



T2 Mk III Taximeter User Guide

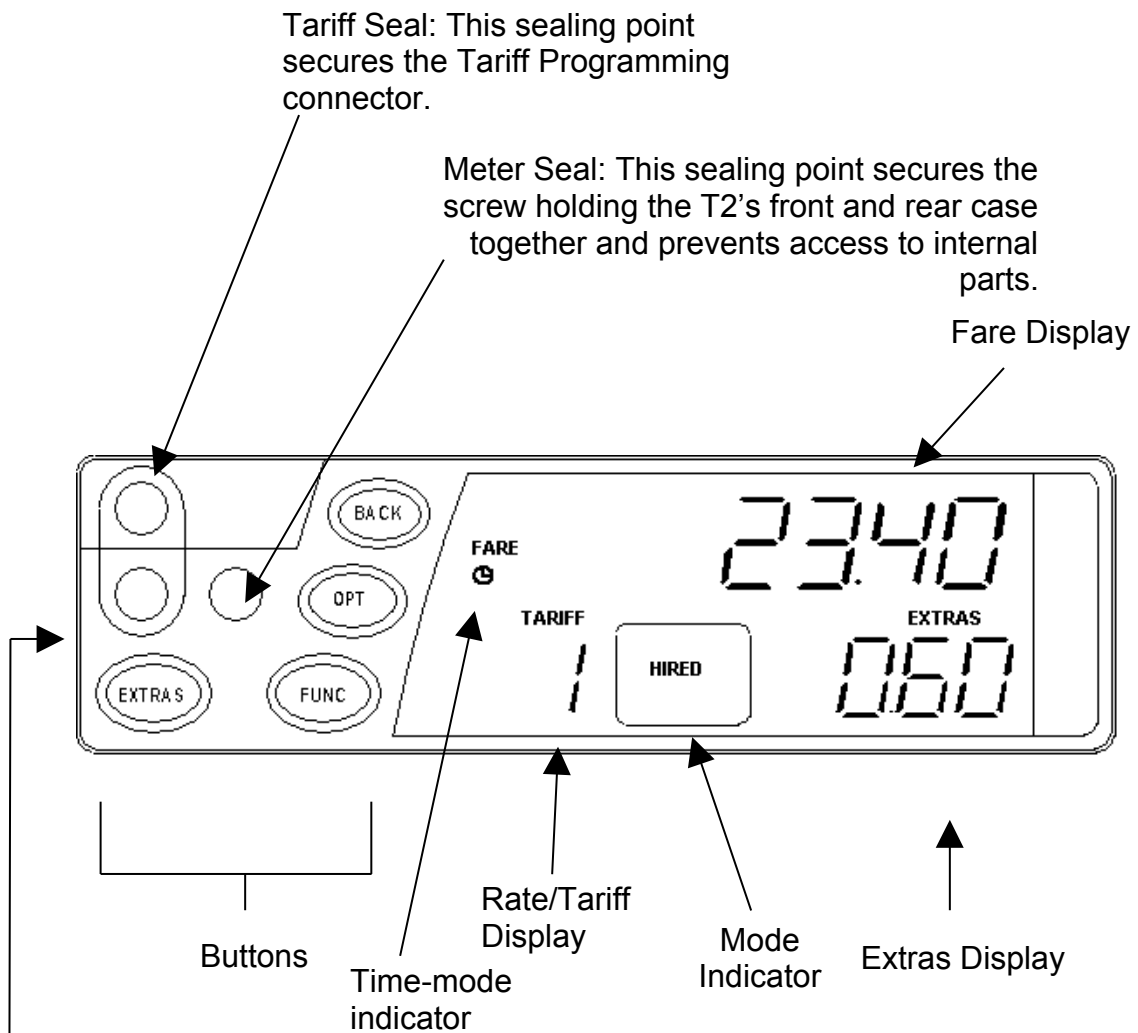
This manual describes the operation of the T2 Mk III Taximeter once correctly installed and configured by an authorised Aquila Taximeter Dealer. Aquila Electronics Limited reserve the right to change the specification of its products without notice. If any further information is required, please contact your local dealer.

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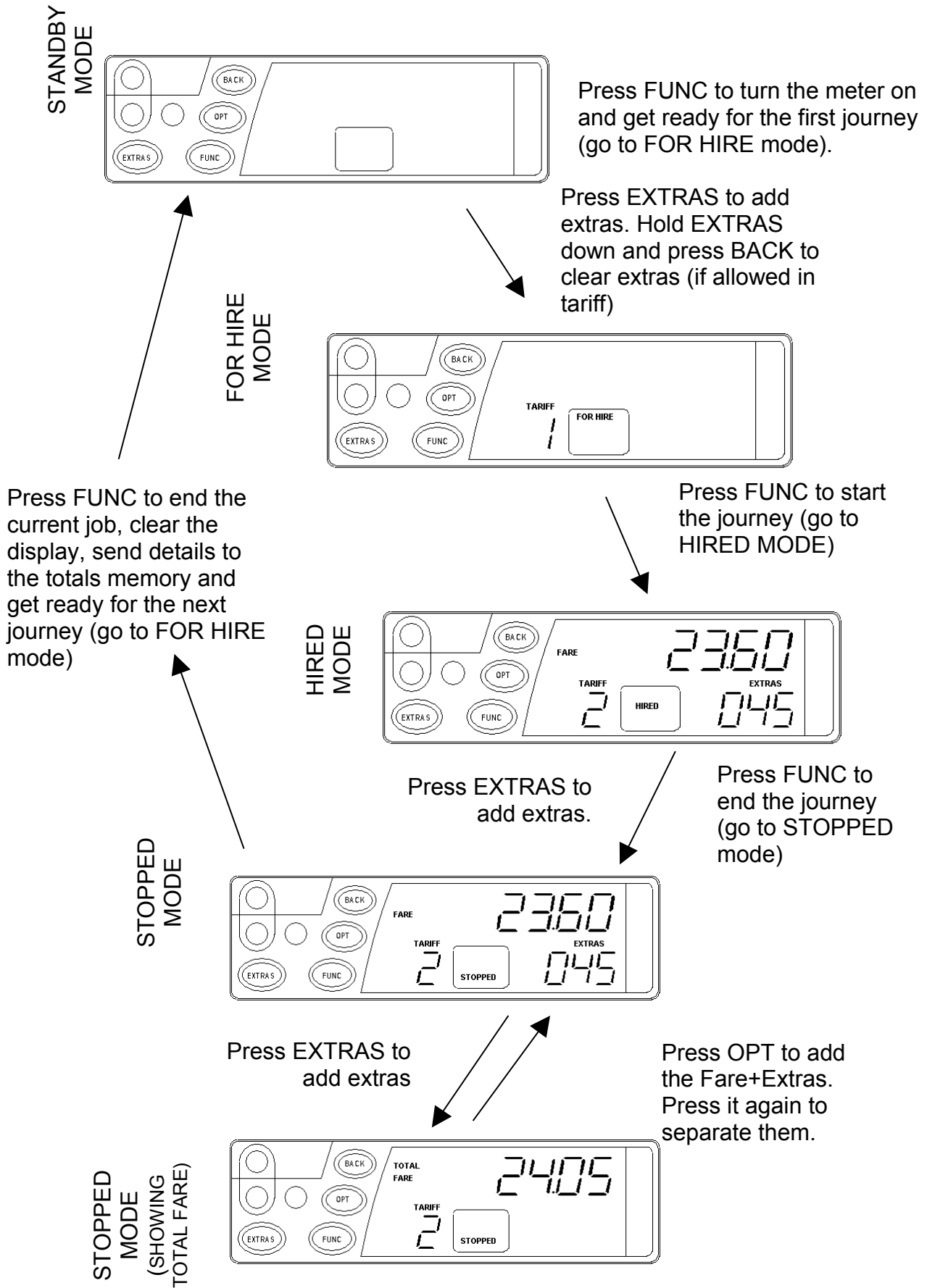
1 The Basics of the T2 Mk III Taximeter



Vehicle Seal: This sealing point secures the screw holding the T2 to its mounting bracket.

Note: The Rate, Fare and Extras displays are used for other purposes in various menus and options.

The diagram of the next page shows how the T2's basic operations work. Following this there are descriptions of each of the T2's operating modes and the functions available in each mode.



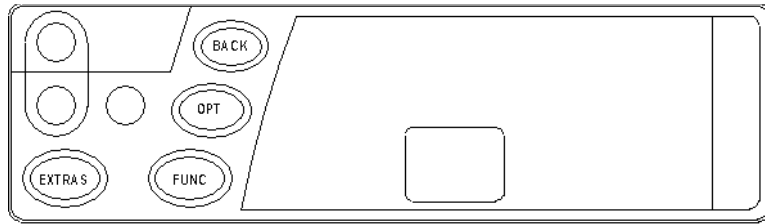
Basic Operation of the T2

2 Operating Modes

2.1 Power Up Test

From software version 49.00, the T2 performs an extended power up self-test before commencing normal operation. There is therefore a few seconds' delay. This is only carried out when power is disconnected and then re-connected.

If the test is unsuccessful, the keypad backlighting flashes. If this occurs, then please contact your dealer for advice.



SOFTWARE CHECKSUM
FAILURE: All buttons flashing

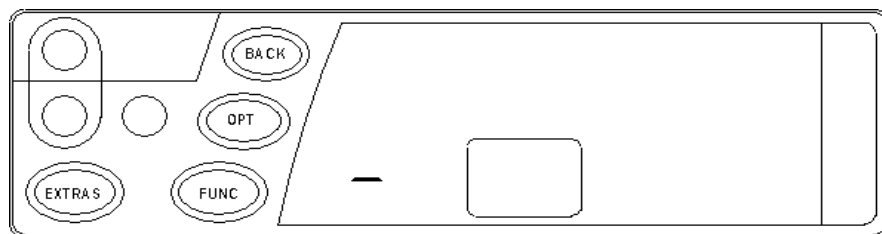
In some circumstances, the T2 may display other error messages after the self -test process.

2.2 Standby Mode

After the T2 is first powered up, it enters STANDBY mode. The display is completely blank except for a dash which appears in the Rate Digit if the vehicle moves.

Access to the User Menu system is available from Standby mode. (See section 4)

- ✓ Optional Feature: A time of day clock may be displayed for 30 seconds if the vehicle moves.



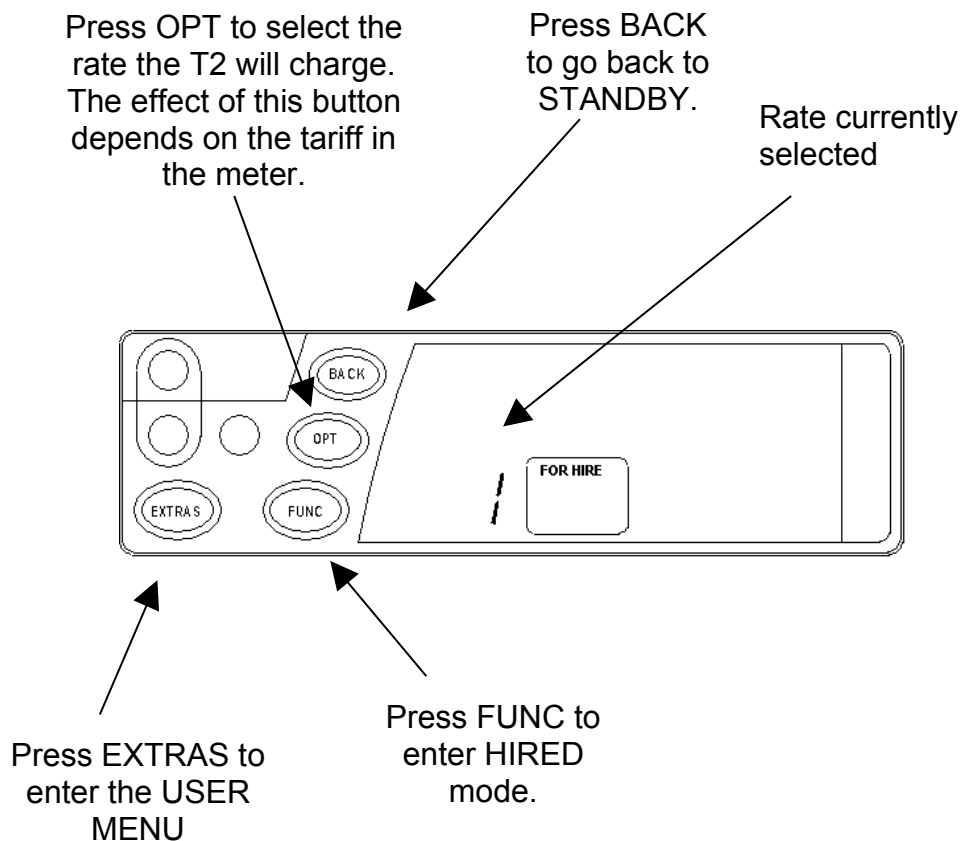
Press
EXTRA S to
enter the
User Menu
System

Press FUNC to
enter FOR HIRE
mode

2.3 FOR HIRE Mode

In FOR HIRE mode, the T2 displays the currently selected rate and allows manual rate selections to be made if these are included in the tariff.

- ✓ Optional Feature: The T2 may optionally display a time of day clock in the Fare Display if allowed in the tariff.



- ✓ In FOR HIRE mode, the T2 may illuminate the roof sign of your vehicle. This depends, however, on the tariff program in the meter.

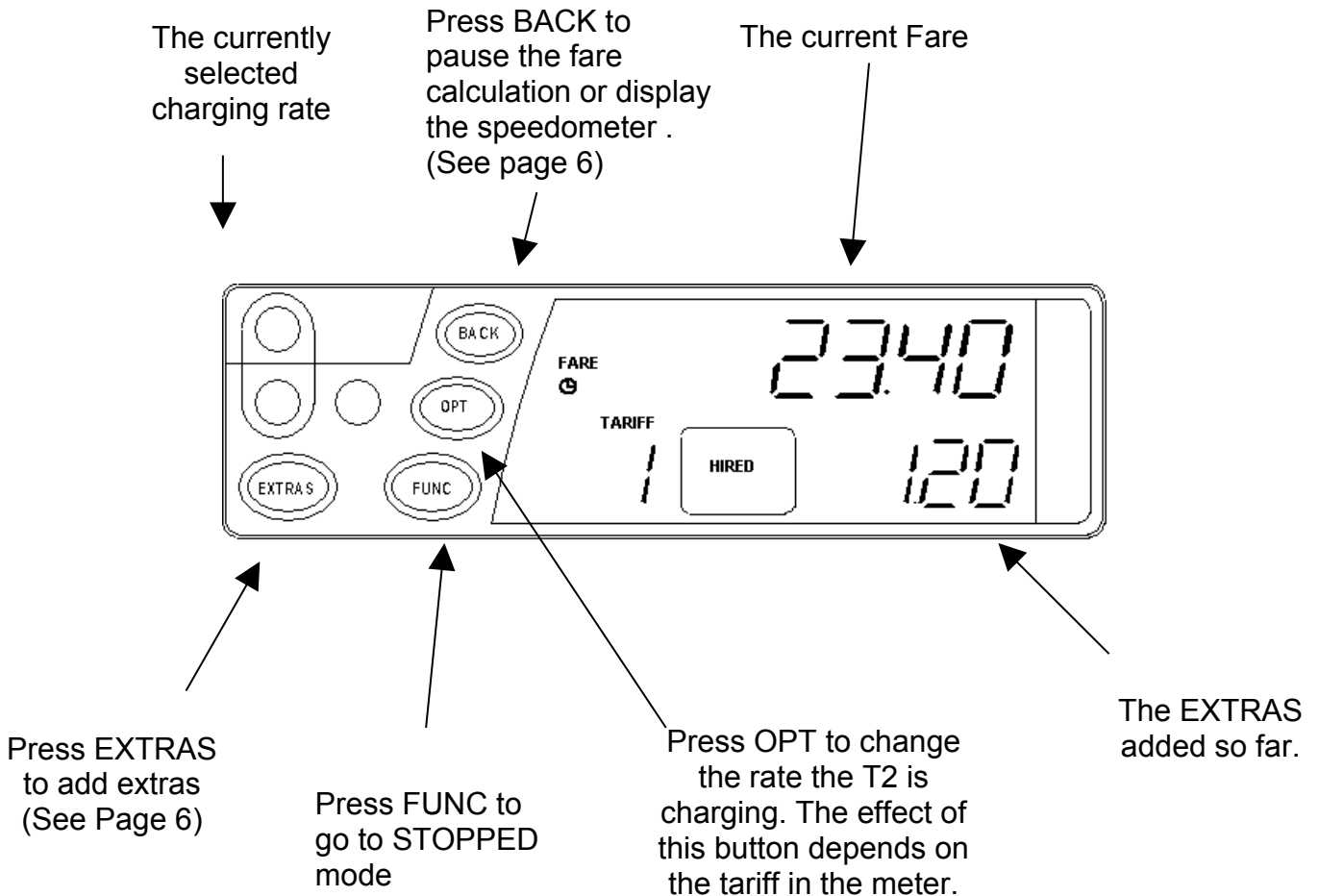
2.4 HIRED Mode

- ✓ HIRED mode is the mode in which the T2 calculates the fare based on a combination of time and distance. As soon as the meter is placed in HIRED mode, it begins to calculate the fare based on the tariff programmed into it.

There are some conditions which will prevent the T2 from entering HIRED mode from FOR HIRE mode. These include:

1. The Date Stop Feature
2. The absence of a tariff program
3. If the meter's clock is not set and the tariff is "calendar controlled"

In case of items 2 and 3, please contact your dealer for assistance. The Date Stop feature is described in Section 4.4.5.



Functions in HIRED Mode

- ✓ If enabled in the tariff program, the BACK button can be pressed to pause the fare calculation. In this case the fare is “frozen” until the BACK button is pressed again. To indicate that the fare is paused, the HIRED and STOPPED legends flash alternately. When re-started, the fare starts from the point at which it was paused. This feature is sometimes called “dead-stop”.
- ✓ If enabled in the tariff program, the T2 may display a speedometer in the EXTRAS display area. This is only available if there are no extras currently shown. To turn the speedometer on or off, press the BACK button. If the “pause” function above is also available, hold the BACK button down for 2 seconds to activate the speedometer.

“Multiple Extras”

The Multiple Extras function of the T2 allows the selection from a number of possible extras amounts, each relating to charges for different types of fare supplements.

For example, the tariff may contain a Multiple Extras table including:

<i>Item</i>	<i>Extras amount</i>	<i>Max number of items</i>	<i>Descriptive Word</i>
Luggage	£0.20	5	“LUGG”
Passengers in excess of one	£0.15	4	“PASS”
Airport Charge	£1.50	1	“AirP”

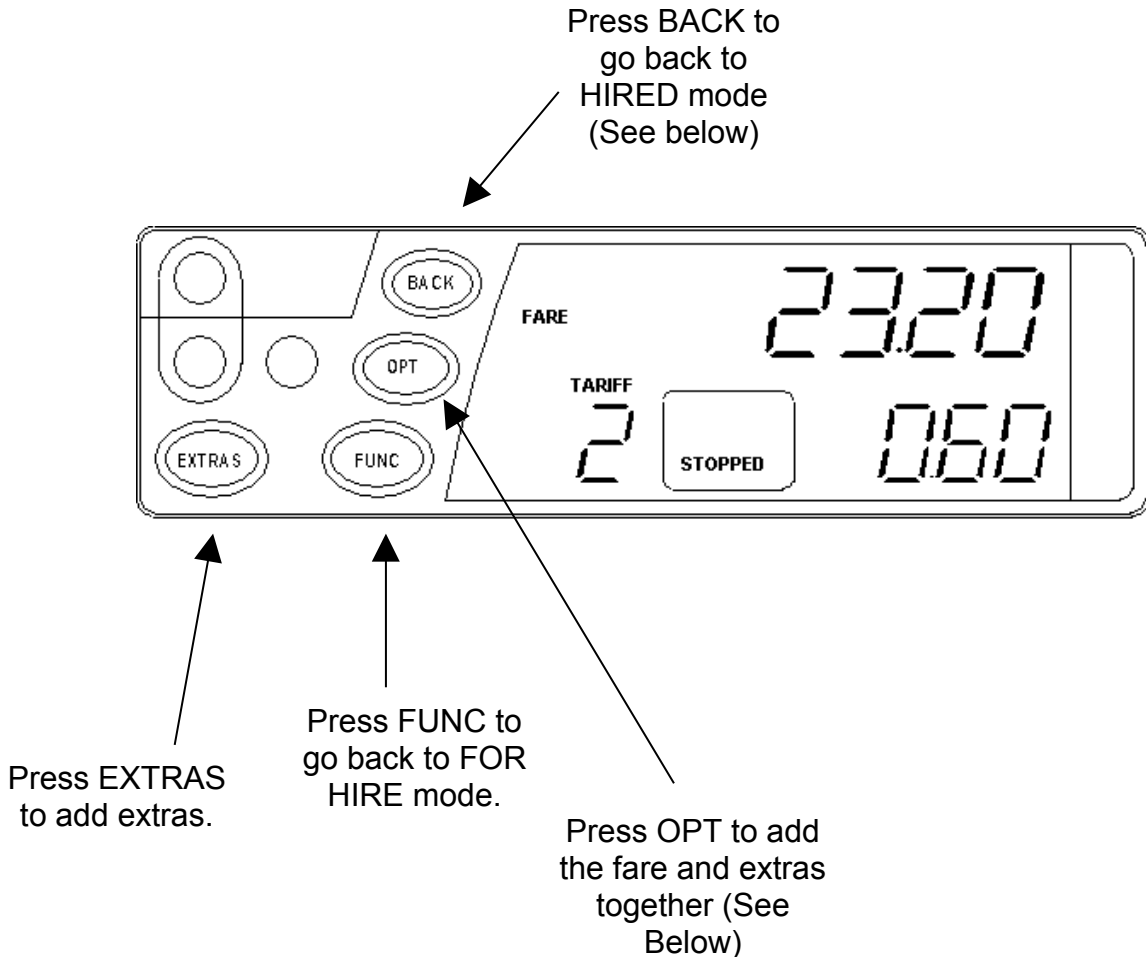
If the tariff programmed into the meter contains “Multiple Extras”, then the operation of the EXTRAS button is altered.

4. The first time the EXTRAS button is pressed, the T2 displays the Descriptive Word from for the presently selected Multiple Extras item, eg, “LUGG” for “Luggage”.
 5. To scroll through the list of Extras items, keep holding down the EXTRAS button and press the FUNC button until the required item is reached.
 6. To add the Extras Amount, release the EXTRAS button, and then press and release it again.
- ✓ The T2 will only allow the permitted number of Extras increments to be added (ie: up to 5 “Luggage” charges in the above example).

Note: Since the T2 (in common with most taximeters) includes time in the fare calculation in HIRED mode, it is not appropriate to do in-vehicle distance related accuracy testing in HIRED mode. STOPPED mode should be used for this purpose.

2.5 STOPPED Mode

The T2 is normally placed in STOPPED mode at the end of the journey and left there until the passenger has paid the fare. In this mode, the time element of the fare calculation is stopped, but the taximeter continues to calculate the fare on the basis of distance only.



- ✓ If the T2 is programmed to do so, pressing the OPT button in STOPPED mode will cause the fare and extras to be added together and the legend "TOTAL FARE" to be illuminated. The exact behaviour of this feature has several possible options. If you require any further information, please contact your dealer.

Since the T2 continues to calculate the fare on a distance basis only, STOPPED mode may be used for in-vehicle testing.

3 Tariffs, Options and PIN Numbers

This section explains some basic principles as they apply to the T2 Taximeter.

3.1 Tariffs

A taximeter needs to be programmed with a *tariff* in order for it to charge the correct fares and comply with the needs of your business and local regulations.

The T2 is programmed with a tariff by your dealer. As well as the charging information, the tariff also includes:

- Information about calendar dates, times and days of the week for so-called “calendar” tariffs.
- The dates and times to change the clock forwards and backwards for Summer and Winter time.
- Configuration of options such as the totalling of the fare and extras in stopped mode
- Configuration of the circuits used to activate the roof sign lamp(s) on the vehicle.

Because of this, the behaviour of an T2 can change greatly depending on the tariff programmed into it. If you require any help with the operation of your taximeter, please contact your local dealer.

3.2 Tariff Code

Tariff programming information is generated by staff at Aquila Electronics in conjunction with local dealers. In order to keep an accurate record of the large number of programs written, and to assist in the diagnosis of problems, every Aquila tariff is uniquely numbered. This number can be displayed in the “Info” user menu (See section 4.3.2).

If given this number, staff at Aquila can quickly find out how your T2 has been programmed and answer any queries you may have.

3.3 Pre-loaded Tariffs

A special “Pre-Loaded” tariff programme can be created. This kind of tariff programme takes effect from a specified date and time. If a tariff of this kind is inserted into the T2, it keeps two separate tariff programmes in its memory, and chooses which one to use based on the date and time. This feature is used to allow tariffs to be inserted into the T2 before they are to take effect.

3.4 Receipt Programs

The T2 can optionally be programmed with one or more receipts for printing on a suitable Receipt Printer. Like the tariff program, the Receipt Program has a unique code number which can be used to identify it to your dealer.

3.5 PIN Numbers

- ✓ A PIN number is used to control access to the Date Stop feature (See section 4.4.5)

The term PIN is borrowed from the banking industry and stands for “Personal Identification Number”.

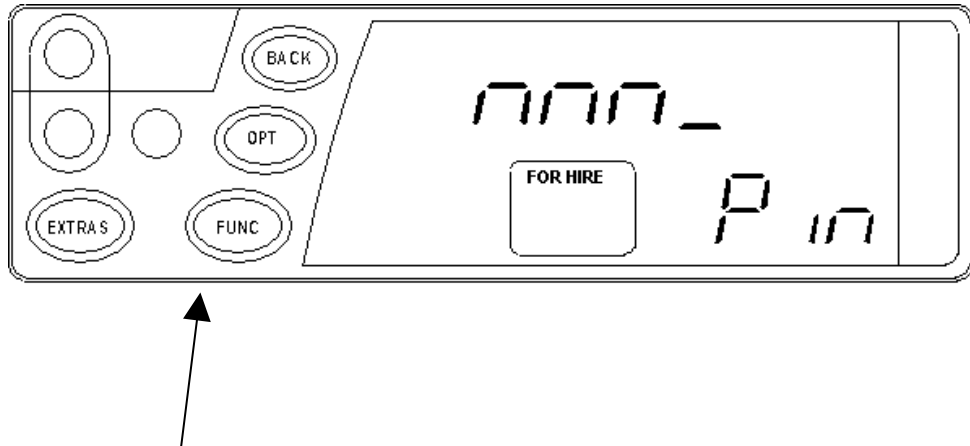
The T2 uses six-digit PIN numbers with each digit taking a possible value of 1,2,3, or 4. This allows PIN’s to be entered directly into the meter using the five buttons, and provides 4096 combinations.

The PIN number is unique to each T2 and may not be changed.

The Date Stop PIN number for your T2 can be obtained from your dealer.

3.6 Entering a PIN Number

When a PIN is required, the T2’s display looks like:



Enter the 6-digit PIN using the buttons for the numbers 1 to 4.

For example, the PIN number 413211 would be entered as:
BACK, EXTRAS, OPT, FUNC, EXTRAS, EXTRAS

- ✓ If no keys are pressed for approximately 30 seconds, the PIN entry times out.

4 The User Menus

The T2's user menus allow:

- Information to be read out of the meter, including the totals information
- Certain functions of the meter and meter/vehicle interface to be tested
- Certain features of the meter to be enabled, disabled or configured

The User Menus are available when the T2 is in FOR HIRE or STANDBY modes. To access the menu system, press the EXTRAS button in either of these modes (see Sections 2.2 and 2.3).

The User Menus include the following sections:

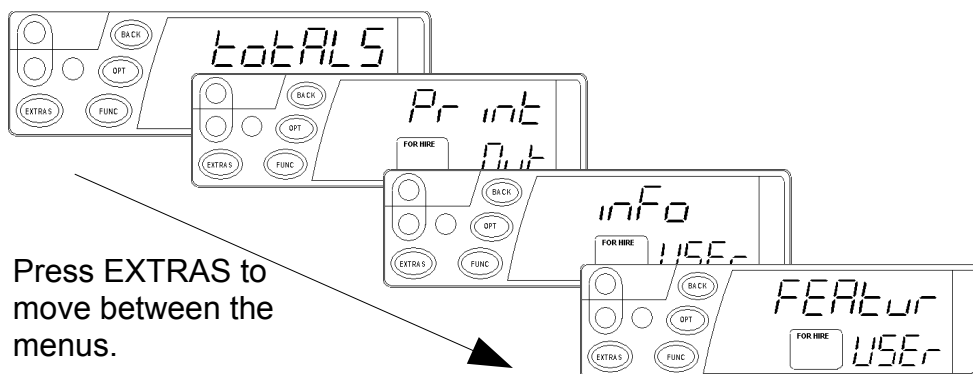
Section	Description
Totals	Allows access to read the meter's totals information. The meter's totals may also be configured and reset in this section.
Print Out	This section is available if the T2 has a receipt program in place, and is used to print out receipts on an optional printer.
Info	Allows access to various "Information" items.
Features	Allows access to various features.

- To move between the sections, press the EXTRAS button.
- To select one of the sections, press FUNC
- To move between the sub-menus, press EXTRAS

To back out of an item, press BACK. To exit completely, press BACK repeatedly.

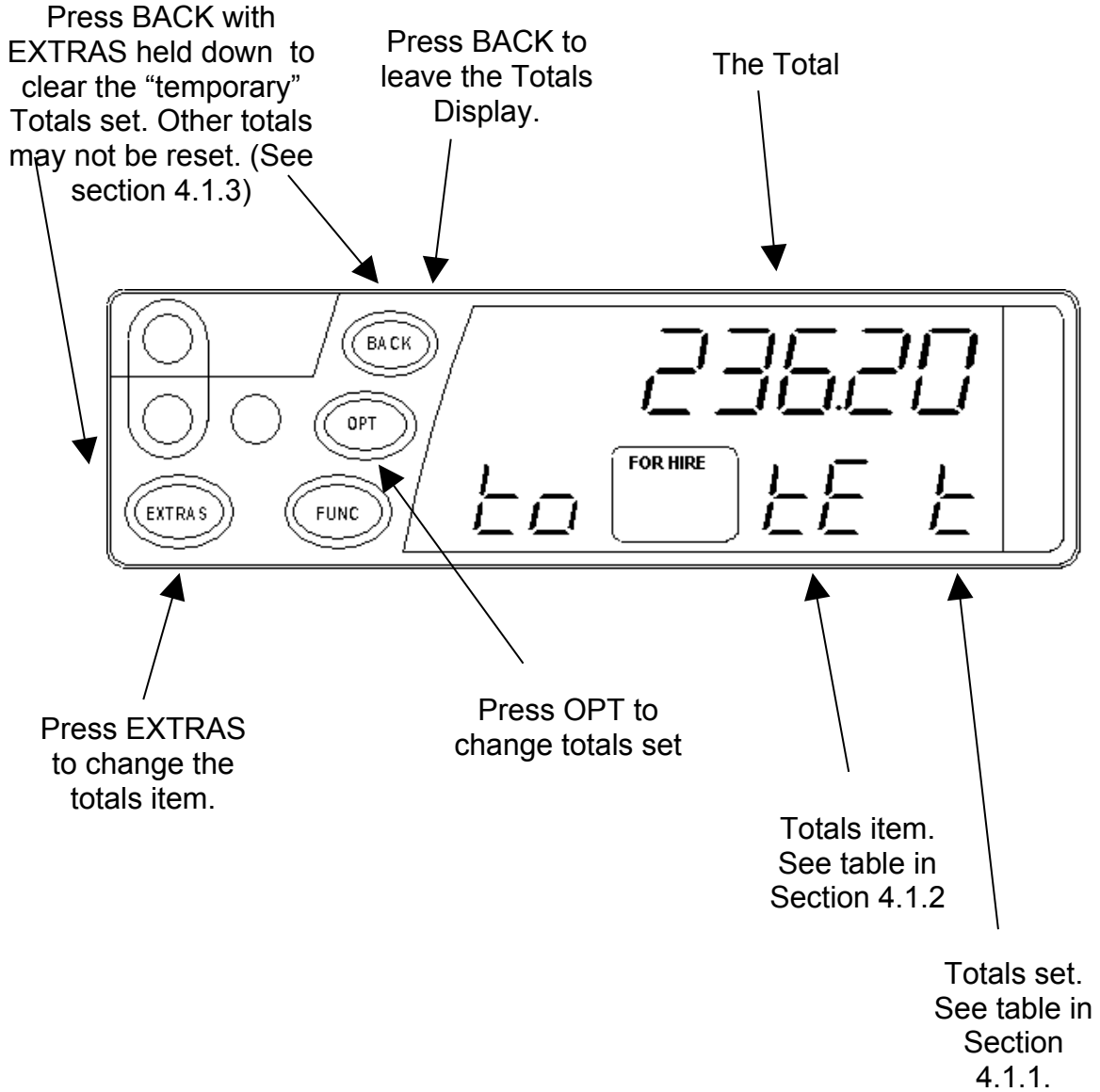
If no button is pressed for a continuous period of 10 seconds, the T2 automatically leaves the User Menus and goes back to the previous mode.

Most of the menu items also time-out in a similar way.



4.1 User Menus: Totals

The T2 stores running totals of your earnings and other journey information for later recall. To access the totals, press OPT from the “Totals” prompt.



4.1.1 The 3 Sets of Totals

Three separate sets of totals are stored:

Display	Description
t	“Temporary Totals”. These may be reset by user.
p	“Permanent Totals”.
L	“Last Journey” totals. This set represents the last journey only.

4.1.2 Items in each set of Totals

Each set of totals includes the following items:

Display	Description	Included In Last Journey Totals
tE	Total Earnings = Fares + Extras + Tips	✓
F	Fares	✓
E	Extras	✓
Hr	Hirings	✗
td	Total Distance travelled including between hirings	✓
pd	Paid Distance: Distance travelled while hired.	✓ (Paid distance during last Journey)
Ud	Unpaid Distance: Distance while not hired	✓ (Unpaid distance since last recorded journey)
nJ	“No Jobs”: Number of journeys “aborted” by a long power interruption.	✓ (Number of “No Job” journeys since last recorded journey)
PU	“Power Ups”: Count of number of times power has been applied to the T2	✓

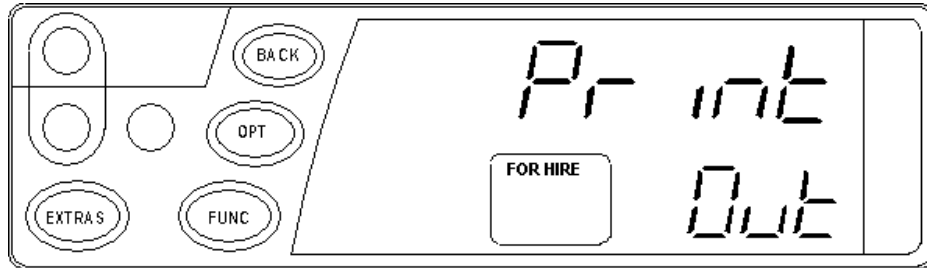
In the case of the “Last Journey” totals, the “Hirings” total is absent. Some of the other items have the meanings as indicated in the table above.

4.1.3 Clearing the “Temporary” Totals Set

- ✓ It is possible to clear the “Temporary” totals set by holding down the EXTRAS button and pressing BACK when the Temporary Totals are being viewed (“t” in the Extras window)

4.2 User Menus: “Print Out”

The “Print Out” menu option is only available if a receipt programme has been inserted into the T2. Its correct use also requires the connection of a suitable Receipt Printer.

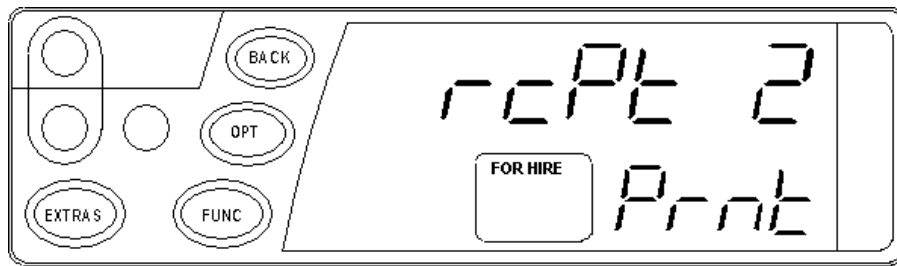


Press EXTRAS to move to the next item.

Press FUNC to print a receipt. If more than one receipt has been programmed, a sub-menu is displayed instead.

Assuming that a receipt printer is connected to the T2 and switched on, a receipt may be printed:

- ✓ If only one receipt choice is available, pressing FUNC will print it.
- ✓ If more than one receipt choice is available, pressing FUNC gains access to a menu of the choices.



Press EXTRAS to move to the next receipt.

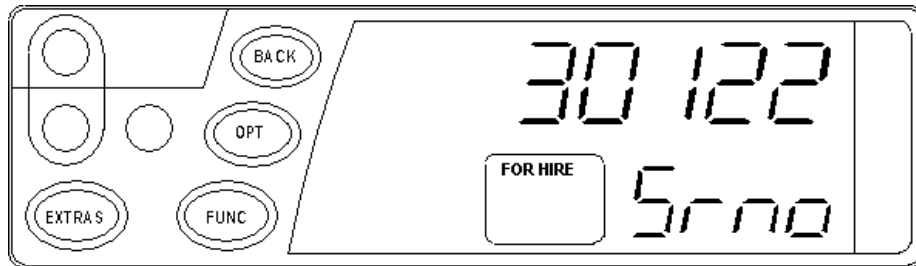
Press FUNC to print the selected receipt.

4.3 User Menus: Info

The info menu contains a series of items giving information about the meter and its status.

4.3.1 Serial Number

This entry shows the T2's serial number which should match the number printed on the front panel.



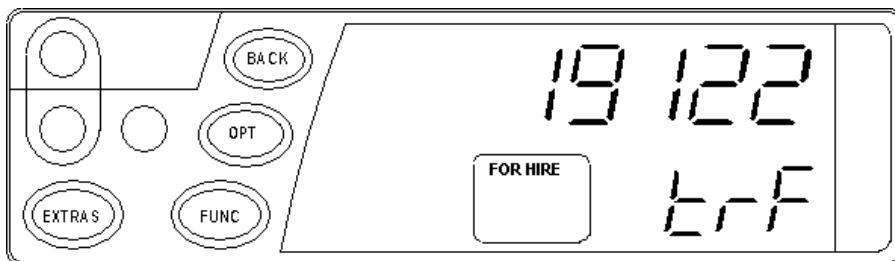
Press EXTRAS to move to the next item.

4.3.2 Tariff Number

See sections 3.1 and 3.2 for details of the tariff numbering scheme.

This item shows the Tariff Number of the tariff currently programmed into the T2. If there is no tariff installed, "no trF" is shown.

Pressing and holding FUNC at this point displays the Tariff Programming event counter and associated information.

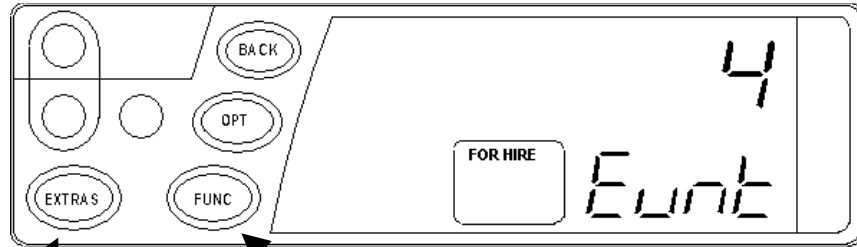


Press EXTRAS to move to the next item.

Press and hold FUNC to display the event counter information.

If the T2 contains a “pre-loaded” tariff (See section 3.3), then there is a further entry in the menu showing the pre-loaded tariff number, or the “old” tariff number if the pre-loaded tariff is active at the current date and time.

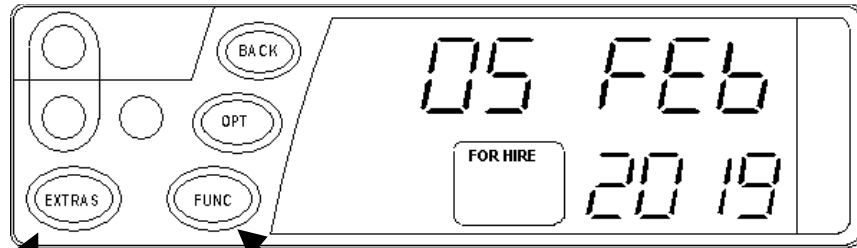
Pressing and holding FUNC displays the Tariff Programming event counter:



Press EXTRAS to move to the next item.

Hold FUNC down

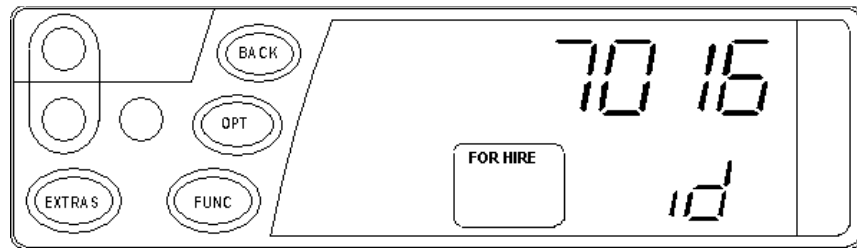
Hold FUNC down and press EXTRAS to move to the next item (the date of the last tariff programming operation):



Press EXTRAS to move to the next item.

Hold FUNC down

The third item is the identity (serial number) of the Tariff Programmer used by the dealer to program the tariff:



4.3.3 Receipt Number

See section 3.4 for details of the receipt number.



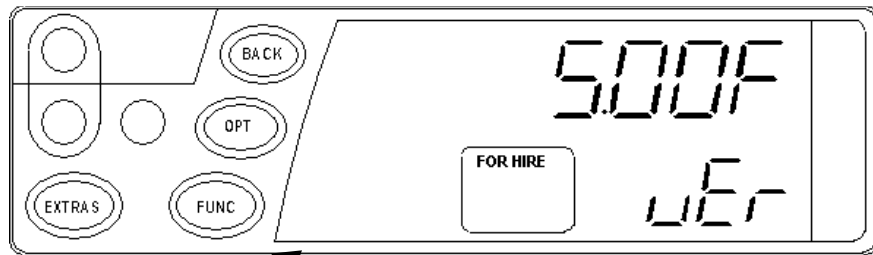
Press EXTRAS to move to the next item.

If there is no receipt programme in the T2, the text "no rcP" is shown.

4.3.4 Software Version and Software Checksum

This item shows the version of the software in the T2.

You may need to tell your dealer the software version in the event of a query.



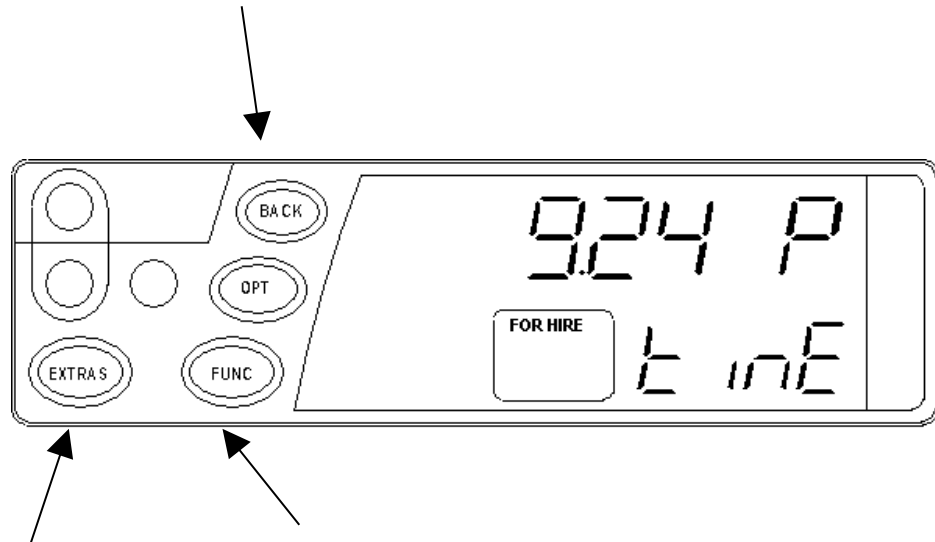
Press EXTRAS to move to the next item.

Press and hold FUNC to display the software checksum.

4.3.5 Time of Day

You can change the time between 12hour and 24hour format here. You can also make minor adjustments to the time to allow for the accuracy of the T2's clock.

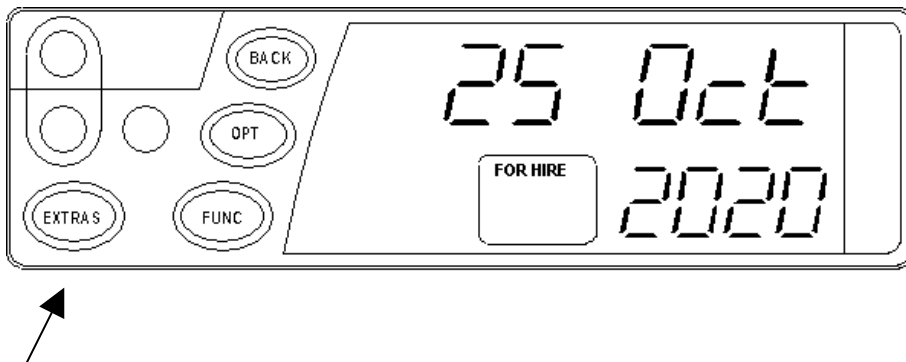
Press BACK, with FUNC held down to adjust the time forwards, OPT to adjust the time backwards.



Press EXTRAS with FUNC held down to change between 12 and 24 hour clock.

Press and hold down FUNC to adjust the time and 12/24 hour clock display.

4.3.6 Date

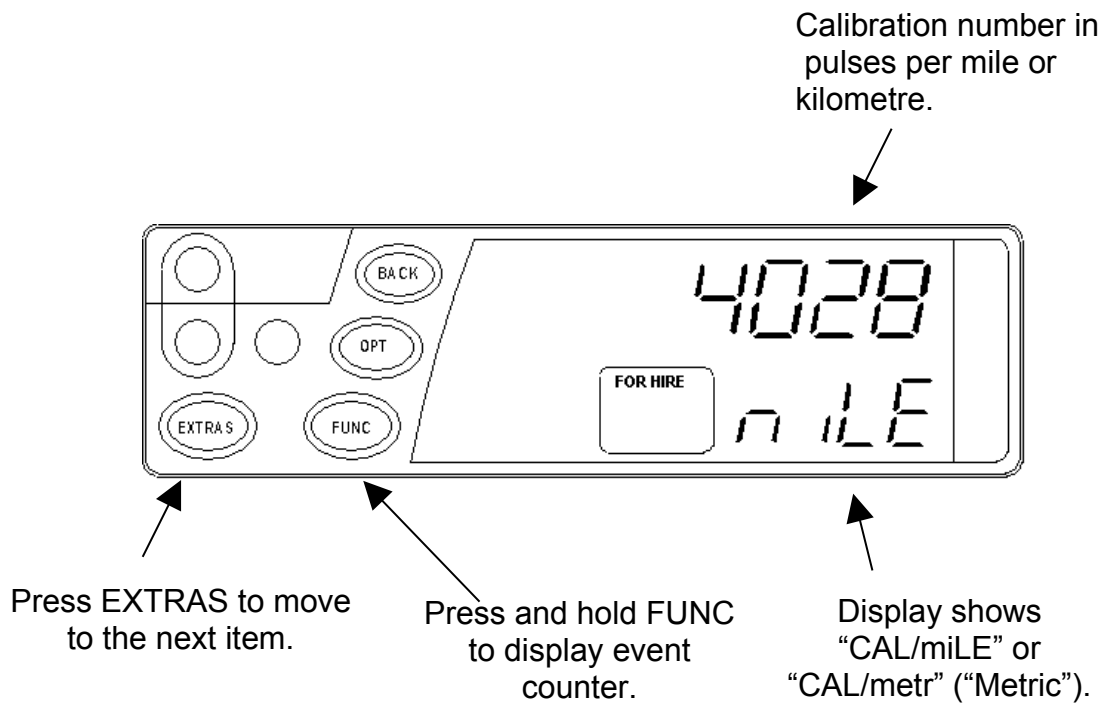


Press EXTRAS to move to the next item.

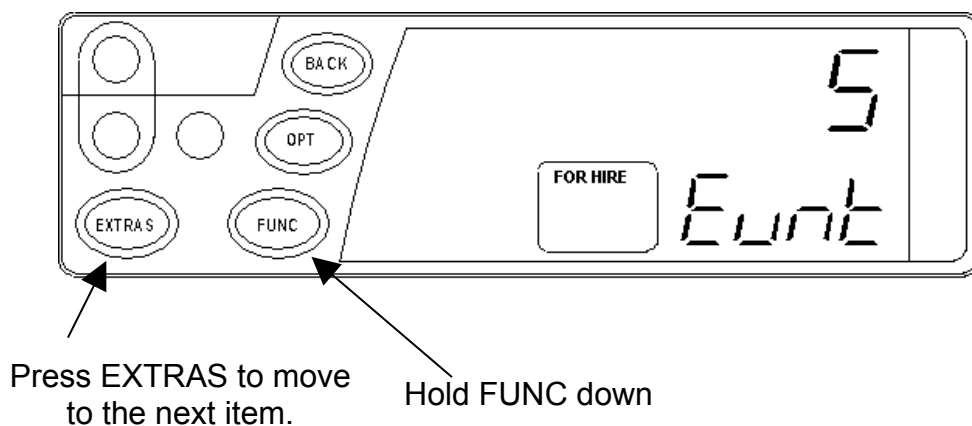
4.3.7 Calibration (k value)

The T2 is programmed by your dealer with a number of **pulses per mile/kilometre**. This item allows you to check the value.

You may need to provide this information to your dealer in the case of a query.



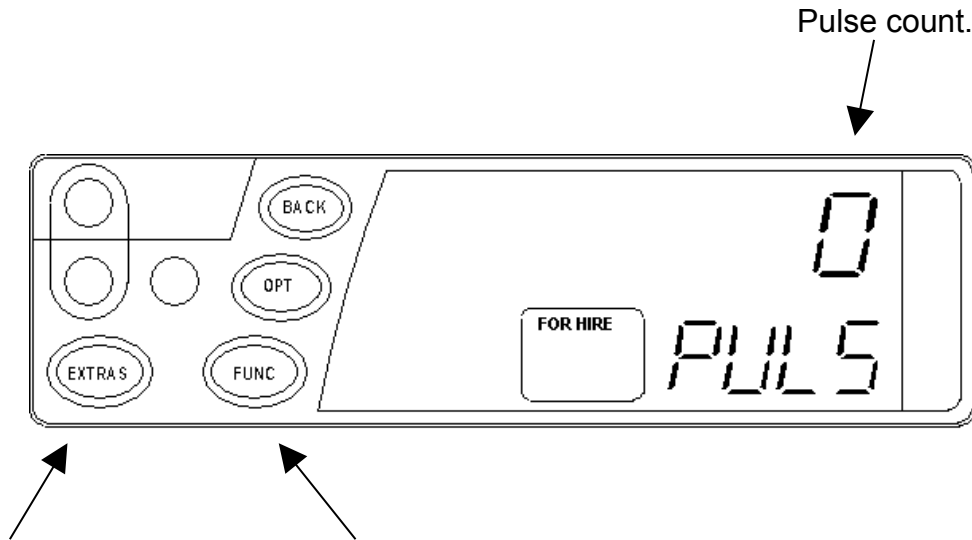
Press and hold the FUNC button to show the calibration event counter:



Holding FUNC down and pressing extras moves to the calibration event date display.

4.3.8 Info Menu: Pulse Count

This item is a test facility for verifying that the pulse signal used to provide distance information to the T2 is working correctly. The pulse count facility



Press EXTRAS to move to the next item.

Press FUNC to start/stop and reset the pulse count

displays a continuous count of pulses received.

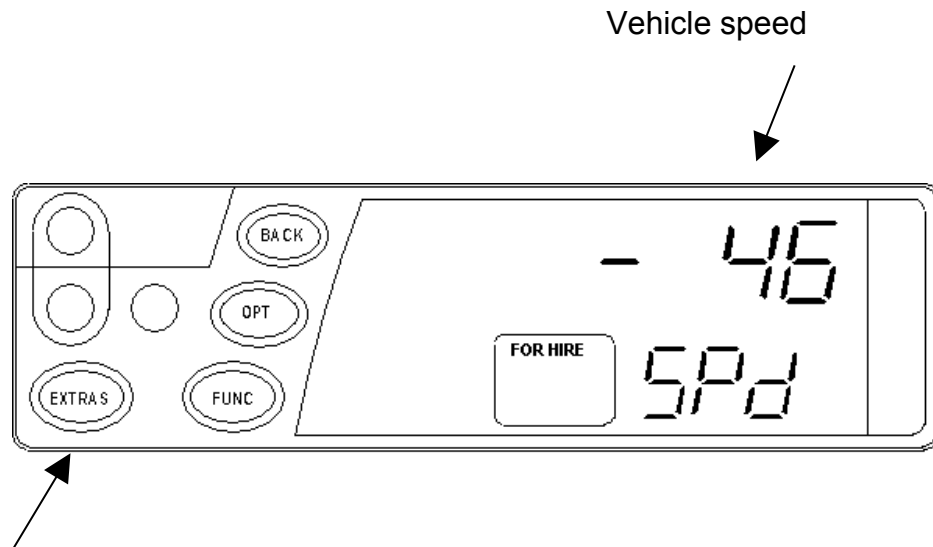
The initial display shows a pulse count of “0” with the text “PULS”.

- To start the pulse count, press the FUNC button.
- To stop the pulse count, press the FUNC button
- To clear the pulse count back to “0”, press FUNC again.

When the Pulse Count is in the active “counting” condition, it will not time-out after 10 or 30 seconds. To exit, press BACK.

4.3.9 Speed Display

This item shows the vehicle's current speed in the same units (miles/km) as the totals information.



Vehicle speed

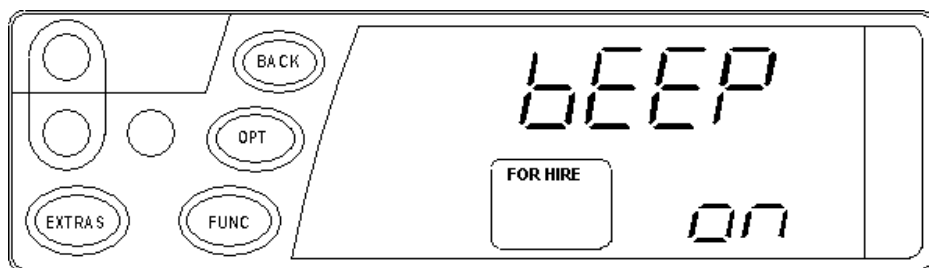
Press EXTRAS to move to the next item.

4.4 User Menu: Features

The Features section of the User Menu allows the control of some of the T2's additional functions.

4.4.1 Beep On/Off

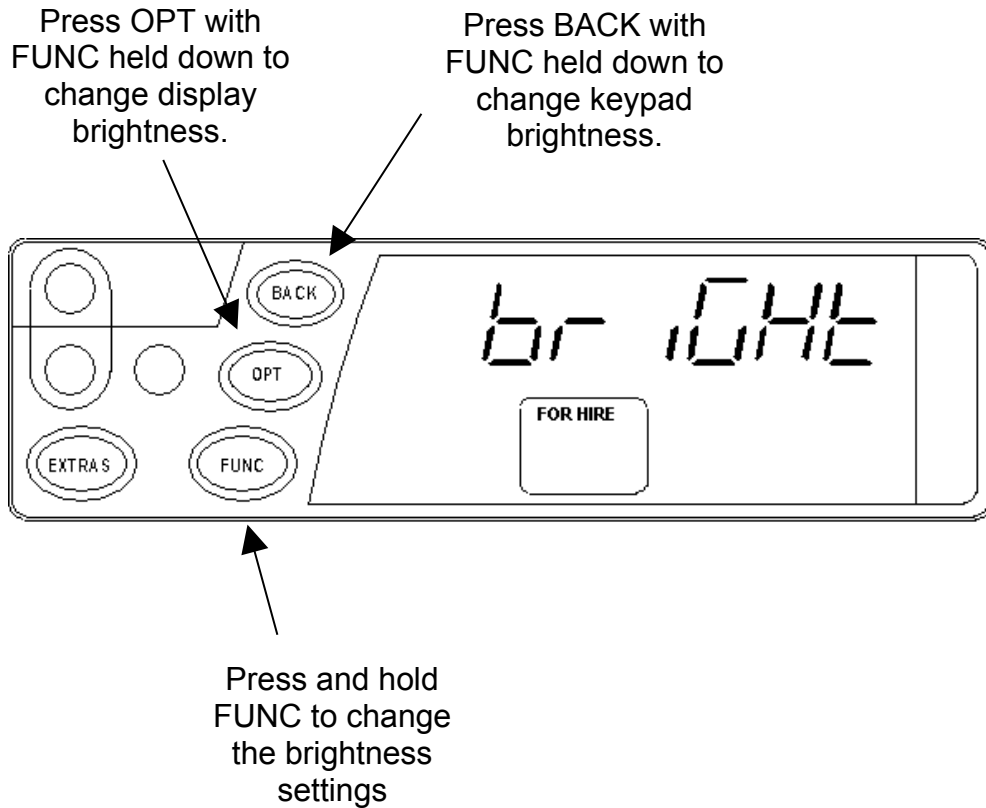
The T2's sounder can be turned on and off using this item.



Hold down the FUNC button for 2 seconds to turn on/off.

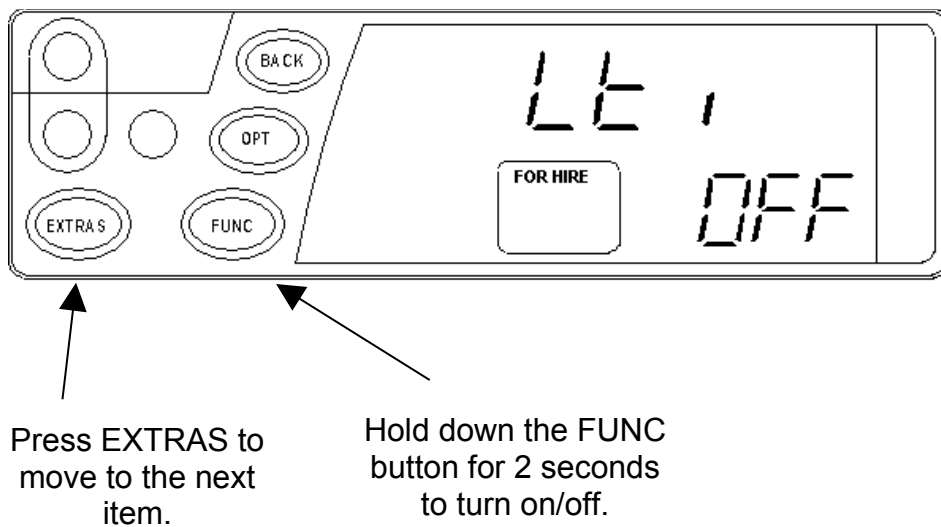
4.4.2 Display and Keypad Brightness

The T2's display and keypad brightness can independently be selected from two levels using this item:



4.4.3 "LTI" Feature

If turned on, the LTI Feature activates lamp outputs 3 and 4 for use in some purpose built taxi vehicles.

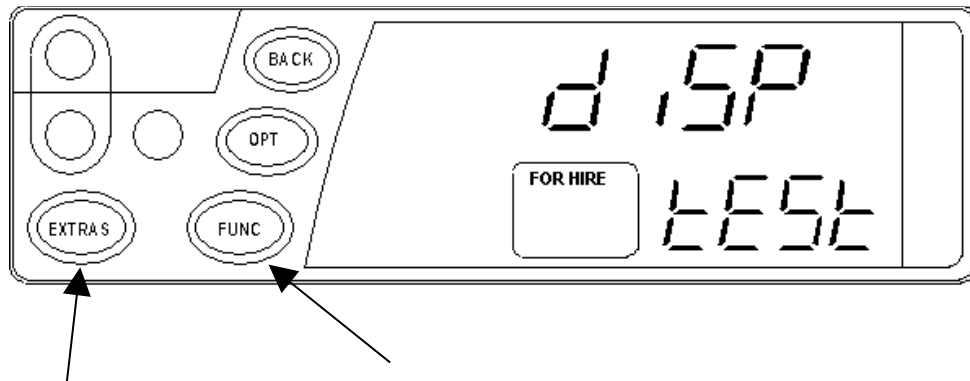


The 4 lamp outputs are activated according to the table below:

	LTI Feature Setting	
	ON	OFF
Lamp 1	As programmed in tariff (normally on in FOR HIRE mode)	
Lamp 2	As programmed in tariff	
Lamp 3	On in FOR HIRE mode when vehicle stationary	As programmed in tariff
Lamp 4	On in STOPPED mode when vehicle stationary	As programmed in tariff

4.4.4 Display Test

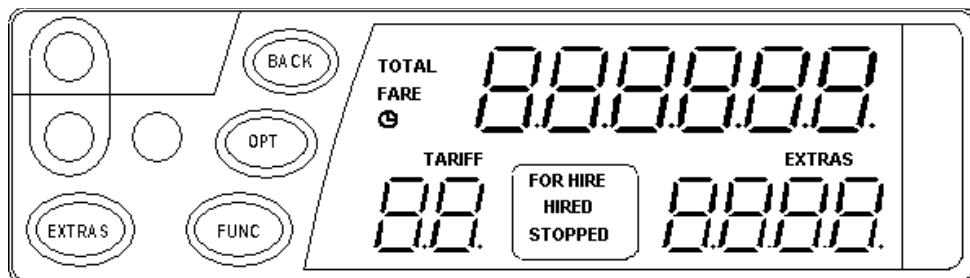
This item performs a test of the display to ensure that all elements are illuminated correctly:



Press EXTRAS to move to the next item.

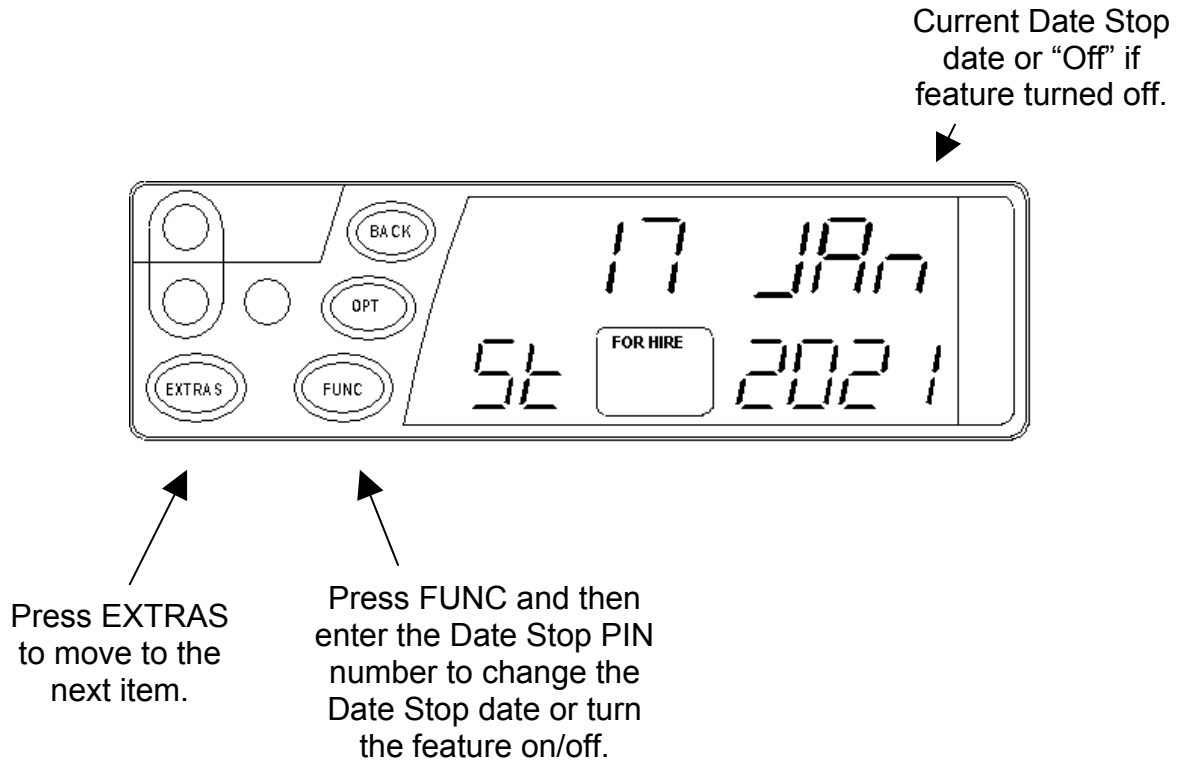
Press and hold FUNC for display test.

Holding the FUNC button down illuminates all of the display elements, allowing the user to check for display faults:



4.4.5 Date Stop

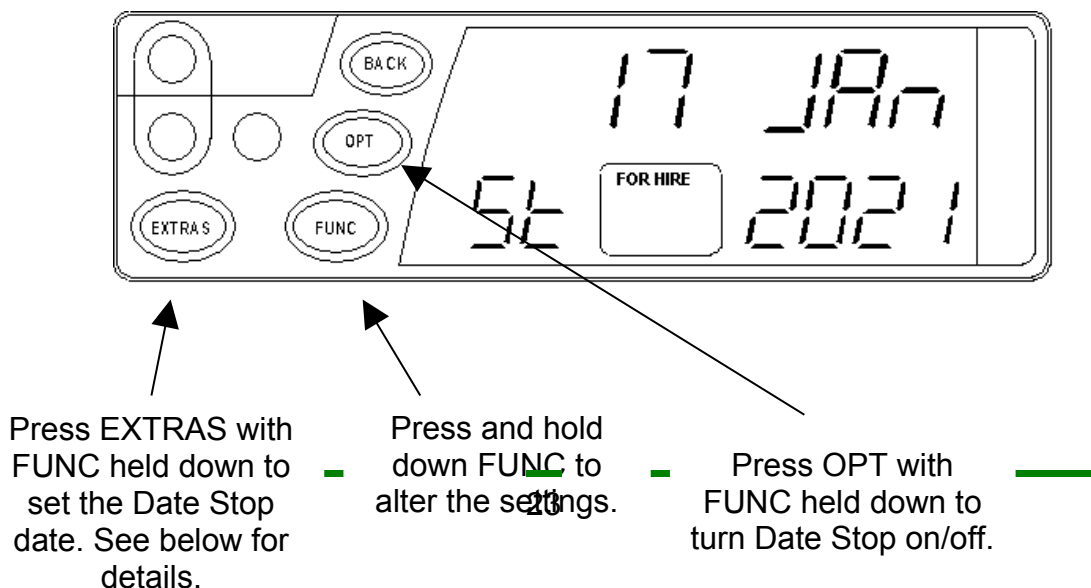
The Date Stop feature allows the T2 to be programmed to work only up to a certain date. This item shows the current setting of the feature and allows the disable PIN to be used to set the Date Stop date or turn the feature on/off.



If the Date Stop feature is currently enabled, the date is shown. If it is not currently enabled, the word "OFF" is shown.

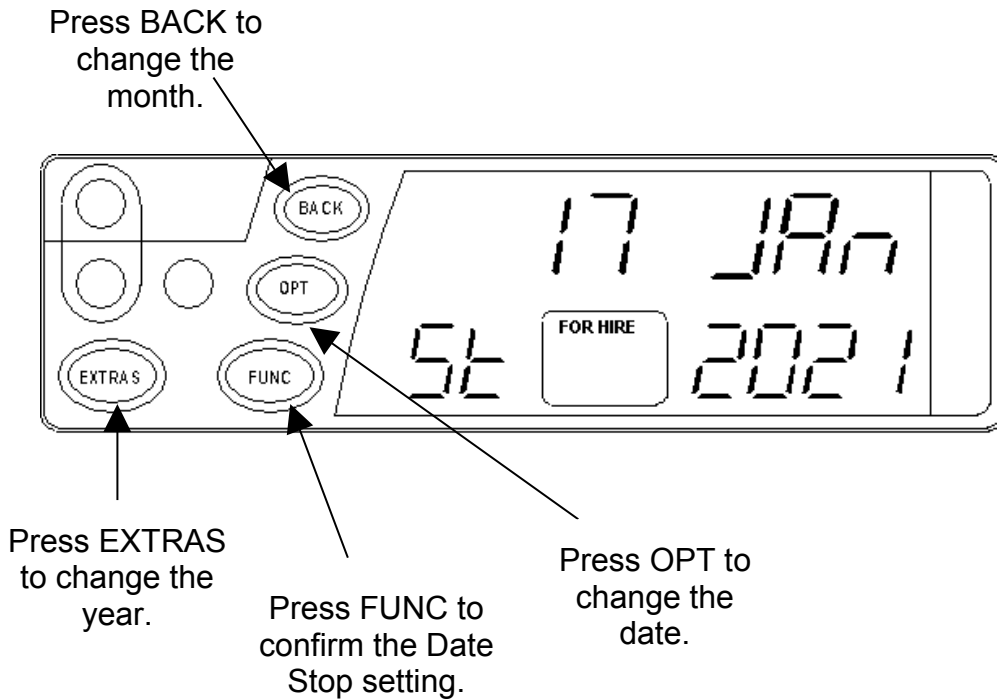
To configure the Date Stop feature:

- Press FUNC
- Enter the Date Stop PIN number.
- The button presses for configuring the feature are shown below:



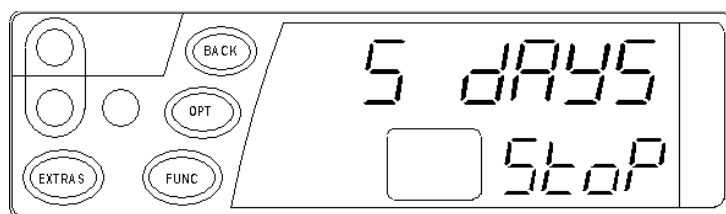
Setting the Date Stop Date

During setting of the Date Stop date, the legend “St” flashes. Use the key presses below to set the date:

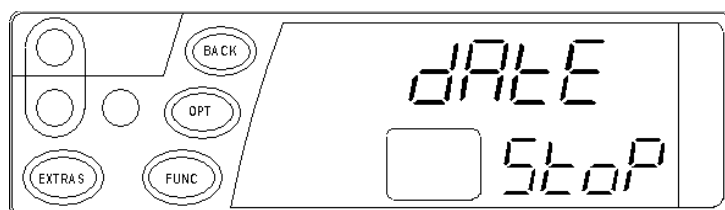


Date Stop Warning Messages

If the current date is 7 days or less from the Date Stop date, the T2 shows a warning message whenever it is switched on.



If the current date/time is past midday on the Date Stop date, the warning shown below is produced. This message is also displayed as an error message if FUNC is pressed to enter HIRED mode from FOR HIRE mode.

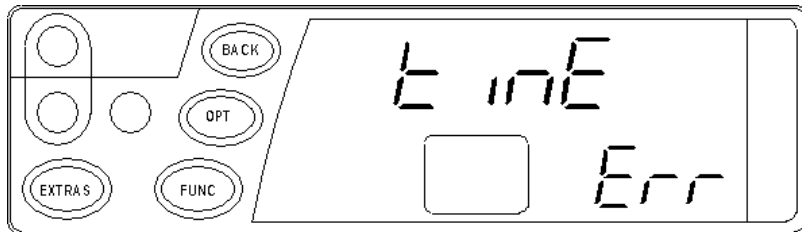


5 The T2's Battery and Clock

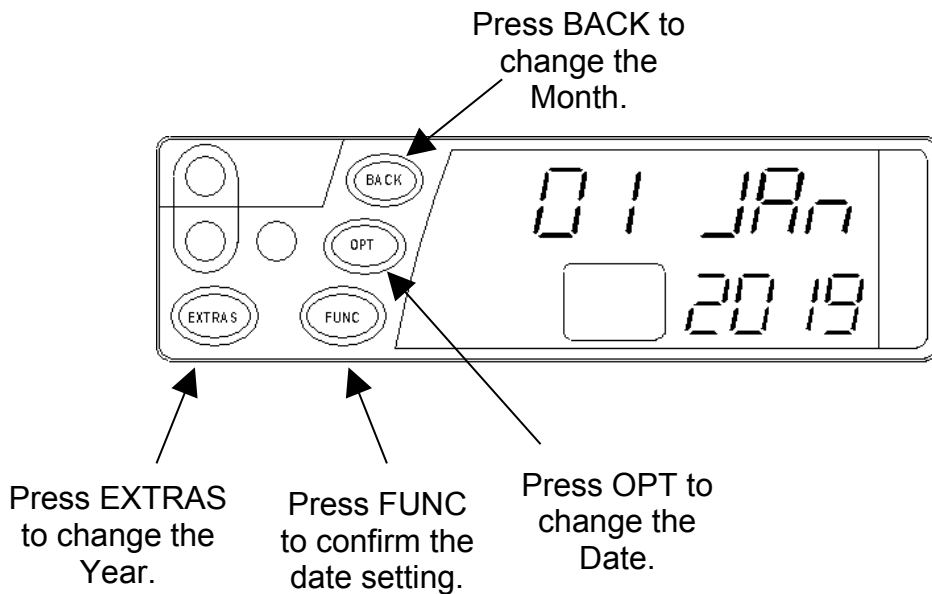
Since the T2 has a “real time clock”, it has an internal lithium battery which maintains the clock when the meter is removed from a source of power. The T2 clock will continue to keep time for a period in excess of 12 months, after which it will need a replacement battery and for the clock to be re-set.

5.1 Setting the Clock

If the T2's battery is replaced, the clock should be set when it is first connected to power. If the clock needs to be set, the T2 shows:



After the message has disappeared, set the current date using the buttons:



Once the date has been confirmed, the time of day must be set:

6 Product Specifications

Electrical/Mechanical Characteristics	
Supply Voltage	9v to 16v (Nominal 12v)
Mechanical class	M3
Electromagnetic class	E3
Temp range	-25 to +70 °c

Pulse Input	
Input type	Schmitt trigger circuit
Input impedance	9.4kΩ
Open circuit voltage	0.6 x Vs
Signal level	Low: Max 2.4v High: Min 3.4v
Range of constant K	800 p/km to 65535 p/km
Maximum Speed	220km/h

Displays	
Type	8- segment LED displays
Colour	Red
Height	0.4"/0.5" (10.25mm/12.8mm)



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