb - 0 oz	2000 oz	993 lb - 12 oz	15,900 oz
5 oz	312 lb - 8 oz	5000 oz	993 lb - 12 oz	15,900 oz

F1.4 Increment Size

[F1.4] INCREMENT SIZE

[XXXX] Current Increment size is displayed for Selection List editing. Press the **SELECT** key to toggle through valid selections. The selection will be limited by the capacity chosen in F1.3.

GEO Code

[ ] GEO CODE

Values from 00 to 31 are accepted. The GEO Code is used to compensate for differences in the acceleration of gravity due to latitude and elevation if the TRIMWEIGH III scale was calibrated in one location then moved to another. Gravitational acceleration decreases with increasing height above sea level by approximately 0.2 parts per thousand every 1000 meters. The GEO Code has 32 settings with an increment size of 0.2 parts per thousand. The default GEO Code is 16 (U.S.) See the GEO Code Table in the appendix.

F1.6 Zero Calibration Adjust

[F1.6 X] ZERO CALIBRATION ADJUST

X = 0 Skip zero adjustment
X = 1 Store current initial on scale as zero.

[15 CAL] If zero calibration adjust is selected the display counts down from 15 to 0 while scale reading are being taken. Scale motion causes the countdown to restart from 15. Pressing **C (CLEAR)** at anytime during the countdown aborts zero adjust so that the motion sensitivity selection can be modified. When the countdown reaches "0," the TRIMWEIGH III scale reading is adjusted to the new zero reading.

F1.7 Span Calibration Adjust

[F1.7 X] SPAN CALIBRATION ADJUST

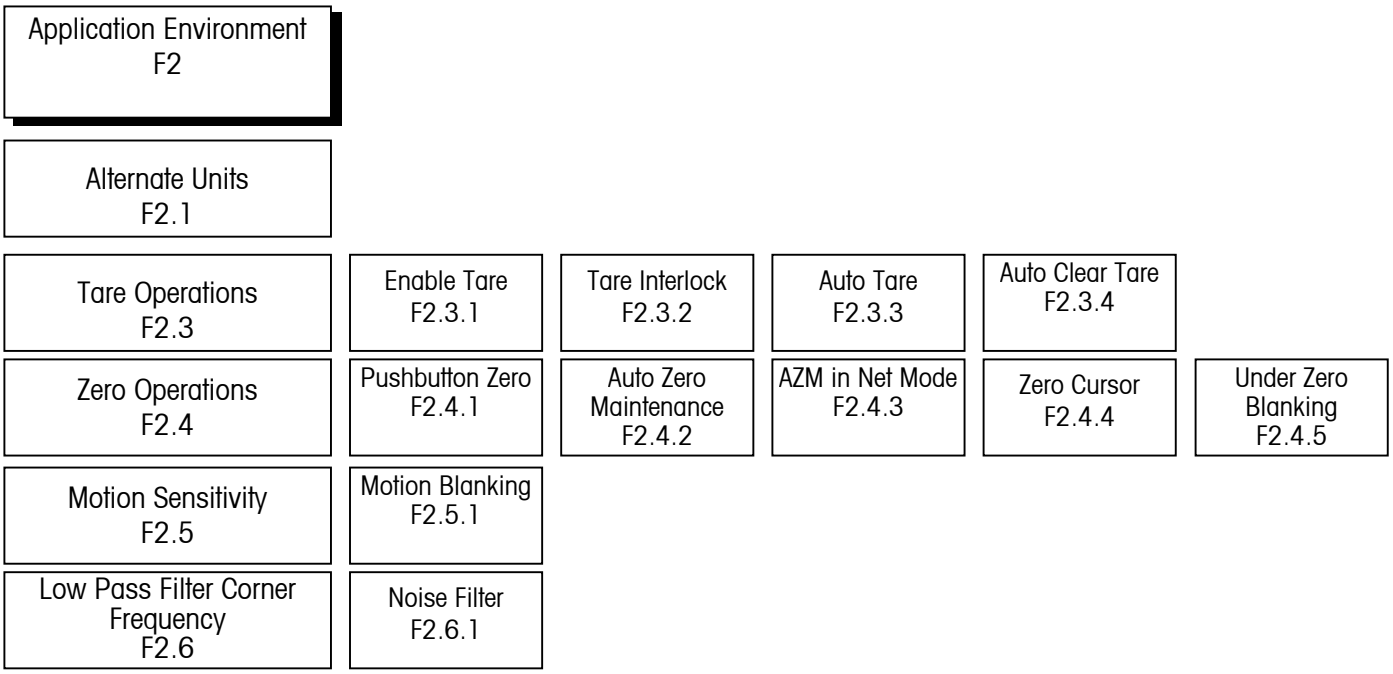
X = 0 Skip span calibration adjust
X = 1 Perform span calibration adjustment.

[00000] Numeric data entry of current scale test load. If **ENTER** is pressed with the display showing " 0", span adjust is aborted.

[15 CAL] After valid (non-zero) data entry, the display counts down from 15 to 0 while scale readings are taken. Scale motion causes the countdown to restart from 15.

Pressing **C (CLEAR)** during the countdown aborts span adjust so that the motion sensitivity selection can be modified. When the countdown reaches "0," an attempt is made to calculate the span calibration. If the weight is negative, over-capacity or in expand mode, "E 35" is displayed to show that span adjustment cannot be performed. If the entered weight is more than twice the original displayed weight, "E 35" is displayed. Press any key to clear "E 35" and proceed to the end of setup.

F2 Application Environment Block



[F2] APPLICATION ENVIRONMENT

Press **SELECT** to skip to [F3]. Press **ENTER** to continue.

F2.1 Alternate Units

Example:
The TRIMWEIGH III scale is calibrated using kg test weights and is switchable to grams. Kg is the primary unit and "g" is the alternate unit. The "g" overlay would be placed over the blank position on the TRIMWEIGH III scale terminal's display lens.

[F2.1 X] ALTERNATE UNITS: Enter a value for X that corresponds to the unit of measure desired as a secondary unit.

X = 0	None	X = 5	lb-oz
X = 1	lb	X = 6	ozt
X = 2	kg	X = 7	dwt
X = 3	g	X = 8	t (Not supported)
X = 4	oz	X = 9	metric ton (Not supported)

Refer to setup step F1.2 for additional information on weight legends.

F2.3 Tare Operations

For lb-oz mode, no Keyboard Tare is permitted. Pushbutton Tare and Remote Tare from the discrete input or serial port is possible if enabled.

[F2.3] TARE OPERATIONS

Press **SELECT** to skip to [F2.4], press **ENTER** to continue.

[F2.3.1 X] ENABLE TARE FROM FRONT PANEL: Enter a value for X that will enable or disable Tare.

X = 0 Tare disabled

X = 1 Only Pushbutton Tare enabled

X = 2 Both Pushbutton Tare and Keyboard Tare enabled

[F2.3.2 X] TARE INTERLOCK: The tare interlock feature, if enabled, places certain limitations on how tare values can be cleared and entered in legal-for-trade applications. Specifically, tare interlock meets legal-for-trade requirements by making the following restrictions:

- Tare weights can be cleared only at gross zero (with the TRIMWEIGH III scale empty)
- Tare can be entered only when the TRIMWEIGH III scale is in gross mode
- Previous tare values must be cleared before a new tare value can be entered (chain tare disabled)

X = 0 Tare Interlock disabled

X = 1 Tare interlock enabled

[F2.3.3 X] AUTO TARE

X = 0 Auto Tare disabled

X = 1 Auto Tare enabled after no motion following > 5d when in GROSS mode

[F2.3.4 X] AUTO CLEAR TARE

X = 0 Auto Clear Tare disabled

X = 1 Auto Clear Tare enabled, tare automatically clears at gross zero

F2.4 Zero Operations

[F2.4] ZERO OPERATIONS

Press **SELECT** to skip to [F2.5], press **ENTER** to continue.

[F2.4.1 X] PUSHBUTTON ZERO ENABLE

X = 0 Pushbutton zero disabled

X = 1 Enable pushbutton zero and AZM within ±2% Full Scale range

X = 2 Enable pushbutton zero and AZM within ±20% Full Scale range

[F2.4.2 X] AUTOZERO MAINTENANCE: Auto Zero Maintenance (AZM) automatically compensates for changes in zero resulting from material build-up or temperature variations. Select the range (±) around gross zero within which the terminal will capture zero. If residual weight on the TRIMWEIGH III scale exceeds the weight range, it will not capture zero.

NOTE: If AZM=0, the tare and zero value will be stored during a power loss. The terminal will display a correct net value when power is restored.

X = 0 No AZM or zero capture at power-up

X = 1 AZM within 0.5 d window; power-up zero capture ±2%.

X = 2 AZM within 1d window; power-up zero capture ±2%.

X = 3 AZM within 3d window; power-up zero capture ±2%.

[F2.4.3 X] AZM IN NET MODE

X = 0 Disable AZM in net mode

X = 1 Enable AZM in net mode

[F2.4.4 X] ZERO CURSOR

X = 0 No Zero cursor

X = 1 Zero cursor enabled

[F2.4.5 X] UNDER ZERO BLANKING

X = 0 No Under Zero blanking

X = 1 Blank display and tare weight as negative out-of-range if gross weight is more than 5d under zero.

F2.5 Motion Sensitivity Selection

[F2.5 X] MOTION SENSITIVITY SELECTION: This determines when a no-motion condition exists on the platform. The sensitivity level determines what is considered stable. Printing, pushbutton zero, and tare entry will wait for stability before completing the command.

Stability detection occurs over a predefined period of time and allows a predetermined "acceptable" amount of motion (in scale increments).

X = 0 Motion detector disabled

X = 1 1.0 d motion sensitivity

X = 2 3.0 d motion sensitivity

[F2.5.1 X] MOTION BLANKING

	Indicator Mode F5.1 = 0	Setpoint Mode F5.1 = 1	Over/Under Mode F5.1 = 2
X=0	Blanking disabled	Blanking disabled	Blanking disabled
X=1	Blanking disabled	Blanking disabled	Blank LEDs and turn off discrete outputs during motion
X=2	Blank weight display during motion	Blank weight display during motion	Blank weight display and LEDs and turn off discrete outputs during motion

F2.6 Low Pass Filter Corner Frequency

Note: Noise filter should not be enabled in batching or filling operations.

[F2.6 X.X] LOW PASS FILTER CORNER FREQUENCY

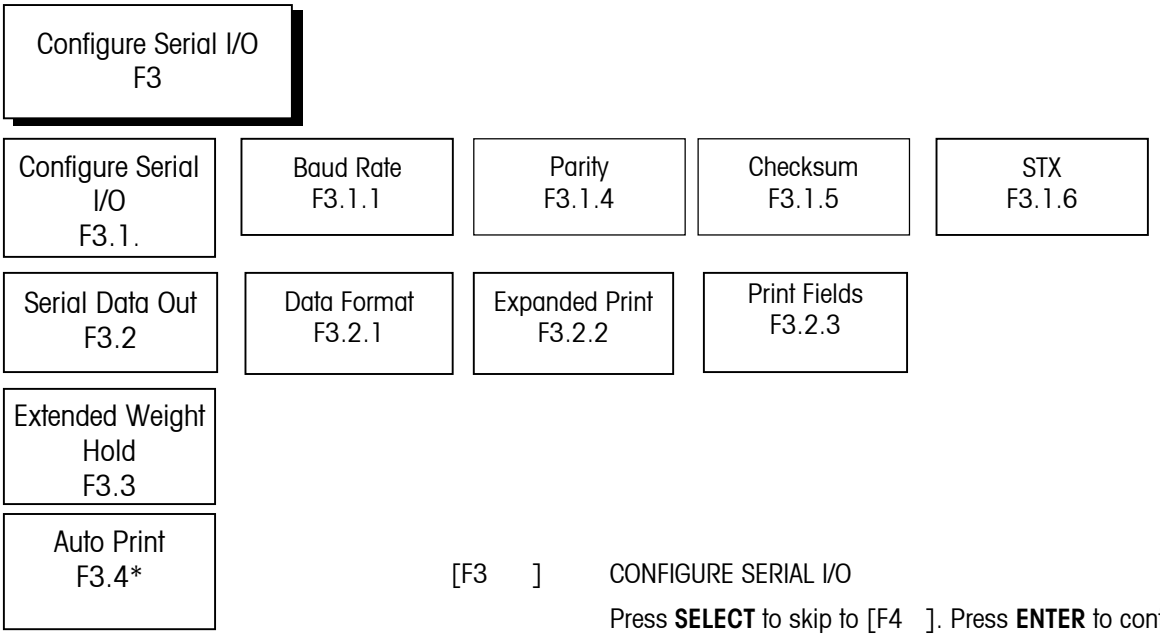
X.X is the numeric data entry for the low pass filter corner frequency (0.5 - 9.9 Hz).

[F2.6.1 X] NOISE FILTER

X=0 Disable Noise Filter.

X=1 Enable Noise Filter.

F3 Configure Serial I/O Block



*When F5.1 = 0 or 2 only

[F3] CONFIGURE SERIAL I/O

Press **SELECT** to skip to [F4]. Press **ENTER** to continue.

F3.1 Select Serial Port Parameters

[F3.1 X] SELECT SERIAL PORT Not supported.

[F3.1.1] DATA RATE

[XXXX] XXXX = Select 300, 1200, 2400, 4800, or 9600 baud

[F3.1.4 X] PARITY

X = 0 No parity

X = 1 Odd parity

X = 2 Even parity

[F3.1.5 X] CHECKSUM

X = 0 No checksum sent

X = 1 Checksum enabled

[F3.1.6 X] STX

X = 0 No STX sent

X = 1 STX enabled

F3.2 Serial Data Output (Standard 6-key Version Only)

[F3.2 X] SERIAL DATA OUT

X = 0 Continuous Mode. If Continuous Mode, the display skips to [F3.3 X].

X = 1 Demand Mode

X = 2 SICS Level O Host Mode

[F3.2.1 X] DATA FORMAT (Demand Mode output only)

X = 0 Displayed weight only

X = 1 Single line.

X = 2 Multiple line

X = 3 Single line with over/under status (Over/Under Mode only)

[F3.2.2 X] EXPANDED PRINT (Demand Mode output only)

X = 0 Normal print

X = 1 Expanded print

[F3.2.3 X] PRINT 'G' IN GROSS WEIGHT FIELD (COM1, Demand Mode output only)

X = 0 No 'G' is printed in gross weight field after weight symbol.

X = 1 'G' is printed in gross weight field after weight symbol.

F3.2 Serial Data Output (Enhanced Keypad Version Only)

Refer to Appendix 1 and 2 for details on output strings.

[F3.2 X] SERIAL DATA OUT

- X = 0 Continuous mode. If continuous mode, the display skips to [F3.3 X].
- X = 1 Demand mode.
- X = 2 SICS Level O Host Mode.

[F3.2.1 X] DATA FORMAT (Demand Mode output only)

- X = 0 Single line.
- X = 1 Multiple line.
- X = 2 Single line with over/under status (over/under mode only)

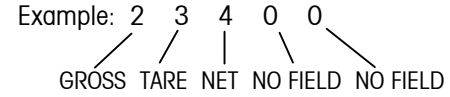
[F3.2.2 X] EXPANDED PRINT (Demand Mode output only)

- X = 0 Normal print
- X = 1 Expanded print

[F3.2.3 X] PRINT FIELD SELECTION (Demand Mode output only)

[XXXXX] Enter the field to be printed using the numeric keyboard. Select the order in which the five fields print by entering numerically:

- X = 0 No field
- X = 1 Displayed Weight
- X = 2 Gross Weight
- X = 3 Tare Weight
- X = 4 Net Weight
- X = 5 Time
- X = 6 Date
- X = 7 ID



If "No Field" is selected, 7 spaces will be inserted as the data field. If multiple line output format is selected, the "No Field" will include a carriage return and line feed characters at the end of the line.

In order to reduce the number of fields or lines transmitted, any "No Field" selections at the end of the selection string will be ignored. For example, in multiple line format:

[00061] will print as:

<sp><sp><sp><sp><sp><sp><sp>CRLF

<sp><sp><sp><sp><sp><sp><sp>CRLF

<sp><sp><sp><sp><sp><sp><sp>CRLF

Time <CR><LF>

[61000] will print as:

Time <CR><LF>

Displayed Weight <CR><LF>

[F3.2.4 X] PRINT 'G' IN GROSS WEIGHT FIELD (COM1, Demand Mode output only)

X = 0 No 'G' is printed in gross weight field after weight symbol.

X = 1 'G' is printed in gross weight field after weight symbol.

[F3.2.5 X] PRINTED TARE DESCRIPTOR SELETION FOR PRESET TARE

X = 0 Print 'T' as tare descriptor when a preset tare is entered

X = 1 Print 'PT' as tare descriptor when a preset tare is entered

F3.3 Extended Weight Hold

[F3.3 X.X] EXTENDED WEIGHT HOLD DISPLAY

Use the numeric keypad to enter a value for the time (in seconds from 0.0 to 9.9) that the weight will be held (frozen) on the display when a print is initiated.

F3.4 Autoprint

[F3.4 X] AUTOPRINT (COM1 Demand mode only)

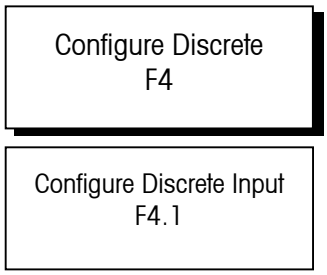
X = 0 No auto printing

X = 1 Auto print enabled.

Note: If F5.5 and F5.6 have never been set, autoprint will not function. To enable autoprint, make sure to do the following when setting up F5.5 and f5.6:

1. Set F5.1 to 1. This will put the unit in setpoint mode and allow changes to F5.5 and F5.6
2. Set F5.5 and F5.6 to 0.
3. Reset F5.1 to 0 (Indicator mode) or 2 (over/under mode)
4. Verify that F3.2 is set to 1 (Demand Mode) and F3.4 is set to 1 (Autoprint).

F4 Configure Discrete Block



[F4] CONFIGURE DISCRETE

Press **SELECT** to skip this block. Press **ENTER** to continue.

F4.1 Configure Discrete Input

[F4.1 X] CONFIGURE DISCRETE INPUT

Assign a function to the discrete input:

X = 0 No function

X = 1 Print

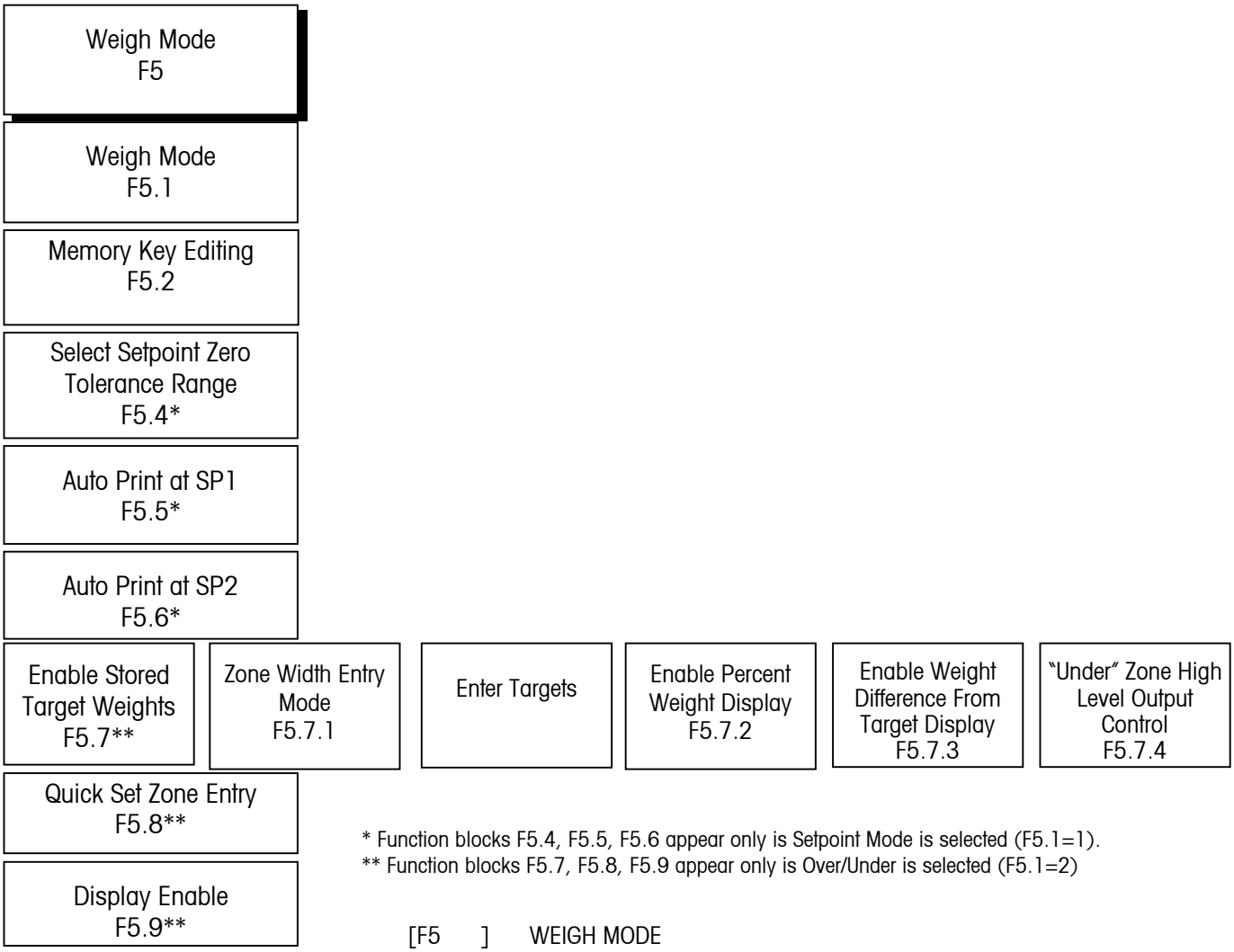
X = 2 Tare

X = 3 Zero

X = 4 Select (switches units)

X = 5 Target

F5 Weigh Mode Block



* Function blocks F5.4, F5.5, F5.6 appear only is Setpoint Mode is selected (F5.1=1).
** Function blocks F5.7, F5.8, F5.9 appear only is Over/Under is selected (F5.1=2)

[F5] WEIGH MODE

Press **ENTER** to continue. Press **SELECT** to skip to [F6].

F5.1 Enter Weigh Mode

[F5.1 X] SELECT WEIGH MODE

- X = 0 Indicator Mode (Setpoints and Targets disabled). Skip to [F6]. The terminal will operate as a straight weighing instrument.
- X = 1 Setpoint Mode. Go to F5.2, Memory Key Editing.
- X = 2 Over/Under Mode. Go to F5.2, Memory Key Editing.

F5.2 Memory Key Editing

[F5.2 X] MEMORY KEY EDITING

(Only appears if Setpoint Mode is selected in F5.1)

X = 0 No setpoint/target editing using MEMORY key

Setpoints/Target editing only in Setup Mode.

Proceed to Setpoint or Over/Under Editing.

NOTE: If F5.1 was set to 2, this goes to F5.7.

X = 1 Setpoints/Targets may be edited only using the **M** (**MEMORY)** key.

Preact /Zones editing only in Setup Mode.

Proceed to Preact or Zone Editing.

NOTE: If F5.1 is set to 2, go to F5.7.

X = 2 Setpoints/Targets and Preacts/Zones may be edited using the **M (MEMORY)** key; full user access. Tolerance editing only in Setup mode. Proceed to Tolerance Editing. (Setpoint Mode)

NOTE: If F5.1 is set to 2, go to F5.7.

X = 3 All Setpoint or Over/Under editing is done only using the **M (MEMORY)** key. Full user access.

NOTE: If F5.1 is set to 2, go to F5.7.

Note: The following section permits editing of Setpoint related functions. If the Weigh Mode is "Indicator" or "Over/Under" skip this section.

Note: The next section relates to the entry of setpoint values. These steps are only accessible if setpoint mode has been selected (F5.1=1).

[SP1] ENTER SETPOINT 1

Press **C** (**CLEAR)** to go to preact editing. Press **ENTER** to proceed.

[012345] Display now shows the previous setpoint 1 value, which may now be edited. If the new value is less than the existing preact value, [E 20] will display for 2 seconds to flag the error before the display returns to [SP1].

(Only appears if Setpoint Mode is selected in F5.1=1)

[SP2] ENTER SETPOINT 2

Press **C (CLEAR)** to proceed to preact editing

Press **ENTER** to proceed.

Press **0 (ZERO)** to backup to [SP1]

Note: If the editing of Preact values from the front panel is allowed (F5.2 = 2 or 3) you may skip the next two steps related to Preact Entry, or enter values.

[012345] Display shows previous setpoint 2 value. If the new value is less than the existing preact value, [E 20] displays for 2 seconds to flag the error before the display returns to [SP2].

If the Weigh Mode is "Indicator" or "Over/Under" skip this section. If Memory Key Editing (F5.2) > 1, skip Preact Entry. Values entered for preact adjust the corresponding cutoff action as follows: Setpoint actuation = Setpoint entry - preact entry

[P1] ENTER PREACT FOR SETPOINT 1

Press **C (CLEAR)** to go to F5.4. Press **ENTER** to proceed.

[012345] Display shows the previous preact value for editing.

Press **0 (ZERO)** back up to [SP2].

Press **ENTER** to accept entry and go to [P2]

Press **C (CLEAR)** to zero display and enter new value.

If the new preact value is greater than the existing setpoint value, [E 20] will be displayed for 2 seconds to flag the error before the display returns to the [P1].

[P2] ENTER PREACT FOR SETPOINT 2

Press **C (CLEAR)** to go to F5.4. Press **ENTER** to proceed.

[012345] Display shows the previous preact 2 value for editing.

Press **0 (ZERO)** back up to [P1].

Press **ENTER** to accept entry and proceed to [F5.4]

Press **C (CLEAR)** to zero display and enter new value.

If the new preact value is greater than the existing setpoint value, [E 20] will display for 2 seconds to flag the error before the display returns to [P2].

F5.4 Select Setpoint Zero Tolerance Range

Note: If the editing of setpoint zero tolerance values from the front panel is allowed (F5.2=3), skip the next section.

[F5.4 X] SELECT SETPOINT ZERO TOLERANCE RANGE.

X = 0 No zero tolerance output

X = 1 1 increment

X = 5 5 increments

F5.5 Auto Print at SP1

Only appears if Setpoint Mode is selected (F5.1 = 2).

[F5.5 X] AUTO PRINT AT SP1 (Setpoint Mode only)

X = 0 Auto print at SP1 disabled

X = 1 Auto print when setpoint reached from zero.

F5.6 Auto Print at SP2

Only appears if Setpoint Mode is selected (F5.1 = 2).

[F5.6 X] AUTO PRINT AT SP2 (Setpoint Mode only)

X = 0 Auto print at SP2 disabled

X = 1 Auto print when setpoint reached from zero.

F5.7 Enable Stored Target Weights

(Only appears if Setpoint Mode is selected in F5.1=2)

NOTE: Stored target weights are always entered in primary units.

If stored targets are disabled (F5.7=0), skip to F5.7.2

[F5.7 X] ENABLE STORED TARGET WEIGHTS

X = 0 Disable stored target weight. Skip to zone editing.

X = 1 Enable stored target weight. If entry of target values from the front panel is allowed, skip the next four steps related to target entry.

[F5.7.1] ZONE WIDTH ENTRY MODE

Depending on F5.7.1, enter values as 0 to full-scale increments, 0 to 99.9%, or actual weight.

IF:	Enter Zone As:
F5.7.1=0	0 to Full Scale increments
F5.7.1=1	0 to 99.9 percent
F5.7.1=2	Actual weight

NOTE: The TRIMWEIGH III scale can have two stored targets. The enhanced keypad version can have 10 stored targets.

[SP1] ENTER TARGET 1 (Only if F5.2 = 0)

Press **C (CLEAR)** to go to F5.7.2.

Press **ENTER** to proceed. Value is displayed. Edit. Press **ENTER.**

Press **0 (ZERO)** to backup to [F5.7] NOTE: You can not use the **0 (ZERO)** key to back up through the setpoints.

Press **SELECT** to move to other setpoints.

[012345] Display now shows the previous target 1 value for editing. When new value is entered, press **ENTER**.

[o XX] ENTER TARGET 'n' OVER ZONE (If F5.2 = 0 or 1.)
XX = Current value for Over Zone.

[h XX] ENTER TARGET 'n' HIGH ZONE (If F5.2 = 0 or 1.)
XX = Current value for High Accept Zone.

[l XX] ENTER TARGET 'n' LOW ZONE (If F5.2 = 0 or 1.)
XX = Current value for Low Accept Zone.

Note: If 5.7.2 is set to 1, the display skips to F5.7.4.

[u XX] ENTER TARGET 'n' UNDER ZONE (If F5.2 = 0 or 1.)
XX = Current value for Under Zone.

NOTE: Repeat the above steps for 'n' targets, where n=2 for the basic TRIMWEIGH III scale and n=10 for the enhanced keypad version.

[F5.7.2 X] ENABLE PERCENT WEIGHT DISPLAY

X = 0 Weight display is in weight units

X = 1 Weight display is in percent of target

NOTE: If F5.7.2 is set to 1, the display skips to F5.7.4.

[F5.7.3 X] ENABLE WEIGHT DIFFERENCE FROM TARGET DISPLAY MODE

When enabled, if a valid target weight is available, weight is displayed as the difference from the target weight instead of the "normal" weight.

X = 0 Disable Weight Difference from Target

X = 1 Enable Weight Difference from Target

[F5.7.4 X] WEIGHT UNDER TARGET HIGH LEVEL OUTPUT CONTROL

X=0 Under target output always on when weight falls below Low zone.

X=1 Under target output on until weight falls below 10 increments of gross zero.

F5.8 Zone Increment Size for Pushbutton Target

Note: F5.8 only appears if Over/Under mode is selected (F5.1=2).

If the editing of the zone increment size from the front panel is allowed (F5.2=2 or 3), you may enter values or skip to step F5.9.

[F5.8] ZONE INCREMENT SIZE

IF:	Enter Zone As:
F5.7.1=0	0 to Full Scale increments
F5.7.1=1	0 to 99.9 percent
F5.7.1=2	Actual weight

[o XX] ENTER QUICKSET OVER ZONE (SP0)
XX = Current difference from QuickSet Target to Over Zone.

[h XX] ENTER QUICKSET HIGH ZONE (SP0)
XX = Current difference from QuickSet Target to High Accept Zone.

[l XX] ENTER QUICKSET LOW ZONE (SP0)
XX = Current difference from Low Accept Zone to Quick Set Target.

[u XX] ENTER QUICKSET UNDER ZONE (SP0)
XX = Current difference from Under Zone to Quick Set Target.

F5.9 Display Enable Sub-block

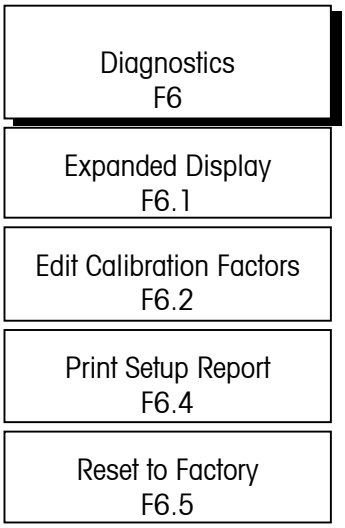
Note: F5.9 only appears if Over/Under mode is selected (F5.1=2).

[F5.9 X] Display Enable

X = 0 Status lights only

X = 1 Weight display and status lights.

F6 Diagnostics Block



{F6] DIAGNOSTICS

Press **SELECT** to skip to [F7]. Press **ENTER** to continue.

NOTE: F6.3 is not supported and does not appear.

F6.1 Expanded Display

[F6.1 X] EXPANDED DISPLAY.

X = 0 Normal display mode

X = 1 Weight displayed in minors

F6.2 Edit Calibration Factors

[F6.2 X] EDIT CALIBRATION FACTORS

X = 0 Skip this block

X = 1 Edit calibration factors

[123456] Zero factor, available for numeric data editing

[123456] Span factor, available for numeric data editing

[123456] Span factor, available for numeric data editing

F6.4 Print Setup

Display will show [PS - XX] during printing. The XX will increment from 01 to indicate printing is proceeding.

[F6.4 X] PRINT SETUP

X = 0 Skip this operation

X = 1 Display cell readings in counts

F6.5 Reset to Factory Settings

[F6.5 X] RESET SOFTSWITCH CONFIGURATION TO FACTORY SETTINGS

X = 0 Skip this sub-block

X = 1 Restore all settings to U.S. factory defaults

X = 2 Restore all settings to European factory defaults

[LOAd 0] Are you sure prompt. Toggle to "1" for yes, "0" to abort, then press **ENTER**. If "yes", soft switches are now set to the factory default values.

F7 Analog Output Option Block

[F7] Not supported

F8 Reserved for Future Use

[F8] Reserved for future use.

F9 Time and Date Program Block (In Enhanced Keypad Version Only)

Time and Date
F9

Time Format
F9.1

Date Format
F9.2

[F9] TIME AND DATE

Press **SELECT** to skip to **[F10]**.

Press **PRINT** to continue programming this sub-block.

F9.1 Time Format

[F9.1 X] TIME FORMAT

X = 0 Time disabled

X = 1 HH:MM (12-Hour Format)

X = 2 HH:MM (24-Hour Format)

If the Time Format is disabled, skip to Date Format entry.

[HHMM A] If time format is 12-hour clock, enter the time in hours and minutes. Press **SELECT** to toggle between 'A' (AM) and 'P' (PM) after entering all four digits. Press **PRINT**.

[HHMM] If time format is 24-hour clock, enter the time in hours and minute in 24-hour format. Then press **PRINT**.

F9.2 Date Format

[F9.2 X] DATE FORMAT

X = 0 Date disabled

X = 1 MM/DD/YY

X = 2 DD.MM.YY

If the Date Format is disabled, skip to **[F10]**

[MMDDYY] Enter the month, day, and year if in MM/DD/YY format. Press **PRINT**.

[DDMMYY] Enter the day, month, and year if in DD.MM.YY format. Press **PRINT.**

Additional Information

To prevent accidental or unintentional changes in setup mode, turn off switch SW1-1.

In legal-for-trade applications, after checking for correct operation and turning switch SW1-1 off, the TRIMWEIGH III scale's enclosure must be "sealed." The enclosure may be sealed by using adhesive labels on two opposite sides of the enclosure and sticking the labels between the front and rear portions of the enclosure. If a wire and lead seal are required, loop the wire through the bottom center hole of the front door, and secure it with a seal.

Once the TRIMWEIGH III scale has been configured (programmed), it is ready for use. Instructions for using the TRIMWEIGH III scale are provided on the operator's card that is included with the unit. Operators can perform any of the basic functions listed on the card.

The advanced functions must have been enabled during the programming sequence you just completed in order for operators to have access to them. Information on using the advanced functions is found in this manual.

Operating Instructions

Refer to the operator's card for basic instructions on operating the TRIMWEIGH III scale. Advanced user functions are covered in the appendix of this manual. Keep in mind the following good weighing practices.

- Items to be weighed should be placed near the center of the weighing platter.
- Items should not be dropped onto the TRIMWEIGH III scale as they can damage the platter, loosen scale components, or change the level condition of the base.
- Avoid sliding heavy items across the platter to prevent scuffing.
- Always use proper lifting devices and practices for loading and unloading the TRIMWEIGH III scale. Avoid moving heavy items to the edge of the platter to get a better grip for lifting. Edge loading can tip the platter and lead to personal injury.
- When using the tare function to remove a container's weight from the total weight on the TRIMWEIGH III scale, tare each container separately. Variations in materials thickness and other factors can affect the containers' weight.

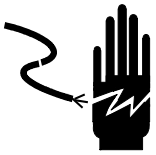
For your notes

4 Service and Maintenance

Cleaning

CAUTION

IMPROPER CLEANING PROCEDURES CAN DAMAGE THIS SCALE. NEVER IMMERSE ANY PART OF IT IN WATER OR ANY OTHER LIQUIDS.



WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE SERVICING OR CLEANING.

Note: You should always follow the washdown procedures specified by your company.

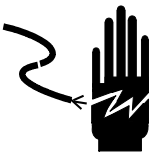
The TRIMWEIGH III scale's base is designed for use in wet, corrosive industrial environments which require frequent washdown. It can be hosed down with high pressure water with the base cover on or off, since all interior parts are protected. The base should be regularly washed down with water to remove any debris which could cause cross contamination of product(s) or affect the performance of the TRIMWEIGH III scale.

To clean the TRIMWEIGH III scale's terminal, wipe its keypad and display with a clean, soft cloth that has been dampened with a mild glass cleaner. Do not use any type of industrial solvent such as toluene or isopropanol (IPA) as they may damage the terminal finish. Do not spray cleaner directly on the terminal.

Neither the TRIMWEIGH III scale's base or terminal should be immersed in water.

Regular maintenance inspections and calibration by a qualified service technician are also recommended.

Overload Stop Adjustments



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 OR EQUIPMENT DAMAGE.

Note: Overload stop gaps must be reset if the top or bottom base frame or the load cell is replaced.

Overload Settings

To set the overload stops, refer to the steps outlined below, as well as the illustrations and table that follow.

Determine where the overload stops contact the standoffs and then back them away a fractional number of turns from this point. It will be necessary to mark a point on the hex key wrench as a reference. When the scale reads 0 weight, the mark on the hex key wrench will identify the starting position. The fractional turns are noted in Figure 2.

Procedure:

1. Remove the platter and zero the scale. This may require a change to the terminal's (indicator's) zero capture range or a calibration zero adjust.
2. Loosen the jam nuts on all six overload stops.
3. Start with the center overload stops. Slowly turn the setscrew clockwise until the terminal display shows a negative weight or goes blank. Slowly turn the setscrew counterclockwise until the terminal display shows 0 weight. Note the position of hex key wrench. This is the Start position.
4. Continue to turn the hex key wrench counterclockwise the number of turns specified in the table below.
5. Hold the hex key wrench at the final position and tighten the jam nut.
6. Repeat steps 3 through 5 for each of the six positions (A, A, B, B, C, C)
7. Replace the platter and recalibrate the scale. If the zero capture was changed, return it to the original setting.

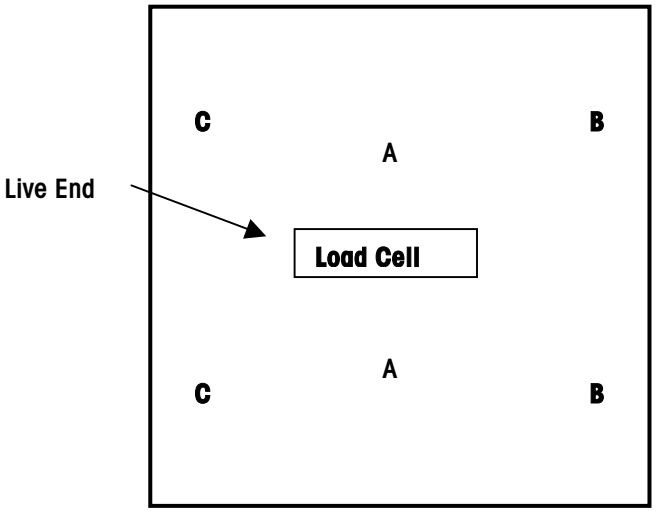


Figure 1: Overload Adjustment Locations

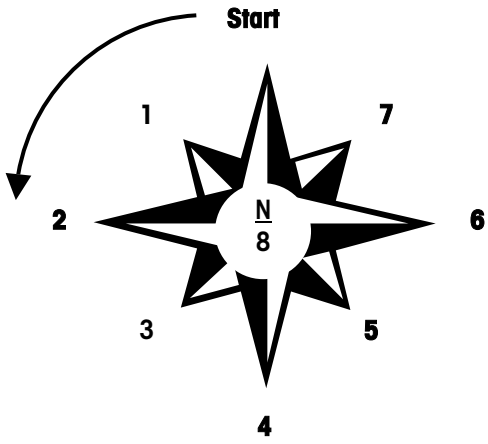


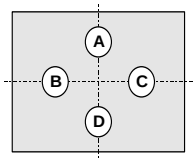
Figure 2: Determining 8ths of a Turn

Model	Overload Stop	Turns from Zero
006B	Live	2/8
	Fixed	5/8
	B	2-4/8
	C	2-6/8
015B	A	2/8
	B	7/8
	C	1-2/8
030B	A	2/8
	B	1-2/8
	C	1-4/8
060B	A	2/8
	B	2-1/8
	C	2-4/8
060L	A	2/8
	B	1-4/8
	C	1-5/8
150B	A	2/8
	B	3-1/8
	C	3-2/8

Shift Test (Base)

A shift test will verify that all sections of the TRIMWEIGH III scale base platter weigh within tolerance. Before performing the test, note the following:

1. The TRIMWEIGH III scale base must be level with all four feet properly adjusted.
2. It should be allowed to warm up and stabilize for at least 30 minutes when first powered up.
3. The terminal must be configured for the rated capacity. Refer to the configuration specifications in Chapter 1.
4. Exercise it by applying full capacity and removing it at least two times.
5. To perform the shift test, use weight equal to half the capacity of the TRIMWEIGH III scale build.
6. Place the weights halfway between the center and edge of the platter.
7. Move the weights to four positions in sequence (A, B, C, D).



Platter Diagram for Shift Test

The terminal reading at each position should be within these limits:

Scale Capacity	Test Weight	Acceptance (New Scale) Tolerance	Maintenance (In Service) Tolerance
5,000 d	2,500 d	+/- 1.5 d	+/- 3 d
3,000 d	1,500 d	+/- 1.0 d	+/- 2 d

Note: Shift problems cannot be corrected in the field. Scale bases that fail this test require a replacement load cell. If the readings are within the specified limits, the TRIMWEIGH III scale base is ready for normal operation.

Calibration Tests

Calibration tests verify that the TRIMWEIGH III scale base is operating within specified limits. They should be performed any time major mechanical components are replaced or adjusted.

Linearity Test

A linearity test confirms scale accuracy over the operating range.

1. Zero the TRIMWEIGH III scale.
2. Apply a test weight(s) equal to one-half the rated capacity in the center of the platter, and write down the reading
3. Remove the test weight(s). Place a second group of test weights equal to one-half the rated capacity in the center of the weighing platter. Press the tare button on the terminal. The terminal should display zero.
4. Add the first group of test weights to the second group already on the platter.
5. The weight reading should be equal to the first reading (tolerance +/- 3 d).
6. Remove the weights. If the reading is not equal, check the terminal operating instructions to determine if linearity can be adjusted electronically. If the reading is out of tolerance, refer to the Troubleshooting section in this manual.

Overload Test

The Overload Test verifies that the overload stops do not engage prematurely or after damage to the counter force has occurred. A full capacity weight is placed at each of the four Shift Test positions. If any readings are out of tolerance, one or more of the overload stops may not be properly adjusted. Check the overload stops and repeat the test.

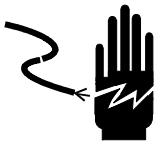
Load Cell Replacement

The following section describes how to replace the load cell for the TRIMWEIGH III scale base. Follow these procedures carefully and always use the proper tools and torque settings to ensure proper installation and accurate measurements. Caution: Load cells are precision instruments and should be handled with care.

Load Cell Torque Settings	
006B	14 N·m (120 in lbs)
015B	14 N·m (120 in lbs)
030B	14 N·m (120 in lbs)
060B	14 N·m (120 in lbs)
060L	14 N·m (120 in lbs)
150B	14 N·m (120 in lbs)

1. Remove the base's platter.
2. Loosen and carefully remove the top load cell mounting bolts that secure the top frame to the load cell. Set the top frame aside.
3. Remove the bottom load cell mounting bolts. The load cell assembly can now be removed from the lower base.
4. Take the replacement load cell from its shipping carton and position it in the base cavity.
5. When reinstalling a digital load cell, reverse the preceding steps. Lubricate the bolt threads before re-assembly. Using a torque wrench, tighten the mounting bolts.
6. To properly align the top and bottom frames, center the overload set screws at the corners above their respective overload stops.
7. The overload stop settings must be checked and adjusted.
8. Connect the load cell cable to the terminal. Apply power and allow the terminal and base to warm up for 30 minutes. Calibrate using test weights.

Troubleshooting



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.

Electrical Problems

Problem	Possible Cause	Remedy
Terminal display is blank.	No AC power. Blown fuse.	Check outlet and power cord connections.
Terminal displays error.	Improper configuration of terminal. Improper connection to load cell.	See possible errors below.
Scale readout unstable	Environment: Air movement or low frequency vibration. Radio transmission nearby.	Use a wind screen in drafty areas. Select a lower frequency filter if possible. Check for 2-way radio transmissions in area.
Out of zero range	Scale may have been lifted by the upper frame. Possible mechanical problem.	Try calibrating again. See Mechanical Problems. Replace load cell.

Mechanical Problems

Problem	Possible Cause	Correction
Calibrates but doesn't weigh correctly.	Base not level. Calibrated in drafty area. Something touching platter, frame, or load cell. Moisture on scale. Overload stop touching.	Verify base is level and not in a draft. Verify load cell cable is not touching frame or platter. Check overload stop gaps. Are there sudden changes in temperature or possible condensation?
Doesn't return to zero (within 0.5d).	Operation before warm up. Load cell bolts not properly torqued. Something touching load cell or upper frame.	Did base warm up for 30 minutes? Was the base calibrated before warm up? Verify torque on load cell bolts.
Doesn't weigh full capacity.	Terminal setup incorrectly. Calibrated without preload. Preload exceed specified limit. Overload stop touching.	Is terminal set up for base capacity? Added fixture or container should be below specified weight and included during calibration. Check overload stop gaps.
Fails shift test.	Base is not level. Test weights positioned too close to edge.	Verify position of test weights. Check load cell torque.
Excessive Creep (greater than1.5d).	Terminal set for more than 5,000 divisions. Load cell bolts not properly torqued.	Check the build option selected and re-test. Check load cell bolt torque.
Terminal responds slowly to weight change.	Incorrect filter setting in terminal.	Select higher frequency filter for quicker response.
Terminal takes too long to settle (least significant digit).	Base in presence of excessive vibration/draft. Terminal configured to more than 5,000 divisions. Incorrect filter setting.	Check the configuration of the terminal. Select a lower frequency filter.

Error Codes

Error Code Table		
Error	**Description**	**Corrective Measures**
E1	PROGRAM MEMORY ERROR	Check power supply voltages. Replace main logic PCB.
E2	INTERNAL RAM ERROR	Check power supply voltages. Replace main logic PCB.
E3	EEPROM MEMORY ERROR	Check power supply voltages. Reprogram and recalibrate. Replace main logic PCB.
E4	EXTERNAL RAM ERROR	Replace main logic PCB.
E7	A/D CIRCUIT MALFUNCTION OR NO ANALOG LOAD CELL CONNECTED	Program for correct load cell type. Check load cells and cables. Check power supply voltages. Replace main logic PCB.
E16	INTERNAL MATH ERROR	Press **CLEAR** to acknowledge. Unit will reset.
E20	NEW SETPOINT VALUE IS LESS THAN CORRESPONDING PREACT VALUE	Re-set setpoint value.
E32	INSUFFICIENT TEST WEIGHT USED FOR CALIBRATION	Recalibrate using more test weight.
E34	TEST WEIGHT EXCEEDS 105% OF CAPACITY	Use less than 105% of capacity. Press **CLEAR** and re-enter.
E35	SPAN CALIBRATION ERROR	Recalibrate. If error persists, check the load cell cable wiring, the mV output from the TRIMWEIGH III scale for positive polarity, and the correct mV amount.
E36	ANALOG LOAD CELL OUT OF RANGE	Recalibrate. Replace load cell
E50	WEIGHT CAN NOT BE DISPLAYED IN ALTERNATE UNITS	Some alternate units combinations are illegal. Choose another scale build or disable alternate units.
E60	STACK OVERFLOW	Press **CLEAR** to acknowledge and re-enter values.
E90	TARGET OR ZONES ARE INVALID.	Press **CLEAR** to acknowledge and re-enter values.
EEE	POSITIVE MORE THAN ZERO APTURE LIMIT OF 2% OF SCALE CAPACITY	Remove material from scale base. Disable AZM in setup. Cycle power.
-EEE	NEGATIVE MORE THAN ZERO CAPTURE LIMIT OF 2% OF SCALE CAPACITY	Disable AZM in setup. Calibrate scale. Cycle power.
o	OVER ZONE IS OUT OF RANGE OR DOES NOT FIT BUILD (ACTUAL WEIGHT ZONES ONLY).	Press **CLEAR** to acknowledge and re-enter zone.
h	HIGH ZONE IS OUT OF RANGE OR DOES NOT FIT BUILD (ACTUAL WEIGHT ZONES ONLY).	Press **CLEAR** to acknowledge and re-enter zone.
l	LOW ZONE IS OUT OF RANGE OR DOES NOT FIT BUILD (ACTUAL WEIGHT ZONES ONLY).	Press **CLEAR** to acknowledge and re-enter zone.
u	UNDER ZONE IS OUT OF RANGE OR DOES NOT FIT BUILD (ACTUAL WEIGHT ZONES ONLY).	Press **CLEAR** to acknowledge and re-enter zone.
------	NO ANALOG LOAD CELL DETECTED	Check load cell wiring. Replace load cell. Replace main PCB.

Calibration Errors

When calibrating the TRIMWEIGH III scale with a known test mass, the TRIMWEIGH III scale may appear to have a linearity and/or calibration error. This may be due to a problem with the Geo Code settings. Refer to the TRIMWEIGH III scale Interface program block (F1) for details on how to reset Geo Codes. After re-setting the Geo Codes, re-test the TRIMWEIGH III scale.

Linearity Errors

A linearity error can be experienced when a scale is calibrated to a capacity above 75% of the load cell capacity. To verify proper functionality of the load cell, simply re-calibrate using a test weight equal to half the desired build capacity. If the TRIMWEIGH III scale weighs properly to 50% capacity but experiences linearity errors above 75% capacity, the load cell is probably not damaged.

To correct this linearity error, open the indicator and move the W1 jumper to the 3mV/V position. Recalibrate using a test weight equal to the desired build capacity. Verify proper operation.

AC Power Test

Using a multi-meter, check the AC input power. The input power must be within 10% of the nominal AC line voltage.

Main Logic PCB Voltage Test

Verify voltage of 5.0 VDC between + and - Excitation (±10%). If the TRIMWEIGH III scale has power but no excitation voltage, replace the main logic PCB.

Discrete Output Voltage

With no load applied and the TRIMWEIGH III scale at gross zero, the following voltages should be measured. Refer to the following table for correct voltage readings.

TB2	Voltage Readings
Pin 8 & Pin 4 (+5 VDC)	5 VDC*
Pin 8 & Pin 5 (OUT 1)	5 VDC*
Pin 8 & Pin 6 (OUT 2)	5 VDC*
Pin 8 & Pin 7 (OUT 3)	5 VDC*

*If voltages are not within the +4.5 to +5.2 VDC range:

- Refer to the section on discrete outputs in the appendix.
- Check programming.
- Check wiring.

RS232 Serial Output Test

1. Remove power from the TRIMWEIGH III scale and printer. Disconnect the data cable from the printer.
2. Set the multi-meter to read 20 volts DC.
3. Connect the red lead (positive) to pin 2 of the printer end of the data cable and connect the black lead (negative) to pin 7.
4. Apply power.
   - In Demand mode, the meter should read between –5 and –15 volts with no fluctuation.
   - In Continuous mode, the meter should fluctuate between –5 and +5 volts continuously. The constant fluctuation on the meter display indicates the TRIMWEIGH III scale/indicator is transmitting information.

To test the Demand baud rates, press **PRINT**. The display should fluctuate between -5 volts to +5 volts for the duration of the transmission, then become stable again. This indicates the Instrument has transmitted data.

Replacing the TRIMWEIGH III Scale Terminal

In the event that the TRIMWEIGH III scale terminal's logic board must be repaired or replaced, the following instructions illustrate how to open the terminal and to reconnect it.

Opening the Terminal

Refer to the instructions on page 1-4 to open the terminal.

Connecting the Unit

1. Pass the cables that enter the enclosure through the cable grip before connecting the wires.
2. After the TRIMWEIGH III scale terminal is opened, you can make the electrical connections.
3. Hang the front cover on the top clips then tighten the cable grip sufficiently to provide a water-tight seal around the cable. This will allow any internal cable slack to be received through the cable grip.
4. Push the bottom of the front cover over the enclosure. A snap sound indicates the cover is in place. Squeeze the front cover to the enclosure at all four corners to verify that all four clips are properly engaged.
5. Engage the butterfly latches on each side. Twist latches to lock in place.
6. Re-configure and recalibrate after replacing the terminal or main PCB.

5 Appendices

Appendix 1: Specifications

	TW1N 006B	TW2N 015B	TW2N 030B	TW2N 060B	TW2N 060L	TW2N 150B
Maximum Capacity	6 kg 15 lb	15 kg 30 lb	30 kg 60 lb	60 kg 150 lb		150 kg 300 lb
Min. Grad. (eMIN)	0.001 kg 0.002 lb	0.002 kg 0.005 lb	0.005 kg 0.01 lb	0.01 kg 0.02 lb		0.02 kg 0.05 lb
Readability Non-Legal-for-Trade at Maximum Capacity	0.0005 kg 0.001 lb	0.001 kg 0.002 lb	0.002 kg 0.005 lb	0.005 kg 0.01 lb		0.01 kg 0.02 lb
Recommended Legal-for-Trade Build (NTEP)	5 x 0.001 kg 10 x 0.002 lb	10 x 0.002 kg 25 x 0.005 lb	25 x 0.005 kg 50 x 0.01 lb	50 x 0.01 kg 100 x 0.02 lb		100 x 0.02 kg 250 x 0.05 lb
Recommended Legal-for-Trade Build (OIML)	6 x 0.002 kg	15 x 0.005 kg	30 x 0.01 kg	60 x 0.02 kg		150 x 0.05 kg
Maximum Back Weight *	9 kg 25 lb	3 kg 7 lb	16 kg 35 lb	36 kg 80 lb	27 kg 60 lb	54 kg 120 lb
Static Overload**	60 kg 130 lb	180 kg 395 lb			450 kg 990 lb	
Resolution	Up to 5,000 divisions (NTEP) Legal-for-Trade / Up to 10,000 divisions non-Legal-for-Trade					
Load Cell Capacity	20 kg 45 kg		50 kg 110 lb	100 kg 220 lb		200 kg 440 lb
Base Dimensions (w x d)	229 x 229 mm 9 x 9 in	305 x 305 mm 12 x 12 in			457 x 457 mm 18 x 18 in	
Net Weight	9 kg 19 lb	12 kg 27 lb			26 kg 58 lb	
Shipping Weight	11 kg 25 lb	16 kg 35 lb			30 kg 66 lb	
Load Cell Type	Analog - single 350 ohm load cell, 2 mV/V					
Load Cell Cable	3 m / 10 ft					
Load Cell Protection	Hermetically sealed					
Construction	304 Stainless steel frame / 304 stainless steel platter / 17-4 stainless steel load cell					
Display	6-digit vacuum fluorescent with (5) red, yellow, green zone LEDs					
Keypad	Standard version with 6 function keys Enhanced version with 8 function keys and 10-digit numeric keypad					
Output	RS232					
Operating Temperature	-10°C to 40° C (14°F to 104°F); 10 to 95% humidity					
Storage Temperature	-40°C to 140° C (-40°F to 60°F); 10 to 95% humidity					

*Back weight based on recommended Legal-for-Trade build.
** Maximum non-shock load that can be placed on the base without affecting the structural integrity of the base.

Appendix 2: Standards Compliance

UL and cUL Listing

The scale has been tested and complies with UL1950 and carries the UL and cUL labels.

CSA Certification

The scale meets CSA standard c22.2 No 143-1975, Office Machines.

Conducted and Radiated Emissions (RFI)

The scale meets or exceeds FCC docket 80-284 for conducted and radiated emissions requirements as a Class A digital device.

Radio Frequency Interference Susceptibility

The scale meets USA, Canadian, and EC requirements for RFI susceptibility as listed in the following table with a maximum of one display increment of change when calibrated for recommended builds.

RFI Susceptibility			
	U.S.A.	Canadian	EC
Radio Interference Frequency	Field Strength	Transmitted Power at Specified Distance	Field Strength
27 MHz	3 volts/meter	4 Watts at 2 meters	N/A
144 MHz	N/A	N/A	N/A
169 MHz	3 volts/meter	N/A	N/A
464 MHz	3 volts/meter	4 Watts at 2 meters	N/A
27-1000 MHz	N/A	N/A	3 volts/meter

AC Power Line Voltage Variation

The scale meets NIST H-44, Canadian Gazette Part 1, and OIML-SP7/SP2 line voltage variation specifications as listed in this table:

AC Power Line Voltages						
Specification	**AC Line Voltage**			**Line Frequency in Hz**		
Line Voltage Variation	**Min.**	**Nominal**	**Max.**	**Min.**	**Nominal**	**Max.**
NIST H-44	100	120	130	59.5	60	60.5
Canadian	108	120	132	58.8	60	61.2
OIML-SP7/SP2	102 187 204	120 220 240	132 242 264	58.8 49.0 49.0	60 50 50	61.2 51 51

Production Meets Type (PMT)

The production of all Trimweigh scales continue to perform at the NIST H-44 Specifications as certified by the Nation Type Evaluation Program. The Trimweigh COC is COC 02-124.

Appendix 3: Shipping and Default Settings

Factory Configuration

Program Sub-Blocks	Default Settings (F6.5, X=1)	Domestic Configuration	Default Settings (F6.5, X=2)	Export Configuration	Description
F1.2	1	1	2	2	Calibration units (1=lb, 2=kg)
F1.3	100	xxx	60	xxx	Scale capacity (per model)
F1.4	0.01	xxx	0.02	xxx	Scale increment size (per model)
GEO	16	16	16	16	Geo code (North America)
F1.6	0	0	0	0	Zero Calibration Adjust
F1.7	0	0	0	0	Span Calibration Adjust
F2.1	0	2	0	0	Alternate units (0=none, 2=kg)
F2.3.1	1	1	1	1	Tare enabled
F2.3.2	0	0	1	1	Tare interlock (0=disabled)
F2.3.3	0	0	0	0	Auto tare disabled
F2.3.4	0	0	0	0	Auto clear tare disabled
F2.4.1	1	1	1	1	Push button zero enabled, 2%
F2.4.2	1	2	1	2	AZM range (0=off, 1=0.5d, 2=1d)
F2.4.3	1	1	1	1	AZM in net mode (0=disabled)
F2.4.4	1	1	1	1	Zero cursor enabled
F2.4.5	0	0	0	0	No under zero blanking
F2.5	1	1	1	1	Motion sensitivity ±1d
F2.5.1	0	0	0	0	Blanking disabled
F2.6	4.0	4.0	4.0	4.0	Filter corner frequency (Hz)
F2.6.1	0	1	0	1	Noise filter (0=disabled)
F3.1.1	9600	9600	9600	9600	COM1 Baud
F3.1.4	2	2	2	2	COM1 Even parity
F3.1.5	0	0	0	0	COM1 Checksum disabled
F3.1.6	0	0	0	0	COM1 STX disabled
F3.2	1	1	1	1	Demand output
F3.2.1	0	0	0	0	Print format = single line
F3.2.2	0	0	0	0	No expanded print
F3.2.3	1	1	1	1	Print 'G' in Gross Weight field
F3.3	0.0	0.0	0.0	0.0	Display hold (0.0 sec)
F4.1	1	2	1	2	Discrete input (1=Print, 2=Tare)

Program Sub-Blocks	Default Settings (F6.5, X=1)	Domestic Configuration	Default Settings (F6.5, X=2)	Export Configuration	Description
F5.1	0	2	0	2	0=Indicator mode, 2=Over/Under
F5.2	0	0	0	0	Target key, no editing allowed
F5.7	0	0	0	0	Stored target weight (0=disabled)
F5.7.1	1	1	1	1	Zone weight entered in percent
F5.7.2	0	0	0	0	Display is in weight units
F5.7.3	0	0	0	0	Weight difference from target (0=disabled, 1=enabled)
F5.7.4	1	1	1	1	"Under" zone indication (0=always on, 1=off at zero)
F5.8					'Quickset' zone editing
o	0	4.0	0	4.0	Over zone setting (%)
h	0	2.0	0	2.0	High zone setting (%)
l	0	2.0	0	2.0	Low zone setting (%)
u	0	4.0	0	4.0	Under zone setting (%)
F5.9	1	1	1	1	Enable weight display and LEDs
F6.x	0	0	0	0	Normal display mode, No Diagnostic display

Appendix 4: Advanced Operator Functions (Standard 6-Key Version)

The standard TRIMWEIGH III scale has a simplified user interface with six function keys. The more advanced functions are made possible by assigning multiple functions to keys or using key sequences. For the most part, the **ENTER** (or **PRINT**) key produces an "accept" operation and the **SELECT** (or **UNITS** switching) key produces the "change" operation. The **TARGET** key functions as a "memory edit" key when used in conjunction with the **SELECT** key.

Setting the Quickset TARGET

The Quickset target function allows the operator to easily establish a new target value by applying a target sample to the scale. The zone values are configured in Setup Mode at [F5.8]. Use the following procedure to set the Quickset Target.

Setting the Quickset Target on the Scale	Display	LEDs
With the scale at gross or net zero, place a sample target weight on the scale platter.	0. 0 0 0 1. 2 8 0	Off
Press the **TARGET** key to set the target to the displayed value. The target cursor will come on and the green LED will be lit. Note that the displayed value will vary with the configuration of F5.7.x.	1. 2 8 0	Red Yellow >Green< Yellow Red
Remove the sample target weight. The display returns to zero and the lower red LED is lit. The scale is now ready for over/under weighing.	0. 0 0 0	Red Yellow Green Yellow >Red<
The Quickset Target can be cleared at any time using the **CLEAR** key. The target cursor and the LEDs will be turned off.	0. 0 0 0	Off

Recalling Stored Targets.

The scale can be configured with one or two stored targets that can be recalled for use by the operator at any time. Each target has independent zones, which are configured in Setup Mode at [F5.7.1]. Use the following procedure to recall stored targets.

Recalling Stored Targets on the Scale	Display	LEDs
With the scale at gross or net zero, press the **TARGET** key. The display will indicate the Setpoint number (SP1) followed by the preset value of the displayed target. If the target value is displayed as zero, the setpoint has not been configured.	0.0 0 0 S P 1 5.5 0 0	Off
Press the **TARGET** key again to scroll to the next setpoint (SP2). The **TARGET** key can be pressed again and again to cycle through the available setpoints. Note that SP0 is the Quickset target and does not have a preset value.	S P 2 3.1 2 5	Off
When the desired target value is displayed, press the **ENTER** key to select that target. The display will return to zero and the lower red LED will be lit. The scale is now in over/under mode.	0.0 0 0	Red Yellow Green Yellow >Red<

Editing Target Values

The operator can edit the target values without entering Setup Mode if [F5.2 x = 1]. Note that the target values are always entered as actual weight in the primary (calibration) units. Use the following procedure to edit the stored target values.

Editing Targets on the Scale	Display	LEDs
With the scale at zero, press the **TARGET** key to select a setpoint for editing. The display will show the setpoint number for a moment then the value (in primary units). Pressing the **TARGET** key multiple times will cycle through the available setpoints (SP1, SP2, SP0). SP0 is the Quickset target which does not have a stored value.	0.0 0 0 S P 1 5.5 0 0	Off
While the desired setpoint is displayed, press the **SELECT** key to enter the editing mode. The display will show the current target value preceded by an equal symbol. The green led will be lit.	= `0 5.5 0 0	Red Yellow >Green< Yellow Red
The apostrophe identifies the digit that can be changed. Press the **SELECT** key to increment the value. Press the **ENTER** key to accept the value. For example, in order to change the target from 05.500 to 05.200, press the **ENTER** key two times to select the tenths digit, press the **SELECT** key seven times to change it from 5 to 2.	= 0 5.`5 0 0 = 0 5.`2 0 0	Red Yellow >Green< Yellow Red
Press the **ENTER** key three more times to accept the last three digits. When the last digit is accepted, the target is updated and the display returns to normal weight mode.	0.0 0 0	Off

Editing Zone Values

The operator can edit the target and zone values without entering Setup Mode if [F5.2 x = 2 or 3]. Refer to the preceding procedure to enter edit mode. Note that the zone values can be entered as actual weight, increments or percent depending on [F5.7.1 x]. Use the following procedure to edit the stored zone values. For this example, [F5.7.1=2].

Editing Zones on the Scale	Display	LEDs
Enter the edit mode and change the target if desired by using the procedure in the preceding section. To keep the current target, press **ENTER** as the apostrophe passes through each digit.	= `0 0 5.2 0	Red Yellow >Green< Yellow Red
Press **ENTER** at the last digit of the target value to proceed to the Over zone. The apostrophe identifies the digit that can be changed. Press **SELECT** to increment the value. Press **ENTER** to accept the value (must be greater than the target).	o `0 05.3 0	>Red< Yellow Green Yellow Red
Proceed to the High zone value. Use the **SELECT** and **ENTER** keys to edit the value. This value must be greater than the target AND less than the Over zone value.	h `0 0 5.2 5	Red >Yellow< Green Yellow Red
Proceed to the Low zone value. Use the **SELECT** and **ENTER** keys to edit the value. This value must be less than the target value.	L `0 05.1 5	Red Yellow Green >Yellow< Red
Proceed to the Under Zone value. Use the **SELECT** and **ENTER** keys to edit the value. This value must be less than the target AND greater than the Low zone value.	u `0 05.1 0	Red Yellow Green Yellow >Red<
Press the **ENTER** key to exit the edit mode and return to normal weighing mode.	0.0 0 0	Off

If an error is detected in the zone values, an E90 message is displayed. Press the **CLEAR** key to return to the Over zone. Verify the entries meet the conditions for each zone. Note that the zones for the Quickset Target are always entered as the difference from the target value.

Appendix 5: Advanced Operator Functions (Enhanced Keypad Version)

The enhanced keypad version of the TRIMWEIGH III scale supports up to10 stored targets and one (1) Quickset target, each with independent High, Over, Low and Under zones. These scales are equipped with an enhanced keyboard to simplify the more advanced over/under features. A **MEMORY** key is added specifically for editing the target and zone values. The full numeric keypad makes entering target, zone and tare values extremely easy.

Entering Numeric Tare or Target Values

The enhanced keypad version of the TRIMWEIGH III scale allows the operator to enter a numeric Tare value and a numeric Quickset target value. Simply key in the desired numeric value and press the **TARE** or **TARGET** key.

All numeric entries must be in correct scale divisions or the operation will be terminated.

Setting the Quickset Target

The Quickset target function allows the operator to easily establish a new target value by applying a target sample to the scale. The zone values are configured in Setup Mode at [F5.8]. Use the following procedure to set the Quickset target.

Setting the Quickset Target on the Enhanced Keypad Version of the TRIMWEIGH III Scale	Display	LEDs
With the scale at gross or net zero, place a sample target weight on the scale platter.	0.0 0 0 1.2 8 0	Off
Press the **TARGET** key to set the target to the displayed value. The Target cursor will come on and the green LED will be lit. Note that the displayed value will vary with the configuration of F5.7.x.	1.2 8 0	Red Yellow >Green< Yellow Red
Remove the sample target weight. The display returns to zero and the lower red LED is lit. The scale is now ready for over/under weighing.	0.0 0 0	Red Yellow Green Yellow >Red<
The Quickset target can be cleared at any time using the **CLEAR** key. The target cursor and the LEDs will be turned off.	0.0 0 0	Off

Recalling Stored Targets

The enhanced keypad version of the TRIMWEIGH III scale can be configured with 10 stored targets that can be recalled for use by the operator at any time. Each target has independent zones, which are configured in Setup Mode at [F5.7.1]. Use the following procedure to recall stored targets.

Recalling Stored Targets on the Enhanced Keypad Version of the TRIMWEIGH III Scale	Display	LEDs
With the scale at gross or net zero, press the **TARGET** key followed a numeric key indicating the desired setpoint (**1**^{SP1} for example). The display will indicate the setpoint number (SP1) followed by the preset value of that target. If the target value is displayed as zero, the setpoint has not been configured.	0.0 0 0 S P - S P 1 5.5 0 0	Off
When the desired target value is displayed, press the **ENTER** key to select that target. The display will return to zero and the lower red LED will be lit. The scale is now in over/under mode.	0.0 0 0	Red Yellow Green Yellow >Red<

Editing Target Values

The operator can edit the target values without entering Setup Mode if [F5.2 x = 1]. Note that the target values are always entered as actual weight in the primary (calibration) units. Use the following procedure to edit the stored target values.

Editing Targets on the Enhanced Keypad Version of the TRIMWEIGH III Scale	Display	LEDs
With the scale at zero, press the **MEMORY** key to select a setpoint for editing. Use the number keys to select the desired setpoint, which is noted at the top of each key. In this example, the **2**^{SP2} key was pressed.	0. 0 0 0 S P - S P 2	Off
The current stored target value is then displayed (in primary units) and the green led will be lit. There are 10 available setpoints (SP1, SP2…SP10) plus a Quickset target. SP0 is the Quickset target which does not have a stored value	= 5. 0 0 0	Red Yellow >Green< Yellow Red
Press the **ENTER** key to accept the value or use the numeric keypad to change the value. For example, in order to change the target from 5.000 to 5.200, press the **5** key, the decimal key and the **2** key.	= 5. 0 0 0 = 5. 2 0 0	Red Yellow >Green< Yellow Red
Press the **ENTER** key to save the new target. The display will prompt for another setpoint to edit. Press the **CLEAR** key to exit.	S P - 0. 0 0 0	Off

Editing Zone Values

The operator can edit the target and zone values without entering Setup Mode if [F5.2 x = 2 or 3]. Refer the preceding procedure to enter edit mode. Note that the zone values can be entered as actual weight, increments or percent depending on [F5.7.1 x]. Use the following procedure to edit the stored zone values. For this example, [F5.7.1=2].

Editing Zones on the Enhanced Keypad Version of the TRIMWEIGH III Scale	Display	LEDs
Enter the edit mode and change the target if desired by using the procedure in the preceding section. Press the **ENTER** key to proceed to the Over zone.	= 0 0 0 5. 2 0	Red Yellow >Green< Yellow Red
Use the numeric keypad to enter the new Over zone value then press the **ENTER** key to accept the displayed value. This value must be greater than the target.	o 0 0 5. 3 5	>Red< Yellow Green Yellow Red
Use the numeric keypad to enter the new High zone value then press the **ENTER** key to accept the displayed value. This value must be greater than the target AND less than the Over zone value.	h 0 0 5. 2 5	Red >Yellow< Green Yellow Red
Use the numeric keypad to enter the new Low zone value then press the **ENTER** key to accept the displayed value. This value must be less than the target value.	L 0 0 5. 1 5	Red Yellow Green >Yellow< Red
Use the numeric keypad to enter the new Under zone value then press the **ENTER** key to accept the displayed value. This value must be less than the target AND greater than the Low zone value.	u 0 0 5. 0 5	Red Yellow Green Yellow >Red<
At the next prompt, the operator may select another setpoint to edit by entering the setpoint number or may exit the edit mode and return to normal weighing mode by pressing the **CLEAR** key.	S P - 0. 0 0 0	Off

If an error is detected in the zone values, an E90 message is displayed. Press the **CLEAR** key to return to the Over zone. Verify the entries meet the conditions for each zone.

Note that the zones for the Quickset target are always entered as the difference from the target value.

Appendix 6: Alternate Units and Units Switching

If enabled in Setup Mode, one additional unit of measure may be used beyond the primary unit of measure used for calibration. To switch between primary and secondary units, press the **UNITS** key. The following tables detail the increment size conversions which allow you to calculate available builds when unit switching is used.

Cal Unit (Increment)	CALIBRATED IN POUNDS (Alternate Unit Increment)					
lb	kg	g	oz	lb-oz	ozt	dwt
0.001	N.A.	N.A.	0.02	N.A.	0.01	0.2
0.002	0.001	1	0.05	N.A.	0.02	0.5
0.005	0.002	2	0.1	N.A.	0.05	1
0.01	0.005	5	0.2	N.A.	0.1	2
0.02	0.01	N.A.	0.5	N.A.	0.2	5
0.05	0.02	N.A.	1	N.A.	0.5	N.A.
0.1	0.05	N.A.	2	N.A.	1	N.A.
0.2	0.1	N.A.	4	N.A.	2	N.A.
0.5	0.2	N.A.	8	N.A.	6	N.A.
1	0.5	N.A.	N.A.	N.A.	N.A.	N.A.
2	1	N.A.	N.A.	N.A.	N.A.	N.A.
5	2	N.A.	N.A.	N.A.	N.A.	N.A.
10	5	N.A.	N.A.	N.A.	N.A.	N.A.
20	10	N.A.	N.A.	N.A.	N.A.	N.A.
50	20	N.A.	N.A.	N.A.	N.A.	N.A.

N.A. = Not applicable.

Cal Unit (Increment)	CALIBRATED IN KILOGRAMS (Alternate Unit Increment)					
kg	lb	g	oz	lb-oz	ozt	dwt
0.001	0.002	1	0.05	N.A.	0.02	0.5
0.002	0.005	2	0.1	N.A.	0.05	1
0.005	0.01	5	0.2	N.A.	0.1	2
0.01	0.02	N.A.	0.5	N.A.	0.2	5
0.02	0.05	N.A.	1	N.A.	0.5	N.A.
0.05	0.1	N.A.	2	N.A.	1	N.A.
0.1	0.2	N.A.	4	N.A.	2	N.A.
0.2	0.5	N.A.	8	N.A.	6	N.A.
0.5	1	N.A.	N.A.	N.A.	N.A.	N.A.
1	2	N.A.	N.A.	N.A.	N.A.	N.A.
2	5	N.A.	N.A.	N.A.	N.A.	N.A.
5	10	N.A.	N.A.	N.A.	N.A.	N.A.
10	20	N.A.	N.A.	N.A.	N.A.	N.A.
20	50	N.A.	N.A.	N.A.	N.A.	N.A.
50	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

N.A. = Not applicable.

Cal Unit (Increment)	CALIBRATED IN GRAMS (Alternate Unit Increment)					
g	lb	kg	oz	lb-oz	ozt	dwt
0.001	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
0.002	N.A.	N.A.	N.A.	N.A.	N.A.	0.001
0.005	N.A.	N.A.	N.A.	N.A.	N.A.	0.002
0.01	N.A.	N.A.	N.A.	N.A.	N.A.	0.005
0.02	N.A.	N.A.	0.001	N.A.	N.A.	0.01
0.05	N.A.	N.A.	0.002	N.A.	0.001	0.02
0.1	N.A.	N.A.	0.005	N.A.	0.002	0.05
0.2	N.A.	N.A.	0.01	N.A.	0.005	0.1
0.5	N.A.	N.A.	0.02	N.A.	0.01	0.2
1	0.002	0.001	0.05	N.A.	0.02	0.5
2	0.005	0.002	0.1	N.A.	0.05	1
5	0.01	0.005	0.2	N.A.	0.1	2
10	0.02	0.01	0.5	N.A.	0.2	5
20	0.05	0.02	1	N.A.	0.5	N.A.
50	0.1	0.05	2	N.A.	1	N.A.

Cal Unit (Increment)	CALIBRATED IN OUNCES (Alternate Unit Increment)					
oz	lb-oz	lb	kg	g	ozt	dwt
0.001	N.A.	N.A.	N.A.	0.02	N.A.	0.01
0.002	N.A.	N.A.	N.A.	0.05	0.001	0.02
0.005	N.A.	N.A.	N.A.	0.1	0.002.	0.05
0.01	N.A.	N.A.	N.A.	0.2	0.005	0.1
0.02	N.A.	N.A.	N.A.	0.5	0.01	0.2
0.05	N.A.	0.002	0.001	1	0.02	0.5
0.1	N.A.	0.005	0.002	2	0.05	1
0.2	N.A.	0.01	0.005	5	0.1	2
0.5	N.A.	0.02	0.01	N.A.	0.2	5
1	N.A.	0.05	0.02	N.A.	0.5	N.A.
2	N.A.	0.1	0.05	N.A.	1	N.A.
5	N.A.	0.2	0.1	N.A.	2	N.A.
10	N.A.	0.5	0.2	N.A.	5	N.A.
20	N.A.	1	0.5	N.A.	N.A.	N.A.
50	N.A.	2	1	N.A.	N.A.	N.A.

Cal Unit (Increment)	CALIBRATED IN POUND - OUNCES (Alternate Unit Increment)					
lb-oz	oz	lb	kg	g	ozt	dwt
0.001*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
0.002*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
0.005*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
0.01*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
0.02	0.02	N.A.	N.A.	0.5	0.01	0.2
0.05	0.05	0.002	0.001	1	0.02	0.5
0.1	0.1	0.005	0.002	2	0.05	1
0.2	0.2	0.01	0.005	5	0.1	2
0.5	0.5	0.02	0.01	N.A.	0.2	5
1	1	0.05	0.02	N.A.	0.5	N.A.
2	2	0.1	0.05	N.A.	1	N.A.
4	4	0.2	0.1	N.A.	2	N.A.
5*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
10*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
20*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
50*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

* Calibration not permitted for this increment size

Cal Unit (Increment)	CALIBRATED IN TROY OUNCES (Alternate Unit Increment)					
ozt	lb	kg	g	oz	lb-oz	dwt
0.001	N.A.	N.A.	0.05	0.002	N.A.	0.02
0.002	N.A.	N.A.	0.1	0.005	N.A.	0.05
0.005	N.A.	N.A.	0.2	0.01	N.A.	0.1
0.01	N.A.	N.A.	0.5	0.02	N.A.	0.2
0.02	0.002	0.001	1	0.05	N.A.	0.5
0.05	0.005	0.002	2	0.1	N.A.	1
0.1	0.01	0.005	5	0.2	N.A.	2
0.2	0.02	0.01	N.A.	0.5	N.A.	5
0.5	0.05	0.02	N.A.	1	N.A.	N.A.
1	0.1	0.05	N.A.	2	N.A.	N.A.
2	0.2	0.1	N.A.	5	N.A.	N.A.
5	0.5	0.2	N.A.	N.A.	N.A.	N.A.
10	1	0.5	N.A.	N.A.	N.A.	N.A.
20	2	1	N.A.	N.A.	N.A.	N.A.
50	5	2	N.A.	N.A.	N.A.	N.A.

Cal unit (Increment)	CALIBRATED IN PENNY WEIGHT (Alternate unit increment)					
dwt	**lb**	**kg**	**g**	**oz**	**lb-oz**	**ozt**
0.001	N.A.	N.A.	0.002	N.A.	N.A.	N.A.
0.002	N.A.	N.A.	0.005	N.A.	N.A.	N.A.
0.005	N.A.	N.A.	0.01	N.A.	N.A.	N.A.
0.01	N.A.	N.A.	0.02	0.001	N.A.	N.A.
0.02	N.A.	N.A.	0.05	0.002	N.A.	0.001
0.05	N.A.	N.A.	0.1	0.005	N.A.	0.002
0.1	N.A.	N.A.	0.2	0.01	N.A.	0.005
0.2	N.A.	N.A.	0.5	0.02	N.A.	0.01
0.5	0.002	0.001	1	0.05	N.A.	0.02
1	0.005	0.002	2	0.1	N.A.	0.05
2	0.01	0.005	5	0.2	N.A.	0.1
5	0.02	0.01	N.A.	0.5	N.A.	0.2
10	0.05	0.02	N.A.	1	N.A.	0.5
20	0.1	0.05	N.A.	2	N.A.	1
50	0.2	0.1	N.A.	5	N.A.	2

Appendix 7: RS232 Serial I/O

The scale transmits RS232C serial data when a print command is issued using the **PRINT** key, Auto Print, or a remote print command from a host. Serial data output is also available in continuous mode.

The data format, baud rate, checksum, parity, etc. are selectable in the setup mode. The serial data is output in an 10-bit ASCII frame which includes: 1 start bit, 7 data bits, 1 parity bit, and 1 stop bit. Parity is selectable as none, odd, or even using SSW F3.1.4. Checksum and STX can be enabled or disabled using SSW F3.1.5 and F3.1.6. All demand mode printing is inhibited during motion and when the weight is under gross zero. Printing is allowed on power-up whether or not zero is captured if AZM is enabled (SSW F2.4.2). The available formats are:

SINGLE LINE DISPLAYED WEIGHT FORMAT

DATA	SO	STX	X	X	X	X	X	X	SP	LB	SP	NET	SI	CR	CHK	LF
NOTES	A	B	C	D	D	D	D	D	D	F	G	G	H	I	J	K

NOTES

A - **SO** = Shift-Out character (optional). If SSW F3.2.2 = 1, expanded print is enabled if receiving device is capable of using SO for enabling expanded (double-width) printing.

B - **STX** = Start of Text character (optional). If SSW F3.1.5 = 1, STX and checksum characters will be sent in this position.

C - **X** = weight data digit, minus sign (-) for negative weight or tare, or space character will be sent in this position.

D - **X** = Weight data digit or decimal point character.

E - **SP** = Space character.

F - "lb" sent for pounds when SSW F1.2 = 1, "kg" sent for kilograms when SSW F1.2 = 2, "g" sent for grams when SSW F1.2=3, "oz" sent for ounces when SSW F1.2=4, "XXXXXX LB XXXXXXoz" sent for lb-oz when SSW F1.2=5, "ozt" sent when SSW F1.2=6, "dwt" sent when SSW F1.2=7, "t" sent when SSW F1.2=8, "ton" sent when SSW F1.2=9, "%" sent when SSW F1.2=2 and SSW F5.7.2=1.

G - Space character and NET will be sent if displayed weight is a net weight. Space character and G will be sent if the displayed weight is gross.

H - **SI** = Shift-In character. If SSW F3.2.2 = 1, SI will reset receiving device to normal print mode (if receiving device is capable of using SO/SI to toggle between expanded and normal print modes.)

I - **CR** = carriage return character.

J - **CHK** = checksum character (optional). Checksum will be sent with STX if SSW F3.1.5 = 1.

K - **LF** = line feed character.

SINGLE LINE GROSS/TARE/NET FORMAT

DATA	STX	*	X	X	X	X	X	X	SP	LB	SP	G	SP	*	*	X	X	X	X	X	SP	LB	SP	T	SP	SO	*
NOTES	A	B	B	B	B	B	B	B	C	D	C	E	C	F	F	F	F	F	F	F	C	D	C	G	C	H	I

X	X	X	X	X	X	SP	LB	SP	NET	SI	CR	CHK	LF
I	I	I	I	I	I	C	D	C	J	K	L	M	N

NOTES

A - **STX** = Start of Text character (optional). If SSW F3.1.5 = 1, STX and checksum characters will be sent in data string.

B - Gross weight data field (7 characters). (* = digit, minus sign (-), or space, X = digit or decimal point.)

C - **SP** = Space character

D - "lb" = Pounds when SSW F1.2 = 1, "kg" sent for kilograms when SSW F1.2 = 2, "g" sent for grams when SSW F1.2=3, "oz" sent for ounces when SSW F1.2=4, "XXXXXX LB XXXXXXoz" sent for lb-oz when SSW F1.2=5, "ozt" sent when SSW F1.2=6, "dwt" sent when SSW F1.2=7, "t" sent when SSW F1.2=8, "ton" sent when SSW F1.2=9, "%" sent when SSW F1.2=2 and SSW F5.7.2=1.

E - **G** = Character for gross weight.

F - Tare weight data field (7 characters). (* = digit, space, X = digit or decimal point)

G - **T** = Characters for tare weight

H - **SO** = Shift-Out character (optional). If SSW F3.2.2 = 1, expanded print is enabled (if receiving device is capable of using SO for enabling expanded (double-width) printing

I - Net weight data field (7 characters), (* = digit, minus sign (-), or space, X = digit or decimal point.)

J - **NET** = Characters for net weight

K - **SI** = Shift-In character. If SSW F3.2.2 = 1, SI will reset receiving device to normal print mode (if receiving device is capable of using SO/SI to toggle between expanded and normal print modes.)

L - **CR** = Carriage return character

M - **CHK** = Checksum character (optional). Checksum will be sent with STX if SSW F3.1.5 =1

N - **LF** = Line feed character

THREE LINE GROSS/TARE/NET FORMAT

LINE 1
GROSS WEIGHT

Line One Data	STX	X	X	X	X	X	X	X	SP	LB	SP	G	CR	CHK
NOTES	A	B	B	B	B	B	B	B	C	D	C	E	F	G

LINE 2
TARE WEIGHT

Line One Data	X	X	X	X	X	X	X	SP	LB	SP	T	CR	CHK	LF
NOTES	I	I	I	I	I	I	I	C	D	C	J	F	G	H

LINE 3
NET WEIGHT

Line One Data	SO	X	X	X	X	X	X	X	SP	LB	SP	NET	SI	CR	CHK	LF
NOTES	K	L	L	L	L	L	L	L	C	D	C	M	N	F	G	H

NOTES

A - **STX** = Start of Text character (optional). If SSW F3.1.5 = 1, STX and checksum characters will be sent in data string.

B - Gross weight data field (7 characters). (* = digit, minus sign (-), or space, X = digit or decimal point.)

C - **SP** = Space character

D - "lb" = pounds when SSW F1.2 = 1, "kg" sent for kilograms when SSW F1.2 = 2, "g" sent for grams when SSW F1.2=3, "oz" sent for ounces when SSW F1.2=4, "XXXXXX LB XXXXXXoz" sent for lb-oz when SSW F1.2=5, "ozt" sent when SSW F1.2=6, "dwt" sent when SSW F1.2=7, "t" sent when SSW F1.2=8, "ton" sent when SSW F1.2=9, "%" sent when SSW F1.2=2 and SSW F5.7.2=1.

E - **G** = Character for gross weight

F - **CR** = Carriage return character

G - **CHK** = Checksum character (optional). Checksum will be sent with STX if SSW F3.1.5 = 1

H - **LF** = Line feed character

I - Tare weight data field (7 characters), (* = digit, space, X = digit or decimal point)

J - **T** = characters for tare weight

K - **SO** = Shift-out character (optional). If SSW F3.2.2 = 1, expanded print is enabled. (If receiving device is capable of using SO for enabling expanded (double-width) printing).

L - Net weight data field (7 characters), (* = digit, minus sign (-), or space, X = digit or decimal point)

M - **NET** = Characters for net weight

N - **SI** = Shift-In character. If SSW F3.2.2 = 1, SI will reset receiving device to normal print mode (if receiving device is capable of using SO/SI to toggle between expanded and normal print modes)

SERIAL DATA OUTPUT IN CONTINUOUS MODE

A 300-9600 baud continuous output may be selected instead of the print on demand output. This data consists of 16 or 18 bytes transmitted in a 10-bit ASCII frame consisting of: 1 start bit, 7 data bits, 1 even parity bit, and 1 stop bit. The format is as follows:

Character	Function
1	STX (Start of text - Optional)
2	Status Word A
3	Status Word B
4	Status Word C
5	Weight MSD
6	Weight
7	Weight
8	Weight
9	Weight
10	Weight LSD
11	Tare Weight MSD
12	Tare Weight
13	Tare Weight
14	Tare Weight
15	Tare Weight
16	Tare Weight LSD
17	CR (carriage return)
18	CKSM (Checksum - Optional)

Non-significant weight data and tare data digits will be transmitted as spaces. A description of the status words A, B, and C is shown in Table 5-a.

TABLE 5A - CONTINUOUS MODE STATUS WORD A - SETPOINTS ENABLED (F5.1)

STATUS WORD A - SETPOINT OPTION ENABLED (F5.1)				
Bit 0, 1, 2	**Encoded Decimal Point**			
	Display	**Bit 2**	**Bit 1**	**Bit 0**
	XXXXX0	0	0	1
	XXXXX	0	1	0
	XXXX.X	0	1	1
	XXX.XX	1	0	0
	XX.XXX	1	0	1
Bit 3	Setpoint Output 1 (0 = less than setpoint value)			
Bit 4	Setpoint Output 2 (0 = less than setpoint value)			
Bit 5	Always = 1			
Bit 6	Always = 1			
Bit 7	Parity of Status Word A			

TABLE 5B - CONTINUOUS MODE STATUS WORD A - SETPOINTS DISABLED (F5.1)

STATUS WORD A - SETPOINTS OPTION DISABLED (F11)				
Bit 0, 1, 2 Encode Decimal Point				
	Display	**Bit 2**	**Bit 1**	**Bit 0**
	XXXXX0		0	01
	XXXXX	0	1	0
	XXXX.X	0	1	1
	XXX.XX	1	0	0
	XX.XXX	1	0	1
Bit 3, 4 Increment Size		3	4	
	X1	0	1	
	X2	1	0	
	X5	1	1	
Bit 5	Always = 1			
Bit 6	Always = 0			
Bit 7	Parity of Status Word A			

TABLE 5-C CONTINUOUS MODE STATUS WORD B

STATUS WORD B	
Bit 0	Gross = 0, Net = 1
Bit 1	Minus sign = 1
Bit 2	Overcapacity = 1
Bit 3	Motion = 1
Bit 4*	lb = 0, kg = 1
Bit 5	Always = 1
Bit 6	- If setpoints enabled (F5.1 = 1), bit 6 = within zero tolerance. - If setpoints disabled (F5.1 ≠ 1), bit 6 = Power Up Flag.
Bit 7	Parity of Status Word B

Note: Bit 4 is set if units are other than lb or kg.

TABLE 5-D CONTINUOUS MODE STATUS WORD C

STATUS WORD C	
Bit 0	Always = 0
Bit 1	Always = 0
Bit 2	Always = 0
Bit 3	Print = 1
Bit 4	Always = 0
Bit 5	Always = 1
Bit 6	Always = 0
Bit 7	Parity of Status Word C

Appendix 8: Standard Interface Command Set (SICS) Protocol

All newer METTLER TOLEDO terminals support the standardized command set "METTLER TOLEDO Standard Interface Command Set" (MT-SICS), which is divided into 4 levels, depending on the functionality of the weighing instrument. The scale supports the MT-SICS level 0 command set.

What Do the Commands of MT-SICS Level 0 Offer?

You can use the commands of MT-SICS level 0 to perform the following operations via the interface:

- Request weighing results
- Tare the instrument
- Zero the instrument
- Identify MT-SICS implementation
- Identify the instrument
- Reset the instrument

Additional Documentation on Data Interface

Settings of the interface such as baud rate, parity, and connector pin assignments are described in previous sections of this manual.

Version number of the MT-SICS

Each level of the MT-SICS has its own version number which can be requested with the command I1. This section describes MT-SICS level 0, version 2.1x You can use the command I1 via the interface to request the MT-SICS level and MT-SICS version implemented on the scale.

Command Formats

Each command received by the scale via the data interface is acknowledged by a response of the scale to the transmitter. Commands and responses are data strings with a fixed format. Commands sent to the balance comprise one or more characters of the ASCII character set. The following must be noted:

- Enter commands only in uppercase.
- The possible parameters of the command must be separated from in this description represented as _).
- Each command must be closed by CR LF (ASCII 13 dec., 10 dec.)
- The characters CR and LF, which can be input using the **ENTER** or **RETURN** key of most keypads, are not listed in this description. It is essential they be included for communications with the scale.

Response Formats

All responses sent by the scale to the transmitter to acknowledge the received command have one of the following formats:

- Response with weight value
- Response without weight value
- Error message

Format of the Response with Weight Value

A general description of the response with weight value is the following:

ID	•••	Status	•••	Weight Value	•••	Unit	C_R	L_F
	1-2 Characters	1 Character		10 Characters		1-3 Characters		

- ID--Response identification.
- _-- Space (ASCII 32 dec.)
- Status--Status of the scale, see description of the commands and responses.
- Weight Value--Weighing result: shown as number with 10 digits, including sign directly in front of the first digit. The weight value appears right-aligned. Preceding zeroes are not shown with the exception of the zero to the left of the decimal point.
- Unit--Weight unit displayed after the scale is switched on.
- CR--Carriage Return (ASCII 13 dec.)
- LF--Line Feed (ASCII 10 dec.)

Comment--CR LF will not be shown in the description.

Example

Response with stable weight value of 0.256 g:

S_S_ _ _ _ _ _0.256_g

Format of the Response Without Weight Value

A general description of the response without weight value is:

ID	•••	Status	•••	Parameters	C_R	L_F
1-4 Characters		1 Character				

- ID--Response identification.
- _--Space (ASCII 32 dec.)
- Status--Status of the scale, see description of the commands and responses.
- Parameters--Command-dependent response code.
- Unit--Weight unit displayed after the TRIMWEIGH III scale has been switched on.
- CR--Carriage Return (ASCII 13 dec.)
- LF--Line Feed (ASCII 10 dec.)

Error messages

ID	C_R	L_F

ID--Error Identification

The scale supports the following two error ID:.

- ES--Syntax error
  The TRIMWEIGH III scale does not recognize the command.

CR--Carriage return (ASCII 13 dec.)
LF--Line Feed (ASCII 10 dec.)

Tips for the Programmer

You can improve the dependability of your application software by having your program evaluate the response of the TRIMWEIGH III scale to a command. The response is the acknowledgment that the scale has received the command.

Reset

To start from a determined state when establishing the communication between the scale and the system, you should send a reset command to the scale. When the scale or system is switched on or off, faulty characters can be received or sent.

Quotation Marks (“”)

Quotation marks included in the command must always be entered.

Commands and Responses MT-SICS Level 0

The scale receives commands from the system computer and acknowledges the command with an appropriate response. The following sections contain a detailed description of all commands of the command set in alphabetical order with the associated responses. Commands and responses are closed with CR and LF. These termination characters are not shown in the following description, but they must always be entered with commands or sent with responses.

The commands of MT-SICS level 0 are fully supported by the scale. These include:

- I1 Inquiry of MT-SICS level and MT-SICS version
- I2 Inquiry of scale data
- I3 Inquiry of scale SW version
- I4 Inquiry of serial number
- S Send stable weight value
- SI Send weight value immediately
- SIR Send weight value immediately and repeat
- T Tare
- Z Zero
- @ Reset

1. I1--INQUIRY OF MT-SICS LEVEL AND MT-SICS VERSIONS

Command: I1--Inquiry of MT-SICS level and MT-SICS versions

Response: I1_A_"x1"_"x2"_"x3"_"x4"_"x5"

- x1 = 0--TRIMWEIGH III with MT-SICS level 0
- x2--Version of the implemented MT-SICS0 commands
- x3--Version of the implemented MT-SICS1 commands
- x4--Version of the implemented MT-SICS2 commands
- x5--Version of the implemented MT-SICS3 commands

Example

Command I1--Inquiry of MT-SICS level and versions used in the scale.

Response--I 1_A_"0"_"2.10"_""_""_""

- 0 Level 0 implemented in scale
- 2.10 Level 0, version 2.10 in TRIMWEIGH III scale
- "" Level 1 not supported in scale
- "" Level 2 not supported in scale
- "" Level 3 not supported in scale

Comments

In the MT-SICS level, only fully implemented levels are listed. If it is not possible to implement all commands from a certain level, the level is not specified. In the MT-SICS version, even partially implemented levels are specified.

2. I2--INQUIRY OF INSTRUMENT DATA

Command: I2--Inquiry of scale type.

Response: I2_A_"text"

- TRIMWEIGH III scale data as "text".

Example

Command I2--Inquiry of scale type.

Response--I2_A_"TRIMWEIGH III_Analog_ _ _ _ _ _100_lb"

- This response shows the scale is used with analog load cells and has been calibrated for 100 lb. capacity.

3. I3--INQUIRY OF INSTRUMENT SOFTWARE VERSION

Command: I3--Inquiry of scale SW version

Response: I3_A_"text"

- TRIMWEIGH III SW version as "text".

Example

Command I3--Inquiry of scale SW version.

Response--I3_A_"0.00_0.00_A148912R"

- 0.00--Scale has no operating system
- 0.00--Always this value for scale
- A148912R--Scale software number

4. I4--INQUIRY OF SERIAL NUMBER

Command: I4--Inquiry of serial number.

Response: I4_A_"text"

- Serial number as "text"

Example

Command I4--Inquiry of serial number

Response--I4_A_"0000000000"

- 0000000000--Always this value for scale

Comments

- The response to I4 appears after the reset command (@) and at power-up.

5. S--SEND STABLE WEIGHT VALUE

Command: S--Send the current stable weight

Responses:

S_S_Weight Value_Unit--Current stable weight value.

S_I--Command not executable (time-out since stability was not achieved.)

S_+ --TRIMWEIGH III in overcapacity range.

S_- --TRIMWEIGH III in under capacity range.

Example

Command S--Send a stable weight value.

Response: S_S_ _ _ _ _100.00_g

The current stable weight is 100.00 g.

Comments

The duration of the stability time-out is two seconds for the scale. The weight unit is the currently selected unit.

6. SI--SEND WEIGHT VALUE IMMEDIATELY

Command: SI--Send the current weight value regardless of scale stability.

Responses:

- S_S_WeightValue_Unit--Stable weight value.
- S_D_WeightValue_Unit--Dynamic weight value.
- S_+ --TRIMWEIGH III in overcapacity range.
- S_- --TRIMWEIGH III in under capacity range.

Example

Command SI--Send current weight value.

Response: S_D_ _ _ _ _129.02_LB

- The current dynamic weight is 129.02 LB.

Comments

- The response to the command SI is the last internal weight value (stable or dynamic) prior to receipt of the command SI.

- The weight unit is the currently selected unit.

7. SIR--SEND WEIGHT VALUE IMMEDIATELY AND REPEAT

Command: SIR--Send the weight values repeatedly, regardless of the scale stability.

Responses:

- S_S_WeightValue_Unit--Stable weight value.
- S_D_WeightValue_Unit--Dynamic weight value.
- S_+ --TRIMWEIGH III in overcapacity range.

S_- --TRIMWEIGH III in under capacity range.

Example

Command: SIR--Send current weight values at intervals.

Responses:

- S_D_ _ _ _ _129.02_LB
- S_D_ _ _ _ _129.06_LB
- S_D_ _ _ _ _129.08_LB
- S_D_ _ _ _ _114.14_LB
- ..._The TRIMWEIGH III sends stable or dynamic weight values at intervals.

Comments

- SIR is overwritten by the commands S, SI, SIR, @ and thus canceled.
- The scale updates 20 times per second.
- The weight unit is the currently selected unit.

8. T--TARE

Command: T--Tare, i.e. store the next stable weight value as a new tare weight value.

Responses:

T_S_WeightValue_Unit--Taring performed. The tare weight value returned corresponds to the weight change on the scale since the last zero setting.

T_I--Taring not performed (time-out since stability was not reached.)

T_+ --Upper limit of taring range exceeded.

T_- --Lower limit of taring range exceeded.

Example

Command: T--The scale is tared and has a value of 100.00 kg in the tare memory.

Response--T_S_ _ _ _ _100.00_kg

Comments

- The tare memory is overwritten by the new tare weight value.
- The duration of the stability time-out is 2 seconds for the scale.
- The tare memory can be cleared using the command Z.
- The weight unit is the currently selected unit.

9. Z--ZERO

Command: Z--Zero the scale.

Responses:

- Z_A--The following then holds:
- Gross = net + tare = 0
- Zero setting performed, i.e. stability criterion and zero setting range complied with.
- Z_I--Zero setting not performed (time-out since stability was not reached).
- Z_+ --Upper limit of zero setting range exceeded.
- Z_- --Lower limit of zero setting range exceeded.

Example

Command: Z--Zero.

Response--Z_A--Zero setting performed.

Comments

- The tare memory is cleared during zero setting.
- The duration of the stability time-out is 2 seconds for the scale.

10. @--RESET

Command: @--Reset the scale to the conditions found after switching on.

Response:

- I4_A_"text"--Serial number of scale; ready for operation.

Example

Command @--Reset

Response--I4_A_"0000000000"--Scale reset and sends the null serial number.

Comments

- All commands awaiting responses are canceled.
- The tare memory is reset to zero.
- The "reset" command is always executed.

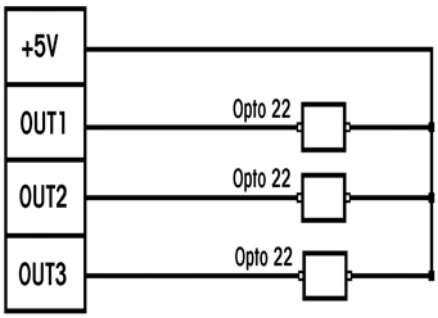
Appendix 9: Discrete Outputs

The outputs are +5 VDC. A solid state relay or OPTO 22 is typically connected to buffer the outputs to a 120 or 220 volt AC signal.

An output supplies a 5 volt DC supply for reference to the setpoint outputs. Because the supply is rated at 115 mA of DC current, it is important to make sure that the total current draw from the devices you are using (relays or optos) does not exceed this limit. If the calculated current draw exceeds 115 mA, an external power supply is required. External power supplies are available through your local authorized METTLER TOLEDO representative.

The setpoint outputs are negative true and "ON" when the scale weight is below the setpoint coincidence value. The setpoints operate on the absolute value of the scale weight so they can be used for both weigh-in and weigh-out processes.

The following diagram shows a typical wiring scheme.



The output voltage at Logic 0 is .4VDC maximum with sink current of 8mADC or less. The output voltage at Logic 1 is 4.0VDC minimum with source current of 8mA DC or less. The discrete outputs are capable of driving solid state relays and are typically used with these devices to switch various DC voltage levels, 110 VAC or 220 VAC. The solid state relay is activated (on) when the scale output is at Logic 0 and deactivated (off) when the output is at Logic 1.

A +5VDC supply is available on TB2 Terminal 4. The maximum output DC current available from the +5VDC supply is 115mADC.

With the scale operating in the over\under mode (F5.1 set to 2) the outputs react as follows:

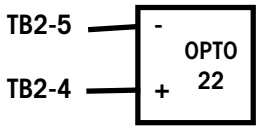
- Out 1 is at Logic 0 when the weight is classified as OVER.
- Out 2 is at Logic 0 when the weight is classified as ACCEPT Light, ACCEPT, and ACCEPT Heavy.
- Out 3 is at Logic 0 when weight is classified as UNDER.
- At all other times the outputs will be at a Logic 1.

Note 1: If F5.7.4 is set to "1" the output will be at Logic 0 at any weight classified as in the Under Zone but greater than 10 increments from Gross Zero. If the weight is within 10 increments of Gross Zero the output will be at Logic 1.

TB2

1	
2	
3	
4	+5VDC, 115mA DC maximum
5	Out 1, rated at 8mA DC
6	Out 2, rated at 8mA DC
7	Out 3, rated at 8mA DC
8	GND
9	Input

Suggested Solid State Relay Connections using Out 1 as an example



Appendix 10: Market Destination

Use the following table to determine the finish code for a particular market destination.

FINISH CODE	DESTINATION MARKET	VOLTAGE & FREQUENCY	PWR PLUG FIG.	WEIGHT UNIT
000	UNITED STATES	120/60	A	LB
001	UNITED STATES	220/60	K	LB
002	DENMARK	230/50	N	KG
003	UK	240/50	C	KG
004	ITALY	230/50	B	KG
005	SWITZERLAND	230/50	M	KG
006	SWITZERLAND	230/50	M	KG
007	SWITZERLAND	230/50	M	KG
008	AMER. SAMOA	120/60	A	LB
009	ARGENTINA	220/50	D	KG
010	AUSTRALIA	240/50	D	KG
011	AUSTRIA	230/50	B	KG
012	BARBADOS	120/50	A	KG
013	BELGIUM	230/50	B	KG
014	BELGIUM	230/50	B	KG
015	BERMUDA	115/60	A	LB
016	BERMUDA	115/60	A	KG
017	BRAZIL	120/60	A	KG
018	BRAZIL	220/60	A	KG
019	CANADA	120/60	A	LB
020	CANADA	120/60	A	KG
021	CZECH REP.	230/50	B	KG
022	CHILE	220/50	E	KG
023	CHINA	220/50	F/D	KG
024	COLOMBIA	120/60	A	KG
025	COSTA RICA	120/60	A	KG
026	CURACAO	120/50	A	KG
027	DOM. REPUBLIC	120/60	A	LB
028	DOM. REPUBLIC	120/60	A	KG
029	ECUADOR	120/60	A	KG
030	EGYPT	220/50	F/B	KG
031	EL SALVADOR	120/60	A	LB
032	EL SALVADOR	120/60	A	KG
033	FINLAND	230/50	B	KG
034	FRANCE	230/50	B	KG
035	GERMANY	230/50	B	KG
036	GREECE	230/50	B	KG
037	GUATEMALA	120/60	A	SPAN. LB
038	GUATEMALA	120/60	A	KG
039	HONDURAS	120/60	A	LB
040	HONDURAS	120/60	A	KG

FINISH CODE	DESTINATION MARKET	VOLTAGE & FREQUENCY	PWR PLUG FIG.	WEIGHT UNIT
041	HONG KONG	200/50	C	KG
042	HUNGARY	230/50	B	KG
043	ICELAND	230/50	B	KG
044	INDIA	240/50	G	KG
045	INDONESIA	220/50	F/B	KG
046	IRELAND	230/50	C	KG
047	ISRAEL	230/50	H	KG
048	JAMAICA	110/50	A	LB
049	JAMAICA	110/50	A	KG
050	JAPAN	"100/50,60"	I	KG
051	JORDAN	220/50	C	KG
052	LEBANON	110/50	F/A	KG
053	MALAYSIA	240/50	C	KG
054	MEXICO	120/60	A	KG
055	MOROCCO	230/50	B	KG
056	NETHERLANDS	230/50	B	KG
057	NEW ZEALAND	230/50	D	KG
058	NICARAGUA	120/60	A	KG
059	NORWAY	230/50	B	KG
060	PAKISTAN	240/50	G	KG
061	PANAMA	120/60	A	KG
062	PARAGUAY	220/50	A	KG
063	PERU	220/60	A	KG
064	PHILIPPINES	230/60	A	KG
065	POLAND	230/50	B	KG
066	PORTUGAL	230/50	B	KG
067	PUERTO RICO	120/60	A	LB
068	PUERTO RICO	120/60	A	KG
069	RUSSIA (CIS)	230/50	B	KG
070	SAUDI ARABIA	127/60	A	KG
071	SINGAPORE	230/50	C	KG
072	SLOVAK REP.	230/50	B	KG
073	SOUTH AFRICA	220/50	G	KG
074	SOUTH KOREA	220/60	B	KG
075	SPAIN	230/50	B	KG
076	SWEDEN	230/50	B	KG
077	TAIWAN	110/60	A	KG
078	THAILAND	220/50	F/B	KG
079	TRINIDAD	120/60	A	KG
080	TURKEY	230/50	B	KG
081	TURKEY	230/50	B	KG
082	URUGUAY	220/50	D	KG
083	VENEZUELA	120/60	A	KG
084	VIRGIN ISLANDS	120/60	A	LB
085	VIRGIN ISLANDS	120/60	A	KG
086	UK	120/50	C	KG
090	ROMANIA	220/50	B	KG

FINISH CODE	DESTINATION MARKET	VOLTAGE & FREQUENCY	PWR PLUG FIG.	WEIGHT UNIT
091	BOLIVIA	220/50	A	KG
092	LATVIA	230/50	B	KG
093	LITHUANIA	230/50	B	KG
094	CROATIA	230/50	B	KG

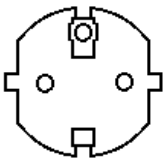
*See Power Cord Configurations that follow in Appendix 11.

**Not for use in new designs

Appendix 11:Power Cord Configurations

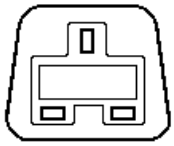
Configuration A

U.S./Canada



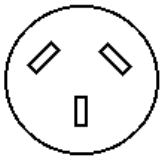
Configuration B

"SCHUKO" Continental Europe (CEE7)



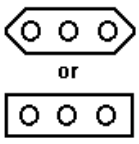
Configuration C

United Kingdom
Fuse is required.



Configuration D

Australia

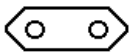


Configuration E

Italy and Chile

Old style Italy. Use SCHUKO (B) for new designs.

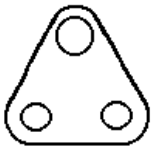
Configuration F



Europlug (CEE7/16)

Use for grounded equipment only if separate ground connection is provided.

Configuration G



India (Old British)

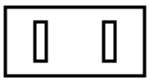
Configuration H

Israel

Configuration I

Japan (J1S 8303 spec)

Configuration J



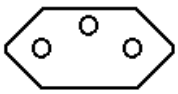
Flat Blade – Undergrounded
Use for grounded equipment only if separate ground connection is provided.

Configuration K

U.S./Canada (220 V)

Configuration L

Old Denmark (Use "N")



Configuration M

Switzerland (Use "B")

Configuration N

Denmark

Appendix 12: GEO Codes

The following table gives GEO Codes (gravity factor adjustment values) that can be used if you need to relocate the TRIMWEIGH III scale to a location other than the location where it was originally calibrated.

Northern and southern latitude in degrees and minutes	Height above sea-level in meters										
	0 325	325 650	650 975	975 1300	1300 1625	1625 1950	1950 2275	2275 2600	2600 2925	2925 3250	3250 3575
	Height above sea-level in feet										
	0 1060	1060 2130	2130 3200	3200 4260	4260 5330	5330 6400	6400 7460	7460 8530	8530 9600	9600 10660	10660 11730
0° 0′ —5° 46′	5	4	4	3	3	2	2	1	1	0	0
5° 46′ — 9° 52′	5	5	4	4	3	3	2	2	1	1	0
9° 52′ — 12° 44′	6	5	5	4	4	3	3	2	2	1	1
12° 44′ — 15° 6′	6	6	5	5	4	4	3	3	2	2	1
15° 6′ — 17° 10′	7	6	6	5	5	4	4	3	3	2	2
17° 10′ — 19° 2′	7	7	6	6	5	5	4	4	3	3	2
19° 2′ — 20° 45′	8	7	7	6	6	5	5	4	4	3	3
20° 45′ — 22° 22′	8	8	7	7	6	6	5	5	4	4	3
22° 22′ — 23° 54′	9	8	8	7	7	6	6	5	5	4	4
23° 54′ — 25° 21′	9	9	8	8	7	7	6	6	5	5	4
25° 21′ — 26° 45′	10	9	9	8	8	7	7	6	6	5	5
26° 45′ — 28° 6′	10	10	9	9	8	8	7	7	6	6	5
28° 6′ — 29° 25′	11	10	10	9	9	8	8	7	7	6	6
29° 25′ — 30° 41′	11	11	10	10	9	9	8	8	7	7	6
30° 41′ — 31° 56′	12	11	11	10	10	9	9	8	8	7	7
31° 56′ — 33° 9′	12	12	11	11	10	10	9	9	8	8	7
33° 9′ — 34° 21′	13	12	12	11	11	10	10	9	9	8	8
34° 21′ — 35° 31′	13	13	12	12	11	11	10	10	9	9	8
35° 31′ — 36° 41′	14	13	13	12	12	11	11	10	10	9	9
36° 41′ — 37° 50′	14	14	13	13	12	12	11	11	10	10	9
37° 50′ — 38° 58′	15	14	14	13	13	12	12	11	11	10	10
38° 58′ — 40° 5′	15	15	14	14	13	13	12	12	11	11	10
40° 5′ — 41° 12′	16	15	15	14	14	13	13	12	12	11	11
41° 12′ — 42° 19′	16	16	15	15	14	14	13	13	12	12	11
42° 19′ — 43° 26′	17	16	16	15	15	14	14	13	13	12	12
43° 26′ — 44° 32′	17	17	16	16	15	15	14	14	13	13	12
44° 32′ — 45° 38′	18	17	17	16	16	15	15	14	14	13	13
45° 38′ — 46° 45′	18	18	17	17	16	16	15	15	14	14	13
46° 45′ — 47° 51′	19	18	18	17	17	16	16	15	15	14	14
47° 51′ — 48° 58′	19	19	18	18	17	17	16	16	15	15	14
48° 58′ — 50° 6′	20	19	19	18	18	17	17	16	16	15	15
50° 6′ — 51° 13′	20	20	19	19	18	18	17	17	16	16	15
51° 13′ — 52° 22′	21	20	20	19	19	18	18	17	17	16	16
52° 22′ — 53° 31′	21	21	20	20	19	19	18	18	17	17	16
53° 31′ — 54° 41′	22	21	21	20	20	19	19	18	18	17	17
54° 41′ — 55° 52′	22	22	21	21	20	20	19	19	18	18	17
55° 52′ — 57° 4′	23	22	22	21	21	20	20	19	19	18	18
57° 4′ — 58° 17′	23	23	22	22	21	21	20	20	19	19	18
58° 17′ — 59° 32′	24	23	23	22	22	21	21	20	20	19	19

Northern and southern latitude in degrees and minutes	Height above sea-level in meters										
	0 325	325 650	650 975	975 1300	1300 1625	1625 1950	1950 2275	2275 2600	2600 2925	2925 3250	3250 3575
	Height above sea-level in feet										
	0 1060	1060 2130	2130 3200	3200 4260	4260 5330	5330 6400	6400 7460	7460 8530	8530 9600	9600 10660	10660 11730
59° 32′ — 60° 49′	24	24	23	23	22	22	21	21	20	20	19
60° 49′ — 62° 9′	25	24	24	23	23	22	22	21	21	20	20
62° 9′ — 63° 30′	25	25	24	24	23	23	22	22	21	21	20
63° 30′ — 64° 55′	26	25	25	24	24	23	23	22	22	21	21
64° 55′ — 66° 24′	26	26	25	25	24	24	23	23	22	22	21
66° 24′ — 67° 57′	27	26	26	25	25	24	24	23	23	22	22
67° 57′ — 69° 35′	27	27	26	26	25	25	24	24	23	23	22
69° 35′ — 71° 21′	28	27	27	26	26	25	25	24	24	23	23
71° 21′ — 73° 16′	28	28	27	27	26	26	25	25	24	24	23
73° 16′ — 75° 24′	29	28	28	27	27	26	26	25	25	24	24
75° 24′ — 77° 52′	29	29	28	28	27	27	26	26	25	25	24
77° 52′ — 80° 56′	30	29	29	28	28	27	27	26	26	25	25
80° 56′ — 85° 45′	30	30	29	29	28	28	27	27	26	26	25
85° 45′ — 90° 00′	31	30	30	29	29	28	28	27	27	26	26

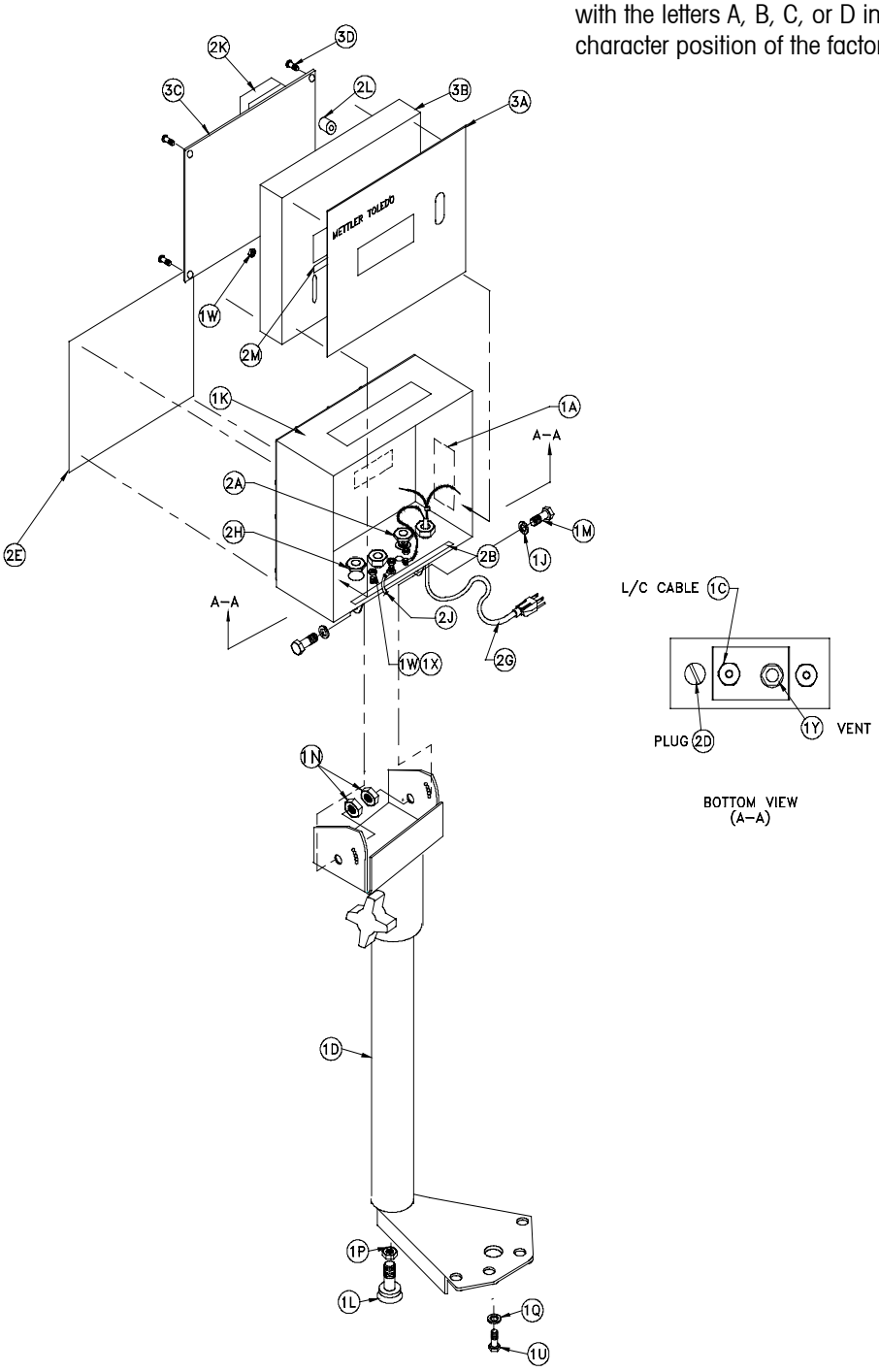
For your notes

6 Parts and Accessories

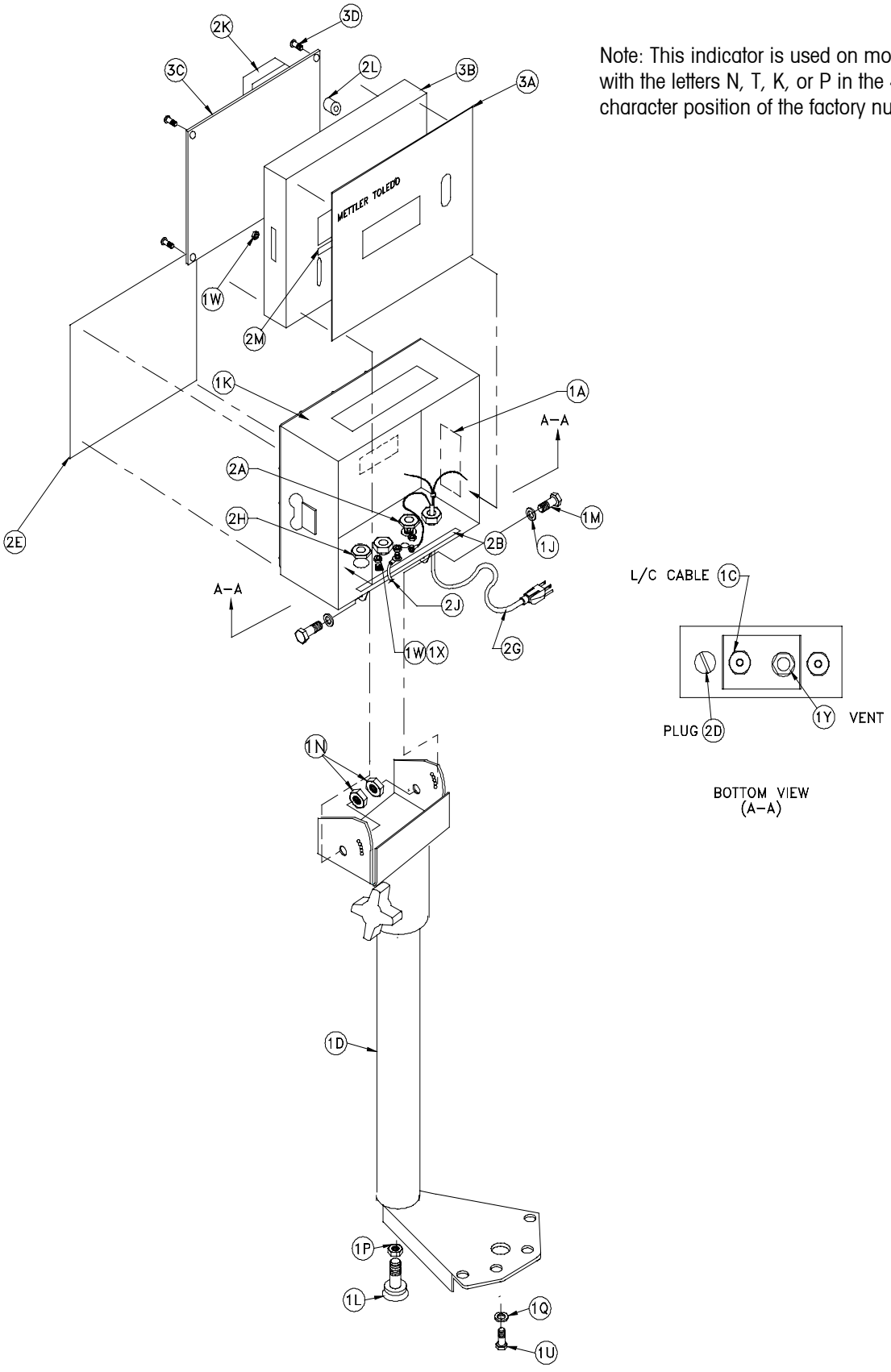
Indicator and Column

IP65 Version w/Internal Clips

Note: This indicator is used on models with the letters A, B, C, or D in the 4th character position of the factory number.



IP69K Version w/External Latches



Note: This indicator is used on models with the letters N, T, K, or P in the 4th character position of the factory number.

Parts List – TRIMWEIGH III Indicator and Columnn Assembly			
Ref. #	**Part Number**	**Description**	**Qty**
1A	(*)15544000A	Label, Shock Warning	1
1C	(*)12901800A	Bushing, Cord with nut	1
1D	(*)16530400A	Tower Weldment, Extend (19")	1
	(*)16530300A	Tower Weldment (14")	
	(*)14826100A**	Bracket, Wall Mount**	
1J	R0520100A	Washer, Nylon	2
1K	(*)16514600A	Enclosure, Back, (IP69K w/External Latches)	1
	(*)14829300A	Enclosure, Back, (IP65 w/Internal Clips)	
1L	(*)16470800A	Foot, Adjustable	1
1M	82712400A	Screw, M6 x 16	2
1P	82708200A	Nut, Hex, M10	1
1Q	82711000A	Lock Washer, M6 IT SS	4
1U	82712300A	Screw, M6 x 12	4
1W	82708400A	Nut, M4	3
1X	82710800A	Lock washer, M4	3
1Y	(*)16391100A	Vent, Breather	1
2A	(*)16689800A	Nut, M12x1.5 Plastic	1
2B	(*)14828700A	Label, Controller I/O	1
2D	(*)14724000A	Hole Plug, PG11	1
2E	(*) 15718300A	Logo Label	1
2G	(*)15625200A	Harness, AC Pwr, N. America (Yellow)	1
	(*)15473200A	Harness, AC Pwr, Australia (Black)	
	(*)14962200A	Harness, AC Pwr, Europe (Black)	
	(*)15549900A	Harness, AC Pwr, Chile (Black)	
	(*)15557000A	Harness, AC Pwr, Africa (Black)	
	(*)14962100A	Harness, AC Pwr, UK (Black)	
	(*)15616700A	Harness, AC Pwr, Switzerland (Black)	
	(*)15428400A	Harness, AC Pwr, Japan (Black)	
	(*)15428200A	Harness, AC Pwr, Denmark	
	(*)15473300A	Harness, AC Pwr, France	
	(*)15651300A	Harness, AC Pwr, Japan (Black)	

Parts List – TRIMWEIGH III Indicator and Columnn Assembly			
Ref. #	**Part Number**	**Description**	**Qty**
2H	(*)14724100A	Hex Nut, PG11 Nylon	1
2J	(*)15048200A	Tension Cable	1
2K	(*)14829600A	Pad, Transformer (IP65 Only)	1
2L	(*)16497600A	Bumper, 1.0 x .50 Neoprene (IP69K)	2
	(*)14830500A	Bumper, .44 x .50 Neoprene (IP65)	
2M	(*)16939400A	Plate, Legend (Lb/Kg)	1
	(*)116939500A	Plate, Legend (Kg Only)	
3A(1)	(*)15699900A	Keypad, 6-Key	1
	(*)15700000A	Keypad, 18-Key Enhanced	
3B(1)	(*)16514500A	Front Cover, (1P69K w/External Latches)	1
	(*)14829400A	Front Cover, (IP65 w/Internal Clips)	
3C	(*)15700400A	PCB Assembly, Main, 6-Key	1
	(*)15493700A	PCB Assembly, Main, 18-Key Enhanced	
3D	(*)82715300A	Screw, M4x10	4
1N	R0562500A	Nut, M6	1

(*) May have a letter prefix ** Not Shown.

Notes:

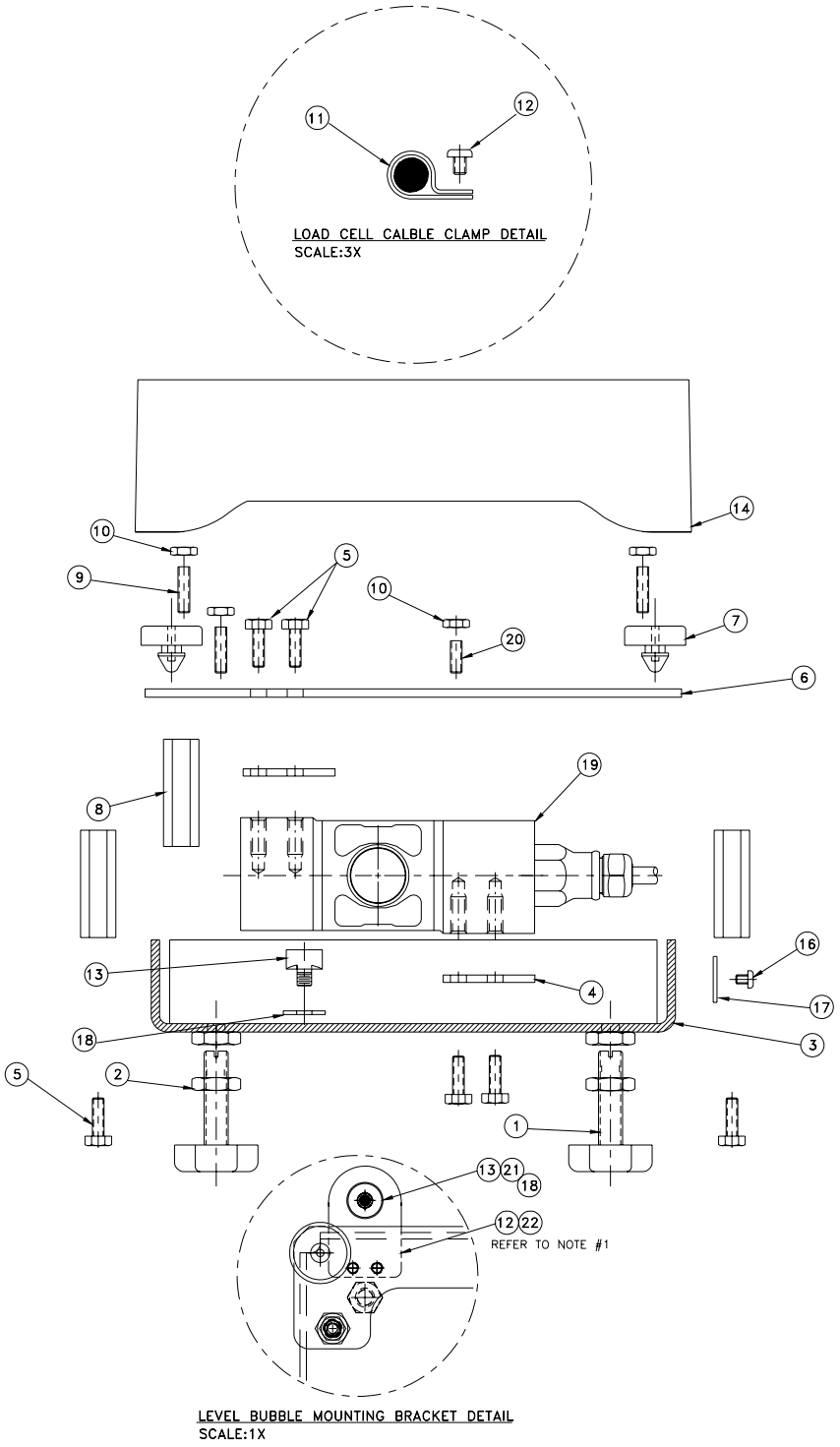
(1): The Front Panel and Keypad are available as a preassembled kit:

For IP69K Units with External Latches:
(*)16940700A Front Cover with 6-Key Keypad
(*)16940800A Front Cover with 19-Key Keypad

For IP65 Units with Internal Clips:
(*)15764600A Front Cover with 6-Key Keypad
(*)15764700A Front Cover with 19-Key Keypad

For your notes

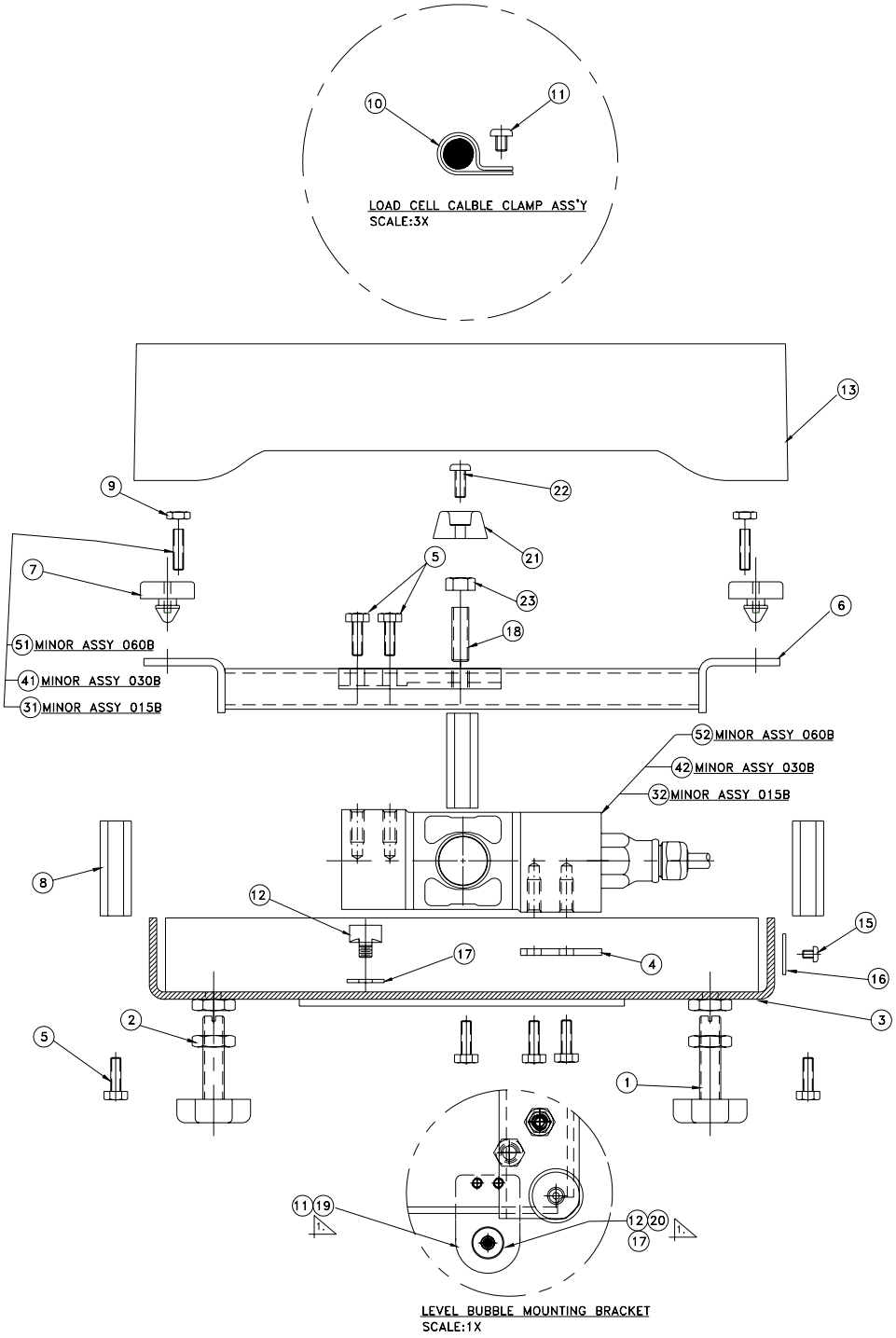
TRIMWEIGH III 9-inch Base



Part List – TRIMWEIGH III 9-inch Base			
Ref #	**Part Number**	**Description**	**Qty**
1	(*)16470800A	Foot, Molded, 10 mm, SST	4
2	82708200A	Nut, Hex, Jam, M10 x, SST	4
3	(*)16404400A	Weldment, Base, 9 x 9	1
4	(*)16403800A	Spacer, LC Mounting	2
5	82712400A	Screw, Hex HD, M6 x 16 mm, SST	13
6	(*)16403300A	Frame, Top, Machined, 9 x 9	1
7	(*)16489800A	Bumper, Conductive	4
8	(*)16467600A	Standoff, Corner Overload, 1.75 inch lg.	5
9	R0562700A	Screw, Set, M6 x 16 mm, SST	5
10	R0562500A	Nut, Hex, M6x, Jam, SST	6
11	12464300A	Clamp, Cable, 188 inch dia.	1
12	82715100A	Screw, Pan HD, M4 x 6 mm, SST	1 (Note #1)
13	16476900A	Level, Indicator, Stud Mnt.	1
14	15185700B	Platter, 9x9, W/O Lip	1
15	A16406800A	Wrench (not shown)	1
16	R0395700A	Rivet, Blind, 188-.250	2
17	(*)15494000A	Data Plate, SST	1
18	R0520100A	Washer, ID 0.25, OD 0.687,0.06 THK Nylon	1
19	16536300A	Load cell, Analog, 20 kg, ZTC, SST	1
20	83015000A	Screw, Set, M6 x 10 mm, SST	1
21	(*)16560700A	Bracket, Mnt., Level, Bubble	1
22	0208496104	Nut, M6x, Hex, Acorn, SST	Note #1
23	(*)16702600A	Screw, Tamper-proof, M4x6mm, SST	Note #1

Note 1. Some models include an extended level mount (QTY 1) with (1) acorn nut and (2) M4x tamper-proof screws.

TRIMWEIGH III 12-inch Base

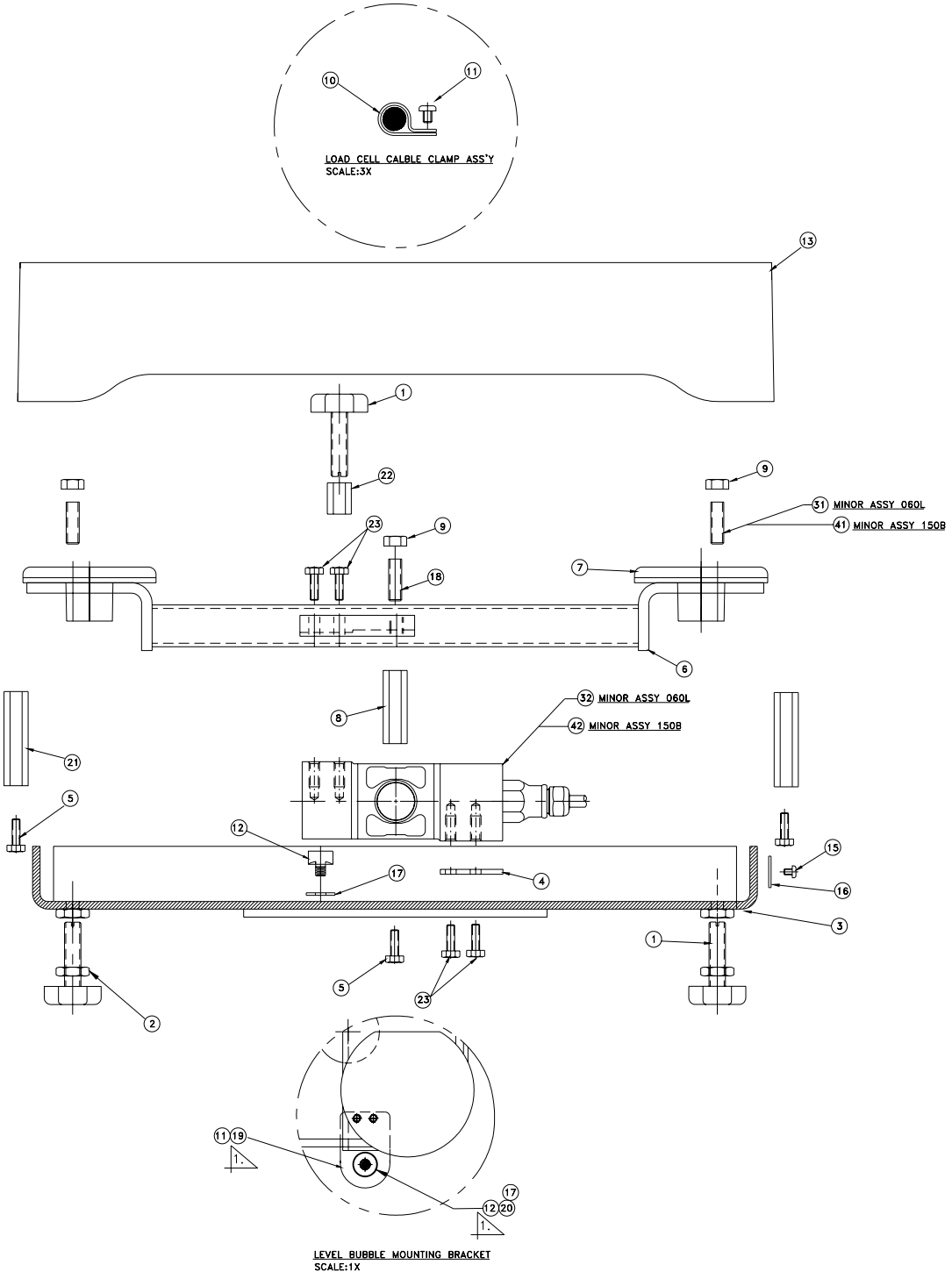


Part List – TRIMWEIGH III 12-inch Base			
Ref #	**Part Number**	**Description**	**Qty**
1	(*)16470800A	Foot, Molded, 10 mm, SST	4
2	82708200A	Nut, Hex, Jam, M10x, SST	4
3	(*)16458300A	Weldment, Base, 12 x 12	1
4	(*)16403800A	Spacer, LC Mounting	1
5	82712400A	Screw, Hex HD, M6 x 16 mm, SST	14
6	(*)16413500A	Frame, Top, Machined, 12 x 12	1
7	(*)16489800A	Bumper, Conductive	4
8	(*)16467600A	Standoff, Corner Overload, 1.75 inch lg.	6
9	R0562500A	Nut, Hex, M6x, Jam, SST	4
10	12464300A	Clamp, Cable, 188 inch dia.	1
11	82715100A	Screw, Pan HD, M4 x 6 mm, SST	1
12	16476900A	Level, Indicator, Stud Mnt.	1
13	15185200B	Platter, 12 x 12, W/O Lip	1
14	A16406800A	Wrench (not shown)	1
15	R0395700A	Rivet, Blind, 188-.250	2
16	(*)15494000A	Data Plate, SST	1
17	R0520100A	Washer, ID 0.25,OD 0.687,0.06 THK Nylon	1
19	(*)16560700A	Bracket, Mnt, Level, Bubble	Note #1
20	0208496104	Nut, M6x, Hex, Acorn, SST	Note #1
21	16497600A	Bumper, Neoprene,1″ Dia.	1
22	82715900A	Screw, Pan HD, M5 x 10, SST	1
23	R0562600A	Nut, Hex, Jam, M8x, SST	2
	(*)16702600A	Screw, Tamper-proof, M4x6mm, SST	Note #1

Minor Assembly – TRIMWEIGH III Base 015B			
31	R0566600A	Screw, Set, HS, M6 x 25, SST	4
32	(*)16406000A	Load Cell, Analog, 20 kg, SST	1
18	R0563000A	Screw, Set, M8 x 20 mm, SST	2
Minor Assembly - TRIMWEIGH III Base 030B			
41	R0566600A	Screw, Set, HS, M6 x 25, SST	4
42	(*)16406100A	Load Cell, Analog, 50 kg, SST	1
18	R0563000A	Screw, Set, M8 x 20 mm, SST	2
Minor Assembly - TRIMWEIGH III Base 060B			
51	R0566600A	Screw, Set, HS, M6 x 25, SST	4
52	(*)16406200A	Load Cell, Analog, 100 kg, SST	1
18	R0562900A	Screw, Set, M8 x 25 mm, SST	2

Note #1. Some models include an extended level mount with (1) acorn nut and (2) M4x tamper proof screws.

TRIMWEIGH III 18-inch Base



Part List – TRIMWEIGH III 18-inch Base			
Ref #	**Part Number**	**Description**	**Qty**
1	(*)16470800A	Foot, Molded, 10 mm, SST	6
2	82708200A	Nut, Hex, Jam, M10x, SST	4
3	(*)16458500A	Weldment, Base, 18 x 18	1
4	(*)16403800A	Spacer, LC Mounting	1
5	82712400A	Screw, Hex HD, M6 x 16 mm, SST	6
6	(*)16444600A	Frame, Top, Machined, 18 x 18	1
7	(*)15083900A	Bumper, Conductive	4
8	(*)16467600A	Standoff, Center Overload, 1.75 inch lg.	2
9	R0562600A	Nut, Hex, Jam, M8x, SST	6
10	12464300A	Clamp, Cable, 188 inch dia.	1
11	82715100A	Screw, Pan HD, M4 x 6 mm, SST	2 (Note #1)
12	16476900A	Level, Indicator, Stud Mnt.	1
14	A16406800A	Wrench (not shown)	1
15	R0395700A	Rivet, Blind, 188-.250	2
16	(*) 15494000A	Data Plate, SST	1
17	R0520100A	Washer, ID 0.25, OD 0.687, 0.06 THK Nylon	1
18	R0562900A	Screw, Set, M8 x 25 mm, SST	2
19	(*)16560700A	Bracket, Mnt, Level, Bubble	Note #1
20	0208496104	Nut, M6x, Hex, Acorn, SST	Note #1
21	(*)16467500A	Standoff, Corner Overload, 2.25 inch lg.	4
22	(*)16467700A	Spacer, M10x, Through Thread, SST	2
23	82712500A	Screw, Hex HD, M6 x 16 mm, SST	8
24	(*)16702600A	Screw, Tamper-proof, M4x6mm, SST	8

Minor Assembly – TRIMWEIGH III Base 060L			
31	R0563600A	Screw, Set, HS, M8 x 30, SST	4
32	(*)16406200A	Load Cell, Analog, 100 kg, SST	1
13	15675000B	Platter, 18 x 18, W/O Lip	1
Minor Assembly – TRIMWEIGH III Base 150B			
41	R0563000A	Screw, Set, HS, M8 x 20, SST	4
42	(*)16406300A	Load Cell, Analog, 200 kg, SST	1
13	15675000B	Platter, 18 x 18, W/O Lip	1
Minor Assembly – TRIMWEIGH III Base 060P			
31	R0563600A	Screw, Set, HS, M8 x 30, SST	4
32	(*)16406200A	Load Cell, Analog, 100 kg, SST	1
13	16063300A	Platter, 18 x 24	1
Minor Assembly – TRIMWEIGH III Base 150P			
31	R0563600A	Screw, Set, HS, M8 x 30, SST	4
32	(*)16406300A	Load Cell, Analog, 200 kg, SST	1
13	16063300A	Platter, 18 x 24	1

Note #1. Some models include an extended level mount with (1) acorn nut and (2) M4x tamper-proof screws.

For your notes

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