



# OEM Manual

MODEL 3001™ through 3006™  
ELECTRONIC TON CYLINDER SCALE

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These instructions generally describe the installation, operation, and maintenance of subject equipment. The manufacturer reserves the right to make engineering refinements that have not been described herein. Should any questions arise that may not be answered specifically by these instructions, they should be directed to **SCALETRON INDUSTRIES, LTD.**, or our sales agent for a response.

All possible precautions were taken in packaging each equipment item to prevent shipping damage. Carefully inspect each item and report damage immediately. Report damage claims to shipping agent involved for equipment shipped F.O.B. job site. **Do Not Install Any Damaged Equipment.**

All instructions given on any labels, or attached tags, should be followed. Carefully inspect all packing materials before discarding to prevent loss of accessories, mounting hardware, spare parts, or instructions.

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## **I. General Description:**

The Model 3001™ thru 3006™ Ton Cylinder Scale(s) were designed to provide accurate weighing of one (or up to six) ton cylinders. The strain gage load cell system provides ease of mounting the digital indicator in a remote location. The four conductor shielded cable required can be run through conduit to a location within 200 feet from base. A current output signal of 4-20 mA, 0-20 mA or + 12 mA, -8 mA, is standard. It is also selectable as active or passive. There are two independently adjustable dry contacts for use in conjunction with low level alarm, or automatic dialer equipment, as required. The printed circuit board contains a power supply section and separate zero and span controls. The weigh meter electronics are housed in a NEMA 4X fiberglass enclosure.

## **II. Specifications:**

**Display:** LED, 4 ½ Digit with minus sign, 0.56 inch high, seven segment

**Resolution:** Indicator: 1999 lb x 0.1 lb, or 2000 to 19999 lb. x 1.0 lb.

**Load Cell Excitation:** 16 VDC Power

**Zero Adjustment:** Internal potentiometer, R-25 med. and R-23 fine. DIP switches SW B 1-6 for course adjust, jumper J-8 to change polarity of adjustment.

**Span Adjustment:** Internal potentiometer for med. (R-12). DIP switches SW A 1-6 for course. 7 & 8 have no effect, not used.

**Current Output Adjustment:** Potentiometer R-43 adjusts 4-20 mA active or passive. 220 Ohm Load max.

**Overload:** Blanks with "0" (or if decimal, "0.0") on the display

**Accuracy:** +/- 0.5% full capacity

**Power:** 120 Volt, 50/60 Hz single phase, -0.5 Amps. 240 Volt, available with jumpers on

board.

**Dimensions:** Indicator: 10.25" W X 6" D X 6.5" H ; Base: (Each Unit) 55" L X 26" W X 9.5" H.

### III. Assembly and Start-up:

1. Place the scale frame on the floor and position the pivoting plates so they are square with platform and working freely. Shim plate to level scale end to end. Mark and drill three holes per plate into concrete and anchor with lag anchors.
2. Adjust leveling foot until scale frame is level side to side.
3. Attach FLEXIBLE conduit to fitting provided on scale frame. It is recommended at least 12" of flexible conduit should be used to allow minimum restraints on scale frame. Rigid conduit can be run from this flexible conduit to location where indicator will be installed.
4. In the event several bases are connected to a single indicator, each of the load cell cables from the individual bases will be run in conduit into the indicator. If indicator is mounted farther from scale than 15', a junction box should be used. The like color wires from each scale should be connected together and a single set of wires run to indicator. If a **SCALETRON™** junction box is used, connect wires as stated in (4a).
- 4a. If multiple bases are used, interconnect load cell wires in junction box as follows:
 

Black wire = - Excitation	Red wire = + Excitation
White wire = - Signal	Green wire = + Signal
5. Mount digital indicator to wall and attach conduit for load cell cable and output signals as required.

Make hole in indicator box for conduit if used. If not, a liquid tight strain relief must be used to seal the NEMA 4X box. Be careful not to drill into P.C. Board. Feed the wire up through the strain relief and tighten the fitting. Fasten the indicator to the wall. Connect wires to 12 pin connector provided (TB 1) according to the following code:

**TB-1 1: Low Level set pt. 1 (REED relay, contact closure to pin 2: common)**  
**2: Common**  
**3: Low Level set pt. 2 (REED relay, contact closure to pin 2: common)**  
 \* **4: 4-20 LOOP Powered (4 is common and 5 is supply)**  
 \* **5:**  
 \* **6: 4-20 SCALE Powered (5 is common and 6 is supply)**  
**7: - Sense (optional)**  
**8: - Excitation (BLACK)**  
**9: + Sense (optional)**  
**10: + Excitation (RED)**  
**11: -Signal (WHITE)**  
**12: +Signal (GREEN)**

\*Make 4-20mA connections at this location. Determine if 4-20 mA signal is to be scale powered, or if it is loop powered (powered by SCADA or PLC). Refer to page 5, Jumper labeled J-4 for proper settings of scale or loop powered 4-20mA.

**Note:** If sense leads are used from load cell to indicator, jumpers J-5 & J-6 must be cut on the 3000™ PC board. If sense leads are not required, then jumpers must be installed. Sense leads are **only** required if the distance between scale base and digital indicator is in excess of 100'.

**When all wires are tightened in their proper positions, press connector on pins at bottom of P/C board WITH WIRES FEEDING OFF BOTTOM OF BOARD. Close the indicator and apply power as required: Standard Unit requires a 120 Volt power source**

**(240 Volt is available as an option.)**

6. Allow approximately 15 minutes warm-up time before using the scale.

#### **IV. General Use And Start-Up:**

1. After the scale has been leveled and secured, and wires connected according to the diagram on page 4, the scale will be ready for use. Please note: **This scale has been calibrated at the factory and will not require any further calibration before use.**
2. With the scale frame(s) completely empty, turn black tare knob until the display reads zero. (Counter-clockwise will decrease the reading, and clockwise increases the reading).
3. **If you know the tare** of the cylinder you are using, (the weight of the empty container only), turn the black tare knob counter-clockwise until you reach that Tare weight number in the negative. Load on the full cylinder, and the number that appears on the LED display is your Net Weight (or weight of the contents). You are now ready to begin using the contents and your display will continuously show the Net Weight for that unit. **If you know the Net Weight**, (the weight of the contents in the cylinder) you will be weighing on the scale frame, you will then load a full cylinder, and turn the black knob counter-clockwise until you see that Net Weight number on the LED display. You are ready to begin using the contents of that cylinder. In both methods of usage, (Tare or Net Weight) once the black tare knob has been set, there is no need to turn it again until you are reloading a new cylinder. The display continuously displays the current net weight of the contents on the frame(s).
4. When the cylinder is empty, remove it from the scale frame, and turn the black tare knob to zero if it is not already on zero. Repeat the same process as outlined in step #3.
5. If there should be a need for any calibration, it is highly recommended that you call the factory for assistance **before** you make any changes. Do not make any changes to the internal parts without discussing your problem with technical assistance. Please see the last page in the manual for those contact numbers.

#### **V. Calibration Procedure:**

*(This procedure is only needed if changes have been made to scale. Read entire section before calibrating. If scale is new, and not giving correct readings, something is most likely connected wrong, or has been damaged in shipment. Changing calibration will not correct the problem. Please contact the factory immediately!)*

1. Once load cell scale base is secured to floor, **with no weight on scale**, it is ready for calibration. Turn (black knob) tare pot on FRONT PANEL fully clockwise, then turn back **counter clockwise** one full turn. (This will assure enough tare adjustment when calibration is complete). Adjust SW B zero switches 1-6 and R-25 to obtain a zero reading on digital display. **Do not move shorting pin on J-8 unless SW 1-6 and R-25 adjustments cannot reach a zero reading. J-8 will reverse the adjustment polarity and thus double the range of the adjustments.**

**Note:** The scales are calibrated at the factory and should only need adjustment of R-25 or slight switch change to get a zero reading.

2. After a zero reading is obtained, a known weight (such as a full gas cylinder with a reliable "Gross" weight {Net + Tare = Gross} marked on it), should be placed on the scale. Wait for liquid to stop movement so a reading can be obtained. Adjust R-12, or SW A 1-6 span switches to obtain gross weight desired. Shorting jumper J-9 can be moved to Hi, or Lo position, if SW 1-6 and R-12 cannot reach desired weight.

**Note:** Calibration is done at the factory and should only need adjustment of R-12, or slight

switch change to set span to desired weight.

3. Adjustment of span interacts with the zero setting previously made, and step (1) must be repeated, followed by the repeat of step (2) until both readings remain correct with weight on or off scale without adjustment. Steps 1 and 2 take time to complete, but once they are set, they should remain correct for a long time.

4. Analog output is selectable as scale powered or loop powered. If scale is to supply the power for the loop, J-4 must be in the "S", or scale, position. The 4-20 mA output will be available at TB 1 terminal 5 & 6. (5= negative, and 6 = positive) 220 Ohm load max. If the device connected to the scale is to supply power for the loop, then jumper J-4 must be in the "L" (loop) position, and the signal will be available at TB 1 terminals 4 (common) and 5 (\*I) (220 Ohm load at 15 VDC, or 440 Ohm at 30 VDC max.)

**Note:** Output is selectable as 4-20 mA, 0-20 mA, or +12 mA, -8 mA with jumper J-7. Two pins closest to R-43 are for 0-20 mA, two center pins are for 4-20 mA and the two pins farthest from R-43 and for +12 mA, -8 mA.

5. Connect device to be connected to output terminals required. Install Milliamp meter in loop to measure current.

6. Adjust R-43 for full load setting. (no load should be correct when digital indicator is reading "0").

7. Two Set Points are available for contact closure at two different points in range of scale. Use R-59 to adjust SP 1 and R-56 to adjust SP 2. SP 1 is available at TB 1 terminal 1 and 2. SP 2 is available at TB 1 terminal 2 and 3. Relay rated for 12 VDC, 1.5 amp max. load. (Contacts are closed below set point.)

## VI. Troubleshooting:

**\*If you experience any problem with this scale, please consult the factory:**

**USA & Canada Toll-Free: (800) 257-5911**

**Tel: (+1) 215-766-2670 ♦ Fax: (+1) 215-766-2672**

**Notice: Do not return any equipment without first contacting the factory. A return authorization number will be issued and it must be marked on all materials returned to the factory, accompanying a letter that explains the problem specifically. A Serial Number will also be required. It is located inside the indicator box.**

VII. Board Diagram:

4 1/2 Digit Analog Board

