



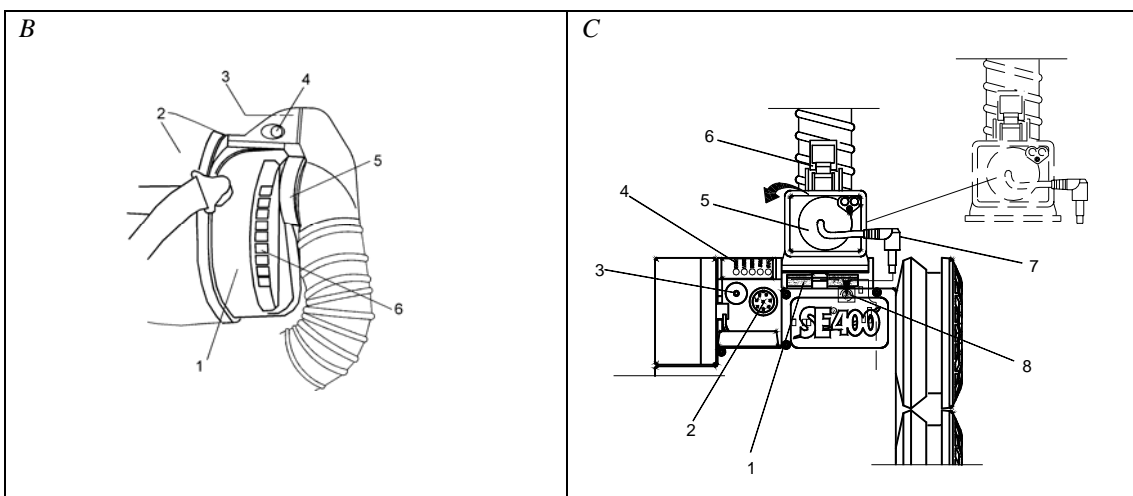
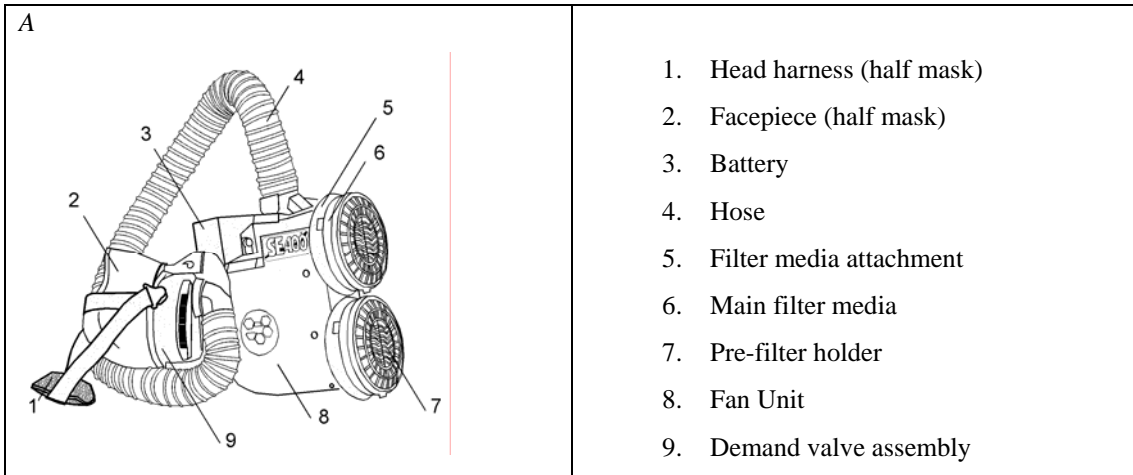
*Fan-supplied Positive-pressure Breath-responsive Respirator*



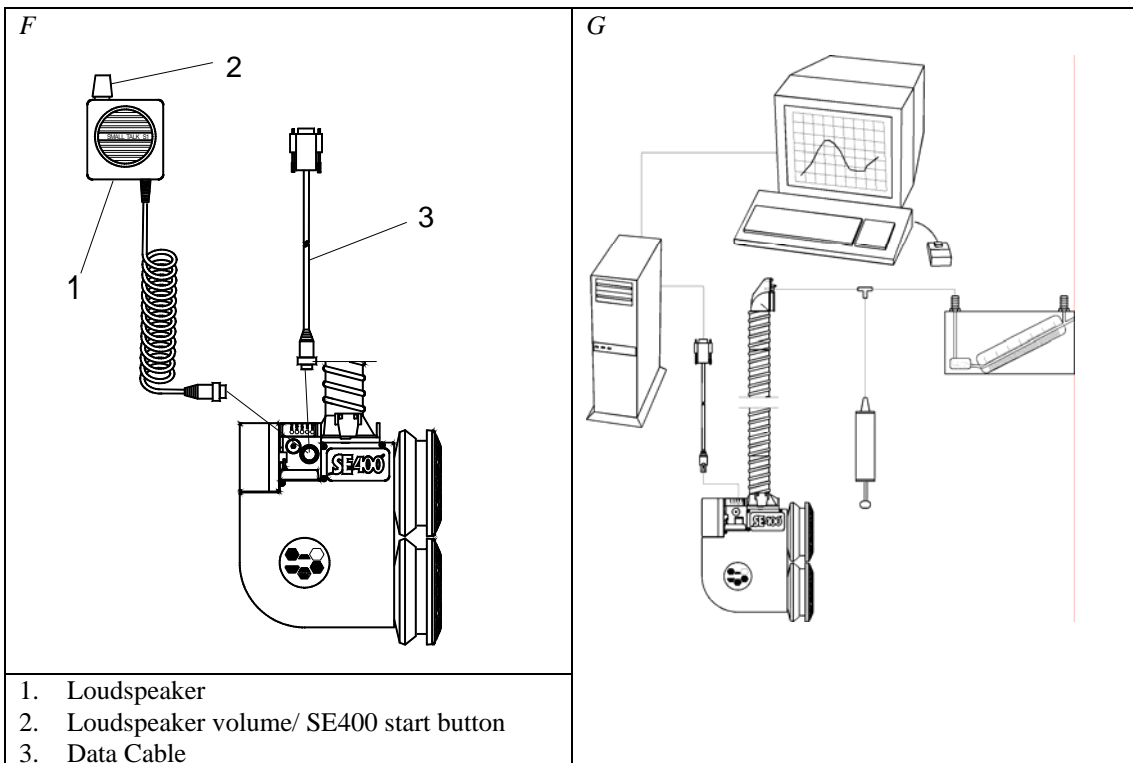
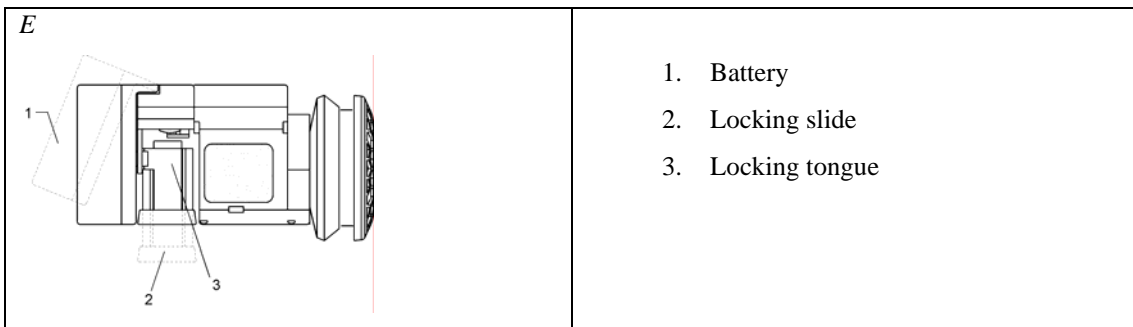
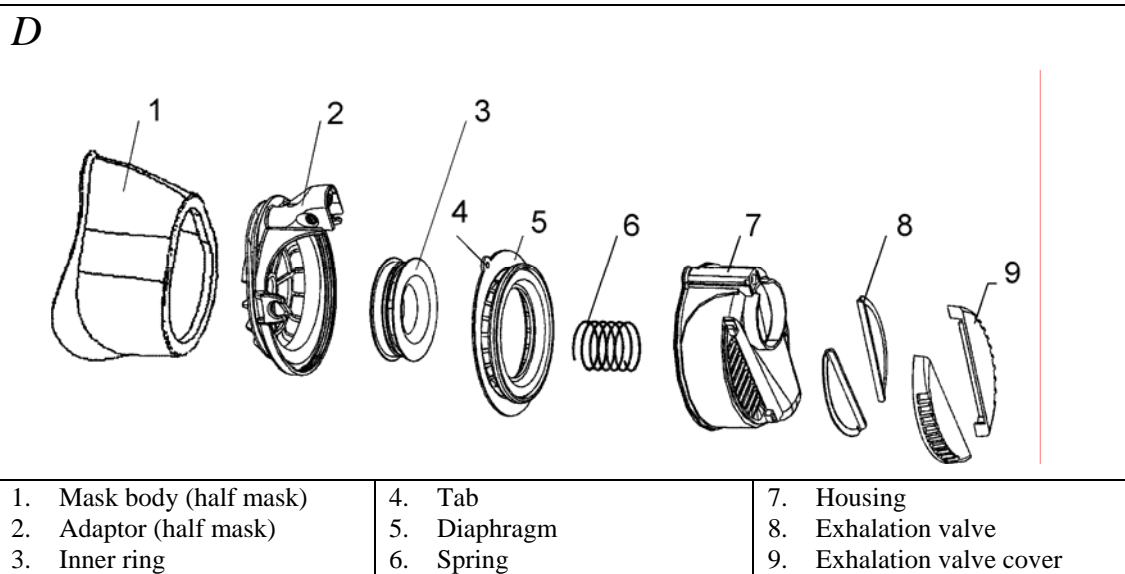
# ***SUPPLEMENTARY MANUAL***

## ***SE400 Advanced Functions***





1. Demand valve assembly  
 2. Facepiece (half mask shown)  
 3. Warning light  
 4. Locking tabs  
 5. Hose attachment  
 6. Exhalation valve
1. Flow chamber  
 2. Communication jack  
 3. On/off button  
 4. Status Lights  
 5. Hose  
 6. Hose locking clip  
 7. Microphone plug  
 8. Microphone jack (on circuit board inside flow chamber)



<b>INTRODUCTION</b>	<b>5</b>
<b>STATUS INDICATORS AND WARNINGS</b>	<b>6</b>
<b>MENU MODE</b>	<b>9</b>
<b>“SE-WIN” CONFIGURATION AND MANAGEMENT</b>	<b>12</b>
<b>MASK PRESSURE CALIBRATION CHECK</b>	<b>13</b>
<b>TROUBLESHOOTING</b>	<b>14</b>
<b>SE-DATA</b>	<b>15</b>
<b>IMPORTANT WARRANTY INFORMATION</b>	<b>15</b>

## INTRODUCTION

The SE400 is an **FPBR** (*Fan-supplied Positive-pressure Breath-responsive Respirator*).

An FPBR draws contaminated ambient air through air-purifying filter media and supplies it to the user's face mask. The greatest advantage of the SE400 FPBR over a PAPR (powered air purifying respirator) is that it responds to the user's breathing demands to ensure positive pressure in the mask at all times.

### Advanced functions

This manual describes the advanced features which are available only in the following SE400 models:

Model	Filter media type
<b>SE400A Advanced</b>	SEA clip-in filter media in silicone rubber holders
<b>SE400AT Advanced</b>	SEA threaded filter media per EN 148

This manual should be used as a supplement to the SE400 User's Manual which comes with every SE400.

All models of the SE400 provide the same high level of breathing protection. The **SE400A Advanced** and **SE400AT Advanced** give the user even more useful information during use, and have many more features which help organisations develop safer work practices.

### Advanced features

- Measurement of total volume of air flowing through the filter media and pressure drop across the filter media
- User-configurable filter end-of-life warning
- User-configurable warnings for the Self-Test function
- Warnings for missing filter media and clogged filter media
- Logging and downloading of important data on the operation of the SE400, including the nature of any events and the time they occurred. (Examples of logged events are power-on and power-off, mask off, self-tests, filter life resets, and all alarms and warnings)
- Real-time monitoring of mask pressure and filter pressure when connected to a personal computer
- Configuring of the SE400 to suit the user's needs
- SE400AT Advanced can be worn with a chemical suit specially designed for the SE400
- "SE-Data", a comprehensive personal protection management tool, including an extensive database of hazardous substances (supplied on CD-ROM)

**IMPORTANT INFORMATION FOR USE**

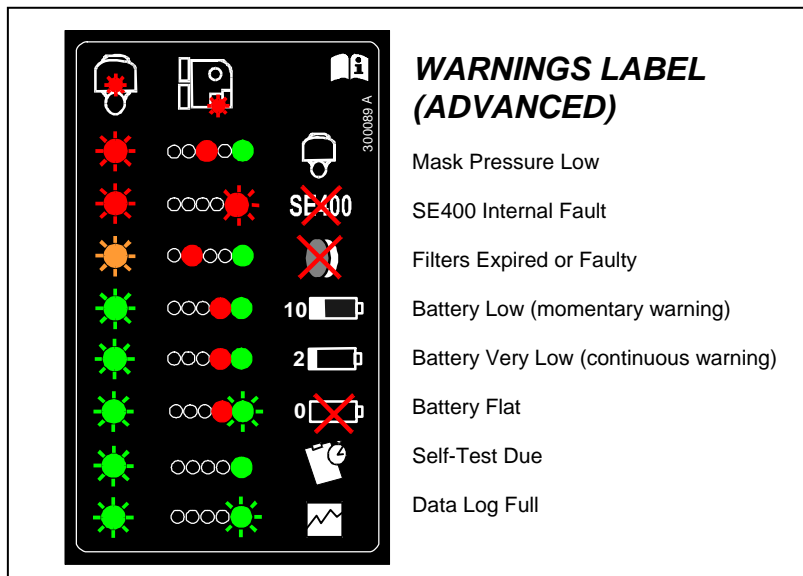
- **DO NOT USE** in atmospheres containing less than 20% oxygen
- **DO NOT USE** in atmospheres Immediately Dangerous to Life or Health (IDLH)
- **DO NOT USE** in atmospheres where the protection factor of the equipment is inadequate for the concentration and TLV (OEL) of the contaminant(s)
- **DO NOT USE** in atmospheres where the contaminants are unknown
- **DO NOT USE** in explosive atmospheres
- If you can taste or smell contaminants when using the SE400, or if you experience respiratory irritation, dizziness, nausea or similar discomfort, discontinue work and leave the area immediately. Ensure that:
  - the SE400 is operating properly
  - the correct filter media are fitted
  - the filter media use-by dates have not expired
  - the filter media are not overdue for replacement

**WARNING!**





The protection level of the SE400 is reduced when used with the power off; however, it continues to function as a negative pressure respirator.

**STATUS INDICATORS AND WARNINGS****WARNINGS LABEL ON FAN UNIT**


The SE400A Advanced and SE400AT Advanced fan units are fitted with an expanded Warnings Label which summarises the warning conditions likely to be encountered during operation. This label is shown below. For more information on the warnings refer to the following section.








**BATTERY STATUS INDICATION DURING START-UP:**

Status lights	Condition	What to do
	FIVE steady RED lights	STRONG charge No action required
	THREE steady RED lights	MEDIUM charge Be prepared to change battery during shift
	ONE steady RED light	WEAK charge Recharge battery or replace with fully charged battery
	PWR flashing GREEN + steady BATT indicator MOTOR DOES NOT START	Battery is FLAT Recharge battery or replace with fully charged battery

**STATUS LIGHTS DURING NORMAL OPERATION:**

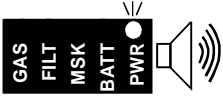
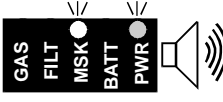
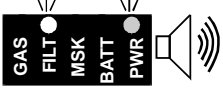





Status lights	Condition	What to do
	PWR steady GREEN	All functions normal Work normally

**WARNING AND FAULT CONDITIONS AT START-UP:**

Warning light	Status lights and buzzer	Condition	What to do
RED	<b>MOTOR DOES NOT START!</b> 	PWR flashing RED	Fundamental operation fault The SE400 cannot be used. Return to supervisor
RED	<b>MOTOR RUNS AT FULL SPEED!</b> 	PWR flashing RED	Secondary operation fault The unit can only be used in emergency mode. Return to supervisor
GREEN		PWR steady GREEN Buzzer sounds once per minute	Self-Test required (see note below) See supervisor Perform Self-Test
GREEN	<b>MOTOR RUNS AT FULL SPEED!</b> 	PWR steady GREEN Buzzer sounds once per minute	Self-Test required (see note below) See supervisor Perform Self-Test
GREEN	<b>MOTOR DOES NOT START!</b> 	PWR steady GREEN	Self-Test required (see note below) See supervisor Perform Self-Test

NOTE: The type of Self-Test warning depends on how the SE400 is configured. For more information see section “Menu Mode”.

**WARNINGS DURING OPERATION:**

Warning light	Status lights and buzzer	Condition	What to do
RED		PWR flashing RED. <b>MOTOR SHUTS DOWN!</b>	Critical Warning Major fault  Keep respirator on your face. Move <b>immediately</b> to safe area **. Return SE400 to vendor for repair.
RED		MSK steady RED	Negative pressure in the facepiece  Move to safe area **. Check equipment to find the cause of the problem
ORANGE		FILT steady RED <b>MOTOR SHUTS DOWN!</b>	Missing or faulty filter media detected  Keep respirator on your face. Move <b>immediately</b> to safe area **. Inspect and replace filter media
ORANGE		FILT steady RED Buzzer sounds once per minute	Filter media have expired  Move to safe area **. Replace filter media and reset filter life
GREEN		BATT steady RED, PWR steady GREEN Buzzer sounds once per minute	Low battery power • Approx 5 to 10 minutes of operation left *
GREEN		BATT steady RED, PWR steady GREEN Continuous buzzer	Very low battery power • Approx 2 minutes of operation left *
GREEN		BATT steady RED PWR flashing GREEN <b>MOTOR SHUTS DOWN!</b>	Battery is FLAT  Keep respirator on your face. Move <b>immediately</b> to safe area **
GREEN		PWR indicator flashing GREEN	Data log full  See supervisor Download data log

\* NOTE: These times can vary considerably depending on the condition of the battery.

\* NOTE: "Safe area" refers to an uncontaminated area.

## MENU MODE

The menu mode is operated via the ON/OFF button on the fan unit, while observing the status lights panel. The following functions can be performed using menu mode:

- Self-test
- Filter life reset

### **To use menu mode:**

Simply follow the instructions in the Menu Mode flow chart on the following page.

### **THE SELF-TEST**

The Self-Test is a simple, automated test that can be performed periodically by the user to check that the SE400 is functioning properly and calibrated correctly.

It is a test only. No re-calibration or resetting is performed.

The Self-Test checks the operation and calibration of:

- Mask pressure
- Filter life
- Air flow

### **“Self-Test due” warning function**

The SE400 has four user-configurable modes of warning when a Self-Test is due:

- Self-Test warning set to “OFF”: SE400 starts and runs normally, with no Self-Test warning
- Self-Test warning set to “Warning Only”: Normal Self-Test warning occurs (see table “Warnings During Operation” in section “Operation”)
- Self-Test warning set to “Emergency Mode”: SE400 will start and run in emergency mode only
- Self-Test warning set to “No Operation”: SE400 will not start

In the last three cases the warning mode will be cleared only after passing a Self-Test.

These options are configured via a PC running the SE-Win software. (See the section “SE-Win Configuration and Management”)

### **To perform the Self-Test:**

The fan unit can be worn by the user, or placed on a table. The facepiece should be placed or held so that air flow through the facepiece is not restricted. Battery and filter media must be fitted, and the power switched off.

The procedure, summarised in the diagram below, is as follows:

- 1 Enter menu mode, then select and activate the Self-Test by following the Menu Mode flow chart

*The test is now in progress. After a moment the fan will run at high speed.*

- 2 When the SE400 beeps while running at high speed, hold the facepiece firmly against your face while holding your breath in order to block the air flow from the facepiece. Hold for two or three seconds until the SE400 beeps again. The test is now complete.
- 3 If the test **passes** the SE400 will display a green PWR light, then the fan unit shuts down. The SE400 is ready for use.

- 4 If the test **fails** the PWR light flashes GREEN and one or more lights will come on steady RED, depending on the cause of the failure:
  - MSK steady RED indicates a problem with the mask pressure system
  - FILT steady RED indicates a problem with the filter pressure system
  - GAS steady RED indicates a problem with the air flow system

*NOTE 1: When the Self-Test encounters a fault, often it will not complete the remaining tests in the cycle. The lights stay on for one minute, or until the ON/OFF button is pressed.*

*NOTE 2: The SE400 will log either "Self-Test Passed" or "Self-Test Failed".*

### **THE FILTER LIFE FUNCTION**

The SE400 has a filter life warning function. It warns the user when the filter media are due for replacement.

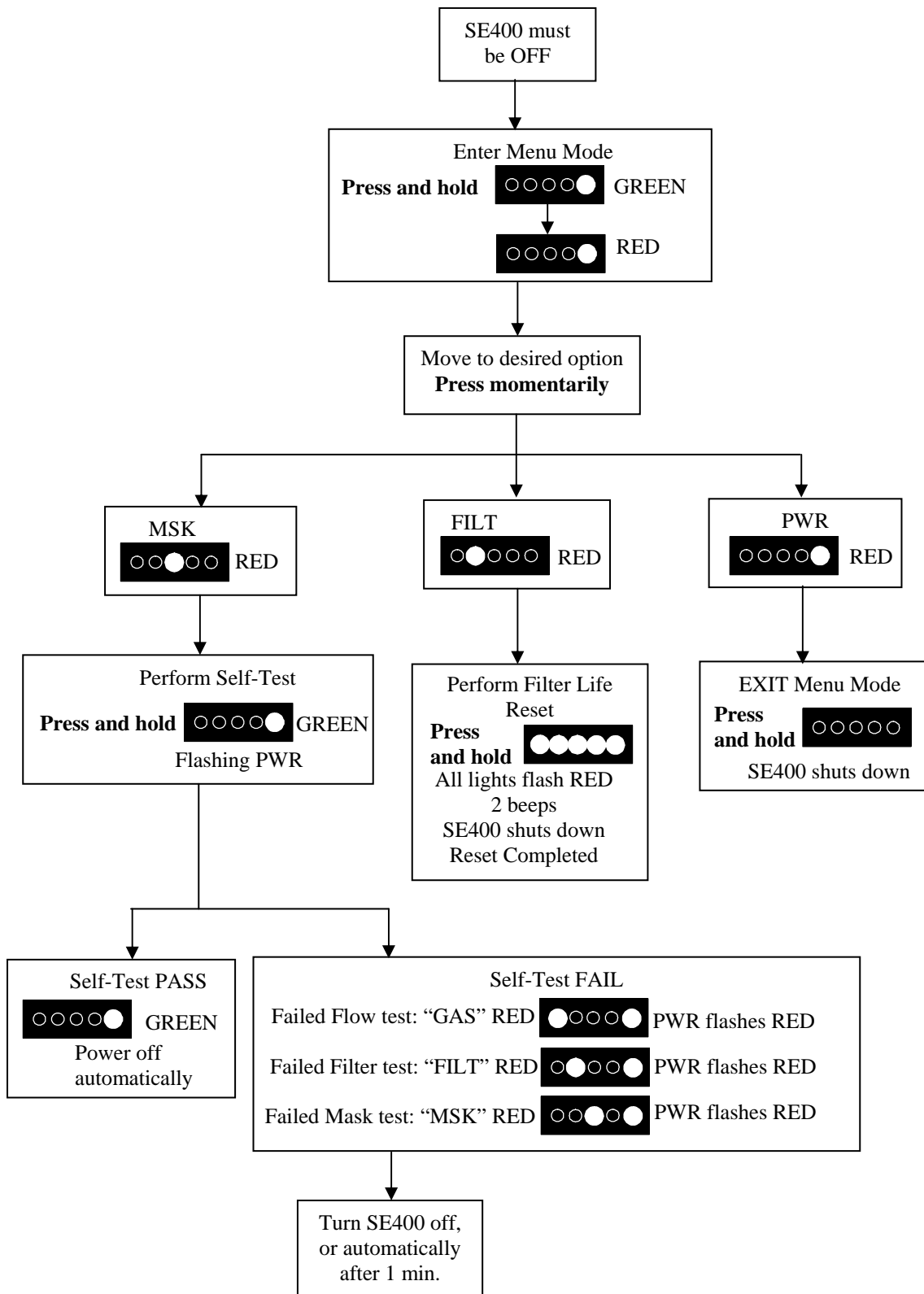
The filter life function can be configured by the user. For more information refer to the section "*SE-Win Configuration and Management*".

#### **To perform a Filter Life Reset:**

Enter menu mode, then select Filter Life Reset by following the Menu Mode flow chart

All status lights flash RED and the SE400 beeps twice and shuts down. The filter life reset is completed.

**Menu Mode Functions**



## “SE-WIN” CONFIGURATION AND MANAGEMENT

The SE400 has powerful configuration and management capabilities.

These capabilities can be accessed via an IBM-compatible personal computer running the “SE-Win” software.

The SE400 is supplied with SE-Win software on CD-ROM, and a data cable for connection to a PC.

SE-Win has two sections:

- SE400 Management
- Real Time Graph

### ***SE400 Management***

SE400 Management includes the following functionality:

- Logging and downloading of important data on the operation of the SE400, including the nature of any events and the time they occurred. The events logged are:
  - Power on and power off
  - Selection of emergency mode
  - All alarms and warnings
  - Self tests, and whether passed or failed
  - Filter life resets
  - Data log downloaded

Data logs can be downloaded and then printed out and/or saved to a file.

The data logger is a powerful tool for analysing the operating patterns of SE400 users in the workplace, and can assist in the development of safer work practices.

The data logging function can be turned on or off, as can the “data log full” warning.

- Customising the settings of the Filter Life function. There are a number of optional filter life modes, and the warning function can be turned on or off (factory default is OFF).
- Customising the settings of the Self Test function. There are a number of optional warning modes, and the warning function can be turned on or off (factory default is OFF).
- Changing time and date settings of SE400

### ***Real-time graph***

Real-time graph includes the following functionality:

- Real-time monitoring of mask pressure
- Real-time monitoring of pressure drop across the filter media

The graphs display mask pressure and filter pressure drop in real time while the SE400 is operating.

### ***PC requirements for SE-Win***

- Intel 486 processor or better
- Windows 95, Windows 98 or Windows NT 4.0
- 2 MB hard disk space
- Mouse
- 1 free COM (serial) port

**To load SE-Win onto a PC:**

Before installing SE-Win, we suggest you read the information file “ReadMe.txt” which can be found on the floppy disk.

- 1 Insert the SE-Win floppy disk in the floppy disk drive (normally A:\)
- 2 Select <START>
- 3 Select <RUN>
- 4 At the blinking cursor, type the name of your floppy disk drive and “setup.exe” (for example A:\setup.exe)
- 5 Press <ENTER>
- 6 Follow the on-screen instructions to complete the installation of SE-Win.

**To connect the SE400 to a PC:**

- 1 Connect the data cable at one end to a serial port on the back of the PC
- 2 Connect the other end of the cable to the communication connector on the SE400 fan unit

**To run SE-Win:**

Simply select Windows “Start”, “Programs”, “SEA”, “SE-Win”

A comprehensive on-line user manual accessible through “Help”.

## MASK PRESSURE CALIBRATION CHECK

The mask pressure calibration can be checked at any time against an external device (see figure G)

The procedure is as follows:

- 1 Connect the SE400 to a PC running the SE-Win software
- 2 Start the SE400
- 3 Run SE-Win, then select “Real time graph” and “Mask pressure”. This will display the mask pressure in real time
- 4 Connect a pressure device to the mask pressure port, located just above the air outlet of the breathing hose
- 5 Apply a known pressure. Check that the mask pressure monitor shows the same pressure.
- 6 Print out the test data, if required, via SE-Win

*NOTE 1: The simplest and safest method is to use an inclined manometer and a syringe.*

*NOTE 2: The applied pressure should be in the range 2—4 mbar and **must never exceed 20 mbar**. Excessive pressure will damage the pressure transducer. **If excessive pressure is applied, the warranty will be voided.***

## TROUBLESHOOTING

Status lights	Possible causes	What to do
MSK indicator steady RED	a) Leakage in the mask pressure hose system	a) Check that the demand valve housing is fitted correctly in the adaptor. b) Check that the breathing hose is fitted correctly in the demand valve housing. c) Check that the breathing hose is fitted correctly to the fan housing. d) Loosen the breathing hose from the fan housing and check that there is no dirt where the pressure hose connects to the fan housing. e) Loosen the breathing hose from the demand valve and check that there is no dirt where the hose connects to the demand valve. f) Remove the demand valve housing from the adaptor and check that there is no dirt and that the membrane is correctly located in the groove in the adaptor.
	b) Blockage in the mask pressure hose system	Remove the breathing hose from the fan unit and the demand valve. Remove the demand valve from the adaptor. Check all openings in the pressure hose system. Check that the holes in the diaphragm and housing line up. Blow carefully with the breath in the pressure hose connection in the lower end of the breathing hose. <b>NOTE: Never use compressed air when doing this. Too high pressure in the system will destroy the pressure sensors.</b>
	c) Pressure sensor out of calibration or an internal fault in the SE400 electronics.	Send the unit to nearest SEA service for repair and/or calibration
FILT indicator steady RED	None or only one set of filter media fitted	Fit filter media according to user manual
	Filter media not fitted properly	Fit filter media according to user manual
	Wrong filter media fitted	Fit SEA filter media marked for use with the SE400
	Filter media clogged	Change filter media
	Pressure sensor out of calibration or an internal fault in the SE400 electronics	Send the unit to nearest SEA service for repair and/or calibration
GAS indicator steady RED	None or only one set of filter media fitted	Fit filter media according to user manual
	Filter media not fitted properly	Fit filter media according to user

		manual
	Wrong filter media fitted	Fit SEA filter media marked for use with the SE400
	Filter media clogged	Change filter media
	Demand valve not correctly assembled	Assemble the Demand valve according to the user manual
	Air flow sensor out of calibration or an internal fault in the SE400 electronics	Send the unit to nearest SEA service for repair and/or calibration
RED light on Fast Charger as battery is inserted in charger	Battery error	DO NOT use the battery in the SE400, even if it seems to work. Remove battery, clean contact points and try again. Attach battery to charger with the power off, then turn on power. Try another battery. If another battery works, there is an internal battery error. Replace battery.

## SE-DATA

“SE-Data” is a comprehensive personal protection management tool, designed to help organisations develop and implement a company-wide personal protection system, as the basis of an organisation’s personal protection system. It includes an extensive database of hazardous materials.

## IMPORTANT WARRANTY INFORMATION

The warranty on the SE400 respirator is NULL AND VOID if:

- The unit is at any time operated without filter media correctly attached to the filter media attachments of the unit
- Filter media are not replaced according to the manufacturer’s recommendation or when prompted by the system’s alert functions

**Safety Equipment Australia Pty Ltd**

*A.C.N.: 002 727 586*

North Shore Business Park  
35/1 Jubilee Avenue, Warriewood NSW 2102, Australia  
Mail: Private Bag, Mona Vale NSW 2103, Australia  
Telephone: [+61] (0)2 9910 7500 — Fax: [+61] (0)2 9979 5364  
Email: [seansw@sea.com.au](mailto:seansw@sea.com.au)

**Safety Equipment Europe AB**

*Org. Nr.: 556518-3711*

Storgatan 64, S-331 31 Värnamo, Sweden  
Telephone: [+46] (0)370 69 34 40 — Fax: [+46] (0)320 179 79  
Email: [seesales@sea.com.au](mailto:seesales@sea.com.au)

**Safety Equipment America, Inc.**

*11 Business Park Drive*

Branford, CT 06405, USA  
Telephone: [+1] (203) 483 9483 — Fax: [+1] (203) 483 6633  
TollFree (USA and Canada only): 1888-732-3500  
Email: [bengtk@sea.com.au](mailto:bengtk@sea.com.au)

**INSPEC Certification Limited**

Upper Wingbury, Aylesbury  
Buckinghamshire  
HP22 4LW  
England  
Email: [sales@inspec-cert.com](mailto:sales@inspec-cert.com)

---

<http://www.sea.com.au/>