



*GT* series

**Configuration &  
Field Calibration  
Handbook**



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When no longer in use, dispose of the instrument carefully and with respect for the environment. GMI will dispose of the instrument without charge if returned to the factory.



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## **REVISION RECORD**

<b>Date</b>	<b>Issue</b>	<b>Description Of Change</b>
17/09/2005	1	New Handbook



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## INTRODUCTION



This handbook allows Field Calibration (Chapter 2), Alarm Configuration (Chapter 3), Set Defaults (Chapter 4) and Clock Configuration (Chapter 5) to be carried out without the use of additional equipment such as PC's or tools.

The instrument must be switched on in Menu mode, as detailed in each of the procedures (Chapters 2 to 5).

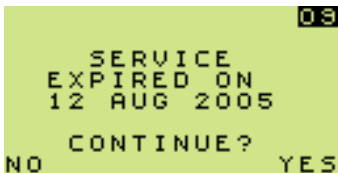
A code must be entered before any of the instrument settings can be altered.

To avoid repeating the warm up sequence in each procedure, Chapter 1 details the 'Switch the instrument ON / OFF' operation.

The procedures, detailed in Chapters 2 to 5, show the GMI factory default settings. When each screen is accessed, the current setting is 'highlighted' on the instrument display.

These settings can be altered as detailed in the following procedures (Chapters 2 to 5).

The bottom line of the instrument display may indicate button press options. For example, to select 'Yes' from the following screen option, you would press the RH (PUMP) button. To select 'No', the LH (INVERT) button would be pressed.



The principle of selecting any one of three options on the bottom line of the instrument display by pressing either LH, CENTRE or RH buttons is used throughout the operation, configuration and field calibration of this instrument.

## SWITCH INSTRUMENT ON / OFF

To switch the instrument ON in fresh air:

- Press and hold the RH (PUMP ) button , for one second.



*Fig. 1.1 Switch ON*

The instrument begins its 30 second warm-up routine with a GT instrument type display, shown in Fig. 1.2. (GT 42 instrument type shown in example).

During the warm-up cycle, a countdown timer appears in the top right hand corner of the display.

The display backlight illuminates and remains ON during warm-up.

When the warm-up cycle is complete, the screen light automatically switches OFF.



*Fig. 1.2 GT Model*

## 1.1 INSTRUMENT IDENTIFICATION

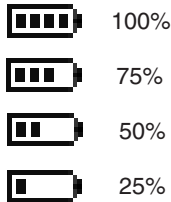
During the warm-up cycle, the instrument display identifies the model, serial number, software version and battery status information as shown in Fig. 1.3:



*Fig. 1.3 Instrument Identification*

## 1.2 BATTERY STATUS

This feature provides the user with a battery capacity level indicator that displays instrument battery power remaining, as shown in Fig. 1.4.

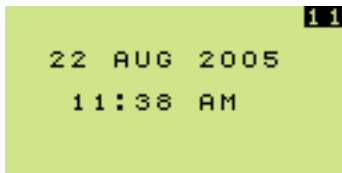


*Fig. 1.4 Battery Capacity*

This battery symbol will be indicated for approximately five (5) seconds during the warm-up cycle, then on the top of the display during normal operation.

## 1.3 TIME AND DATE

The time and date from the instrument's built-in clock is displayed on the screen during warm-up, as shown in Fig. 1.5. If datalogging is being used, the time and date is set from this clock. This may be important when viewing the logged data.



*Fig. 1.5 Time and Date*

## 1.4 CALIBRATION DUE DATE

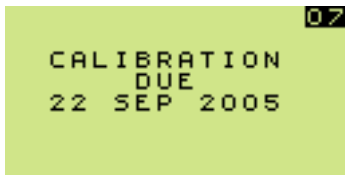
The CAL DUE date can be set by the workshop and is set to 30 days by default. The date can be set from 1 to 400 days.

The CAL DUE is reset when the instrument is successfully calibrated.

The CAL DUE feature has five (5) configurable options:

1. *Cal Due Date message is not displayed.*
2. *Cal Due Date and overdue date messages are displayed.*

Calibration due date is displayed, as shown in Fig. 1.6.



*Fig. 1.6 Calibration Due Date*

The screen, shown in Fig. 1.7, is displayed when the Calibration date has expired. i.e. overdue.

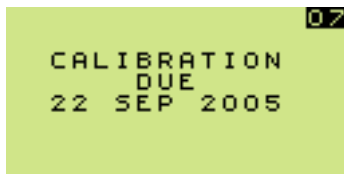


*Fig. 1.7 Calibration Overdue*

After approximately five (5) seconds, the instrument warm-up continues.

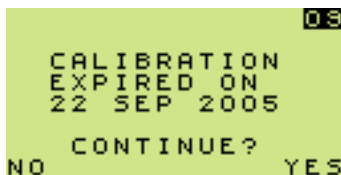
- 3. Cal Due Date message is displayed with user acknowledge if overdue (Default).**

Calibration due date is displayed, as shown in Fig. 1.8.



*Fig. 1.8 Calibration Due Date*


The screen, shown in Fig. 1.9, is displayed when the Calibration date has expired. i.e. overdue.



*Fig. 1.9 Calibration Overdue*

The user must acknowledge that Calibration has expired.

To continue:



- Press and hold YES , as indicated on the bottom line of the display, and the instrument warm-up continues.

To switch OFF:

- Press and hold NO  as indicated on the bottom line of the display. The screen shown in Fig. 1.10 is displayed.



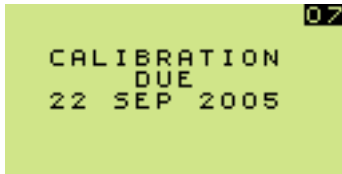
*Fig. 1.10 Switch OFF*

- Press and hold both the LH (INVERT) button  and the RH (PUMP) button  simultaneously to proceed with the switch-off sequence.



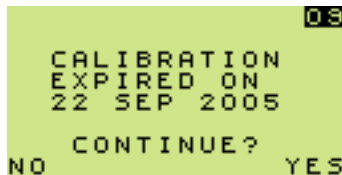
4. ***Cal Due Date message is displayed with user acknowledge for extended period option, if overdue.***

Calibration Due Date message is displayed, as shown in Fig. 1.11.



*Fig. 1.11 Calibration Due Date*

If overdue but within the 'extended period', the screen, shown in Fig. 1.12, is displayed.




*Fig. 1.12 Calibration Overdue*

The user must acknowledge that Calibration has expired.


Note: The extended period can be set from 1 to 31 days

To accept 'extended period' option:

- Press and hold YES , as indicated on the bottom line of the display, and the instrument warm-up continues.



Note: When the extended period option expires, the user will be forced to switch the instrument OFF.

To reject 'extended period' option:

- Press and hold NO , as indicated on the bottom line of the display. The screen shown in Fig. 1.13 is displayed.

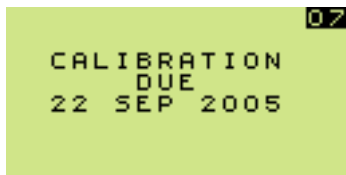


*Fig. 1.13 Switch OFF*

- Press and hold both the LH (INVERT) button  and the RH (PUMP) button  simultaneously to proceed with the switch-off sequence.

5. ***Cal Due Date message is displayed with user shut-down if overdue.***

Calibration due date is displayed, as shown in Fig. 1.14.





*Fig. 1.14 Calibration Due Date*

The screen, shown in Fig. 1.15, is displayed when the Calibration date has expired. i.e. overdue.



*Fig. 1.15 Switch OFF*

To proceed with the switch-off sequence.

- Press and hold both the LH (INVERT) button  and the RH (PUMP) button  simultaneously.

## 1.5 SERVICE DUE DATE

The Service due date can be set by the workshop and is set to two (2) years by default from last service date. The date can be set over a period of 1 to 36 months in 1 month steps.

Note : By default, the service due date will not normally be displayed at start up, but if display option is selected, it will be shown at 90 days prior to the preset date, as shown in Fig. 1.16.

The SERVICE DUE feature has five (5) configurable options:

1. ***Service Due Date message is not displayed (Default).***
2. ***Service Due Date and overdue date messages are displayed,*** as shown in Fig. 1.16.



*Fig. 1.16 Service Due Date*

The screen, shown in Fig. 1.17, is displayed when the Service date has expired. i.e. overdue.



*Fig. 1.17 Service Overdue*

After approximately five (5) seconds, the instrument warm-up continues.

- 3. *Service Due Date message is displayed with user acknowledge if overdue.***

Service due date is displayed, as shown in Fig. 1.18.



*Fig. 1.18 Service Due Date*


The screen, shown in Fig. 1.19, is displayed when the Service date has expired. i.e. overdue.



Fig. 1.19 Service Overdue

The user must acknowledge that Service has expired.

To continue:

- Press and hold YES , as indicated on the bottom line of the display, and the instrument warm-up continues.

To switch OFF:




- Press and hold NO , as indicated on the bottom line of the display. The screen, shown in Fig. 1.20, is displayed.



Fig. 1.20 Switch OFF

- Press and hold both the LH (INVERT) button  and the RH (PUMP) button  simultaneously to proceed with the switch-off sequence.

**4. Service Due Date message is displayed with user acknowledge for extended period option, if overdue.**

Service Due Date message is displayed, as shown in Fig. 1.21.



*Fig. 1.21 Service Due Date*

If overdue but within the 'extended period', the screen, shown in Fig. 1.22, is displayed.




*Fig. 1.22 Service Overdue*

The user must acknowledge that Service has expired.

Note: The extended period can be set from 1 to 31 days

To accept 'extended period' option:

- Press and hold YES , as indicated on the bottom line of the display, and the instrument warm-up continues.

Note: When the extended period option expires, the user will be forced to switch the instrument OFF.

To reject 'extended period' option:




- Press and hold NO  as indicated on the bottom line of the display. The screen, shown in Fig. 1.23, is displayed.



Fig. 1.23 Switch OFF

- Press and hold both the LH (INVERT) button  and the RH (PUMP) button  simultaneously to proceed with the switch-off sequence.



5. ***Service Due Date message is displayed with user shut-down if overdue.***

Service due date is displayed, as shown in Fig. 1.24.




*Fig. 1.24 Calibration Due Date*

The screen, shown in Fig. 1.25, is displayed when the Service date has expired. i.e. overdue.



*Fig. 1.25 Switch OFF*

To proceed with the switch-off sequence:

- Press and hold both the LH (INVERT) button 

and the RH (PUMP) button  simultaneously.

## Warm-up Complete



The instrument will now automatically select the Leak Test Mode, as default.

*The following configurable options are available:*

- a) *To start up in any selected other operational mode.*
- b) *To start up in the mode last used.*

## 1.6 SWITCH THE INSTRUMENT OFF

To initiate the shut down sequence:

- Press and hold both the LH (INVERT)  and RH (PUMP)  buttons simultaneously.

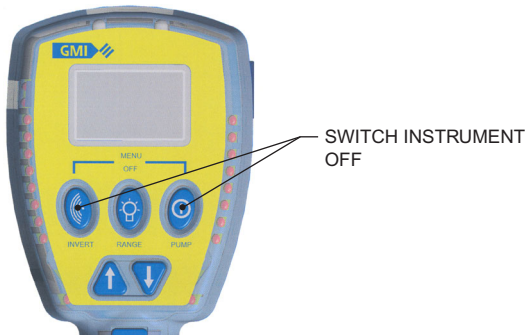
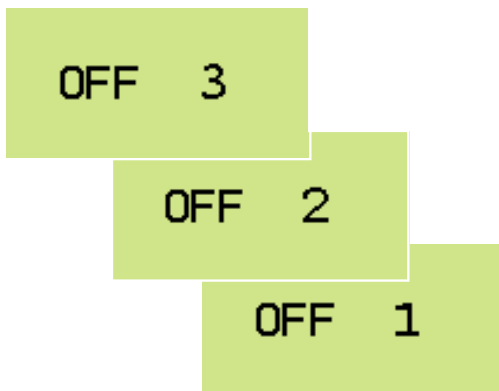


Fig. 1.26 Switch OFF

For the first two (2) seconds, the Mode menu will be displayed.

After this time, the OFF sequence begins and the user will have to keep the buttons pressed for a further three (3) seconds to complete the OFF sequence countdown as shown in Fig. 1.27.



*Fig. 1.27 OFF sequence*



## FIELD CALIBRATION



*Fig. 2.1 Button References*

Field Calibration allows calibration to be carried out without the use of additional equipment such as PC's or tools. The Field Calibration function must be enabled in the instrument's configuration to perform this operation. The instrument must be switched on in Menu Mode, as detailed in the following procedure, then a code entered.

For any other calibration, use only GMI software to ensure safe and proper function of these life-saving instruments.

## 2.1 SWITCH THE INSTRUMENT ON

To switch the instrument ON:

- Press and hold the RH (PUMP) button .



Fig. 2.2 Switch ON

The following screens are displayed in sequence:



Fig. 2.3

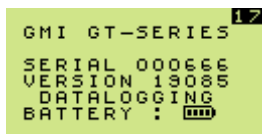


Fig. 2.4


Immediately following the GT Series screen display (Fig. 2.3) and while the instrument identification screen (Fig. 2.4) is displayed,

- Press the following buttons in sequence:

LH (INVERT) button 

RH (PUMP) button 

LH (INVERT) button 

RH (PUMP) button 

The instrument then begins its warm-up routine, which lasts approximately 30 seconds. During warm-up, a countdown timer appears in the top (RH) corner of the display.

(Refer to Chapter 1 for complete warm-up sequence).

If the correct button sequence is accepted, the countdown timer alternates with 'M' (menu) symbol.

The instrument now proceeds through the normal start up sequence, ending with a check of all sensors and displaying a spanner symbol if a sensor is faulty. If a sensor is faulty, the orange LED will be active and an audible 'beep' will be heard.

The instrument displays the configuration & field calibration menu screen. The alphanumeric screen now acts as a prompt to help you through the calibration process.

An example of this display is shown in Fig. 2.5:

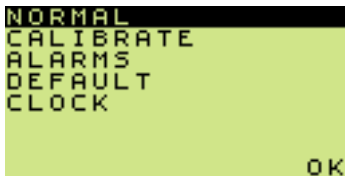




Fig. 2.5 Configuration & Field Calibration Menu

## 2.2 ENTER CALIBRATION MENU

To enter CALIBRATE menu:

- Use the UP  and DOWN  buttons to scroll through the options until CALIBRATE is highlighted in the display as shown in Fig. 2.6.

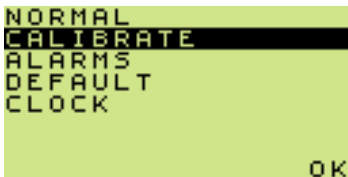

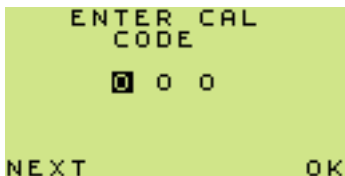


Fig. 2.6 'Calibrate' Highlighted

- When 'CALIBRATE' is highlighted, press OK .

The following display, Fig. 2.7, will request the calibration code to be entered.





*Fig. 2.7 Enter Calibration Code*





If the Field Calibration option is disabled in the instrument's configuration, the message, shown in Fig. 2.8, will be displayed briefly. Field Calibration is only available if enabled in configuration.



*Fig. 2.8 Calibration Disabled*

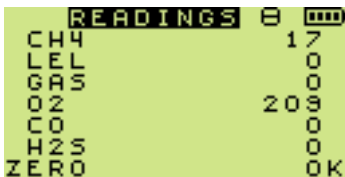
### 2.2.1 Enter Calibration Code

To enter the Calibration code (333):

- Press the UP  or DOWN  buttons to alter the highlighted digit.
- Press NEXT  to select the next digit.
- When all three digits have been entered, press OK  to accept.

## 2.3 ZERO ALL RANGES


All sensors must be zeroed before the calibration can commence. Make sure that the instrument is in clean air.



READINGS		8	
CH4		17	
LEL		0	
GAS		0	
O2		20.9	
CO		0	
H2S		0	
ZERO		OK	

Fig. 2.9 Before Zeroing

To zero all ranges:

- Press ZERO .


Note: If an oxygen sensor is fitted, the sensor is zeroed to 20.9% Oxygen.



READINGS		0	
CH4		0	
LEL		0	
GAS		0	
O2		20.9	
CO		0	
H2S		0	
ZERO		OK	

Fig. 2.10 After Zeroing

To move to the calibration screen:

- Press OK .

## 2.4 CALIBRATE



*Fig. 2.11 Calibration Screen*

If ppm Methane ( $\text{CH}_4$ ) is to be calibrated, it is important that it is calibrated first. After this, the order of calibration is not important.

Refer to 'CALIBRATION GAS CONCENTRATIONS' Instruction Sheet (Part No.13939) for details of gases required by instrument type. Calibration gas must be applied at the instrument probe inlet. The correct calibration gas regulator should be used.

The gas will flow through the instrument and exit at the instrument rear outlet. Refer to 'USE OF BALANCED FLOW REGULATOR VALVE' Instruction Sheet (Part No.99104) for details of gas concentration and flow rate to be used.

### 2.4.1 Ranges

All the ranges for the sensors in this instrument can be calibrated, excluding Oxygen ( $\text{O}_2$ ) which calibrates automatically on zeroing.

Note: Oxygen is shown for viewing purposes only.

### 2.4.2 Test Gas

The concentrations set for the previous calibration will be shown. If the concentrations, in the cylinder you intend to use this time, are different then you need to change the values.

### 2.4.3 Cal Gas Number

Identifies the ranges you wish to calibrate together with the particular cylinder you are using for each exposure.

In the example shown in Fig. 2.12, the cylinder to be used for calibrating CH<sub>4</sub> has a concentration of 800ppm.

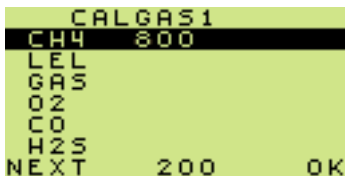







Fig. 2.12 Calibration Gas Number

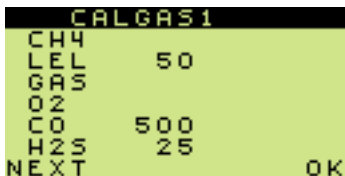
### 2.4.4 Procedure:

- To move to the required range, press NEXT .
- If the Cal Gas Number concentrations are correct, press OK .

To change the concentration use the UP  and DOWN  buttons or use fast setting option, as follows:.

To change the concentration using the 'fast setting option', press the Centre  button to increment by the amount indicated on the bottom line of the display (e.g. CH<sub>4</sub> = 200ppm in Fig. 2.12). Each gas range has this feature with the value as appropriate: LEL 50 ; GAS 50 ; CO 100 ; H<sub>2</sub>S 50.


- c) Repeat until all ranges are correctly set.  
e.g. If your first cal cylinder is 50% LEL, 500ppm CO and 25ppm H<sub>2</sub>S. Your final screen will be as shown in Fig. 2.13:

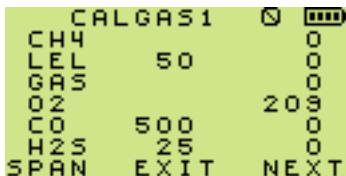


```

CALGAS1
CH4
LEL      50
GAS
O2
CO       500
H2S     25
NEXT                                OK
  
```

Fig. 2.13 Calibration Screen


- d) Press OK  if you have set-up correctly.
- e) If all ranges are zeroed, pass the first test gas as per 'Use of Balanced Flow Regulator Valve' instruction sheet.



```

CALGAS1  [ ] [ ] [ ] [ ]
CH4
LEL      50
GAS
O2       20.9
CO       500
H2S     25
SPAN     EXIT     NEXT
  
```


Fig. 2.14 Apply Gas Now

- f) When the readings are 'steady', as shown in Fig. 2.15, press SPAN .

Pressing SPAN will calibrate each range with a concentration set.




CAL GAS 1		
CH4		0
LEL	50	49
GAS		0
O2		203
CO	500	510
H2S	25	24
SPAN	EXIT	NEXT

Fig. 2.15 Span

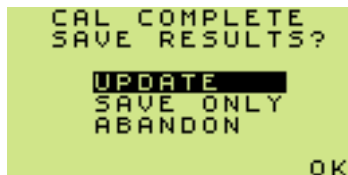
- g) Press NEXT  to return to cal set-up screen as shown in Fig. 2.16.

CAL GAS 1		
CH4		
LEL	50	
GAS		
O2		
CO	500	
H2S	25	
NEXT		OK

Fig. 2.16 Calibration Screen

- h) To identify your next test gas, use the UP  and DOWN  buttons to change the Cal Gas Number when this is highlighted.
- i) Repeat steps (a) to (h) until all ranges are calibrated, or all ranges for which you have gases.
- k) After the last test gas, press EXIT  to exit Field Calibration.

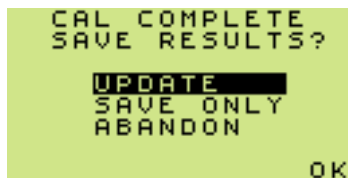
You now have the following choices depending on whether you had all relevant gases and all ranges calibrated correctly.



*Fig. 2.17 Calibration Save Options*

## 2.5 ACCEPT CALIBRATION

At the end of the calibration process the following screen, Fig. 2.18, is displayed:



*Fig. 2.18 Calibration Save Options*

To alter the highlighted option:

- Press the UP  or DOWN  buttons until the required option is highlighted.

To accept the highlighted option:

- Press and hold OK  and the display will move to the next step.

### **2.5.1 Update**

The calibration data, time and date will now be stored in the instrument memory. If the calibration period option is in use, the calibration due date will now be updated automatically from the calibration period option in the configuration of the instrument.

### **2.5.2 Save Only**

The new gain setting will be updated but the calibration due date will not update if the calibration period is in use from the setup menu. This option may be selected if you were unable to calibrate all the sensors in the instrument but wish to save the gain setting for the sensors calibrated successfully.

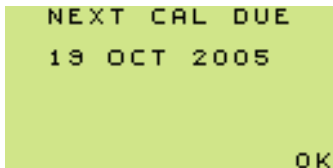
### **2.5.3 Abandon**

Neither the gains or the calibration due date will be updated if this option is highlighted. The instrument will go directly to the MENU display.



## 2.6 NEXT CALIBRATION DUE


If the 'Update' (default) option was selected, the 'Next Cal Due' is displayed as + 30 days, as shown in Fig. 2.19:



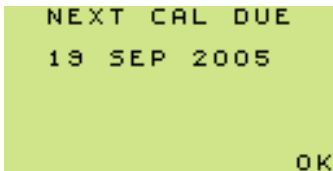
*Fig. 2.19 New Cal Due Date*

Note: The time period, from 1 to 400 days, is programmable from the 'calibration period' in the configuration of the instrument.

To confirm the new setting, exit the calibration menu and return to the configuration & field calibration menu:


- Press OK .

If the 'Save Only' option was selected, the existing 'Cal Due' remains unchanged as shown in Fig. 2.20:

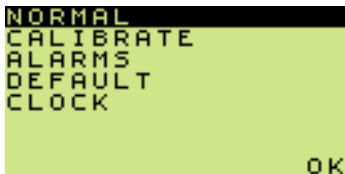


*Fig. 2.20 Cal Due Date Unchanged*

To exit the calibration menu and return to the configuration & field calibration menu:



- Press and hold OK .

If the 'Abandon' option was selected, the configuration & field calibration menu is displayed, as shown:




*Fig. 2.21 Configuration & Field Calibration Menu*

**Note:** The Calibration mode, or sequence, may be abandoned at any time by pressing and holding both buttons together for 3 seconds. The display will count down from 3 seconds to OFF.

If you wish to now enter a configuration function or return to operational (normal) mode, use the UP  or DOWN  buttons to highlight your option.

To select highlighted option:

- Press and hold OK .

---

## ALARM CONFIGURATION



*Fig. 3.1 Button References*

Alarm Configuration allows simple set up of the alarms to be carried out without the use of additional equipment such as PC's or tools. The instrument must be switched on in Menu Mode, as detailed in the following procedure, then a code entered.

For any other configuration, refer to Handbook or use only GMI software to ensure safe and proper function of these life-saving instruments.

### 3.1 SWITCH THE INSTRUMENT ON

To switch the instrument ON:

- Press and hold the RH (PUMP) button .

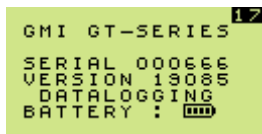


*Fig. 3.2 Switch ON*

The following screens are displayed in sequence:



*Fig. 3.3*




*Fig. 3.4*


Immediately following the GT Series screen display (Fig. 3.3) and while the instrument identification screen (Fig. 3.4) is displayed,

- Press the following buttons in sequence:

LH (INVERT) button 

RH (PUMP) button 

LH (INVERT) button 

RH (PUMP) button 

The instrument then begins its warm-up routine, which lasts approximately 30 seconds. During warm-up, a countdown timer appears in the top (RH) corner of the display.

(Refer to Chapter 1 for complete warm-up sequence).

If the correct button sequence is accepted, the countdown timer alternates with 'M' (menu) symbol.

The instrument now proceeds through the normal start up sequence, ending with a check of all sensors (only displayed if a sensor is faulty). If a sensor is faulty, the orange LED will be active and an audible 'beep' will be heard.

The instrument displays the configuration & field calibration menu screen. The alphanumeric screen now acts as a prompt to help you through the configuration process.

An example of this display is shown in Fig. 3.5:

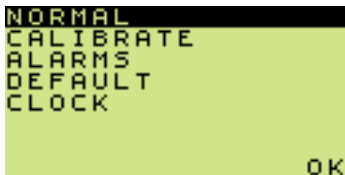




Fig. 3.5 Configuration & Field Calibration Menu

### 3.2 ENTER ALARMS MENU

To enter ALARMS menu:

- Use the the UP  or DOWN  buttons to scroll through the options until 'ALARMS' is highlighted in the display as shown in Fig. 3.6:

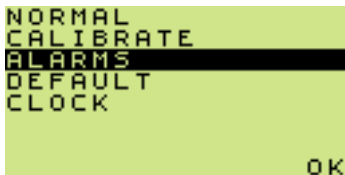



Fig. 3.6 'Alarms' Highlighted

- When 'ALARMS' is highlighted, press OK .

The following display, Fig. 3.7, will request the alarms code to be entered.

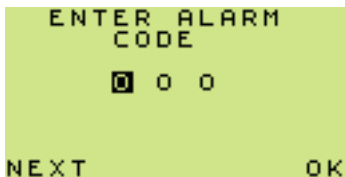






Fig. 3.7 Enter Alarm Code

### 3.2.1 Enter the Alarm Code

To enter ALARMS code (123):

- Press the UP  or DOWN  buttons to alter the highlighted digit.
- Press NEXT  to select the next digit.
- When all three digits have been entered, press OK  to accept.

The following Table 3.1 shows the GMI default selections. Latching or non-latching options exist in all allowable alarms.

Alarms are allowed in Leak Mode and CSM Mode.


Any single alarm, e.g. LEL Hi, Toxic Warning etc., can only have one alarm concentration level and either latching/non latching, mute or non mute. The output, i.e. display, Lo Pitch / Hi Pitch with LED's flashing / ramping are preset according to the following Table 3.1.

This means that if a CO warning is set at 35ppm and latching and non-muting is selected, for leak and/or CSM the level will be the same in each mode and the type, e.g latching will also be common.

If the alarm is disabled, it will not function in any mode.



## ALARM CONFIGURATION

ALARM TYPE	LATCHING Yes / No	MUTE Yes / No	AUDIBLE INDICATION	VISUAL LED INDICATION	DISPLAY
LEL Warning	N	N / A	N / A	N / A	Flash Range
LEL (Hi)	N	Y	High Pitch Tone	(4) Flashing	Toggle Hi / Conc
LEL (Hi Hi)	Y	N	High Pitch Warble	(8) Ramping	Toggle Hi Hi / Conc
O <sub>2</sub> (Lo)	N	Y	High Pitch Tone	(4) Flashing	Toggle Lo / Conc
O <sub>2</sub> (Lo Lo)	Y	N	High Pitch Warble	(8) Ramping	Toggle Lo Lo / Conc
O <sub>2</sub> (Hi Hi)	Y	N	High Pitch Warble	(8) Ramping	Toggle Hi Hi / Conc
H <sub>2</sub> S Warning	N	N / A	N / A	N / A	Flash Range
H <sub>2</sub> S (Hi Hi)	Y	N	High Pitch Warble	(8) Ramping	Toggle Hi Hi / Conc
H <sub>2</sub> S (STEL)	Y	N	High Pitch Warble	(8) Ramping	Toggle STEL / Conc
H <sub>2</sub> S (LTEL / TWA)	Y	N	High Pitch Warble	(8) Ramping	Toggle LTEL / Conc
CO Warning	N	N / A	N / A	N / A	Flash Range
CO (Hi Hi)	Y	N	High Pitch Warble	(8) Ramping	Toggle Hi Hi / Conc
CO (STEL)	Y	N	High Pitch Warble	(8) Ramping	Toggle STEL / Conc
CO (LTEL / TWA)	Y	N	High Pitch Warble	(8) Ramping	Toggle LTEL / Conc
Lo / 	Y	N / A	Low Pitch Tone	Fault LED Flashing	Display 'Type'
Low Battery	Y	N / A	Low Pitch Tone	Fault LED On	Display 'Type'
Zero Fault	Y	N / A	Low Pitch Tone	Fault LED Flashing	Display 'Type'
Sensor Fault	Y	N / A	Low Pitch Tone	Fault LED Flashing	Display 'Type'
Flow Fault	Y	N / A	Low Pitch Tone	Fault LED Flashing	Display 'Type'
Calibration Expired	Y	N / A	Low Pitch Tone	Fault LED Flashing	Display 'Type'
Service Expired	Y	N / A	Low Pitch Tone	Fault LED Flashing	Display 'Type'

*Table 3.1*

### 3.3 ALARM OPTIONS

There are three options in the alarm set-up menu, as shown in Fig. 3.8 example.

% LEL ALARMS			
TYPE	LEV	LAT	MUT
WRN	0		
HI	0		
HIHI	20	✓	
NEXT	RANGE		OK

Fig. 3.8 Alarm Options

#### 3.3.1 Levels

In this function, individual alarm setpoints can be adjusted or disabled. If an alarm value is set to zero (0), the alarm will be disabled.

#### 3.3.2 Latching

In this function, individual alarms can be selected to be 'LATCH' or 'NON-LATCH'. When an alarm is latching, a 'tick' symbol will appear. If non-latching, the option will be blank.

Note: Latch means when a gas alarm setpoint is exceeded, the audible and visual alarm will stay active until the gas value returns within the gas alarm setpoint and requires the user to press and

hold LH (INVERT) button  for one (1) second to clear.

**IMPORTANT:** If the alarm is latching, the user will not be permitted to set the mute option. If already set, it will be automatically reset.

Note: Non-latch means that when a gas alarm setpoint is exceeded, the audible and visual alarm will re-set automatically when the gas value returns within the gas alarm setpoint.

### 3.3.3 Mute

This function allows certain alarms to be programmed thus allowing the user to acknowledge a gas alarm and silence the AUDIBLE alarm for a period of 60 seconds. During this period, the VISUAL alarm stays active during the presence of gas. After 60 seconds has elapsed, the AUDIBLE alarm will sound again to alert the user that the gas hazard still exists if gas is still present. Also, if gas level has dropped within limits but alarm is latching, it will sound again.

If during the 'MUTE' period a different alarm occurs, the instrument will respond as normal, depending on the alarm configuration.

## 3.4 LEL ALARMS

The LEL sensor alarm setpoints are displayed as shown in Fig. 3.8:

% LEL ALARMS			
TYPE	LEV	LAT	MUT
WRN	0		
HI	0		
HIHI	20	✓	
NEXT	RANGE		OK


Fig. 3.8a LEL Alarms

The highlighted alarm setpoint may be altered by use of the UP  or DOWN  buttons.



Each single press of the button will increase the alarm value in steps of 1%. Pressing and holding the button will cause the reading to increase rapidly.

If you wish to have an alarm disabled, set the level to zero.


To accept the highlighted alarm setpoint:



- Press NEXT .

This will accept the highlighted alarm setpoint and step to the latching / non latching segment.


Again the UP  or DOWN  buttons allow viewing of the options, in this case YES (✓) or NO (blank).

To move to the Mute / Non Mute option:

- Press NEXT .

Again the UP  or DOWN  buttons allow viewing of the options, in this case YES (✓) or NO (blank).

To move to the next LEL alarm level:

- Press NEXT .

The display will now highlight the next alarm setpoint.


If required, this alarm setpoint can be altered as before.

When complete, or at anytime during this procedure,

Accept the LEL alarm setpoints and step to the next sensor:

- Press RANGE .

Accept changes and exit the alarm configuration

- Press OK .

Note: A 'WRN' alarm cannot be muted, for any range, hence this option is automatically bypassed.

### 3.5 OXYGEN ALARMS

The Oxygen (O<sub>2</sub>) sensor alarm setpoints are displayed as shown in Fig. 3.9:

% O <sub>2</sub> ALARMS			
TYPE	LEV	LAT	MUT
LO	0		
LOLO	195	✓	
HIHI	230	✓	
NEXT	RANGE		OK


Fig. 3.9 Oxygen Alarms

The highlighted alarm setpoint may be altered by use of the UP  or DOWN  buttons.



Each single press of the button will increase the alarm value in steps of 0.1%. Pressing and holding the button will cause the reading to increase rapidly.

If you wish to have an alarm disabled, set the level to zero.

To accept the highlighted alarm setpoint:



- Press NEXT .

This will accept the highlighted alarm setpoint and step to the latching / non latching segment.


Again the UP  or DOWN  buttons allow viewing of the options, in this case YES (✓) or NO (blank).

To move to the Mute / Non Mute option:

- Press NEXT .

Again the UP  or DOWN  buttons allow viewing of the options, in this case YES (✓) or NO (blank).

To move to the next O<sub>2</sub> alarm level:


- Press NEXT .

The display will now highlight the next alarm setpoint.


If required, this alarm setpoint can be altered as before.

When complete, or at anytime during this procedure,

Accept the O<sub>2</sub> alarm setpoints and step to the next sensor:

- Press RANGE  (i.e. Centre 'RANGE' button)

Accept changes and exit the alarm configuration

- Press OK .

## 3.6 TOXIC GAS ALARMS

### 3.6.1 Carbon Monoxide (CO)

The Carbon Monoxide (CO) sensor alarm setpoints are displayed as shown in Fig. 3.10:

PPM CO ALARMS			
TYPE	LEV	LAT	MUT
WRN	20		
STEL	200	✓	
LTEL	30	✓	
HIHI	35	✓	
NEXT	RANGE		OK


Fig. 3.10 Carbon Monoxide Alarms

The highlighted alarm setpoint may be altered by use of the UP  or DOWN  buttons.



Each single press of the button will increase the alarm value in steps of 1 ppm. Pressing and holding the button will cause the reading to increase rapidly.

If you wish to have an alarm disabled, set the level to zero.


To accept the highlighted alarm setpoint:



- Press the NEXT .

This will accept the highlighted alarm setpoint and step to the latching / non latching segment.


Again the UP  or DOWN  buttons allow viewing of the options, in this case YES (✓) or NO (blank).

To move to the Mute / Non Mute option:

- Press NEXT .

Again the UP  or DOWN  buttons allow viewing of the options, in this case YES (✓) or NO (blank).

To move to the next CO alarm level:

- Press NEXT .

The display will now highlight the next alarm setpoint.


If required, this alarm setpoint can be altered as before.



When complete, or at anytime during this procedure,  
Accept the CO alarm setpoints and step to the next sensor:

- Press RANGE .

Accept changes and exit the alarm configuration

- Press OK .

### 3.6.2 Hydrogen Sulphide (H<sub>2</sub>S)

The Hydrogen Sulphide (H<sub>2</sub>S) sensor alarm setpoints are displayed as shown in Fig. 3.11:

PPM H2S ALARMS			
TYPE	LEV	LAT	MUT
WRN	0		
STEL	10	✓	
LTEL	5	✓	
HIHI	15	✓	
NEXT	RANGE		OK

Fig. 3.11 Hydrogen Sulphide Alarms

The highlighted alarm setpoint may be altered by use of the UP  or DOWN  buttons.



Each single press of the button will increase the alarm value in steps of 1 ppm. Pressing and holding the button will cause the reading to increase rapidly.

If you wish to have an alarm disabled, set the level to zero.


To accept the highlighted alarm setpoint:



- Press the NEXT .

This will accept the highlighted alarm setpoint and step to the latching / non latching segment.


Again the UP  or DOWN  buttons allow viewing of the options, in this case YES (✓) or NO (blank).

To move to the Mute / Non Mute option:

- Press NEXT .

Again the UP  or DOWN  buttons allow viewing of the options, in this case YES (✓) or NO (blank).

To move to the next H<sub>2</sub>S alarm level:

- Press NEXT .


The display will now highlight the next alarm setpoint.

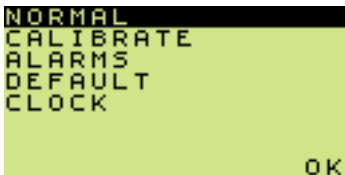
If required, this alarm setpoint can be altered as before.

When complete, or at anytime during this procedure,  
Accept the H<sub>2</sub>S alarm setpoints and step to the next sensor:



- Press RANGE .

Accept changes, exit the alarm configuration and return to the configuration and field calibration menu:


- Press OK .



*Fig. 3.12 Configuration & Field Calibration Menu*

If you wish to now enter another configuration or field calibration function or return to operational (normal) mode, use the UP  or DOWN  buttons to highlight your option.

To select highlighted option:

- Press and hold OK .



## SET DEFAULTS

'SET DEFAULT' allows the user to easily set the instrument to the factory default settings.



*Fig. 4.1 Button References*

Care should be taken to use this function only if absolutely necessary. It is also important to check that configuration and all alarm values are set as per your company or application requirement. The factory defaults will set the instrument to alarm as per UK EH40 limits and work in standard set-up.

---

**CAUTION:** The instrument must be re-calibrated after setting the defaults.

---

#### 4.1 SWITCH THE INSTRUMENT ON

To switch the instrument ON:

- Press and hold the RH (PUMP) button .



Fig. 4.2 Switch ON

The following screens are displayed in sequence:



Fig. 4.3

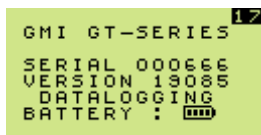



Fig. 4.4


Immediately following the GT Series screen display (Fig. 4.3) and while the instrument identification screen (Fig. 4.4) is displayed,

- Press the following buttons in sequence:

LH (INVERT) button 

RH (PUMP) button 

LH (INVERT) button 

RH (PUMP) button 

The instrument then begins its warm-up routine, which lasts approximately 30 seconds. During warm-up, a countdown timer appears in the top (RH) corner of the display.

(Refer to Chapter 1 for complete warm-up sequence).

If the correct button sequence is accepted, the countdown timer alternates with 'M' (menu) symbol.

The instrument now proceeds through the normal start up sequence, ending with a check of all sensors (only displayed if a sensor is faulty). If a sensor is faulty, the orange LED will be active and an audible 'beep' will be heard.

The instrument displays the configuration & field calibration menu screen. The alphanumeric screen now acts as a prompt to help you through the configuration process.

An example of this display is shown in Fig. 4.5:

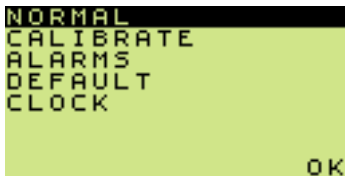




Fig. 4.5 Configuration & Field Calibration Menu

## 4.2 ENTER DEFAULT MENU

To enter DEFAULT menu:

- Use the the UP  or DOWN  buttons to scroll through the options until 'DEFAULT' is highlighted in the display as shown in Fig. 4.6:

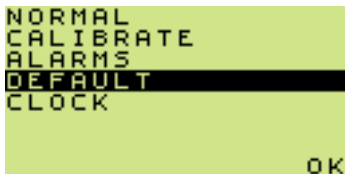



Fig. 4.6 'Default' Highlighted

- When 'DEFAULT' is highlighted, press OK .

The following display, Fig. 4.7, will request the default code to be entered.



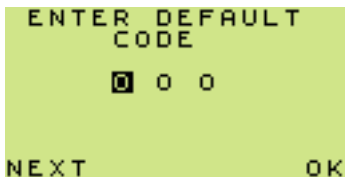






Fig. 4.7 Enter Default Code

#### 4.2.1 Enter the Default Code:

To enter DEFAULT code (777):

- Press the UP  or DOWN  buttons to alter the highlighted digit.
- Press NEXT  to select the next digit.
- When all three digits have been entered, press OK  to accept.

Once the correct Default code has been entered, the following screen, Fig. 4.8, is displayed:

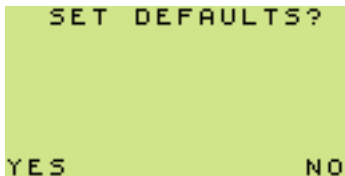



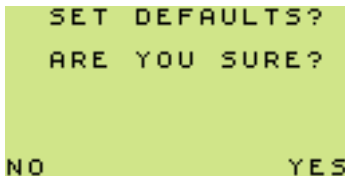
Fig. 4.8 Set Defaults

To accept the factory-set defaults option:

- Press YES .

The following screen, Fig. 4.9, will request confirmation of this option.

Selecting NO will return to configuration & field calibration menu.



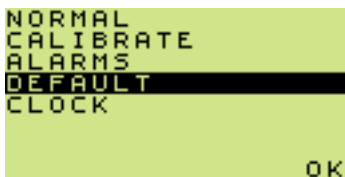
*Fig. 4.9 Confirm Option*

If you are sure that the factory-set defaults option is required:



- Press YES  to confirm.

The display will then return to the configuration & field calibration menu as shown in Fig. 4.10.


Selecting NO will return to configuration & field calibration menu.



*Fig. 4.10 Configuration & Field Calibration Menu*

If you wish to now enter another configuration or field calibration function or return to operational (normal) mode, use the UP  or DOWN  buttons to highlight your option.

To select highlighted option:

- Press and hold OK .



---

## CLOCK CONFIGURATION

Clock configuration allows simple set-up of the Clock to be carried out without the use of additional equipment such as PC's or tools.



*Fig. 5.1 Button References*

The instrument must be switched on in Menu Mode, as detailed in the following procedure, then a code entered. For any other configuration, refer to manual or use only GMI software to ensure safe and proper function of these life-saving instruments.

## 5.1 SWITCHING THE INSTRUMENT ON

To switch the instrument ON:

- Press and hold the RH (PUMP) button .

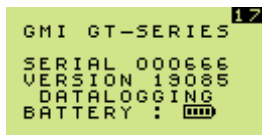


*Fig. 5.2 Switch ON*

The following screens are displayed in sequence:



*Fig. 5.3*





*Fig. 5.4*


Immediately following the GT Series screen display (Fig. 5.3) and while the instrument identification screen (Fig. 5.4) is displayed,

- Press the following buttons in sequence:

LH (INVERT) button 

RH (PUMP) button 

LH (INVERT) button 

RH (PUMP) button 

The instrument then begins its warm-up routine, which lasts approximately 30 seconds. During warm-up, a countdown timer appears in the top (RH) corner of the display.

(Refer to Chapter 1 for complete warm-up sequence).

If the correct button sequence is accepted, the countdown timer alternates with 'M' (menu) symbol.

The instrument now proceeds through the normal start up sequence, ending with a check of all sensors (only displayed if a sensor is faulty). If a sensor is faulty, the orange LED will be active and an audible 'beep' will be heard.

The instrument displays the Selecting NO will return to configuration & field calibration menu screen. The alphanumeric screen now acts as a prompt to help you through the calibration process.

An example of this display is shown in Fig. 5.5:

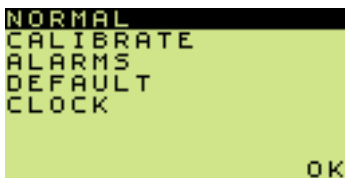




Fig. 5.5 Configuration & Field Calibration Menu

## 5.2 ENTER CLOCK MENU

To enter CLOCK menu:

- Use the UP  or DOWN  buttons to scroll through the options until 'CLOCK' is highlighted in the display as shown in Fig. 5.6:

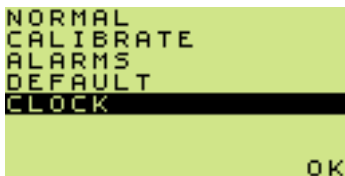


Fig. 5.6 'Clock' Highlighted

- When 'CLOCK' is highlighted, press OK .

The following display, Fig. 5.7, will request the clock code to be entered.



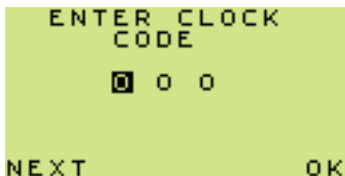






Fig. 5.7 Enter Clock Code

### 5.2.1 Enter the Clock Code

To enter CLOCK code (407):

- Press the UP  or DOWN  buttons to alter the highlighted digit.
- Press NEXT  to select the next digit.
- When all three digits have been entered, press OK  to accept.

### 5.2.2 Date and Time Set-up

The following DATE / TIME screen, Fig. 5.8, is displayed highlighting the 'hour' setting:

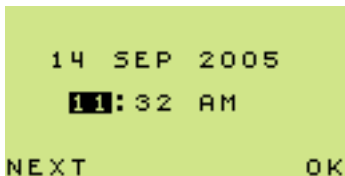





Fig. 5.8 Date / Time Set

### 5.2.3 Adjusting the Option Highlights


The highlighted option can be altered using the UP  or DOWN  buttons.

A single press will increment or decrement the highlighted option whilst a press and hold will cause the readings to change rapidly.

To highlight the next option:

- Press NEXT .

To save the changes made and return to the configuration & field calibration menu:

- Press OK .

Configuration Menu screen, Fig. 5.9 is then displayed.

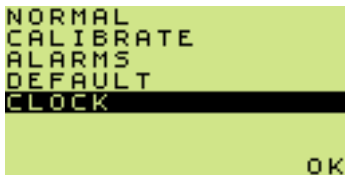





Fig. 5.9 Configuration & Field Calibration Menu

If you wish to now enter another configuration or field calibration function or return to operational (normal) mode, use the UP  or DOWN  buttons to highlight your option.

To select highlighted option:

- Press and hold OK .



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