



Ottawa, October 15, 1979

NOTICE OF APPROVAL – AVIS D'APPROBATION

Manufactured By: Toledo Scale Division of Reliance Electric Ltd.
2462 Howard Avenue
Windsor, Ontario

Type of Device: Electronic Digital Indicator for use with approved compatible scales using one strain gauge load cell.

Use of Scale: General Trade.

Capacity and Readout Increments: Indicating capacity may be up to but not in excess of the approved capacity of the weighing system in which the indicator is installed, or the approved metric equivalent.

Model Number: 8135 (Remote mounted), 280 (Scale mounted 8135 with the load cell included in the indicator).

If the indicator is "remotely" mounted (ie. on a wall, desk, etc.) the load cell is mounted in the scale, the model designation for this is Model 8135. If the indicator is mounted directly on a scale with the load cell included in the indicator itself it is designated as Model 280.

On standard Toledo models, the use of the 280 indicator is designated by the final digits of the model number becoming a "6" (ie. the Model 2081 becomes 2086, the Model 2181 becomes 2186, the Model 2881 becomes 2886, etc.)

When this indicator is installed on another manufacturer's lever system, the model number will be indicated as XXXX/8135 or XXXX/280, depending on which way it is mounted, where XXX represents the model number of the lever system. The approval number (S.WA-1140) for the electronic indicator will be shown after the approval number of the lever system.

Device Description: The electronic digital indicator is designed for use with a low or medium capacity load cell which is part of the instrument (indicator) connected to mechanical understructures through a load bearing steelyard. The indicator is housed in a gasketed enclosure suitable for applications where water washdown is required.

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A keyboard on the front of the instrument provides the following functions:

- a) ZERO - Push button to zero, the weight indication.
- b) CLEAR - Clears the entered tare
- c) AUTOMATIC TARE - tares off the weight on the scale platform (an optional manual tare module is also available).
- d) LB or Kg selection.
- e) Print for printing wieght information on optional printer utilizing a zoma current loop. (20 ma).

The display consists of 5 digits or 4 digits and a "-" sign. There are 4 LED's adjacent to the legends ZERO, NET, LB, and Kg to indicate center of zero (± 0.25 of an increment of the center of zero), a tare is entered and the indication is the "NET" weight, the indication is in pounds, and the indication is in kilograms respectively.

There are two internal switches used to select capacities of 1500, 2000, 2500, and 3000 increments. Two other internal switches are used to select increments of X1, X2, and X5. In addition there are three internal switchès to select the decimal point location as follows:

- 1) XXXX0
- 2) XXXXX
- 3) XXXX.X
- 4) XXX.XX
- 5) XX.XXX
- 6) X.XXXX

Internal switches and potentiometers provide initial (zero) compensation of from 0 to 16.5 millivolts and span ajustment of from 4 to 16 microvolts per increment. Either 1.5 mV/V or 2.0 mV/V cells may be used and the load cell excitation is provided for one 240 ohm load cell.

Gross weights which exceed the selected capacity of the scale by more than five increments will cause blanking of the weight display.

The system includes "weight in motion" detection controled by the microprocessor in order to inhibit the Zero, Tare, or Print functions while the weight display is changing (No motion is defined in this case as 3 successive weight reading within \pm the smallest weight increment).

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When the power is turned on or is restored after more than a 1 second interruption, the Zero Indicator (LED) will flash until the Zero pushbutton is pressed or until zero is automatically captured. The internal switch SW4-3's function is that when it is "ON" the scale will power up in the metric mode and when "OFF" the scale will power up in the avoirdupois mode, regardless of what mode it was in when the power was interrupted.

Description of functions:

1) Instrument Zeroing

- (a) Automatic Zero Maintenance - The electronic digital indicator is equipped with automatic zero maintenance (AZM). The range of zero maintenance is limited to 4% of scale capacity with the center of the range determined by the internal analog zero setting. Weight variations which occur at a rate of 0.2 increments per second or slower will be compensated.
- (b) Pushbutton Zero - A front panel pushbutton provides rezeroing of the scale over a range of 4% of scale capacity. The center of this range is determined by the setting of the analog zero potentiometer. The Zero pushbutton must be held depressed while there is "no motion", with the scale in the Gross weighing mode, to be effective. Pushbutton zero operates by determining the difference between the actual weight and zero, to the nearest minor increment, and adding or subtracting this value to the actual weight to provide a corrected weight display.
- (c) Zero Indication - An LED adjacent to the legend ZERO will be illuminated when the instrument zero is within ± 0.25 increments of the center of zero increment. A blinking ZERO LED indicates zero is not captured.
- (d) Display Verification (Visual) - Pressing the ZERO pushbutton causes the center segment of each of the 5 LED digital displays and all legends to turn on. When the button is released and the scale is empty, all zeroes will be displayed. A combination of these two displays demonstrates that all segments and drive circuits are functional in both ON and OFF conditions.

2) Clear

Pushing the clear pushbutton will clear out any tare entered and return the display to a zero indication or to the indication of the gross weight on the scale. This is the only function of the switch.

3) Tare

- (a) Pushbutton Tare (Normal Mode) - Tare may be entered by pressing the TARE button whenever the Gross or Net weight is positive and there is no motion. Tare is limited to a maximum of four significant digits. If the Tare weight is removed, the display shows (-) Net Weight. Tare is cleared by use of the C (clear) pushbutton.
- (b) Pushbutton Tare (Interlocked Mode) - When the internal tare Interlock switch SW4-1 is ON, Tare may be entered by pressing the TARE button only when the scale is in the Gross Weight mode, the Gross Weight is positive, and there is no motion. Tare is limited to a maximum of four significant digits. The zero pushbutton is not operative after a Tare has been taken (ie. in the net mode). Tare must be cleared by use of the C pushbutton before a new Tare may be entered.
- (c) Digital Tare (Option) - Provision is included for entry of tare via four selector switches which are mounted in an enclosure attached to the scale column. Whenever the switches are set to other than 0000, the scale is in the NET mode, and pushbutton Tare and LB-Kg switching is non operative. When the scale increment is selected as X2 or X5, the least significant digit (LSD) of tare will be rounded off as follows:

<u>TARE SWITCH LSD</u>	<u>TARE ENTERED (X2)</u>	<u>TARE ENTERED (X5)</u>
0	0	0
1	2	0
2	2	0
3	4	5
4	4	5
5	6	5
6	6	5
7	8	5
8	8	10
9	10	10

Switch tare is cleared by returning the switches to the 0000 position. The Clear (C) pushbutton has no effect upon Manual Switch Tare.

4) LB/Kg Selection

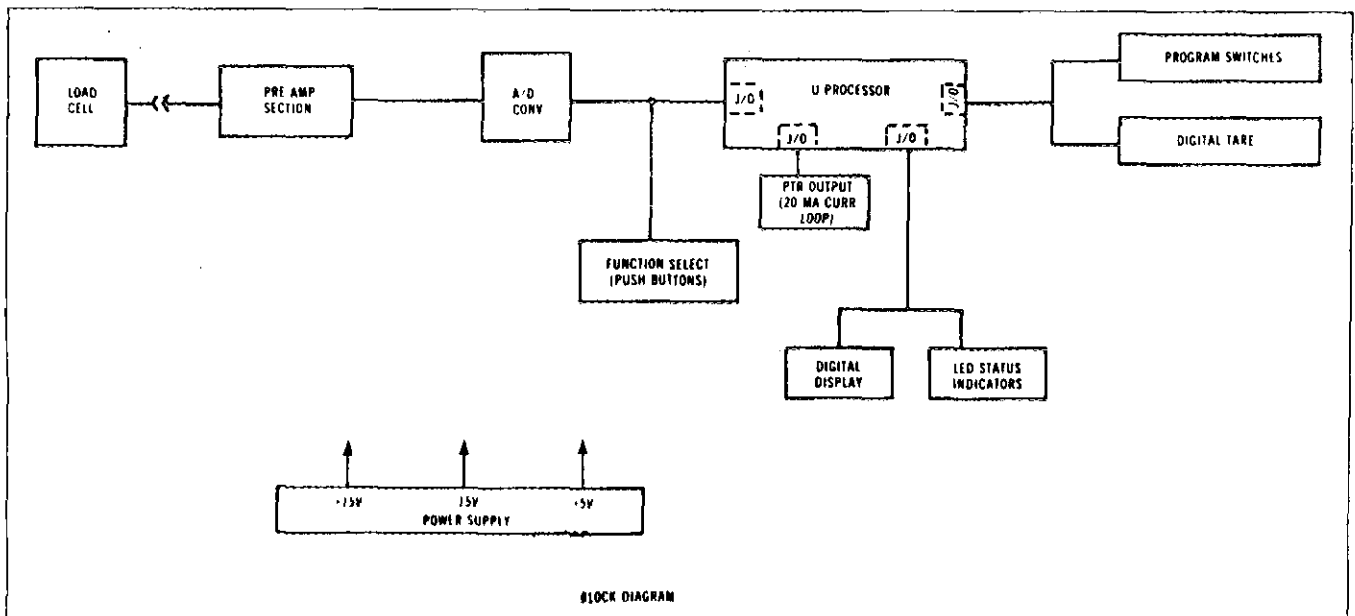
For avoirdupois models, a front panel LB/Kg pushbutton is provided. When power is first applied to the unit, the LB mode is selected and the LB indicator LED is turned ON if switch SW4-3 is "OFF" or if switch SW4-3 is "ON" the Kg mode will be selected and the Kg indicator LED will be turned ON. Pressing the LB/Kg button selects the LB mode or the Kg mode alternately. The increment in the Kg mode is related to the LB mode increment as follows:

<u>LB</u>	<u>Kg</u>
0.1	0.05
0.2	0.1
0.5	0.2
1	0.5
2	1
5	2
etc.	etc.

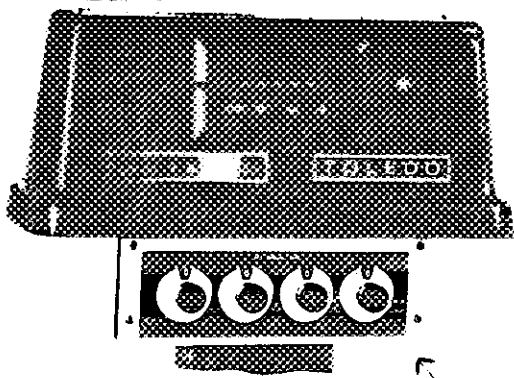
The correct decimal point and increment are automatically selected when switching modes. The total number of increments is always the same for both LB and Kg modes, as selected by the capacity switches.

5) Print (Option)

Internal program switches select printing formats. Negative Gross weights are always inhibited from printing. Negative Net weights may or may not be Tare weights, and are printed with a preceding minus sign. The data is transmitted only once when the Print button is pressed. If the weight is in motion when the button is pressed, the Print command will be stored until motion ceases, and then the data will be transmitted.

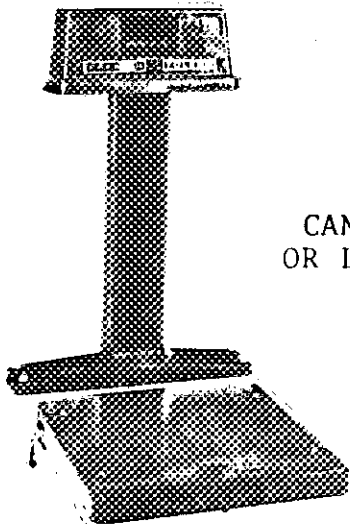


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MODEL 8135 - Desk or Wall Mounting
(Load Cell in Steelyard). Approved
Tare Accessory Shown.

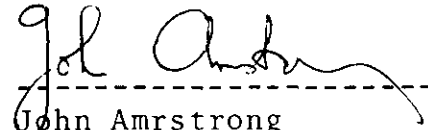
TARE ACCESSORY



MODEL 280 CONVERSION - (Loadcell
in indicator) also illustrates
the Toledo models 2086, 2186 and
2886.

CAN HAVE SHORT
OR LONG COLUMN

CONDITIONS OF APPROVAL: Approval is granted under the Weights and Measures Act, S.C. 1970-71-70, Chapter 36, and the Weights and Measures Regulations P.C. 1974-1461 of June 27, 1974 for use in Canada under the general conditions of the said Regulations, and under any special conditions listed above.



John Armstrong
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Weights and Measures Division
Legal Metrology

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