AUTO600

SMOKEMETER

Stock No: 19266-2 February 2013

IMPORTANT SAFETY INSTRUCTIONS

- Read all instructions.
- Please take care when handling the probe as it may be hot
- Ensure equipment or any electrical cables are free from damage
- Please beware of cables coming in contact with rotating engine parts or other moving components
- Allow the AUTO600 to cool before storage
- The AUTO600 extracts exhaust gases that may be toxic in relatively low concentrations. These gases are exhausted from the top and the base of the AUTO600 base unit.
- Use in an adequately ventilated area
- Ensure the test vehicle is at normal operating temperature before carrying out an opacity test
- Due to the nature of the opacity test ensure the vehicle being tested has been properly maintained. Kane take no responsibility for any damage caused to a vehicle as a result of the testing process.
- Clean the exterior of the product with a damp cloth only. Do not use solvents of any kind.

SAVE THESE INSTRUCTIONS

1. INTRODUCTION

The AUTO600 is a portable and re chargeable ‘partial flow’ diesel engine Smokemeter designed for “Continuous” and “Peak” testing of exhaust gases in diesel vehicles.

It is designed to meet recognised standards for accuracy and repeatability for Category A (Cars & Light Commercial) and Category B (Commercial) vehicles.

Measurement Units are %H (Hartridge units) and k (/m).

Comprising of a rugged smoke measuring base unit linked via Bluetooth or optionally cable to the handset control module the AUTO600 offers ease and flexibility of use.

2. PRINCIPLE OF OPERATION

The AUTO600 takes a sample of exhaust gas through a flexible probe inserted into the vehicle's exhaust. The gases are passed through a tube that is illuminated by a near monochromatic visible light source. The obscuration of this light gives an accurate measurement of the density of the smoke emitted by the vehicle.

A fan is used to deliver clean fresh air to the smoke tube prior to the test sequence. This is to ensure the AUTO600 has an accurate zero. Vectored air curtains are directed at the lenses at each end of the smoke tube to prevent "sooting" of the lenses, which would change the zero calibration.

The measurement tube and smoke delivery system are heated to prevent condensation and loss of smoke particles. This is to ensure accurate and repeatable measurements are obtained.

3. BEFORE USING FOR THE FIRST TIME

The AUTO600 base unit has an integrated nickel-metal hydride (NiMh) battery pack that can be recharged by using a mains powered charger.

The first charge should be for twelve hours continuously. When an external charger is connected and power is detected the green LED above the charger socket flashes.

NiMh batteries are suitable for top up charging at any time, even for short periods. The charger can be left connected to the AUTO600 continuously.

TIP: ***For maximum battery operational life it is strongly recommended that the* AUTO600 *is connected to the mains charger or the vehicle DC adapter during the warm up period. This ensures that the high power needed during this phase does not drain the internal battery. This will substantially increase operational battery life.***

The expected operational battery life is four hours on a full charge.

3.1 BASE UNIT:

1. Probe Connection
2. Handset Cable Socket
3. LED Indicators (internal heaters)
4. Smoke Sample Exhaust
5. Charger Socket, Charging Indicator and Fuse
6. Base Unit On/Off switch

CAUTION!
The fuse fitted to the AUTO600 is a 20*5mm, 5A quick blow fuse. Do not fit any other part.

3.2 HANDSET:

The Handset requires two alkaline AA cells and is supplied with these. If required these can be replaced with rechargeable NiMh AA cells which must be recharged outside the handset.

1. Handset cable connection
2. Units key selects measurement units in k (/m) or Hartridge (%H)
3. Backlight and contrast key. Press repeatedly for four levels of contrast with the backlight on and four levels with backlight off

4. Enter key used to confirm a selection throughout the AUTO600's operation.
5. Infra-red printer port.
6. On/Off key.
7. Scroll up key.
8. Scroll down and print key.
9. MODE key selects operating modes.
    a. Zero Check
    b. Peak
    c. Menu
        I Trigger
        ii Cat A/B
        iii Time
        iv Date
        v Cal Filter
        vi Serial Number
        vii Language
    d. Zero Smoke

The Mode key is also used as an 'escape' key to avoid certain actions in setting up the AUTO600.

The handset will operate for at least fifty hours on a fresh set of batteries with Bluetooth communications, longer when using the serial cable. The handset will keep the time and date as set even when turned off. When new batteries are needed the handset will interrupt the normal screen display with a message. It will also report the condition of the base unit's batteries.

When the handset batteries require replacement, ensure it is turned off first before replacing the cells. This will avoid resetting the time and date again. The handset will keep accurate time and date for a short period with the batteries removed but only when the display is off.

4. PREPARING FOR USE

The Main Switch:

There is a master ON/OFF switch located at the front of the base unit This must be switched on before use and when charging.

The OFF position is provided for when longer term storage is anticipated to ensure that the batteries are not discharged.

Attaching the probe:

The probe attaches to the AUTO600's body using a metal screw thread attachment. This only needs to be hand tight. Take care not to over tighten or cross thread it.

Do not insert the probe into the vehicle exhaust until:

a) **The vehicle's engine is up to the required temperature**

b) **The AUTO600 has completed its warm up sequence and has auto-calibrated itself.**

c) **Instructed to do so by the handset in PEAK mode operation.**

Bluetooth or cable connectivity:

It is possible to use either Bluetooth to link the handset and base unit, or the included cable if preferred. It is not possible to switch from one to the other while in use. In order to change the connection method the AUTO600 must be powered down and then restarted.

Bluetooth communication between the handset and the base unit is achieved using Class1 devices. These have a nominal range of one hundred metres.

5. USING THE AUTO600

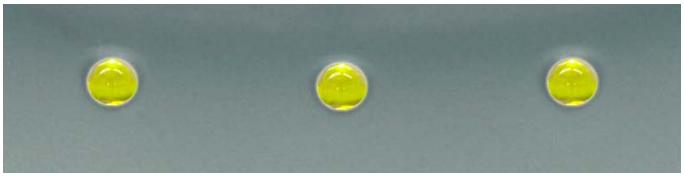
It is recommended that the AUTO600 is used with Bluetooth communications as this avoids use of cables and potential trip hazards. It is also a very convenient method of operation as it gives the user greater flexibility in taking smoke measurements.

Connect the AUTO600's base unit to the mains or DC adapter and press the ON/OFF button. Use a long key press on the handset to turn the instrument on. This will initiate the AUTO600's start up sequence.

The handset screen will display the system status and the warm-up sequence begins.

The screen will display the warm up time and the LEDs on the base unit will start to flash in sequence for up to twenty five minutes depending on the ambient temperature.

The three LEDs on the base unit represent each of the three internal heaters and will flash slowly between dim and bright until operating temperature has been reached when the flash rate will change.



Once the AUTO600 has reached operating temperature and performed a zero calibration, the handset display will change and indicate vehicle category, measurement units and Bluetooth connectivity as below.

The AUTO600 is now ready for use

Bluetooth connection svmbol

Vehicle Category
Cat A Cars & light commercial
Cat B Commercial

Measurement Units

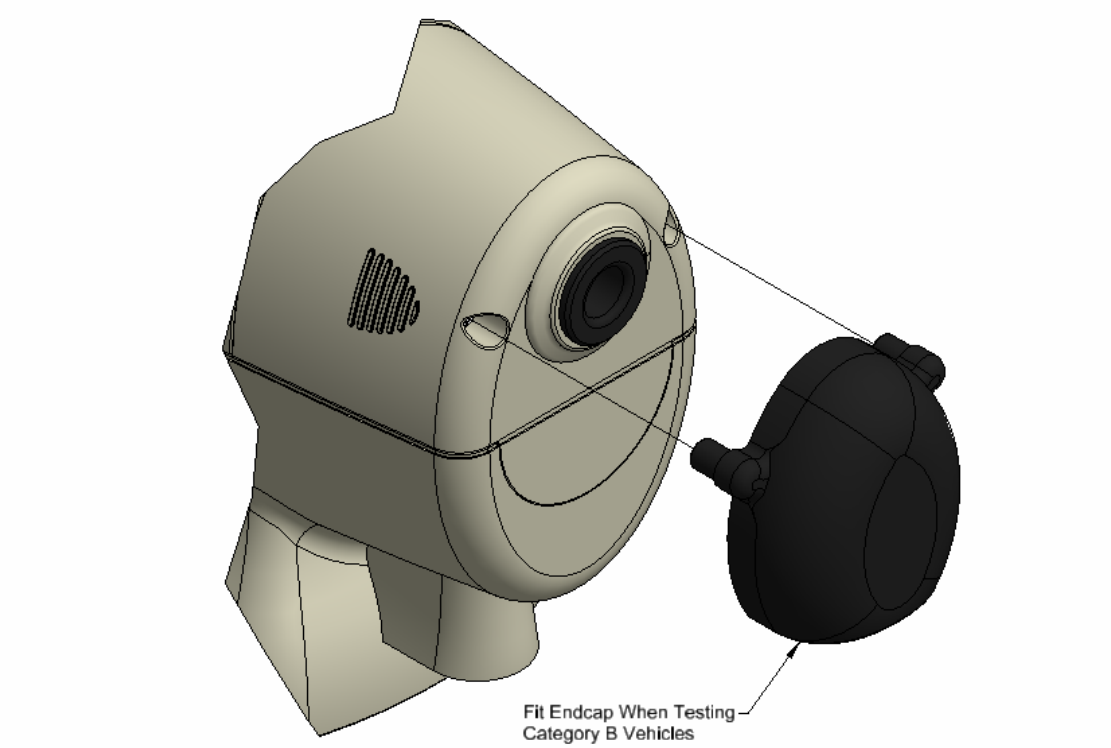
5.1 ”CONTINUOUS” SMOKE TESTING

Following the warm-up sequence, the AUTO600 can be used for continuous smoke testing and will monitor the exhaust smoke opacity continuously in “real time”. In fresh air the reading will be zero.

Setting up test parameters
To change the measurement units press the “UNITS” button to select either %H (Hartridge) or k (/m).

To change vehicle category press “MODE” until “MENU” option is displayed. Press “ENTER” and scroll to “Cat A/B” using the “UP” or “DOWN” key. Press “ENTER”. Select “CatA” or “CatB” and press “ENTER” to confirm the option required.

It is important that the end cap is fitted for Cat B vehicles and not fitted for Cat A vehicles. The smoke test results obtained will not be within the stated accuracy unless the cap is fitted as described.



Press “MODE” to exit back to the main test screen.

CAUTION: Ensure the vehicle is at normal operating temperature particularly its oil temperature!

Position the base unit close to the exhaust pipe and insert the probe, start the vehicle and depress the vehicle's accelerator pedal to obtain the required increase in engine speed. The smoke emission can be monitored on the handset.

THESE LIVE READINGS CANNOT BE PRINTED OR SAVED

5.2 "PEAK" SMOKE TESTING

The AUTO600 smokemeter also operates in a peak mode. This is the standard method of testing diesel smoke emissions.

The AUTO600 monitors the smoke emission on accelerating the diesel vehicle's engine to its maximum speed. The vehicle's engine speed should be increased rapidly to its maximum and held at this level for a total period of three seconds. The AUTO600 provides instructions on its handset when to "ACCELERATE" and "STOP" the test. The AUTO600 automatically detects the engine acceleration by an increase in smoke emission as extra fuel is supplied to the engine during this time. The default trigger sensitivity is generally suitable for a wide range of smoke emission but it can be adjusted in the "MENU". The default setting is "3".

In fresh air the smoke reading displayed will be zero but inside an exhaust the background level of smoke will be detected and displayed. A reading less than 0.1k is typical.

The AUTO600 can be set to take an average of the last three or five "PEAK" smoke tests. If the number of tests performed is less than this then the average of the readings obtained is displayed. The average smoke emission is presented to the user between tests and is automatically calculated as the number of tests increases.

Set up test parameters:

Press the “MODE” button until the “PEAK” option is displayed and press “ENTER”. Follow the screen prompts.

If the AUTO600 has performed a peak smoke test since it was switched on the handset will start a zeroing sequence. Follow the on screen prompts until the handset displays the current vehicle category. This may be changed by using the “UP”, “DOWN” and “ENTER” keys.

Select the measurement units required using the “UNITS” key and press “ENTER” to confirm.

Select the number of smoke tests to average using the “UP” “DOWN” and “ENTER” keys. The choice is three or five peaks.

At this stage the AUTO600 summarises the test parameters on the screen.
The screen then displays the key actions needed to stop and start the smoke test sequence. It is very important that the probe is fitted into the running vehicle’s exhaust before the “ENTER” key is pressed to start testing. The AUTO600 monitors the vehicle’s idle smoke emission and uses this to detect when the engine is accelerated. If this sequence is not followed false smoke triggers and unreliable readings will result.

Starting the test sequence:

CAUTION: Ensure the vehicle is at normal operating temperature, particularly its oil temperature, and the engine is running!

Insert the probe into the exhaust.

Press the “ENTER” key to start the test and press the “UP” and “DOWN” keys at the same time to end the test. A test can only be terminated at the end of the “5 4 3 2 1” countdown. It is only at this point that the full smoke information is available.

Follow the screen prompts precisely. Wait for the countdown and when instructed the vehicle's accelerator pedal must be fully depressed in a smooth motion in under one second and held at full acceleration for a period of three seconds until the screen shows "STOP".

Repeat the sequence for a minimum of three or five times in order to get the average reading required. The AUTO600 will average fewer readings however.

The results of the individual tests and the average can be printed using the Kane infrared printer. Ensure the emitter on the top of the handset and the printer are lined up and in range, before pressing the print button. Follow the screen prompts if further copies of the test results are needed. If necessary the results can be printed from the normal screen, but if the AUTO600 is switched off all information is lost.

NOTE:-

THESE READINGS CANNOT BE SAVED
A REPEAT TEST WILL REQUIRE A RE-ZERO

What should the readings be?

- 2.50k for vehicles with non-turbocharged engines, used before 1 July 2008
- 3.00k for vehicles with turbocharged engines, used before 1 July 2008
- 1.50k for vehicles used on or after 1 July 2008

Drift

The Auto600 monitors its change in zero as peak testing progresses and produces an average drift figure. This is the average change in zero for every peak test. If the drift figure exceeds 0.05k the test should be repeated. This may occur on vehicles with high emissions.

What are the causes of excessive smoke?

Smoke is the product of combustion. Vehicles may produce three kinds of smoke, two of which indicate engine problems. The three types are:

- Blue smoke (mainly oil and unburnt fuel), which indicates a poorly serviced and/or tuned engine.
- Black smoke (soot, oil and unburnt fuel) which indicates a mechanical fault with the engine or air intake restriction.
- White smoke (water droplets and unburnt fuel) which is produced when the engine is started from cold and disappears when the engine warms up.

With older engines, the white smoke produced has a sharp smell, which may cause irritation to your upper respiratory system.

What factors effect the composition of diesel smoke emission

The quantity and composition of diesel smoke may vary depending on:

- The quality of diesel fuel used
- The type of engine, e.g. standard, turbo or injector
- The state of engine tuning
- The fuel pump setting
- The workload demand on the engine
- The engine temperature
- Whether the engine has been regularly maintained

6: MODE FUNCTION

Pressing the handset “MODE” key repeatedly allows access to the following functions.

ZeroCheK: This turns the fan on for forty five seconds to clear the measurement tube of any smoke.
NOTE: the probe must be in fresh air at this time.
Follow the Screen prompts “REMOVE PROBE FROM EXHAUST…PRESS ENTER TO CONTINUE”
“Zero Chk Underway”

Peak: Press “ENTER” For Peak testing sequence.
Follow the screen prompts to set up test parameters and begin the test procedure. The AUTO600 detects the change in smoke level and holds the highest reading that it sees. Once this change is detected and stored, screen prompts invite further peak tests. This will continue until the “UP” and ”DOWN” keys are pressed together.

Individual test results, the current smoke average, and the drift figure are displayed as they are made available. These results can be printed at the end of the testing sequence. See section 5.1for full details.

Menu: Press “ENTER” to access Menu and scroll to function required

Trigger: Press “ENTER” to adjust peak test sensitivity trigger point. The default setting for the trigger level is 3. In low smoke situations if the “PEAK” fails to trigger increase the sensitivity. The range is 0 to 5.
“0” should only be used in high smoke situations when absolutely necessary. High smoke situations risk dirtying the optics.
Follow the screen prompts and use “UP “DOWN” and “ENTER” to adjust

Cat A/B:
Depending on the test vehicle category and use “UP “DOWN” and “ENTER” to select “Cat A” for Cars and light commercial and “Cat B” for Commercial

Time: Press the “ENTER” key to access and “UP” or “DOWN” to adjust. “ENTER” key confirms setting.

Date: Press the “ENTER” key to access and “UP” or “DOWN” to adjust. “ENTER” key confirms setting.

CalFiltr: To be only used if calibration verification is required Follow procedure on page 27.

SerialNo: Each handset and base measuring unit has a unique serial number to access press “ENTER” please use this when registering your product www.kane.co.uk. The serial number is also on the labels fitted to the base and handset.

Language: Follow the on screen instructions to select the language needed. Note that if the handset batteries are allowed to run down the language selection will revert to the default, English.

ZeroSmke: Press ‘ENTER’ key to select this function which zeros the smokemeter. Follow the on screen instructions to set the process running, ensuring the smoke probe has been removed from the exhaust of the vehicle and is in fresh air.

7: Maintenance

7:1 General Maintenance

- Check calibration of your instrument annually to ensure it meets original performance specifications.
- Keep your instrument dry. If it gets wet, wipe dry immediately. Liquids can degrade electronic circuits.
- Whenever practical, keep the instrument away from dust and dirt that can cause premature wear.
- Although your instrument is built to withstand the rigours of daily use, it can be damaged by severe impacts. Use reasonable caution when using and storing the meter.

7.2 Periodic Service

 **CAUTION!**

Repair and service of this instrument is to be performed by qualified personnel only. Improper repair or service could result in physical degradation of the instrument. This could alter the protection from personal injury this meter provides to the operator. Perform only those maintenance tasks that you are qualified to do.

7.3 Cleaning

 **CAUTION!**

Periodically clean your instrument case using a damp cloth. DO NOT use abrasive, flammable liquids, cleaning solvents, or strong detergents as they may damage the finish, impair safety, or affect the reliability of the structural components.

7:4 Regular Maintenance

If the readings are erratic or if the AUTO600 will not zero it may be necessary to clean the lenses and also the measurement tube. Follow the procedure below observing the cautions.

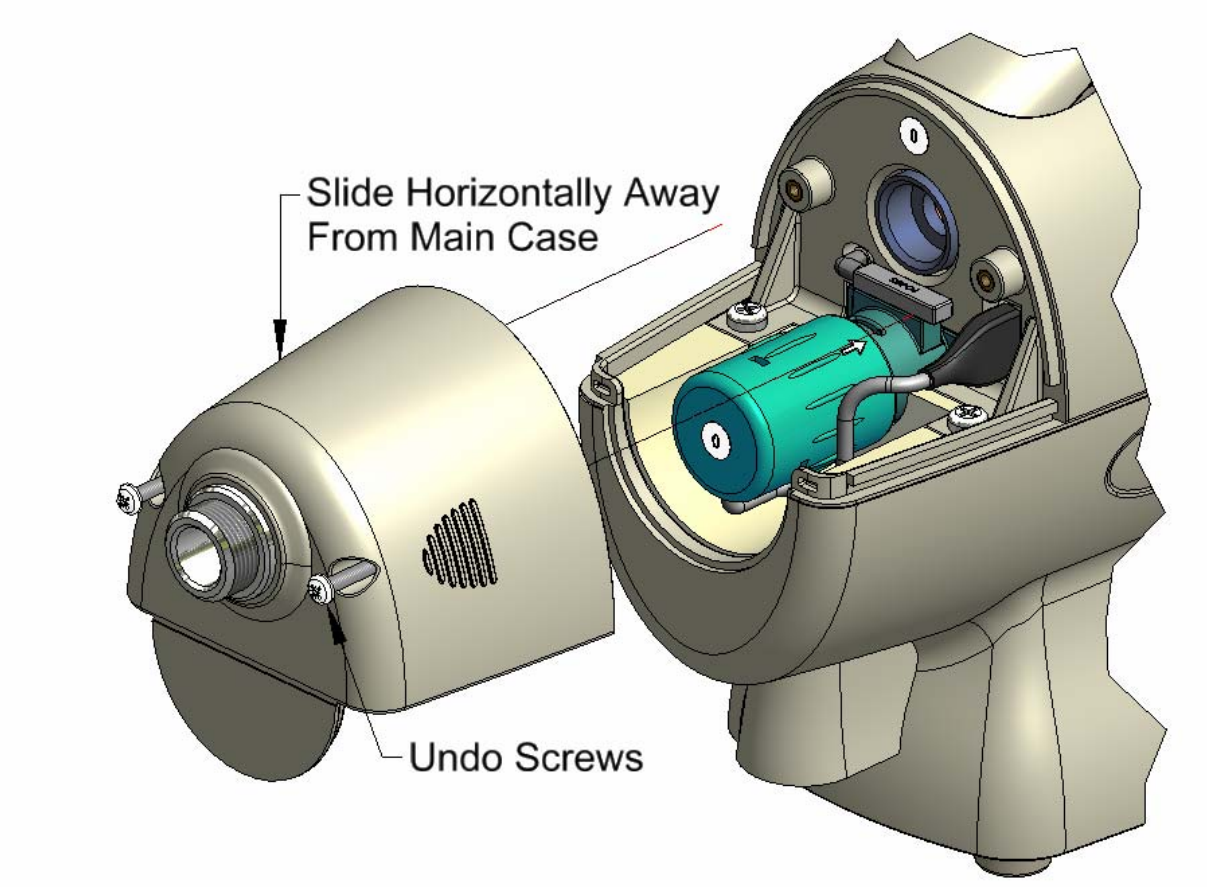
The AUTO600 may be returned to the Kane Service Centre if preferred.

 **CAUTION!**

- Some internal parts of the AUTO600 are heated to temperatures in excess of 70^{o}C.
- Switch the AUTO600 off for 30 minutes or so to allow it to cool before touching any internal parts.
- Beware of fine soot particles in the measurement tube and avoid inhaling while cleaning. These particles may cause irritation if breathed in.

7.4.1: How to remove the end caps:

The end caps are each held in place by two captive Philips headed screws. Once these have been completely undone the end caps are removed by sliding them horizontally away from the main case assembly.



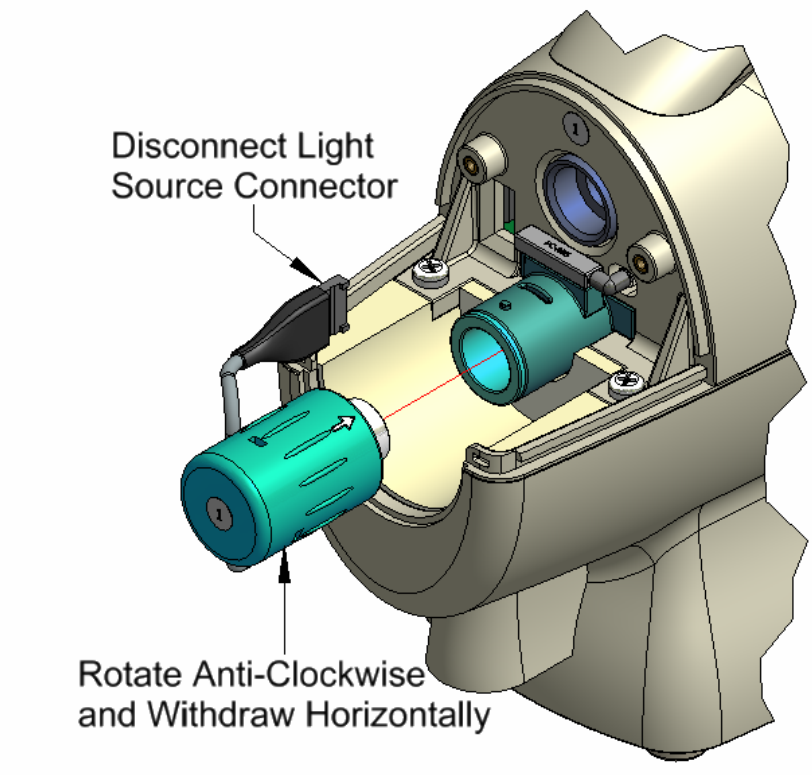
7.4.2: How to remove the light source

CAUTION!
ALWAYS ALLOW THE AUTO600 TO COOL BEFORE PERFORMING THIS OPERATION. HOT SURFACES MAY BE PRESENT.

The light source is marked with an identification label (1). A matching label is attached to the correct end of the main case assembly.

Disconnect the light source's connector by gentling pulling on the cable where it enters the body of the main case assembly. The connector is locking so exercise care when extracting the connector. Note the orientation of the connector. The key way lugs face outwards.

Hold the body of the light source assembly and rotate it anticlockwise until the marker point is at the 12 o clock position. (a rotation of approx. 15 degrees) The light source can now be removed by withdrawing it horizontally along the main access of the case assembly.



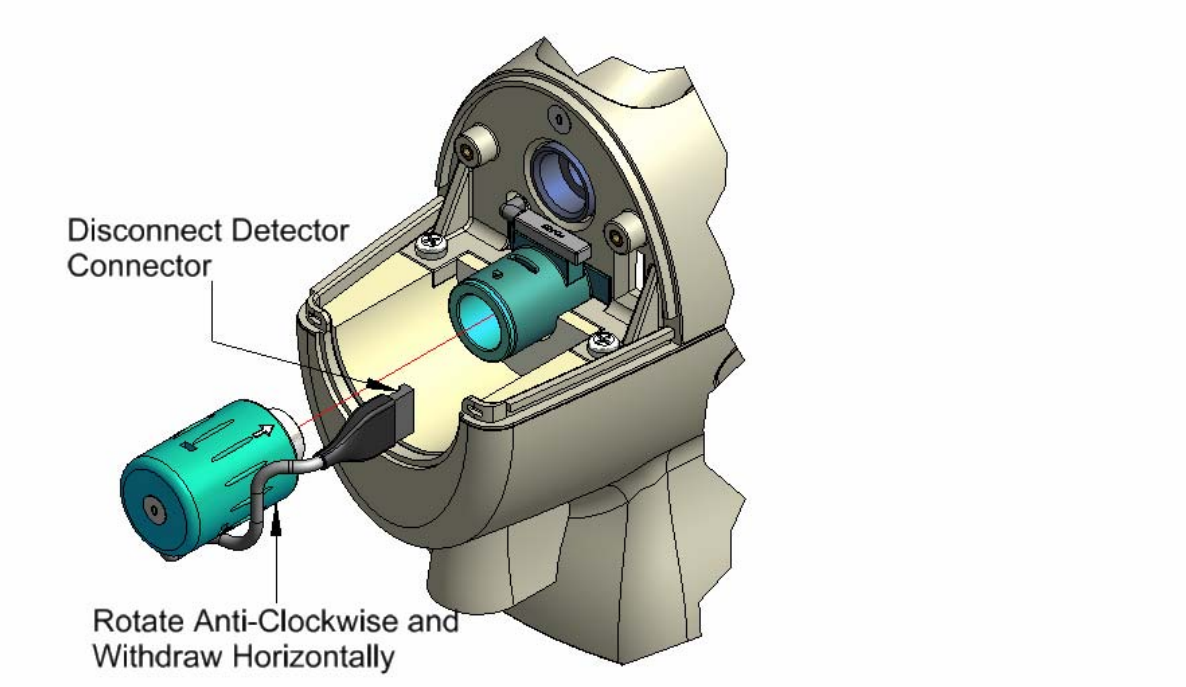
7.43: How to remove the detector assembly

CAUTION!
ALWAYS ALLOW THE AUTO600 TO COOL BEFORE PERFORMING THIS OPERATION. HOT SURFACES MAY BE PRESENT.

The detector assembly is marked with an identification label (0). A matching label is attached to the correct end of the main case assembly.

Disconnect the detector assembly's connector by gentling pulling on the cable where it enters the body of the main case assembly. The connector is locking so exercise care when extracting. The key way lugs face outwards.

Hold the body of the detector assembly and rotate it anticlockwise until the marker point is at the 12 o'clock position. (a rotation of approx. 15 degrees) The assembly can now be removed by withdrawing it horizontally along the main access of the case assembly.



7.4.4: How to clean the lenses:

CAUTION!
ALWAYS ALLOW THE AUTO600 TO COOL BEFORE USING ANY CLEANING SOLVENT OR FLUID ON THE OPTICS. SURFACES WILL BE HOT IF IT HAS BEEN IN USE.

It is important to use a lens cleaning fluid that leaves no residue with an optical quality microfiber cloth to minimise the risk of damaging the lens surfaces. These are readily available for use with camera lenses etc.

NOTE: Always apply the cleaning fluid to the cloth not to the lens.

After cleaning leave in a warm dry place for enough time for all of the cleanser residue to evaporate.

7.4.5: How to clean the measurement tube.

CAUTION!
THE SOOT PARTICLES RELEASED DURING CLEANING CAN CAUSE IRRITATION IF INHALED. ALWAYS ALLOW THE AUTO600 TO COOL BEFORE PERFORMING THIS OPERATION. SURFACES MAY BE HOT.

The measuring tube is coated with black paint and care must be taken if cleaning this tube to ensure that this surface is not degraded by the cleaning process.

The tube can be cleaned using a soft ‘bottle’ brush. It needs to be pushed in and pulled out a few times and be rotated whilst doing so to loosen any soot that has attached itself to the wall of the measurement tube. A vacuum cleaner (not supplied) can be used to extract any loosened particles. The use of compressed air is **NOT** recommended.

7.4.6: How to refit the light source:

Check that the identification label on the assembly matches that on the main case body.

Slide the source assembly onto it spigot with the marker at 12 o clock and when it is fully home rotate the assembly clockwise to its stop. The cable should now be at the 6 o clock position of the source assembly.

Carefully re-fit the connector ensuring that it is fully mated.

7.4.7: How to refit the detector assembly:

Check that the identification label on the assembly matches that on the main case body.

Slide the detector assembly onto it spigot with the marker at 12 o'clock and when it is fully home rotate the assembly clockwise to its stop. The cable should now be at the 6 o clock position of the detector assembly.

Carefully re-fit the connector ensuring that it is fully mated.

7.4.8: How to refit the end caps

The probe end cap goes to the left hand side of the main case when viewed from the side facing the three LEDs. Align the end caps in turn with the main case and slide them horizontally checking that they are correctly mated. Tighten the two screws a little at a time, in turn, until the end caps are symmetrically aligned in all planes. Now tighten the screws to provide firm attachment without risking stripping the screw threads.

7.4.9: How to clean the case

 **CAUTION!** Always disconnect the AUTO600 from any charger and switch the main switch off. Do not use any solvents.

The main case material is Polypropylene. It can be cleaned using a proprietary non-solvent foaming cleanser and a soft cloth or tissue, or a damp cloth. Take care to avoid applying too much liquid particularly near

the connector and switch. Follow the cleanser manufacturer's instruction.

After cleaning leave in a warm dry place for enough time for all the cleanser residue to evaporate before re-applying power to the instrument

The Handset materials: PC – ABS with a rubber over-moulding.

7.5: Batteries

CAUTION!
THE BATTERY MODULE SHOULD NEVER BE REPLACED WITH ANYTHING OTHER THAN AN ORIGINAL KANE BATTERY MODULE. SERIOUS INJURY MAY RESULT.

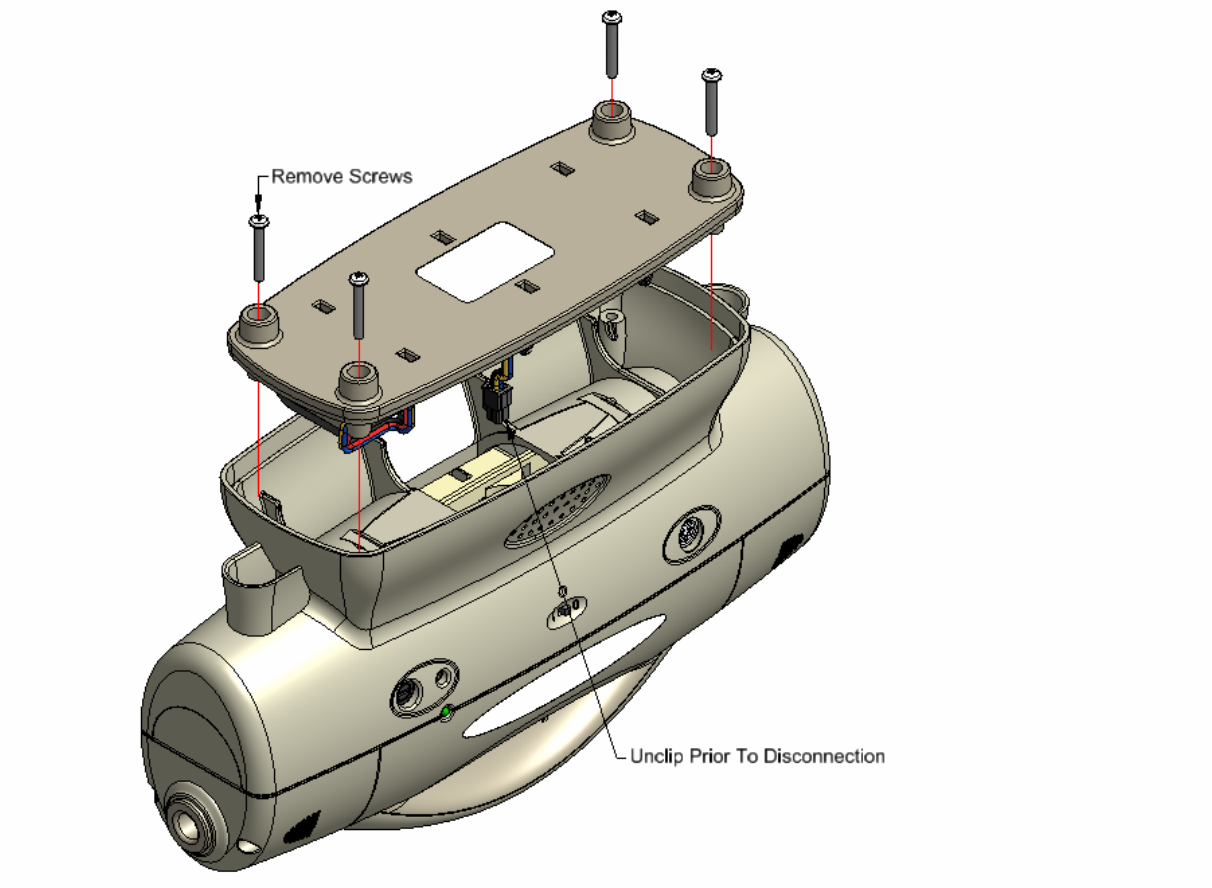
7.5.1How to remove the Smokemeter's battery module

Turn the Smokemeter on its side on a suitable surface and unscrew the four screws.

Note: These screws are not captive.

The battery pack's connector is a locking connector and it must be unclipped prior to disconnection.

Note: The battery pack's connecting cable is positioned at the right hand side of the main case when viewed from the side facing the three LEDs.



Replacement is a reversal of this process.

7.5.2: Low Battery Indication

The handset indicates that its batteries are low by a message on the screen.

The AUTO600 base indicates that its batteries are low by flashing its three LEDs bright and then dim. A warning is also displayed on the handset.

7.5.3: How to replace the handset's batteries

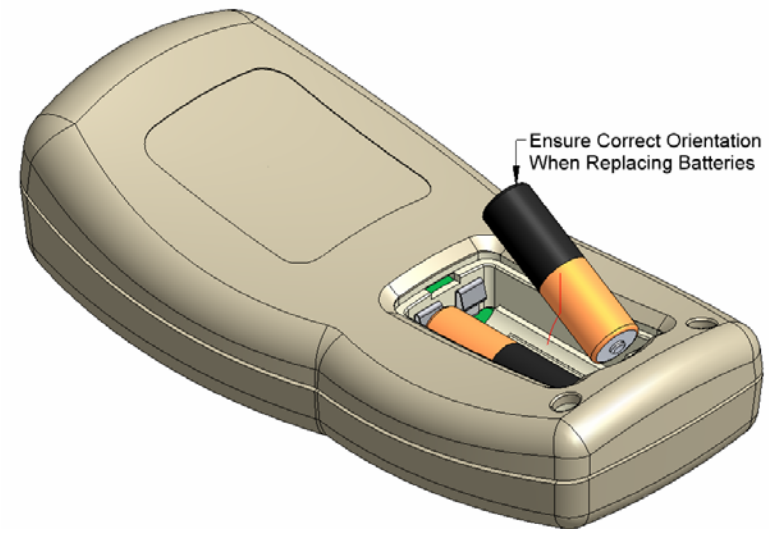
CAUTION!
ENSURE BATTERIES ARE CORRECTLY REPLACED

Switch the handset OFF**.**

Unclip the battery compartment cover.

Take note of the orientation of the batteries and the detail in the battery compartment.

Remove the batteries and insert new batteries in the correct orientation.



Replace the battery compartment cover.

Switch the handset back ON to test for correct operation.

Re-cycle the spent batteries according to local guidelines and regulations.

8: CALIBRATION

The Smokemeter calibration is automatically adjusted after every test sequence. This is done by accurately measuring the light being received by the detector. If the light level is too low the lenses require cleaning. Since the smoke density measurement is directly related to the level of light obscuration this process serves as an automatic re-calibration.

Should automatic recalibration not succeed it may indicate an electronic failure or a failure to properly remove residual smoke after a test sequence. In extreme cases, after extensive use with high smoke output engines, there may be a build up of soot in the measurement tube obscuring the light path.

See below for details of how to correct for these situations.

8:1 Calibration Verification

For regulatory emissions programmes some authorities still require that calibration is regularly verified using neutral density filters.

The AUTO600 is currently unapproved (approval to UK standards pending) and so is only intended for use in pre-compliance testing situations.

With future approvals in mind the AUTO600 has been designed to allow such calibration verification to be performed.

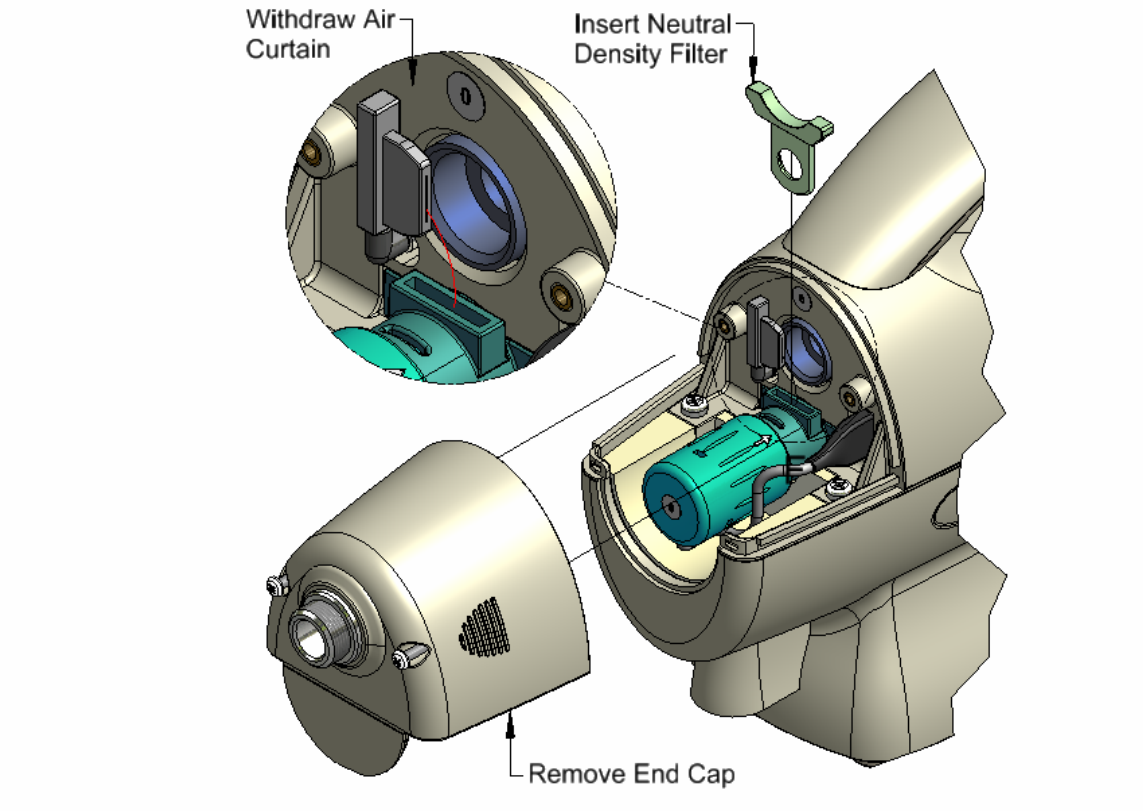
When required this can be achieved as follows:

 **CAUTION!**
EXPOSED PARTS MAY BE HOT

Remove an End Cap as detailed below and then withdraw the air curtain applicator. Insert a neutral density filter in place of the air curtain and run a static test to confirm calibration.

Note: The neutral density filter must be perfectly clean to give repeatable results. You must also confirm the accuracy limits of the filter and apply these as appropriate to local regulations

Neutral density filters are an **optional extra** as different regulators mandate different densities of filters and different accuracy levels.



9: Problem Solving

If any problems are not solved with these solutions, contact us or an authorised repair centre.

Fault Symptom	Causes / Solutions
Smokemeter fails to zero	▪ Perform “ZeroChek” ▪ Dirty lens or measurement tube - may require cleaning
Smokemeter does not respond to exhaust smoke	▪ Probe not inserted. ▪ Ultra clean engine not triggering peak test – adjust trigger
Loss of Communication between handset and base unit	▪ Flat battery in handset or base unit – change handset & charge base ▪ Bluetooth out of range. Will require restart to re-establish ▪ Cable has become disconnected (if in use)
No Printout	▪ Will only print following peak test ▪ Check printer alignment ▪ Change printer batteries
Not charging	▪ Ensure base switch in on position ▪ Check charging indicator is flashing ▪ Check supply light on mains charger
Smokemeter fails to warm up	▪ Connect to external supply
Lens “sooting” up	▪ Vehicle exhaust very dirty remedial action required

10: ELECTROMAGNETIC COMPATIBILITY

European Council Directive 89/336/EEC as amended by 92/31/EEC requires electronic equipment not to generate electromagnetic disturbances exceeding defined levels and have adequate immunity levels for normal operation. Specific standards applicable to this smokemeter are stated below.

As there are electrical products in use pre-dating this Directive, they may emit excess electromagnetic radiation levels and, occasionally, it may be appropriate to check the smokemeter before use by:

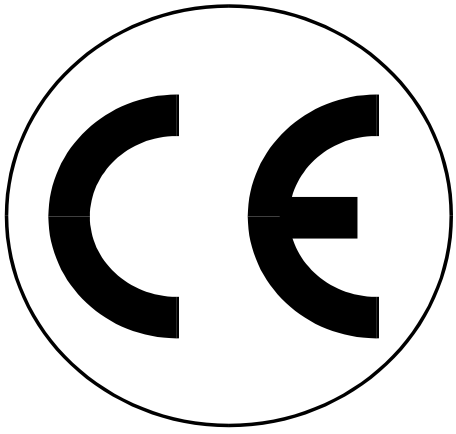
Use the normal start up sequence in the location where the smokemeter will be used.

Switch on all localized electrical equipment capable of causing interference.

Check all readings are as expected. A level of disturbance is acceptable.

If not acceptable, adjust the smokemeter's position to minimize interference or switch off, if possible, the offending equipment during your test.

At the time of updating this manual (June 2012) Kane International Ltd are not aware of any field based situation where such interference has occurred and this advice is only given to satisfy the requirements of the Directive.



This product has been tested for compliance with the following generic standards:

EN 61000-6-3 : 2001
EN 61000-6-1 : 2001

and is certified to be compliant

Specification EC/EMC/KI/K600 details the specific test configuration, performance and conditions of use.

Please Note:

Batteries used in this instrument should be disposed of in accordance with current legislation and local guidelines.

At the end of the product's life it should be re-cycled in accordance with current legislation and local guidelines.

11: AUTO600 ANNUAL SERVICING AND CONFORMITY

The AUTO600 automatically re-calibrates itself on a regular basis during use. An annual service will confirm that its overall operation meets its original manufacturer's specification and counter any long-term sensor or electronics drift or accidental damage.

Local regulations may require more frequent certification of conformity.

In the UK, Kane International has service facilities at Atherton near Manchester (Tel: 01942-873434), the primary service centre for UK customers and at Welwyn Garden City in Hertfordshire (Tel: 01707-375550), the primary service centre for non-UK customers.

12: SPECIFICATION *(Note may be subject to change)*

BASE UNIT

Measurement Range	0 to 16k
Accuracy	±5% of reading or ±0.05k whichever is greatest
Warm up time	In ambient of 20ºC, typically 12 mins
Dimensions	440 mm long 250 mm high 130 mm wide
Internal Supply	12Vdc Nickel-Metal Hydride battery rated capacity 7Ah
External Charger Supply Requirement	13-15Vdc at 4Amps
Fuse Rating	5A(T) time delayed, in 20*5mm form
Weight	4.6 kg

HANDSET

Dimensions	200 mm long 50 mm high 95 mm wide
Keypad	Seven tactile keys
Display	4 line LCD with 8 characters a line, backlight and contrast control
Weight	0.4 kg
Battery type	Non-rechargeable MN1500/LR6/AA alkaline cells x 2
Battery life (alkaline)	50 hours typically on Bluetooth comms. 75 hours typically on serial cable option

PROBE

Dimensions	270 mm Insertion Depth
Weight	0.5 kg

BATTERY MODULE

Type:	NiMh rechargeable (12V, 7AH)
Life:	4 hours from full charge
Charge time:	4 hours

BATTERY CHARGER

Input:	100-240V AC. @ 47-63Hz.
Output:	15 V dc @ 4 amps

AMBIENT OPERATING RANGE

-10°C to + 45°C
< 85% RH non condensing

13: Glossary

Selector and Display Parameters on KANE AUTO600

H% – Smoke measurement parameter Hartridge unit %
0% full light:100% no light

k (/m) – Smoke measurement parameter; light absorption coefficient

Zerochek - This turns the fan on for 45 secs to clear the tube of any smoke.

ZeroSmke – This performs a true zero of the Smokemeter.

Triggger – Point at which the peak test is registered.
The sensitivity can be adjusted in low smoke or high smoke conditions

Cat A/B – Vehicle type Cat A Cars & light commercial Cat B Commercial

CalFiltr – Optional extra; for regulatory emissions programmes some authorities still require that calibration is regularly verified using neutral density filters.

Peak - The peak level of smoke emission over a period of at least 3 secs.

Thank you for buying this Smokemeter.

Before use, please register on our website

www.kane.co.uk