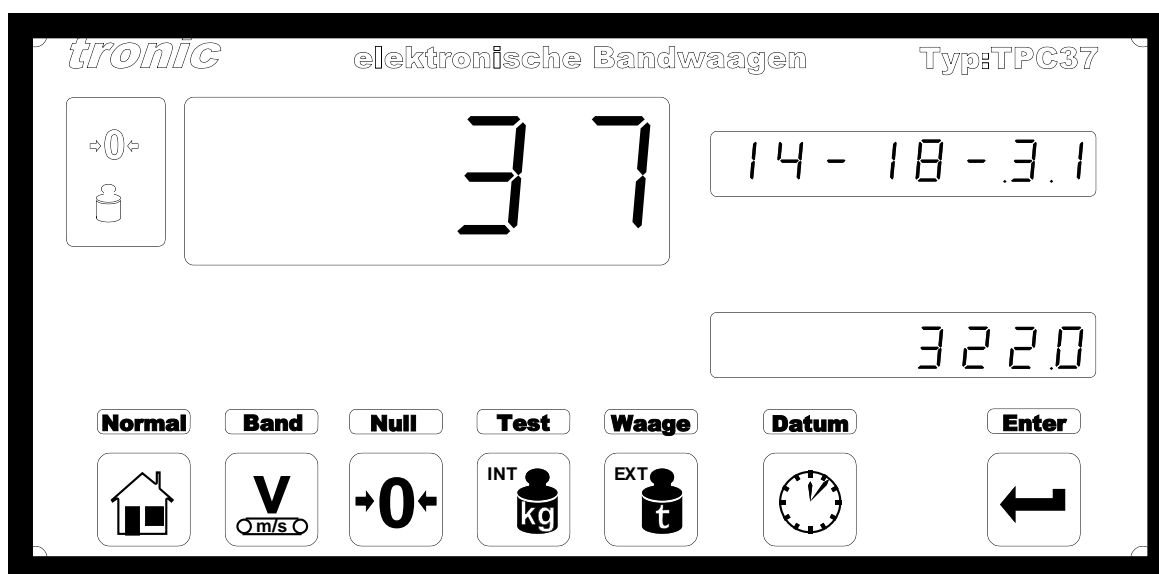


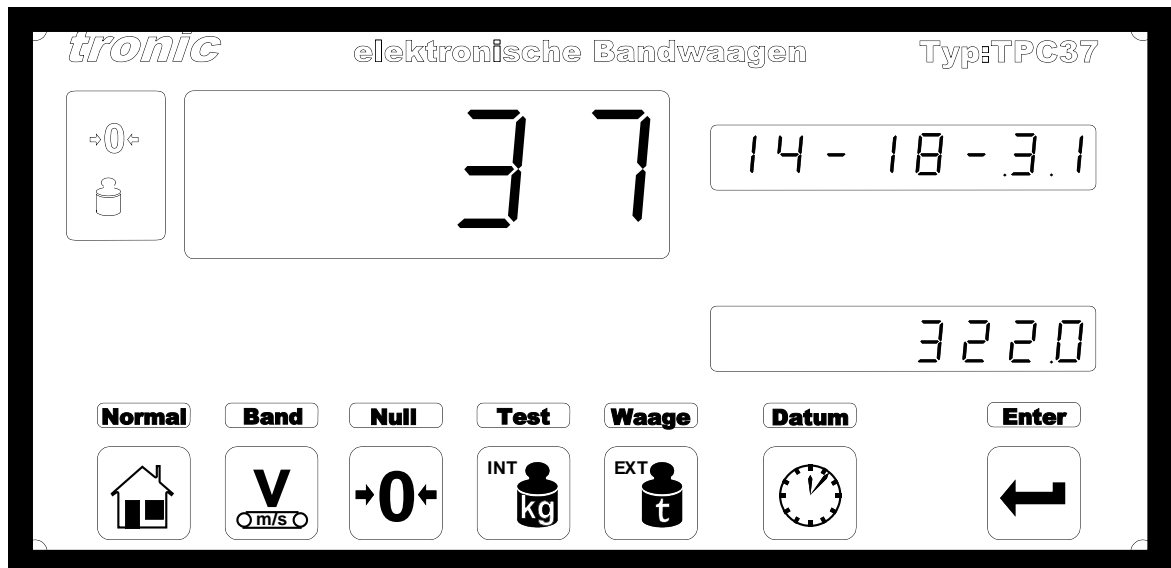
TPC37



tronic

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We introduce



- ☞ Processor controlled
- ☞ Easy to use
- ☞ Automatic tare
- ☞ Test mode with test weight integrated
- ☞ Insensitive measuring system
- ☞ High resolution and reproducibility
- ☞ Integrated clock
- ☞ Two galvanically isolated outputs for PLC
- ☞ Serial interface
- ☞ Current loop interface 0(4) - 20mA

Technical Overview

Mechanics:

The mechanical part of our weighbelts is deliberately robust because experience has shown that, particularly in mobile applications, the weighing stations are subjected not only to the applied weight force of the conveyed material, but also to heavy vibrations and overloading when the conveyor belts are in motion.

In the weighing station, care was taken to ensure that all moving parts at the conveyor belt frame have adequate clearance. This measure prevents falling conveyed material from impeding the movement of the station by jamming. This experience gathered on site led us to decline cost-reducing savings in the mechanics.

Measuring transducers:

For the force transducers, a system was chosen in which the measuring spring and the travel measuring system are separated. This arrangement was chosen by us because it excludes the possibility of damage by overloading. This arrangement also has the advantage that the measuring range of the weighbelt can be extended by simply installing an additional measuring spring. If correctly installed, the service life of the measuring transducer is virtually unlimited. The idle wheel for speed measurement is held in triple bearings and has a rubber running surface which minimises slippage between the idle wheel and the conveyor belt.

Function:

A pressure and travel signal generated by the measuring transducer is converted electronically into a corresponding digital signal and is processed by a microprocessor.

The belt speed information is measured by an impulse generator.

The conveying rate and the conveyed quantity are calculated by these two values.

The values measured by the weighbelt can also be transferred through diverse interfaces to other control systems such as computers, printers, pen recorders and relay controllers.

Many faults such as open circuits and faults in the measuring transducer can be detected and displayed by the evaluation circuitry.

Electronics

Measurement acquisition electronics:

The electronic system of the weighbelt consists of two parts. One part is located directly at the mechanical part of the weighbelt. The very small signal of the measuring transducer is processed here to create a signal of 4-20mA. This has two advantages: 1. the signal generated in this way is extremely insensitive to externally generated interference fields and the length of the cable can be changed without recalibration. 2. if the evaluation circuitry is replaced, it is unnecessary to calibrate the measuring transducer.

With the current loop interface, it is also possible to detect open circuits and short-circuits. The 2nd part of the electronic system is the evaluating circuitry.

Evaluation circuitry:

Case: To DIN 43700 with the following dimensions 192 X 96 X 64 (WxHxD)
The DIN case (protection class IP 55) consists of fibreglass reinforced NORYL GFN2 SE1

Displays: 3 displays are installed.
- 1 x 5 digit 20mm display height
- 2 x 8 digit 8mm display height

In normal operation of the weighbelt, the following data is displayed constantly:

- Average conveying rate in t/h
- Current time
- Tonnes per day in 0.1t steps

Furthermore, the belt speed, date, annual ton counter and special displays for calibration and zeroing can be accessed.

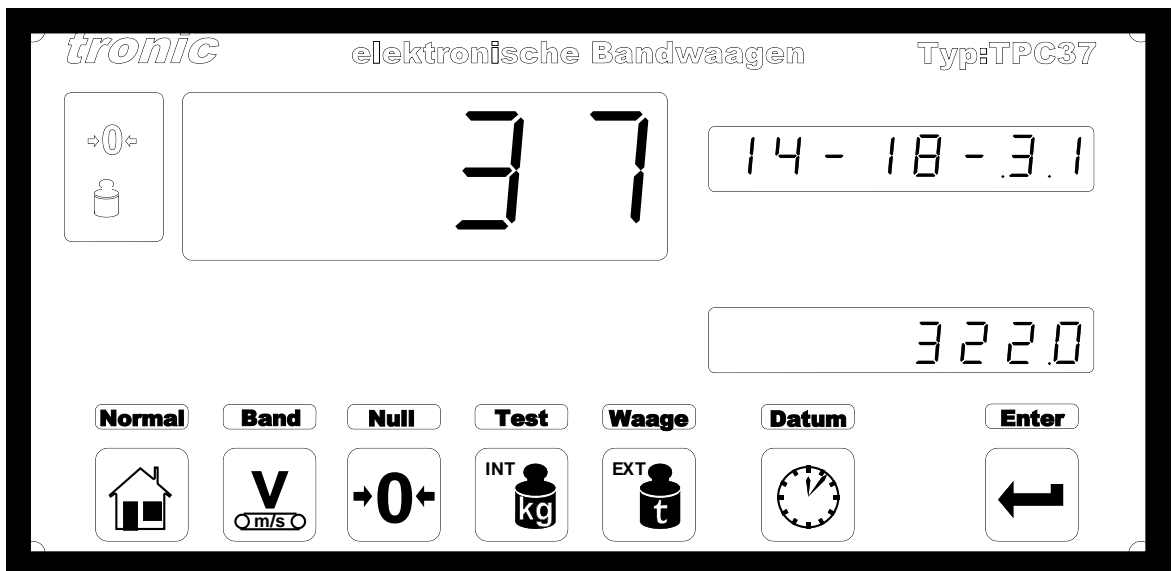
Keys: 7 keys are available for the operation of the weighbelt. These are arranged and marked clearly. The keys are also easy to distinguish by their different colours.
To avoid faults caused by penetrating dust, film keys are used.

Overview of the equipment characteristics

Mechanics:	Lever arm mechanism with LVDT measuring transducer Tacho generator for belt speed
Belt width:	400-1500 mm
Case:	Control panel case to DIN 43700
Electronics:	-Supply 24VDC or 100-240VAC, 50/60Hz (option) -Power consumption max. 12VA -Working temp. range -20 to +50° Celsius -Accuracy better than 1 % -Cable length up to 200m
Measuring range:	depending on the design, from 20 t/h to 3000 t/h
Displays:	Conveying rate in steps of 1 t/h Tonne counter in 0.1 t steps Maximum indicated tonnes 9999999.9 t Daily and annual counter, belt speed Date, time
Means of adjustment:	Automatic zeroing Calibration with test weight or test weighing Limits for max. and min. conveying rate Limits for min. speed
Outputs:	Analogue and digital interfaces are programmable to order

Operating Instructions

TPC 37

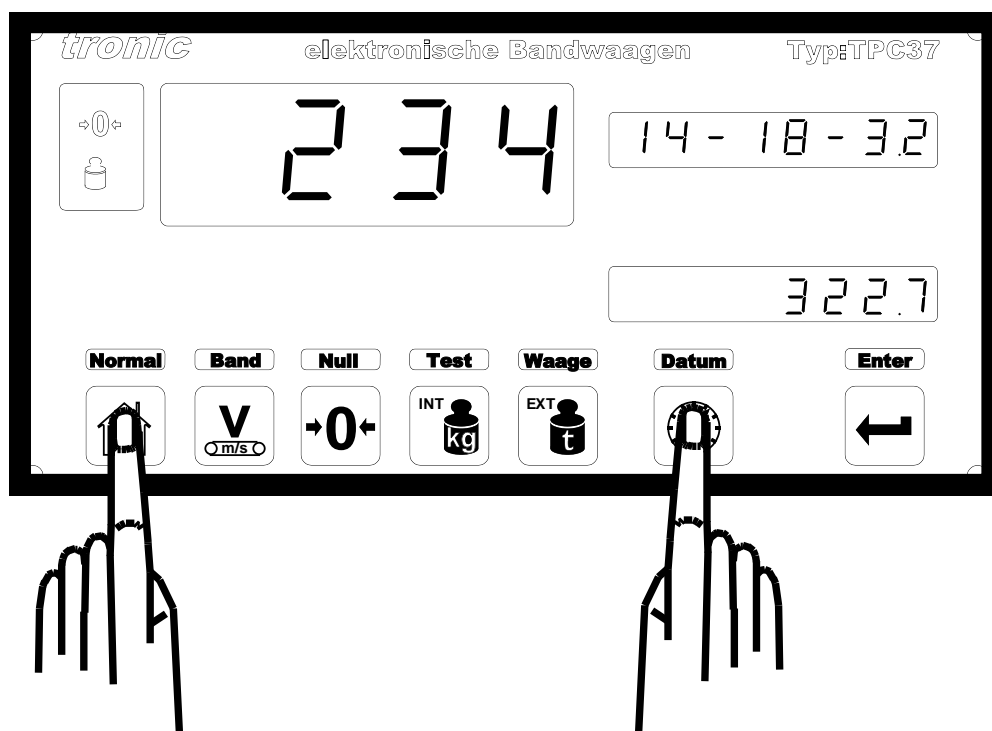
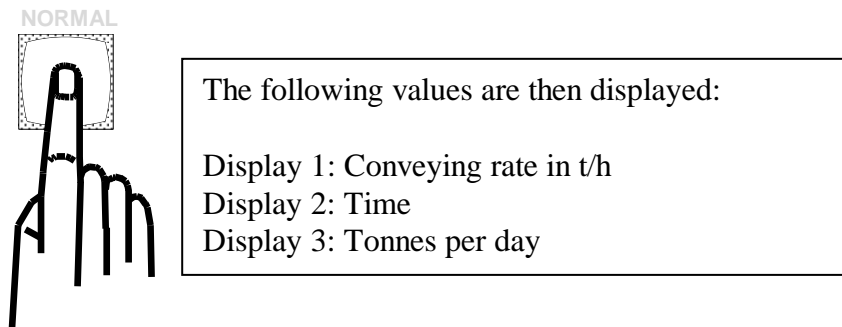


1. Normal operation

The weighbelt switches automatically to normal operation after commissioning.

If a different mode is active, normal operation can be chosen at any time by pressing the "NORMAL" KEY.

In normal operation, the following data is displayed continuously:

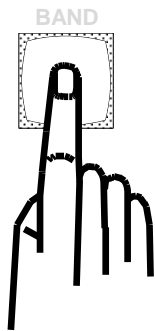


The daily counter can be reset to zero by pressing the "NORMAL KEY" and then pressing the "DATE" key.

This makes it possible to determine whether this is to be a daily, weekly, monthly or other counter.

1.1 Belt speed

If you wish to determine the belt speed, press the "BELT" key

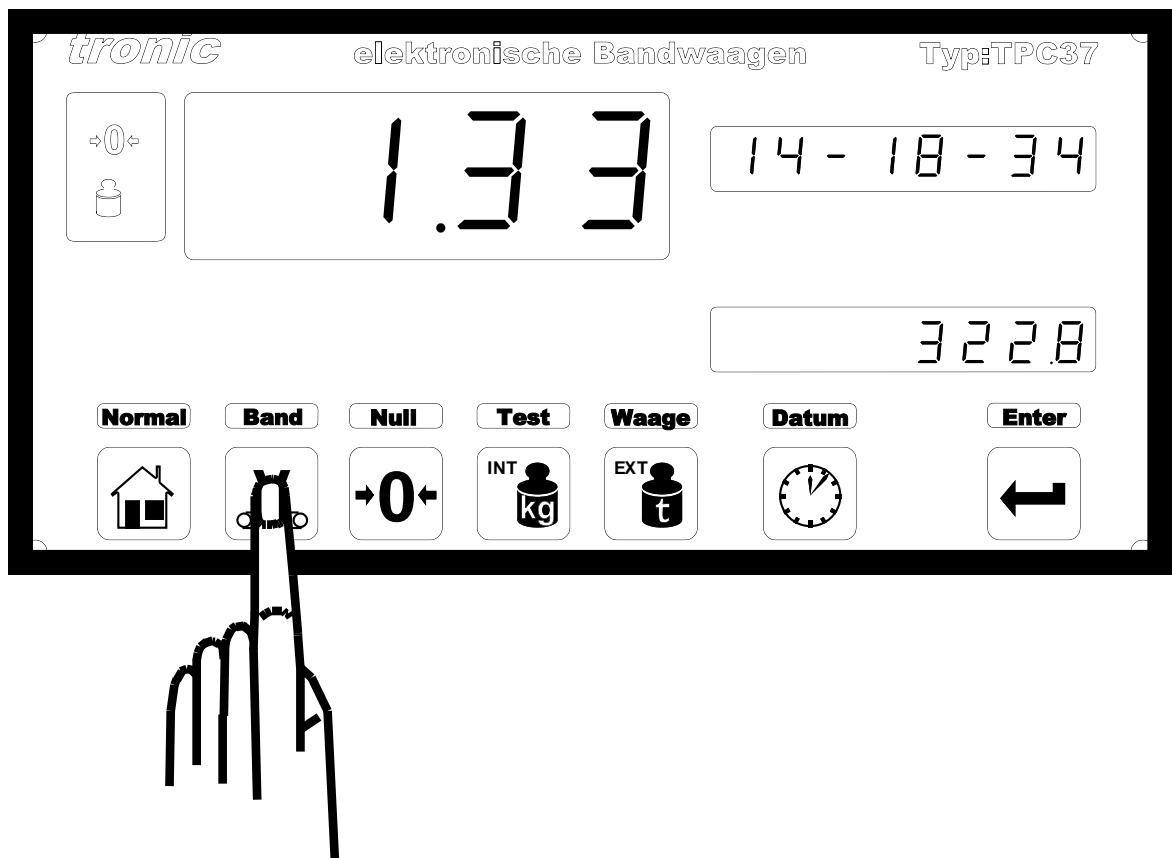


The following values are then displayed:

Display 1: Belt speed

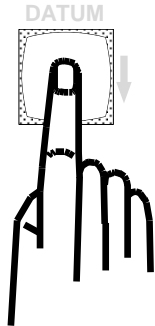
Display 2: Time

Display 3: Tonnes per day



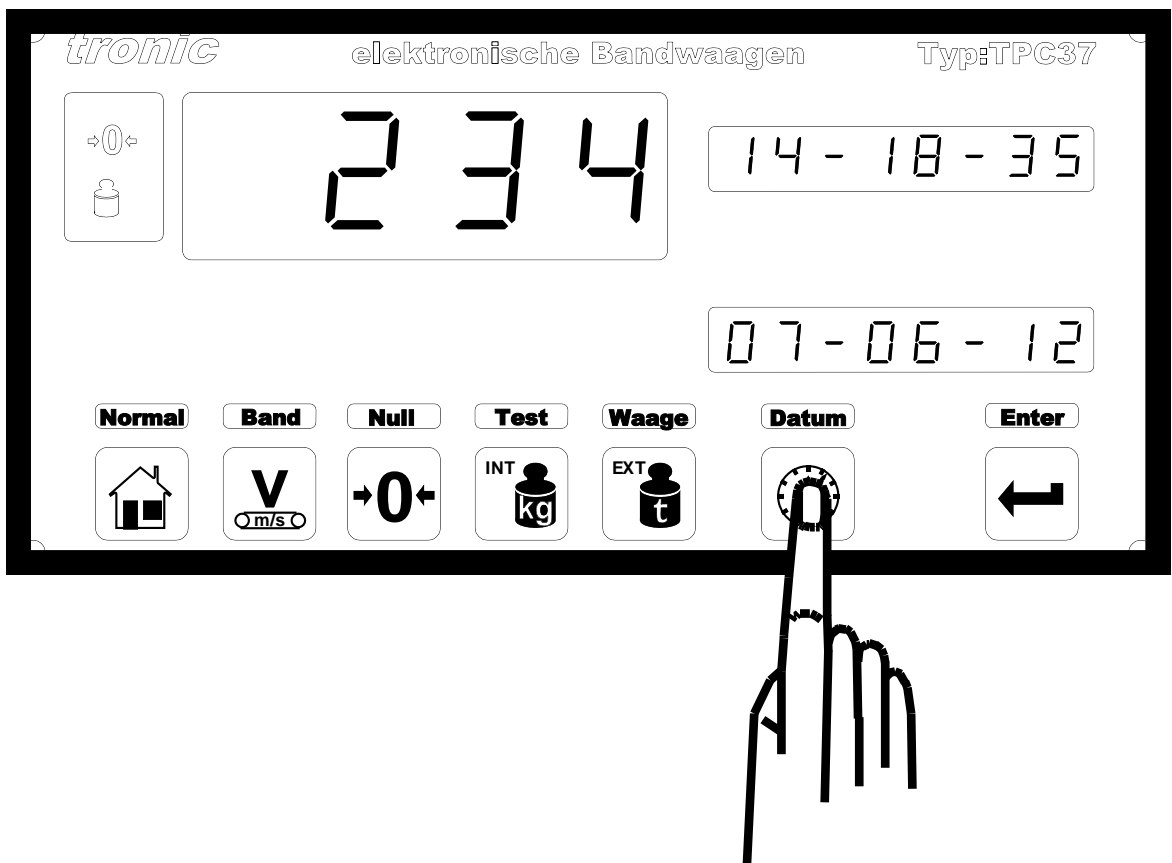
1.2 Date

You can call the date by pressing the "DATE" key.



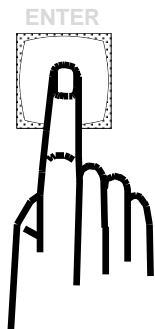
The following values are then displayed:

- Display 1: Conveying rate in t/h
- Display 2: Time
- Display 3: Date



1.3 Year counter

The year counter shows you the sum of the conveyed tonnes. The year counter can be called by pressing the "ENTER" key.

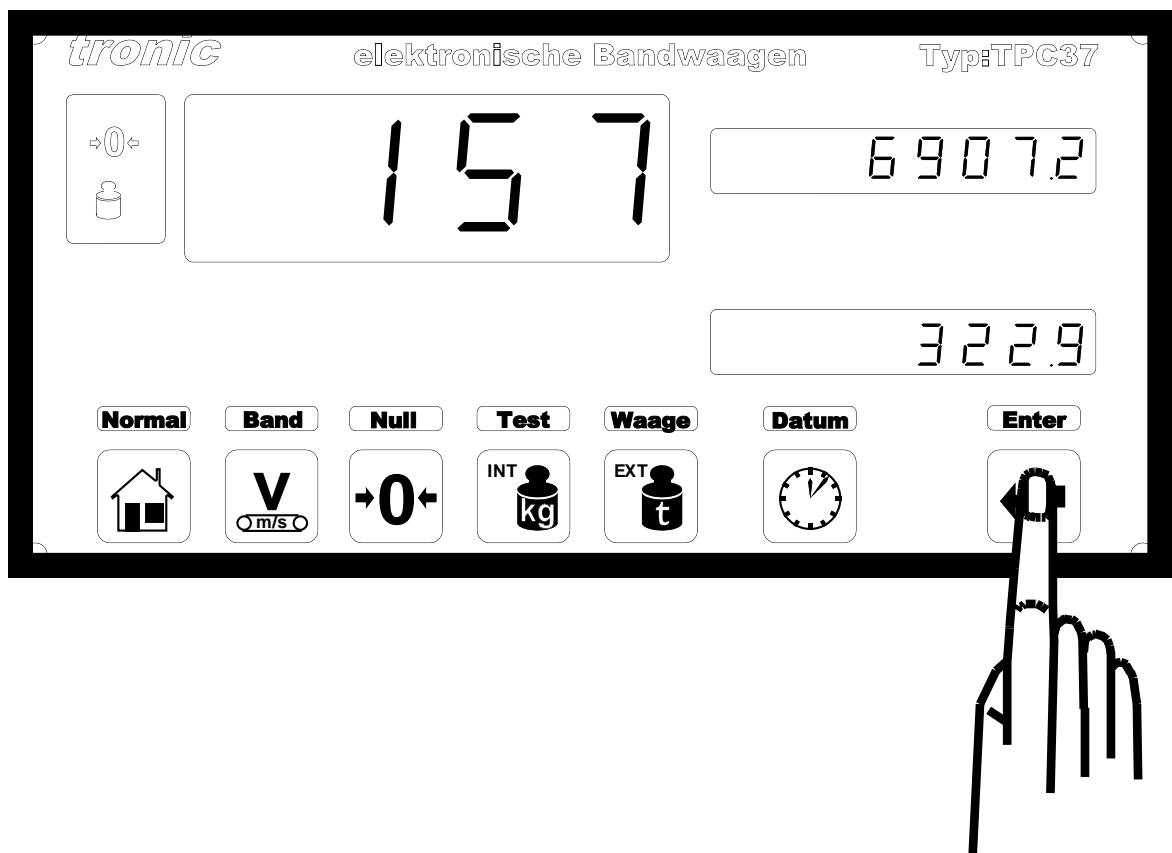


The following values are then displayed:

Display 1: Conveying rate in t/h

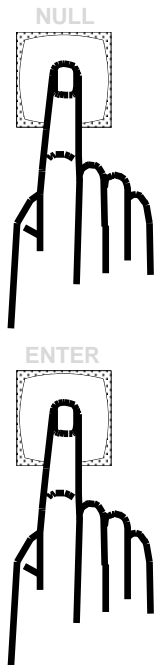
Display 2: Year counter

Display 3: Daily counter

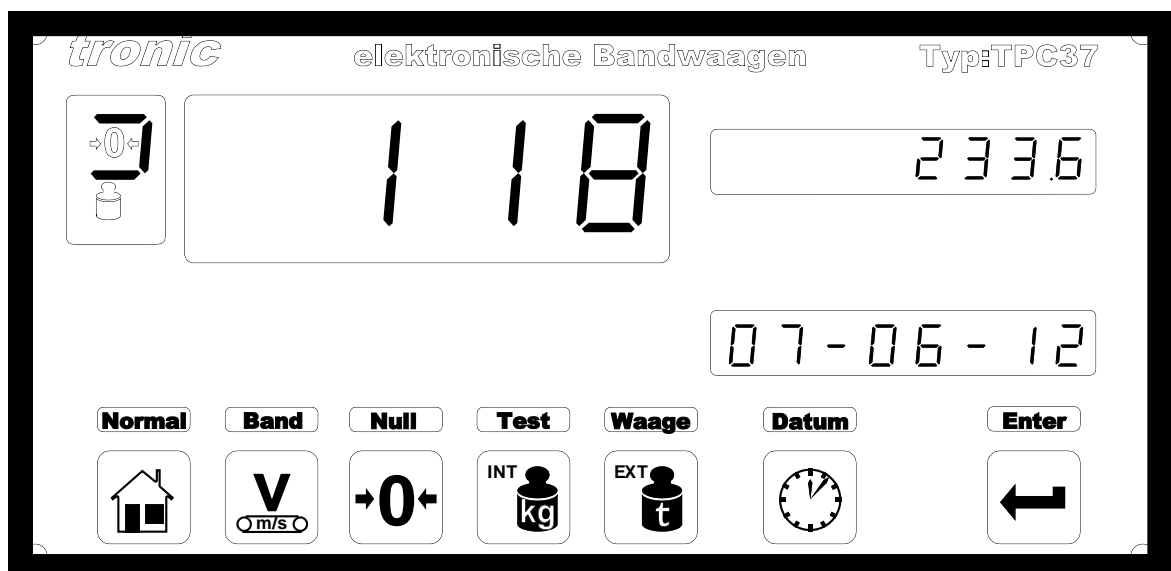


2. Tare adjustment

For the orderly operation of the weighbelt, it is necessary to adjust the tare weight at regular intervals, particularly after the conveyor belt has been moved. The following work is necessary for this:



1. Start the empty conveyor belt
2. Press the key "ZERO".
The number 118 then appears on display 1
3. Tare adjustment is started by pressing the "ENTER" key.
As long as tare adjustment is running, display 1 also marks the word TARE Icon on the upper left.



Tare adjustment is performed automatically by the controller. Display 1 indicates a number decreasing continuously to 0. When the value 0 is reached, the adjustment is complete and the unit switches automatically to normal operation.

3. Calibration

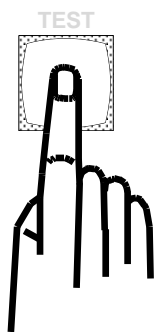
The precision of the scales depends on its calibration. Calibration can be performed in two ways, with a test weight or by test weighing.

The two methods are introduced and described below.

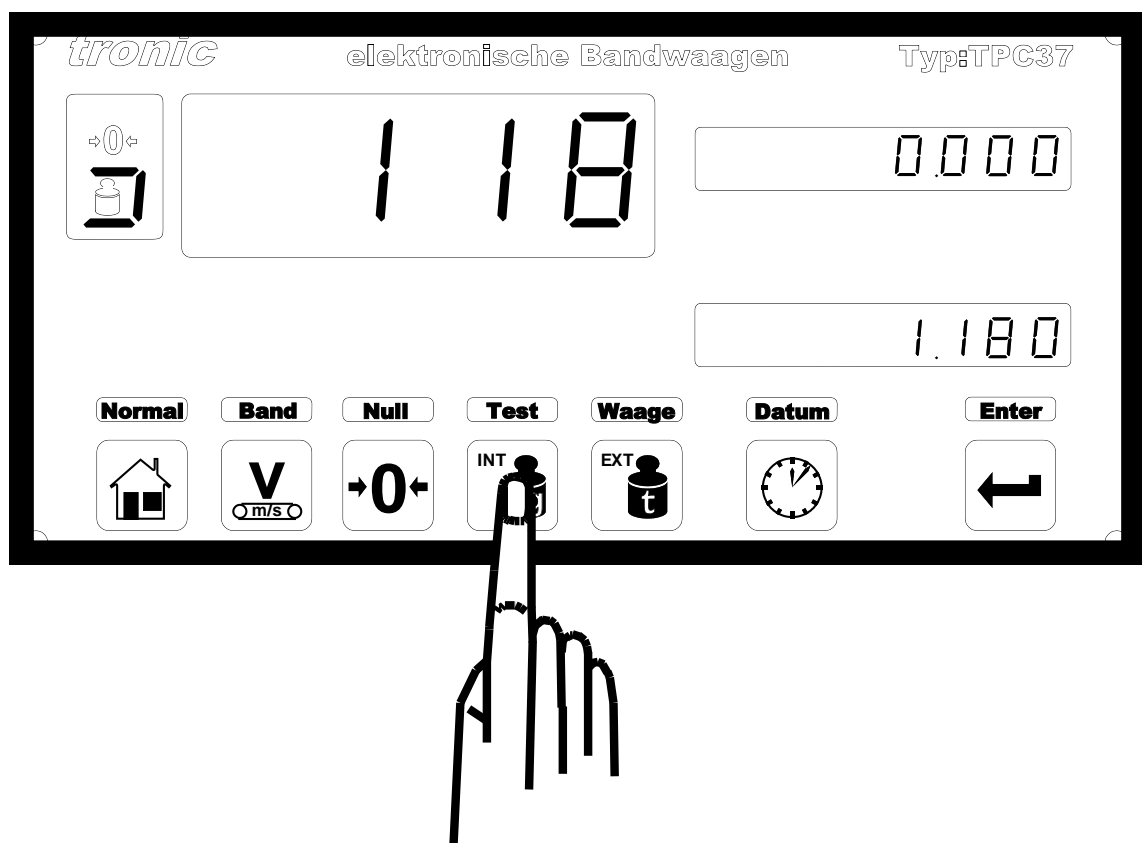
3.1 Calibration with a test weight

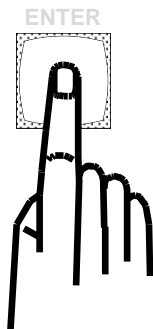
Calibration with a test weight is intended specially for mobile application of the scales. This makes it possible to perform a calibrations at any place or time. Before calibration, it is necessary to adjust the tare weight (see Point 2).

To access the test mode "Calibration with test weight", the following steps must be taken.

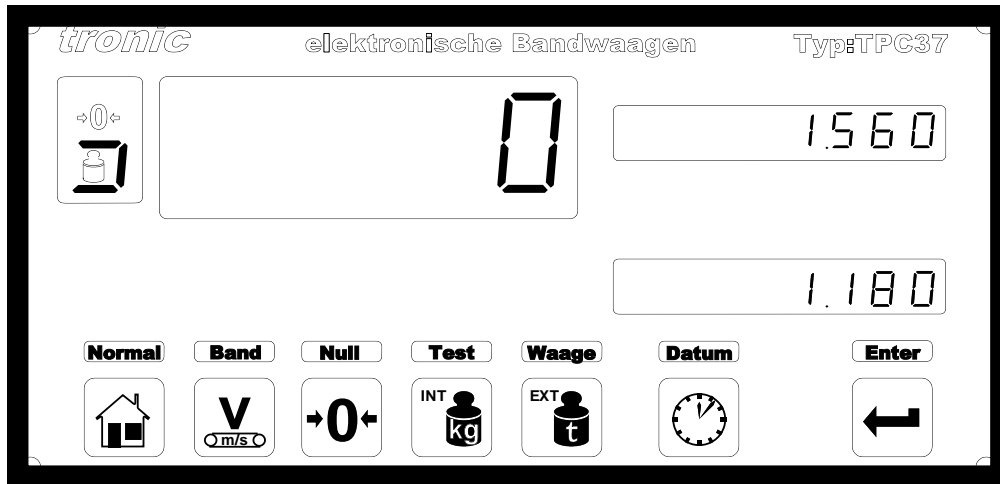


1. Suspend the test weight and start the conveyor
See at Page 18 how to suspend the test weight
2. Press the key "TEST"
Display 1 then marks the word CAL
Display 1 shows the value 118
Display 2 shows the value 0.000
Display 3 indicated the nominal value





3. Press the key "ENTER".
The number in display 1 reduces continuously to 0
In display 2, the value increases and approaches the nominal value in display 3.



By renewed pressing of the "ENTER" key, the value in display 2 is adjusted to the nominal value in display 3.

Display 1 briefly indicates the letters "-CAL-", the scales then automatically switch to normal Operatration.
The test weight must then be removed.

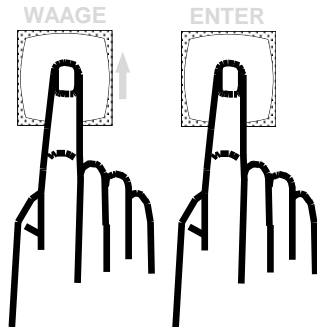


3.2 Calibration by test weighing

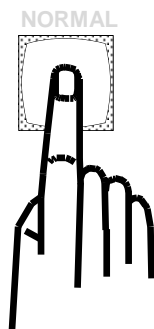
If test weighing is possible, this is preferable to calibration with a test weight.

Tare adjustment must firstly be performed (see Point 2).

The following work must then be performed:

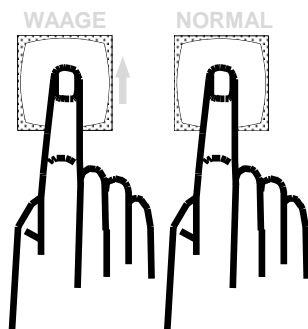


1. Press key "Scales"
2. The weighing procedure starts when the "ENTER" key is pressed.
3. Material should now be fed to the conveyor belt. The weight is indicated by display 2. Load a truck with the weighed, conveyed material

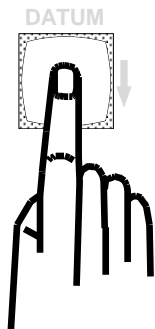


4. When the truck is loaded, press the "NORMAL" key. The scales switch to normal operation. Adjust the value of the weighbelt with the value determined in this way as follows:

Weigh the truck on a calibrated industrial weighbridge.

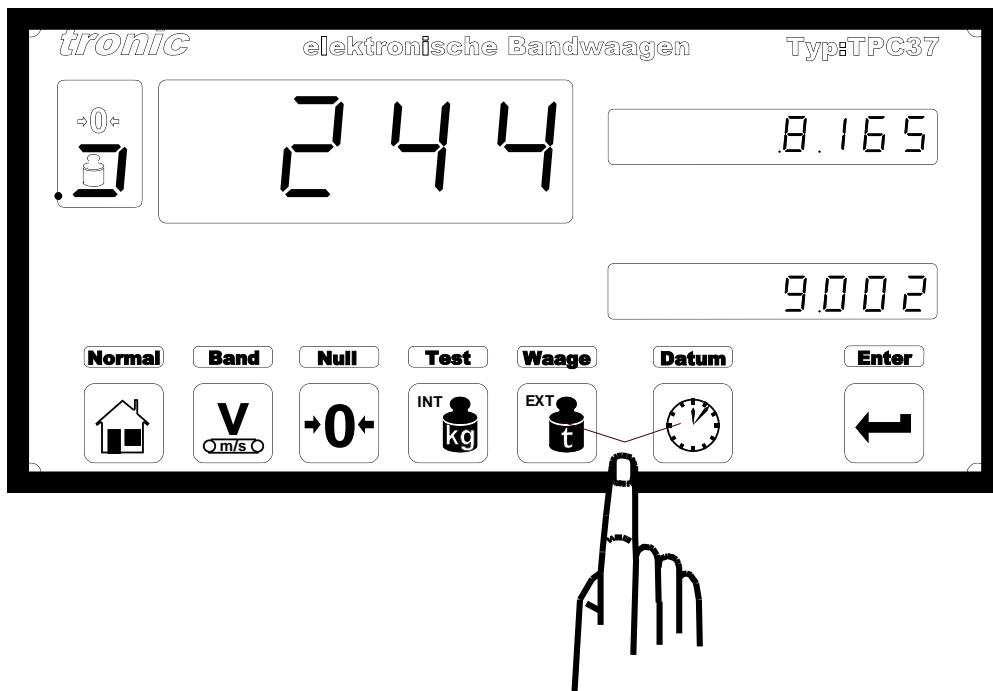


5. Press the "SCALES" key, display 2 indicates the weightdetermined by the weighbelt. If the actual weight is almost identical with this, it is unnecessary to readjust the scales and the procedure can beterminated by pressing the "NORMAL" key.

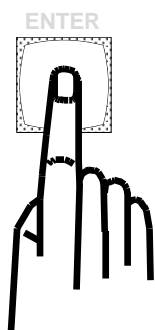


If the actual weight deviates substantially from the weight determined by the industrial weighbridge,, the scales must be adjusted.
For this, press the "DATE" key instead of the "NORMAL" key.

Display 3 now indicates the same value as display 2.



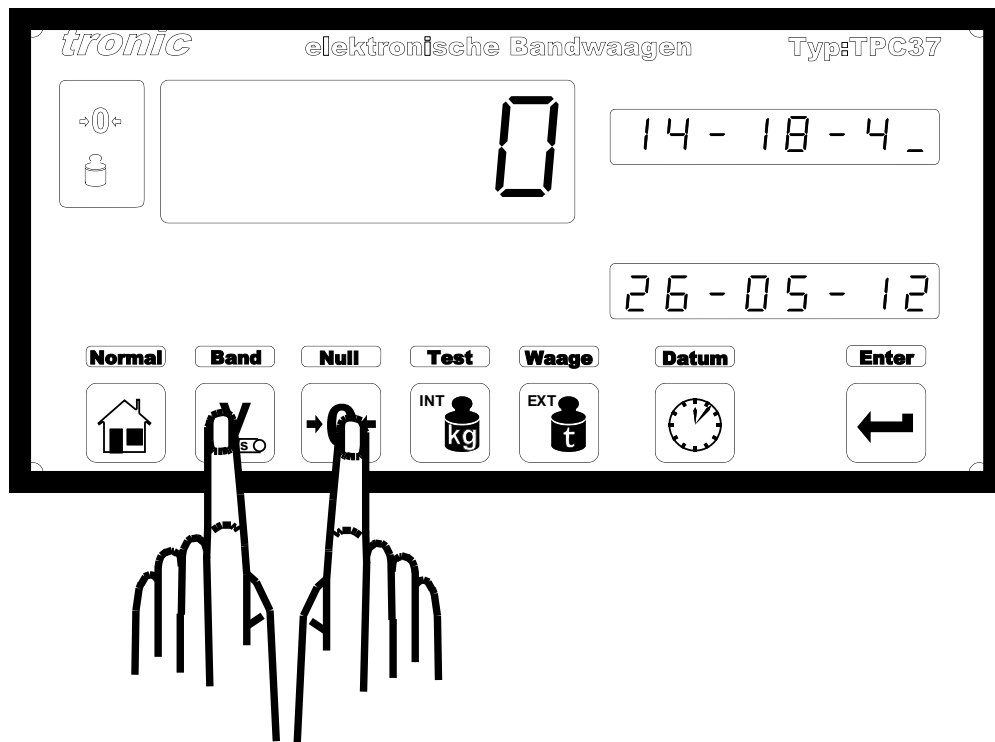
By pressing the "SCALES" key (arrow points downwards), you can reduce the nominal value in display 3. By pressing the "DATE" key (arrow upwards), you can increase the nominal value.



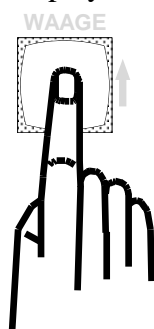
When the nominal value is correctly adjusted, press the "ENTER" key.
Display 1 briefly shows "-CAL-".
The scales are now calibrated and are back in normal operation.

4. Setting the clock

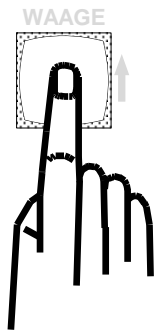
The time and date can be correctly adjusted in a single operation. The same work is required for both settings.



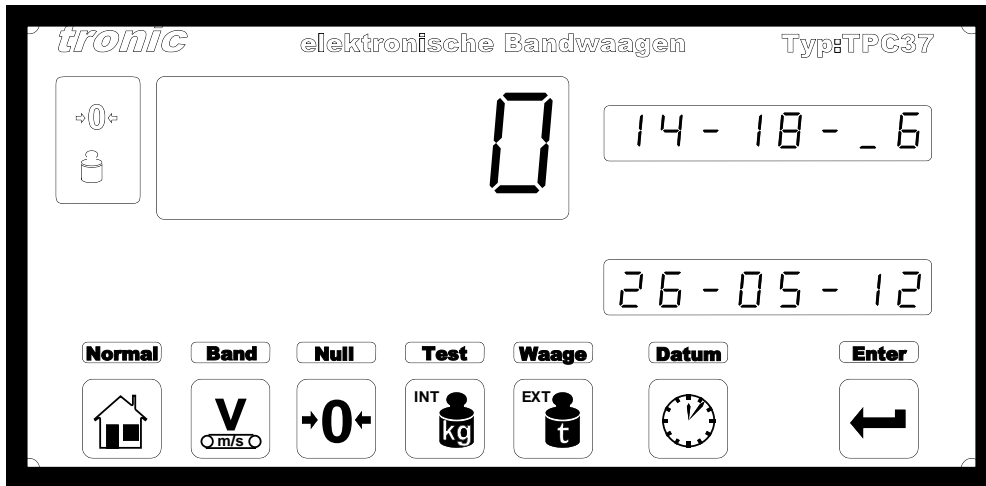
After pressing the "BELT" key and then pressing the "ZERO" key, display 2 indicates the time, by which the last digit blinks in display 2.
Display 3 indicates the date.



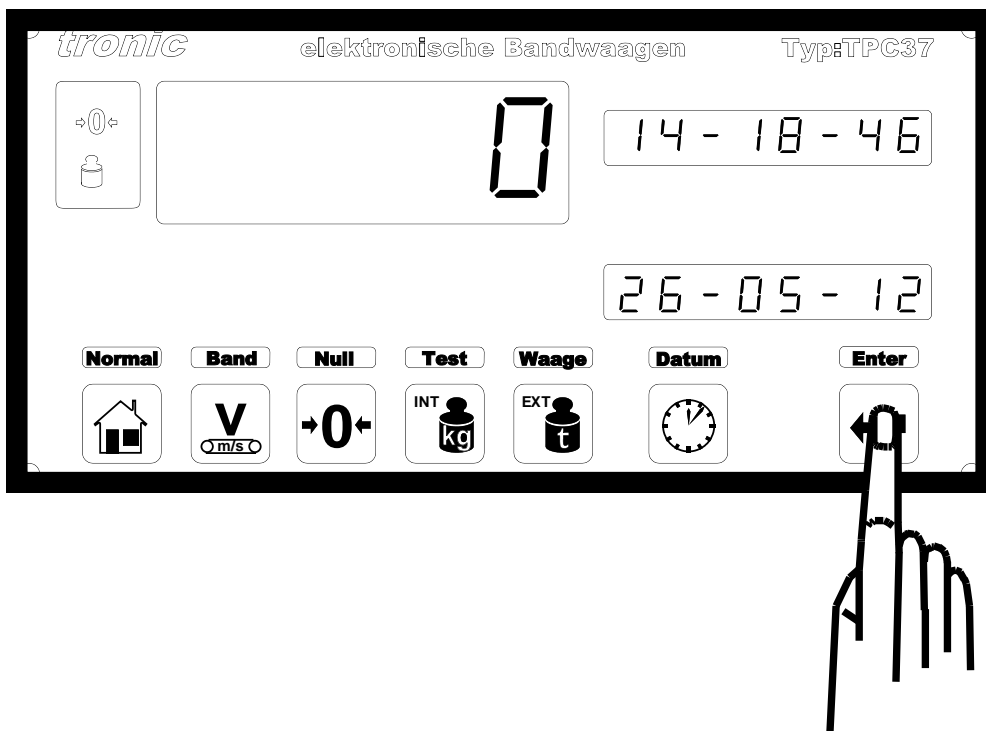
By pressing the "SCALES" key, the blinking digit can be adjusted.



When the blinking digit is adjusted as desired, press the "DATE" key. The cursor then moves one digit further.



Repeat these steps until the time and date are correctly adjusted. When the "ENTER" key is pressed, the scales store the new value and return to normal operation.



How to apply the test weight

