The Value Leader™

TPI 717R

Combustion Flue Gas Analyser

Contents

1. Introduction

Thank you for purchasing TPI brand products. The TPI 717R Combustion Analyser is a state of the art, easy to use analyser designed not only to display and calculate the required readings from a flue but also to cover most of the other desirable parameters associated with appliance installation and maintenance. The instrument is ruggedly constructed and comes with a limited 6 Year Warranty*.

This manual will guide you through the functions of the TPI 717R, which will give you many years of reliable service. The TPI 717R software has in-built self-diagnostics that can easily be interrogated by our fully qualified and professional engineers should an error occur. Please call the number below before returning your instrument to your distributor should an error occurs. We can rectify over 75% of proposed faults over the phone.

TPI HELPLINE
01293 530196 opt. 1

Your TPI 717R Combustion Analyser comes complete with the following items as standard: -

- TPI 717R Instrument c/w Integral Magnet
- Rubber Boot
- Soft Carrying Case
- Sampling Probe (c/w Type "K" Thermocouple)
- In-Line Water Trap Bowl Filter (c/w Spare Particle Filter)
- Battery Charger
- Mini In-Line Pump Protection Filter (c/w 5 spare filters)
- Exhaust Spigot (removable)
- Pressure Tubing (2 x 1 metres)
- GK11M Air Probe
- Instruction Manual

Your TPI 717R Combustion Analyser has the following options available: -

- Infrared Printer (see Appendix B)
- Various Temperature Probes (see Appendix B)
- Oil Filter (see Appendix B)
- Smoke Test Pump (see Appendix B)

*subject to annual servicing & re-certification being carried out by TPI Europe or one of its approved service centres.

2. Instrument Overview

2.1 Front View

Gas & Pressure Inlet Ports

Charger Socket

Thermocouple Sockets

Display

Exhaust Port

Infrared Window

Keypad

Combustion Analyzer

Rubber Boot	Protects the instrument from accidental damage
Display	Large 3 Parameter Backlit Display
Battery Indicator	Showing battery life

Scrolls through selectable fuels (see 4.1.1, 4.1.3, 4.1.4 & 4.1.5)
Switches between ºC and ºF (see 4.1.6 & 4.2.1)
Scrolls through mbar, kPa and inH_2O (see 4.3.1)
Selects "Pass" on the Let/By, Tightness Test (see 4.4)
Moves up through the Stored Data Addresses (see 5, 7 & 8)

Switches between Efficiency Options (see 4.1.1, 4.1.3, 4.1.4 & 4.1.5)
Zeroes pressure reading (see 4.3.1 & 4.4)
Selects "Pass" on the Let/By, Tightness Test (see 4.4)
Moves down through the Stored Data Addresses (see 5, 7 & 8)
Used to "HOLD" Data on Screen (see 6)

Scrolls through Flue Gas Analysis Function Screens (see 4.1 & 6)
Starts & Moves through the Let/By, Tightness Test (see 4.4)
Starts & Stops the CO Build-Up Test (see 4.5)
Allows you to choose a Stored Data Address (see 5, 7 & 8)

Sends stored data to a separate infrared printer (see 8)

Allows you to view stored data on the display (see 7)

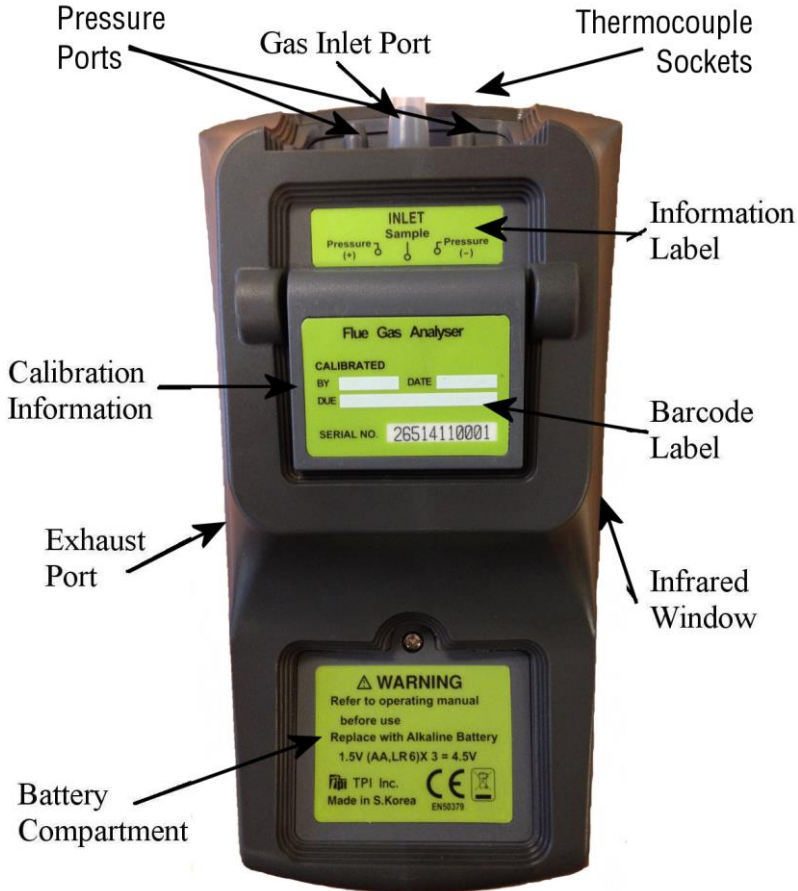Stores/Saves readings to memory (see 5)

Func
Moves you through the 6 Functions (see 4)
Turns Backlight ON and OFF (see 4)
Used to Exit Review or Print Functions (see 7 & 8)

Turns the instrument ON and OFF (see 3 & 9)

2.2 Back View

|	
<u>Gas and Pressure Inlet Ports</u>	Connection for In-Line Pump Protection Filter (see 2.4 & 3)
	Connections for Pressure Tubing (see 2.4 & 4)
<u>Calibration and Info Label</u>	Displays calibration information
	Displays serial number
<u>Battery Compartment</u>	Holds rechargeable battery
<u>Rubber Boot</u>	Protects the instrument from accidental damage

2.3 Side Views

Left Hand Side — Rubber Boot — Right Hand Side

Exhaust Port

Infrared Window
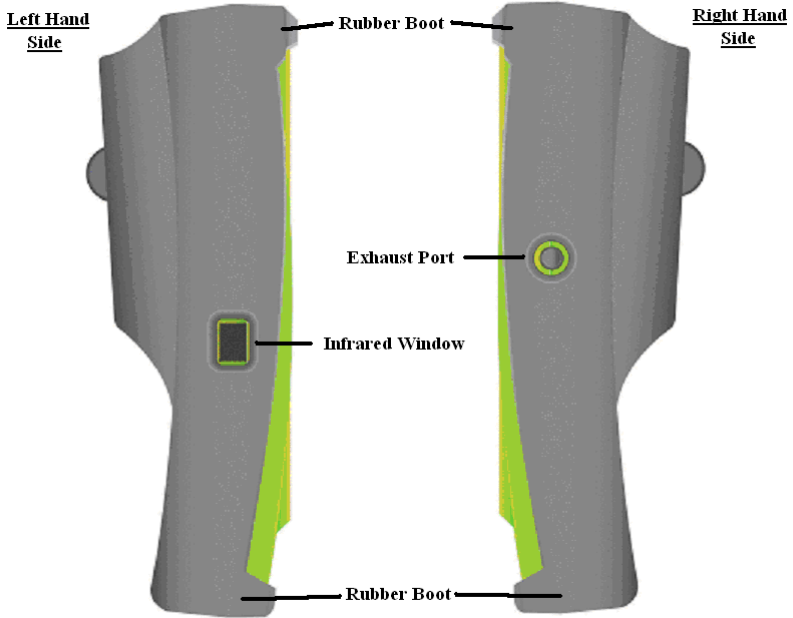
Rubber Boot

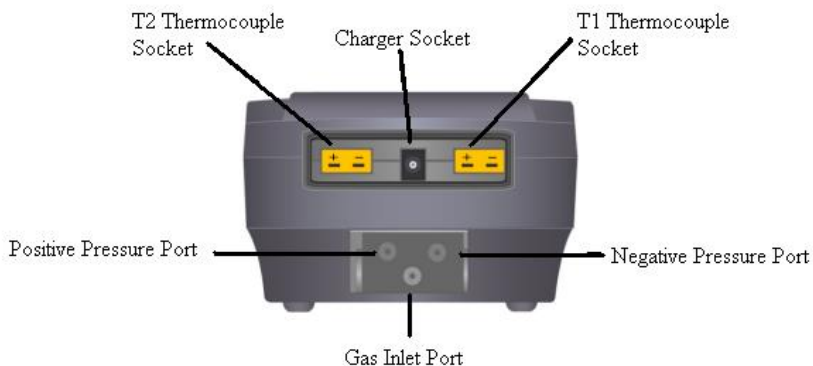Exhaust Port   Port for connection of Exhaust Adaptor

Infrared Window   Window for sending stored data to IR Printer (see 8)

Rubber Boot   Protects the instrument from accidental damage

2.4 Top View

T2 Thermocouple Socket   Charger Socket   T1 Thermocouple Socket

Positive Pressure Port   Negative Pressure Port

Gas Inlet Port

Charger Socket	Connection for 220V/115V charger (see 9.1)
Thermocouple T1 Socket	Connection for thermocouple plug on probe (see 4.1) Connection for any 'K' type thermocouple probe (see 4.2)
Thermocouple T2 Socket	Connection for any 'K' type thermocouple probe (see 4.2)
Gas Inlet Port	Connection for In-Line Pump Protection Filter (see 3)
Pressure (+) Port	Connections for Pressure Tubing (see 4.3 & 4.4)
Pressure (-) Port	Connections for Pressure Tubing (see 4.3)

3. Turning On

3.1 Turning On

Always: - Before turning on please ensure that the **In-Line Pump Protection Filter** (shown across) is connected to the Gas Sample Port (see 2.2 or 2.4).
THIS MUST REMAIN ON THE UNIT AT ALL TIMES.
Failure to do so may result in pump failure and will invalidate the warranty.
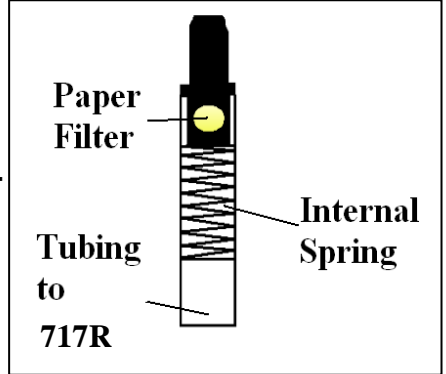
Press the **Power Key** ⏻ for approximately 2 seconds and the TPI 717R will start up and display ALL Segments on the display for approx. 1 second. The 717R will then enter its 30-second purge period, briefly displaying the Software Version & Instrument Serial Number, before continuing with the countdown where upon the following screen will be displayed.

The instrument should ALWAYS be turned on in a clean air environment as the 30 second purge will attempt to set the Carbon Monoxide level to 0 ppm and the Oxygen to 20.9%.

*If there is insufficient clean air in the sensor chamber after the 30 second purge period an error indicating this **may** be displayed, please see troubleshooting guide (appendix D) for appropriate remedy. If the error is still present after attempting the suggested remedy please call the*

TPI HELPLINE
01293 530196 opt. 1

4. THE 6 FUNCTIONS

After the 30-second countdown the instrument is ready to take **Flue Gas**, **Temperature** or **Pressure** readings and will Display the following Screen.
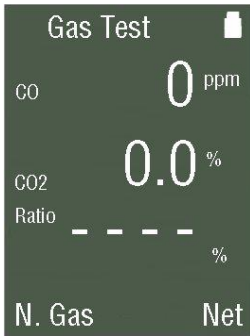
You are now ready to take Flue Gas Analysis Readings. Please continue on with the manual from Section 4.1 (below) which will guide you through the various Analysis Screens.

**However, if you do not wish to perform a Flue Test at this moment Press the Func/Backlight Key and move onto Section 4.2 of the manual.**

At any time you can activate the Backlight by **holding down** the **Func/Backlight Key** for 2 seconds.

4.1 Function 1: - Flue Gas Analysis

Ensure you have connected the Temperature Sampling Probe complete with In-Line Water Trap Bowl Filter to the In-Line Pump Protection Filter (See 3) which should ALWAYS be connected to the Gas Sample Port (see 2.2 or 2.4) and that the 'K' Type Thermocouple Plug is in Thermocouple Socket (ch1) (see 2.4). Also ensure that a 'K' Type Air Probe is connected to Thermocouple Socket (ch2) (see 2.4) in order to calculate efficiency.

Your temperature-sampling probe comes complete with an In-Line Water Trap Bowl Filter as standard.
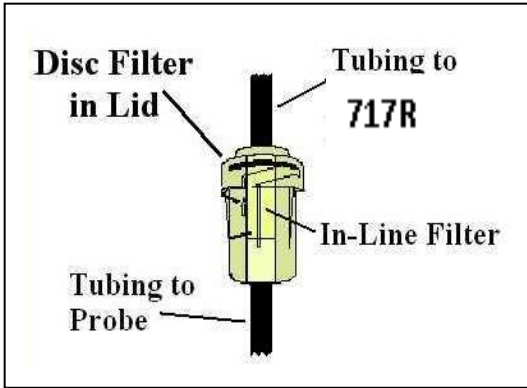

This consists of a Particle Filter in the Bowl Compartment and a Disc Filter in the Lid (as shown in the diagram across). The Disc Filter in Lid will prevent any excessive water from entering the 717R Combustion Analyser if used correctly.

If you are working with **OIL** then you <u>**MUST**</u> ensure that you also use the optional Oil Filter as shown below. **Failure to do so will result in erroneous readings.**
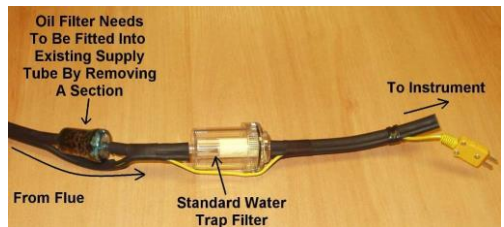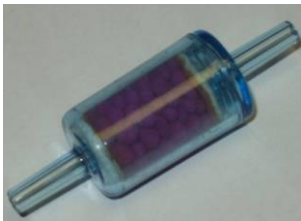

If any of the filters become excessively dirty or blocked then the following screen will be displayed as a warning and no further readings will be able to be taken until either the dirty filters are replaced or the blockage removed:-
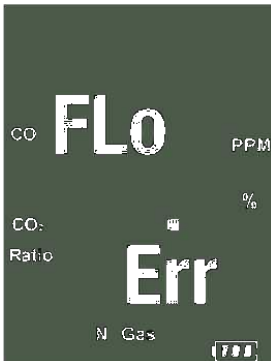
<u>The 717R will also give off an audible Beeping Alarm to warn that a "FLo Err" is being detected</u>

WARNING: - Ensure that the In-Line Water Trap Bowl Filter hangs in a vertical position whilst readings are being taken, particularly if water is visible (see below). **Failure to comply may result in damage to the instrument and will invalidate the warranty.**
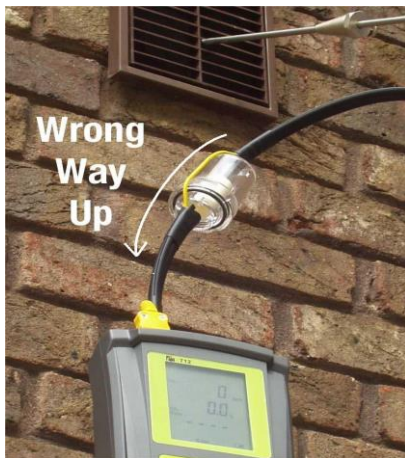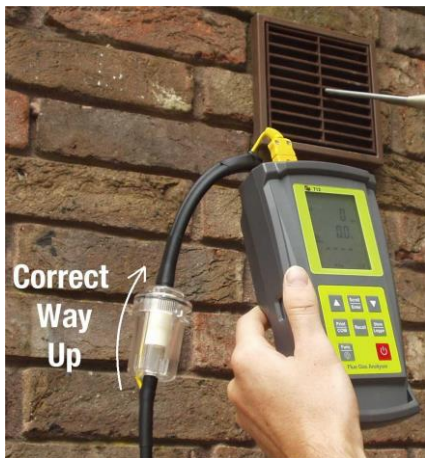

WARNING: - There is **ONLY** one correct way to connect the 'K' type thermocouple plug into the socket (see 2.4). The thermocouple plug is designed with one thick (negative) and one thinner (positive) prong. Forcing the plug into the socket the wrong way round may result in damage to the instrument. **Failure to comply may result in damage to the instrument and will invalidate the warranty.**

Pressing the **Enter Key** ⏎ will take you through the following Flue Gas Analysis Screens

4.1.1 Screen 1
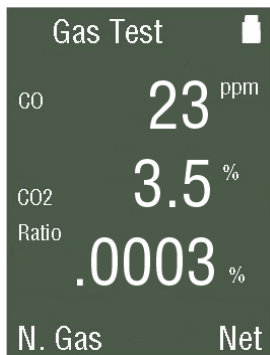
Displays Carbon Monoxide (CO) reading in parts per million (ppm)
Displays calculated Carbon Dioxide (CO_2) figure in percentage (%)
Displays calculated CO/CO_2 (Ratio) figure

Pressing the Up Arrow Key ▲ will toggle between the Fuel Options

Pressing the Down Arrow Key ▼ will toggle between the Efficiency Options

4.1.2 HIGH CO ALARM

Should the CO reading rise above 2,000ppm a continuous series of Alarm Beeps will be heard. This Alarm alerts the user that there is a high concentration of CO and that there may be a potential problem with the appliance. The instrument will continue to monitor CO up to 10,000ppm but the longer the probe is left attached to the instrument sampling at these high levels the longer the recovery time back to ambient air before the instrument will be able to be switched off (see 4.1.7 – Failsafe Turn Off).

4.1.3 Screen 2

Displays Oxygen (O_2) reading in percentage (%)
Displays calculated Excess Air (X Air) figure in percentage (%)
Displays calculated Efficiency (Eff.) figure in percentage (%)

Pressing the Up Arrow Key ▲ will toggle between the Fuel Options

Pressing the Down Arrow Key ▼ will toggle between the Efficiency Options
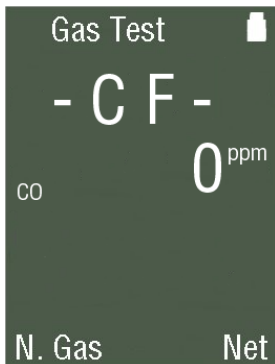
4.1.4 Screen 3
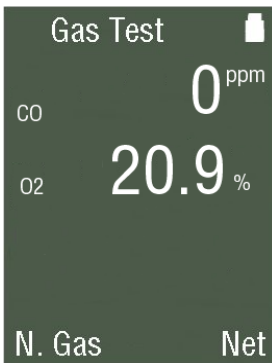
Displays Carbon Monoxide (CO) reading in parts per million (ppm)
Displays Oxygen (O_2) reading in percentage (%)

Pressing the Up Arrow Key ▲ will toggle between the Fuel Options

Pressing the Down Arrow Key ▼ will toggle between the Efficiency Options

4.1.5 Screen 4

Displays CO air free calculated reading

Pressing the Up Arrow Key ▲ **will toggle between the Fuel Options**

Pressing the Down Arrow Key ▼ **will toggle between the Efficiency Options**

4.1.6 Screen 5
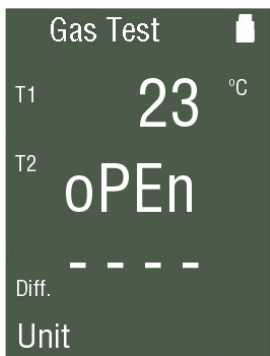
Displays Temperature reading of T1 in degrees Centigrade ($^{\circ}$C)
Displays Temperature reading of T2 in degrees Centigrade ($^{\circ}$C)
Displays the Differential Temperature (Diff.) between T1 and T2 in $^{\circ}$C

'oPEn' will be displayed if no 'K' type probe is connected to the thermocouple socket

Pressing the Up Arrow Key ▲ **will toggle between $^{\circ}$C and $^{\circ}$F**

4.1.7 CO above 15ppm (Failsafe) Protection Beep
The 717R will not allow the user to either Turn the instrument OFF or to move to another Function whilst the CO level is above 15ppm. A short beep will be heard should the user attempt either of the above with the CO above 15ppm.
This is a Failsafe Feature of the 717R to protect the instrument from giving false readings when next turned on. The 717R should be run in a clean air environment with just the In-Line Pump Protection Filter attached until the CO level drops below 15ppm. The 717R will then be able to be moved to a different function screen or be turned OFF.

4.2 Function 2: - Temperature Reading
The pump will stop running when in this function

Remember:- It was the **Function Key** that got you here!!!

Ensure you have a 'K' type probe connected to one or both of the thermocouple sockets T1 or T2 (see 4.2)

WARNING: - There is **ONLY** one correct way to connect the 'K' type thermocouple plug into the socket (see 2.4). The thermocouple plug is designed with one thick (negative) and one thinner (positive) prong. Forcing the plug into the socket the wrong way round may result in damage to the instrument. **Failure to comply may result in damage to the instrument and will invalidate the warranty.**

4.2.1 Screen 1

Displays Temperature reading of T1 in degrees Centigrade (°C) or degrees Fahrenheit (°F)
Displays Temperature reading of T2 in degrees Centigrade (°C) or degrees Fahrenheit (°F)
Displays the Differential Temperature (Diff.) between T1 and T2 in °C or °F

Pressing the Up Arrow Key **will toggle between °C and °F**

'oPEn' will be displayed if no 'K' type probe is connected to the thermocouple socket

4.3 Function 3: - Pressure Testing
The pump will stop running when in this function

Remember:- It was the **Function Key** [Func ⊛] that got you here!!!

Ensure you have Pressure Sampling Tube connected to one or both of the Pressure Ports (see 2.2 or 2.4)

4.3.1 Screen 1
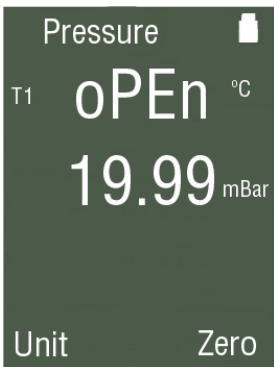
Displays Pressure reading in either millibars (mbar), kiloPascals (kPa), or inches of Water (inH$_2$O)

Pressing the Up Arrow Key [▲] will scroll through mbar, kPa and inH$_2$O

Pressing the Down Arrow Key [▼] will Zero the Pressure reading

4.4 Function 4: - Tightness/Let By Test

Remember:- It was the **Function Key** [Func] that got you here!!!

This function is designed to step you through each stage of the Let-By/Timed Tightness Test allowing you to Pass/Fail at the end of each stage and record the results either to memory for future use or directly to the optional IR (A740) printer.

Let By
P1 **0.00**
mBar
Skip   GO   Zero
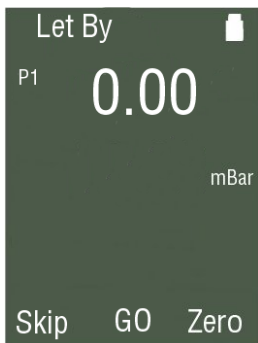
1. Connect up pressure tubing & zero, if necessary by pressing the **Down Arrow Key** [▼]

2. Apply required amount of pressure
3. Press **Enter Key** [↵] to start the Test

Let By
P1 **10.00**
P2 **9.99** mBar
Wait   59
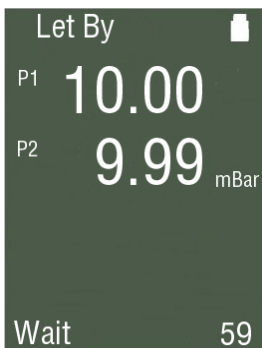
4. The Initial Pressure will be stored at P1 and P2 will become the "Live" pressure.
5. The 717R will countdown from 60 seconds

Let By
P1 **10.00**
9.99 mBar
Diff. **- 0.01**
Pass   Fail

6. Once the countdown is finished the 717R will display P1, P2 and Differential (P2-P1) and give you the option to "Pass" or "Fail" depending on whether the readings are within the allowable tolerance or not.
7. Choosing "Fail" by pressing the [▼] **Down Arrow Key** will stop the test and allow you to, if required, store/save (see section 5) or print (see section 7) the readings so far.

8. Choosing "Pass" by pressing the [▲] **Up Arrow Key** will take you to the next part of the test – Stabilisation

Stabilize ▯	
P1	10.00
P2	9.99 mBar
Wait	59

9. Start the stabilisation part of the test by pressing the **Enter Key** ⏎

10. The Initial Pressure will be stored at P1 and P2 will become the "Live" pressure.
11. The 717R will countdown from 60 seconds

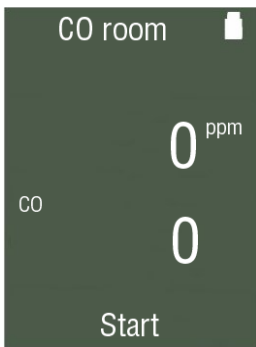| Stabilize ▯	
P1	9.99
	9.99 mBar
Diff.	0.00
Pass	Fail

12. Once the countdown is finished the 717R will display P1, P2 and Differential (P2-P1) and give you the option to "Pass" or "Fail" depending on whether the readings are within the allowable tolerance or not.
13. Choosing "Fail" by pressing the ▼ **Down Arrow Key** will stop the test and allow you to, if required, store/save (see section 5) or print (see section 7) the readings so far.
14. Choosing "Pass" by pressing the ▲ **Up Arrow Key** will take you to the next part of the test – Tightness

Tightness ▯	
P1	20.00
	mBar
	GO

15. Apply the required amount of pressure
16. Start the Tightness part of the test by pressing the **Enter Key** ⏎

Tightness ▯	
P1	20.00
P2	20.00 mBar
Wait	119

17. The Initial Pressure will be stored at P1 and P2 will become the "Live" pressure.
18. The 717R will countdown from 120 seconds

```
 ┌──────────────────────┐
 │  Tightness        ▯  │
 │ P1                   │
 │    20.00             │
 │    20.00 mBar        │
 │    0.00              │
 │ Diff.                │
 │ Pass          Fail   │
 └──────────────────────┘
```

19. Once the countdown is finished the 717R will display P1, P2 and Differential (P2-P1) and give you the option to "Pass" or "Fail" depending on whether the readings are within the allowable tolerance or not.
20. Choosing "Fail" by pressing the ▼ **Down Arrow Key** will stop the test and allow you to, if required, store the readings so far.
21. Choosing "Pass" by pressing the ▲ **Up Arrow Key** will take you to the Finish screen
22. From the Finish Screen you can store/save (see section 5) or print (see section 7) the readings/test

4.5 Function 5: - CO Build Up Test

Remember:- It was the **Function Key** 🔘 that got you here!!!

The CO room test function enables the 716 to monitor and log ambient CO levels in a room or office space at 1 minute interval up to a total of 50 minutes. This data can be retrieved later via the optional infrared printer.

```
 ┌──────────────────────┐
 │  CO room          ▯  │
 │                      │
 │              0 ppm   │
 │ CO                   │
 │              0       │
 │                      │
 │       Start          │
 └──────────────────────┘
```

1. Begin with the 717R in a fresh clean air environment
2. Press the **Enter Key** ⏎ start to the CO Room Test

```
 ┌──────────────────────┐
 │  CO room          ▯  │
 │                      │
 │              1 ppm   │
 │ CO                   │
 │              30      │
 │                      │
 │       Stop           │
 └──────────────────────┘
```
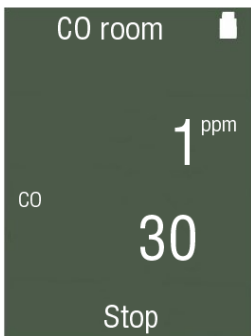
3. The 717R will start and record the CO level every 60 seconds and count up to 50 on the screen
4. At any time you can stop the test by pressing the **Enter Key**
5. At the end of the test you can store/save (see section 5) or print (see section 7) the readings

4.6 Function 6: - Date/Time

```
Time/Date          ▯
   16.45
   01.22
   2015
```

1. Press the **Print Key** 🖶 **& Down Arrow Key** ▼ for 3 seconds to allow
   you to change the Time, Date and Year

2. Use the **Print & Recall Keys** 🖶 🖵 to choose the "Flashing
   Numeric" to change

3. Use the **Up & Down Arrow Keys** ▲ ▼ to make the changes

4. Once the changes have been made press the **Store/Save Key** 💾

5. Press the **Enter Key** ⏎ to exit and return back to the Date/Time
   Screen

5. STORING/SAVING DATA

It is possible to save complete combustion readings, temperature and single pressure readings as follows:-

1. Have the 717R analyser set to the relevant screen for the readings that you wish to save (i.e. Any of the combustion screens (see 4.1) for combustion readings or pressure screen (see 4.3.1) for single pressure reading OR have just completed a Tightness or CO Build Up Test)

2. Press the **Store/Save Key** 🖫 once

3. **'Addr'** will be displayed and a location number (0 to 99) will be flashing on the screen.

4. Select the required address location that you wish to save the data to by pressing the **Up** ▲ **and** ▼ **Down Arrow Keys**
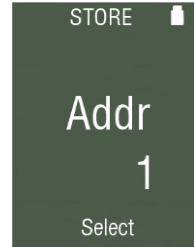
**Please Note:- Choosing the same Address Location on which previously Stored Data is being held will _OVERWRITE_ the previous readings with the New Stored Data. This will be the case regardless of the particular readings you are attempting to save (i.e. should you have Combustion Readings stored at Address 1 and you Save Temperature Readings to Address 1 then the Previous Combustion Readings will be overwritten with the New Temperature Readings) and the previously Stored Readings will not be retrievable.

5. Press the **Enter Key** ⏎ once and the readings will be stored to the location that was chosen.
6. The 717R will then return to the Last Screen visited.

The information that you just stored can be either be Reviewed on the screen (see 7) or Printed to a compatible IR Printer (see 8)

6. HOLDING DATA

It is possible to hold & review complete combustion readings, temperature and single pressure readings as follows:-

1. Have the 717R analyser set to the relevant screen for the readings that you wish to save (i.e. Any of the combustion screens (see 4.1) for combustion readings or pressure screen (see 4.3.1) for single pressure reading)

2. Press & Hold Down the **Down** ▼ **Arrow Key** until the 717R beeps (approx. 2 seconds)

3. The readings will freeze & the word "HELD" will be displayed on the bottom line to indicate you are viewing "HELD" readings

4. You can scroll through the other combustion screens by pressing the **Enter Key** ↵ repeatedly

5. The "HELD" readings can also be printed whilst in "HOLD" Mode. Please follow instructions from section 7.1

6. The "HELD" readings can also be stored whilst in "HOLD" Mode. Please follow instructions from section 5.1.

7. To release the "HELD" readings and return to "LIVE" readings Press & Hold the **Down** ▼ **Arrow Key**

7. REVIEWING DATA

1. Press the **Recall Key** 🖥 once and the following screen will be displayed:-

   'FLuE' will be flashing on the display. If you wish to review any other data then press the **UP or Down** ▲ ▼ **Arrow Keys** to scroll through **"tE P"**, temperature or **"PrSu"**, Pressure or **"CAL"**, Date of Last Calibration

2. Press the **Enter Key** ↵ once and if you have chosen to view the Last Time Calibrated Date **(CAL)** then the Date that the Last Time the 717R was calibrated will be displayed on the screen.(Go To Step 6)

3. However if you have chosen to view Flue, Temperature or Pressure Readings then **'Addr'** will be displayed and a location number will be flashing.

4. **Select the required address location that you wish to review by pressing the Up** ▲ **and** ▼ **Down Arrow Keys.**

5. Press the **Enter Key** ↵ once and the **Time & Date of the Saved Data** from the selected address location will be displayed on the screen.
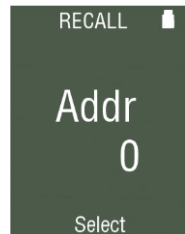
   If there is no data present at that location then **'no dAtA' will be displayed**

6. **The rest of the Saved Data at this address location can be reviewed by pressing the Enter Key** ↵ **Repeatedly**

7. Press the **Func Key** ⚙ once to be returned to the screen you were originally on.

8. **To review further data on the screen start again at Step 1 above**

8. PRINTING DATA

WARNING: - To operate correctly there must be a clear line of sight between the Infrared Window on the instrument (see 2.3) and the Infrared Window on the IR Printer (see Printer instructions)

1. Press the **Print Key** 🖨 once and the following screen will be displayed.

PRINT 🔋

rEAL
Stor
CAL

Select

'rEAL' will be flashing.

If you wish to Print Out previously Stored Data **(Stor)** or

Last Time Calibrated Date **(CAL)** then press the

Down ▼ **Arrow Key** to have **'Stor'** or **'CAL'** flashing

rather than **'rEAL'**

2. Press the **Enter Key** ↵ once and if you have chosen to print out Real Time **(rEAL)** readings or Last Time Calibrated Date **(CAL)** then the **'Print Out'** screen (below left) will be displayed and the Real Time **(rEAL)** readings or Last Time Calibrated Date **(CAL)** will be sent to the printer.

PRINT 🔋

out

Wait . .

However if you have chosen to print the Stored Data **(Stor)** then **'FLuE'** will be flashing.
Select the required type of data (Flue, Temperature, Pressure, Tightness or CO Build Up Test) that you wish to print by pressing the Up ▲ **and Down** ▼ **Arrow Keys**

PRINT 🔋

FLuE

Select

3. Press the **Enter Key** ↵ to select the required data
4. Select the required address location that you wish to print by pressing the Up ▲ and ▼ Down Arrow Keys.

5. Once the selected data has been chosen by pressing the

   Enter Key ↵ then the **'Print Out'** screen (above left)

   will be displayed and the chosen data will be sent to the

   IR Printer

PRINT 🔋

Addr
0

Select
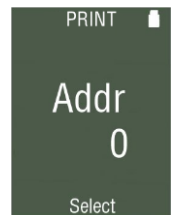
6. Repeat from step 4 to print out more data or press the **Function Key** 🔘 to return to your last viewed screen

9. Turning Off & Charging

Always: - Before turning off the TPI 717R return the instrument to a clean air environment ensuring that the **In-Line Pump Protection Filter** remains connected to the Gas Sample Port and allow the Carbon Monoxide level to return to below 15ppm and the Oxygen level to return to 20.9% (± 0.3%).

Press the **Power Key** once to turn the instrument off.

NOTE: Should you attempt to turn the instrument Off and the CO reading is above 15ppm then the instrument will remain On and a short Beep will be heard. The instrument can only be switched off if the CO is below 15ppm.

The instrument has an auto shut off after 10mins should no keys have been pressed for this period and, as mentioned above, that the CO is below 15ppm. Should the CO be above 15ppm then the 10-minute auto shut off countdown will not begin till the CO has gone below 15ppm.

9.1 Charging

Plug the Charger supplied into the charger socket on the instrument (see 2.4). If the instrument is turned on then a charging symbol will be displayed. Should the instrument then be turned off or turn off automatically with the charger plugged in then the charging symbol will not be displayed BUT the instrument will still be charging.

The instrument should be charged overnight for a period of 10 to 12 hours and will give over 6 hours Operating Time.

Alternatively the instrument can be used whilst plugged into the mains

Appendix A : SPECIFICATIONS

Instrument
Operating Temperature Range	-10˚C to +50˚C
Battery	Rechargeable Ni-MH
Battery Life	> 6 Hours
Charger Input Voltage	115V or 230V : 50/60 Hz AC
Fuels	Natural Gas, LPG, Light Oil, Heavy Oil Bituminous Coal, Anthracite Coal, Coke, Butane, Wood (Dry), Bagasse, Wood Pellet
Pressure Ranges	mbar, kPa & inH_2O
Display	Backlit LCD
Data Storage	50 sets of readings
Time & Date	24 Hour Real Time Clock
Dimensions	200mm x 90mm x 60mm
Weight	500g
Casing	Rubber Boot as Standard
Switch Off	Failsafe
Exhaust	Safety Spigot
Conforms to	EN50379 & BS7967

Flue Temperature Probe
Construction	Pistol Grip with Stainless Steel Shaft
Hose Length	2500mm
Insertion Length	200mm
'K' Type Thermocouple Accuracy	+/- 0.3%, +/- 1˚C
Maximum Temperature	800˚C

Gases
	Range	Resolution	Accuracy
Oxygen	0-25%	0.1%	+/- 0.3%
Carbon Monoxide	0-10,000 ppm	1 ppm	<20 ppm : +/- 3 ppm >100 ppm : +/- 5 %
Carbon Dioxide (calculated)	0-25%	0.1%	+/- 0.3%
CO/CO_2 Ratio (calculated)	0-0.999		
Combustion Efficiency	0-100%	0.1%	

Pressure Measurement
Selectable Ranges	mbar, kPa and inH_2O
Range	- 150 mbar to + 150 mbar
Resolution	0.01 mbar & 0.1 mbar
Accuracy	+/- 0.5% fsd

Appendix B : CALIBRATION & SERVICE

It is recommended, as written in the British Standard – BS7967, that the instrument be calibrated every 12 months. Please consult your instrument supplier for further details.

The following are consumable parts for the instrument: -

In-Line Water Trap Bowl Filter Element 32mm (pack of 10)	User Replaceable	Part No. A796-F
In-Line Pump Protection Filter Complete	User Replaceable	Part No. A763
SMART Oxygen Sensor	User Replaceable	Part No. A760S
SMART Carbon Monoxide Sensor	User Replaceable	Part No. A761S

The following are accessories for the instrument: -

Flue Temperature Probe	Standard	Part No. A770
In-Line Large Water Trap Bowl Filter Complete	Standard	Part No. A796
Battery Charger	Standard	Part No. A766
Rubber Boot	Standard	Part No. A765
Soft Carrying Case	Standard	Part No. A768
Air Probe	Standard	Part No. GK11M
Infrared Printer	Optional	Part No. A740
Various 'K' Type Probes	Optional	See TPI Brochure
Oil Filter Complete	Optional	Part No. A773
Smoke Test Pump	Optional	Part No. A788

Appendix C : GUARANTEE

Your TPI 717R Combustion Analyser is guaranteed free from defects in materials and workmanship for 6 Years subject to annual service being carried out by TPI Europe or one of its approved service centres.

Covered by TPI: - Repair parts and labour; or replacement of the product at the option of TPI. Normal transportation charges to the purchaser are also covered.

Not covered by TPI: - Damage to the product which are the result of abuse, improper use or maintenance are not covered. Any other expenses, consequential damages, incidental expenses including damages to property are not covered. Transportation expenses to the customer are not covered.

To obtain warranty performance: - Include with the product your name, address, phone number, fax number, written description of the problem and proof of purchase date. Carefully package and return to TPI.

This guarantee does not affect your statuary rights.

Appendix D : TROUBLESHOOTING GUIDE

Problem	Probable Cause	Possible Remedy
Unit does not turn on	Batteries are flat	Recharge batteries or run on mains.
Unit does not turn on	Dislodged battery	Disconnect and Re-connect battery
Unit does not turn off	CO level above 15ppm	Leave 717R running in clean air until CO drops below 15ppm
Unit will not move off combustions screens	CO level above 15ppm	Leave 717R running in clean air until CO drops below 15ppm
Continuous alarm Sounds	Excessive levels of CO are being detected	Remove probe from flue and run in clean air for 15/20 minutes
Negative pressure readings on Display	Pressure tubing connected to wrong pressure port	Reconnect pressure tubing to positive pressure port rather than negative pressure port
Negative pressure readings on display	Either there is suction or pressure was not zeroed in atmospheric air	Re-zero in atmospheric air.
Negative temperature readings on display	Thermocouple plug has been plugged in the wrong way round	Remove thermocouple plug and plug in the correct way round
"Flo Err" is displayed	Blockage in sampling probe or kink/blockage in sample tube	Check and rectify as necessary
"Flo Err" is displayed	Dirty/blocked filters	Remove and replace dirty/wet filters
Battery life shorter than usual	Excessive use of backlight	Turn off backlight when not needed
"InIt O2 Err" is displayed	Instrument turned on in contaminated air.	Turn instrument off and then turn instrument on again in clean air.
"InIt CO Err" is displayed	Instrument has turned off with Gas Sample still present	Run instrument in clean air until after turning the instrument on/off the error disappears. Depending on the level of CO present this may take up to 1 hr.

Appendix E : INDEX

TPI Helpline
01293 530196 opt. 1

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