Gas-Tight Suit Automatic Test Unit

BS\097\A\2015

Contents

Gas-tight chemical protective clothing is worn in combination with appropriate respiratory protective devices in order to isolate the body of the wearer from the environment. Although a danger to the wearer arises from leakage in an inward direction, the EN 464 test method assesses the outward leakage of air after the gas-tight suit has been inflated. This stretches the material of construction enabling the detection of very small imperfections, e.g. holes, splits or tears.

The digital automatic test unit is designed specifically for determining the leak-tightness of Respirex gas-tight suits to the European standard EN943 using the EN 464 inflation test method. The unit has been designed to be easy to use and as such the operation of the unit is largely intuitive

On opening the test unit case the user will see that the lid contains:

- 12 volt dc power supply
- Mains lead to the power supply
- Braided hose to connect the test unit to the suit
- Suit adaptor to connect the braided hose to an exhalation valve that has been opened and had its diaphragm removed
- Rubber bung with which to seal off the remaining exhalation valve from the inside of the suit during the test

The test unit control panel comprises:

- A rotating air inlet with CEJN fitting to be connected to either a compressed airline supply or an optional electrical air pump which can be supplied with the test unit
- A 12 volt power-in socket
- A socket to take the braided hose that connects the test unit to the suit under test
- An illuminated on/off rocker switch
- A touch-screen computer
- A red over-pressure warning light (this light illuminates briefly on start-up to confirm that it is functioning correctly)
- Two USB ports to which the user may connect:

o A mouse (not supplied)

o A keyboard (not supplied)

o A USB memory-stick (not supplied)

Please note: It is not possible to connect a USB printer to the test unit.

When operating the test unit please follow the instructions in this manual carefully.

Essential information

Do not install the test unit in the following locations.

- A hot or humid location (near a water tap, hot water heater, humidifier, heater air conditioner or other appliance that generates heat) or a cold and dry location.
- A location which is exposed to direct sunlight (if necessary shut out light with a curtain)
- A poorly ventilated location.
- A dusty location.
- A location where ammonia gas is emitted.
- In the vicinity of a volatile inflammable substance such as alcohol or paint thinners.
- A location which is subjected to strong vibrations.
- A location subject to abrupt changes in temperature. By rapidly raising the temperature of a cold location water droplets (condensation) will form on the inside of the test unit which may result in damage to sensitive components.

Note : The test unit is designed solely for indoor use.

If the red over-pressure warning light illuminates during use the test box should be switched-off. The user should check that the inflation hose is not kinked and that it is connected to both the test unit and the suit adaptor correctly. The unit should then be re-started and the test recommenced. If, during the recommenced test the warning light illuminates again the unit should be switched off and the manufacturer should be contacted.

Electricity supply

The test unit should be connected via the 12v dc power supply via a suitable switched socket in an accessible position.

Fuses (UK & Ireland Only)

The mains lead to the test unit power supply is fitted with a plug and a 5A fuse. If the fuse requires replacing only those rated at 5A and ASTA approved to BS1362 should be used. Correct replacement is identified by colour coding and/or marking on the base of the plug.

CE marking certifies that this appliance complies with requirements laid down in EEC Directive 89:336 (Electromagnetic compatibility).

Method of use

Prior to performing the internal pressure test, lay out the gas-tight suit including gloves and boots and full face mask if appropriate, on a suitable flat and clean surface away from any sources of heat and/or currents of air. Remove any creases and folds from the suit as far as practicable. Leave the suit for a minimum of 1 hour at ambient temperature (20 ± 5)°C.

1. Insert the mains lead into the 12v power supply and plug into an appropriate AC mains electricity supply.
2. Plug the right-angled connector from the 12v power supply into the socket marked '12v DC' on the control panel.
3. Connect a clean compressed air source set between 1 - 3.5 Bar (100-350 kPa) max. to the rotating inlet located at the top left hand corner of the control panel.
4. Using a torque driver with a 'T8' Torx bit, loosen and remove the screw from the centre of one of the suit exhalation valves, then remove the cap.
5. Carefully slide the diaphragm up the central spigot and remove from the exhalation valve body.
6. Push the suit adaptor fully into the exhalation valve body.
7. Seal off any remaining valves on the inside of the suit using the rubber bungs provided and ensure that the suit zipper is fully closed.
8. Plug one end of the inflation hose into the white socket on the control panel and the opposite end into the white socket on the suit adaptor plugged into the exhalation valve.
9. Turn on the test unit using the green rocker switch located at the bottom of the control panel (a green light will illuminate in the switch). The red over-pressure warning light will illuminate briefly and the test unit computer will boot up into the Respirex testing screen.
10. Press 'Start' on the touchscreen computer; the test unit will commence inflating the gas-tight suit, the display background with turn mauve and 'INFLATING' will be indicated.
11. The test unit will stop inflation at the required pressure; the display background with turn amber, a 10 minute timer will begin and 'SETTLING' will be indicated. During the 10 minute settling period the test unit may inject short bursts of air to maintain pressure within the gas-tight suit.
12. After completion of the settling period the display background will turn brown and indicate 'DEFLATING'. The test unit will allow the gas-tight suit to deflate until the required pressure for the start of the internal pressure test is reached (1650 Pa).
13. Once the required pressure for the start of the internal pressure test is reached (1650Pa) the display background will turn blue; a black trace line will start to appear from the horizontal line marked 1650Pa on the display graph and a 6 minute timer will begin. The black trace line will remain active whilst the test timer is in operation. Note: Each vertical line on the display graph indicates 1 minute of elapsed time.
14. After 6 minutes the black trace line will stop and the final pressure within the suit will be frozen on the display. If the pressure reading on the display is above 1350Pa the gas-tight suit has passed the test and the display background will turn green. If the final pressure is below this figure the suit has failed the test and the display background will turn red. The date and time, final pressure in Pascals and result (PASS or FAIL) are automatically displayed in the relevant fields on the screen. The user may input information of their choice into the remaining fields on the screen (Title, Operator, Location, Suit No. and Notes) using either the touchscreen keyboard or alternatively a USB keyboard connected via one of the ports at the lower right hand corner of the control panel.
15. If required, the final test may be saved on the computer by pressing 'Save' on the touchscreen, browsing to a file location of your choice and selecting and suitable filename. Previous test results can be reloaded to the display screen by pressing 'Load' and browsing to the relevant file.
16. If a permanent record of the test is required for viewing or printing on a remote computer an image file can be saved to a portable USB drive inserted in one of the ports at the lower right hand corner of the control panel. Press 'Save' on the touchscreen, wait a short period for the save as box to appear, browse to the drive letter of the inserted USB drive, choose a filename and press save. The USB drive can now be removed and inserted into a remote computer where the image file can be saved as a backup of the test result, viewed and printed.
17. After completion of the internal pressure test press 'Shut Down' on the touchscreen, allow the computer to shut down fully then switch off the green illuminated rocker switch.

18. Disconnect the inflation hose from the suit adaptor attached to the exhalation valve; remove the suit adaptor from the exhalation valve and check that there is no dust, debris or contamination of any kind in the exhalation valve body. Carefully slide a new diaphragm down the central spigot until it rests evenly on the valve body. Ensure the diaphragm is correctly orientated with the ridged side uppermost. Replace the exhalation valve cap and ensure the two location channels engage with the locating keys on either side of the valve body. Note: When correctly located, the valve cap will not rotate independently on the valve body. Replace the centre screw, turn by hand two times to engage the thread with the valve body, then fully tighten using a torque driver set to 23 ± 2 cN.
19. Open the suit zip and remove all rubber bungs from any remaining exhalation valves. If required, additional bungs may be purchased from Respirex, please quote part no. D00702.
20. Disconnect the opposite end of the inflation hose from the white socket on the control panel.
21. Unplug the right-angled connector from the socket marked '12v DC'; remove the mains lead from the 12v power supply and unplug from AC mains electricity supply.

WARNING : If spraying gas-tight suits to locate leaks under no circumstances allow water to enter the test unit.

Care and maintenance

Under NO circumstances use water or abrasive substances to clean the test unit. The outer surfaces of the unit should be wiped with a dry cloth only.

Occasionally it is advisable to inspect the rubber 'O' ring fitted to the suit adaptor for signs of wear. If necessary a new 'O' ring can be purchased from Respirex.

If the mains lead becomes damaged contact the manufacturer or an authorised service agent for a replacement part.

The test unit is designed to be maintenance free; there are no user serviceable parts contained in the test unit. In the event of malfunction, disconnect from the electricity supply and check the 5A fuse fitted to the mains lead plug (UK and Ireland only). If the fuse is in good working order and the test unit still fails to operate please contact Respirex International Ltd or an authorised agent for further assistance.

Respirex recommend that all packaging supplied with the automatic test unit is retained for the purpose of returning the unit to the manufacturer or authorised service agent for service.

Tel : +44 (0)1737 778600

Fax: +44 (0)1737 779441

Specifications

POWER SOURCE	AC 240V,50Hz, 100mA
POWER CONSUMPTION	Approx. 24W maximum when inflating
DIMENSIONS	433 x 177 x 279.4mm (W x H x D)
	17 x 7 x 11" (W x H x D)
WEIGHT	Approx. 9.7 kg (21.4lb)

EC Declaration of conformity

This is to certify that the:

Gas Tight Suit Automatic Test Unit, Model No. G02500 series

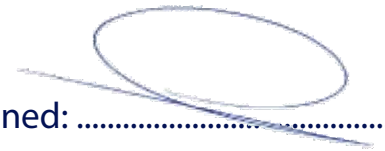
Manufactured by:

Respirex International Ltd,
Unit F Kingsfield Business Centre,
Philanthropic Road,
Redhill, Surrey RH1 4DP. UK

Conforms with the protection requirements of Council Directive 2004/108/EC, relating to Electromagnetic Compatibility, and Council Directive 2006/95/EC, relating to the Low Voltage Directive, by the application of:

EN 61326-1: Electrical equipment for measurement, control and laboratory use — EMC requirements — Part 1: General requirements (unit conforms to both basic requirements and industrial requirements).

EN61010: Safety Requirements for Electrical Equipment for measurement, control & laboratory use. (Part 1 General Requirements).



Signed: .....

Position: Managing Director

Of: Respirex International Ltd

Date: October 2015

RESPIREX INTERNATIONAL LTD,
Unit F Kingsfield Business Centre,
Philanthropic Road,
Redhill,
Surrey RH1 4DP
United Kingdom

Tel. +44 (0) 1737 778600