



RESPIREX™



Instructions for use of Simplair A.E Suit



EN943-1:2002
TYPE 2

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General Information

You have purchased a Respirex Simplair air supplied suit. This equipment is for use within certain contaminated environments only. You must carefully read and follow these operating instructions closely.

The Respirex Simplair range of protective clothing is designed for use with breathable air supplied from an external compressed air source providing positive pressure. The air flowing into the garment must conform to EN 12021: 2014 Annex A.

Respirex Simplair Suits are supplied in a range of sizes, styles and materials. All Respiratory Protective Clothing are UKCA and CE marked to indicate compliance with European Regulation 2016/425 on personal protective equipment (PPE) and Regulation 2016/425 on personal protective equipment as brought into UK law and amended. The suit has been tested in accordance with the technical specification EN943-1:2002 TYPE 2 "Non- Gas Tight", which specifies the performance requirements both for the materials of construction of the suit and for the suit as a whole.

For further information on the performance results of each specific material refer to the data sheet supplied with the suit.

UKCA and CE Declarations of Conformity can be found at www.respirex.com/doc

Limitations & Warnings

Worn in conjunction with suitable gloves and safety boots the Respirex Simplair air supplied suit will meet the performance requirements of the technical specification to satisfy Annex II of the PPE Regulation (EU) 2016/425.

At high work rates the pressure in the garment may become negative at peak inhalation flow or during bending or squatting.

Adequate protection may not be provided by the garment in atmospheres that are immediately dangerous to life or health.

The garment must NOT be used with oxygen only or oxygen enriched air.

Care must be taken to ensure that the garment is being used from the correct length and bore of air supply hose, as a low airflow may cause a less efficient protection.

The equipment is designed to work on a range of air line pressures. The suit is pre-set by Respirex to operate at the customer's specific air line pressure (the maximum air line pressure that the suit can be set to is 8.27 bar [120 PSI]).

Unless otherwise stated by Respirex the material fabric of the garment does not breathe. Your body temperature will rise when working in the garment therefore you are advised to leave the work area in the event you feel too much body fluid has been lost.

The garment must only be used in the hazardous area for which it is intended. Always follow the instructions carefully otherwise the protection offered by the garment may be drastically affected.

Always use compatible PPE, e.g. gloves and safety boots advised by Respirex.

For any enquiries please contact the Respirex customer services department on Tel : +44 (0)1737 778600,

Fax : +44 (0)1737 779441 or

Email: info@respirex.co.uk

Pre-checking the Air Supplied Suit

Under the Control of Substances Hazardous to Health (COSHH) regulations 2002 and the Personal Protective Equipment at work regulations 1992, a thorough examination of respiratory protection equipment (RPE) is required to be undertaken in a clean area at least once per month if the garment has not been used. When in use Respirex recommend that the RPE is always checked before the start of each shift cycle. These inspections are required to ensure that the RPE will perform as intended and is free from defects.

Each inspection must be recorded and the following noted : date, serial number, name of examiner, condition of the equipment and details of any defect found. The inspection records will be kept by relevant Health & Safety departments for a period of at least five years.

1. Visually inspect the suit for any damage that may impair the correct working of the garment together with the gloves.
2. Check that the gloves are correctly fitted (see page 6).
3. Check correct airflow in the suit. The suit will be marked with its working pressure which must correspond to the factory airline pressure as indicated by the pressure gauge at your airline supply outlet point. Ensure that the silencer is clean and free of any contamination from the airline. The silencer must be replaced if it is contaminated to any extent.

4. The suit is free from contamination both inside and out.
5. The identification number is clearly legible in the suit.
6. The zip operates correctly and the pull tag(s) is in good condition.
7. The suit materials are free from tears and holes, including the head of the garment. Pay particular attention to the seam areas
8. Ensure that the waist belt air attachment is secure and not damaged.
9. A clean silencer is fitted.
10. The vision from the visor is not obstructed by large scratches and heavy scuff marks. On suits fitted with rigid visors a removable outer visor can be fitted which prevents damage to the main visor. This can be changed by simply peeling away from the Velcro fasteners and replaced with a new outer visor.
11. Respirex recommend that the exhalation valves are part of the visual precheck. If the valve diaphragm is distorted or damaged in any way it must be replaced (see page 13).

Inspection of the compressed air supply tube (medium pressure connecting hose) which supplies breathing quality air to the operator must be carried out at least once per month and before each shift cycle and the results recorded.

During the inspection the following should be checked:

1. Lines are clean externally.
2. Lines are free from damage (holes, splits, etc).
3. Air line coupling connections are in good condition and the non-return valves are in good working order.

Submerge in water to locate any leaks if any sign of external damage is evident.

Report any defects to the supervisor and record them. The compressed air supply tube must NOT be used until the defect has been rectified.

Maximum Length And Bore Of Medium Pressure Connecting Hose

Respirex recommend a minimum of 3/8" internal diameter bore hose is used approved to EN 270:1994. If other Medium Pressure Hose and couplings are to be used they should be suitable for the intended use and conform to the requirements of EN 270:1994 (a sample must be supplied to Respirex to enable the correct air settings to be achieved).

The garment will be set by Respirex to give the correct rate of airflow to coincide with the customer's supplied airline pressure, as notified to Respirex and indicated on the airline waist belt label. The user shall assure himself that the pressure range of the air supply to the apparatus is within the limits recommended by Respirex.

Maximum And Minimum Flow In Litres/minute

The airflow to the suit must be within the range:

Maximum 440 L/Min

Minimum 360 L/Min

This must be checked prior to each use by means of the Respirex airflow meter. (See page 5).

Checking The Air Flow In The Suit

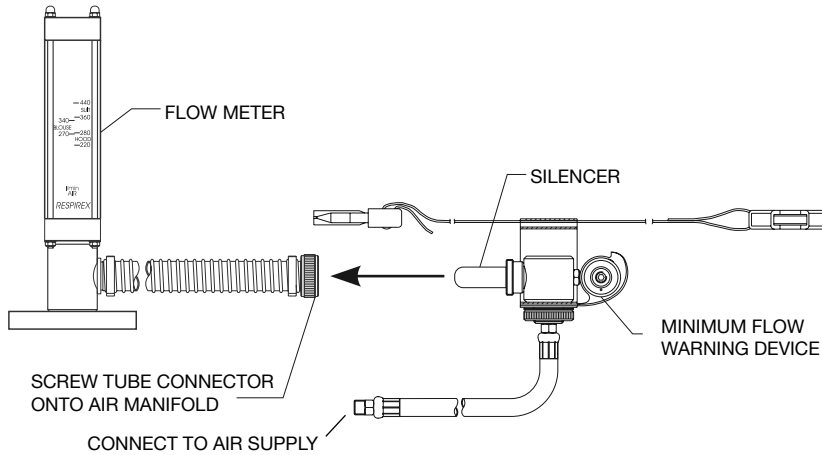


Fig.1

1. Open the suit at the zip fully to allow access to the air system.
2. Unscrew the connecting collar from the bulkhead adaptor.
3. With the Respirex flow meter on flat a level surface, screw the tube connector from the flow meter onto the bulkhead adaptor.
4. Connect the garment onto the air supply and measure the airflow on the meter. See page 4 for correct flow rates.
5. Disconnect the flow meter and reconnect the air system.

Should you be unable to achieve the air flows indicated, then the silencer should be replaced.

Note : Respirex recommend customers set up their own silencer replacement programme. This will be determined by the quality of the air and the frequency of use of the garment.

Minimum Flow Warning Device

1. With the Respirex flow meter connected to the air system turn the air pressure down to obtain the minimum air flow into the garment.
2. When the minimum air flow is reached the warning device will sound a high pitch whistle.
3. After checking the minimum flow warning device, set the air pressure back to the correct working pressure.

Fitting Gloves Into The Respirax Locking Cuff

1. Firstly turn the sleeve of the garment inside out.
2. Carefully push the tapered cone into the glove so that the glove stretches over the cone (see Figs 2 & 3).



Fig. 2



Fig. 3

3. Push the glove and cone into the cuff body with the little finger of the glove in-line with the seam of the sleeve (see Fig 4).
4. Make sure that the glove and cone are pushed into the cuff body with equal pressure all around its circumference (see Fig 5).



Fig.4

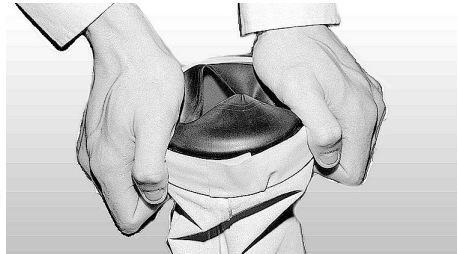


Fig.5

5. Locate the locking ring over the gauntlet of the glove and screw into the cuff body (see Fig 6). If necessary the gauntlet of the glove can be cut down if it is too long and interferes with the locking ring.



Fig.6

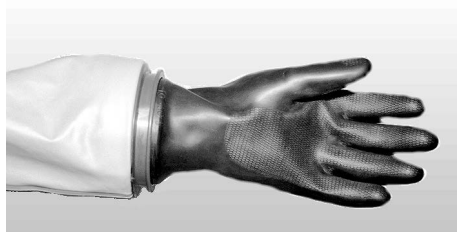


Fig.7

6. Turn the sleeve the correct way out by pulling on the glove (see Fig 7).

Check that there are no creases in the glove around the cuff seal. If there are any creases or the glove is pinched in any way it should be removed and re-fitted. If the cuff and glove have been assembled as described there should now be a gas tight wrist seal.

Fitting Gloves Into The Respirax Soft Rubber Cuff

Follow the procedure as described for fitting gloves into the Respirax locking cuff up to and including stage 5. Carefully turn the sleeve the correct way out and make sure that the glove and cone are pushed through the moulded rubber cuff equally all around it's circumference (see Fig 8).



Fig.8

Donning The Full Suit

It is strongly recommended that before anybody attempts to wear or use an air supplied garment, full training is given on wearing and decontamination by a competent person, and the details of the training be recorded.

1. Open the zip fully. For single slide zips pull 61cms (24") at a time keeping the zip straight with one hand as you pull the slider with the other. Repeat this exercise for the whole length of the zip. For double slide zips keep the zip completely straight with one hand as you pull the split ring fitted to the slider with the other and open fully from the centre without jarring or snagging.



Fig. 9



Fig. 10



Fig.11

2. Step into the suit with your feet through the elastic stirrups, see Fig 9.
3. Roll the outer leg up approximately 20 - 23cms (8"-9").
4. Step into your protective safety boots, see Fig 10.
5. Roll down the outer leg over the exterior of the boots, see Fig 11.

Exactly the same procedure should be utilised when wearing suits with elasticated inner legs or integral feet, see Figs 12 & 13.



Fig. 12



Fig. 13

6. Lift the suit to the waist. Arrange the waist belt comfortably and fasten firmly, see Fig 14 for front entry suits and Fig 15 for side entry suits.
7. Connect the suit to the medium pressure airline.
8. Insert your arms into the sleeves, see Fig 16 for front entry suits and Fig 17 for side entry suits.



Fig. 14



Fig. 15



Fig. 16



Fig. 17

9. Pull the hood over your head.
10. Close the zip fully as described in step 1 (double-slide zips should meet in the centre), see Figs 18, 19 & 20.



Fig. 18



Fig. 19



Fig. 20

The suit should appear as in Figs 21 & 22.



Fig. 21



Fig. 22

Removing the wearer from the Full Suit

1. Carefully open the zip following the procedure in step 1 on page 7.
2. Disconnect the suit from the medium pressure airline.
3. Remove your arms from the sleeves.
4. Pull the hood back over your head.
5. Lower the suit to the waist and unfasten the waist belt.
6. Roll the outer leg up approximately 20 - 23cms (8"-9").
7. Step out of the suit.

After use decontaminate according to your company procedures.

If a gas tight or liquid tight zip has been fitted it should be lubricated using Max. Wax once the suit has been decontaminated and cleaned.

Instructions For Lifting Harness (Tank Suit Only)

WARNING : The facility must only be used in conjunction with a back 'D' ring fixing full body harness approved to EN 361 : 1992. Always follow closely the manufacturer's recommendations for use, inspection and cleaning of safety belts and harnesses. This facility is designed for positioning purposes only, i.e. lowering into and out of tanks or vessels. It should NEVER be worn as a means of arresting falls. Respirex cannot guarantee the integrity of any suit used in such circumstances.

1. Don the body harness according to manufacturer's instructions ensuring that the back 'D' ring lifting point is between the wearer's shoulder blades. See Fig 23.
2. Don the Simplair Tanksuit as outlined on pages 7&8 as far as stage 8.
3. Pull the lifting harness trunk of the Simplair Tanksuit inside out and down towards the lifting point of the full body harness. Unscrew the locking nut of the 'quick-link' and connect to the 'D' ring on the full body harness. Screw the locking nut on the 'quick-link' to the fully locked position. See Fig 24.
4. Complete the donning procedure for the Simplair Tanksuit as described on page 8.
5. Connect the line from the lifting system to the 'quick-link' on the exterior of the Simplair Tanksuit. Ensure that the locking nut on the 'quick-link' is screwed to the fully locked position.

NOTE : When a Simplair suit is being worn in conjunction with a lifting harness, the trunk at the rear of the hood must concertina flat towards the wearer's neck. This is to ensure that when the wearer is lifted the movement of the harness is taken up by the trunk. This prevents damage occurring to the suit. See Fig 25.



Fig. 23



Fig. 24



Fig. 25

Inspection And Replacement Of Component Parts

A regular inspection and replacement program should be conducted by employees.

The Respirex air supplied suit and all component parts and assemblies should be inspected for damage or excessive wear before and after each use to ensure proper functioning. Immediately remove the suit from service and replace parts or assemblies that show any sign of failure or excessive wear that might reduce the degree of protection originally provided.

Use only Respirex components and replacement parts.

Replacing A Silencer

1. Open the zip fully to allow access to the bulkhead.
 2. Unscrew the connecting collar from the bulkhead adaptor.
 3. Pull the breathing air tube assembly away from the control waist belt.
 4. Unscrew the silencer from the bulkhead.
 5. Screw a new silencer into the bulkhead.
 6. Locate the breathing air tube assembly over the bulkhead and tighten the retaining ring .
- Check that the air supplied suit is working correctly and that there are no air leaks before use.

Removing The Air Control Waist Belt From A Suit

1. Open the zip fully and lay the suit on its back.
2. Unscrew the bulkhead locknut on the exterior of the suit and remove along with the plastic and rubber washer. It may be necessary to remove the airline coupling if it is too large to allow the locknut and washers to be removed.
3. Unscrew the bulkhead connecting collar on the inside of the suit and then carefully guiding the medium pressure connecting hose through the orifice in the rear of suit, remove the control waist belt assembly.

Refitting The Air Control Waist Belt Into A Suit

1. Check that the air control waist belt assembly to be fitted is not damaged and that all of the parts are correctly assembly.
2. Ensure that a new silencer has been fitted to the bulkhead assembly and check that the correct flow is achieved. This test must be carried out with the pressure and hose length that the suit is to be used on.
3. Take the air system distribution hose to be fitted and ensure the round distribution block is facing down.
4. Make sure that the belt and loop, whistle shroud and one rubber washer are fitted to the bulkhead assembly.
5. Fit the bulkhead assembly into the suit by first passing the medium pressure connecting hose through the orifice in the rear of the suit (hose to be fitted from interior to exterior).
6. Push the thread of the bulkhead through the orifice and locate the rubber and plastic washer on the bulkhead, then screw on the locknut.
7. Before tightening the locknut, screw the connecting collar onto the bulkhead hand tight.
8. Check that the belt and loop are positioned correctly and that the suit is laying flat around bulkhead, now tighten the locknut on the outside of the suit.
9. Fit the airline coupling if necessary. The coupling must be sealed with Loctite Part No. C00221.
10. Plug the suit onto an airline and check the flow of air through the air system.

Replacing The Removable Visor (Rigid Visor Model Only)

1. Carefully peel the removable visor from the Velcro discs.
2. If necessary clean the rigid visor before fitting a new removable visor.
3. Remove the protective film from the new removable visor.
4. Locate the centre discs at the top and bottom of the removable visor on to the centre discs on the hard visor.
5. Wrap the removable visor around each side of the rigid visor lining up all the fixing discs and firmly press together (see fig 26).

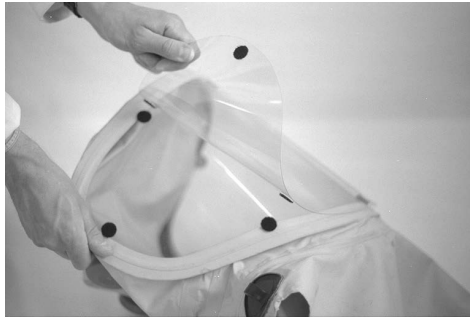


Fig.26

Replacing The Exhalation Valve Diaphragm

1. Using a torque driver with a 'TX10' Torx bit, loosen the retaining screw from the center of the exhalation valve and remove the cap.
2. Carefully stretch the diaphragm over the center spigot to remove from the exhalation valve body.
3. Check that there is no debris or contamination in the exhalation valve body.
4. Carefully stretch a new diaphragm over the center spigot making sure that it is correctly orientated and that the hole in the diaphragm is located under the shoulder of the spigot. (see fig).
5. Replace the exhalation valve cap (making sure that the location channel on the cap is located over the location key on the valve body. (The Respirex lettering should be at the top).
6. Replace the retaining screw (NO.4 X 1.1/4 TX1 - part number C00349), turn by hand two times to engage the thread with the valve body, then fully tighten using a torque driver set to 23 ± 2 cNm.

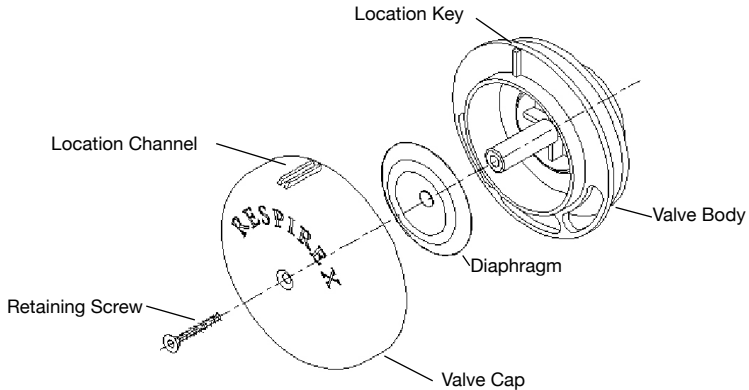


Fig.27

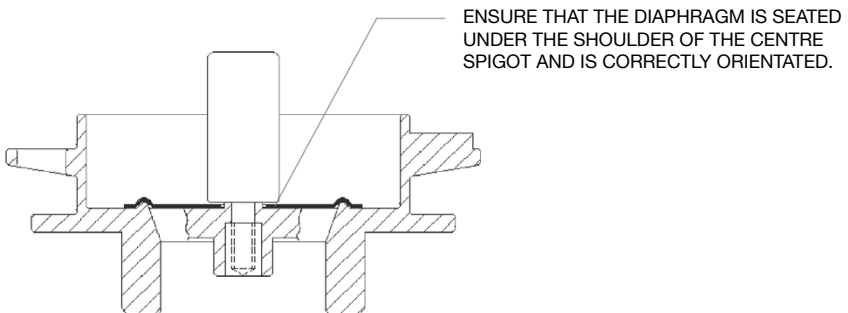


Fig.28

Removing A Complete Exhalation Valve Assembly

1. Lay the suit on a clean flat surface and open the zip to its fullest extent.
2. Using a two pin wrench (Tool No.G01486) locate the pins into the two holes in the exhalation valve retaining ring and unscrew.
3. Remove the rubber sealing washer.
4. Then from the outside of the suit carefully remove the exhalation valve assembly.

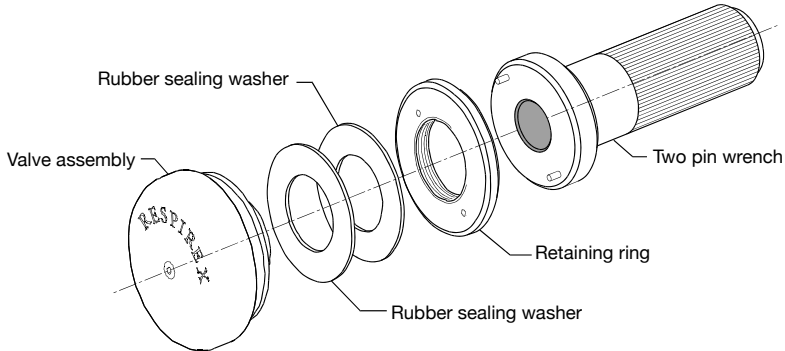


Fig.29

Replacing A Complete Exhalation Valve Assembly

1. The new exhalation valve will have all the parts screwed together, so remove the retaining ring and one of the rubber sealing washers.
2. Check that the remaining rubber sealing washer is laying flat against the valve body.
3. Locate the thread on the exhalation valve assembly through the hole in the back of the suit.
4. Locate the second rubber sealing washer around the thread on the valve body so that it is laying flat against the material of the suit .
5. Hand tighten the retaining ring onto the exhalation valve.
6. Check that the exhalation valve is orientated correctly (the Respirex lettering should be at the top of the valve and the three slots under the cover must be at the bottom).
7. Tighten the retaining ring using the two pin wrench (Tool No. G01486, see fig.30).



Fig.30

Cleaning

The Simplair air supplied suit should be cleaned and sanitized at least once a week, or more often if subjected to heavy use. Suits used by more than one person must be cleaned, inspected and sanitized after each use. If not cleaned contamination may cause illness or disease.

Respirex do not recommend laundering the suit. When the suit becomes dirty it should be wiped with a sponge using warm water and Citikleen, rinsed and air-dried. The inner surfaces of the suit should be sanitized using Synodor.


Do not use solvents or strong cleaning and disinfecting agents as these could damage the visor and parts of the suit.

Do not get water inside the breathing tubes or in any part of the flow control waist belt assembly.

The air supply hose should be cleaned by wiping with a sponge using warm water and a mild detergent, rinsed and air dried. Do not get water inside the air supply hose.

The suit should be hung in a warm room to dry (temperature should not exceed 30°C, 86°F) and if there is any possibility of water or cleaning agent getting into the air system, air should be passed through the air system until it is dry.

Warnings

HAND WASH ONLY 

DO NOT SPIN

DO NOT DRY CLEAN 

DO NOT BLEACH 

DO NOT IRON 

DO NOT TUMBLE DRY 

DO NOT USE SOLVENT ON PVC FABRIC

DO NOT USE AGGRESSIVE CLEANING POWDERS

DO NOT SCRUB THE SURFACE OF THE FABRIC

Storage

Always store the suit with the zip open in a dry area of ambient temperature.

The Respirex Simplair suit is supplied with a three point hanging system, there are loops on the head and shoulders that allow the suit to be hung on a three point hanging frame. The hanging frame is designed to allow the suit to be hung without distortions to the visor. (fig. 31).

If the suit is to be stored in a box or container it should be folded so that the breathing air and cooling tubes are not twisted and the visor is not distorted.

In order to maintain the level of protection offered, care should be taken to minimize the risk of damage occurring to the Simplair suits during transportation between work areas. It is recommended that all Simplair suits are transported in a suitably sized rigid container resistant to penetration by sharp objects, abrasive surfaces, chemicals, oils, solvents etc.

ALWAYS STORE THE SUIT IN A DRY CONDITION.



Fig. 31

Servicing And Maintenance

Garments manufactured in polymer rubber materials e.g. Neoprene, can be repaired using a Respirex repair Kit. Respirex DO NOT guarantee repairs carried out by the customer. Garments manufactured from thermoplastic materials e.g. PVC, require specialist equipment and will need to be returned to the manufacturer for repairs.

Respirex recommend that periodically you return used garments to our care and maintenance department for overhaul, repairs where necessary and report on the condition of your equipment. When your garment should be returned for inspection will depend upon the extent to which the garment is used.

There is no pre-determined life expectancy for these garments as this will depend upon usage, maintenance and washing. However, your garment's protection will be seriously reduced by the existence of the following conditions;

- a. Lifting tape.
- c. Thinning of the materials.
- e. Broken closures.
- g. Excessive dirt.
- b. Holes/Tears.
- d. Degradation of the fabric of the garment.
- f. Stretched or worn cuff seals.

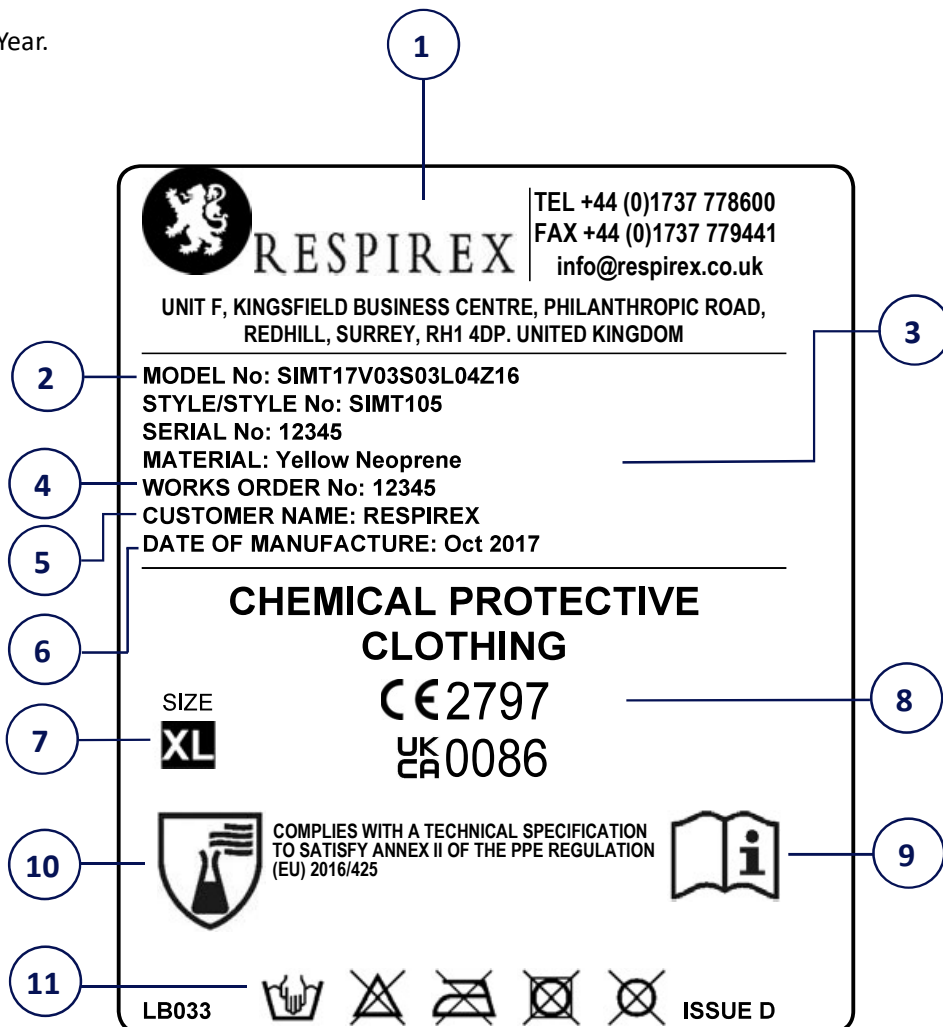
For further enquiries on servicing & maintenance contact Respirex customer services on:

Tel : +44 (0)1737 778600, Fax : +44 (0)1737 779441 or Email : info@respirex.co.uk






Product labelling

1. Manufacturer of garment and address:
Respirex International Ltd.
2. Manufacturer's Model number
3. Material of Manufacture.
4. Manufacturer's Order No.
5. Customer Name.
6. Date of manufacture: Day/Month/Year.
7. Standard Garment Size for wearer

Size	Chest (cm)
S	88 - 96
M	96 - 104
L	104 - 112
XL	112 - 124
XXL	124 - 136

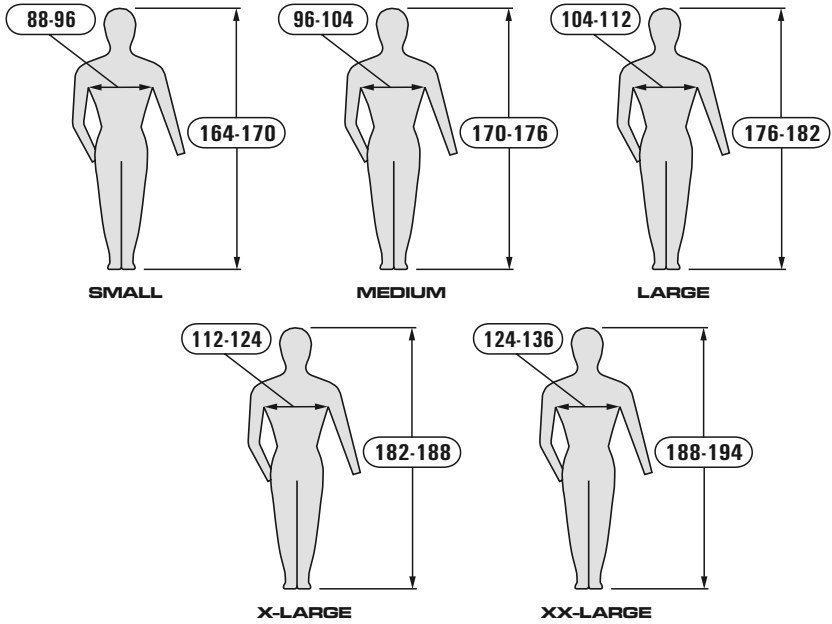


8. CE and UKCA mark including Notified Body and Approval Body code.
9. "Open Book Pictogram"; wearer must refer to the "Instructions for use" for further information.
10. Pictogram defining protection types: Particulate Radiation Pictogram
11. Five care pictograms indicating that clothing is not suitable for cleaning and reuse.

- Pictogram 1 Hand wash 
- Pictogram 2 Do not bleach 
- Pictogram 3 Do not iron 
- Pictogram 4 Do not machine dry 
- Pictogram 5 Do not dry clean 

Sizing

The following pictograms designate the range of height & chest sizes suitable for specific sizes of Simplair suit, check your body measurements and select the correct size of suit. Body measurements in cm (inch).



Size	Body Height	Chest Girth
S	164-170 (5'4½" - 5'7")	88-96(35" - 38")
M	170-176 (5'7" - 5'9")	96-104(38" - 41")
L	176-182 (5'9" - 5'11½")	104-112(41" - 44")
XL	182-188 (5'11½" - 6'2")	112-124(44" - 49")
XXL	188-194 (6'2" - 6'4½")	124-136(49" - 53½")

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