

Model: 1269-8000
75 Ton (68 Metric Ton)
Universal Jack Tester



06/2024 – Rev. 03

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REVISION	DATE	TEXT AFFECTED
01	02/2019	Original release
02	05/2023	Updated 4.1 Beam Assembly Positioning, 5.0 Operation, 6.3.1 Pre-Operation Inspection, and Parts List
03	06/2024	Modified Parts List

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1.0 PRODUCT INFORMATION

1.1 DESCRIPTION

The jack tester has two vertical columns connected together by a top connecting beam and installed into the base. The top connecting beam support holds a manually operated hoist which is connected to the load beam assembly. A load cell is mounted on the underside of the load beam assembly. The load beam assembly is locked in place by a pair of lock pins. The position of the beam assembly can be adjusted by removing the lock pins and using the hoist.

1.2 MODEL & SERIAL NUMBER

Reference nameplate on unit

1.3 MANUFACTURER

TRONAIR, Inc./ColumbusJack/Regent
1 Air Cargo Pkwy East
Swanton, Ohio 43558 USA

Telephone: (419) 866-6301 or 800-426-6301
Fax: (419) 867-0634
E-mail: sales@tronair.com
Website: www.tronair.com

1.4 SPECIFICATIONS

Capacity 75 ton (68 metric ton)
Jack Height Capability
 Minimum 8 in (20.3 cm)
 Maximum 116 in (294.6 cm)
Tester Overall Dimensions
 Height 186 in (472.4 cm)
 Width 140 in (355.6 cm)
 Depth 110 in (279.4 cm)
 Base Height 13 in (33 cm)
Weight of Components
 Base 5800 lbs (2630.8 kg)
 Columns 600 lbs (272.16 kg) each
 Load Beam 1450 lbs (657.7 kg)
 Connecting Beam 150 lbs (68 kg)
Electrical Requirement 110 VAC, 50/60 Hz

2.0 SAFETY INFORMATION

2.1 USAGE AND SAFETY INFORMATION

To ensure safe operations please read the following statements and understand their meaning. Also refer to your equipment manufacturer's manual for other important safety information. This manual contains safety precautions which are explained below. Please read carefully.



WARNING! — Warning is used to indicate the presence of a hazard that **can cause severe personal injury, death, or substantial property damage** if the warning notice is ignored.

CAUTION! — Caution is used to indicate the presence of a hazard that **will or can cause minor personal injury or property damage** if the caution notice is ignored.

3.0 TRAINING

3.1 TRAINING REQUIREMENTS

The employer of the operator is responsible for providing a training program sufficient for the safe operation of the unit.

3.2 TRAINING PROGRAM

The employer provided operator training program should cover safety procedures concerning use of the unit in and around the intended aircraft at the intended aircraft servicing location.

3.3 OPERATOR TRAINING

The operator training should provide the required training for safe operation of the unit.

NOTE: Maintenance and Trouble Shooting are to be performed by a skilled and trained technician.

4.0 ASSEMBLY

1. Place the base in position.



CAUTION!

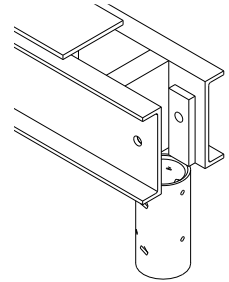
Make sure there is at least 20 ft (6.1 m) vertical clearance for tester assembly.



WARNING!

Use caution when working around the supported load beam.

2. Place the load beam on the base as shown.
3. Assemble both columns into the base and install cap screws, washers and nuts. Do not tighten the nuts.
4. Assemble the connecting beam to the top of the columns.
5. Assemble the chain hoist from the connecting beam to the load beam.
6. Install adjusting screws and nuts in the bottom column support and tighten until the columns are vertical within 0.5 degrees. Tighten nuts.
7. Using the chain hoist, raise and lower the load beam to verify ease of pinning the beam to the columns.



WARNING!

Make sure that the area around the jack tester is clear of objects that could hit or catch the load chain or beam assembly during operation.



WARNING!

Never walk under beam assembly if load pins are not in the locked position.

8. Install the load cell to the bottom beam assembly and connect cable to the Digital Weight Indicator.

4.1 BEAM ASSEMBLY POSITIONING



WARNING!

Make sure that the area around the jack tester is clear of objects that could hit or catch the load chain or beam assembly during operation.



WARNING!

Never walk under beam assembly if load pins are not installed and secured with T pins.

1. Raise or lower the load beam until the proper height is reached.
2. Install the lock pins and lower the hoist until the hoist chain is slack.

5.0 OPERATION

1. Turn power source "on". Permit the control box to do a self-check for approximately one (1) minute.
2. Position the beam assembly as required (Reference Section 4.1 Beam Assembly Positioning).



WARNING!

Jack must be centered and leveled under load cell to prevent side loads applied to jack tester.

3. Center jack under the load cell.



WARNING!

Tripod jack footpads must be positioned over base I-beams.



WARNING!

Not intended to be used with jacks rated greater than 68 tons.

4. Partially extend screw extension on jack.
5. Press the display indicates "Zero" weight by pressing the TARE button.
6. Close relief valve on jack and extend ram(s) until cup adapter and ball contact jack tester.
7. Extend jacks to the following height positions:
Single Stage Jacks: Extend ram at least 2 in (5 cm)
Multi-Stage Jacks: Extend the first (larger) stage ram fully and the second (smaller) stage at least 2 in (5 cm)
8. Continue to pressurize the jack against the load cell until the desired load is indicated on the display. Set the relief valve on the jack. Upon re-checking the adjustment, the load indicated may vary + 5% of rated load. This effect is due to amount, type and length of manual pump strokes. Jacks with air pumps should be set using the air pump.



WARNING!

Do not load to more than 75 tons.

9. After completion of the test, open release valve on the jack and fully retract the jack ram(s). Lower the screw extension completely and remove the jack from under the jack tester.

6.0 MAINTENANCE

6.1 LOAD CELL

Refer to Avery Maintenance Manual for complete instructions on load cell maintenance and calibration. (See Appendix II)

6.2 RECOMMENDED TEST/SUPPORT EQUIPMENT

After the initial installation of the tester, there are no additional items of test or support equipment required to maintain the tester, depending upon the type of load cell calibration method chosen. (See Appendix II)

6.3 ROUTINE MAINTENANCE REQUIREMENTS

6.3.1 Pre-Operational Inspection

1. Visually inspect tester for damage, loose or missing components.
2. Visually inspect lock pins for damage and ease of removal and installation.
3. Visually inspect load chain for signs of wear, damaged links, or foreign matter.

6.3.2 6 Month

1. Perform pre-operational inspection.
2. Clean columns as required and verify load beam can be easily positioned.

6.3.3 12 Month

1. Perform 6 month maintenance.
2. Calibrate load cell as outlined in Avery manual located in the Appendix II.
3. Perform maintenance on hand hoist as outlined in CM manual located in the Appendix I.

7.0 PROVISION OF SPARES

7.1 SOURCE OF SPARE PARTS

Spare parts may be obtained from the manufacturer:

TRONAIR, Inc./ColumbusJack/Regent	Telephone: (419) 866-6301 or 800-426-6301
1 Air Cargo Pkwy East	Fax: (419) 867-0634
Swanton, Ohio 43558 USA	E-mail: sales@tronair.com
	Website: www.tronair.com

For Spare Parts, Operations & Service Manuals or Service Needs:
Scan the QR code or visit Tronair.com/aftermarket



7.2 RECOMMENDED SPARE PARTS LISTS

Reference the following page(s) for Replacement Parts and Kits available.

8.0 IN SERVICE SUPPORT

Contact Columbus Jack. for technical services and information. See Section 1.3 – Manufacturer.

9.0 GUARANTEES/LIMITATION OF LIABILITY

1. ColumbusJACK Corporation, (Seller) warrants each new product of its manufacture to be free from defects in material or workmanship, under proper, reasonable and normal use and service, and for a period of twelve (12) months after date of shipment from Seller's Swanton, OH. USA facility.
2. Where Buyer claims an alleged defect in material or workmanship and so advises Seller in writing within ten (10) days after discovery thereof, then and in such event, Buyer shall return said equipment, transportation prepaid, to the Seller, provided such return is timely and within twelve (12) months form date of original shipment. This warranty and liability of the Seller is expressly limited solely to replacement of repair of defective parts or goods, and return at Buyer's expense to Seller after find by Seller the product was defective prior to original shipment or, at the option of Seller, to making refund to Buyer of the purchase price for said product.
3. It is further expressly understood and agreed that:
 - a. THERE IS NO WARRANTY, representation of condition OF ANY KIND, express or implied, (INCLUDING NO WARRANTY OF MERCHANT-ABILITY OR OF FITNESS) EXCEPT THAT THE MATERIAL SHALL BE OF THE QUALITY SPECIFIED HEREIN, and none shall be implied by law. Except as otherwise provided herein, quality shall be in accordance with seller's specifications. Final determination of the material for the use contemplated by Buyer is the sole responsibility of Buyer and Seller shall have no responsibility in connection with such suitability, and
 - b. The Buyer's sole and exclusive remedy shall be repair or replacement of defective parts by the Seller. Should the goods, in the judgment of Seller, preclude the remedying of the warranted defects by repair or replacement, the buyer's sole and exclusive remedy shall the be the refund of the purchase price, and
 - c. Seller shall not be liable for prospective profits or special, indirect or consequential damages, nor shall any recovery of any kind against Seller be greater in amount than the purchase price of the specific material sold and causing the alleged loss, damage or injury. Buyer assumes all risk and liability for loss, damage or injury to persons or property of Buyer or others arising out of use or possession of any product or part sold hereunder, and
 - d. The Seller shall in no way be deemed or held to be obligated, liable or accountable upon or for any guarantees or warranties, express or implied, or created by statute or by operation of law or otherwise, in any manner of form beyond its express agreement above set forth, and
 - e. No warranty herein shall apply to any product which shall have been repaired or altered, unless such alteration or repair has been made by Seller or where, after return to and inspection by Seller, the product is found by Seller to have been subject to misuse, negligence or accident, and
 - f. No warranty of any nature is made by Seller as to any component forming a part of the product sold and Buyer shall receive only such warranties offered by such other manufacturer pertinent to such component, and
 - g. Seller does not assume nor does Seller authorize any other person to assume for it any other liability or make any warranty in connection with the sale of its products.

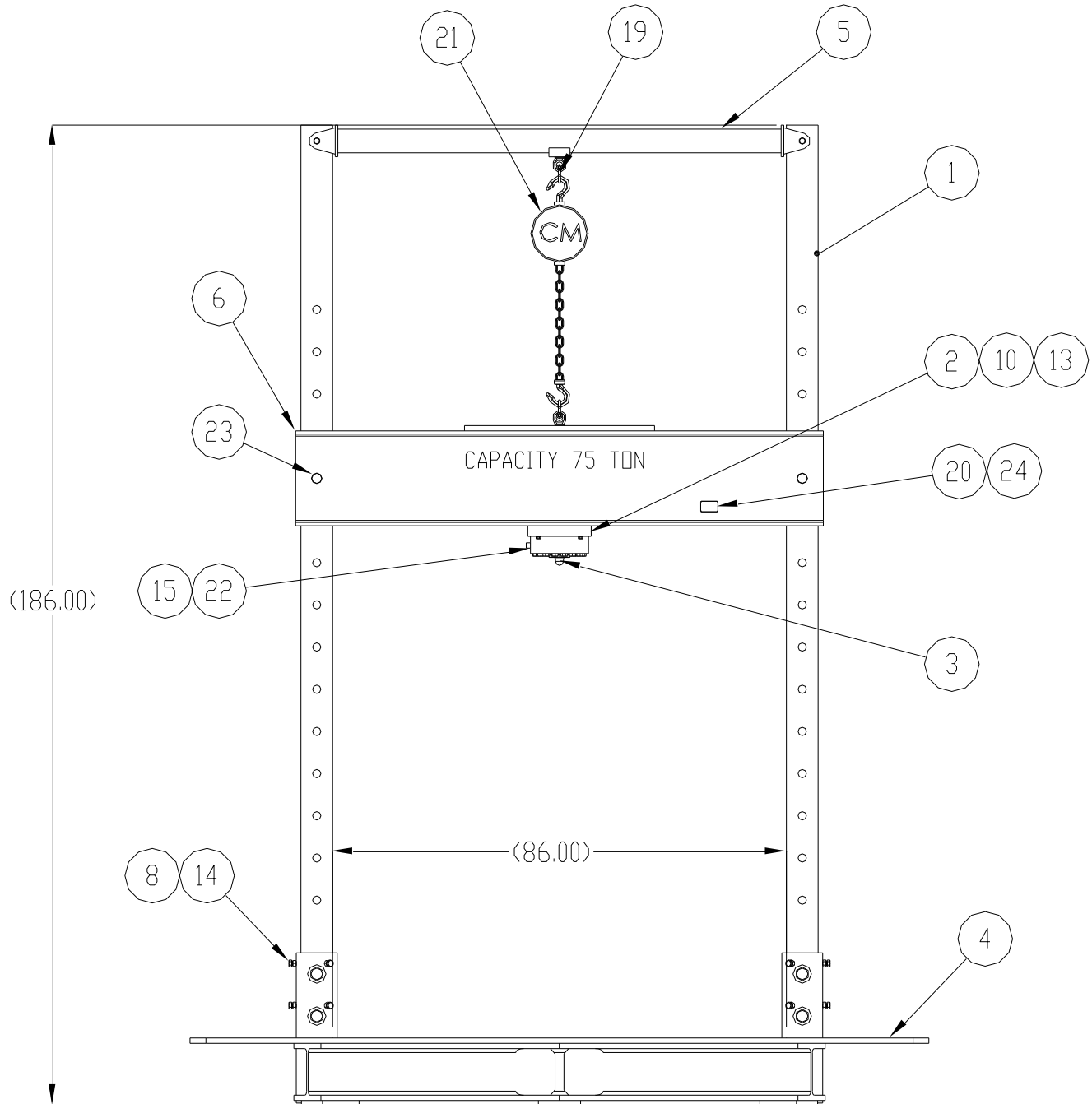
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10.0 APPENDICES

APPENDIX I Avery ZM401/405 Indicators User Instructions

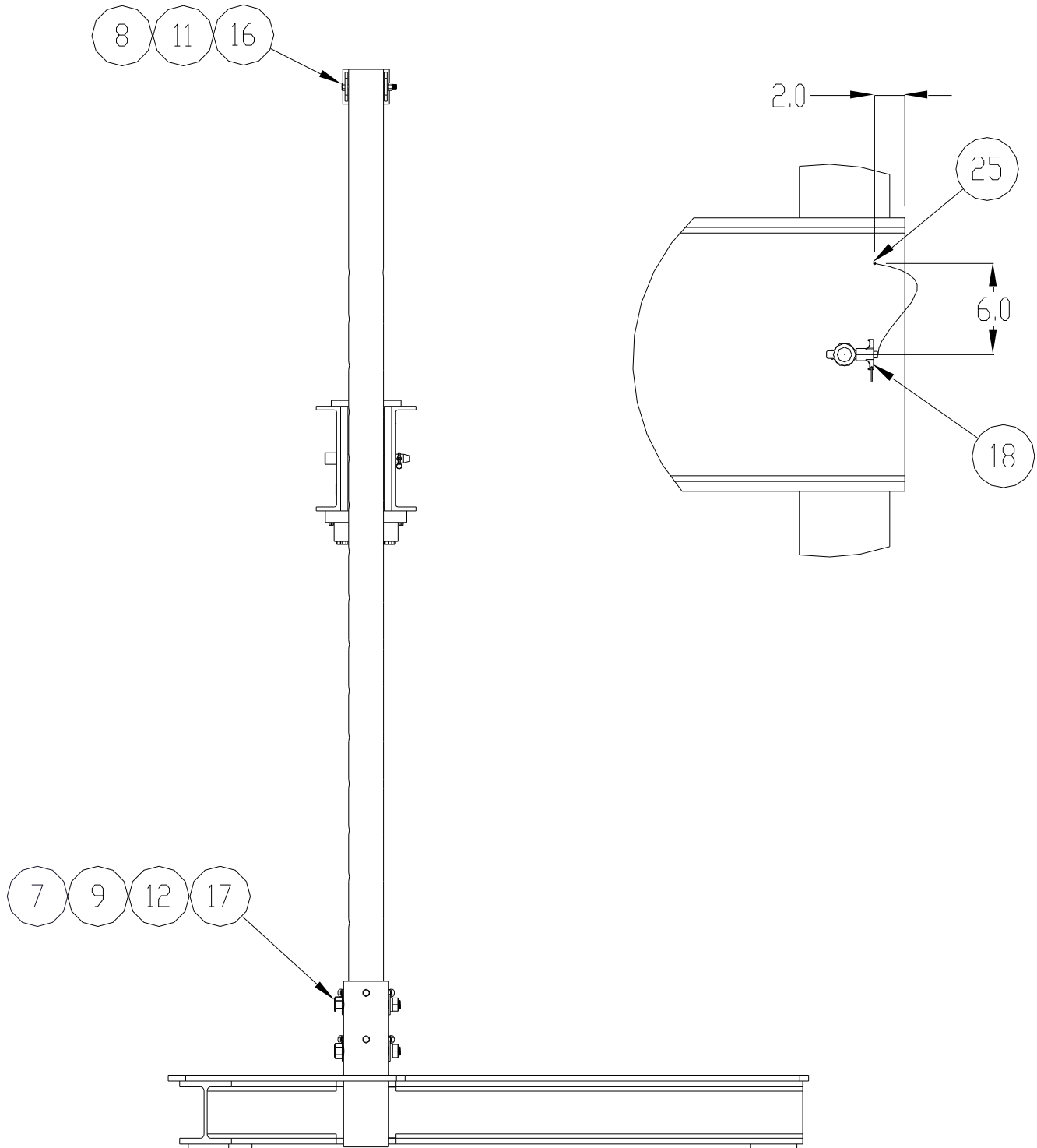
Parts List

When ordering replacement parts/kits, please specify model, serial number and color of your unit.



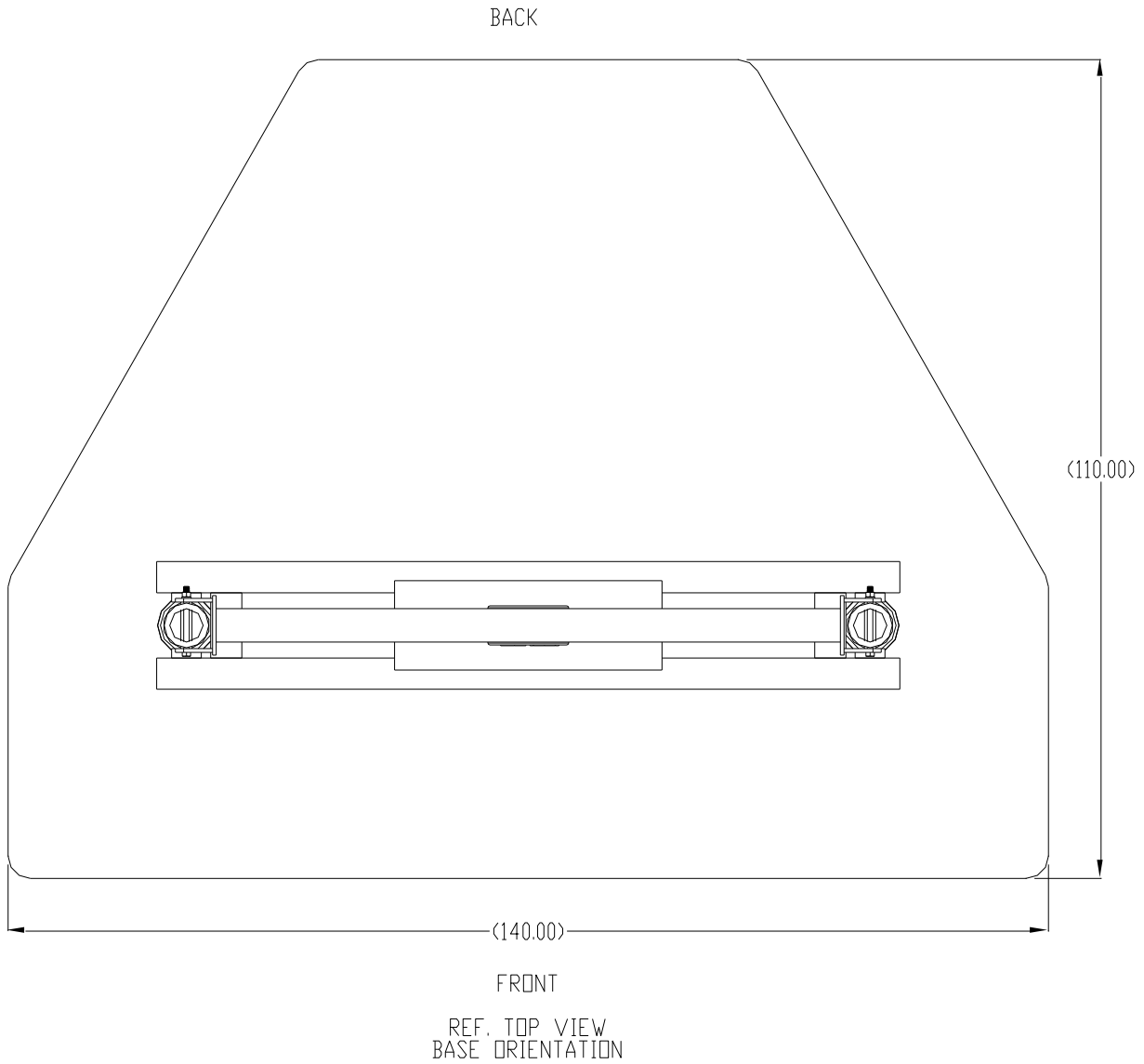
Parts List

When ordering replacement parts/kits, please specify model, serial number and color of your unit.



Parts List

When ordering replacement parts/kits, please specify model, serial number and color of your unit.



Parts List

When ordering replacement parts/kits, please specify model, serial number and color of your unit.

Item	Part Number	Description	Qty
1	1269-8001	COLUMN	2
2	1269-8002	BASE, LOAD CELL	1
3	1269-8031	$\frac{3}{4}$ " MALE ADAPTER	1
4	1269-8200	BASE WELDMENT	1
5	1269-8300	CONNECTING BEAM	1
6	1269-8400	LOAD BEAM WELDMENT	1
7	333-43800	HEX NUT	4
8	333-52600	HEX NUT	14
9	345-11090	FLAT WASHER	8
10	346-10032	LOCK WASHER	4
11	346-10048	LOCK WASHER	2
12	346-10096	LOCK WASHER	4
3	371-20220	HHCS	4
14	372-26140	HHCS	12
15	375-26360	HHCS	16
16	372-26680	HHCS	2
17	374-38800	HHCS	4
18	450A6266	QUICK RELEASE PIN	2
19	H-2652-09	SHACKLE	2
20	450A6984	DRIVE SCREW	4
21	H-5106	HAND CHAIN HOIST	1
22	450A7537	LOAD CELL ASSY	1
23	7054-170	PIN	2
24	915-543	NAMEPLATE	1
25	MS21318-13	DRIVE SCREW	2



APPENDIX I

Avery ZM401/405 User Instructions

Avery Weigh-Tronix

ZM401/405

Indicators



User Instructions

AWT35-501330
Issue AA

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1 General information and warnings

1.1 About this manual

This manual is divided into chapters by the chapter number and the large text at the top of a page. Subsections are labeled as shown by the 1.1 and 1.1.1 headings. The names of the chapter and the next subsection level appear at the top of alternating pages of the manual to remind you of where you are in the manual. The manual name and page numbers appear at the bottom of the pages.

1.1.1 Text conventions

Key names are shown in **bold** and reflect the case of the key being described. If a key has a dual function it may be referred to by its alternate function.

Displayed messages appear in ***bold italic*** type and reflect the case of the displayed message.

Annunciator names appear as *italic* text and reflect the case of the annunciator.

1.1.2 Special messages

Examples of special messages you will see in this manual are defined below. The signal words have specific meanings to alert you to additional information or the relative level of hazard.



CAUTION!

This is a Caution symbol.

Cautions give information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.



NOTE: *This is a Note symbol. Notes give additional and important information, hints and tips that help you to use your product.*

1.2 Installation



NO USER SERVICEABLE PARTS. REFER TO QUALIFIED SERVICE PERSONNEL FOR SERVICE.

1.2.1 Safe handling of equipment with batteries



CAUTION: *Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.*

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. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.*

1.2.2 Wet conditions

Under wet conditions, the plug must be connected to the final branch circuit via an appropriate socket / receptacle designed for washdown use.

Installations within the USA should use a cover that meets NEMA 3R specifications as required by the National Electrical Code under section 410-57. This allows the unit to be plugged in with a rain tight cover fitted over the plug.

Installations within Europe must use a socket which provides a minimum of IP56 protection to the plug / cable assembly. Care must be taken to make sure that the degree of protection provided by the socket is suitable for the environment.

1.3 Routine maintenance

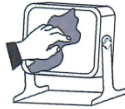


IMPORTANT: *This equipment must be routinely checked for proper operation and calibration. Application and usage will determine the frequency of calibration required for safe operation.*

Always isolate the indicator from the power supply before starting any routine maintenance to avoid the possibility of electric shock.

1.4 Cleaning the machine

Table 1.1 Cleaning DOs and DON'Ts



DO	DO NOT
Wipe down the outside of standard products with a clean cloth, moistened with water and a small amount of mild detergent	Attempt to clean the inside of the machine
Spray the cloth when using a proprietary cleaning fluid	Use harsh abrasives, solvents, scouring cleaners or alkaline cleaning solutions
	Spray any liquid directly on to the display windows

1.5 Training

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

To avoid the risk of RSI (Repetitive Strain Injury), place the machine on a surface which is ergonomically satisfactory to the user. Take frequent breaks during prolonged usage.

1.6 Sharp objects

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

1.7 FCC and EMC declarations of compliance

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 édicté par le ministère des Communications du Canada.

European Countries

WARNING: This is a Class A product. In a domestic environment, this product may cause radio interference in which the user may be required to take adequate measures.

2 Introduction

The ZM400 series indicators, shown in [Figure 2.1](#), are high performance, multi-function programmable indicators. They can display, analyze, store, and transmit data across a range of technology methods.

These indicators are suitable for the office, dusty, wet or high pressure and heavy washdown environments. They come in IP69K stainless steel desktop and IP66 panel mount housings. They have IBN displays for high contrast and a graphic array to display text and graphic messages appropriate to the function of the program.

The ZM400 indicator will support up to two scales with a maximum total of 16 - 350 ohm load cells. The standard indicator can connect to a single analog scale, an analog and digital scale or two digital scales. The indicators require 100 VAC - 240 VAC, 50 or 60 Hz or 12-36VDC. The standard indicator connectivity includes a USB Host, two serial ports and an Ethernet port.

With an option card they can support 2 analog scale inputs. Available options include:

- Analog Output
- Current Loop/RS485/RS422
- USB Device
- Wireless 802.11g
- Internal 120 VAC relay
- 2nd Scale Input 5VDC Excitation
- 2nd Scale Input 10 VDC
- External I/O Interface (for existing GSE or 1310 I/O cards)
- AC input, 4 Inputs (120-240VAC)
- DC input, 4 inputs(4-30VDC)
- AC output, 4 relays (20-240VAC)
- DC output, 4 relays (3-60VDC)

The indicator also has three logic level inputs with configurable functions and three setpoint outputs. See the Specification literature for a full list of specifications.

2.1 Front panel

The front panels, shown in [Figure 2.1](#), consists of the keys and displays.









Figure 2.1 Front panels of the ZM401 and ZM405 indicators
















Never press a key with anything but your finger. Damage to the overlay may result if sharp or rough objects are used.

The normal function of the keys on the front panel of the ZM401 are listed below.

	Press the TARE key to perform a pushbutton tare function. Acts as an up arrow key for menu navigation. Allows entry of numeric values.
	Press the SELECT key to toggle between the active display values. Press and hold to enter the setpoint editor. Acts as a down arrow key for menu navigation. Allows entry of numeric values.
	Press the ZERO key to zero the display. Acts as an ENTER key to accept a displayed value or function.
	Press the PRINT key to send information to a peripheral device through a configured communications port. Acts as a left arrow key for menu navigation and removes last digit during numeric entry.
	Press the UNITS key to scroll through the available units of measure while in normal operating mode. Acts as a right arrow key for menu navigation and inserts new digit during numeric entry.
	Press the F1 key to select application specific choices. Aborts a numeric entry and acts as an ESCAPE key in the menu navigation. Press and hold to view the password entry screen for menu access.

The normal function of the keys on the front panel of the ZM405 are listed below.

	Press the TARE key for pushbutton, key entry or preset Tare functions. Acts as an up arrow key for menu navigation. Allows entry of numeric values.
	Press the SELECT key to toggle between the active display values. Press and hold to enter the setpoint editor. Acts as a down arrow key for menu navigation. Allows entry of numeric values.
	Press the PRINT key to send information to a peripheral device through a configured communications port. Acts as a left arrow key for menu navigation and removes last digit during numeric entry.
	Press the UNITS key to scroll through the available units of measure while in normal operating mode. Acts as a right arrow key for menu navigation and inserts new digit during numeric entry.
	Press the ZERO key to zero the display. Acts as an ENTER key to accept a displayed value or function.
	The SAMPLE key can be used to perform custom application functions.
	The START key can be used to perform custom application functions.

	The STOP key can be used to perform custom application functions.
	The F1/ID key can be used to perform custom application functions. It can also be used to abort a numeric entry and it acts as an ESCAPE key in the menu navigation.
	The SCALE key can be used to perform custom application functions. It can also be used to select the active scale when more than one scale is enabled.
	The SETUP key can be used to perform custom application functions. It can also be used to view the password entry screen for menu access.
	The TARGET key can be used to perform custom application functions.
	Use the numeric keypad to enter numbers in the appropriate screens. Press the C (CLEAR) key to clear the last entry.

2.1.1 Display

The display and annunciators are shown and labeled in [Figure 2.2](#).

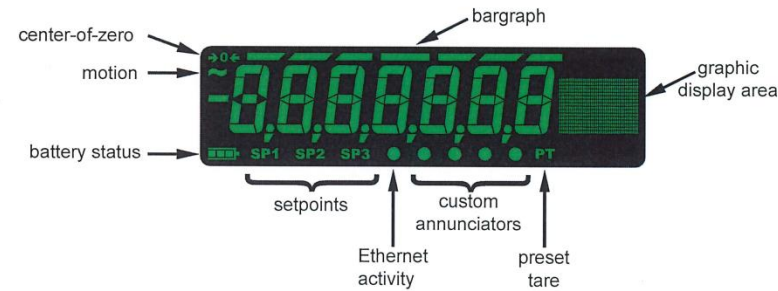


Figure 2.2 Annunciators

These annunciators will light during operation to inform the user of the weighing mode, active unit of measure, etc.

2.2 Powering up a ZM400 series indicator

The indicator is always active as long as power is received. Power can be supplied by:

- AC power cord connected to a properly grounded outlet (100 VAC - 240 VAC, 50 or 60 Hz)
- External 12VDC @ 1.2 Amps up to 36VDC @400mA (14.4 Watts). These are the power requirements for a fully loaded unit (16 x 350 load cell, 500mA out the 5V COM port terminal block, 500mA load on USB Host, and Wireless option card installed).
- AC to 24VDC power converter (optional accessory for panel mount version)
- Optional external battery pack with 4 D cells:
 - 1 x 350 ohm load cell = 6 hours battery life
 - 4 x 350 ohm load cell = 4 hours battery life
 - 8 x 350 ohm load cell = 1 hour battery life

2.3 Alphanumeric entry procedure (ZM401 only)

The keys in [Figure 2.3](#) have alternate functions in alphanumeric entry screens.


	These segments flash in numeric entry mode
TARE / ▲ -	Press to increment the flashing number
SELECT / ▼ -	Press to decrement the flashing number
PRINT / ◀ -	Press to backspace cursor in a number
UNITS / ▶ -	Press to advance cursor in a number
ZERO / ↵ -	Press to accept a value
F1 / ESC -	Press to escape an entry screen

Figure 2.3 Key function during numeric entry



When the graphic display is present you can scroll through numbers, alpha characters and symbols by repeatedly pressing the **TARE** or **SELECT** keys.

In numeric entry screens, the center segments shown in [Figure 2.3](#) flash. Use the keys, as described in [Figure 2.3](#), to enter a value on the display. Following is an example:

Example: To key in the number 507:

Repeatedly press the **TARE(▲)** or **SELECT(▼)** key until **5** appears on the display.

Press the **UNITS(→)** key once to move cursor one space to the right.

Repeatedly press the **TARE(▲)** or **SELECT(▼)** key until **0** appears on the display.

Press the **UNITS(→)** key once to move cursor one space to the right.

Repeatedly press the **TARE(▲)** or **SELECT(▼)** key until **7** appears on the display.

Press the **ZERO** key to enter or accept the value.

Press the **PRINT(←)** key to move the entry function one digit to the left. This effectively deletes the current value in that position and allows you to enter a new value in that position.

2.4 Using the alphanumeric keypad (ZM405 only)

Use the alphanumeric keypad to enter numbers and words when prompted by the indicator. The action is similar to using a cell phone to select the number or letter. A rapid succession of presses will scroll through the number on the key and then the letters, starting with upper case and then lower case. The decimal key scrolls through the negative sign, pound sign, colon, comma and percent sign. The 0 key toggles between 0 and a space.

2.5 Entering negative numbers or decimal point

To enter a minus sign for a negative number or a decimal point (or comma), press the **C** key (or **PRINT** key) to clear the current value from the display.

Then to enter a negative number, with a single **0** displayed press **SELECT**. The first character will then change to a (-) negative sign. Enter the rest of the digits normally.

To enter a decimal point (or comma), on a ZM405 use the decimal point key. On a ZM401 when the flashing digit is a 0 press the **SELECT** key and a decimal point (or comma) will appear. Then press the **UNITS** key to scroll in the next digit to follow the decimal and enter the rest of the digits normally. To enter a value less than 1 requires the entry of the leading 0 before a decimal point is allowed.

3 Indicator applications

The ZM401 indicator comes standard with a basic weighing application. The ZM405 indicator comes standard with a basic weighing application and 50 Preset Tare/ID memory. Custom applications can be written in LUA programming language or by installing Macro programs.

3.1 General weighing application

3.1.1 SELECT key default function

In the General Weighing application you can view the gross, net and tare display values or other scale parameters by repeatedly pressing **SELECT**.

3.1.2 Gross weighing



To change unit of measure, press **UNITS**.

To perform gross weighing, power up the unit and follow these steps:

1. Empty the scale and, if necessary, press **ZERO** to zero the display ...
0 is displayed and the *center-of-zero* annunciator lights.
2. Place item to be weighed on the scale ...
Weight is displayed.
3. Repeat steps 1 and 2.

3.1.3 Net weighing

Net weighing is available via three types of tare entry.

Pushbutton tare When enabled press **TARE** to tare the weight on the scale.

Entered tare When enabled key in a tare weight and press **TARE** to set. Not available in the ZM401.

Preset tare When enabled press **TARE** and then enter a stored Preset Tare ID (up to 4 alphanumeric digits) and press **ZERO** to set. Not available in the ZM401.



Pushbutton and Entered Tares can be enabled simultaneously. If Preset Tare is enabled, Pushbutton and Entered Tares are automatically disabled.

Auto Tare Clear

If auto tare clear is enabled, after a weighment, when the weight falls into the gross zero band, tare is cleared to zero.



Definition: Gross zero band - this is a configured value that defines a window around gross zero. This is used in several ways in different applications.

The three types of tare are explained below.

Using Pushbutton Tare

To perform a net weighment using pushbutton tare, power up the unit and follow these steps:

1. With no weight on the scale, if the display does not read **0** press **ZERO** ...
0 is displayed and the *center-of-zero* annunciator lights.
2. Place item to be tared on the scale ...
Weight is displayed.
3. Press **TARE** ...
0 is displayed and the *NET* weight is displayed.
4. Place material to be weighed into or on the tared item on the scale ...
Net weight of material is displayed.
5. Repeatedly press **SELECT** to view the gross, tare, and net values.
6. If repeated weighments use the same tared item, you do not need to establish a new tare value as described in step **2** and **3**.



*Pressing **TARE** will perform the tare function but if you continue to press and hold **TARE** for 3 seconds the display will show **cLEARed** and the Tare weight is cleared.*



*If gross weight is not at 0, press the **ZERO** key; then press the **TARE** key to clear the tare value.*

Using Entered Tare (ZM405 only)

To perform a net weighment using entered tare, the following steps describe a typical operation:

1. With no weight on the scale, if the display does not read **0** press **ZERO** ...
0 is displayed and the *center-of-zero* annunciator lights.

2. Key in the tare value of the container or box that will be used to hold the material that requires a net weight value, and press **TARE** ...
Tare weight is displayed as a negative value and the *NET* weight is displayed and the PT annunciator lights.
3. Place the container or box and material to be weighed on the scale ...
Net weight of material is displayed.
4. If repeated weighments use the same tared item, you do not need to establish a new tare value as described in step 2.
5. To remove the tare weight from the scale, enter **0**, then press **TARE** ...
The tare is cleared and the scale is in gross weigh mode.



Press and hold **TARE** for 3 seconds and the display will show **cLEARed** and the Tare weight is cleared.

Using Preset Tare (ZM405 only)

Preset tares are entered in a password protected menu. Refer to details described in the [Supervisor menu \(ZM405 only\) on page 30](#). There can be up to 50 tare values stored in memory referenced by a 4 digit ID. To perform a net weighment using one of the preset tares, follow these steps:

1. With no weight on the scale, if the display does not read **0** press **ZERO** ...
0 is displayed and the *center-of-zero* annunciator lights.
2. Press **TARE** ...
EntEr is displayed.
3. Key in the desired preset tare ID and press **ZERO** ...
Tare weight is displayed as a negative value and the net weight is displayed and the PT annunciator lights.
4. Place container or box and material to be weighed on the scale ...
Net weight of material is displayed.

Step 4 can be done prior to step 2 if desired.



When the item is removed from the scale the Tare is cleared automatically if Auto Tare Clear is enabled. To remove the tare weight manually, select a preset tare ID that has a value of 0 for the tare.



If the active unit of measure is lb-oz then tare weights must be entered in the oz equivalent. To enter 2 lb 4.5 oz you would need to enter 36.5 oz (2 lb = 32 oz plus the 4.5)

3.1.4 Using setpoints

Setpoints are values (weight) at which outputs are triggered automatically. Outputs can control relays connected to valves, lights, other machinery, or used in applications for status or conditional settings to impact the way the indicator operates. Setpoint outputs can be configured in the Ztools configurator program.

The default application is configured for the three onboard Outputs to Activate Above a Gross Weight Value. Hold the SELECT key to access the setpoint editor.

The three onboard inputs are setup for:

- 1 = Zero
- 2 = Tare
- 3 = Print

3.1.5 Printing

What is printed is typically controlled by the custom application program. The default application program will print the gross, tare and net weight on serial port 1 when you press **PRINT**.

Printing any of the configured print formats is possible using the Numbered Print feature. Enter the print format number and then press the **PRINT** key. The selected print format will be transmitted out all ports that are configured to print.

4 Menus

Password protected menus are available to configure the indicator and/or view information.

4.1 Accessing the menus

Follow these steps to access the menus in the ZM400 series.

1. With the indicator powered up and in normal operating mode, press and hold **SETUP** on the ZM405 and **F1** on the ZM401 ...

Pass is displayed, prompting you to enter the password.

2. Key in the password for the menu you want and press the **ZERO** key ...

The first item in the top level of the menu you accessed is displayed.

3. Use the navigation keys, shown below, to navigate through the menu structure. The symbols in the chart appear on the bottom of the keys.

Press **SELECT/ ▼** to move down in a menu

Press **TARE/ ▲** to move up in a menu, except at the bottom item in a menu, then use **ZERO/ ↵** or **F1**

Press **PRINT/ ◀** to move left in a menu

Press **UNITS/ ▶** to move right in a menu

Press **ZERO/ ↵** to accept a value or choice and move up in the menu.

Press **F1** to escape and move up in the menu

4.2 Menu annunciators

The menu structure is made up of menu items, parameters, value entry screens and lists from which you choose one item. To help you know where you are in the menu, the bargraph at the top of the display is on while the indicator is in the menus and will change appearance according to the following rules:

All segments flashing	This means you are in the menu structure but not in any of the following screens.
Center flashing / others solid	This means you are in a parameter prompt screen.
Center flashing / others off	This means you are in a numeric entry screen. Enter a number and press ZERO to accept.
Right flashing / others off	This means you are in a list. Scroll through the choices with the PRINT and UNITS keys and press ZERO to accept.

4.3 Exiting the menus

1. If you are at the bottom item in a menu use **ZERO** to accept a choice or value and move up a level, or use **SETUP** on the ZM405 or **F1** on the ZM401 to escape and move up one level without accepting the choice or value. From that point, press **TARE** repeatedly until ...

SAVE no is displayed. This means "Do not save changes."

2. Press **UNITS** to scroll through the choices: **SAVE no**, **SAVEYES** and **CAnCEL**. Press **ZERO** to accept the displayed choice.

If you choose **SAVE no** or **SAVEYES** the indicator exits the menu and returns to normal weighing mode.

OR

If you choose **CAnCEL**, the indicator remains in the menu.

4.4 USER level menus

The USER level menus are available to the user. The other menu levels are for supervisors and technicians only.

The USER level (password 111) contains the User, About, and Audit menus arranged as shown in [Figure 4.1](#).



Figure 4.1 USER level (password 111) menus

To access the USER level, from normal weighing mode, press and hold the **F1** key. Enter password 111 and press the **ZERO** key.

4.5 User menu

The User menu is shown in Figure 4.2.

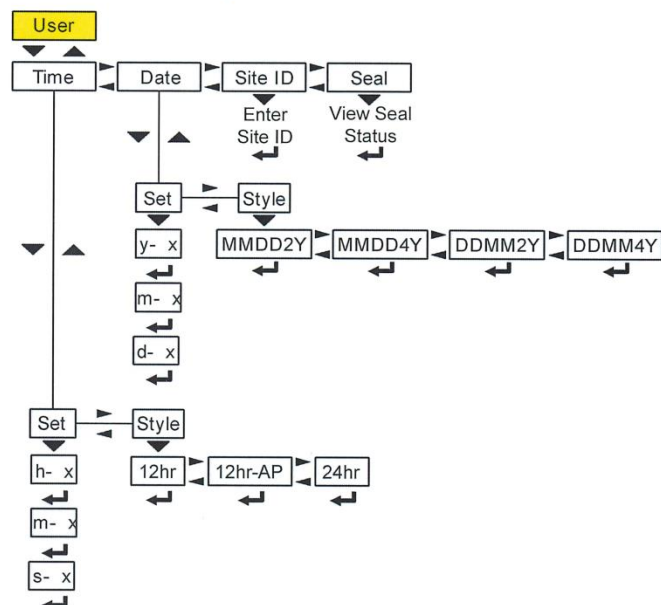
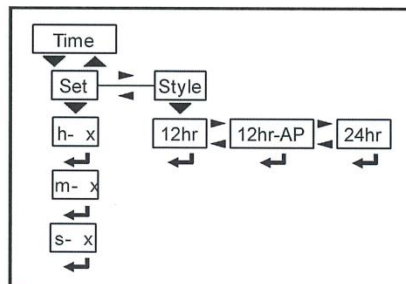


Figure 4.2 User menu

Use this menu to set the time and date, to enter a site ID, and view the physical seal status. Each is explained below:

4.5.1 Time



Use the **tiME** menu item to set the clock (**SEt**) and to choose the style of the time display (**StYLE**) 12 hr, 12 hr AM/PM or 24 hr.



The Time and Date can be used in print formats.

SEt Use this to enter values for the time.

h- x, = Hour

m- x = Minute

s- x = Seconds

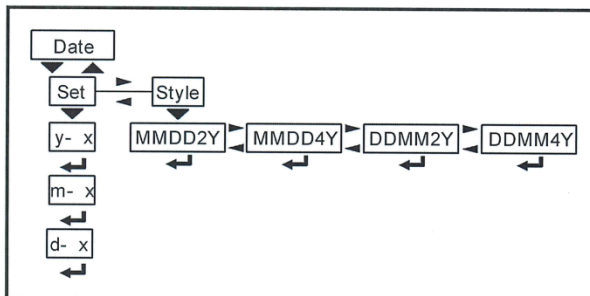
StYLE Choose the style of the time display. Choices are:

12hr, = 12 hour clock

12hr-AP = 12 hour clock with AM/PM

24hr = 24 hour military time

4.5.2 Date



Use the **dAtE** item to set the year, month and day and the style of the displayed date.

SEt Enter values for the date.

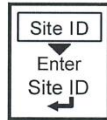
y- x = Year

m- x = Month

d- x = Day

StYLE Choose the style of the date display. Choices are:
MMdd2Y = Month, Day, 2-digit Year
MMdd4Y = Month, Day, 4-digit Year
ddMM2Y = Day, Month, 2-digit Year
ddMM4Y = Day, Month, 4-digit Year

4.5.3 Site ID

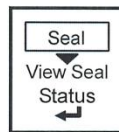


Site

Use this to enter a Site ID. Enter up to 6 characters for the Site ID via the alphanumeric entry. See page 14.

The Site ID can be used in a print format. Valid entries are decimal 32 through 126 (ASCII space to the ~ character)

4.5.4 Seal



SEAL

Use this to view the seal status of the indicator.

This is the status of the physical seal jumper inside the indicator. If the unit is sealed, no changes can be made to the configuration of the indicator.

To exit the menu, see *Exiting the menus* on page 21.

4.6 About menu

The About menu is shown in [Figure 4.3](#).

Reference Accessing the menus on page 17

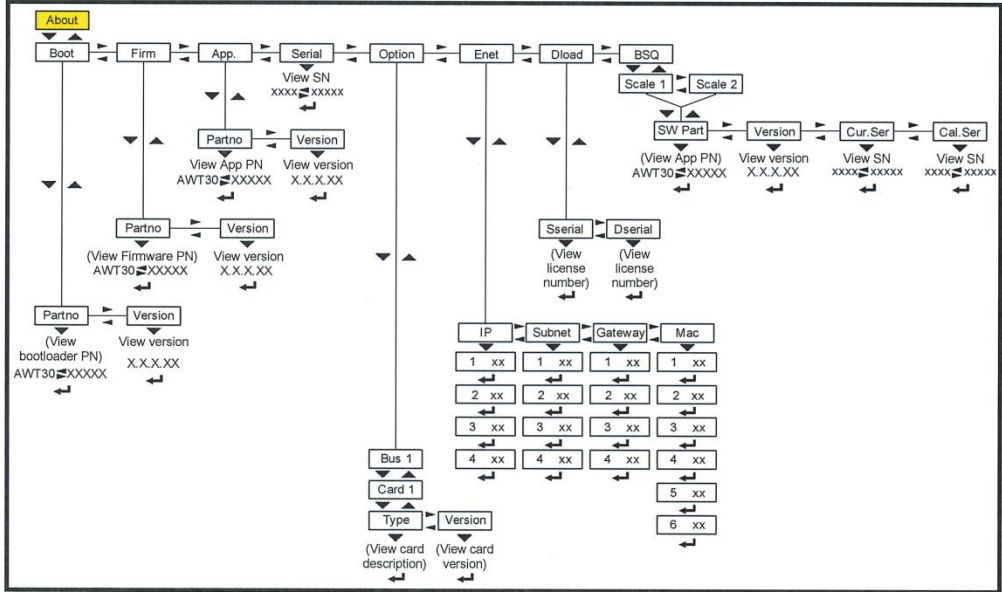


Figure 4.3 About menu

Use this menu to display information about the various items shown in [Figure 4.3](#). Each is explained below:



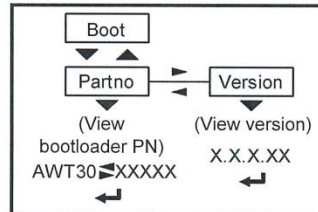
Definitions:

Bootloader Software that makes the electronics run.

Firmware Embedded system software that creates core functions of the product.

App Specific software that controls the behaviour for a given installation.

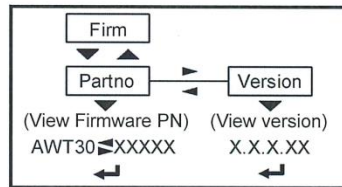
4.6.1 Boot (Bootloader)



PArtno Use this to view the bootloader part number. The part number is displayed in two parts. Press **RIGHT arrow** key or **LEFT arrow** key to toggle the display between the first and second parts of the part number.

VErSion Use this to view the version of the bootloader.

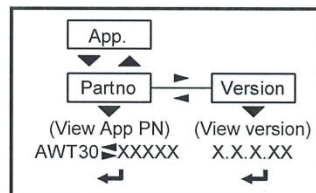
4.6.2 Firmware



PArtno Use this to view the firmware part number. The part number is displayed in two parts. Press **RIGHT arrow** key or **LEFT arrow** key to toggle the display between the first and second parts of the part number.

VErSion Use this to view the version of the firmware.

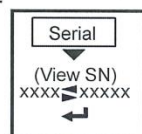
4.6.3 App



PArtno Use this to view the App part number. The part number is displayed in two parts. Press **RIGHT arrow** key or **LEFT arrow** key to toggle the display between the first and second parts of the part number.

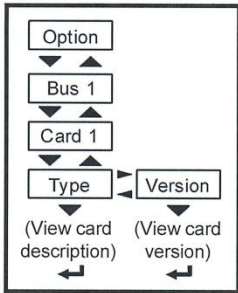
VErSion Use this to view the version of the App.

4.6.4 Serial



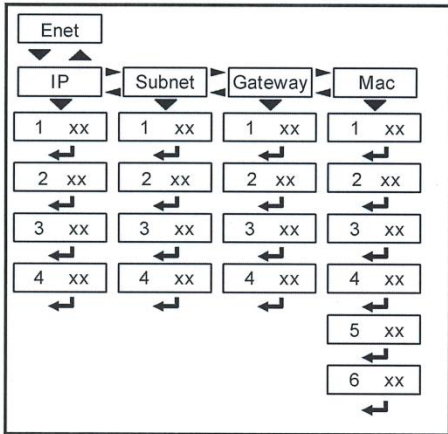
SErIAL Use this to view the Serial Number of the indicator. The number is displayed in two parts. Press **RIGHT arrow** key or **LEFT arrow** key to toggle the display between the first and second parts of the serial number.

4.6.5 Option



- Bus 1** There is only 1 Bus in the ZM400.
- Card 1** There is only 1 Card in the ZM400.
- oPtion** Use this to view the description and version of an installed option card.

4.6.6 Enet



EnEt This stands for Ethernet. Use this to view the network addresses.



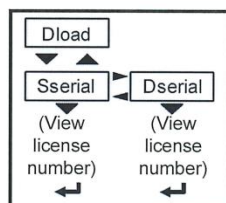
If the indicator is connected to an Ethernet network, the values displayed will be the current assigned addresses.

- iP** Use this to view the IP address.
- SubnEt** Use this to view the Subnet address.
- gAtEWAY** Use this to view the Gateway address.
- MAc** Use this to view the Mac address.



The IP, Subnet and Gateway addresses are a series of four double digit values.
The MAC address is a series of six double digit values: 1 XX, 2 XX, 3 XX, etc.

4.6.7 Download



dLoAd

This stands for download. Use this to view these items:

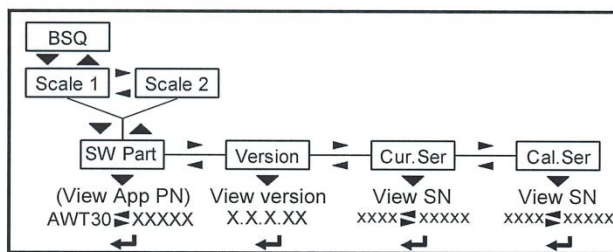
SSeriAL View the license number that created the configuration file.

dSEriAL View the license number that downloaded the configuration file.



To upload a configuration file, the license number of the Configurator (Ztools) software must match one of the license numbers in the indicator Contact AWTX Technical Support for assistance.

4.6.8 BSQ



This stands for Bench Scale - Quartzell.

SW Part View the firmware part number of the cell that is connected.

VerSion View the firmware version of the cell that is connected.

cur.Ser View the serial number of the cell that is connected.

cAL.Ser View the serial number of the cell that **WAS** connected at the time of calibration.

To exit the menu, see *Exiting the menus* on page 20.

4.7 Audit menu

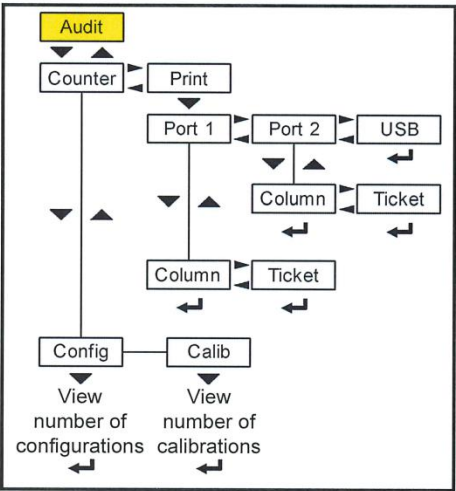
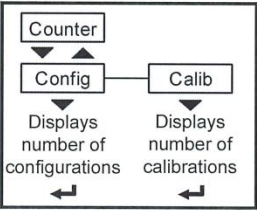


Figure 4.4 Audit menu

Use this menu to display audit counters for configuration and calibration and to print the information. Each is explained below:

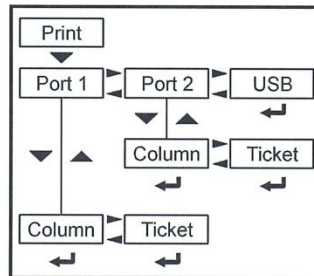
4.7.1 Counter



countEr Use this to view these items:

- conFig**View how many times the indicator has been configured.
- cALib**View how many times the indicator has been calibrated.

4.7.2 Print



Print Use these to select which port to print the audit report through. Choices are:

Port 1 Under **Port 1** choose to print to a column or ticket printer.

Port 2 Under **Port 2** choose to print to a column or ticket printer.

uSb Printing to USB requires that a USB flash drive is connected to the indicator host USB. Printing to USB will create a folder on the flash drive and a comma separated file with the data.

To exit the menu, see *Exiting the menus on page 20*.

5 Supervisor menu (ZM405 only)

The Supervisor menu allows the setup and editing of the Preset Tare register in the ZM405. This menu only applies to the default standard application of the ZM405 indicator.

To access the Supervisor menu requires entry of the Supervisor password. Refer to the Service manual for details. The ZM405 has a Preset Tare register memory which can store 50 tares, each identified by a 4 digit alphanumeric Tare ID. Preset Tare must be enabled for these settings to function.

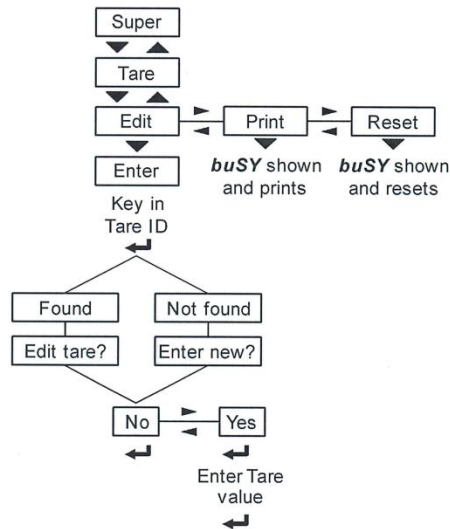


Figure 5.1 Supervisor menu

Enter the Supervisor password. Follow the keypresses illustrated in Figure 5.1 and see the definitions of each item below to enter, print or reset the 50 available Preset Tares, which include the ID number and the tare weight.

- SuPEr*** This is the top item in the Supervisor menu.
- tArE*** This is the only item to appear in the Supervisor menu. Use this to manage the Preset Tares.
- EdIt*** Use this to find an existing tare or create a new one
- PrInT*** Use this to print the tare list. See *Printed Preset Tare report example on page 32*.
- rESEt*** Use this to clear all tares in memory.

For step by step instructions see the following sections.

5.1 Creating a new Preset Tare

1. From **Edit** press **SELECT** ...
EntEr is displayed. A cursor appears in the graphic display box on the right side of the display.
2. Enter up to 4 alphanumeric digits for the Preset Tare ID. The digits will appear in the graphic display. Press **ZERO** to accept ...
 Since this is a new Preset Tare the display will quickly scroll through these messages: **not Found** and then **EntEr nEW?** followed by **no**.
3. Press **UNITS** ...
YES is displayed.
4. Press **ZERO** ...
 A flashing **0** is displayed and the instruction **Enter Tare** appears in the graphic display.
5. Key in the Preset Tare weight and press **ZERO** to accept ...
 The display returns to the **Edit** menu item. The Preset Tare is now in memory and can be recalled.

5.2 Editing an existing Preset Tare

1. From **Edit** press **SELECT** ...
EntEr is displayed. A cursor appears in the graphic display box on the right side of the display.
2. Enter the Preset Tare ID number. The digits will appear in the graphic display. Press **ZERO** to accept ...
 Since this is an existing Preset Tare the display will quickly scroll through these messages: **Found** and then **Edit tArE?** followed by **no**.
3. Press **UNITS** ...
YES is displayed.
4. Press **ZERO** ...
 A flashing display of the current tare value is displayed and the instruction **Enter Tare** appears in the graphic display.
5. Key in the new Preset Tare weight and press **ZERO** to accept ...
 The display returns to the **Edit** menu item. The new Preset Tare value is now in memory and can be recalled.

5.3 Printing the Preset Tare list

1. From **Edit** press **UNITS** ...
Print is displayed.

2. Press **SELECT** ...

bUSY is briefly displayed as the Preset Tare report is printed. See *Printed Preset Tare report example on page 32*. The display returns to the **Print** menu item.

5.4 Resetting the Preset Tare list

1. From **Edit** press **UNITS** twice ...

rESEt is displayed.

2. Press **SELECT** to reset the Preset Tare memory to factory defaults ...

bUSY is briefly displayed as the Preset Tare memory is cleared and then the display returns to the **rESEt** menu item.



If the Preset Tare list has been reset and you print the Preset Tare report the 50 memory channels will be listed but the Tare Name and Tare Value will each be 0.

5.5 Printed Preset Tare report example

List of Preset Tares

	Tare Name:	Tare Value:
1	12AB	10
2	23BC	20
3	34CD	30
4	45DE	40
5	56EF	50
6	67FG	60
7	78GH	70
8	89HI	80
9	90IJ	90
10	123A	100
11	234B	110
12	345C	120
13	456D	130
14	567E	140
15	678F	150
16	789G	160
17	890H	170
18	ABCD	180
19	BCDE	190
20	CDEF	200
21	1234	210
22	2345	220
23	3456	230
24	4567	240
25	5678	250
26	6789	260
27	7890	270
28	ABCD	280
29	BCDE	290

Etc. to 50

Tare List Complete

6 Communications

The ZM400 can communicate through these ports:

- Serial (2)
- Ethernet
- USB-Host (transactions to USB memory stick or compatible USB printer)
- Option Cards
 - USB-Device
 - Wireless 802.11g
 - RS485/20ma current loop

6.1 Default print formats

Below are examples of the default formats that are available:

General Weighing (Format #1)

```

Gross  272.04 lb
Tare   95.88 lb
Net    176.16 lb
  
```

Active value (G, T or N) and displayed weight (Format #5)

```

G  272.04 lb
  
```

Displayed weight and active value (G, T or N) (Format #7)








```

272.04 lb G
  
```

The indicator can be configured for many other outputs to match the application.

7 Error messages

The following error messages may be displayed during use of the indicator:

Message	Display
Overload	
Can't fit on display	
Underload	
Can't	
Entry not in valid range	
Password entry failed	
Indicator did not reach a stable zero weight within time window set for automated weighing process.	

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