



OEM Manual

MODEL 4020™ - 4 ½ Digit
DRUM 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 damages 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 material before discarding it to prevent loss of accessories, mounting hardware, spare parts, or instructions.

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I. General Description:

The Model 4020™ Digital Drum Scale is available with 12", or 16" discs and was designed to provide the accurate weight of cylinders the same diameter and smaller. The maximum net weight rating on the base is 300.0 to 600.0 lbs.(depending on disc size) and should not be exceeded. Maximum tare weight is 150.0 lbs.

The low profile design of the platform, 1 ½" allows for safe and easy loading and unloading of cylinders. The printed circuit board contains a power supply section and a separate tare and span control. The weighmeter electronics are housed in a NEMA 4X enclosure for mounting on the wall.

Standard Parts

1 Base assembly
1 Weighmeter
1 Power Cord
1 Technical Manual

Available Options

A. Remote mounting of standard enclosure
B. Loadcell Cable

II. Specifications:

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 R-12 for med., and R-13 for fine. DIP switches SW-A 1-6 for course, 7 & 8 no effect, not used

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

Power: 120 Volt, 50/60 Hz single phase, 0.5 amps. 240 Volt available with jumpers on board.

Dimensions: Base: 12 inch disk, 16 inch disk

III. Assembly and Start-Up:

The set up procedure is as follows:

1. Locate a solid, level spot on the floor to install scale platform. Clear area of all loose debris.
2. Place platform on this location and bolt base to floor in all four corners.
3. **The scale is calibrated at the factory with certified test weights and should not need calibrating when installing!**
4. Mount digital indicator to wall. Be sure to use the liquid tight fittings where wires enter the indicator to protect the electronics from damage.
5. Connect load cell cable from load cell, or junction box, to TB-1 as follows:

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'.

IV. General Use Instructions:

Please refer to these instructions for daily use of this scale. These instructions simulate the procedure for every day usage.

Use this procedure for the occasional on and off loading of cylinders:

To load a new, full cylinder, please follow these steps:

1. If you know what the tare weight of your cylinder (the weight of an empty cylinder) you may turn your black tare knob (located on the front of the indicator door) counterclockwise, until the tare weight is shown on the LED indicator as a negative number. *(Ex: Your cylinder is stamped with a tare weight of 100 lbs. You turn your tare knob counterclockwise until it reads “-100”. Then you load the cylinder on to the disc, being sure that it is completely on the disc and not touching the base.)*

Do not load the cylinder on before you have reached the tare weight.

-OR-

2. If you do not know the tare weight of the cylinder, or if you DO know the Net Weight, (the weight of the contents of the cylinder) you may use this alternate procedure. Load the full

cylinder on to the scale base being sure that the cylinder does not sit on the base. When cylinder is centered, turn the tare knob (located on the door of the indicator) counterclockwise, until the known weight of the contents is displayed on the LCD. (Ex: You have a cylinder that holds 150 lbs. of contents. Load the cylinder on the scale, and turn the black tare knob located on the front of the indicator door until the weight of the contents, 150 lb., is displayed on the LCD display. You are ready to start using the contents.) **When cylinder is empty, remove old cylinder, and load new one using the instructions above.**

Use this procedure for the filling and using of a stationary Tank or Drum:

1. Load an empty tank onto the base, and attempt to center the cylinder as much as possible. Be sure cylinder is not touching the base frame, and is entirely on the disk.
2. Turn black tare knob on indicator box until display reads "0" lb. (This is to tare out the empty cylinder weight).
3. Fill cylinder. Display will show how much net weight (cylinder contents) as you fill and then use the material.
4. Use contents in cylinder. Weight will decrease as you use the contents.
5. When scale reads 0 lb., the contents have been completely used. Fill tank and begin process again.

V. Calibration Procedure:

The Model 4020™ Drum Scale is **pre-calibrated at the factory to within specified accuracy, and is calibrated to standards traceable to the Bureau of Weights and Measures. No further calibration should be necessary. If the electronics or load cells in the base are being replaced, the following procedure should be used.**

1. Once scale is leveled 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 completed.) 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-B 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.
2. After a zero reading is obtained a known weight (such as a certified test weight) should be placed on the scale.

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.

Wait for a minute so a reading can be obtained. Adjust R-12 or SW-A 1-6 span switches to obtain gross weight desired.

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.
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" (scale) position. The 4-20 mA output will be available at TB-1 Terminal 5 & 6. (5= -) & (6= +) 220 Ohm load max.

If the device connected to the scale is to supply power for the loop, then the jumper, J-4 must be in the "L" (loop) position and the signal will be available at TB-1 terminals 4 (common) and 5 (+1). (220 Ohm load at 15 VDC, or 440 Ohm load 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 are for +12mA, -8mA.

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").

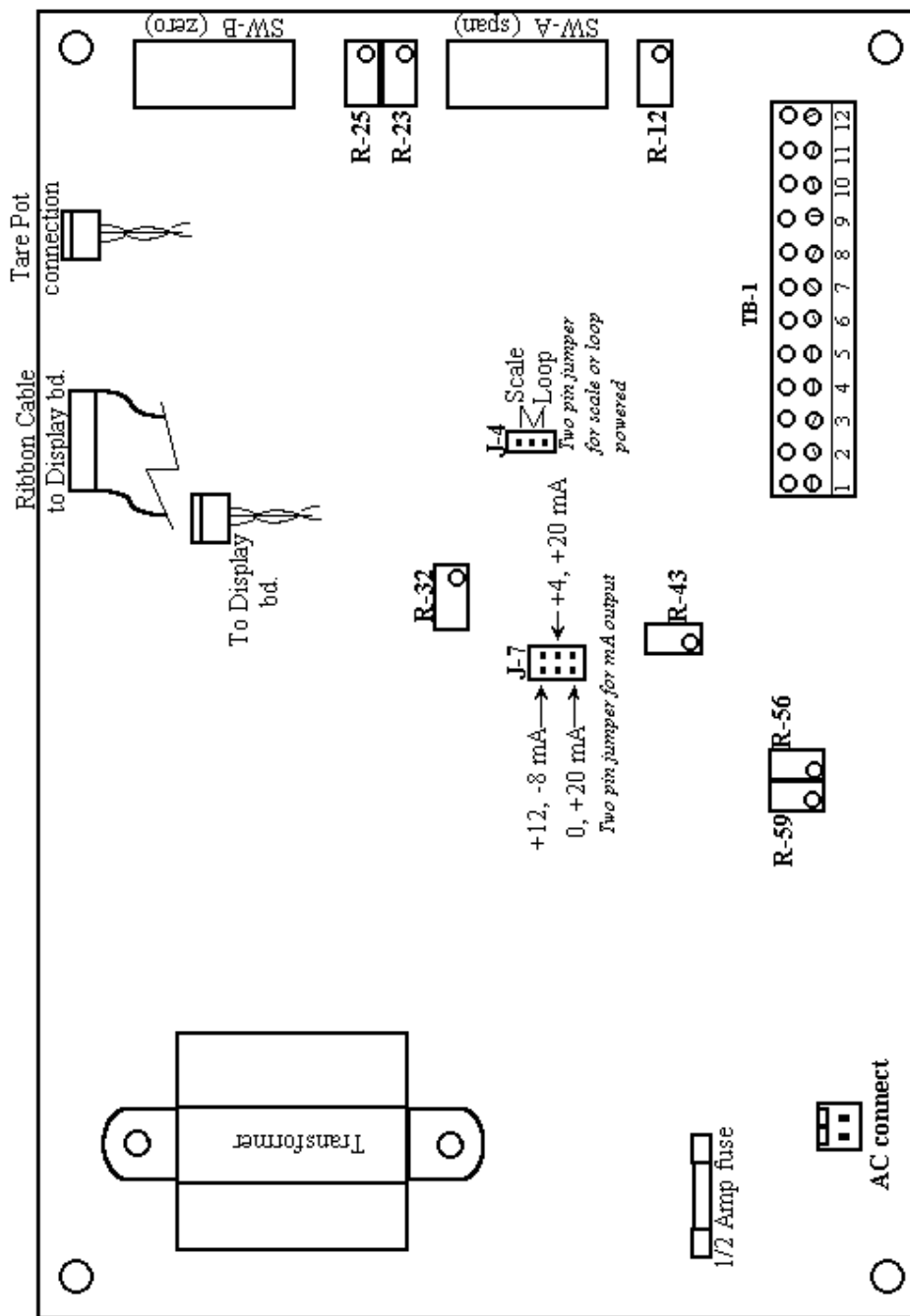
7. Two set points are available for contact closure at two different points in range of scale. Use R-59 to adjust SP 1, and R-56 to adjust SP 2. SP 1 is available at TB 1 terminal 1 and 2. SP 2 is available at TB 1 terminal 2 and 3. Relay rated for 12 VDC 1.5 amp maximum load. (Contacts are closed below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

VI. **Troubleshooting:** Please contact 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



- TB-1**
- 1 = Low level set point 1 (REED relay contact closure to pin 2 common)
 - 2 = Common
 - 3 = Low level set point 2 (REED relay contact closure to pin 2 common)
 - 4 = 4-20mA Loop Powered
 - 5 = 4-20mA Scale Powered
 - 6 = - Sense (optional)
 - 7 = + Sense (optional)
 - 8 = Black
 - 9 = + Sense (optional)
 - 10 = Red
 - 11 = White
 - 12 = Green

