SPEEDWEIGH®
SPEEDWEIGH® PLUS
Over/Under Scale
Technical Manual

C15339000A
(7-02).02

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.

DECLARATION OF CONFORMITY

Konformitätserklärung
Déclaration de conformité
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We/Wir/Nous/Wij/Noi: **Mettler-Toledo, Inc.**
1150 Dearborn Drive
Worthington, Ohio 43085
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Model/Type: **SW… series**

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relating to non-automatic weighing instrument (90/384/EEC) amended by directive (93/68/EEC)	EN 45501:1992/AC:1993E Article 1.2.a.
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 61010-1

Worthington, Ohio USA, June, 2001 **Mettler-Toledo, Inc.**

Office of Weights and Measures
Darrell Flocken, Manager

Original issue:	October, 1998	
Revised:	August, 1999	added reference to NAWI Directive 90/384/EEC
	June, 2001	revised model/type from “SW (Speedweigh)” to “SW… series”

According to EN 45014

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.

Your Name:		Date:
Organization Name:		METTLER TOLEDO Order Number:
Address:		Part / Product Name:
		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?	
	Met and exceeded my needs
	Met all needs
	Met most needs
	Met some needs
	Did not meet my needs

Comments/Questions:

DO NOT WRITE IN SPACE BELOW; FOR METTLER TOLEDO USE ONLY

☐ Retail ☐ Light Industrial ☐ Heavy Industrial ☐ Custom

RESPONSE: Include Root Cause Analysis and Corrective Action Taken.

B12745800A

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Please seal with tape.

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

FCC Notice

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 own expense.

PRECAUTIONS

READ this manual BEFORE operating or servicing this equipment.

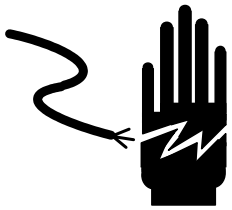
FOLLOW these instructions carefully.

SAVE this manual for future reference.

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

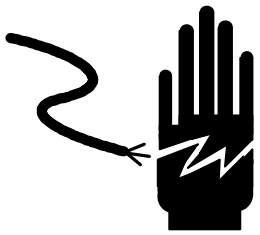
ALWAYS DISCONNECT this equipment from the power source before cleaning or performing maintenance.

CALL METTLER TOLEDO for parts, information, and service.



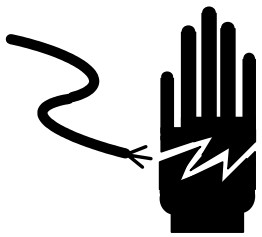
WARNING

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, programming, configuring, and servicing the SpeedWeigh® and SpeedWeigh® Plus scales. The SpeedWeigh and SpeedWeigh Plus scales are reliable, flexible checkweighing scales designed for simple weighing, over/under weighing, and weighing in light washdown environments.

Please refer to the specifications listed in Appendix 1 for specific information on each model. Detailed instructions for programming each model are provided in Chapter 3.

Review all instructions and safety precautions carefully. All installation and service procedures should be performed only by authorized personnel.

Inspection and Contents Checklist

- If the scale's shipping container appears damaged upon delivery, check inside for damage. File a freight claim with the carrier if necessary.
- If the container was undamaged, unpack the container if you have not already done so. Keep the original packing materials for future use.
- Make sure the scale package contains the following:
  - SpeedWeigh or SpeedWeigh Plus scale, including terminal, column (for small or medium base), and base
  - Wrench
  - Capacity Sheet Labels
  - Alternate Cursor Labels
  - Technical Manual
  - Operator's Card

Model Identification

The SpeedWeigh and SpeedWeigh Plus scales are available in different weighing capacities and with various options. Use the information below to confirm the correct model number for the SpeedWeigh scale with which you will be working. Specifications for each model are provided in Appendix 1.

Scale Type: The first two digits of the model number refer to the scale type. "SW" denotes a SpeedWeigh scale.

Capacity: The next two digits refer to the maximum capacity in kg to which the scale is capable of weighing.

Keyboard: A "K" following the capacity denotes a SpeedWeigh Plus scale, which is similar to a SpeedWeigh scale but has a full numeric keyboard.

Mounting Option: No character in the next position denotes the standard column version.

A "W" in this position denotes the wall mount option. No column is provided with the wall mount unit.

An "E" in this position indicates an extended column has been ordered for the 6 kg model, which is the only model for which this option is available.

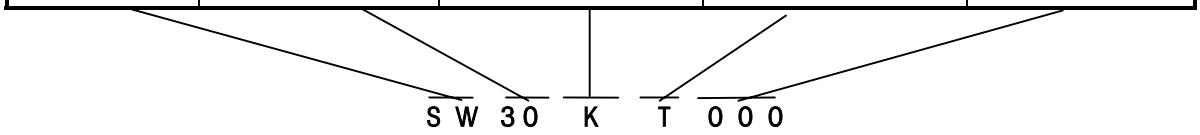
If a "T" appears in this position, a toggle switch is provided to activate the tare function. Only one choice may be selected.

If a "P" appears in this position, a flat platter (without a lip) is provided.

Destination Market: The last three digits refer to the destination market.

SpeedWeigh Model Number Configuration

Scale Type	Capacity	Keyboard	Mounting Option	Destination Market
SW	XX	X	X	XXX
SpeedWeigh	06, 15, 30, 60, 75, 150 kg	Blank-SpeedWeigh K – SpeedWeigh Plus	Blank- column W-wall E-extended column (SW06 only) T – toggle switch P- Platter without "lip"	000 - 999 By Destination (Per Appendix 10)

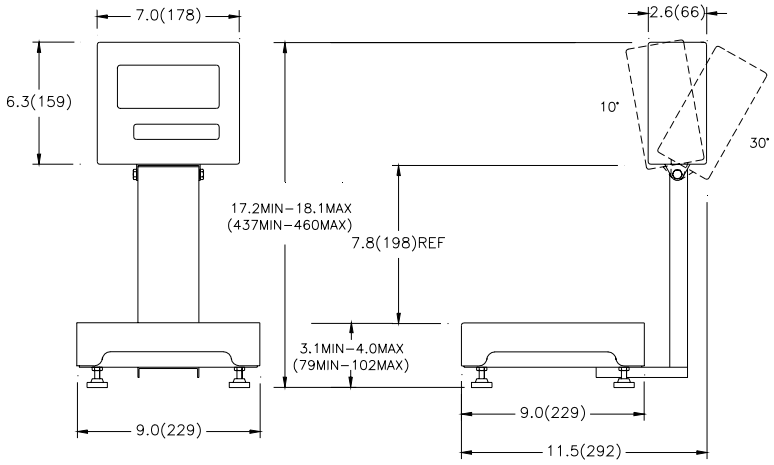


The example above indicates a 30 kg capacity SpeedWeigh Plus scale with a column (not a wall mount bracket) and a toggle switch that is intended for the U.S. market.

Physical Dimensions

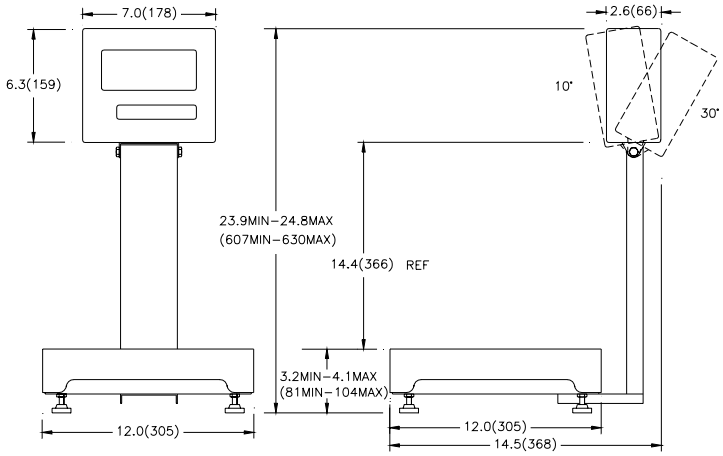
The SpeedWeigh and SpeedWeigh Plus scales have the following dimensions (shown in inches):

Model SW06/SW06K



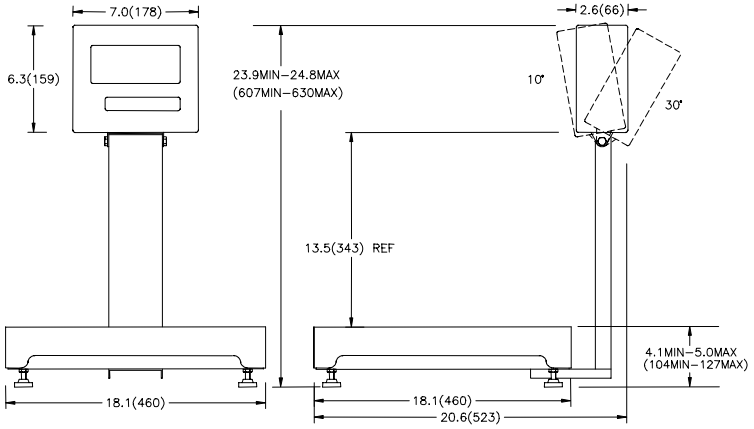
The SW06/SW06K base measures 79 mm (3.1 in.) high x 229 mm (9.0 in) wide x 229 mm (9.0 in) deep. The overall height is 437 mm (17.2 in) and overall depth is 292 mm (11.5 in) with the standard column.

Models SW15/SW15K, SW30/SW30K, SW60/SW60K



These bases measure 81 mm (3.2 in.) high x 305 mm (12.0 in) wide x 305 mm (12.0 in) deep. Overall height is 607 mm (23.9 in.) and overall depth is 368 mm (14.5 in.) with the standard column.

Models SW75/SW75K and SW150/SW150K



These bases measure 104 mm (4.0 in.) high x 457 mm (18.0 in) wide x 457 mm (18.0 in) deep. Overall height is 600 mm (23.6 in).

Warnings/ Precautions

⚠ 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 AND/OR PROPERTY DAMAGE.

⚠ CAUTION

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

Location/ Environment

The first step in installing the SpeedWeigh or SpeedWeigh Plus scale is to select the best location. Keep in mind the following conditions:

- **Vibration** – Vibration diminishes the scale's ability to measure accurately. Electrical machinery such as conveyors and presses can cause inaccurate and non-repeatable readings.
- **Level** – The scale may read inaccurately if it is not properly leveled. Choose a flat, level surface on which to place the SpeedWeigh or SpeedWeigh Plus 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 SpeedWeigh and SpeedWeigh Plus scales are designed to continue functioning if temperatures change in the room in which it is located. However, if the 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 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 scale.
- **Moisture** – The SpeedWeigh and SpeedWeigh Plus scales are designed for use in wet environments but cannot be immersed or sprayed with pressurized water.

⚠WARNING!

The SpeedWeigh and SpeedWeigh Plus scales ARE NOT intrinsically safe! Do NOT use in areas classified as HAZARDOUS by the National Electric Code (NEC) because of combustible or explosive atmospheres.

Set-up Procedures

The SpeedWeigh and SpeedWeigh Plus scales' columns may need to be attached to their bases using the three (3) bolts and lock washers provided with the SW06 or the four (4) bolts and lock washers provided with the SW15, SW30, SW60, SW75, and SW150. (See Figure 1-a.) Store any extra load cell cable in the column. It may be necessary to remove the column cover.

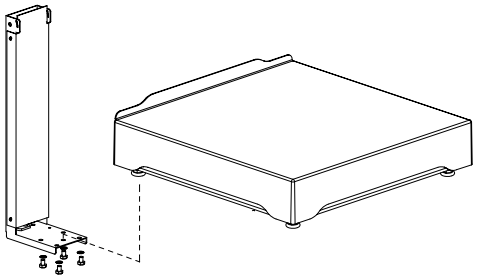


Figure 1-a

Level the Base

Once the SpeedWeigh or SpeedWeigh scale base is in place, level it by performing these steps:

- Turn the leveling feet of the weighing platform until the scale is horizontal. The leveling feet should each touch the surface on which the scale base is placed. The scale base should not rock or teeter.

- Check to make sure the level bubble (located on the top of the base underneath the platter) is centered as shown here.

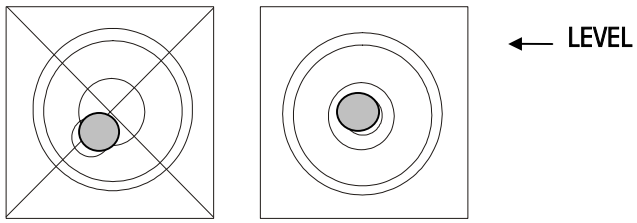


Figure 1-b

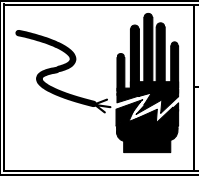
- Use the wrench included with the SpeedWeigh or SpeedWeigh Plus scale to "jam" the lock nut on each foot against the bottom of the base to keep the foot from moving.
- You must re-level the SpeedWeigh or SpeedWeigh Plus scale after every location change.

Installation Without Calibration

Each SpeedWeigh and SpeedWeigh Plus 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 the programming block labeled GEO Code for the installation site. The GEO codes can be found in Chapter 5, Appendix 12. You need to know the latitude and elevation of the installation site.

	North America	Metric (Export)
SW06/SW06K	10 x 0.002 lb	6 x 0.002 kg
SW15/SW15K	30 x 0.005 lb	15 x 0.005 kg
SW30/SW30K	50 x 0.01 lb	30 x 0.01 kg
SW60/SW60K	100 x 0.02 lb	60 x 0.02 kg
SW75/SW75K	100 x 0.02 lb	60 x 0.02 kg
SW150/SW150K	250 x 0.05 lb	150 x 0.05 kg

Electrical Connections



⚠ WARNING

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

Power Requirements

The SpeedWeigh and SpeedWeigh Plus scales are each provided with a (manually selectable) power supply, which operates, from 85 to 264 VAC. 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 SpeedWeigh and SpeedWeigh Plus scales 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 SpeedWeigh and SpeedWeigh Plus scales are shipped with the power cord installed and the appropriate plug for the installing location, provided the appropriate country finish code was used when the SpeedWeigh or SpeedWeigh Plus scale was ordered.

The following charts show the wiring for the SpeedWeigh and SpeedWeigh Plus scales 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 terminal strips is 24 to16 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 SpeedWeigh and SpeedWeigh Plus scales' 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.

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

Pin Connection for METTLER TOLEDO Devices Using COM1 RS-232			
Instrument TB2 COM1		8806 8855 8861 8807 8856 8865 8845 8860 MP750	8617-TB2 9323-TB2 9325-TB2
1	TXD	3*	2
2	RXD	Not Connected	Not Connected
3	GND	7*	3

*Each of these devices uses this connection.

Main PCB Discrete I/O Wiring

Discrete I/O. The SpeedWeigh and SpeedWeigh Plus scales have 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 1-c.

Input. The discrete input can be programmed to activate 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 (logic ground) and 9 (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 is 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' sinks current when the programmed threshold is reached. When the discrete outputs are 'off' the signal is driven to a logic high state.

A 5VDC 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.

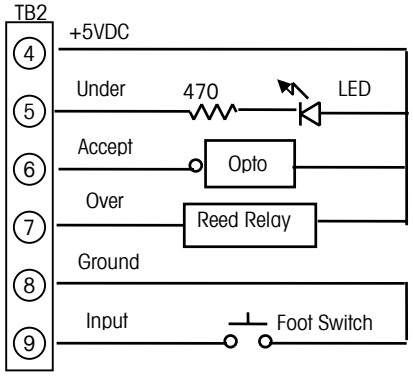


Figure 1-c

Main PCB Switches, Jumpers, Fuse

Switches and jumpers on the Main PCB should be set as follows (Figure 1-d).

Switch SW1

SW1-1 Setup/Calibration Enable = On
Approved Normal Operation = Off

SW1-2 Display Comma Tail = On

SW1-3 Not Used (Must be Off)

SW1-4 Test Mode (Must be Off)

Jumper W1

Install W1 jumper on both pins for domestic models (5000d builds).

2mV/V ■ ■

Install W1 jumper on only one pin for 3000d builds (such as export builds).

3mV/V ■ ■

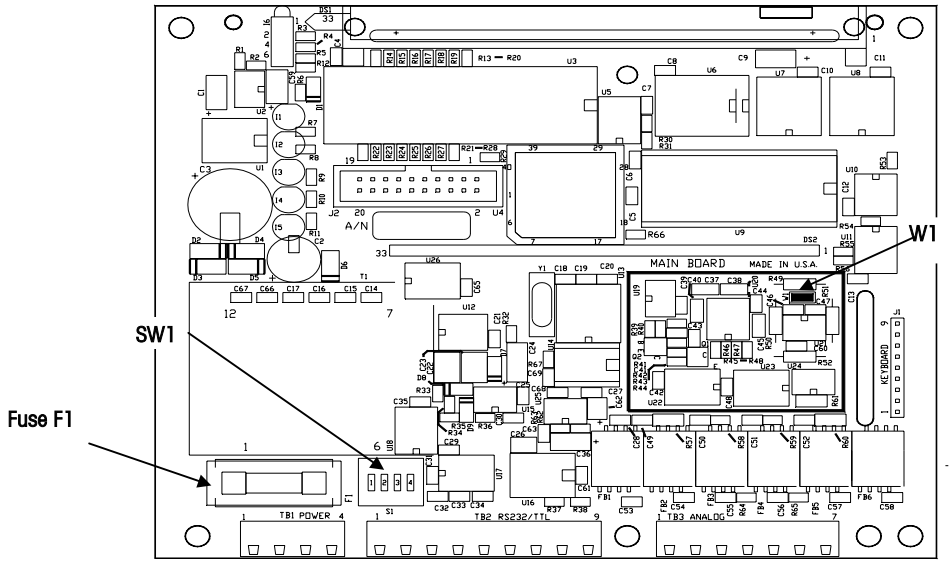


Figure 1-d

Scale Build Determination

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

MODEL	SW06/ SW06K	SW15/ SW15K	SW30/ SW30K	SW60/ SW60K	SW75/ SW75K	SW150/ SW150K
Max. Capacity	6 kg/15 lb	15 kg/ 30 lb	30 kg/60 lb	60 kg/120 lb	75 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	0.01 kg 0.02 lb	0.02 kg 0.05 lb
Max. Divisions (nMAX)	5000d	5000d	5000d	5000d	5000d	5000d
Recommended Build*	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	50 x 0.01 kg 100 x 0.02 lb	100 x 0.02 kg 250 x 0.05 lb
Recommended 3000e build	6 x 0.002 kg	15 x 0.002 kg	30 x 0.01 kg	60 x 0.02 kg	60 x 0.02 kg	150 x 0.05 kg

*Factory Default for US and Canada (000 and 019 country finish)

The following tables provide guidelines for capacities and increment sizes for the SpeedWeigh and SpeedWeigh Plus scale models. 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 Appendix 6 to determine the appropriate increment size and scale build.

SW06/SW06K

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

SW15/SW15K

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

SW30/SW30K

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

SW60/SW60K

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	1600 x 0.2
lb-oz*	93.75 x 0.5	75 x 0.2	NA
ozt	1500 x 0.5	1200 x 0.2	1600 x 0.2
dwt	30000 x 10	30000 x 5	20000 x 2

SW75/SW75K

Units	Low Res. Build	Standard Build	High Res. Build
lb	150 x 0.05	100 x 0.00	100 x 0.01
kg	75 x 0.005	60 x 0.02	50 x 0.01
g	60000 x 20	50000 x 10	50000 x 5
oz	2000 x 0.05	NA	2000 x 0.2 oz
lb-oz*	9.375 x 0.5	NA	125 lb x 0.2

SW150/SW150K

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

Units	Low Res. Build	Standard Build	High Res. Build
lb-oz*	250 x 1	NA	250 lb x 0.5

*NOTE: When calibrating in pounds-ounce mode, the 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

Additional Information

Once the SpeedWeigh or SpeedWeigh Plus scale has been leveled, plugged in, and calibrated, it can be programmed to accommodate specific applications. This includes enabling operator access to certain functions.

2 Programming Information

Before programming and calibrating the SpeedWeigh or SpeedWeigh Plus scale, review the following information on the various scale modes, operating states, data entry instructions, and other important topics.

Operating Modes and States

Gross and Net State

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

Net State - The 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 SpeedWeigh and SpeedWeigh Plus scales operate as normal scales. 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 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 LED's for Over, Under and Accept can be enabled to help operators determine if the product is within a preprogrammed tolerance of the target weight. The SpeedWeigh scale has two stored targets and one quickset target. The SpeedWeigh Plus has 10 stored targets and one quickset target.

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

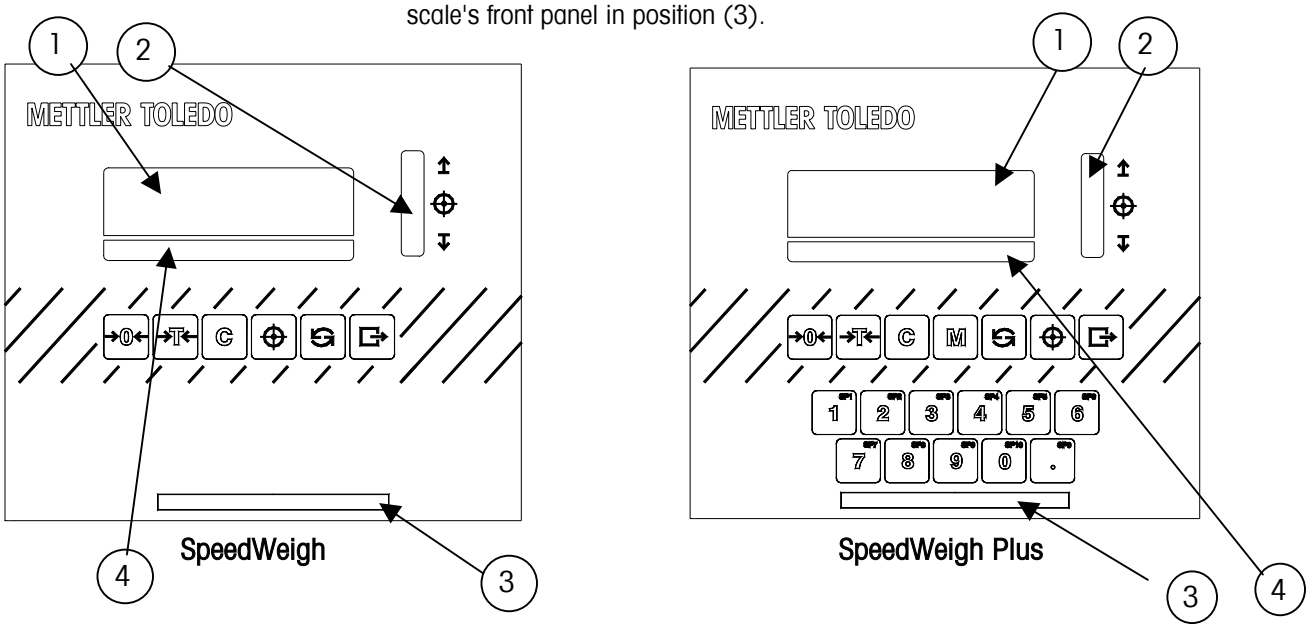
Memory Recall Mode - When recalling a target from memory, **Memory Recall mode** must be accessed by pressing the **TARGET** key on the SpeedWeigh or the **M** (Memory) key on the SpeedWeigh Plus.

Display

The SpeedWeigh and SpeedWeigh Plus scales use 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 conditions.
- To the right, a line of multi-colored LEDs (2) provides quick operator feedback to over/under conditions.

Decals containing scale build information are provided and should be placed on scale's front panel in position (3).



Description of Legends

Below the display area are legends (4) which are defined as follows:

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

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

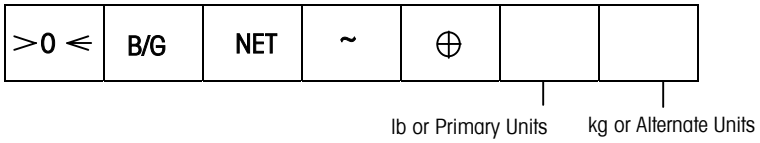
NET Net - The scale is in net state. A tare has been taken.

~ Motion – Weight is not stable.

⊕ Target – The scale is in the over/under state.

lb Pound weight units are currently displayed.

kg Kilogram weight units are currently displayed.



Additional Legend(s)

Additional decals are included with the SpeedWeigh and SpeedWeigh Plus 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 on the SpeedWeigh or SpeedWeigh Plus scales.

ton **Metric Ton** - Not used on the SpeedWeigh or SpeedWeigh Plus scales.

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).

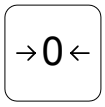
( ) **Blank** - May be placed over any unused weight legend.

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

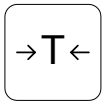
- Open the instrument. Remove the main logic board from the cover.
- Slide the legend plate up and out of the pocket between the overlay and the front cover.
- Apply the decal to the legend plate at the appropriate location.
- Slide the modified legend plate back into the pocket behind the overlay.
-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

Key Functions for Operation

The keys used on the SpeedWeigh and SpeedWeigh Plus scales are as follows:



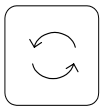
The **ZERO (0)** key is used to compensate for small changes in weight when the platform is empty. To zero the indication of weight, press **ZERO**.



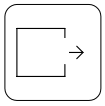
In Indicator mode, the **TARE (T)** key is used to subtract the weight of an object on the scale from subsequent indications of weight.

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 scale platform. Note: If 'Tare Interlock' is enabled, platform must be empty.

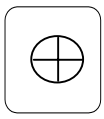
The **MEM** or Memory **(M)** key is used to access target weight values. Operator access to these values must be enabled in the Setup mode.



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



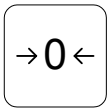
The **PRINT** key is used to initiate a serial output of the weight data. Also used to accept selected targets.



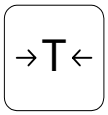
The **TARGET** key is used to recall a stored target and to set a "quick shot" target. On the SpeedWeigh, it also functions as the **M** key above.

Key Functions for Programming

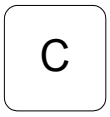
The following keys are used to configure the program blocks in setup mode. Main program blocks are displayed as [F1], [F2], and so on. Program sub-blocks are displayed as [F1.1], [F5.8.2], and so on.



Backs up to the previous program block.

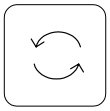


Not used.

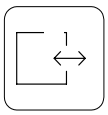


Resets a numeric data entry value to zero. Allows programmer to skip to the end of setup when pressed at a main program block.

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.

Note: The SpeedWeigh Plus scale has 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 SpeedWeigh 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.

For example, suppose a SpeedWeigh scale has just been reset to the factory defaults (F6.5 = 1). The calibration constants have been cleared, so the unit has to be calibrated. At F1.3, the scale capacity is displayed as 100 lb. We want to change the capacity to 10 lb.

Key Operation for SpeedWeigh Scale (6-key)	Display
Press the **ENTER** key at the F1.3 program block.	0′ 0 0 1 0 0
Press the **ENTER** key three times to move the apostrophe over to the hundreds digit.	0 0 0 1′ 0 0
Press the **SELECT** key nine times to cycle the digit back to zero.	0 0 0 0′ 0 0
Press the **ENTER** key to move to the tens digit.	0 0 0 0 0′ 0
Press the **SELECT** key to increment the tens digit.	0 0 0 0 1′ 0
Press the **ENTER** key to move to the ones digit.	0 0 0 0 1 0′
Press the **ENTER** key to accept the capacity of 10 lb and proceed to program block F1.4 for the increment size.	F 1. 4 .0 1

Entering Setup Mode

All programming and calibration is done in the Setup mode. Enter Setup mode by doing the following:

- Open the SpeedWeigh or SpeedWeigh Plus scale as described in Chapter 4.
- Close SW1-1. (It can remain closed if instrument security is not required.) Then close the instrument.
- Simultaneously press and release the **PRINT** and **ZERO** keys.
- F1 is displayed.

Exiting Setup

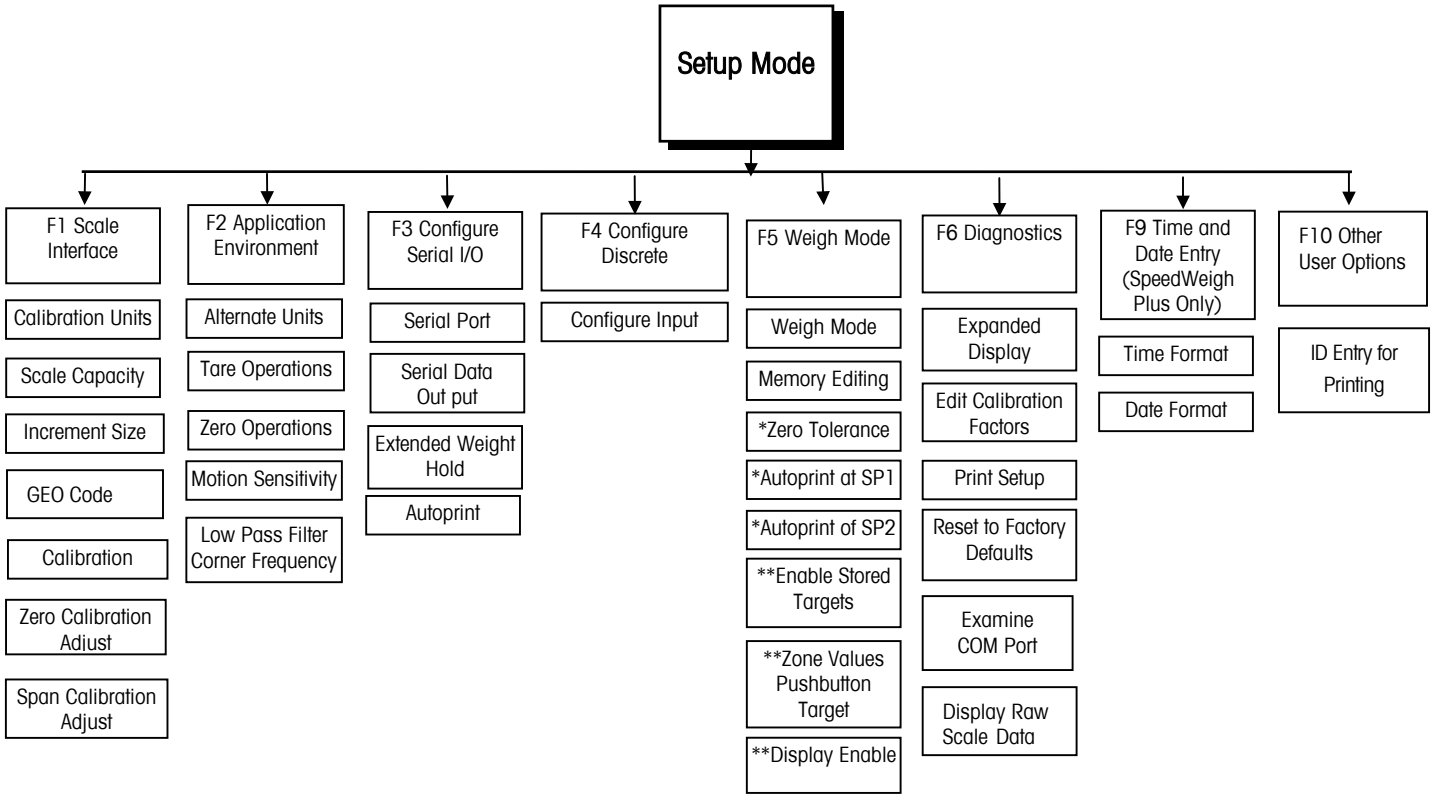
To return to a normal operating mode after programming the scale, exit the Setup mode by doing the following:

- Press **PRINT** until a major program block (such as [F2]) is shown.
- Press **CLEAR** to advance to the [CALOFF] display.
- Press **PRINT**. The SpeedWeigh and SpeedWeigh Plus scales 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 and Calibration

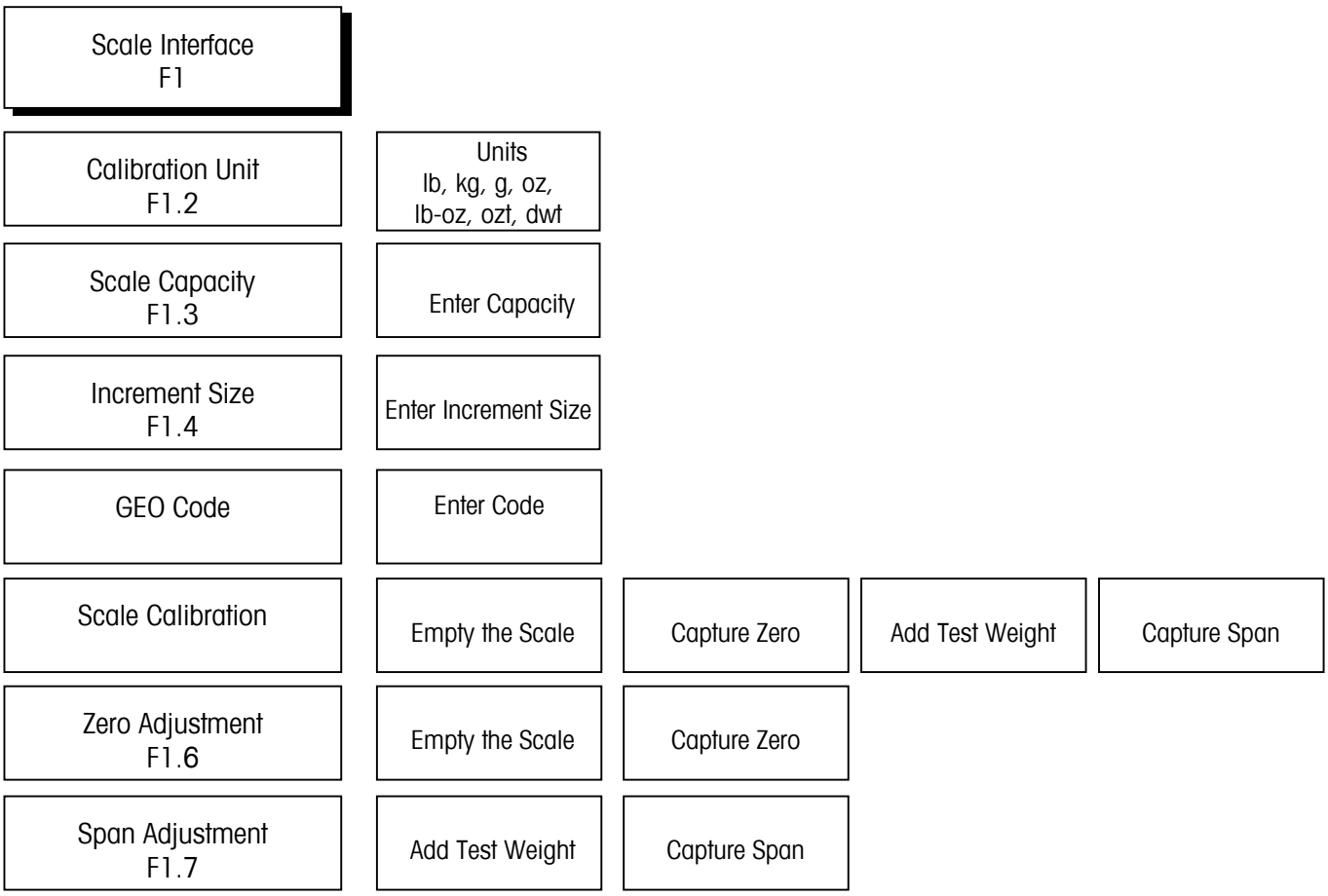
Programming

The following diagram provides an overview of the SpeedWeigh/SpeedWeigh Plus scale's program blocks and the sub-blocks within each.



* Only appears if Setpoint Mode is selected.
**Only appears if Over/Under Mode is selected.

F1 Scale Interface Program Block



NOTE: There is no F1.1 in the Scale Interface program block.

[F1] Scale Interface.
Press select to skip this block. Press **ENTER** to continue.

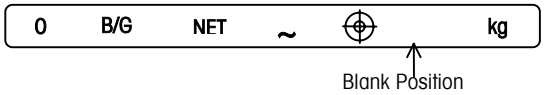
F1.2 Calibration Units

[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
X = 9 ton (Not supported)

Primary Units is selected in Step F1.2 as the **Calibrated Unit**. **Alternate Units** is selected in Step F2.1. If neither unit is lb or kg, the left cursor (blank position) is used to indicate the primary unit and the right cursor (kg position) the alternate unit. Alternate unit decals are provided and 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 and remove the controller PCB.
- Remove the legend plate from the bottom of the display window.
- After adding the legend label, reassemble in reverse order.

Example:

The SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus terminal display lens.

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	MINIMUM BUILD		MAXIMUM BUILD	
SIZE	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 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.

Calibration Sub-block (No "F" Designation)

[CAL X] SCALE CALIBRATION PROCEDURE

X = 0 Skip calibration procedure

X = 1 Continue calibration

[E SCL] Empty scale platform and press **PRINT** to continue.

[15 CAL] Delay while initial is set (display counts down). If the motion sensitivity is not disabled and motion is detected at this step, the display returns to the **[E SCL]** prompt.

[Add Ld] Place test weight on the scale platform, and press **PRINT**.

[`XXXXXX] Enter the test weight value. No digits to the right of the decimal point are permitted. Maximum test weight is 105% of full scale capacity.

[15 CAL] There will be a delay while span is set (display counts down). If motion is detected at this step, the display returns to the **[Add Ld]** prompt.

[CAL d] "Calibration done" is displayed momentarily.

NOTE: When in lb-oz mode, enter the test weight value in ounces.

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 readings are 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 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

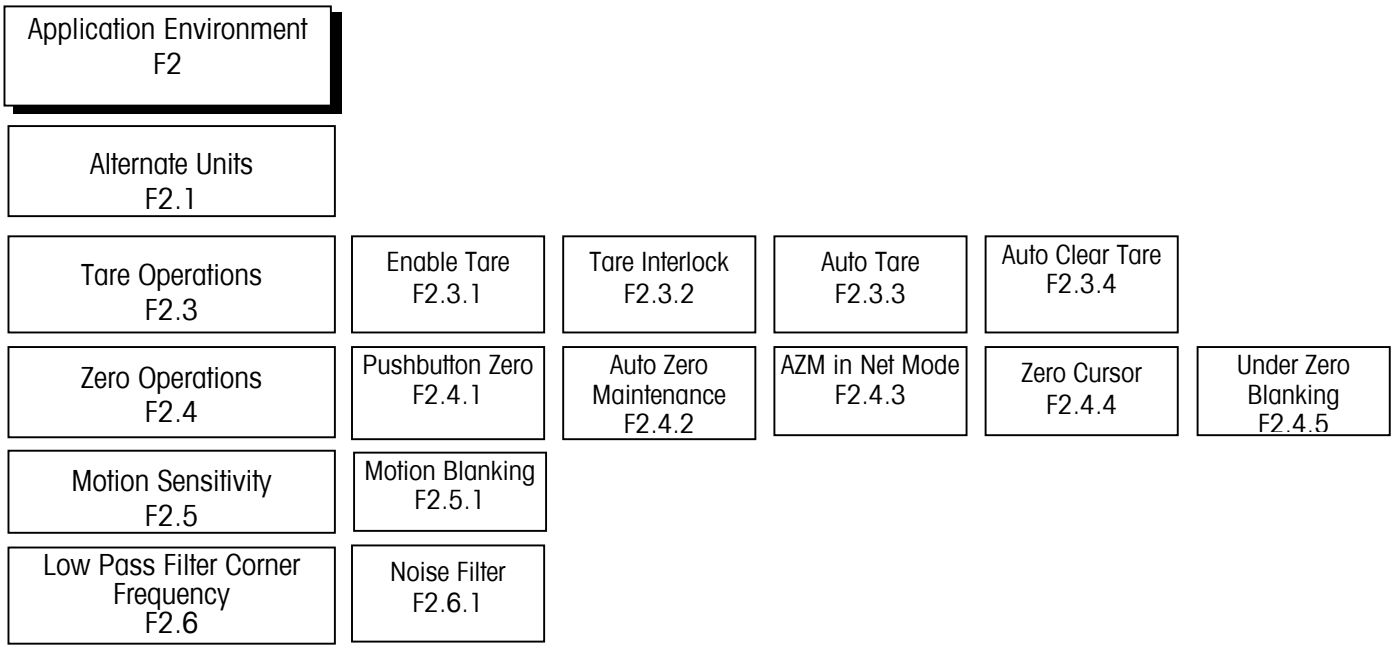
X = 1 Perform span calibration adjustment.

[0] Numeric data entry of current scale test load. Adjust the display to the appropriate value using the **SELECT** and **ENTER** keys as described on Page 2-5 or using the numeric keypad on the SpeedWeigh Plus scale. 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



NOTE: There is no F2.2 in the Application Environment program block.

[F2] APPLICATION ENVIRONMENT
Press **SELECT** to skip to [F3]. Press **ENTER** to continue.

F2.1 Alternate Units

Example:
The SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus scale'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 = 1 lb
- X = 2 kg
- X = 3 g
- X = 4 oz
- X = 5 lb-oz
- X = 6 ozt
- X = 7 dwt
- X = 8 t
- X = 9 metric ton (Not supported)

F2.3 Tare Operations

For lb-oz mode on the SpeedWeigh Plus scale, 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 (SpeedWeigh Plus only).

[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 scale empty)
- Tare can be entered only when the 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 a > 5d weight 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

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.

[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 weight range (±) around gross zero within which the terminal will capture zero. If residual weight on the scale exceeds the weight range, it will not capture zero.

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: The motion detection feature determines when a no-motion condition exists on the scale platform. The sensitivity level determines what is considered stable. Printing, pushbutton zero, and tare entry will wait for scale stability before carrying out 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

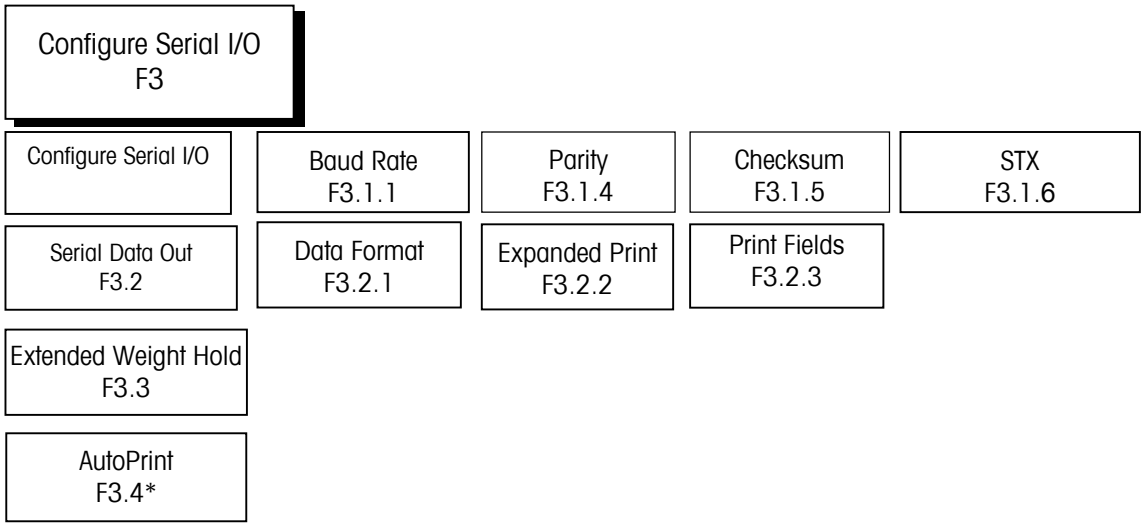
X.X is the numeric data entry for the low pass filter corner frequency (0.5 - 9.9 Hz).

[F2.6.1 X] NOISE FILTER

X = 0 Disable Noise Filter

X = 1 Enable Noise Filter

F3 Configure Serial I/O Block



*AutoPrint appears only on the SpeedWeigh Plus scale.

[F3] CONFIGURE SERIAL I/O
Press **SELECT** to skip to [F4]. Press **ENTER** to continue.

F3.1 Select Serial Port Parameters

[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 Out (SpeedWeigh Scale Only)

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

[F3.2 X] SERIAL DATA OUTPUT

- 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 'G' IN GROSS WEIGHT FIELD (COM 1, 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 (SpeedWeigh Plus Scale Only)

Refer to the Appendix for details on output strings.

[F3.2 X] SERIAL DATA OUTPUT

- 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

Example: 2 3 4 0 0

GROSS TARE NET NO FIELD NO FIELD

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.

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:

[00051] 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>

[51000] 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 (SpeedWeigh Plus only)

[F3.4 X] AUTOPRINT

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

Configure Discrete
F4

Configure Discrete Input
F4.1

[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

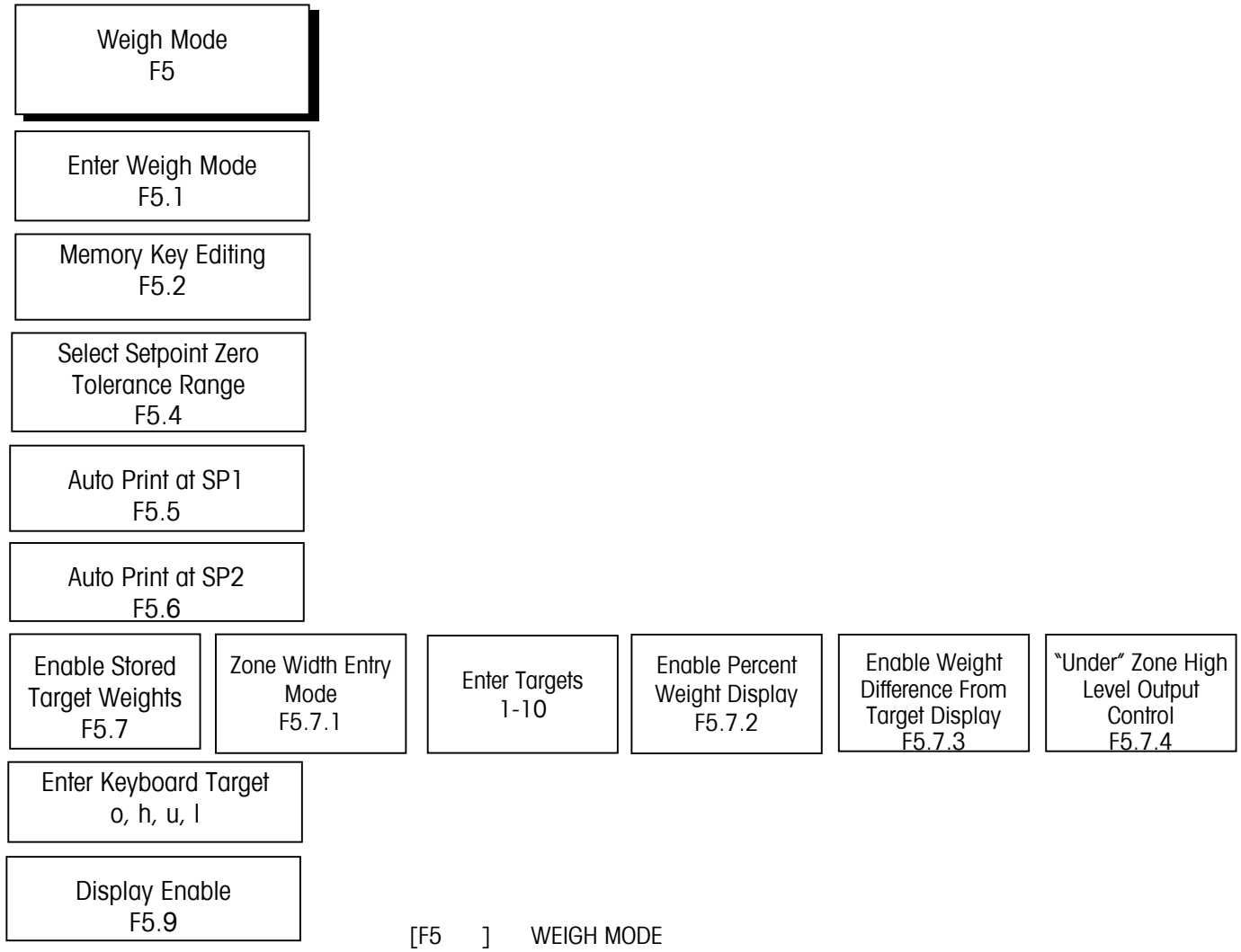
X = 2 Tare

X = 3 Zero

X = 4 Select (switches units)

X = 5 Target

F5 Weigh Mode Block



[F5] WEIGH MODE

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

F5.1 Enter Weigh Mode

[F5.1 X] ENTER 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.
- X = 2 Over/Under Mode. Go to F5.2, Memory Key Editing.

F5.2 Memory Key Editing

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

[F5.2 X] MEMORY KEY EDITING

X = 0 Over/Under editing using **M (MEMORY)** key

Over/Under 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 was set to 2, this goes 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 was set to 2, this goes 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 was set to 2, this goes to F5.7.

Note: The next two sections related to the entry of setpoint values are allowed from the front panel.

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

NOTE: If Memory Key Editing (F5.2) > 0, skip Setpoint Entry.

[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].

Note: If the editing of Preact values from the front panel is allowed, skip the next two steps related to Preact Entry.

[SP2] ENTER SETPOINT 2

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

Press **ENTER** to proceed.

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

[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].

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

[P2] ENTER PREACT FOR SETPOINT 2

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

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

[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].

Note: If the editing of setpoint zero tolerance values from the front panel is allowed, skip the next section.

If the Weigh Mode is "Indicator" or "Over/Under" skip this section. If Memory Key Editing (F5.2) > 2, skip Select Setpoint Zero Tolerance Range.

F5.4 Select Setpoint Zero Tolerance Range

[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

[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

[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

[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.

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

(Only appears if Over/Under Mode is selected in F5.1)

[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

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

[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.

NOTE: The SpeedWeigh scale can have 2 stored targets. The SpeedWeigh Plus scale can have 10 stored targets.

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

NOTE: If three-zone operation is desired (Under, Accept, Over), set the values for over ("O") and under ("U") to be 0. The outputs on terminal block TB2 will remain under on position 5, accept on position 6, and over on position 7.

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

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

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

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

NOTE: Repeat the above steps for 'n' targets.

[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.

NOTE: If Memory Key Editing (F5.2) is equal to 2 or 3, skip to F5.9. 9.

F5.8 Zone Increment Size for Pushbutton Target

[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

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

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

[XX] ENTER QUICKSET LOW ZONE (SP0)
XX = Current difference from Low Zone to QuickSet Target.

[XX] ENTER QUICKSET UNDER ZONE (SP0)
XX = Current difference from Under Accept Zone to QuickSet Target.

F5.9 Display Enable Sub-block

[F5.9 X] Display Enable

X = 0 Status lights only

X = 1 Weight display and status lights.

F6 Diagnostics Block

Diagnostics
F6

Expanded Display
F6.1

Edit Calibration Factors
F6.2

Print Setup Report
F6.4

Reset to Factory
F6.5

Examine COM Port Receive Diagnostics
F6.6

Display Raw Scale Data
F6.7

[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

NOTE: A list of the factory defaults appears in the Appendix.

[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.

NOTE: F7 and F8 are not supported. If you are using the SpeedWeigh scale (6-key keypad), you may exit program mode at this time. F6.6, F6.7, F9, and F10 only appear if you are using a SpeedWeigh Plus scale (18-key keypad).

F6.6 Examine COM Port Receive Buffer Diagnostics

[F6.6 X] EXAMINE COM PORT RECEIVE BUFFER DIAGNOSTICS

- X = 0 Skip this sub-block.
- X = 1 Examine com port 1 receive buffer.
- X = 2 Examine com port 2 receive buffer (if host PCB is installed)
- X = 3 Examine com port 3 receive buffer (DLC data in digital version only)

[nnn xx] Where "nnn" is current receive buffer read pointer offset (0-255) and "xx" is the data in hex. The receive buffers are circular buffers 256 bytes in length. The read pointer is an offset into the buffer that points to the next byte to be read. Press **MEMORY** to advance forward through the receive buffer or **TARE** to step backward through the receive buffer. Press **ENTER** or **CLEAR** to exit this diagnostic. The receive interrupt is disabled while in the diagnostic.

[F6.7 X] DISPLAY RAW SCALE DATA

- X = 0 Skip this sub-block.
- X = 1 Display raw counts

[nnnnnnn] Where "nnnnnnn" are the raw filtered counts. The raw counts are zero adjusted (fine zero has been subtracted off) in the digital version, but not zero adjusted in the analog version.

F9 Time and Date Entry Program Block (SpeedWeigh Plus – 18 Key – Scale Only)

Time and Date
F9

Time Format
F9.1

Date Format
F9.2

NOTE: This section only applies to the SpeedWeigh Plus (18-key) scale. The standard SpeedWeigh scale (6-key) does not support time and date.

[F9] Press **SELECT** to skip to [CALOFF]. Press **ENTER** to continue.

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)

NOTE: If Time 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 **ENTER**.

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

F9.2 Date Format

[F9.2 X] DATE FORMAT

X = 0 Date disabled

X = 1 MM/DD/YY

X = 2 DD.MM.YY

NOTE: If Date is disabled, skip to [CALOFF]

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

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

F10 Other User Options Program Block

Other User Options
F10

ID Entry for Printing
F10.1

[F10] OTHER USE OPTIONS
Press **SELECT** or **CLEAR** to skip to **[CALOFF].**
Press **PRINT** to continue configuring this sub-block.

F10.1 ID Entry for Printing

[F10.1 XX] ID Entry for Printing
Values from 00 to 99 are accepted. The ID can be selected as a print field.

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 SpeedWeigh or SpeedWeigh Plus 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 SpeedWeigh or SpeedWeigh Plus scale has been configured (programmed), it is ready for use. Instructions for using the SpeedWeigh or SpeedWeigh Plus scale are provided on the SpeedWeigh/SpeedWeigh Plus Operator's Card that is included with the unit. Operators can perform any of the basic functions listed on the card. A copy of those instructions is found in the Appendix of this manual (Chapter 5).

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 the Appendix (Chapter 5) of this manual.

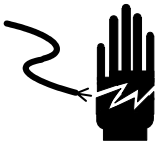
NOTES

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 OR SPRAY IT WITH HIGH PRESSURE WATER.



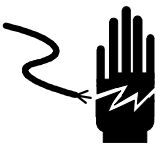
⚠ WARNING

DISCONNECT ALL POWER TO THIS UNIT BEFORE SERVICING OR CLEANING.

- Wipe the terminal 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.
- To clean the base, use a soft cloth and a mild detergent appropriate for use on stainless steel products. The base and terminal should never be immersed in water or subjected to high pressure spray.
- Regular maintenance inspections and calibration by a qualified service technician are also recommended.

Troubleshooting

The table on the next page lists the SpeedWeigh and SpeedWeigh Plus scales' error messages, descriptions, and correction actions.



⚠ 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.

Error Codes and Actions

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 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 SpeedWeigh or SpeedWeigh Plus scale with a known test mass, the 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 Scale Interface program block (F1) for details on how to reset GEO Codes. After re-setting the GEO Codes, re-test the scale.

Linearity Errors

A linearity error can be experienced when a SpeedWeigh or SpeedWeigh Plus 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 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 SpeedWeigh or SpeedWeigh Plus scale has power but no excitation voltage, replace the main logic PCB.

Discrete Output Voltage

With no load applied and the SpeedWeigh or SpeedWeigh Plus 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 Chapter 5, Appendix 9, Discrete Outputs.
- Check programming.
- Check wiring.

RS232 Serial Output Test

1. Remove power from the SpeedWeigh or SpeedWeigh Plus 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 scale/indicator is transmitting information.
5. 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 Terminal

If the scale's terminal or logic board must be repaired or replaced, the following instructions illustrate how to open the indicator and it.

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-a).
Gently push in toward the enclosure. (You should hear a "pop" when the cover has been released.)
Push in on the side of the slot closest to the power cord side of the cover. Repeat for the other slots.
After releasing the front panel, lift the bottom of the front panel out until it completely clears the enclosure.
Squeeze the top of the front panel and raise it to clear the top clips. The cover will swing down, hinged by a wire cable at the bottom.

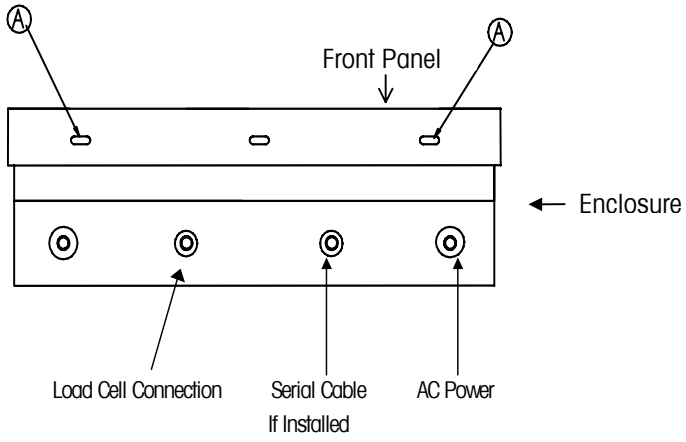


Figure 4-a

Connecting the Unit

- Pass the cables that enter the enclosure through the cable grip before connecting the wires.
- After the SpeedWeigh or SpeedWeigh Plus scale terminal is opened, you can make the electrical connections.

- 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.
- Re-configure and recalibrate after replacing the terminal or main PCB. Refer to Appendix 4 for the standard factory configuration.

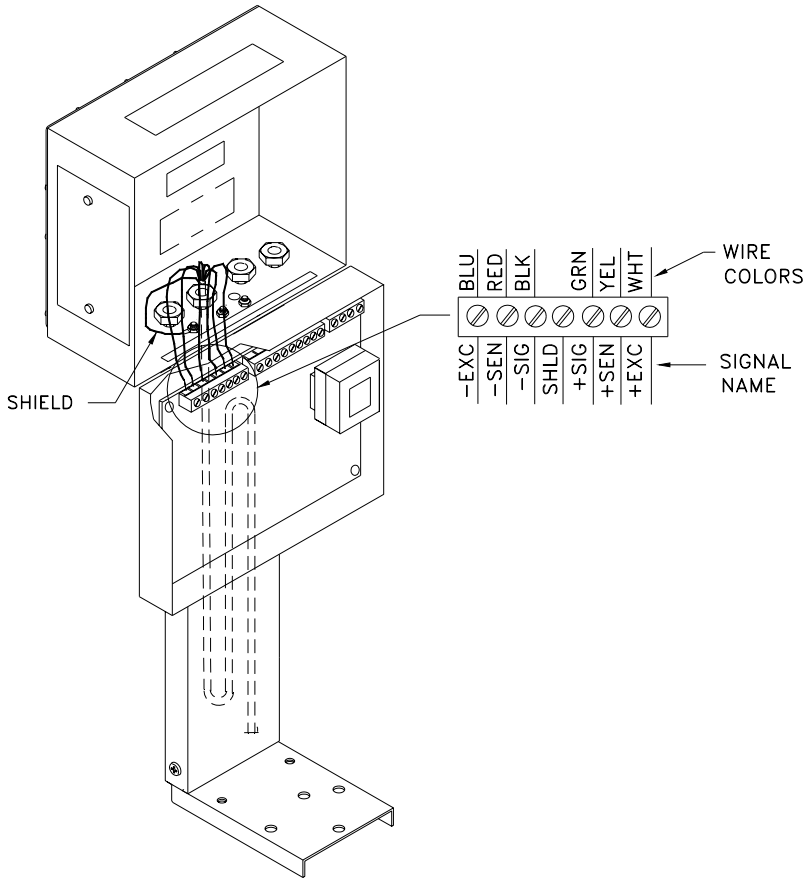


Figure 4-b

NOTES

5 Appendices

Appendix 1: Specifications

Model	SW06/SW06K	SW15/SW15K	SW30/SW30K
Max. Capacity	6 kg/15 lb	15 kg/30 lb	30 kg/60 lb
Min. Grad. (eMIN)	0.001 kg/0.002 lb	0.002 kg/0.005 lb	0.005 kg/0.01 lb
Max. Divisions (nMAX)	5000d	5000d	5000d
Recommended Build	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
Operating Temperature	14°F -113°F (-10°C - 40°C) at 10% - 95% humidity, non-condensing	14°F -113°F (-10°C - 40°C) at 10% - 95% humidity, non-condensing	14°F -113°F (-10°C - 40°C) at 10%-95% humidity, non-condensing
Storage Temperature	-40°F -140°F (-40°C - 60°C) at 10%-95% humidity, non-condensing	-40° -140°F (-40°C - 60°C) at 10%-95% humidity, non-condensing	-40°F -140°F (-40°C -60°C) at 10%-95% humidity, non-condensing
Base Dimensions	9 in x 9 in 230 mm x 230 mm	12 in x 12in 305 mm x 305 mm	12 in x 12 in 305 mm x 305 mm
Terminal Enclosure Construction	Stainless Steel (304)	Stainless Steel (304)	Stainless Steel (304)
Platter/Base Construction	Stainless Steel (304)	Stainless Steel (304)	Stainless Steel (304)
Load Cell Capacity	11 kg/25 lb	22 kg/50 lb	45 kg/100 lb
Load Cell Cable Length	2 m/7 ft	2 m/7 ft	2 m/7 ft

Model	SW60/SW60K	SW75/SW75K	SW150/SW150K
Max. Capacity	60 kg/120 lb	75 kg/150 lb	150 kg/300 lb
Min. Grad. (eMIN)	0.01 kg/0.02 lb	0.01 kg/0.02 lb	0.02 kg/0.05 lb
Max. Divisions (nMAX)	5000d	5000d	5000d
Recommended Build	50 x 0.01 kg 100 x 0.02 lb	50 x 0.01 kg 100 x 0.02 lb	100 x 0.02 kg 250 x 0.05 lb
Operating Temperature	14°F -113°F (-10°C -40°C) at 10%-95% humidity, non-condensing	14°F -113°F (-10°C - 40°C) at 10% - 95% humidity, non-condensing	14°F -113°F (-10°C - 40°C) at 10% - 95% humidity, non-condensing
Storage Temperature	-40°F -140°F (-40°C - 60°C) at 10%-95% humidity, non-condensing	-40°F -140°F (-40°C - 60°C) at 10%-95% humidity, non-condensing	-40° -140°F (-40°C - 60°C) at 10%-95% humidity, non-condensing
Base Dimensions	12 in x 12 in 305 mm x 305 mm	18 in x 18 in 455 mm x 455 mm	18 in x 18 in 455 mm x 455 mm
Terminal Enclosure Construction	Stainless Steel (304)	Stainless Steel (304)	Stainless Steel (304)
Platter/Base Construction	Stainless Steel (304)	Stainless Steel (304)	Stainless Steel (304)
Load Cell Capacity	100 kg/220 lb	100 kg/220 lb	200 kg/440 lb
Load Cell Cable Length	2 m/7 ft	3 m/10 ft	3 m/10 ft

Appendix 2: Standards Compliance

UL and cUL Listing

The SpeedWeigh and SpeedWeigh Plus scales have been tested and comply with UL1950 and carries the UL and cUL labels.

CSA Certification

The SpeedWeigh and SpeedWeigh Plus scales meet CSA standard c22.2 No 143-1975, Office Machines.

Weights and Measures Approval

USA NTEP COC. The SpeedWeigh and SpeedWeigh Plus scales meet or exceed requirements for Class III devices. The Certificate of Conformance number 98-110 was issued under the National Type Evaluation Program of the National Conformance of Weights and Measures.

Canada Notice of Approval. A Notice of Approval AM-5260 has been issued by Canadian Weights and Measures for the SpeedWeigh and SpeedWeigh Plus scales.

Conducted and Radiated Emissions (RFI)

The SpeedWeigh and SpeedWeigh Plus scales meet or exceed FCC docket 80-284 for conducted and radiated emissions requirements as a Class A digital device.

Radio Frequency Interference Susceptibility

The SpeedWeigh and SpeedWeigh Plus scales meet 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.

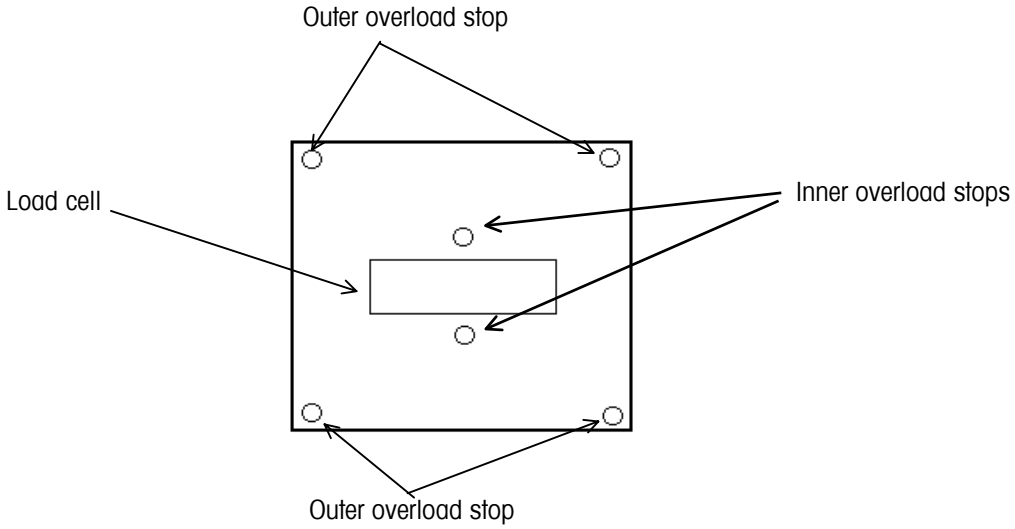
RFI Susceptibility			
Radio Interference Frequency	U.S.A. Field Strength	Canadian Transmitted Power at Specified Distance	EC Field Strength
27 MHz	3 volts/meter	4 Watts at 2 meters	N/A
144 MHz	N/A	N/A	N/A
169 MHz	3 volts/meter	N/A	N/A
464 MHz	3 volts/meter	4 Watts at 2 meters	N/A
27-1000 MHz	N/A	N/A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

AC Power Line Voltage Variation

The SpeedWeigh and SpeedWeigh Plus scales meet 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

Appendix 3: Overload Gap and Torque Settings



Model	Location	Overload gap +/- .003"/0.07 mm	LC Bolt Torque
SW06/SW06K	Outer	0.065 in / 1.65 mm	150 in•lb
	Inner	0.016 in / 0.41 mm	217 N•m
SW15/SW15K	Outer	0.058 in / 1.47 mm	150 in•lb
	Inner	0.023 in / 0.58 mm	217 N•m
SW30/SW30K	Outer	0.108 in / 2.74 mm	150 in•lb
	Inner	0.038 in / 0.97 mm	217 n•m
SW60/SW60K	Outer	0.181 in / 4.6 mm	150 in•lb
	Inner	0.064 in /1.63 mm	217 N•m
SW75/SW75K	Outer	0.115 in / 2.92 mm	125 in•lb
	Inner	0.025 in / 0.64 mm	180 N•m
SW150/SW150K	Outer	0.210 in / 5.33 mm	125 in•lb
	Inner	0.050 in / 1.27 mm	180 N•m

Appendix 4: Shipping and Default Settings

SpeedWeigh Scale 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)
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

Program Sub-Blocks	Default Settings (F6.5, X=1)	Domestic Configuration	Default Settings (F6.5, X=2)	Export Configuration	Description
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)
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

SpeedWeigh Plus Scale 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 Value
F2.1	0	2	0	0	Alternate units (0=none, 2=kg)
F2.3.1	2	2	2	2	Push Button and Keyboard Tare enabled
F2.3.2	0	0	1	1	Tare interlock (0=disabled, 1=enabled)
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=disabled,1=0.5d, 2=1.0d)
F2.4.3	0	1	0	1	AZM in net mode (0=disabled, 1=enabled)
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 ± 1.0 d.
F2.5.1	0	0	0	0	Blanking disabled
F2.6	2.0	4.0	4.0	4.0	Filter corner frequency (Hz)
F2.6.1	0	1	0	1	Noise filter (0=disabled, 1=enabled)
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 = displayed weight only
F3.2.2	0	0	0	0	No expanded print
F3.2.3	23400	23400	23400	23400	Print Fields
F3.2.4	1	1	1	1	Print "G" in Gross Weight Field

Program Sub-Blocks	Default Settings (F6.5, X=1)	Domestic Configuration	Default Settings (F6.5, X=2)	Export Configuration	Description
F3.2.5	0	0	0	0	Print "T" as Tare Descriptor
F3.3	0.0	0.0	0.0	0.0	Display hold (0.0 sec)
F3.4	0	0	0	0	Autoprint Disabled
F4.1	1	2	1	2	Discrete input: 1=Print , 2=Tare
F5.1	0	2	0	2	0=Indicator mode, 2=Over/Under mode
F5.2	0	0	0	0	No Target edits using Mem key
F5.7	0	0	0	0	Stored target weight disabled.
F5.7.1	0	1	0	1	Zone weight: 0=Increments, 1=% of Target.
F5.7.2	0	0	0	0	Display is in weight units
F5.7.3	1	0	1	0	Weight diff from target (0=disabled, 1=enabled)
F5.7.4	1	1	1	1	"Under" output (0=always on, 1=off at zero)
F5.8					Quickset' zone editing
o	0	4.0	0	4.0	High weight zone (%)
h	0	2.0	0	2.0	Accept high weight zone (%)
l	0	2.0	0	2.0	Accept low weight zone (%)
u	0	4.0	0	4.0	Low weight zone (%)
F5.9	1	1	1	1	Enable weight display and status lights
F6.x	0	0	0	0	Normal Display, No Diagnostic mode
F9.1	0	0	0	0	Time disabled
F9.2	0	0	0	0	Date disabled
F10.1	00	00	00	00	ID=00

Appendix 5: Advanced Operator Functions

Instructions for using the SpeedWeigh and SpeedWeigh Plus scales for normal weighing and checkweighing are included on the SpeedWeigh/SpeedWeigh Plus Operating Instructions Card. An overview of the advanced functions are provided on the following pages.

SpeedWeigh (6-key) Advanced User Functions

The SpeedWeigh scale has a simplified user interface with only 6 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 SpeedWeigh Scale (6-key)	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 SpeedWeigh scale can be configured with one or two stored targets that can be recalled for use by the operator at any time. Note that the target values are always entered as actual weight in the primary (calibration) units. Use the following procedure to recall stored targets.

Recalling Stored Targets on the SpeedWeigh Scale (6-key)	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 SpeedWeigh Scale (6-key)	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 = 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 SpeedWeigh Scale (6-key)	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 5.2 0 `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 5.3 0 0  o 0 5.3 5 `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 5.2 5 0  h 0 5.2 0 `0	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 5.1 0 0  L 0 5.1 5 `0	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 5.1 5 0  u 0 5.1 5 `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 (SP0) are always entered as the difference from the target value. In the above example, the Over zone and the Low zone would have been entered as 0.150, and the High zone and Under zone would have been entered as 0.050.

SpeedWeigh Plus (18-key) Advanced User Functions

The SpeedWeigh Plus 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 SpeedWeigh Plus 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. For example, an SW30 is configured as 25 x 0.005 kg. These numeric entries are allowed for Tare and Target values: 6.1, 6.12, 6.125. These numeric entries are NOT allowed: 6.122, 6.123, 6.129. The 0.00x position must have a 0 or 5 in it for the given scale build.

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 SpeedWeigh Plus 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 SpeedWeigh Plus scale can be configured with ten 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 SpeedWeigh Plus 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 SpeedWeigh Plus 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 to the preceding procedure to enter edit mode. 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.

Editing Zones on the SpeedWeigh Plus 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 5.2 0 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 5.3 0 0   o 0 5.3 5 `0	>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 5.2 5 0 h 0 5.3 0 0′	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 5.1 0 0   l 0 5.1 `5 0	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 5.1 5 0 u 0 5.0 0 0	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 (SP0), are always entered as the difference from the target value. In the above example, the Over zone and the Low zone would have been entered as 0.150, and the High zone and Under zone would have been entered as 0.050.

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 SpeedWeigh/SpeedWeigh Plus 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
	XXXXXX	0	1	0
	XXXXX.X	0	1	1
	XXXX.XX	1	0	0
	XXX.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
	XXXXXX	0	1	0
	XXXXX.X	0	1	1
	XXXX.XX	1	0	0
	XXX.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 new 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 SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus scale.

Command Formats

Each command received by the SpeedWeigh/SpeedWeigh Plus scale via the data interface is acknowledged by a response of the SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus scale.

Response Formats

All responses sent by the SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus 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.

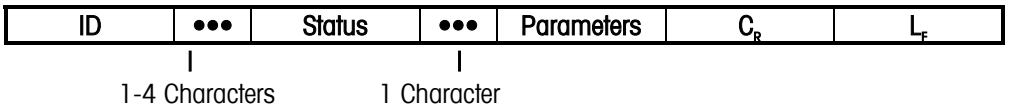
Example

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--Response identification.
- _--Space (ASCII 32 dec.)
- Status--Status of the SpeedWeigh/SpeedWeigh Plus scale, see description of the commands and responses.
- Parameters--Command-dependent response code.
- Unit--Weight unit displayed after the SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus scale supports the following two error ID:.

- ES--Syntax error
  The SpeedWeigh 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 SpeedWeigh scale to a command. The response is the acknowledgment that the SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus scale. These include:

- I1 Inquiry of MT-SICS level and MT-SICS version
- I2 Inquiry of SpeedWeigh/SpeedWeigh Plus scale data
- I3 Inquiry of SpeedWeigh/SpeedWeigh Plus 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--SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus scale.

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

- 0 Level 0 implemented in SpeedWeigh/SpeedWeigh Plus scale
- 2.10 Level 0, version 2.10 in SpeedWeigh/SpeedWeigh Plus scale
- "" Level 1 not supported in SpeedWeigh/SpeedWeigh Plus scale
- "" Level 2 not supported in SpeedWeigh/SpeedWeigh Plus scale
- "" Level 3 not supported in SpeedWeigh/SpeedWeigh Plus 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"

- SpeedWeigh scale data as "text".

Example

Command I2--Inquiry of scale type.

Response--I2_A_"SpeedWeigh_Analog_ _ _ _ _ _100_lb"

- This response shows the SpeedWeigh/SpeedWeigh Plus 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"

- SpeedWeigh SW version as "text".

Example

Command I3--Inquiry of scale SW version.

Response--I3_A_"0.00_0.00_A148912R"

- 0.00--SpeedWeigh/SpeedWeigh Plus scale has no operating system
- 0.00--Always this value for SpeedWeigh/SpeedWeigh Plus scale
- A148912R--SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus 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_+ --SpeedWeigh/SpeedWeigh Plus in overcapacity range.

S_- --SpeedWeigh/SpeedWeigh Plus in undercapacity 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 2 seconds for the SpeedWeigh/SpeedWeigh Plus 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_+ --SpeedWeigh/SpeedWeigh Plus in overcapacity range.
- S_- --SpeedWeigh/SpeedWeigh Plus in undercapacity 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 SpeedWeigh/SpeedWeigh Plus scale stability.

Responses:

- S_S_WeightValue_Unit--Stable weight value.
- S_D_WeightValue_Unit--Dynamic weight value.
- S_+ --SpeedWeigh/SpeedWeigh Plus in overcapacity range.

S_- --SpeedWeigh/SpeedWeigh Plus in undercapacity 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 SpeedWeigh sends stable or dynamic weight values at intervals.

Comments

- SIR is overwritten by the commands S, SI, SIR, @ and thus canceled.
- The SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus scale.

10. @--RESET

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

Response:

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

Example

Command @--Reset

Response--I4_A_"0000000000"--SpeedWeigh/SpeedWeigh Plus 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.

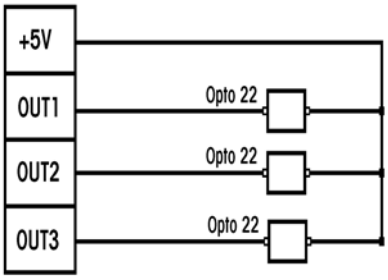
Appendix 9: Discrete Outputs

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 8mADC 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 SpeedWeigh/SpeedWeigh Plus 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 SpeedWeigh/SpeedWeigh Plus scale operating in the over\under mode (F5.1 set to 2) the outputs react as follows:

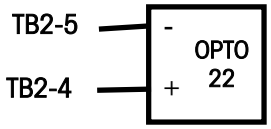
- Out 1 is at Logic 0 when the weight is classified as UNDER.
- Out 2 is at Logic 0 when the weight is classified as ACCEPT Light, ACCEPT, and ACCEPT Heavy.
- Out 3 is at Logic 0 when weight is classified as OVER.
- At all other times the outputs will be at a Logic 1.

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, 115mADC maximum
5	Out 1, rated at 8mADC (Under target)
6	Out 2, rated at 8mADC (Accept)
7	Out 3, rated at 8mADC (Over target)
8	GND
9	Input

Suggested Solid State Relay Connections using Out 1 as an example



Weight is in:	TB2-5	TB2-6	TB2-7	TB2-5	TB2-6	TB2-7
OVER weight zone	OFF	OFF	ON	OFF	OFF	ON
HIGH weight zone	OFF	ON	ON	N/A	N/A	N/A
ACCEPT weight zone	OFF	ON	OFF	OFF	ON	OFF
LOW weight zone	ON	ON	OFF	N/A	N/A	N/A
UNDER weight zone	On	OFF	OFF	ON	OFF	OFF
	5-Zone Configuration			3-Zone Configuration		

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 FIGURE*	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	lb
035	GERMANY	230/50	B	kg

FINISH CODE	DESTINATION MARKET	VOLTAGE & FREQUENCY	PWR PLUG FIGURE*	WEIGHT UNIT
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
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

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

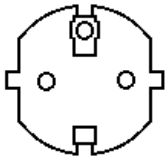
*See Power Cord Configurations that follow in Appendix 11.

**Not for use in new designs

Appendix 11: Power Cord Configurations

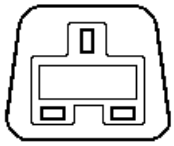
Configuration A

U.S./Canada



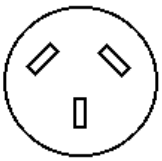
Configuration B

"SCHUKO" Continental Europe (CEE7)



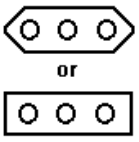
Configuration C

United Kingdom
Fuse is required.



Configuration D

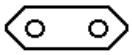
Australia



Configuration E

Italy and Chile

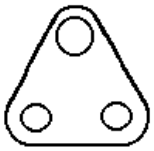
Old style Italy. Use SCHUKO (B) for new designs.



Configuration F

Europlug (CEE7/16)

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



Configuration G

India (Old British)

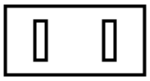
Configuration H

Israel

Configuration I

Japan (J1S 8303 spec)

Configuration J



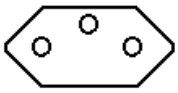
Flat Blade – Undergrounded
Use for grounded equipment only if separate ground connection is provided.

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

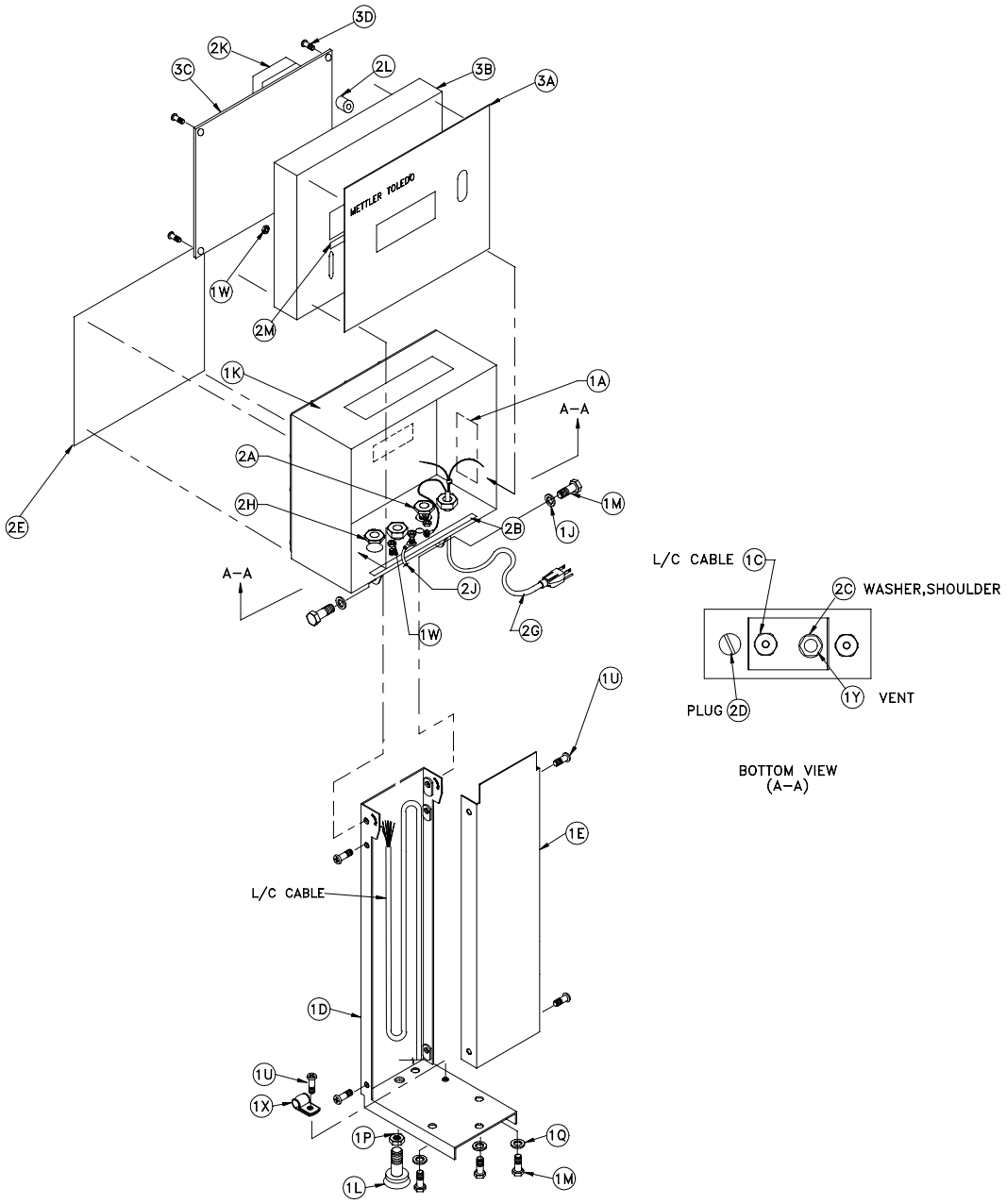
The following table gives GEO Codes (gravity factor adjustment values) that can be used if you need to relocate the SpeedWeigh or SpeedWeigh Plus scale to a location other than the location where it was originally calibrated.

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

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
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
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

6 Parts and Accessories

SpeedWeigh/ SpeedWeigh Plus Terminal

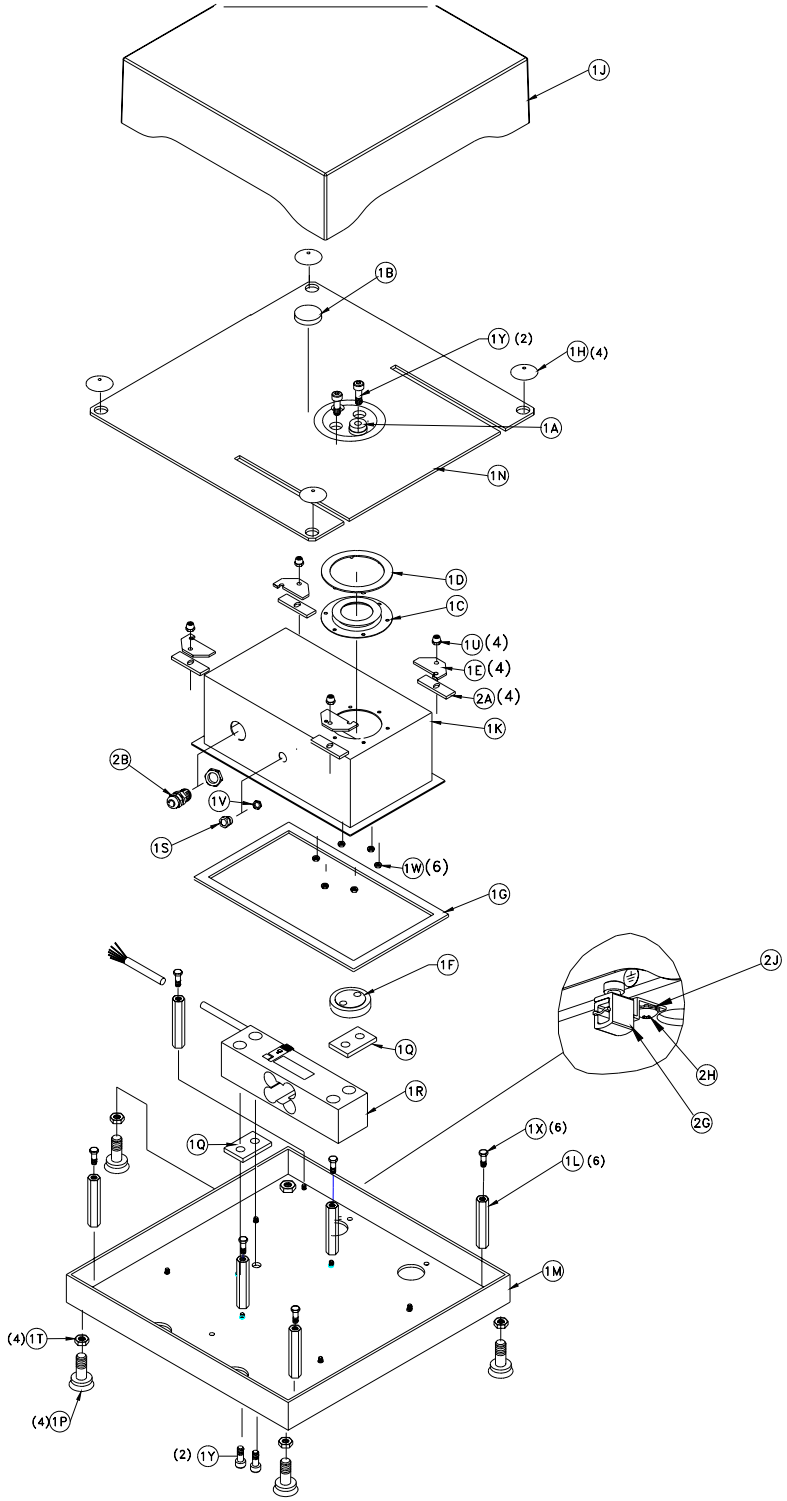


Parts List – SpeedWeigh/SpeedWeigh Plus Terminal Assembly			
Ref. #	**Part Number**	**Description**	**Qty**
1A	(*)15544000A	Label, Shock Warning	1
1C	(*)12901800A	Bushing, Cord with nut	1
1D	(*)15517000A	Tower Weldment, Extend (19")	1
	(*)15538400A	Tower Weldment (14")	
	(*)14826100A**	Bracket, Wall Mount**	
1E	(*)15521500A	Cover Extended Tower (19")	1
	(*)15538500A	Cover Tower (14")	
1J	R0520100A	Washer, Nylon	2
1K	(*)14829300A	Enclosure, Back	1
1L	(*)12900400A	Foot, Adjustable	1
1M	R02072020	Screw, 1/4 - 20 x 0.375	5
1P	R0365600A	Nut, Hex, 5/16 - 18	1
1Q	R0372700A	Lock Washer, 1/ 4 IT SS	3
1U	R0377900A	Screw, 8 - 32 x 0.25	5
1W	R0519600A	Nut, M4	4
1X	(*)12476400A	Clamp, Cable	1
1Y	(*)15473000A	Vent, Breather	1
2A	R0542300A	Nut, 1/8-27 NPT	1
2B	(*)14828700A	Label, Controller I/O	1
2C	(*)15709000A	Washer, Shoulder, Nylon	1
2D	(*)14724000A	Hole Plug, PG11	1
2E	(*) 15692800A	SpeedWeigh Logo Label	1
2G	(*)15625200A	Harness, AC Pwr, N. America (Yellow)	1
	(*)15473200A	Harness, AC Pwr, Australia (Black)	
	(*)15473300A	Harness, AC Pwr, Europe (Black)	
	(*)15549900A	Harness, AC Pwr, Chile (Black)	
	(*)15557000A	Harness, AC Pwr, Africa (Black)	
	(*)15606200A	Harness, AC Pwr, UK (Black)	
	(*)15616700A	Harness, AC Pwr, Switzerland (Black)	

Parts List – SpeedWeigh/SpeedWeigh Plus Terminal Assembly			
Ref. #	**Part Number**	**Description**	**Qty**
	(*)15651300A	Harness, AC Pwr, Japan (Black)	
2H	(*)14724100A	Hex Nut, PG11 Nylon	1
2J	(*)15048200A	Tension Cable	1
2K	(*)14829600A	Pad, Transformer	1
2L	(*)14830500A	Bumper, 44 x .50 Neoprene	1
2M	(*)15667600A	Plate, Legend (Domestic)	1
	(*)15667500A	Plate, Legend (Export)	
3A	(*)15699900A	Keyboard, SW, 6-Key	1
	(*)15700000A	Keyboard, SW, Enhanced (SWXXK only)	
3B	(*)14829400A	Front Cover	1
3C	(*)15700400A	PCB Assembly, Main, 6-Key	1
	(*)15493700A	PCB Assembly, Main, Enhanced (SWXXK only)	1
3D	R0511100A	Screw, M4x10	4

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

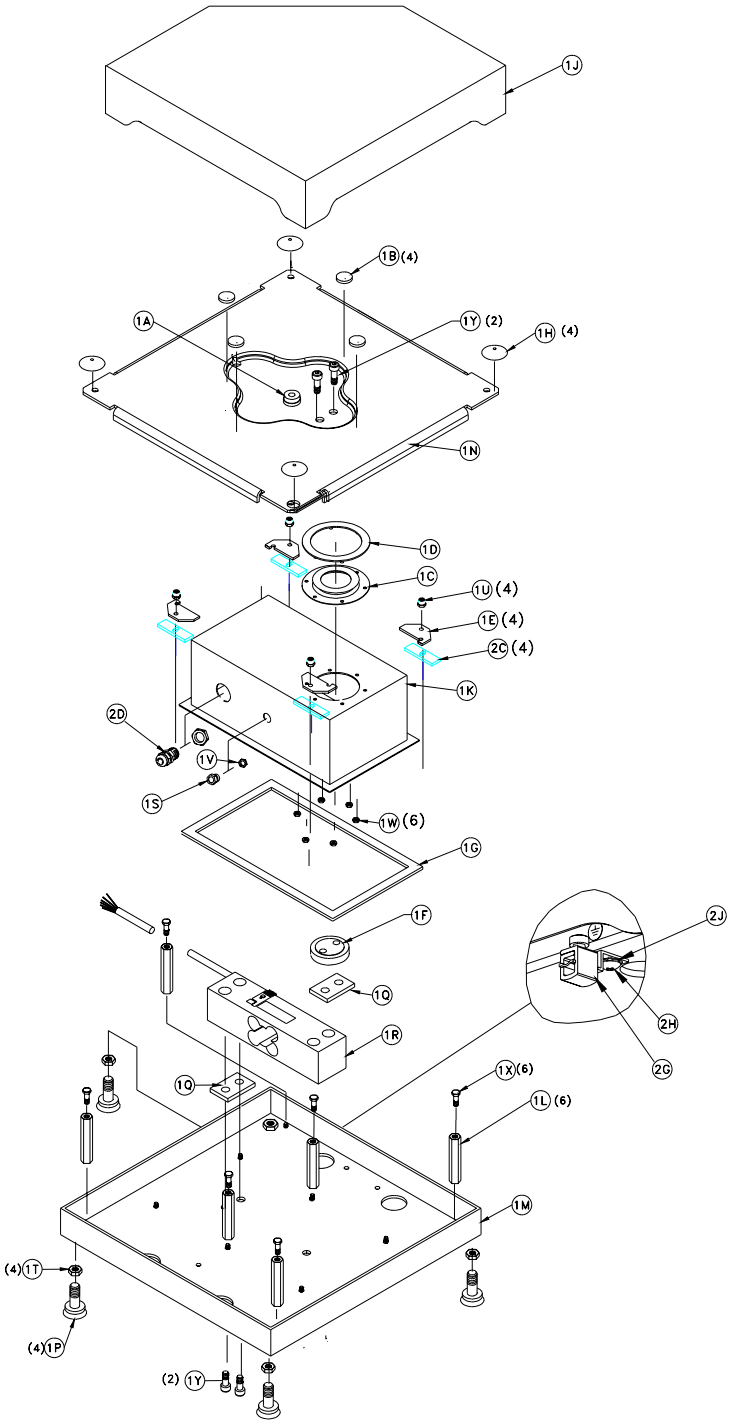
SpeedWeigh
Small Base
SW06/SW06K



Parts List – SpeedWeigh/SpeedWeigh Plus Small Base Assembly			
Ref. #	**Part Number**	**Description**	**Qty**
1A	(*)10268900A	Level	1
1B	(*) 10839700A	Pad, Damper	1
1C	(*)13937600A	Boot, Load Cell	1
1D	(*)15330100A	Clamp, Boot Ring	1
1E	(*)15219600A	Bracket, Hold Down	4
1F	(*)15349800A	Adaptor Block, Boot	1
1G	(*)15219700A	Gasket, L/C Enclosure	1
1H	(*)14044100A	Pad, Bumper	4
1J	(*)15185700A	Platter, 9″, No LIP	1
	(*)15344800A	Platter, 9″, with LIP	
1K	(*)15185300A	Enclosure, L/C	1
1L	(*)15185500A	Standoff, 10-32	6
1M	(*)15186700A	Base Weldment, 9″	1
1N	(*)15186800A	Sub-platter, 9″	1
1P	(*)12900400A	Foot, Adjusting, 5/16 – 18	4
1Q	(*)14647700A	Spacer, L/C, 1.5 x 1.0	2
1R	(*)15187200A	L/C Assy, Qual 11 kg (SW06)	1
1S	(*)15473000A	Vent, Breather	1
1T	R0365600A	Nut, Hex 5/16 – 18	4
1U	R0529100A	Acorn Nut, 10-32	4
1V	R0542300A	Nut, 1/8 – Pipe	1
1W	R0509500A	Nut, Lock 4-40	6
1X	R0518100A	Screw, 10 – 32 x 5/8 trimmed	6
1Y	R0540800A	Screw M8 x 25	4
2A	(*)15419800A	Spacer, 1.50 x 43	4
2B	(*)12901800A	Grip Busing	1
2G, 2H, 2J	**	CSA Grounding Hardware**	0
Not Shown	(*)15352000A	Wrench, 1/2, 7/16, 9/16	1

(*)May have a letter prefix ** Not included with this model.

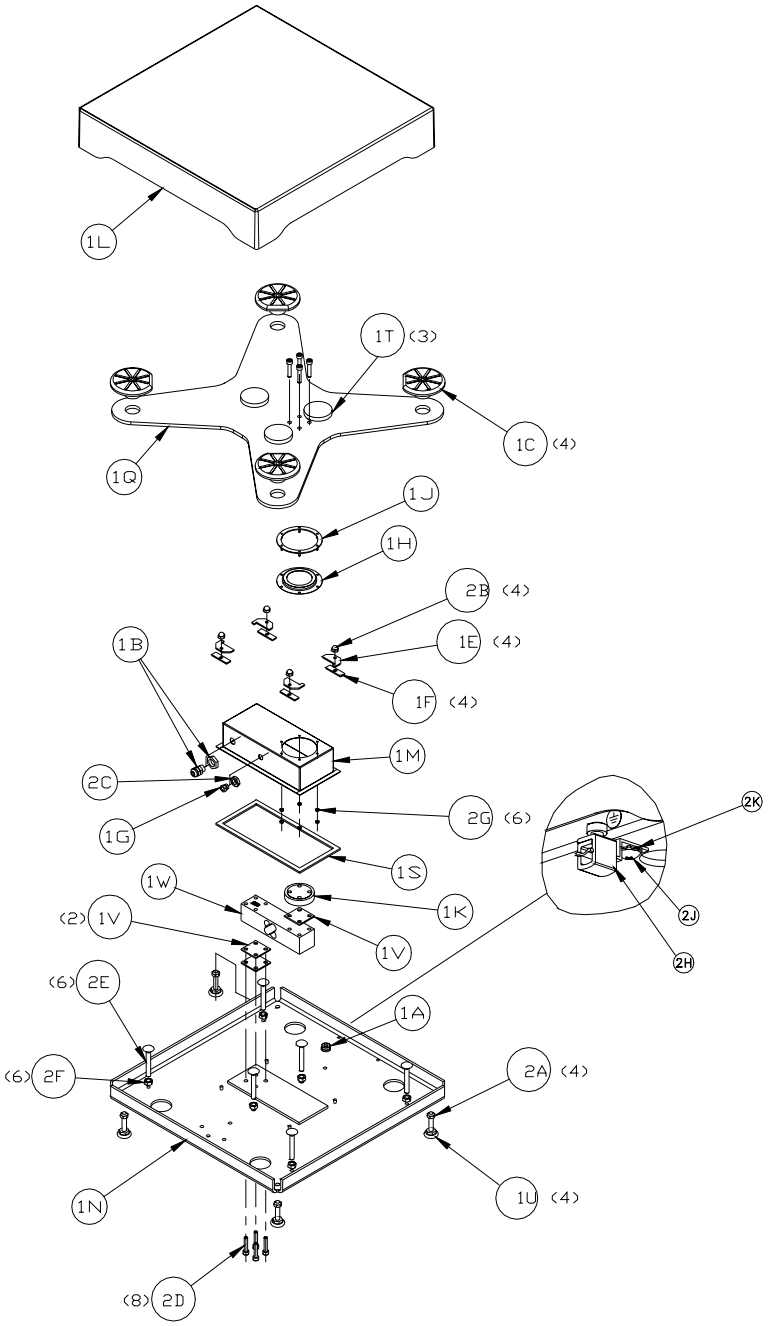
SpeedWeigh
Medium Base
SW15/SW15K, SW30/SW30K, SW60/SW60K



Parts List – SpeedWeigh/SpeedWeigh Plus Medium Base Assembly			
Ref. #	**Part Number**	**Description**	**Qty**
1A	(*)10268900A	Level	1
1B	(*) 10839700A	Foot, Polyurethane, Adhesive Back	4
1C	(*)13937600A	Boot, Load Cell	1
1D	(*)15330100A	Clamp, Boot Ring	1
1E	(*)15219600A	Bracket, Hold Down	4
1F	(*)15349800A	Adaptor Block, Boot	1
1G	(*)15219700A	Gasket, L/C Enclosure	1
1H	(*)14044100A	Pad, Bumper	4
1J	(*)15185200A	Platter, 12″, No LIP	1
	(*)15348600A	Platter, 12″, with LIP	
1K	(*)15185300A	Enclosure, Load cell	1
1L	(*)15185500A	Standoff, 10-32	6
1M	(*)15187000A	Base Weldment, 12″	1
1N	(*)15219200A	Sub-platter, 12″	1
1P	(*)12900400A	Foot, Adjusting 5/16 – 18	4
1Q	(*)14647700A	Spacer, L/C, 1.5 x 1.0	2
1R	(*)14612300A	L/C Assy, Qual 22 kg (SW15)	1
	(*)14611500A	L/C Assy, Qual 45 kg (SW30)	
	(*)14611900A	L/C Assy, Qual 100 kg (SW60)	
1S	(*)15473000A	Vent, Breather	1
1T	R0365600A	Nut, Hex 5/16 – 18	4
1U	R0529100A	Acorn Nut, 10-32	4
1V	R0542300A	Nut, 1/8 – Pipe	1
1W	R0509500A	Nut, Lock 4-40	6
1X	R0518100A	Screw, 10 – 32 x 5/8 trimmed	6
1Y	R0540800A	Screw M8 x 25	4
2C	(*)15419800A	Spacer, 1.50 x .43	4
2D	(*)12901800A	Grip Bushing with nut	1
2G, 2H, 2J	**	CSA Grounding Hardware**	0
Not Shown	(*)15352000A	Wrench, 1/2, 7/16, 9/16	1

(*)May have a letter prefix ** Not included with this model.

SpeedWeigh
Large Base
SW75/SW75K and SW15060/SW150K



Parts List – SpeedWeigh/SpeedWeigh Plus Large Base Assembly			
Ref. #	Part Number	Description	Qty
1A	(*)10268900A	Level	1
1B	(*)12901800A	Grip Bushing	1
1C	(*)15083900A	Platter Pad, Corner	4
1E	(*)15219600A	Bracket, Hold Down	4
1F	(*)15419800A	Spacer, 1.5 x .43	4
1G	(*)15473000A	Vent, Breather	1
1H	(*)15674700A	Boot, L/C. 18 x 18 SW	1
1J	(*)15674800A	Clamp, Ring 18 x 18 SW	1
1K	(*)15674900A	Adaptor Block Boot 18 x 18 SW	1
1L	(*)15675100A	Platter w/ lip, 18 x 18 (SW)	1
1L	(*)15675000A	Platter, no lip, 18 x 18 (WB)	1
1M	(*)15675200A	Enclosure, L/C, 18 x 18	1
1N	(*)15675300A	Base, 18 x 18	1
1Q	(*)15675400A	Sub platter w/reinforcement	1
1S	(*)15676000A	Gasket, L/C Enclosure, 18 x 18	1
1T	(*)15676100A	Pad, Platter support	3
1U	(*)12900400A	Foot, Adjusting 5/16 – 18	4
1V	(*)14609700A	Spacer, 4 hole load cell	3
1W	(*)14654600A	L/C, 100 kg, QUAL (SW75)	1
1W	(*)14639000A	L/C, 200 kg, QUAL (SW150)	1
2A	R0365600A	Nut, Hex, Jam 5/16 – 18	4
2B	R0529100A	Acorn Nut 10 – 32	4
2C	R0542300A	Nut, Hex, 1/8 – Pipe	1
2D	R0511000A	Screw, M6 x 35	8
2E	R0548100A	Bolt, Carriage, 5/16 – 18	6
2F	R0233700A	Nut, Hex, 5/16 – 18	6
2G	R0549500A	Nut, Hex, M3 w/insert	6
2H, 2J, 2K	**	CSA Grounding Hardware	0

(*)May have a letter prefix ** Not included with this model.

NOTES

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C15339000A

(7-02).02