

MAX

DIGITAL WEIGHT INDICATOR

OPERATION MANUAL



WESTERN SCALE CO. LTD.

**MAX DIGITAL WEIGHT INDICATOR
OPERATION MANUAL**

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INTRODUCTION

The MAX digital weight indicator has been specifically designed for mobile weighing applications. Multiple power inputs, a versatile display, and a weather-proof enclosure allow for efficient and trouble-free scale operation in any location. Sophisticated filtering algorithms and display modes offer the best solution available for vibration issues and dynamic applications such as livestock weighing.

Built from the ground up with battery-friendly components, the MAX incorporates Western's unique PowerMAX operating platform that intelligently identifies when to supply or conserve power resources. This industry leading power efficiency stretches battery life to over 500 hours! Designed with the durability, functionality, and versatility expected from Western, the MAX is truly *engineered for the diversity of the weighing industry*.

The following information is for the exclusive use of **WESTERN** Dealers and Customers.

Safety

Installation, configuration, and servicing are only to be done by qualified Scale Service Technicians as authorized by Western.

Power must be disconnected before servicing the unit. Disconnection from the line voltage is done by disconnecting the mains plug.

This equipment must be connected to a socket-outlet with a protective earthing connection. The socket outlet shall be installed near the equipment, and shall be easily accessible.

This equipment is intended for connection to multiple RATED VOLTAGES or FREQUENCIES. The switchover to the corresponding voltage is done automatically by the equipment.



CAUTION! HIGH VOLTAGES are present inside the MAX indicator enclosure.



Scale Service Technicians handling MAX PCBs must observe proper electrostatic discharge (ESD) handling procedures.



ATTENTION! Unauthorized installation and service of this unit may void the warranty.

Features

Mobile & Versatile

- Large LCD display
- Easy to read in low light and direct light conditions
- Weather-proof, stainless steel enclosure suitable for outdoor use
- MENU key accesses tickets and macro functions

Multiple Power Inputs

- Direct AC Power
- 4 "D" cell alkaline batteries (Up to 500 hours)
- 12 Volt input terminal for car batteries and power adapters

Easy to Use & Service

- Flashlight style battery compartments
- Easy to navigate software menu and calibration
- Calibrate to any test weight value
- Terminal wiring

Advanced Capabilities & Quality

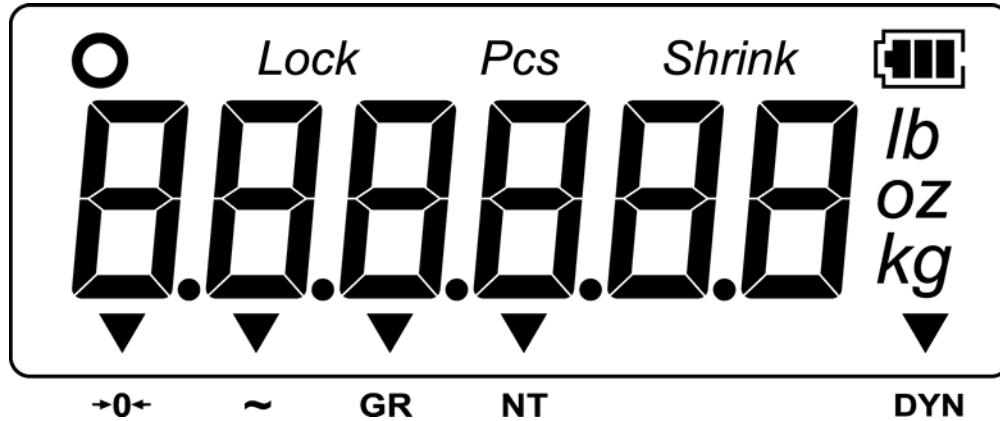
- DYNArrest digital filtering system for fast and stable dynamic weighing
- MACRO II Ticket System for customized scale tickets
- *Made In Canada with 2 Year Warranty.*

Specifications

Excitation:	5 VDC, Up to 4 x 350 Ω load cells (8 x 700 Ω)
Analog Input Range:	0 - 39 mV
Resolution:	1 million (Internal counts) 10,000d Class III / IIIL (NTEP); 10,000d Class III; 20,000d Class IIIHD (M. Can.)
Measurement Speed:	10 - 80 weight samples/sec. (Automatic)
Power:	Battery: 4 "D" cell alkaline batteries AC Input: 90 - 240 VAC DC Input: 12 VDC Consumption: 500 mW (Rated 5W)
Display:	6 digit, 7 segment, LCD display with backlight 1-1/8 th inch digits (29 mm)
Communications:	Full duplex RS-232 serial port Configurable data format Selectable output strings & tickets
Temperature Range:	14°F to 104°F / -10°C to 40°C
Approvals:	NTEP & Measurement Canada Approved

DISPLAY & ANNUNCIATORS

The MAX uses a Liquid Crystal Display (LCD) with an LED backlight. HTN technology gives the display better contrast over wider viewing angles. LCD arrow and display annunciators communicate scale status and mode information to the user.



MAX Display

Weight Display

- 6 digits (7 segments each). Up to 3 decimal points.
- Negative weights are indicated by a minus sign (-) on the far left character.

Arrow Annunciators

- ▼
-0- **CENTRE ZERO:** The scale is within ± 0.2 graduations of **TRUE ZERO**.
- ▼
~ **MOTION:** The scale is **IN MOTION** (the weight is changing).
- ▼
GR **GROSS:** The scale is in **GROSS** weighing mode.
- ▼
NT **NET:** The scale is in **NET** weighing mode (a tare weight is stored).
- ▼
DYN **DYNAMIC:** The scale is weighing in **DYNAMIC** mode (if enabled).

Display Annunciators

lb

Scale is weighing in **POUNDS**.

oz

Scale is weighing in **OUNCES**.

kg

Scale is weighing in **KILOGRAMS**.

g

Scale is weighing in **GRAMS**.

O

The weight on the scale is **STABLE**.

Lock

The averaged scale weight has been **LOCKED** on the display (only if dynamic weighing is enabled).

Pcs

The indicator is displaying a **PIECE COUNT**. Not available at this time.

Shrink

The indicator is displaying a **SHRINKAGE** weight.



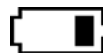
Indicates that the **BATTERY IS IN USE & BATTERY LIFE**



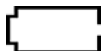
3 segments = Full battery life



2 segments = Med battery life



1 segment = Low battery



0 segments = Change batteries as soon as possible



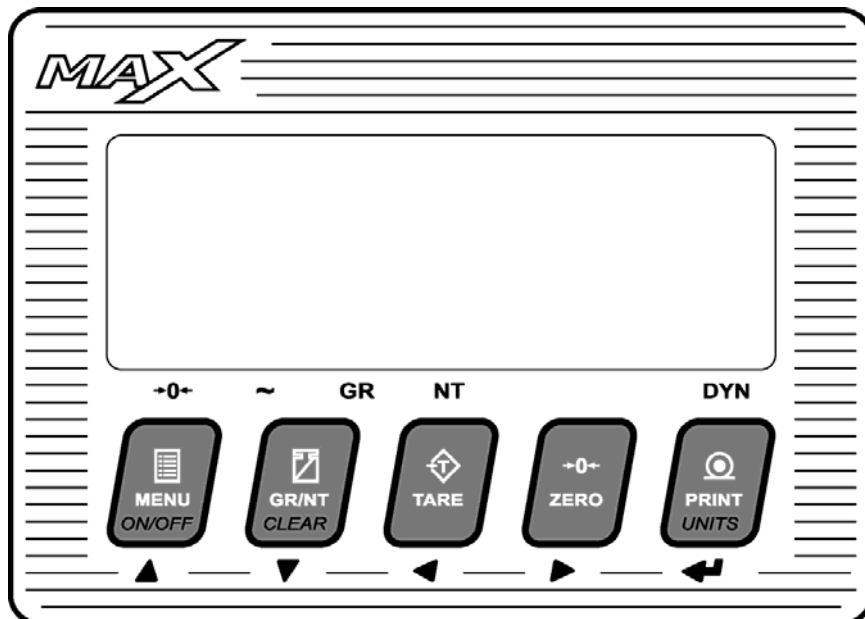
Flashing = Batteries are too low for indicator to run



Some annunciators may not function the same way in Remote Display Mode. For more information, see page 16.

KEYPAD & SCALE FUNCTIONS

The MAX indicator utilizes 5 keys for operator interfacing. To maximize indicator functionality, some keys perform multiple functions.



MAX Keypad



Press the key: **MENU** - Cycles through the USER MENU to access additional Scale Tickets and functions (See page 13).

Press & hold the key (2 sec): **POWER** - Turns the indicator ON and OFF



Press the key: **GR/NT** - Toggles between GROSS and NET weighing modes if a tare value is stored.

Press & hold the key (2 sec): **CLEAR** - Clears any previously acquired tare values. When used in Legal for Trade applications, tares can only be cleared when GROSS weight is at no load.

Clears Peak Hold (locked weight) values when Peak Hold function is enabled.



Press the key: **TARE** - Acquires a tare value from weight on the scale (Container, Box, etc.).

The indicator will not tare if:

- Scale weight is in MOTION;
- Scale weight is zero, negative or over capacity;

“Err 2” is briefly displayed when one of these tare errors occurs.

Press & hold the key (2 sec): **CLOCK** – Display / Set the time and date. For more information, see Time & Date (page 15).



The TARE button may be disabled in Calibration Mode by Qualified Technicians.



In Canadian Legal for Trade applications, previous tare weights must be cleared before a new tare weight can be acquired.



ZERO: Sets the weight display to ZERO.

The indicator will not zero if:

- Scale weight exceeds the allowed ZERO RANGE;
- Scale weight is in MOTION or over capacity;

“Err 4” is briefly displayed when one of these zero errors occurs.



Press the key: **PRINT** - Transmits a scale ticket or data string.

NOTE: If multiple tickets are programmed, Ticket 1 is always assigned to the PRINT key.

Press & hold the key (2 sec): **UNITS** - Toggles between Primary, Secondary and Tertiary Weighing Units (if enabled).

Alternate Units may be selected or disabled in Calibration Mode by Qualified Technicians.

INSTALLATION

Pre-Installation

It is always good practice to verify that your Western MAX indicator is complete and undamaged upon receipt.

- Check over packaging for any signs of damage.
- Remove the MAX from protective packaging and check for damage.
- Verify that the box includes the MAX indicator complete with:
 - User Manual;
 - Mounting bracket and thumb screws;
 - Note: Batteries not included.

Mounting Instructions

1. The MAX can be mounted to horizontal or vertical surfaces using the mounting bracket.
2. Ensure that mounting structures (walls, posts, etc.) will bear the weight of the indicator (Approx. 3 kg / 7 lb with batteries).
3. Use proper hardware, including wall anchors where necessary, when mounting the bracket and indicator.

Plugging In

1. Plug the AC power cord into a power outlet.
2. Installers must take proper steps to prevent noise, static, or other power problems.



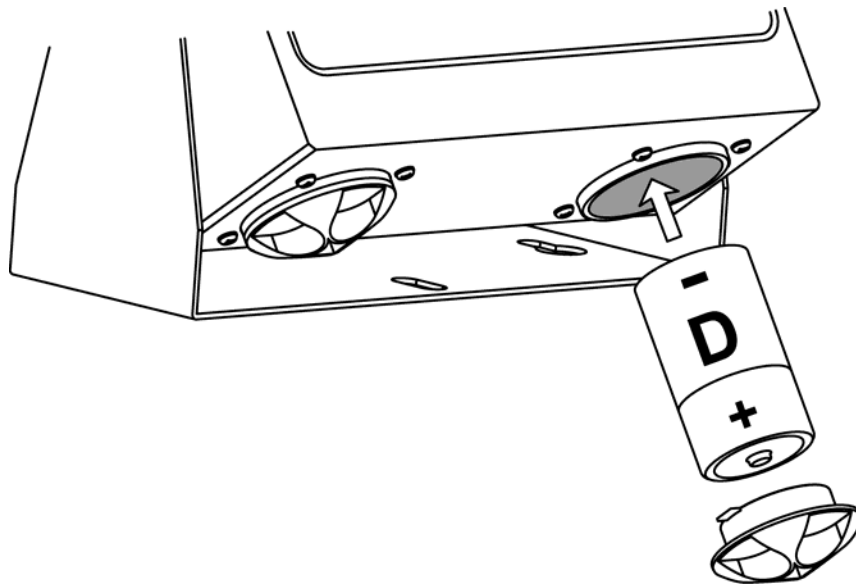
ATTENTION! In noisy industrial environments, power-conditioning filters are a requirement to ensure a fail-safe operation under all conditions. Indicators should not share AC power with electrical motors and switchgear. Consult the site engineer for clean AC power.



CAUTION! HIGH VOLTAGE! Only trained personnel should access any internal wiring and/or components.

Loading Batteries

1. To open the battery compartments, turn compartment caps 90 degrees counter clockwise.
2. Insert 2 “D” cell alkaline batteries in each compartment, checking for correct polarity.
3. Replace battery compartment caps and turn 90 degrees clockwise to lock the compartment closed.



PowerMAX Power Management System

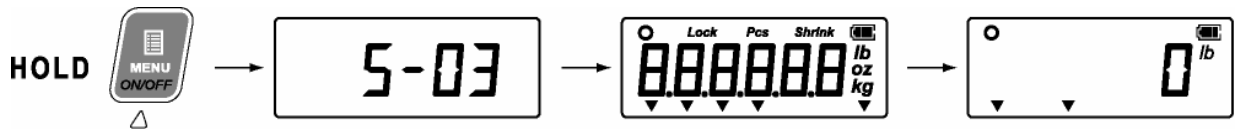
The PowerMAX system automatically detects and prioritizes available power sources to conserve batteries.

- If AC power is plugged in, it is the primary source with no draw on the external 12 VDC power or the internal batteries.
- With no AC power, the external 12 VDC power is utilized with no draw on the internal batteries.
- If AC and external 12 VDC power sources are not available, the internal batteries are used.

OPERATION (WEIGHING MODE)

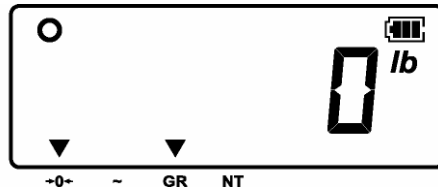
Start-Up

1. Ensure AC, external 12 volt, or battery power is being applied.
2. Press and hold the **ON/OFF** key.
3. The indicator will perform a short start-up sequence including the software version number and a display segment test before entering Weighing Mode (displaying the scale weight).

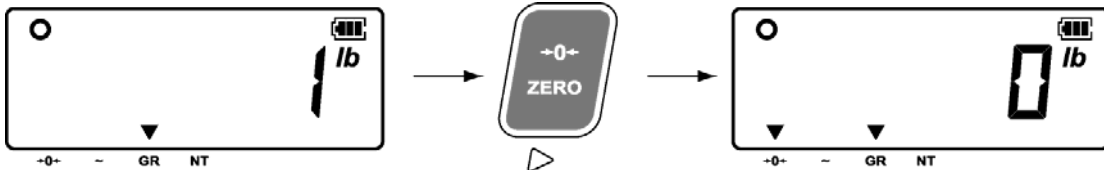


Basic Weighing

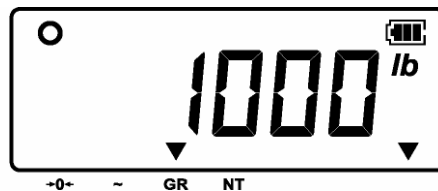
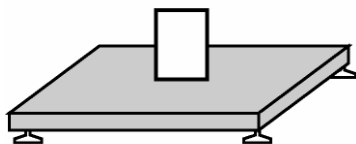
1. Ensure the weighing platform (scale) is empty and the indicator reads '0'.



2. If the indicator does not read '0', press the **ZERO** key.

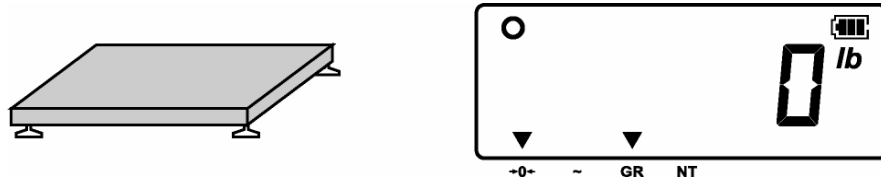


3. Load product on the scale and read the weight data on the indicator.

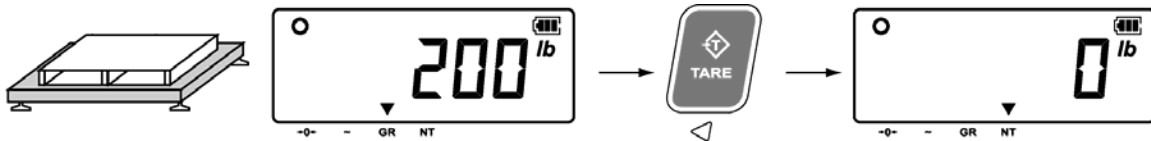


Weigh Using a Tare (Containers, Pallets, etc.)

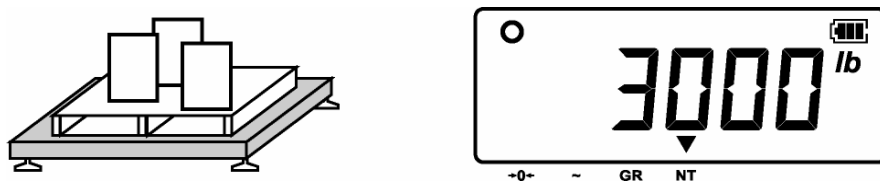
1. Ensure the weighing platform (scale) is empty and the indicator reads '0'.



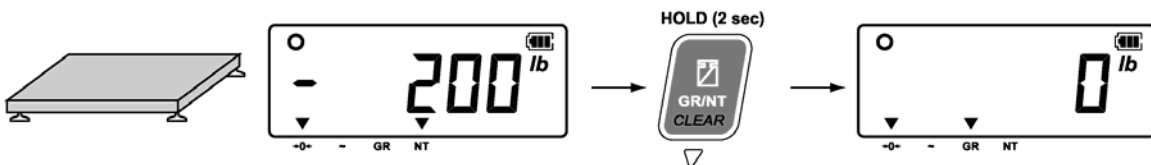
2. Load the container on the scale and press the **TARE** key. The indicator will read '0' and the **NT** annunciator (net weight) will be illuminated.



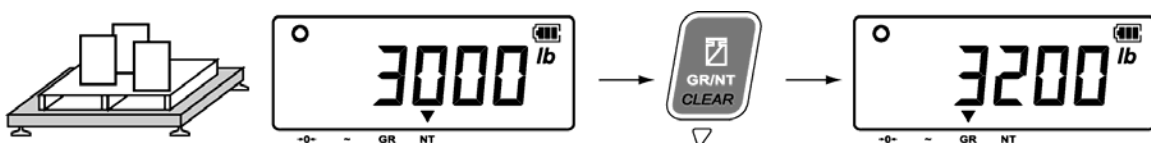
3. Load commodities into the container on the scale and read weight data on the indicator.



4. To clear the tare, remove all weight from the scale. Press and hold the **CLEAR** key until the indicator reads '0' and the **GR** annunciator (gross weight) is illuminated.



5. To view the gross weight when the scale is in net mode without clearing the tare, press the **GR/NT** key.



COMMUNICATIONS

Scale communications with peripheral devices such as serial printers, remote displays and/or Personal Computers are configured by qualified Scale Service Technicians during scale set-up and calibration.

Default Communications Settings:

- 9600 Baud
- No Parity
- 8 Data Bits
- 1 Stop Bit
- No Hardware Handshaking
- Continuous Transmit

Default Communications Format:

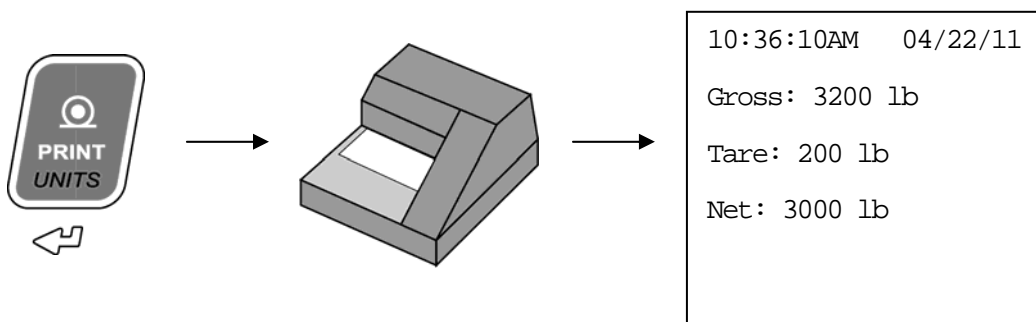
Western Data String (DF1500)

<STX><P><W><W><W><W><W><W><S><U><U><S><M><M><S><ST><CR><LF>

STX: Start of Text (ASCII 02)	M: Mode Character (GR or NT)
P: Polarity (- or Spc)	ST: Status Character (Sp, O, M, or -)
W: Weight Character (# or Spc)	CR: Carriage Return (ASCII 13)
S: Space (ASCII 32)	LF: Line Feed (ASCII 10)
U: Units Characters (KG or LB)	

Print a Ticket (If enabled)

1. Ensure the scale weight is stable.
2. Press the **PRINT** key to transmit a scale ticket to the printer.



*If multiple tickets are programmed, press the **MENU** key to enter the User Menu to access these tickets and/or functions.*

User Menu

The User Menu gives the Operator access to additional scale tickets and/or indicator functions.

1. In Weighing Mode, press the **MENU** key to enter the User Menu.
 - User Menu options (tickets) are numbered by default as in Fig. A.
 - Tickets may be named to describe functions as in Fig. B.
 - If there are no active tickets or functions, the User Menu will be empty and the display will remain in Weighing Mode.
2. Use the **UP & DOWN ARROW** keys to cycle through the User Menu functions.
3. When the desired menu item is displayed, press **ENTER** to activate it. Once the function is complete, the display returns to Weighing Mode.

To return to Weighing Mode without activating a ticket or function, press the **LEFT ARROW** key or wait 8 seconds for the User Menu to time out.

Fig. A

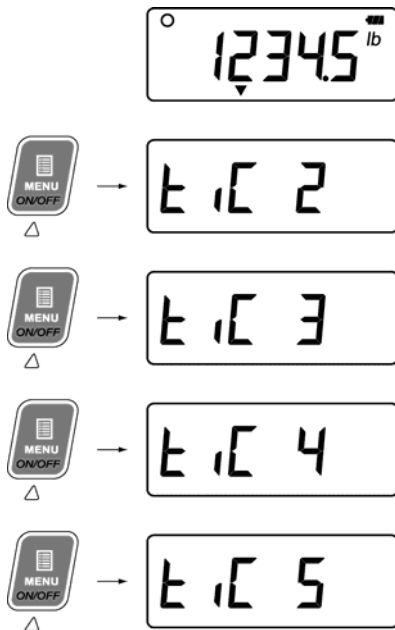


Fig. B

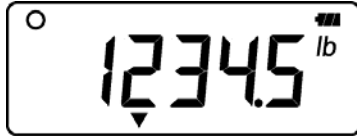


User Menu options (tickets, functions, etc.) must be programmed in Calibration Mode by qualified Technicians.

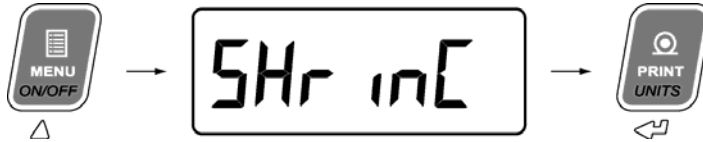
Livestock Shrinkage

The MAX features a livestock shrinkage program to compensate for potential “weight loss” experienced during transport.

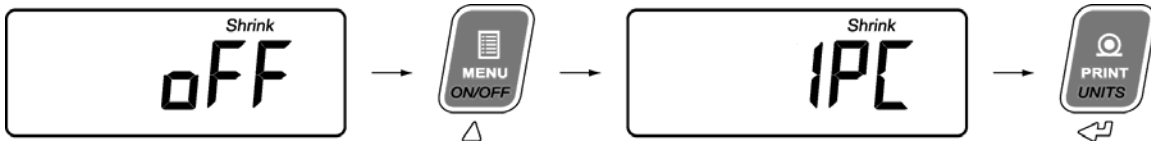
1. Load the livestock on the scale. The actual weight is displayed.



2. Press the **MENU** key until “SHrinC” is displayed. Press **ENTER** to confirm.



3. Use the **UP & DOWN ARROW** keys to select the percentage to be used for shrinkage (1 to 5%).



4. The display will show the shrinkage weight (actual weight minus the percentage) and the “**Shrink**” annunciator will be illuminated.



5. To return to actual weight, set “SHrinC” to “OFF”. The “**Shrink**” annunciator will be turned off.



The Shrinkage option will appear in the User Menu after the tickets if enabled in Calibration Mode by qualified Technicians. If not enabled, it will not appear in the User Menu at all.

TIME & DATE

1. From Weighing Mode, press and hold the **TARE** key until “CLOC” is displayed, followed by the time.
 - If 12 Hour Clock is selected, the time will appear HH.MM.A/P
 - If 24 Hour Clock is selected, the time will appear HH.MM
2. Adjust the time using the **LEFT & RIGHT ARROW** keys to select digits and the **UP & DOWN ARROW** keys to alter digits.
3. Press **ENTER** to confirm and the date will be displayed
 - If International Date is selected, the date will appear DD.MM.YY
 - If US Date is selected, the date will appear MM.DD.YY
4. Adjust the date using the **LEFT & RIGHT ARROW** keys to select digits and the **UP & DOWN ARROW** keys to alter digits.
5. Press **ENTER** to confirm and return to Weighing Mode.



Time & Date must be enabled and the format (12 Hr, 24 Hr, etc.) selected in Calibration Mode by qualified Technicians.

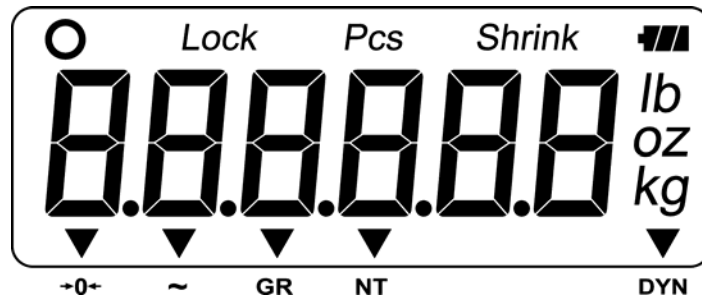


If the MAX is disconnected from AC power or another power source, batteries must be installed for the clock to keep time.

OPERATION (REMOTE DISPLAY MODE)

The MAX may function as a Remote Display when connected to other Western indicators (Models **M2000**, **MAX**, **Lightspeed** & **M1**) by qualified Technicians. In Remote Display Mode, the MAX displays the connected indicator's weight and scale status information.

Display & Annunciators



- The weight display should show the same weight numbers as the connected indicator (complete with minus signs and decimals).
- Units and Mode annunciators will work. DYN, Centre of Zero, Pieces, Shrinkage, Lock and battery level annunciators are not supported in Remote Display Mode.
- Gram and Ounce annunciators will only work with M1, MAX or Lightspeed indicators.

Start-Up

1. Ensure the AC power cord is plugged into a power outlet or that external 12 volt or battery power is being applied, then press and hold the **ON/OFF** key.
2. The start-up sequence displays the software version then the word 'dSPLAY' on the screen to indicate Remote Display Mode. The scale weight from the connected indicator is then displayed.



Remote Keypad Functions

Remote Display Mode utilizes the keypad to send serial commands for remote operation of indicator functions. To maximize functionality, some keys perform multiple functions.



Press the key: **MENU** – NO FUNCTION

Press & hold the key (2 sec): **ON / OFF** – NO FUNCTION



Press the key: **GR/NT** - Sends a serial command to toggle between GROSS and NET weighing modes if a tare value is stored (M2000 only).

Press & hold the key (2 sec): **CLEAR** - Sends a serial command to clear any previously stored tare values.



TARE: Sends a serial command to acquire a tare value from the weight on the scale (Container, Box, etc.).



ZERO: Sends a serial command to set the weight display to ZERO.

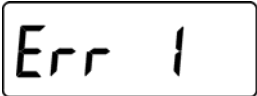

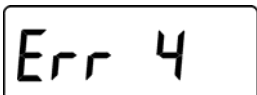
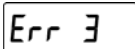
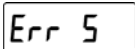

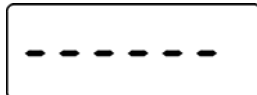


Press the key: **PRINT** - Sends a serial command to the indicator to print a scale ticket.

Press & hold the key (2 sec): **UNITS** - Sends a serial command to toggle between Primary and Secondary Weighing Units.

TROUBLESHOOTING & ERROR MESSAGES

Unit won't power up:	When using D Cell batteries (or C cells in older versions)
No Display:	Press and <u>HOLD</u> the POWER key until indicator turns on. If the indicator does not turn on, verify the power source (power outlet, batteries, etc.).
Blank Display with BLINKING battery symbol:	Battery power is too low for the indicator to function properly. <ul style="list-style-type: none"> • Replace batteries. • Use alternate power source.

Error Message	Condition	Solution
	Cannot print on motion or if scale is overloaded.	Wait for scale weight to settle before attempting to print. If overloaded, remove weight.
	Cannot TARE on motion or if gross weight is at zero or below zero.	Place a weight on the scale and wait for weight to settle before attempting to tare.
	Cannot ZERO scale outside of zero range.	Clean scale (debris may have accumulated). If problem persists, call your local Scale Service Company.
Other Errors  	Scale Service Required	Call your local Scale Service Company.
	Scale Overload Error: Scale weight is greater than scale capacity.	Remove weight from scale.
	Remote Display Mode: Communications lost.	Verify wiring/cable between remote display and indicator. If problem persists, call your local Scale Service Company.