

A. INTRODUCTION TO SITE OPERATIONAL PROCEDURES

A.1 General Introduction

A major factor in ensuring high quality data from the Automatic Urban and Rural Monitoring Network will be the regular visits to each monitoring site carried out by locally based personnel – the Local Site Operator (LSO).

This section sets out procedures to be followed by Local Site Operators in carrying out the tasks necessary to support the operation of equipment used to undertake gravimetric monitoring of airborne particulate concentrations of PM₁₀ and, where relevant PM_{2.5}, at sites in the UK.

In particular, it details the procedures relating to the operation of the Rupprecht & Patashnick (R&P) Partisol Plus 2025. It outlines procedures required for the necessary installation of unexposed filters for the collection of fine particulates, the downloading of filter record data, and the routine maintenance of the equipment necessary for continued optimal performance.

Together with these routine two-weekly functions, there may be instances when non-routine site visits will be necessary, in the event of apparent instrument or system malfunction.

Local Site Operators will have been trained in all aspects of normal equipment operation by the QA/QC unit. Operators must retain copies of instrument manuals at each site, and are required to familiarise themselves with normal operating principles and characteristics of the instrumentation.

The following sections of this manual describe step-by-step procedures that must be followed during site visits. It is essential that the procedures be followed as written, for two-weekly and non-routine site visits, to ensure that reliable and accurate air quality measurements are made.

The sequential sampling system of the Partisol Plus 2025 monitor enables up to 16 fixed 24-hour period particulate samples (00:00 – 00:00 hrs GMT) to be undertaken between routine site visits. **For the purposes of the current work, site attendance will be required every 14 days to exchange filter cassette magazines from the storage and supply positions within the units.**

A.2 Operational procedures

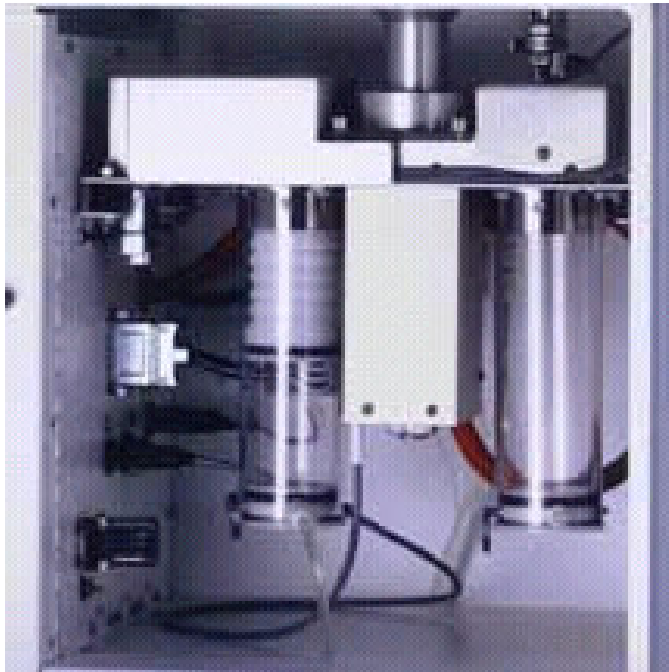
Summary:

- **The Partisol Plus 2025 unit is designed to gravimetrically measure ambient concentrations of suspended particulate.**
- **It has a unique filter storage and exchange system that allows it to operate unattended for upto 16 days. Data from the previous 2 weeks' exposure is required to be downloaded prior to the input of new**

The Partisol-Plus Sampler (Model 2025) is designed to meet the regulatory monitoring requirements for particulate sampling methods in the US, Europe and other countries. It is based on the gravimetric technique: a measured volume of ambient air is drawn into the sampler and passes through a pre-weighed filter. The filter is subsequently weighed in the laboratory. From the measured volume of air sampled, and the mass of particulate captured on the filter, it is possible to calculate the ambient concentration of particulate matter in the sampled air.

The filter storage and exchange system permits the operation of the device for up to 16 days of daily sampling between site visits (Figure A.1).

Figure A.1 Filter supply and storage positions



A.3 Filter Cassettes

Summary:

- **Loaded filter cassette magazines will be provided to the LSO every 2 weeks**
- **Each filter cassette magazine will usually hold 14 filter cassettes**
- **Each filter cassette will have a unique filter identifier, the loaded sequence of the filter cassettes in the magazine will be highlighted on attached correspondence sent when the filter magazine is dispatched**
- **It is important to attach the air supply tube to connector at the base of the supply filter cassette magazine on each occasion a new supply magazine is fitted**
- **Exposed filters cassettes (in the cassette magazine) must be returned to the supply laboratory IMMEDIATELY**

This section covers the filter cassette magazines used into the Partisol Plus 2025 Sampler.

A pre-loaded filter cassette magazine will be supplied to each LSO every two weeks.

The magazine holds a total capacity of 14 loaded filter cassettes. In rural and remote sites 15 filter cassettes may be loaded in the magazine. Each filter cassette will have a specific filter identifier. The ordered sequence in which the loaded filter cassettes are arranged within the magazine will be identified in attached correspondence (Filter Exposure Sheet) when dispatched by the supply laboratory.

The magazine will be received with an orange cap on the upper end.

The magazine must be sealed with the orange cap during transportation in the metal transport container in order to avoid the risk of contamination and damage to the filters. **All transport of magazines to and from the supply laboratory must take place using the metal transport container.**

A.4 STATUS MODES

Summary:

- Different status modes reflect the current operating conditions of the Partisol 2025 equipment
- Where 'normal' operation of the equipment is interrupted as a result of equipment failure, the equipment will enter the ERROR mode
- Relevant error codes will be displayed in the ERROR status code screen.

The Partisol 2025 operates in a number of modes that reflect the current status of the equipment. The current mode is displayed in the upper right-hand corner of the **Main Screen** (e.g. Figure A.2), as well as in the same position of other screens. Pressing the <Run/Stop> softkey button enables the user to select the different modes.

Figure A.2 Main Screen

Stat :	Partisol 2025	Mode:		
Current Time :	09.27 97/07/23			
Start Sample :	00.00 97/07/24			
Stop Sample :	00.00 97/07/25			
Filter ID :	123456			
Cassette ID :	100123			
	Blan	No		
Help	Stats	FiltSet	Data	Setup

The modes are:

STOP mode: in this mode the user defines the sampling programme using the SAMPLING SETUP SCREEN and the FILTER SETUP SCREEN. It is not necessary to enter this mode to exchange the filter cassette magazines since these can be swapped while the device is sampling. Pressing <Run/Stop> in this mode will cause the sampler to advance to the WAIT or SAMPLING operating modes dependent upon the pre-defined sampling criteria.

WAIT mode: the Partisol-Plus Sampler resides in this mode until the user-defined sampling conditions are met for the next filter exposed. Pressing <Run/Stop> in this mode will cause the sampler to enter the AUDIT or STOP operating modes.

SAMPLING mode: whilst in this mode the sampler is in the user defined sampling interval, e.g. midnight - midnight. The device controls the sample stream at the volumetric flow rate at the default sample flow rate of 16.7 l/min. Once the ending conditions are met, the sampler

attempts to exchange filter cassettes. Once the last sampling interval has been complete, the sampler switches to the DONE mode. Pressing <Run/Stop> when in this mode offers the user the choice of entering the AUDIT or STOP operating modes.

DONE mode: the sampler enters the DONE mode if the filter cassette supply magazine runs out of filter cassettes. Pressing <Run/Stop> in this mode will cause the sampler to enter the STOP operating mode. Once running and if continual supplies of filters are provided, the Partisol Plus will never enter into the DONE mode.

ERROR mode: typically, two critical types of status conditions will force the sampler to enter the ERROR mode:

- 1.) the measured flow rate deviates beyond the acceptable levels of error (code 'S1')
- 2.) the sampler detects an error in the filter exchange (code 'X').

In addition, any problems in the supply of power to the unit will give the error code 'Z'.

Pressing <Run/Stop> in this mode will cause the sampler to return to the STOP operating mode.

A.5 Sampling set-up

Summary:

- **The default BASIC programme on the Partisol Plus unit defines fixed 24 hour sampling periods from midnight to midnight**
- **As long as a continual supply of filters is provided, the sampler will continuously sample using the default BASIC programme settings**
- **During the initial site visit it is important to set the start date of the sampling as that following the day of attendance**

The Partisol 2025 is set to use the default <BASIC> programme for sampling. This is the most commonly used programme and specifies a 24-hour sampling period from midnight - midnight.

In this programme the sampler changes filter cassettes and samples continuously for the same duration on each of the filters until there are no more filters in the filter supply magazine.

A.6 Head cleaning

Summary:

- **Cleaning of the PM₁₀ and PM_{2.5} SCC inlets is required every 4 weeks**
- **Both the acceleration and collection assemblies of the PM₁₀ head are required to be cleaned**
- **Care and attention must be paid during the cleaning procedures.**

The PM₁₀ and/or PM_{2.5} inlets should be cleaned at least monthly to prevent the build-up of particulate matter and contaminants. The cleaning materials used are:

- lint free tissues
- cotton buds
- 1% Decon 90 in distilled water
- distilled water

Prior to cleaning the inlet it is necessary to cease active sampling of the unit by disabling the pump. It should not be necessary to turn the unit off. The procedures in Section B should be followed in order to disable the pump.

A.7 Filter data records

Summary:

- **Data relating to the exposure for each filter identifier are located within a unique record data set**
- **Access to the full data set relating to each record is made through accessing a number of discreet summary screens**
- **It is necessary to enter five data screens in order to record all relevant information for each filter identifier**

Data for each filter exposed in the Partisol Plus sampler are stored as a separate record of filter data. For readability, the sampler splits the display of data records among five screens:

- Filter Data Time screen
- Filter Data screen
- Filter Data Status Codes screen
- Filter Data Averages screen
- Power Failures screen

For each filter identifier loaded into the Partisol Plus sampler a separate record number is designated.

B. REGULAR DUTIES TO PERFORM ON SITE

B.1 Filter Changeover

Filter cassette magazines may be exchanged in any of the sampler's operating modes (see above).

Filter cassette magazines containing new filters must be installed on the left (supply) side, while magazines receiving exposed filters must reside on the right (storage) side.

Perform the following steps to perform Filter Changeover:

- 1) Open the enclosure of the Partisol 2025 Sampler.
- 2) The right hand side magazine (aka. "storage") contains filters that have already been exposed. The left hand side magazine (aka. "Supply") contains filters that have not been exposed.
- 3) Remove the magazine of exposed filters from the right hand side. Rotate anticlockwise and pull down the filter cassette magazine to remove it.
- 4) Remove the last filter from this magazine. The "RP Code" (Filter Reference) is stamped on the bottom of the metal screen below the filter. Write this ID on both the Filter Exposure Sheet and the Checklist. Replace the filter carefully back into the magazine of exposed filters.
- 5) Detach the air pressure supply tube to the air connection at the base of the left hand side (Supply) filter cassette magazine.
- 6) Rotate the left hand Supply magazine anticlockwise and pull down on the filter cassette magazine to remove it.
- 7) Assuming there have been no faults with the instrument, this should be empty (as all the filters will have been exposed and moved over to the storage cassette over the past 2 week period). Should any unexposed filters be remaining in the supply (left) side magazine, then make a note of the RP codes on both the Filter Exposure Sheet and the checklist, carefully add the unexposed filters to the top of the newly removed Supply magazine of exposed filters.
- 8) Remove the orange cap from the top of the supplied filter cassette magazine containing the unexposed filter cassettes. Place the orange cap over the open end of the magazine of exposed filters to protect its contents during transportation.

9) The former Supply magazine will now become the Storage magazine for the next fortnight. Locate the mounting studs on the right hand (Storage) side of the Partisol, match the slots in the filter cassette magazine with the mounting studs in the sampler. Push the now empty supply filter cassette magazine upward and rotate clockwise to lock it into place.

10) Prior to installing the new filter cassette magazine check that the filter identifier (RP Code) of the top-most cassette in the magazine corresponds with the filter identifier written on the correspondence sheet and that the O-ring is in good condition.

11) Locate the mounting studs on the left hand (Supply) side of the Partisol. With the air connection of the filter cassette magazine facing toward the user, matching the slots in the filter cassette magazine with the mounting studs in the sampler.

12) Push the filter cassette magazine upward and rotate clockwise to lock it into place.

13) Important – do not forget to attach the air pressure supply tube to the air connection at the base of the new supply filter cassette (the one on the left).

14) Once the storage filter cassette magazine has been capped, place the filter cassette magazine into the metal transportation container and send immediately, with the appropriate filter exposure sheet, to:-

AURN Filter Weighing Service
John Carrington
Analysis Services Manager
Bureau Veritas
The Heath Business and Technical Park
PO Box 13
Runcorn
Cheshire
WA7 4QF
01928 517 800

It is important that the exposed filter cassette magazine is returned to the laboratory immediately due to the requirement to dispatch a re-loaded filter magazine cassette within 5 working days. Failure to return the exposed filter cassettes within this time-scale will mean that the provision of unexposed filters cannot be guaranteed when the next site attendance is due (i.e. within 10 working days of a site visit).

15) After each two-week site visit a completed Partisol Checklist should be sent with a copy of the appropriate filter exposure sheet to:

Patricia Bowe
Bureau Veritas HS & E Ltd
Great Guildford House

30 Great Guildford Street

LONDON SE1 0ES

Tel: 0207 902 6139

Fax: 0207 902 6149

B.2 Filter Identifiers

Perform the following steps to Input Filter Identifiers and Filter Reference codes

The following procedures should be followed in order to input filter identifiers from the filter exposure sheet accompanying a new magazine of unexposed filters:

Inputting the Filter Identifiers

- 1) Press <F3:FiltSet> in the Main Screen (Figure A.1).
- 2) Press <F4:FiltLst> in the Time Based Filter Setup Screen (Figure B.1).

Figure B.1. Time Base Sequential Sampling Setup Screen

Stat : OK		Partisol 2025		Mode:Done
Current Time :		15.34 97/07/23		
Start Sample :		00.00 97/07/24		
Stop Sample :		12.00 97/07/25		
Filter ID :		38101		
Cassette ID :		RP100123		
Blank :		No		
Help	Prev	Next	FiltLst	*More*
Function Keys in Browse Mode				
Help	Prev	Next	FiltLst	*More*
	Reset	+ Hour	+ Day	*Back*
Function Keys in Edit Mode				
-List	+ List	Bksp		

The Filter List Setup Screen will be displayed which will identify columns in which the identifiers for the individual filter IDs, as well as the filter cassette IDs can be input (Figure B.2).

- 3) Use the arrow ←, ↑, →, ↓ to move the cursor to the position of the first filter identifier input location.
- 4) Press <EDIT> on the soft-key pad.

Figure B.2 Filter List Setup Screen

Type	Filter ID	Cassette ID	Blank	
1 P	38101	RP 099001	No	
2 P	38102	RP 099002	No	
3 P	38103	RP 099003	No	
4 P	38104	RP 099004	No	
:	381**	RP 0990**	No	
14 P	38114	RP 090014	No	
	FiltSet	Copy	Insert	Delete
Function Keys in Browse Mode				
	FiltSet	Copy	Insert	Delete
Function Keys in Edit Mode				
-List	+List	Bksp		

5) Input the Filter Identifier as described in the filter exposure sheet provided by the filter provider (Bureau Veritas).

Use the arrow ←, ↑, →, ↓ and the number soft-keys to input filter identifiers for each of the filters loaded into the Partisol 2025 filter cassette magazine. Where the filter provider has provided an additional Filter Reference (RP Code) input this ID also.

6) Press <ENTER> on the soft-key pad to confirm the filter identifiers.

7) Press <ESC> twice to return to the Main Screen.

8) Once the filter identifiers have been input they can be checked by pressing <F3:FiltSet> when in the Main Screen menu (Figure 2.2) followed by <F4:FiltLst>.

Once checked, press <ESC> the necessary number of times to return to the Main Screen.

Check the start sampling date and time are correct. If the date and time are incorrect they must be amended (see procedures below) before the Partisol unit can be left.

If there is an error code in the top left hand corner of the screen and /or the status in the top right hand screen corner displays any code other than WAIT or SAMP then any problems must be solved and the error codes cleared before amendments to sample start date and time can be made.

C. OCCASIONAL DUTIES TO PERFORM

C.1 PM₁₀ Inlet Head Assembly Cleaning

Follow the procedures outlined below to remove the inlet and clean the inlet head.

1) Whilst the unit is in the sampling mode (SAMP) press <RUN/STOP> twice on the keypad.

A dialogue box asking 'Do you want to AUDIT or STOP?' will be shown. Press <F1:AUDIT> to stop the pump.

2) The PM₁₀ head is mounted on the Partisol sample inlet tube above the housing of the sampler. Use a ladder stored in the cabin, with due regard to personal safety, to gain access to the top of the Partisol unit. Extra care should be taken if conditions are wet and slippery. (THE READER IS REFERRED TO THE WORK AT HEIGHT REGULATIONS 2005 – PLEASE FOLLOW WORKING INSTRUCTIONS ON SAFE USE OF LADDERS, AND ENSURE THAT LADDER IS AT CORRECT ANGLE AND IS SECURED AT TOP AND BOTTOM).

3) Hold the Partisol inlet tube firm with one hand and carefully lift off the complete PM₁₀ (and sharp cut cyclone for PM_{2.5} sampling) assembly, holding it at the point where it is attached to the inlet tube. The unit is sealed to the tube with two O-rings and it may be necessary to gently twist the assembly to and from whilst lifting in order to remove it.

4) Protect the inlet tube so that rain or snow cannot enter whilst the head is removed, and take the head inside the monitoring cabin for cleaning.

5) Separate the upper and lower inlet halves by unscrewing (counter-clockwise) the Acceleration assembly from the Collection assembly (see Fig C.1).

6) If the Acceleration or Collection Assemblies appear to be faulty, excluding the need to re-apply grease/silicon, please do not proceed with cleaning, instead immediately report the problem to Bureau Veritas.

Cleaning the Acceleration Assembly

1) Mark the upper and lower plates of the assembly with a pencil so that the unit can be correctly aligned on re-assembly.

2) Unscrew the four Philips screws from the top plate and remove the plate and four spacers.

3) Clean the top plate, deflector cone, insect screen, internal walls and the underside plate.

4) Inspect the condition of the large diameter O-ring and inform SSE if it is worn or damaged. Wipe any grease off with a tissue and apply a THIN coating of silicon grease to the O-ring and to the aluminium threads.

5) Carefully re-assemble, using the pencil marker to align the top and bottom plates.

Cleaning the Collector Assembly

1) Disconnect the rain jar assembly from the lower collector plate assembly. Remove the rain jar and clean. Clean inside the brass tube with cotton buds and Decon 90. Rinse with distilled water.

2) Clean the walls, the three vent tubes and the base of the assembly with a lint free cloth soaked in Decon 90. Rinse with distilled water and dry with lint-free wipes.

3) Use cotton buds and Decon 90 to clean the three vent tubes, base of the assembly and weep hole in the collector plate where the moisture runs out to the moisture trap. Rinse with distilled water and dry with lint-free wipes.

4) The cap of the rain jar has a cork gasket apply a THIN film of silicon grease to it before refitting the jar. If the sealing gasket is neoprene, no grease is required.

5) Re-connect the rain jar assembly to the lower collector assembly, ensuring the rain jar is sitting vertically.

6) Inspect the condition of the two inlet tube O-rings and inform SSE if they are worn or damaged. Wipe off any grease present and apply a VERY THIN coating of silicon grease to the O-rings.

7) Clean the internal threads of the assembly with a lint free tissue and Decon 90.

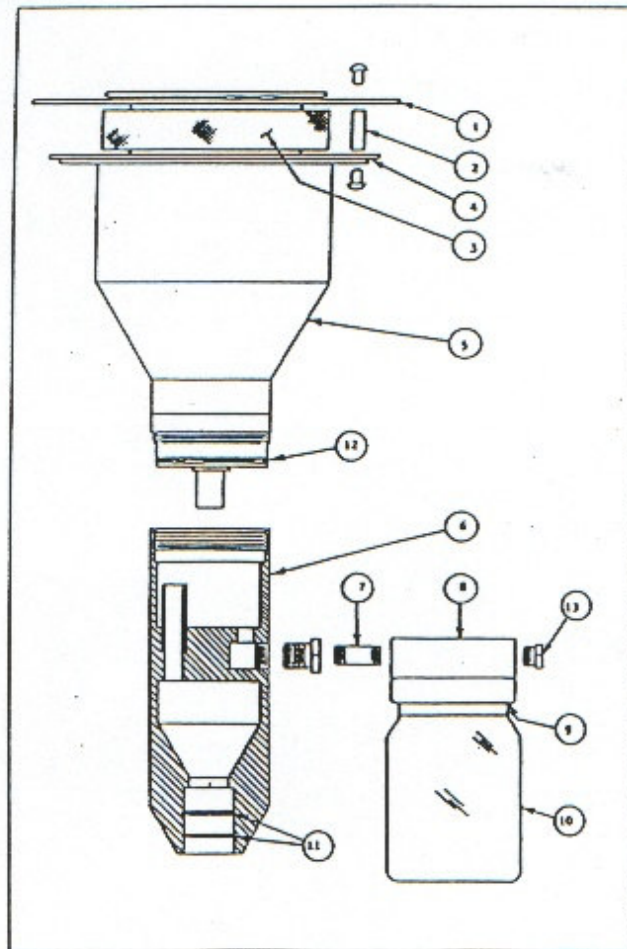
Replacing the Head

1) Screw (clockwise) the Acceleration and Collection assemblies together until the threads are hand tight. DO NOT OVER-TIGHTEN.

2) Place the complete assembly back onto the Partisol inlet tube. Hold the Partisol inlet tube firm with one hand and carefully lift on the complete PM₁₀ carefully locating the point where it attaches to the inlet tube.

3) Once the inlet is cleaned and re-located in position; press <RUN/STOP> on the soft-key pad to re-commence sampling and complete the current day's sampling on the same filter for which sampling was earlier interrupted.

Figure C.1 PM₁₀ Inlet Assembly



- | | | | |
|----|---------------------------------|-----|--------------------------|
| 1. | Top Plate with Deflector Cone | 8. | Cap |
| 2. | Spacer | 9. | Cap Seal |
| 3. | Protector Screen | 10. | Rain Jar |
| 4. | Lower Plate with Rain Deflector | 11. | O-Ring |
| 5. | Acceleration Assembly | 12. | O-Ring (Impactor Nozzle) |
| 6. | Collector Assembly | 13. | Socket Plug |
| 7. | Fitting | | |

C.2 Cleaning the Sharp Cut Cyclone (SCC)

In addition to the routine cleaning of the PM₁₀ sample inlet, it will be necessary for local site operators to clean the sharp cut cyclone (SCC) used in the Partisol units measuring PM_{2.5} (Fig.C.2).

Fig. C.2 Sharp Cut Cyclone –

PM_{2.5} shown in stand alone profile and in conjunction with a PM₁₀ sampling head.



- 1) To gain access to the SCC unlatch the top cover of the Partisol 2025 sampler.
- 2) Lift the SCC unit from the upper part of the enclosure.
- 3) Holding the SCC unit upright in the position which it has been removed from its 'plug-in' position, pull the 180° size separation unit from the site of the main accelerator chamber.
- 4) The separation unit can be cleaned simply by blowing into the orifice at the top of the unit.

- 5) Clean the walls of the main accelerator chamber with a lint free cloth soaked in Decon 90. Wipe clean with a dry lint-free tissue.
- 6) Once cleaned, push the separation unit back into position on the accelerator chamber and re-locate the SCC unit into its plug-in position.
- 7) Close the top cover of the Partisol 2025 unit making sure that the down tube of the PM₁₀ inlet head locates home with the SCC unit.

C.3 Determining and clearing error status codes

Summary:

- **When the unit has entered the ERROR mode it is important to determine which errors have occurred.**
- **Where error codes relate to the exchange and provision of filter cassettes it is important to clear these before sampling is re-started**
- **Where any other error codes are given contact Bureau Veritas for advice**

Status codes are found in the top left hand corner of the screen, MODE in the top right hand corner.

The following section of the manual highlights how the user can interrogate the Partisol Plus unit to determine the error codes and how to clear them so that normal operation of the unit can continue.

Where an error is encountered that is not covered in this manual, the reader is referred in the first instance to the manufacturer's manual accompanying the equipment. If, after reference to the manufacturer's manual the problem is still evident, the Local Site Operator is requested to inform Bureau Veritas and a service engineer will be called.

Where normal operation of the Partisol Plus sampler is interrupted, either through the occurrence of a power failure or, where problems have been encountered with the exchange of filter cassettes the unit will enter into the ERROR status mode as discussed in the previous section.

Identifying the exact reason for the unit entering the ERROR status mode can be determined by interrogating the equipment using the soft-keys as follows:

Press <F2:Stats> in the Main Screen (Figure C.3).

Figure C.3 Main Screen Setup

Stat :	Partisol 2025	Mode:
Current Time :	09.27 97/07/23	
Start Sample :	00.00 97/07/24	
Stop Sample :	00.00 97/07/25	
Filter ID :	123456	
Cassette ID :	100123	
	Blan	No
Help	Stats	FiltSet
		Data
		Setup

The Temperature and Pressure Statistics Screen will be displayed (Figure C.4)

Figure C.4 Temperature and Pressure Statistics Screen.

Stat :	Temp / Pressure		Mode:Wait
	Current	Average	
Filter Temp:	25.8	21.2 C	
FilterCompTemp:	25.4	21.1 C	
Ambient Temp:	25.8	21.1 C	
Ambient Pre:	751	748 mmHg	
Ambient %RH:	72	68%	

StCode	Sample	User/O	Wind	System
--------	--------	--------	------	--------

Press <F1:StCode>. The Status Codes Screen will be displayed.

If the system is currently in the 'OK' Status the following dialogue box will be shown:

Figure C.5. Status Codes Screen

OK	Status Codes	STOP
> OK No Status Conditions		

-Rec	+Rec	MoreDat	IntDat	
------	------	---------	--------	--

If an error has occurred during the pre-defined sampling period an ERROR code will be displayed in the Status Codes Screen.

The most common status codes likely to be experienced are:

- Z *Power Failure*
- F *Flow Out of Range*
- S *Flow Stop*
- X *Filter Exchange Failed*
- N *No Filters*

Error (status) code N is accompanied with DONE in the top right hand corner of the screen.

Error codes S, R, X and Z are often but not always shown with Mode: ERR.

If any of the above error codes are shown in the Status Code Screen (Figure C.5) it is important that the error be corrected prior to the commencement of the next sampling period.

Filter Exchange Failure

The most frequently experienced error code is X ERR, filter exchange failure. An attempt should be made to clear the problem by performing the following procedure:

- 1) With the Partisol unit displaying the Main Screen (Figure C.3) press <F2:StCode> to enter the Status Code screen (Figure C.6)

Figure C.6. Status Codes Screen

X		Status Codes		ERR	
> Filter Exchange Failure					
Reset					FXCHG

2) Press <F5: FXCHG> to display the Filter Exchange Prompt Screen (Figure C.7)

Figure C.7 Filter Exchange Prompt

OK				ERR	
Status Codes Reset					
Reset					FXCHG

3) Press <F5: FXCHG> again to display the Filter Exchange Screen (Figure C.8). The status code in the top left hand corner of the screen will have changed from X to OK.

Figure C.8 Filter Exchange Screen

Filter Exchange Step:---						
		Valves				
					1	2
Pressure	OFF	Pump:	OFF	NewFilt	OFF	OFF
Shuttle:	OFF			LiftUP	ON	OFF
MagPres	OFF	Shuttle		LiftDn:	OFF	OFF
LiftPush:	OFF	Rdy:	ON	PushDn:	ON	OFF
PushPre	OFF	Ext:	OFF	PushUp:	OFF	OFF
ON/OFF		AmbFilt		FlowVal	Start	Misc

5) Press <F4: START> to begin the exchange process. If filter exchange is successful Status code OK will be displayed in the top righthand corner of the screen.

If filter exchange has been unsuccessful a code e.g. SHUTRDY will be displayed in the top right hand corner. This indicates during which phase of filter exchange the process failed.

6) If the filter exchange procedure above was unsuccessful, attempt to clear the filter manually to the filter storage cassette.

7) After the jammed filter or exchange failure has been rectified press <ESC> until the Main Screen is displayed.

8) Press <R/S> until the MODE is changed to WAIT.

9) Check the start day is correctly set to commence sampling at midnight. If the start time is wrong follow the procedure in Section C.4

If manual attempts fail to free the filter, or if any codes other than those relating to the filter exchange and provision are displayed, please notify Bureau Veritas. If necessary, a service engineer will be called.

10) Other Errors: once rectified, most errors can be cleared by pressing <F2: STCode> in the Main Screen (Figure C.3) then <F1:Reset> in Status Codes screen (Figure C.6) followed by <YES> or <NO> depending upon whether the fault has been rectified. If faults are cleared return the unit to the WAIT mode ready to commence sampling at midnight the next day (see procedures in Section C.4 later in this document).

C.4 Setting the start date

1) Select <F3:FiltSet> from the **Main Screen** (Figure C.3).

The **Basic Filter Setup Screen** will be shown (Figure C.9)

The necessary start and finish time will be displayed for the first filter cassette identified as being present in the supply filter cassette magazine. The sequential nature of the Partisol Plus 2025 means that once the sampling has finished on the first filter cassette, the second filter cassette will automatically be loaded and the same sampling interval (i.e. 24 hours) will be used.

2) Press <EDIT> on the key pad.

Using <F1:-List>, <F2:+List> and <F3:Bksp> and the arrow keys ←, ↑, →, ↓ set the date for commencement of sampling.

3) Press <Enter>

4) Press <STOP/RUN> until the unit enters WAIT mode.

This should be indicated in the upper right-hand corner of the **Main Screen** with the display WAIT.

Figure C.9. The Basic Filter Setup Screen

Stat : OK		Filter Setup		Mode:Stop
		Start Date : 97/07/24		
The Current Time is : 15:34 97/07/23				
Sample will start at : 00:00 97/07/24				
Each sample will collect for 24:00 hours				
Flow 1 :			0.0 l/min	
Help	+ Day	NextDay	FiltLst	
Function Keys in Browse Mode				
Help	+ Day	NextDay	FiltLst	
Function Keys in Edit Mode				
- List	+ List	Bksp		

C.5 Perform the following steps to retrieve Filter data records

Summary:

- **Data relating to the exposure for each filter identifier are located within a unique record data set**
- **Access to the full data set relating to each record is made through accessing a number of discrete summary screens**
- **It is necessary to enter five data screens in order to record all relevant information for each filter identifier**

For each filter identifier loaded into the Partisol Plus sampler, a separate record number is designated. If required to do so by Bureau Veritas, these records may be manually noted using the procedures below, or they may be downloaded to a laptop computer.

- 1) To manually access the data records Press <F4: Data> when in the **Main Screen** (Figure C.3) to enter the **Filter Data Time Screen** (Figure C.10).
- 2) Press <F3: MoreDat> to scroll through the current Filt ID and Cass ID information.
- 3) Press <F1: -Rec> repeatedly to return to the first Filt ID of the new cassette installed during the previous exchange visit.

Figure C.10. Filter Data Times Screen

Stat: OK		Filter Data Times		Rec: 7
Set Sample Start :		00:00	1998/06/01	
Set Sample Stop		00:00	1998/06/02	
Actual Sample Start :		00:00	1998/06/01	
Actual Sample Stop :		00:00	1998/06/02	
Valid Elapsed Time:		24:00		
Total Elapsed Time :		24:00		
- Rec	+ Rec	MoreDat	IntvDat	DwnLoad

- 4) Record the following information on the record sheet for each of the exposed filters:

Stat:

Rec:

Actual Sample Start: (date only)

Actual Sample Stop: (date only)

Valid Elapsed Time:

Total Elapsed Time:

5) Press <F3: MoreDat> to move to the **Filter Data Screen** (Figure C.11). The sampler remains in the same record of the filter data when switching among filter data-related screens.

Figure C.11 Filter Data Screen

Stat: OK	Filter Data	Rec: 7
Filter ID : 230434	Volume : 6.0	
Cass ID : RP100123	% CV : 0.1	
Max Temp Diff 0.8 at 15:38 1998/06/01		
Id1: "01230000010032819970721160000"		
Id2:		
- Rec	+ Rec	MoreDat
		IntvDat
		DwnLoad

6) Record the following information on the record sheet for each of the filters for which sampling has been carried out:

Filter ID:

Volume:

7) Press <F3: MoreDat> to move to the Filter Data Status Codes screen. There is no need to record any information from this screen as prior interrogation of the system has taken place to determine the occurrence of ERROR status

8) Press <F3: MoreDat> to move to the **Filter Data Averages Screen** (Figure C.12). The sampler remains in the same record of the filter data when switching among filter data-related screens.

Figure C.12 Filter Data Averages Screen

Stat: OK	Averages			Rec: 7
	Min	Ave	Max	Average
Flow:	16.6	16.7	16.7	WDir : 0
FltT:	+22.2	+22.5	+22.7	WSpd: 0.00
AmbT:	+22.3	+22.5	+22.7	WDir: 0.00
Pres:	751	752	752	AI1: 000.0
%RH:	65	69	72	AI2: 000.0
				AI3: 000.0
-Rec	+Rec	MoreDat	IntvDat	DwnLoad

9) Record the following information on the record sheet for each of the filters for which sampling has been carried out:

- Flow:
- FltT:
- AmbT:
- Pres:
- %RH:

10) Press <F3: MoreDat> to move to the **Power Failures Screen** (Figure C.13). The sampler remains in the same record of the filter data when switching among filter data-related screens.

Figure C.13 Power Failures Screen

Power Failures			Rec: 7
2:24 1998/05/26			
6:43 1998/05/26			
-Rec	+Rec	MoreDat	IntvDat

11) Record any power failures occurring over the exposure period in the comments section of the record sheet.

12) Press <ESC> to return to the **Filter Data Times Screen** (Figure C.10).

13) Press <F2: +Rec> to advance to the next Filt ID record

14) Repeat procedures set out in points 4 to 13., noting values accordingly, until all the Filt ID's have been recorded and the current Filt ID is displayed.

15) Return to the **Main Screen** by pressing <ESC> the necessary number of times.

16) **After all records have been noted / downloaded to a laptop** load a new Filter Cassette Magazine, Filter identifiers and RP codes using the procedures described earlier.

Appendix B contains the record sheet for which the parameters downloaded using the procedures defined in the previous pages should be used.

Local site operators should photocopy the pages of the record sheet accordingly.

Once complete, copy the record sheet and fax through to the CMCU contact :

Patricia Bowe
Bureau Veritas HS & E Ltd
Great Guildford House
30 Great Guildford Street
LONDON SE1 0ES
Tel: 0207 902 6139
Fax: 0207 902 6149

Any problems or unusual occurrences should also be notified to the QAQC contact at AEA Energy & Environment, so that these can be taken into account during data ratification:

Alison Loader
AEA Energy & Environment
Building 551.11
Harwell Business Centre
DIDCOT
OX11 0QJ
0870 190 6518
alison.loader@aeat.co.uk

However, it is not necessary to routinely copy the record sheets to the QA/QC unit.