Tru-Test Model 700

User Manual

TRU-TEST®

Contents

About This Manual

This manual tells you how to operate the *TRU-TEST* Model 700 Indicator - the keyboard and display unit for the *TRU-TEST* 700 Series agricultural weighing system.

Models 701, 702 and 703 are more advanced Indicators which are described in separate manuals.

Operation of the Indicator is described in the main text of this manual. Complete lists of keys, display pointers and messages are given in the Quick Reference Sections at the end.

If you are setting up the system for the first time, read the *Installation* section in this manual, also read the *TRU-TEST Loadbars Manual* for instructions on installing the Loadbars.

To gain the best possible performance from your Indicator and especially if you have an internal battery installed, read the *Care And Maintenance* section.

If problems arise, refer to *Troubleshooting* on page 30 before contacting your *TRU-TEST* Service Centre.

In this manual, the term "Loadbar" is used to mean "Loadbar, Suspension Cell or Produce Platform".

TRU-TEST Model 700
Agricultural Weighing System

INDICATOR

12v

12v SUPPLY

CABLES

PLATFORM, CRATE,
CRUSH OR CHUTE

LOADBARS
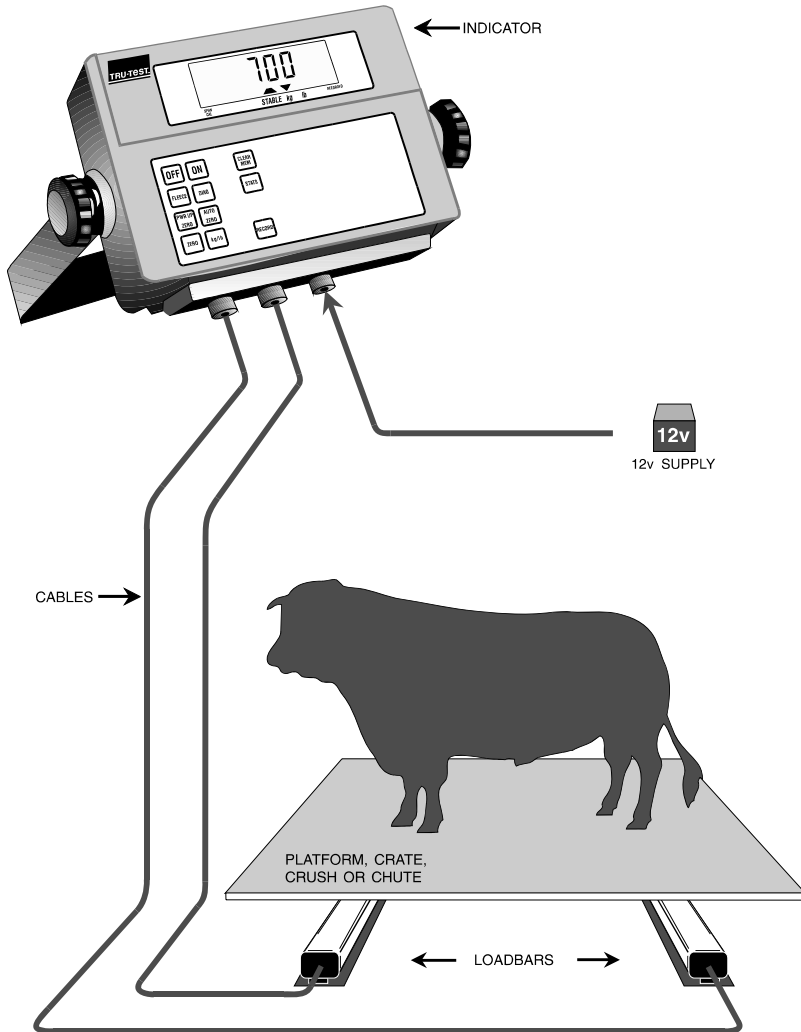
System Overview

The *TRU-TEST* 700 Series is an advanced and versatile agricultural weighing system. It has been designed with the benefit of many years of animal weighing experience and is used by farm management professionals and agricultural scientists the world over.

The system consists of a microprocessor controlled Indicator (keyboard / display unit) and one or more Loadbars or Suspension Cells. The Loadbars are fitted beneath a platform or crate that holds the animal, and the weight is transmitted from the Loadbars to the Indicator. The Indicator gives a digital readout of the weight and, through the keypad, provides control over the processing capabilities of the scale.

Weight statistics can be recorded for later analysis.

In the more advanced Models, 702 and 703, weight data is recorded and retained in the Indicators memory and can be output to a printer at any stage during or after weighing. Comprehensive reports including weights, tag numbers, condition codes and statistics can be printed. The data can be directly transferred to a computer via a cable for permanent storage and further analysis.

Calibration

On power up, the Indicator automatically identifies and calibrates itself to the Loadbars connected to it. The latest Indicators operate with the complete range of *TRU-TEST* Loadbars, Suspension Cells or Produce Platforms. This is known as *Standard Calibration*.

There is no need for the operator to calibrate the Indicator when starting up or even when swapping from one set of *TRU-TEST* Loadbars to another. *Standard Calibration* eliminates the need for time consuming calibration using test weights.

Applications using other manufacturers' Loadbars, which are not pre-programmed, can be satisfied using *Span Calibration* with known test weights.

Indicator Options

- An internal rechargeable battery is available which allows the Indicator to be conveniently independent of any external power supply.

- The two more advanced models (702 and 703) can be connected to a *TRU-TEST* printer to print results, or to a computer for storing and further processing data.

Reliability

- The *TRU-TEST* Indicator is a rugged and robust product designed to withstand the environment associated with livestock handling. The case is made from extremely tough, ultraviolet - resistant polycarbonate. The keyboard is completely sealed for all - weather operation.

- For livestock weighing, animal movement can sometimes be a problem with a digital scale. The Indicator eliminates this problem using **SUPERDAMP**© - a sophisticated statistical damping technique.

- The large digital display is easy to read. Stabilisation of the display is usually extremely fast - within seconds.

Main Features

- LIVE Weighing Mode.

- Provides STATISTICS on recorded data.

- FLEECE (FINE WEIGHT) Mode for better precision at low weights.

- ZERO controls.

- *Span Calibration* using known weights if required.

Installation

In general, this section needs to be read only when setting up your system for the first time.

When you unpack your new Indicator, complete and post the warranty card to ensure you receive the service you are entitled to.
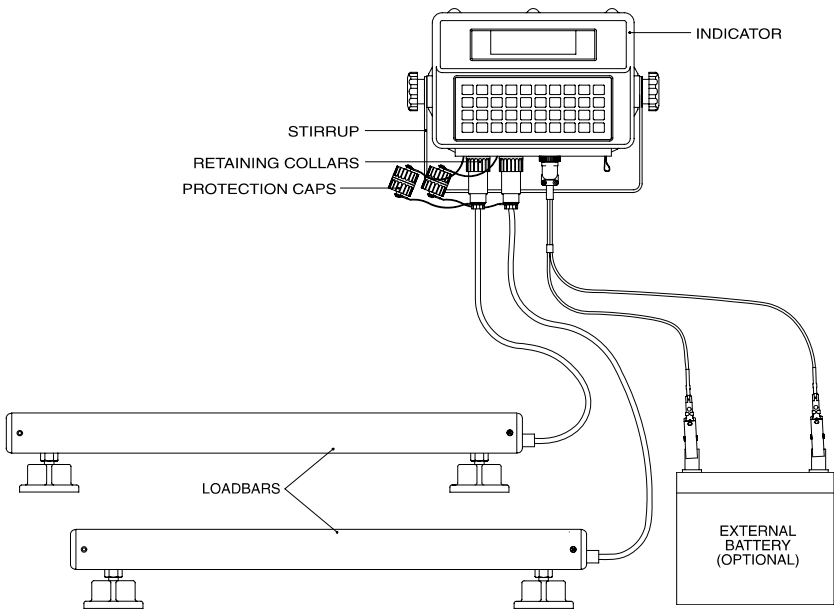
700 Series System

1.   Unpack and install the Indicator mounting stirrup in a convenient position. Ensure that it is located securely.

2. Install the Loadbars or Suspension Cells according to the manual which comes with them (*TRU-TEST Loadbars Manual*).

3. Run the Loadbar cables to the Indicator, making sure they are protected from damage.

4. Unscrew the protection caps from the cable plugs and the Indicator sockets marked CELL1 and CELL2.   Insert the plugs into the sockets and tighten the retaining collars by hand only. The plugs can go into either socket. Screw the protection caps together to keep out dirt and moisture.

5. If an internal battery is installed, charge it by connecting the Indicator to a good 12 volt DC source, either the recommended power supply unit or a 12 volt car/bike battery.   Refer to *Internal Battery Charging* on page 28 for full details.

6. If no internal battery is installed, 12 volts must be available where the Indicator is mounted. One of the following options must be used:

    *   12 volt battery

        Note: Red lead to positive terminal.
                      Black lead to negative terminal.

    *   Power Supply Unit

        230 or 115 volts AC to 13.8 volts DC at 5 amps.

    *   AC adaptor

   230 or 115 volts AC to 13.8 volts DC at 600mA.

    Use only the power cable supplied by *TRU-TEST*. Plug it in to the socket marked 12V DC on the Indicator and tighten the retaining collar by hand only. The cable may be permanently attached to the Indicator.

Calibration

The Indicator automatically identifies and calibrates itself to the Loadbars connected to it. This is known as *Standard Calibration*.

Span Calibration with known weights can also be carried out. (See your *TRU-TEST* Service Centre).

Operation
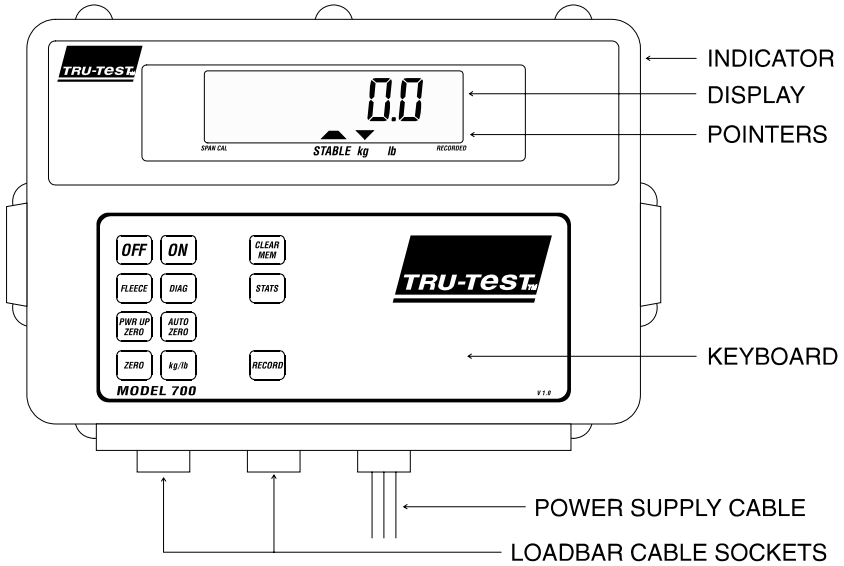
Operating the *TRU-TEST* Model 700 is straightforward and logical. Many functions are performed with a single key press.

Safety

To avoid damage, never load the scale further if the overload message appears on the display.

Keypad

The Indicator comes ready to use with default options set in the factory. However, you can use the keypad to set your own preferred options, such as kilograms or pounds for the units of measure. These options remain in memory until they are changed, even when the Indicator is not connected to a power supply.

A quick reference to all the keys is given on page 20.

Display

Normally the display shows the current live weight on the platform.

When the Indicator is carrying out an operation, for example re-setting zero, the display shows an appropriate message.

(If the weight is about half way between two values, it is normal for the display to switch occasionally between the two, even when the *Stable* pointer is on.)

Pointers

A row of triangular pointers at the bottom of the screen give status information. The labels beneath them show their purpose.

Resolution

The resolution is the smallest weight change that can be displayed at a particular time (also known as a division), for example 0.5kg or 1.0kg division size.
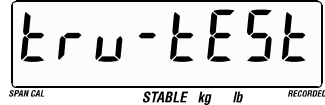
The division size close to zero (base resolution) depends on the Loadbars fitted. (See your *TRU-TEST Loadbars Manual.*)

The division size automatically changes at particular weight limits to reflect the accuracy of the scale. (See *Autoranging* on page 38.)
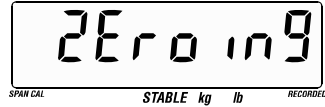
Switching On

1.   If there is no internal battery, connect the 12 volt supply, red lead to the positive terminal, black to negative.
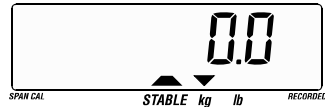
2.   Press $\boxed{ON}$. Display shows:

$$tru\text{-}tESt$$

SPAN CAL   STABLE kg   lb   RECORDED

The scale zeroes itself automatically (if *Power Up Zero* is *On*, see page 14)

$$2Ero\ in9$$

SPAN CAL   STABLE kg   lb   RECORDED

Current weight:

$$0.0$$

SPAN CAL   STABLE kg   lb   RECORDED

Weighing

Normally the display shows the current live weight on the platform. The reading is called Live because it never locks up - when the weight changes, the reading changes.

To weigh an animal:

1.   Make sure the Indicator is displaying zero. If not, refer to *Zeroing* on page 14.

2.   Clear existing memory data (if required).

$$CLr\ dAtA$$

SPAN CAL   STABLE kg   lb   RECORDED
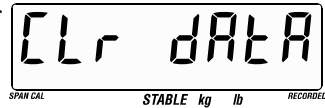
Press $\boxed{\substack{CLEAR \\ MEM}}$. Press $\boxed{\substack{CLEAR \\ MEM}}$ again to confirm.

3.   Move the animal onto the platform or crate, making sure it doesn't lean on any other structure.

4.   Wait for the *Stable* pointer to come on which shows that the scale has settled and the reading is reliable.

5.   Read the weight displayed.
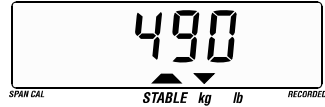
6.   If required, press RECORD to add the weight to the statistics.
     See *Recording Statistics* on page 16.

7.   Move the animal off the platform.

     The indicator normally automatically zeroes itself ready
     for the next animal (see *Automatic Zero* on page 14).

Switching Off

**If the power supply is disconnected while the Indicator is
On, the statistics data in memory will be lost.**

To switch off:

1.   Press **OFF**.

2.   Disconnect the power supply if required.

Automatic Power Off

The **TRU-TEST** Model 700 automatically switches *Off* after
30 minutes if no change in weight or key press is detected. This
conserves battery life when the scale is not being used.

The data in memory is retained if the Indicator automatically
powers off.

Automatic Power Off can be disabled if required. Contact your
TRU-TEST Service Centre for details.

Changing Units of Measurement

Weights can be displayed in kilograms or pounds.

The *kg* and *lb* display pointers show which units are being
displayed.

- To change the units, press $\boxed{kg/lb}$.

Zeroing

The **TRU-TEST** Model 700 has three methods of zeroing the scale:

- *Power Up Zero*

- *Automatic Zero*

- *Manual Zero*

Power Up Zero

The scale normally zeroes itself on power up, ie. when it is turned *On*. The weight of the platform or crate on the Loadbars is zeroed. In some situations, it may be desirable to turn this feature *Off*.

To change the *Power Up Zero* status (*On* or *Off*):

- Press $\boxed{\begin{array}{c}\textbf{PWR UP}\\\textbf{ZERO}\end{array}}$.

The new setting is displayed for about 1 second.

A typical situation where *Power Up Zero* should be turned *Off* is when wool bales are being filled and the scale has been zeroed for the wool press. For the displayed weight after turn *On* to be the same as when the Indicator was turned *Off* (eg. overnight break or power failure), ensure *Power Up Zero* is set to *Off*.

Automatic Zero

The *TRU-TEST* Model 700 normally re-zeroes when a load is taken off.

This feature can be set to *Off*.

To change the *Automatic Zero* setting (*On* or *Off)*:

- Press $\boxed{\begin{array}{c}\textit{AUTO}\\\textit{ZERO}\end{array}}$.

The new setting is displayed for about 1 second.

If *Automatic Zeroing* is *On*, *Manual Zeroing* is usually unnecessary, unless the weight being zeroed is relatively large and is outside the range for *Automatic Zeroing* (6 divisions maximum). See *Specifications* on page 40.

If *Power Up Zero* is set to *Off*, *Automatic Zero* is locked *Off*.

In some situations this feature should be turned *Off*. For example, when weighing animals in certain crates where opening and closing the doors may cause the Indicator to zero incorrectly.
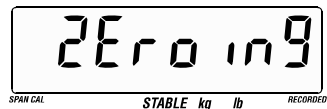
Manual Zero

If *Automatic Zeroing* is *Off*, the scale should be manually zeroed occasionally.
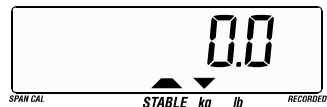
To manually zero the scale:

1. Remove load.

2. Press $\boxed{\textit{ZERO}}$.

Waiting for a stable zero reading:

Zero weight is displayed when the scale has settled.

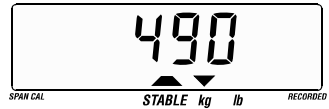See *Troubleshooting* on page 30 if "Zero OL" is displayed.

Recording Statistics

The *TRU-TEST* Model 700 has the ability to record and display statistics during the weighing session.
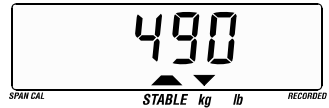
Ensure that previous statistics are cleared before starting a weighing session (see *Clearing Statistics* on page 18).

As each animal moves onto the platform:

1. Wait for the Stable pointer to come on.

    ```
    490
    SPAN CAL        STABLE  kg   lb    RECORDED
    ```

2. Press RECORD to add the weight to the statistics.

    ```
    490
    SPAN CAL        STABLE  kg   lb    RECORDED
    ```

To avoid accidental recording of the same animal twice, if you press RECORD a second time before the current animal has left the platform, the Indicator doesn't save the weight again but displays "No Rec'd".

However, if you are weighing animals fairly fast, it can happen that the indicator fails to sense the change of animal and displays "No Rec'd". In this case, press RECORD again to override the safety feature and record the current animal.
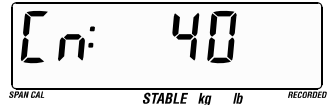
Viewing Statistics

To view the statistics, press STATS .

The following information is displayed in sequence as you keep pressing the key.
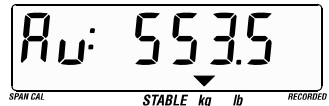
COUNT
Number of animals weighed.

```
Cn:    40
SPAN CAL            STABLE  kg    lb    RECORDED
```

TOTAL
Sum of all the weights of all the animals weighed.

```
tL:22,140.0
SPAN CAL            STABLE  kg    lb    RECORDED
```

AVERAGE
Average weight of all the animals weighed.

```
Au:   553.5
SPAN CAL            STABLE  kg    lb    RECORDED
```

MINIMUM
Smallest weight recorded.

```
Lo:   536
SPAN CAL            STABLE  kg    lb    RECORDED
```

MAXIMUM
Largest weight recorded.

```
Hi    572
SPAN CAL            STABLE  kg    lb    RECORDED
```

To return the display to the current live weight, either scroll through each of these options by pressing STATS or press any other key.

Clearing Statistics

To clear the current set of statistics and start a new set:

1. Press $\boxed{\substack{\textit{CLEAR} \\ \textit{MEM}}}$.

2. Press $\boxed{\substack{\textit{CLEAR} \\ \textit{MEM}}}$ again to confirm, or press any other key to return to the current live weight without clearing the statistics.

Fleece (Fine Weight) Mode

Fleece (Fine Weight) Mode allows precise measurement of relatively small weights on certain Loadbar systems.

You can weigh wool fleece(s), produce or small animals up to 300kg (660lb) with weight changes as small as 0.1kg (0.2lb).

Weight changes as small as 0.05kg (0.1lb) can be measured using a single Loadbar system (see the *TRU-TEST Loadbars* manual).

To change *Fleece (Fine Weight) Mode* status (*On* or *Off*):

Press | FLEECE | (Fine Weight).

The new setting is displayed for about 1 second.

(Fleece (Fine Weight) Mode is disabled for particular markets and models, and when using *Span Calibrated* Loadbars.)

Quick Reference Section

Keys

AUTO ZERO	Sets Automatic Zero tracking (*On* or *Off*).
CLEAR MEM	Clears memory. Press again to confirm, or press any other key to abort the clear operation.
DIAG	Displays battery/supply voltage and diagnostic information. Press any other key to return to live weight.
FLEECE	Sets Fleece Mode (*On* or *Off*).
FINE WEIGHT	Sets Fine Weight Mode (*On* or *Off*). (USA Model Indicators.)
kg/lb	Sets the display to read in kilograms or pounds.
OFF	Turns the Indicator *Off*. If the Indicator is turned off while power is connected, statistics will be retained in memory (even when you disconnect the power supply).
ON	Turns the Indicator *On*.
PWR UP ZERO	Sets automatic *Power Up Zero* (*On* or *Off*).
RECORD	Adds the current weight to the statistics. The display blinks to confirm.

STATS	Statistics. Press for *Count*, *Total*, *Average*, *Minimum*, *Maximum* in sequence. Press any other key to return to live weight display.
ZERO	Cancels out dirt and excrement accumulated on the platform and returns the display to exactly zero.

Display Pointers

▼

SPAN CAL

▲ ▼ ▼   ▼

STABLE kg   lb   **RECORDED**

SPAN CAL	Shows that the *Span Calibration* option is being used. (For Service Centres' use only.)
STABLE	Shows that the reading is stable.
kg	Shows that the displayed weight is in kilograms.
lb	Shows that the displayed weight is in pounds.
RECORDED	Current weight has been recorded.

Display Messages

Message		Meaning
$\boxed{\text{12.5 uolt}}$	**12.5 Volt**	Power supply voltage. First press of DIAG key.
$\boxed{\text{Au: 553.5}}$	**Av:**	Average weight statistic.
$\boxed{\text{bAd codE}}$	**Bad Code**	Bad code from Loadbar cable plug.
$\boxed{\text{bAd conF}}$	**Bad Conf**	Configuration data is lost.
$\boxed{\text{bUSY}}$	**Busy**	Busy performing sorting or calculations.
$\boxed{\text{CAL LOSt}}$	**Cal Lost**	*Standard Calibration* data lost.
$\boxed{\text{CLr dAtA}}$	**Clear Data**.	Do you want to clear data?
$\boxed{\text{Cn: 30}}$	**Cn:**	Count statistic.
$\boxed{\text{CS FAULt}}$	**Cs Fault**	Checksum Fault in EPROM.
$\boxed{\text{d iF cELL}}$	**Dif Cell**.	Memory records present which were recorded with a different cell. Clear memory.
$\boxed{\text{d iF Un it}}$	**Dif Unit**.	The units (kg/lb) are different to those in other memory records. Clear memory or change units.
$\boxed{\text{H i: 572}}$	**Hi:**	Maximum (high) weight statistic
$\boxed{\text{H i9h bAt}}$	**High Bat**	High supply voltage indicated.

`Lo: 536`	**Lo:**	Minimum (low) weight statistic.
`Lo bAt`	**Lo Bat**	Low supply voltage indicated.
`no cELL`	**No Cell**	No Loadbar is connected.
`no rEc'd`	**No Rec'd**	*RECORD* key pressed but weight has already been recorded for this animal.
`no trAdE`	**No Trade**	Not legal for trade.
`not StbL`	**Not Stbl**	Not stable when attempting to record.
`OFF`	**Off**	Function is *Off*.
`On`	**On**	Function is *On*.
`OuErLoAd`	**Overload**	Overload on scale.
`Pr FAULt`	**Pr Fault**	Processor fault. Call your service centre.
`rEAdy`	**Ready**	The Indicator is ready, but no Loadbar is connected.
`SEruicE`	**Service**	The Indicator requires service.
`SPC LOSt`	**Spc Lost**	*Span Calibration* data is lost. Call your service centre.
`tL:16,605`	**tL:**	Total weight statistic.
`UndEr Ld`	**Under Ld**	The voltage from the Loadbars is abnormally low.
`2Ero OL`	**Zero OL**	Zero overload when using *Span Calibration*.

`2Ero in9`   **Zeroing**   The Indicator is Zeroing.

Care and Maintenance

The *TRU-TEST* Model 700 Indicator is a rugged and robust product, designed to withstand the environment associated with livestock handling. The case is made from extremely tough, ultraviolet - resistant polycarbonate. The keyboard is completely sealed for all - weather operation.

Like any equipment, however, appropriate care and maintenance ensures long life and good appearance.

A set of simple guidelines is given below:

- Both the Indicator and Loadbars or Suspension Cells are designed to be shower proof. Under no circumstances should the equipment be submerged in water or left in a damp environment for extended periods.

- Occasionally clean away foreign material from the underside of the platform to make sure that all the load is taken by the Loadbars.

- The Indicator should be stored in a cool dry place.

- Keep the Indicator clean. Use a soft damp cloth to remove dust and mud. *Do not use abrasive cleaners*.

- Replace the protection caps onto the plugs and sockets whenever the Loadbars are detached from the Indicator. When the cables are plugged in, screw the protection caps together. Dust and moisture can be removed from the plugs and caps with methylated spirits or ethyl alcohol. Stronger spirits must not be used as they may react with the plastic.

- If fitted with an internal battery, store the Indicator in a fully charged state and recharge every three months.

- To extend the life of the Indicator keep it indoors when not in use. If the internal battery is fitted, it is convenient to do the charging at the same time.

- **Do not open the Indicator case.** There are no user serviceable parts inside. Refer all servicing matters to your *TRU-TEST* Service Centre. The case is a sealed unit and, if opened, moisture could affect the operation of the Indicator. The product warranty becomes void if the case seal is broken.

Internal Battery

The rechargeable internal battery option allows the Indicator to be conveniently independent of any external power supply.

The internal battery comes with its own internal battery charger. See *Internal Battery Charging* below.

Once charged the internal battery gives 8 hours of continuous operation at normal temperatures
(5°C - 20°C) (40°F - 70°F) with two Loadbars connected.

The battery lasts for 3 to 5 years or approximately 250 charges if stored in a charged state and not submitted to temperature extremes.

To preserve battery life, observe the following simple guidelines:

- Never use an insufficiently charged or exhausted battery.

- Recharge the battery regularly.

- Recharge the battery once every 3 months even if it is not in use.

- Store the Indicator in a cool dry place.

- Use the recommended power supply.

Internal Battery Charging

Automotive battery chargers are NOT suitable for charging. The voltage and current they supply may be outside the required range. They may damage the Indicator resulting in the warranty becoming void.

Small AC to DC adaptors are NOT suitable for charging. A special system automatically controls the internal battery charging. This is designed to provide maximum protection for the battery and to allow charging while the Indicator is in use or when it is switched *Off*.

The internal battery charger maintains maximum life of the battery, while giving the fastest charging rate possible. It automatically changes from a full charge rate to a trickle charge depending on the internal battery state. Charging from a flat state takes six hours. A quiet buzzing noise from within the Indicator shows that the battery charger is working.

The internal battery charger operates from either the recommended *TRU-TEST* power supply unit or a 12 volt car battery. Other charging supplies may damage the Indicator resulting in the warranty becoming void.

When charging the indicator from a car battery, the car battery will lose energy equivalent to leaving the car headlights on for approximately 1 hour.

If the power source is unable to supply the required power, the charger switches *Off* and does not charge the internal battery. The Indicator continues to operate from the external power source. The charger only restarts once the external power supply has been disconnected or turned *Off* and then reapplied.

You can read the voltage at any time in order to check the condition of the internal battery.

If an external supply is connected, the charging voltage is displayed. Otherwise, the internal battery voltage is displayed.

- To read the voltage, press [DIAG].

Press any other key to return to live weight display.

A fully charged internal battery reads 12.5 volts or more when the indicator has been on for 5 to 10 minutes with no Loadbars or external power source connected.

The internal battery is considered low when the voltage reads less than 11.0 volts.

You can use the internal voltmeter to determine if the battery has been charged by displaying the voltage 30 minutes after connecting it to the external 12 volt supply. If the battery has been charged, the display should read greater than 13.5 volts. However, this does not mean that charging is complete.

Troubleshooting

"8 Volt" displayed

Cause   The internal 8 volt supply (used to supply the Loadbars) is outside its specified limits.

Solution   Disconnect the Loadbar cables from the Indicator one at a time. If the "8 voLt" message disappears then there is a fault in the Loadbars or their cables. If, after disconnecting the cables, the message is still displayed then the Indicator is faulty. Return all faulty items to your Service Centre.

"Bad Code" displayed

Cause   The code resistors in the Loadbar cable plugs are not recognised. (This message is also displayed for Loadbars which are only used with S*pan Calibration* before being calibrated.)

Solution   If you have two Loadbars, disconnect one at a time to determine which has faulty code resistors. Return faulty parts to your Service Centre.

Cause   Moisture inside the Indicator.

Solution   Return the Indicator to your Service Centre.

"Cal Lost" displayed during turn on

Cause   The Indicator has not been calibrated or it has lost its *Standard Calibration* data.

Solution   The *Standard Calibration* data is not used if the Indicator has been *Span Calibrated*. If this is the case then the extreme left pointer (SPAN) should be *On* when the Loadbars or Suspension Cells are plugged in. The Indicator can then be used normally.

If the Indicator is not using *Span Calibration* then it may still be used without its *Standard Calibration* but with reduced accuracy. The accuracy cannot be guaranteed. Return the Indicator to your Service Centre to have its *Standard Calibration* data cleared or restored.

"CS Fault" displayed

Cause   The EPROM CheckSum self test has failed.

Solution   Turn the Indicator *Off* and then *On* again. If the condition persists, return the Indicator for service.

Display is unstable

The display jumps from reading to reading or cycles up or down.

Cause   Moisture or dirt in the Indicator or Loadbar plugs.

Solution   Clean with methylated spirits or ethyl alcohol and dry out the Indicator and Loadbar plugs.

Cause   Loadbar cable damaged.

Solution   Check for broken or split areas on the covering of the Loadbar cable and repair by covering with waterproof tape. If any of the wires in the Loadbar cable are exposed, cut or frayed, return the Loadbar to your Service Centre for repair.

Cause   One Loadbar foot off the ground.

Solution   Ensure all feet are in firm contact with ground. Use spacers under the feet if required.

Cause   Dirt or other material build - up underneath the platform.

Solution   Clean the underside of the platform.

Cause   An animal having one leg off the platform and resting on the ground.

An animal touching the side of the race.

Solution	Ensure animal correctly positioned on the platform.

"High Bat" displayed

Cause	The supply voltage is greater than 16 volts DC. This message is displayed for 15 seconds and then the Indicator switches itself *Off*.
Solution	Replace power supply with a unit that can provide 10.5 to 16 volts DC.
Cause	Moisture inside the Indicator.
Solution	Return the Indicator to your Service Centre.

Indicator functions suddenly behave abnormally

Cause	An Indicator memory variable may have become corrupted by severe electrical disturbance.
Solution	Turn the Indicator *Off* and then *On* again. If the problem persists, check all Indicator settings and change if necessary. If problem persists, clear all of memory.

"Lo Bat" displayed

Cause	The supply is below 10.5 volts DC or the battery terminals are dirty. This message is displayed for 15 seconds and then the Indicator switches itself *Off*.
Solution	Replace power supply or battery with a unit that can provide 10.5 to 16 volts DC. Clean the battery terminals.
Cause	Moisture inside the Indicator.
Solution	Return the Indicator to your Service Centre.

"No Cell" displayed during turn on, then displays "Ready"

Cause	There is no Loadbar connected or the Loadbar code resistors are open circuit.

Solution	The Indicator can be used without the Loadbars connected for setting up. If the condition persists when the Loadbar cables are plugged in, refer to "bAd codE" above.
Cause	Old code 99 Loadbars are being used.
Solution	Contact your Service Centre for reconfiguration of the Indicator to recognise 99 as a valid code.

"PR Fault" displayed

Cause	The processor inside the Indicator has "crashed", probably due to an electrical trauma in the power supply line.
Solution	Turn the Indicator *Off* and then *On*. If there is a "Bad Conf", "Cal Lost" or "Spc Lost" message during turn *On* then the crash has caused the loss of vital internal data which the Indicator has been unable to recover by itself. (The Indicator keeps three copies of calibration data to enable recovery in most cases.) Refer to the troubleshooting section specific message(s).

If the "PR Fault" recurs regularly, check the power supply by running the Indicator from a 12 volt car battery. If the condition persists, return the Indicator for service. |

"Service" or "Bad Conf" displayed

Cause	Essential memory data containing the configuration number has been corrupted or an upgrade attempt has failed.
Solution	Contact your Service Centre.

"Spc Lost" displayed during turn on

Cause	The *Span Calibration* data has been lost.

Solution   If configured to do so, and if standard Loadbars are being used, the Indicator may continue to function using *Standard Calibration* although possibly with different resolutions and load ratings and with reduced accuracy.

If you need to use *Span Calibration*, the system must be re-calibrated in situation. If you do not use *Span Calibration*, you may continue to use the Indicator normally. Return the Indicator to your Service Centre to have the *Span Calibration* cleared.

"Under Ld" displayed

Cause   The signal from the Loadbars is abnormally low (negative) or the Indicator is faulty.

Solution   If you have two Loadbars, disconnect one at a time to determine if one is faulty. Return faulty units to your Service Centre.

Weights are out by a factor of nearly two

Cause   The Indicator is working in the wrong units of measurement.

Solution   If both kilograms and pounds are available, two pointers labelled "kg" and "lb" indicate which one is currently being used. Change the units by pressing the *kg/lb* key.

If the Indicator's units of measurement cannot be changed, return it to your Service Centre to have the configuration number corrected.

Weight readings inaccurate

Cause
- loose Loadbar feet

- load bearing surface is not supporting foot

- faulty Loadbar

- uneven or non-level surface

- faulty Indicator.

Solution   Carefully tighten loose Loadbar feet lock nuts and ensure that all four feet are resting on concrete or 25mm (1 inch) of timber. If a Loadbar or the Indicator is faulty, return faulty item to your Service Centre.

See also "Weights are out by a factor of nearly two".

"Zero OI" displayed

Cause   The Indicator is using *Span Calibration* without the 50% dead load configuration option and is trying to zero more than 2% of live capacity.

Solution   Ask your Service Centre to check the configuration to ensure that 50% dead load allowance is included.

"Zeroing" message persists indefinitely

Cause   The signal from the Loadbars is excessively noisy or the cables are contaminated with moisture or the 12 volt power source is excessively noisy.

Solution   Remove any live weight from the platform. If you have two Loadbars, disconnect one at a time to determine if one is faulty. Check the power supply by replacing it or running the Indicator from a 12 volt car battery.

Service Centres

If after carrying out the above recommended solutions to the various problems the fault has not been rectified, contact your local *TRU-TEST* Service Centre:

New Zealand

Phone	Facsimile	Toll Free
(09) 274 5799	(09) 274 6367	0800 653 356

USA

Phone	Facsimile	Toll Free
(210) 377 2885	(210) 377 2932	1 800 874 8494

Australia Vic. S.A. Tas.

Phone	Facsimile	Toll Free
(03) 5831 5525	(03) 5831 5524	1 800 682 880

Australia Qld. N.S.W. N.T.

Phone	Facsimile	Toll Free
(07) 3807 8800	(07) 3807 8877	1 800 682 880
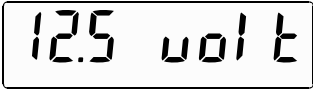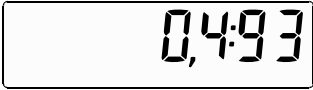
Australia W.A.

Phone	Facsimile	Toll Free
(08) 9274 5122	(08) 9274 4824	1 800 682 880

Please have on hand the diagnostic information.

This can be obtained from the Indicator by pressing *DIAG* with the Loadbars connected - see next page.

Pressing *DIAG* four times gives the information in the following sequence:

1. Supply voltage

$$12.5 \ volt$$

2. Model numbers, language and software version.

$$0,0E \ : 1.0$$

3. PCB type, memory size and Loadbar code.

$$0,4{:}93$$

4. Configuration number.

$$0$$

Press any other key to return to current live weight display.

Write the diagnostic information here:

1. Voltage _____ **.** ___

2. Diag number _____

3. Diag number _____

4. Config number _____

Technical Information

Autoranging

The scale is usually set to autorange. This means that the display resolution automatically changes to coarser increments when the weight reaches the equivalent of 250 times the next coarser division size. This better reflects the actual accuracy of the scale.

The weight is still displayed in kilograms or pounds, it is only the resolution (precision) which changes at higher loads.

Example Autorange (standard Loadbars)

Weight Range	Resolution
0 to 250kg (500lb)	0.5kg (1lb)
250kg (500lb) to 500kg (1250lb)	1kg (2lb)
500kg (1250lb) to 1250kg (2500lb)	2kg (5lb)
1250kg (2500lb) to capacity	5kg (10lb)

The live capacity of the scale is usually a round multiple of the base resolution, for example:

3000 x 0.5kg = 1500kg.

Refer to the *TRU-TEST Loadbars Manual* for live capacities of *TRU-TEST* Loadbars and Suspension Cells.

USA Model Indicators

USA Model Indicators have some different key names from the standard model. See *Keys* on page 20.

FCC Warning

The TRU-TEST Indicator 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 their own expense.

Model 700 Specifications

Analogue input

Loadbar excitation: 8 volts DC, 4 wire, 6 x 350 ohm loadcells max.

Sensitivity: 3 microvolts/division minimum.

Full Scale: 14mV max. including dead load.

Accuracy *Standard Calibration* (System):

greater of ± 1 division or 0.5% of reading OR,
greater of ± 2 division or 1.0% of reading,

depending on the Loadbar type used. Refer
TRU-TEST Loadbars Manual.

Display

Display divisions: Set by built-in configuration, dependent on Loadbar type used. Four division sizes (d1, d2, d3, and d4). Transitions at 250d2, 250d3, 250d4.

Stable pointer: *On* when displayed result is within 0.5%, 1% or 2% of the true weight (user selectable).

Weighing speed: For a step change in weight, the display will indicate a stable reading within 0.8 seconds.

Damping algorithm: Non locking, based on intelligent statistical analysis.

Maximum displayed weight:

999,999kg or lb.

Division sizes: 0.0001 through 100 (kg or lb).

Overload indication: Displays "Overload" at greater than 9 divisions above live capacity.

Under zero: Displays negative weights until the hardware limits, then displays "UndEr Ld".

Zero controls

Push button Zero: For span cal
Maximum weight which can be zeroed is ± 2% of
live capacity.

For std cal or 50% deadweight allowance option:
Any weight up to live capacity may be zeroed.
Capacity reduces if zeroed weight is greater than the
built-in dead weight allowance.

Auto zero tracking: User selectable (*On* or *Off*). Capture range factory
configured to 0.5d, 1d, 3d or 6d. Minimum time
between operations: 8 seconds.

Capture Range: 6d.

Auto power up zero: User selectable *On*/*Off*. Limits are same as for push
button zero.

Power requirements

Voltage: +10.5 to +16.0 volts DC
(Protected against polarity reversal).

Current: 200mA.
1.5A with internal battery charger option.

Internal battery

Sealed lead acid. Must be stored in a charged state.

Operating time: 8 hours @ 20°C (70°F), with two Loadbars
connected.

Charging time: Not less than 6 hours using 12 volt DC 1.5A (3 Amp
20uS pulses) @ 20°C (70°F).

Environmental

Operating temperature:	-10 to +40°C (+15 to +105°F).
Storage temperature:	-20 to +80°C (-5 to +175°F).
Humidity:	95% relative humidity. Case is proof to IP53 moisture and dust.

Physical dimensions

Display:	8 by 7-segment LCD. Height 18mm (3/4 inch). 9 pointers.	
Dimensions:	Height	210mm (8.25 inches).
	Width	315mm (12.5 inches).
	Depth	62mm (2.5 inches).
Weight:	Indicator only:	1.8kg (4.0lb).
	With battery:	2.6kg (6.0lb).

Note: Product Specifications may change without prior notice.

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