Avery Weigh-Tronix

User Manual

Model: ZM 110

Bench Scale

ZM110_u_en_501860.docx

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Manual revision history

Current Issue	Date Created	Details of Changes
Draft	Jan. 2019	New

Please be aware this product contains a lead acid battery which MUST be removed and disposed of safely prior to any disposal of the scale.

1. <u>General Information and Warnings</u>

1.1. **FCC Declarations of Compliance** - FCC Déclaration de conformité

United States

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

Canada

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans le Règlement sur le brouillage radioélectrique edicté par le ministère des Communications du Canada.Interference Regulations of the Canadian Department of Communications.

1.2. Training - *Formation*

Do not attempt to operate or complete any procedure on a machine unless you have received the appropriate training or read the instruction books.

Ne pas tenter d'utiliser la machine ou lui appliquer une quelconque procédure sans avoir reçu une formation adaptée ou lu les manuels d'instruction.

CAUTION! Risk of electrical shock. Refer to qualified service personnel for service.

ATTENTION! Risque de choc électrique. Confier la réparation de l'appareil à un personnel qualifié.

1.3. Safe Battery Disposal - *Élimination sécurisée des batteries*

Please be aware this product contains a lead acid battery which MUST be removed and disposed of safely prior to any disposal of the scale.

This battery can be easily accessed by removing the battery cover found on the underside of the indicator.

CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

ATTENTION! Il y a danger d'explosion s'il y a remplacement incorrect de la batterie, remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur.

1.4. Routine Maintenance - *Entretien de routine*

IMPORTANT: This equipment must be routinely checked for proper operation and calibration. Application and usage will determine the frequency of calibration required for safe operation.

PRUDENCE: Le fonctionnement et l'étalonnage de cet équipement doivent être vérifiés régulièrement. Les applications et l'utilisation déterminent la fréquence de l'étalonnage requis pour une utilisation en toute sécurité.

1.5. Cleaning of Scale - *Nettoyage de la machine*

Do - *Ce qu'il faut faire*	Do NOT - *Ce qu'il ne faut pas faire*
Wipe down the outside of product with a clean cloth, moistened with water and a small amount of mild detergent cleaning fluid. *Essuyer la partie externe des produits standard à l'aide d'un chiffon propre légèrement imprégné d'eau et d'une petite quantité de détergent doux.*	Use harsh abrasives, solvents, scouring cleaners or alkaline cleaning solutions. *Utiliser des produits abrasifs, des solvants, des produits de récurage ou des solutions de nettoyage alcalines.*
Spray on to the cloth when cleaning and not directly onto the indicator area. *Pulvériser tout produit de nettoyage spécifique sur le chiffon.*	Do not attempt to clean the inside of the machine. *Tenter de nettoyer l'intérieur de la machine.*
	Spray any liquid directly on to the display windows. *Pulvériser des liquides directement sur les écrans d'affichage.*

1.6. Sharp Objects - *Objets tranchants*

Do not use any sharp objects such as screwdrivers or long fingernails to operate the keys.

Ne pas appuyer sur les touches avec des objets tranchants tels que des tournevis ou même des ongles longs.

2. <u>Introduction</u>

The ZM110 is a general purpose indicator ideal for connecting to most bench and floor scales.
This indicator can easily be desk or pole mounted and comes with an AC power adaptor along with a rechargeable lead acid battery to allow the scale to be used in applications where power outlets are limited.
This ZM110 indicator comes standard with a range of easy to operate General weighing functions along with basic Checkweighing and Counting.

2.1 Unpacking

Carefully take the scale out of its package, make it sure it's not damaged and all accessories are included.

- Remove the scale from the carton;

- Remove the protective covering;

- Inspect the scale and indicator/display for damage;

- Make sure all components are included:

    1. ZM110 Indicator

    2. Adaptor plus plug adaptors

    3. Platform, column and brackets

    4. Product manual

2.2. General Installation Guidelines

To get the best performance from the scale, place the ZM110 in a location that will not degrade its accuracy.

- Avoid extremes of temperature. Try to avoid placing the scale in direct sunlight or near air vents;
- Place the scale on a level flat surface. Do not place the scale near vibrating machinery;
- Avoid unstable power sources. Do not use near welding equipment or other large users of electricity.

2.2.1 Levelling the Scale

Level the scale using the four adjustable feet on the bottom of the scale, Figure 1, and the bubble level near the base of the column, Figure 2.

(!) *Always check the level prior to using scale.*
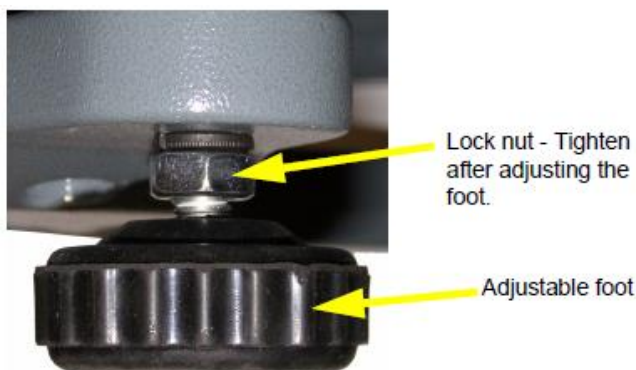
Fig. 1 Adjust scale feet to level the scale

Lock nut - Tighten after adjusting the foot.

Adjustable foot

Fig. 2 Adjust feet until bubble is centered in the black circle

2.2.2 Scale Installation

1. Attach the support column to the bracket at the back of the scale base using the three mounting screws. Use a 3mm hex (Allen) key to tighten the screws. See Figure 3.
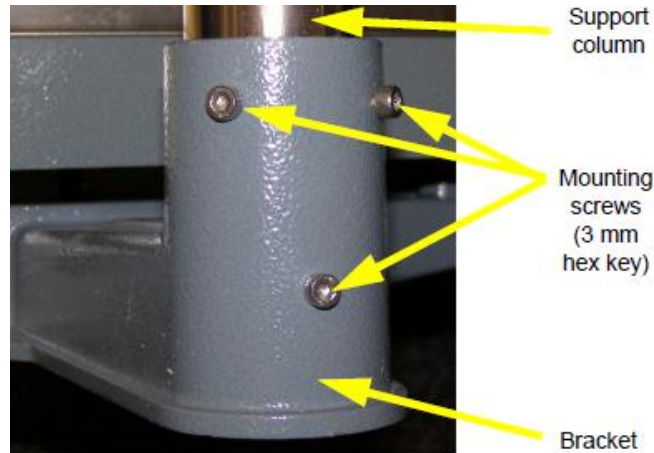
Fig. 3 Insert column into bracket and secure with three screws

2. Place the indicator on the top bracket as shown in Figure 4 and slide it down until it snaps into the final position. Loosen the adjustment knob shown in Figure 4 and adjust the indicator's angle for best viewing of the display, then tighten the knob.

Fig. 4 Slide indicator head onto column bracket

3. The cable from the base to the indicator is run through the column and out through the plastic bracket at the top when you unpack the scale. Make sure the connector is free of obstructions, i.e. packing foam, and plug the cable into the connector, as shown in Figure 5. Tighten the threaded collar.

4. Attach the AC power adapter to the connector on the back of the indicator. See Figure 5.
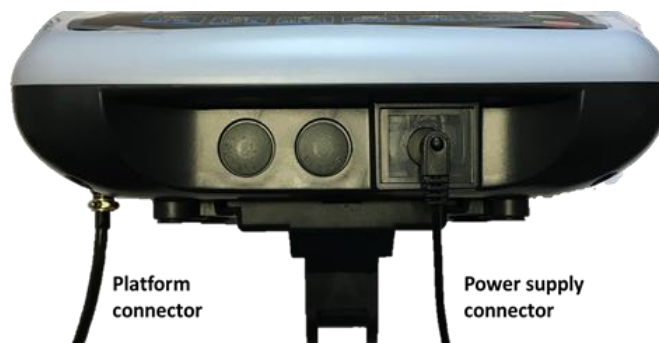
Fig. 5 Signal cable plugged into back of the indicator

2.3. Battery Operation

The ZM110 can be operated from a 6V 4Ahrs battery located inside the indicator or plugged into an acceptable power outlet. Battery life is approximately 107 hours with the backlight off.

When the battery needs charging this symbol, ⊞⊟ , appears in the upper left corner of the weight display. The scale will still operate for about 10 hours after which it will automatically switch off to protect the battery.

When the scale is turned on, the battery status is shown by:
- Green LED, battery is fully charged;
- Red LED, battery is low and needs to be recharged.

Do not use any other type of power adaptor other than the one supplied with the scale and verify that the AC power socket outlet is properly protected.

(!) *Charge the battery for at least 12 hours before using.*

2.4. Powering On/Off the Scale

With the platform connected and the battery fully charged or the charger plugged into the indicator, press the **ON** key to power ON the scale. A display test will be performed on power up and the scale will finish in normal weighing mode. Press the **OFF** key to turn the scale off.

2.5. Front Panel

The indicator has a sealed keypad and a 6 digit LCD display, 0.59" (40mm) high with white backlight. Only active annunciators are shown below.
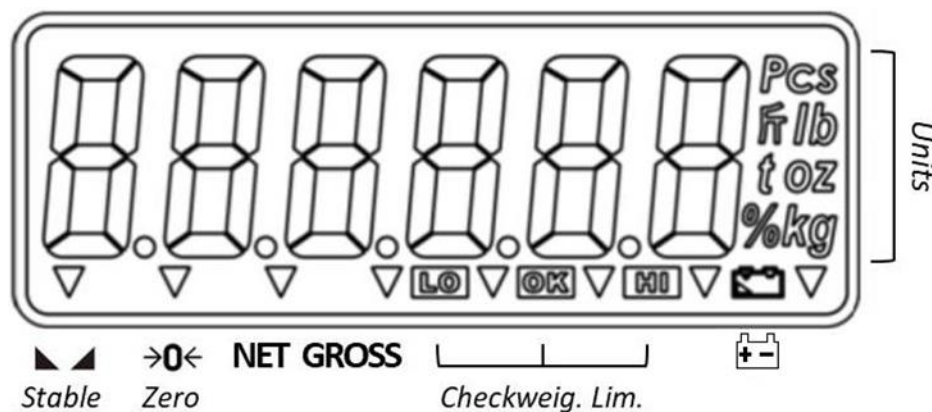
2.5.1. Display Annunciators

STABLE	Display reading is stable
→0← ZERO	Scale at Zero
NET	Indicates a Net weight
GROSS	Indicates a Gross weight
LO	Under acceptable weight range
OK	Within acceptable weight range
HI	Over acceptable weight range
⊞⊟	Battery needs to be recharged
kg lb g	Current unit of measure

2.5.2. Operation Keys

Keys are shown below along with their functions. Some keys have secondary functions.

OFF	Press and hold the **OFF** key to turn off the scale. "oFF" will be displayed for 2 seconds.
ON	Press the **ON** key to turn on the scale. The scale will run through a display test before displaying 0.000.
UNITS ESC	- Press the **UNITS** key to scroll through the active units of measure. - **In Menu mode**: It aborts a numeric entry and acts as an ESCAPE key (Esc).
→0← ZERO	- Press the **ZERO** key to zero the scale. Enabled only within the ±2% range of capacity. - **In Menu mode**: It acts as a left arrow key (◄).
TARE	- Press the **TARE** key to perform a tare function. - **In Menu mode**: It acts as a right arrow key (►).
SELECT	- Press the **SELECT** key to toggle between the operating modes enabled. - **In Menu mode**: It increments a numeric value (▲).
PRINT	- Press the **PRINT** key to send information to a peripheral device. - **In Menu mode**: It acts as an ENTER key to accept a displayed value or function (↵).

2.6. Error Codes

Err H	Initial zero too high (over FULL SCALE + 10%), for approved models [LF 6]
Err L	Initial zero too low (under FULL SCALE – 10%), for approved models [LF 6]
Err N	Unstable internal count, this may indicate the load cell or electronics are faulty
-OL-	Overload, full capacity +9d

3. <u>Scale Operation</u>

This section covers the scale operations of simple weighing, counting and hold. The steps for various kinds of weighing are explained in the following pages.

(!) *A warm-up time of 15 minutes is required to stabilize the measured values.*

3.1. Gross Weighing

To perform a gross weighment, follow these steps:

1. Power up the scale. Be sure the scale is displaying weight in the correct unit of measure. Press the **UNITS** key, if necessary to change the units of measure the scale is working in.

2. Zero the scale if necessary by pressing the **ZERO** key. If the weight change is within the Zero window area the display will show *0.000*. Decimal positions available may vary.

3. Place the item(s) to be weighed on the scale platform.

4. The display will now display the weight of the item that is on the weight platter

3.2. Tare Weighing

If you want to do NET weighing, such as weighing objects in a container, follow these steps:

1. Power up the scale. Be sure the scale is displaying weight in the correct unit of measure. Press the **UNITS** key, if necessary to change the units of measure the scale is working in.

2. Zero the scale if necessary by pressing the **ZERO** key. If the weight change is within the Zero window area the display will show *0.000*. Decimal positions available may vary.

3. Place the item to be tared on the scale platform.

4. Press the **TARE** key. If the container weight is outside the Zero window area the display will show *0.000* weight and the NET annunciator is illuminated. Decimal positions available may vary.

5. Place the item to be weighed on the scale platform. Net weight of the item is displayed. Press the **SELECT** key to choose the Gross or Net weight.

0.000 kg	5.000 kg	0.000 kg	10.000 kg	15.000 kg
▼ ▼	▼	▼ ▼	▼ ▼	▼ ▼
◣◢ →0←	◣◢	◣◢ NET	◣◢ NET	◣◢ GROSS
press ZERO	*add the box*	*press TARE*	*add the items*	*press SELECT*

Example: annunciators lit when tare weighing with 5 kg box and 10kg of items.

3.2.1. Clear a Tare

Remove any load from the scale and press the **TARE** key until that *0.000* is displayed. Decimal positions available may vary.

0.000 kg	-5.000 kg	0.000 kg
▼ ▼	▼ ▼	▼ ▼
◣◢ NET	◣◢ →0← NET	◣◢ →0←
	remove the container	*press TARE*
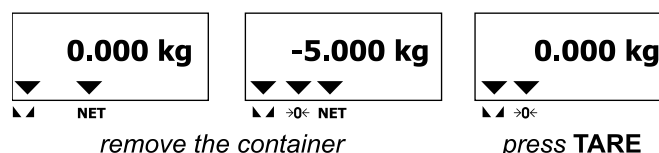
Example: annunciators lit when clearing a 5 kg cointaner tare

3.3. Counting Mode

The ZM110 Counting mode has been designed to allow the operator to easily carry out basic sampling and counting routines on this scale even if the scale is mainly used for general weighing applications. By pressing the **UNITS** key until *Pcs* is illuminated on the display, the scale can now be quickly used to sample parts ready for counting.

> ⊘ *For count accuracy, all items should be uniform in weight and UF-5 set as HOLD 0.*
> *It is recommended that the sample weight be a minimum of 0.1% of scale capacity.*

3.3.1. Sampling Parts Prior to Counting

Follow these steps to count items using the sampling method.

1. Power up and if necessary Zero the scale by pressing the **ZERO** key. If the weight change is within the Zero window area the display will show *0.000*. Decimal positions available may vary.
2. Press the **UNITS** key until **0 Pcs** is displayed.
3. Press **SELECT** to choose the sample size from: **10, 20, 50, 100 and 200**.
4. Manually count the sample of parts on to the scale to the agreed sample size and press the **PRINT** key to confirm.
5. Place the remaining parts onto the scale platform to Count Parts. The display will show the number of parts on the scale.

0.000 kg	0 Pcs	C 10 Pcs	10 Pcs	10 Pcs
▼ ▼	▼ ▼	▼	▼	▼
◣◢ →0←	◣◢ →0←	◣◢	◣◢	◣◢
press **ZERO**	*press* **UNITS**	*press* **SELECT**	*add 10 items*	*press* **PRINT**
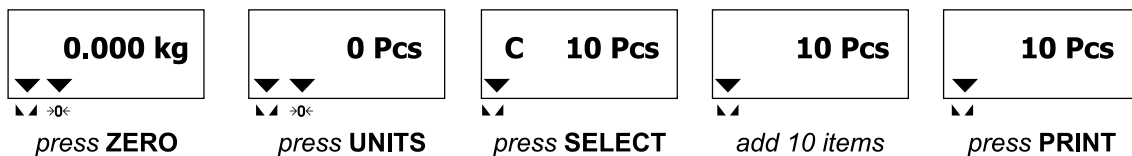
Example: annunciators lit at the steps: 1, 2, 3 and 4 when sample size 10 Pcs

Follow these steps to perform counting while using a tare:

i. After you have set the piece weight place the empty container on the empty scale and press the **TARE** key.
ii. The scale will Zero the display and illuminate the Net annunciator. Place the parts to be counted into the container and read off the net count value.

3.4. Checkweighing Mode

Checkweighing is a function that allows the operator to quickly see if a product is within an agreed acceptable tolerance, ideal for fast repetitive work where accuracy is important.

By setting an upper and lower acceptable weight or count limits for a product the scale can be used to check for regular weight or count conformity.

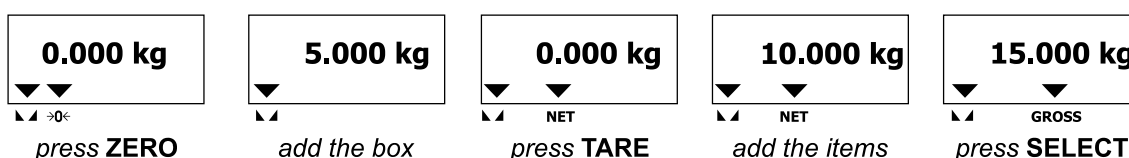**To set the limits and beeper mode, see chapters 3.4.1. and 3.4.2. on page 14.**

To perform a gross weighment, follow these steps:

1. Power up the scale. Be sure the scale is displaying weight in the correct unit of measure. Press the **UNITS** key, if necessary to change the unit of measure.
2. Zero the scale if necessary by pressing the **ZERO** key. If the weight change is within the Zero window area the display will show *0.000*. Decimal positions available may vary.
3. Place the item to be checkweighed on the scale platform.

    The weight is displayed and either the **HI**, **OK** or **LO** annunciator will be illuminated letting the operator quickly see if the item being weighed is within an acceptable weight tolerance to proceed.

4. Remove item from the scale platform and repeat steps 3 and 4 for each item to be checkweighed.

Checkweighing can also be done while using a tare. After you have Zero the scale (step 2), place the item to be tared on the scale, press the **TARE** key and continue with checkweighing as described in steps 3 and 4.

0.000 kg	0.500 kg	or	2.500 kg	or	5.000 kg
▼ ▼	▼ **LO**		▼ **OK**		▼ **HI**
◣◢ ⭢0⭠	◣◢		◣◢		◣◢

press ZERO   *add the items to be checkweighed*
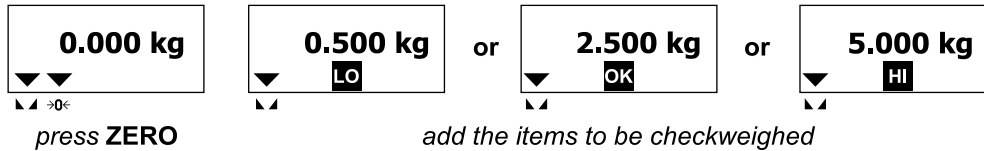
Example: annunciators lit when acceptable limits are: LO < 1.00 kg and HI > 4.00 kg

3.4.1. Setting the Checkweighing Limits

When the scale is ON, press

[⊙ PRINT] and [⇄ TARE]

UF-1 ▶ UF-2

↵

enter lower limit   000.00 LO

↵

enter higher limit   000.00 HI

↵

beeper mode   o   000

↵

press UNITS
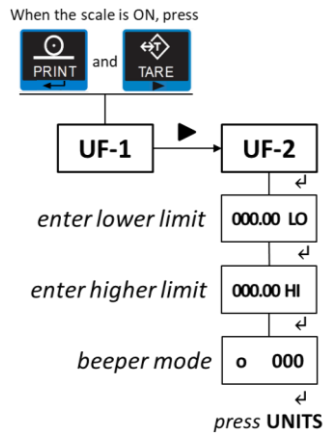
i. When the scale is ON, press **PRINT** and **TARE** keys together;

    UF-1 will be displayed*.*

ii. Press **TARE** (▶) key;

    UF-2 will be displayed.

iii. Press **PRINT**(↵) key;

iv. Enter or edit the **LO** limit value by pressing **ZERO**(◀) and/or **TARE** (▶) keys to move the flashing digit left or right and press the **SELECT** (▲) key to increase the numeric value;

v. Press **PRINT** (↵) key to confirm;

vi. Repeat points *iv.* and *v.* for the **HI** limit;

vii. Choose the **beeper mode** [**000; 001; 002; <u>See Section 3.3.2</u>**] by pressing **ZERO**(◀) and/or **TARE** (▶) keys to move the flashing digit left or right and press the **SELECT** (▲) key to increase the numeric value;

viii. Press **PRINT** (↵) key to complete and leave the procedure;

ix. Press **UNITS** (ᴇꜱᴄ) key to exit the User Menu.

ⓘ *To disable the checkweighing feature, set the LO limits to 0 in the User Menu [UF-2].*
The LO and HI annunciators may vary. The illustration shows the annunciators displayed when acceptable limits are entered for first time.

3.3.2. Checkweighing Beeper Modes
There are three beeper modes.

o 000	The beeper is disabled.
o 001	The beeper tones only when the load is <u>within</u> the acceptable limits.
o 002	The beeper tones only when the load is <u>outside</u> the acceptable limits.

⚠ *Please, ignore any other mode not listed above.*

3.5. Hold Mode for Animal Weighing
Hold mode is not available in this model.

4. <u>Menus</u>

There are three menus that allow to configure, enable or execute specific functions or options.

4.1. User Menu

In the User Menu there are various submenus available to configure specific sections of the scale operating modes, including a diagnostic feature.

4.1.1. User Menu Levels [UF]

Navigate the options by pressing **ZERO** (◄), **TARE** (►) and increase a numeric value by **SELECT** (▲) key. Press **UNITS** (ᴇsᴄ) to exit the option or the menu and **PRINT** (↵) key to confirm.

When the scale is ON, press
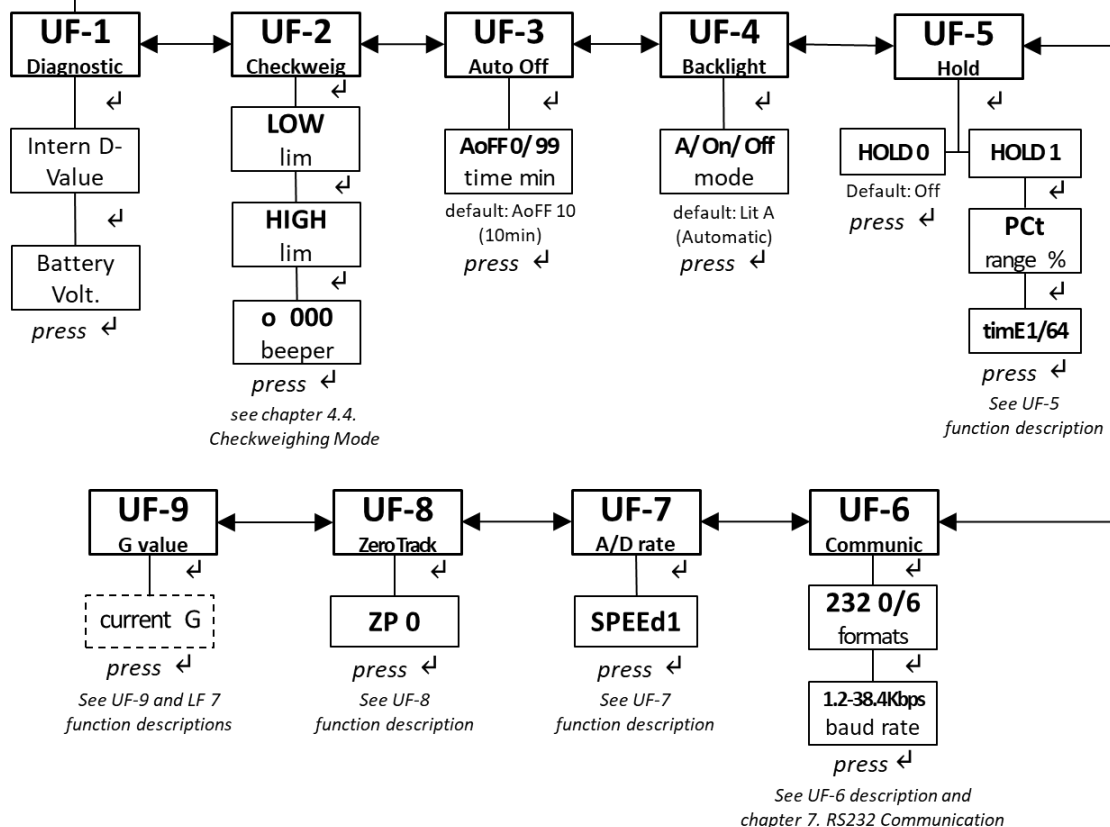
4.1.2. User Functions Descriptions [UF]

There are 9 Setup Functions.

UF-1	**Diagnostic:** use this menu to check or verify the performance of the indicator. The diagnostic tests available include: Scale A to D to view output from the connected scale base or load device, *Internal D-Value*, and *Battery Voltage*.
UF-2	**Checkweighing**: the acceptable weight is any weight which falls between the upper and lower limits. Enter this option to set the items relating to checkweighing: • *LOW* / *HIGH* limits. Valid beeper modes: *o 000*; *o 001*; *o 002*. See chapter 3.4. Checkweighing Mode at page 13.
UF-3	**Auto Power-Off**: use this to set the length of time before the scale automatically turns off if not being used. Values can be set between 01 and 99 minutes. *Factory default: AoFF 10 (10min).* Auto Power-OFF disabled when *AoFF 00*
UF-4	**Backlight**: use this to set the light mode: • OFF **/** Automatic **/** ON *Factory default: Lit A (automatic)*
UF-5	Not supported.
UF-6	Not supported.
UF-7	**ADC Update Rate**: use this to select the sampling frequency: 15 (1), 30 (2) or 7.5Hz (3) See LF 4, Supervisor Functions Descriptions
UF-8	**Zero Tracking**: use this to define a ±0 /5div range around zero. When scale weight is not at the center of zero but inside this range, ½ of the weight will be subtracted until the weight is inside the center of zero region. See LF 5, Supervisor Functions Descriptions.
UF-9	**Gravitational value**: use this item to key in a gravity constant value. (!) **CAUTION!** This item is locked when the calibration switch is at position OFF. See LF 7, Supervisor Functions Descriptions and chapter 6. Calibration on page 21.

4.2. Supervisor Menu

In the Supervisor Menu there are various submenus available to configure system parameters, specific sections of the operating modes and the calibration feature (see also chapter 6. Calibration).

4.2.1. Supervisor Menu Levels [LF]

Navigate the options by pressing **ZERO** (◄), **TARE** (►) and increase a numeric value by **SELECT** (▲) key. Press **UNITS** (ᴇꜱᴄ) to exit the option or the menu and **PRINT** (↵) key to confirm.

ON — **1.** Turn ON the scale.

→0← ZERO — **2.** Press and hold the key during the display countdown until 1001 is shown. Then release the key.

> (!) If locked, see chapter **6. Calibration**

LF 1 — 1ˢᵗ Calibrat — ↵
- *remove any load* — **CALZ** zero — ↵
- *enter the Test Weight* — **0150.00** span — ↵
- *load the Test Weight* — **150.00** *blinking* — ↵
- **150.00** kg/lb ▼▲
- The scale goes back to General weighing mode
- **NOTE**: If Err 10 is displayed, repeat the procedure.

LF 2 — Config. — ↵
- Intern D-Value — ↵
- ***ABCDEF*** config —
- **015000** capacity — ↵
- **d 0.00** 5 decimals — ↵
- **div 01/50** increment
- *press* ↵
- *see 5. Scale Configuration*

LF 3 — Linearization — ↵
- **CALZ** zero ►
- **0150.00** edit val — ↵
- **75.00** kg/lb load ►
- **PASS**
- **NOTE**: If Err 10 is displayed, repeat the procedure.

LF 4 — A/D rate — ↵
- **SPEEd 1/3** Hz
- *press* ↵
- *see LF 4 description*

LF 5 — Zero Track — ↵
- **ZP 0/5** divisions
- *press* ↵
- *see LF 5 description*

LF 6 — *do NOT use*

LF 8 — Zero at Start — ↵
- **SEtZ Y/N** mode
- *press* ↵
- *see LF 8 description*

LF 7 — G value — ↵
- **9.81259** current G — ↵
- edit G
- *press* ↵
- *see LF 7 description*

4.2.2. Supervisor Functions Descriptions [LF]

There are 8 functions.

LF 1	**1ˢᵗ Calibration**: *see chapter 6. Calibration at page 21.*
LF 2	**Configuration**: use this item to configure system parameters, specific sections of the operating modes. *See chapter 5. Scale Configuration at page 20.*
LF 3	**Linearization**: use this to add 1 linearization point for the scale. (!) **CAUTION!** Perform the linearity procedure only if test weights applied to the scale between the zero and span calibration points are showing slight inaccuracies, such as ± a few divisions. If large inaccuracies are recorded, this indicates a possible mechanical problem or possible load cell failure which linearity calibration may not be able to correct.
LF 4	**ADC Update Rate**: use this to select the sampling frequency: 15 (1), 30 (2) or 7.5Hz (3)

	Factory default: SPEEd 1 (standard 15Hz)
LF 5	**Zero Tracking**: use this to define a ± 0 /5 divisions range around zero. When scale weight is not at the center of zero but inside this range, ½ of the weight will be subtracted until the weight is inside the center of zero region.
	Factory default: ZP 0 (off)
LF 6	*Factory default: none*
LF 7	**Gravitational value**: use this item to key in a G constant value: 9.78031 < G < 9.83217 If the scale has been calibrated at a different location and it is not possible to re-calibrate with known test weights, the scale can be adjusted using this gravity factor. • Current G value can only be edited if Cal Switch ON. See chapter 6. Calibration.
	Factory default: 9.81259
⚠	**CAUTION!** Verify with local agencies if adjusting the gravity factor is accepted in your area. It may be required that calibration be done with certified weights.
LF 8	**Zeroing at Every Power UP:** use this items to set an auto zero at the power up.
	Factory default: SEtZ Y (on)

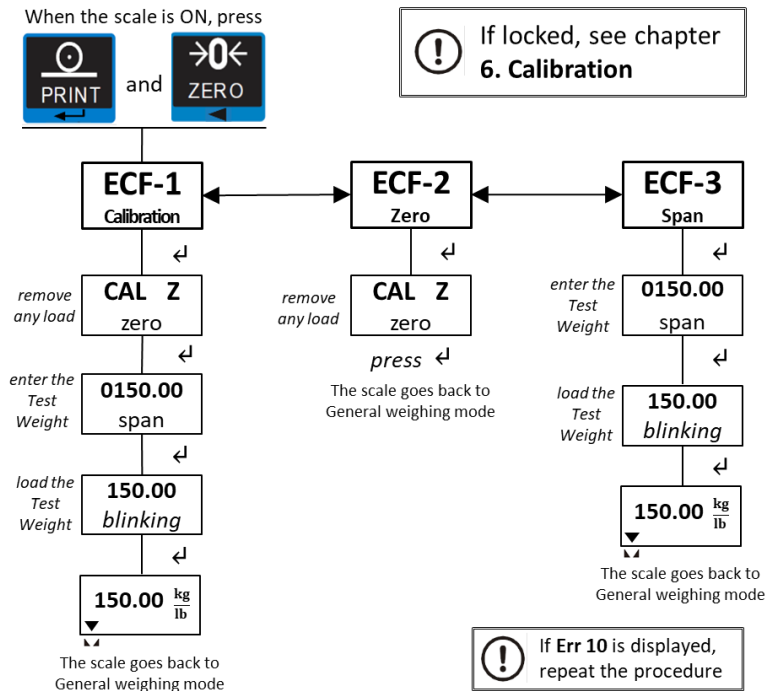# 4.3 Quick Calibration Menu

Before entering this menu, make sure that UF-5 is set as HOLD 0. See chapter 6. Calibration on page 21 for a detailed procedure.

4.3.1. Quick Calibration Menu Levels [ECF]

Navigate the options by pressing **ZERO** (◄), **TARE** (►) and increase a numeric value by **SELECT** (▲) key. Press **UNITS** (ᴇsᴄ) to exit the option or the menu and **PRINT** (↵) key to confirm.

4.3.2 Quick Calibration Functions Descriptions [ECF]

There are 3 Calibration Functions.

ECF-1	**Calibration**: ZERO / SPAN. Test weight should be at least 1/3 of the max. capacity
ECF-2	**Zero Calibration** (only)
ECF-3	**Span Calibration** (only)

5. <u>Scale Configuration</u> [LF 2]

Enter the function **LF 2** to set the units, counting mode, calibration units, decimal position of the separator and division size.

Navigate the options by pressing **ZERO** (◄), **TARE** (►) and increase a numeric value by **SELECT** (▲) key. Press **UNITS** (ᴇꜱᴄ) to exit the option or the menu and **PRINT** (↵) key to confirm.

1. Turn ON the scale.

2. Press and hold the key during the display countdown until 1001 is shown. Then release the key.

> ⚠ If locked, see chapter **6. Calibration**

LF 1 1ˢᵗ Calibrat ↔ **LF 2** Config.

LF 2 Config. ↵

Intern D-Value ↵

ABCD0F config ↵

015000 capacity ↵

d 0.00 5 decimals ↵

div 01/50 increment

press ↵

	DESCRIPTION	OPTIONS
A	Metric Units	0= none; 1= kg; 2= T; 3= g
B	Imperial Units	0= none; 1= lb; 2= lb oz
C	Other Units	0= none; 1= TW kg; 2= HK kg; 3= VISS
D	PCS (sample)	0= Off; 1= On
0	Do NOT use	
F	Calibration Unit	1= Metric; 2= Imperial (except lb oz)

Default

| 1 1 0 1 0 1 | Scale units: **kg** and **lb** / Counting (PCS) enabled / Calibration unit set as **kg** |

Example

| 1 1 0 1 0 2 | Scale units: **kg** and **lb** / Counting (PCS) enabled / Calibration unit set as **lb** |

6. <u>Calibration</u>

It is recommended to perform only the very first calibration following the function **LF 1** in the **Supervisor Menu** (page 18). To prevent any unintentionally amendment of the scale configuration, all the next Calibration should be performed entering the **Quick Calibration Menu** (page 19).

6.1. Enabling the Calibration Procedures

The access to the Supervisor and Quick Calibration Menus is allowed only if the Calibration Switch is at ON.

Calibr. Switch	User Menu	Service Menu	Quick Cal. Menu
ON	✔	✔	✔
OFF	✔*	✗	✗

Note: ✔* No Gravitational adjustment allowed. The function UF-9 is locked.

Please note: for legal for trade applications the indicator may be sealed and removing this seal may void the scale legal for trade stamping, this should only be carried out by a qualified technician.

The switch is located on the bottom edge of the indicator main PBC board. (Fig. 6)
To change the Calibration Switch position, follow these steps:

  i.Unplugged the PSU, remove the 4 screw of the case and carefully open the indicator.

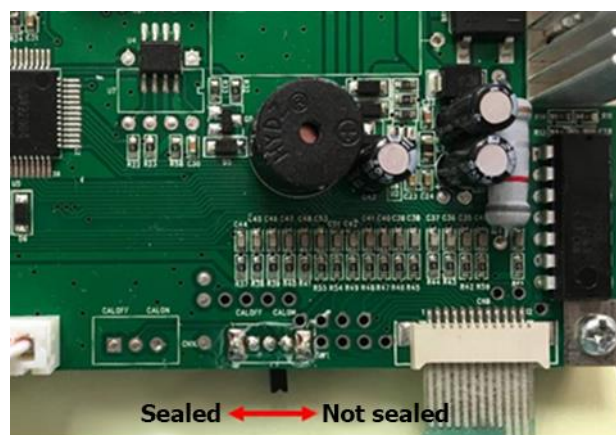 ii.Shift gently the switch from right (NOT SEALED) to left (SEALED) and vice versa.

Figure 6 – ZM110 position of the Calibration Switch on the main PCB

6.2. Scale Calibration Procedure

The following procedures assume that the scale has been already properly configured [function **LF 2**], including the settings of the **Gravitational** correction values [function **LF 7**] and **Linearity** correction points [function **LF 3**]**.**
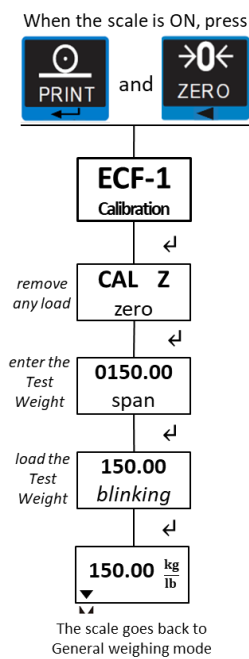

Note: Perform the linearity procedure only if test weights applied to the scale between the zero and span calibration points are showing slight inaccuracies, such as ± a few divisions. If large inaccuracies are recorded, this indicates a possible mechanical problem or possible load cell failure which linearity calibration may not be able to correct.

LF-2 CALIBRATION SETTINGS

- Default setting for calibrating in **kg** with counting function active is [110101]
- Default setting for Legal-for-Trade calibrating in **kg** is [110001]. Counting function must be turned off for Legal-for-Trade use.

The calibration steps following the function LF 1 or entering the Calibrations Menu ECF are the same. For this reason, **only the ECF-1 is described below**.

When the scale is ON, press

 and

↓

ECF-1
Calibration

↓

remove any load | **CAL Z**
zero

↓

enter the Test Weight | **0150.00**
span

↓

load the Test Weight | **150.00**
blinking

↓

150.00 kg lb

The scale goes back to General weighing mode

*Before starting, make sure that **UF-5 is set as HOLD 0** and **Calibration Switch set to NOT SEALED** (see chapter 6.1). Test weights equivalent to at least 1/3 of the maximum capacity are needed.*

i. When the scale is ON, press the **PRINT** and **ZERO** keys together;

   ECF-1 will be displayed.

ii. Press **PRINT**(↵) key;

   CAL Z will be displayed;

iii. Remove the loads from the pan (0 kg) and press **PRINT**(↵) to confirm;

iv. Edit the span by pressing **ZERO**(◄) and/or **TARE** (►) keys to move the flashing digit left or right and press the **SELECT** (▲) key to increase the numeric value;

v. Press **PRINT** (↵) to confirm;

vi. Load the test weight;

vii. Press **PRINT** (↵) to complete and leave the procedure.

⚠ If **Err 10** is displayed re-edit the span value, confirm and move to the next step.

6.3. Stamped Calibration

For legal for trade applications the following configuration settings need to be set and the indicator seal according to OIML directives.

- Set the scale division sizes according to the approval document and set the LF6 setting in the configuration menu to OIML
- (OIML setting represents all the legal for trade setting for both NTEP and OIML)
- Attach the correct capacity labels to the front of the display and seal as shown below

Sealing with supplied tamper proof labels   Sealing with lead seals

⚠ *For legal for trade applications the indicator has to be properly configured entering the functions available in the Supervisor Menu before setting the Calibration Switch at OFF and sealing the indicator.*

7. <u>Replacement Parts</u>

Description		P/N
ZM110 indicator		AWT05-509350
Replacement battery : DJW6-4.0 (6V 4.0AH) sealed lead acid battery		
RS232 kit		AWT15-501905
Replacement Power Supply (switch mode input 100 to 240VAC output: 12V 1A with positive centre) with UK – EU – USA plug adaptors		AWT15-501904
Plug Adaptors AUS		AWT25-502470
Loadcell Zemic L6E3-FS	100 kg	AWT27-500241
	200 kg	AWT27-500242
	500 kg	AWT27-500252
Loadcell Zemic L6W -FS- 500kg	500 kg	AWT27-500244
Stainless Steel Top Pan	40 x 40cm	AWT20-509282
	40 x 50cm	AWT20-509283
	50 x 60cm	AWT20-509284
Adjustable column bracket		AWT20-509267
Foot Kit		AWT20-509280

8. <u>Loadcell pinouts</u>

LOADCELL connection (for indicator)
PIN 1 :   Ex +
PIN 2 :   Sense +
PIN 3 :   Ex-
PIN 4 :   Sense -
PIN 5:   Sig +
PIN 6 :   GND
PIN 7 :   Sig –

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