RESPIREX

INSTRUCTIONS FOR USE OF GAS TIGHT SIMPLAIR SUIT (GTA)

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General Information

You have purchased a Respirex Gas-Tight Simplair Suit (GTA). 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 132:1999 Annex A.

Respirex GTA suits are supplied in a range of sizes, styles and materials. All Respiratory Protective Clothing is CE marked to indicate compliance with European directives on personal protective equipment (PPE). The suit has been tested in accordance with EN 943-1:2002, 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.

Limitations & Warnings

Worn in conjunction with suitable gloves and safety boots the Respirex GTA gas-tight suit will meet the performance requirements of **TYPE 1c "gas-tight"** chemical protective clothing.

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 120 PSI (8.3 bar)}.

Unless otherwise stated by Respirex the material fabric of the garment does not breathe. Persons who show any signs of excessive stress such as nausea, dizziness or excessive body-fluid loss should leave the work area immediately and get out of the suit as quickly as possible (decontamination may be necessary before removing the suit, see page 15).

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 Gas Tight Suit

Gas tight suits should undergo a visual inspection after each period of use or every six months if the suit has not been used during that time period. They should also be subject to an annual pressure test (see page 18).

1. Check that the gloves are correctly fitted (see page 5).

2. 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.**

3. The suit is free from contamination both inside and out.

4. The identification number is clearly legible in the suit.

5. The zip operates correctly and the pull tag is in good condition.

6. The suit materials are free from tears and holes, including the head of the garment. Pay particular attention to the seam areas.

7. Ensure that the waist belt air attachment is secure and not damaged.

8. 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.

9. 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 270:1995. 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 270:1995 (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 4).

Checking The Air Flow In The Suit

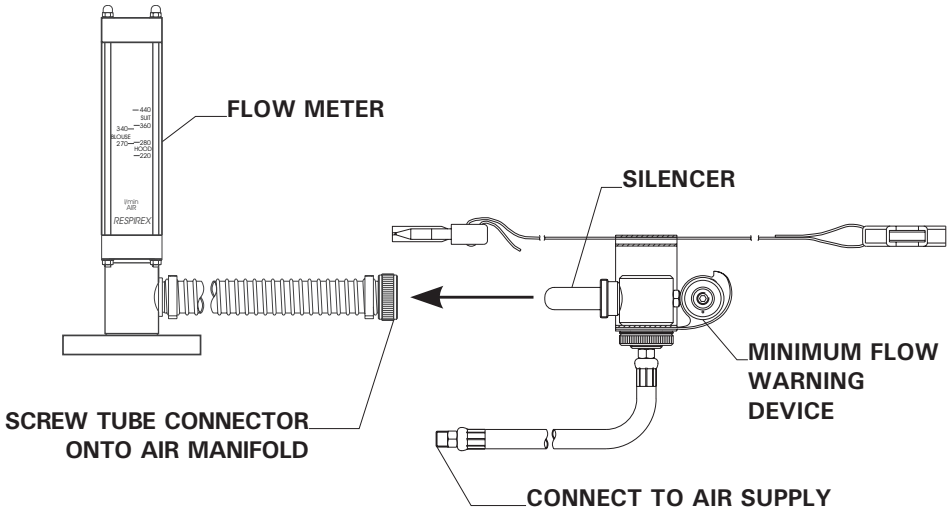


Fig.1

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 3 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 Respirex 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

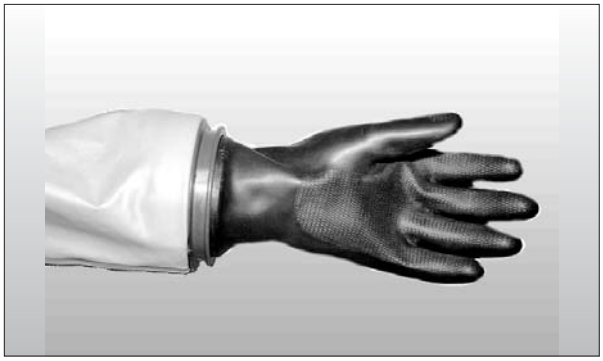


Fig.7

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.

For any further enquiries, please contact our customer services department on:
Tel : +44 (0) 1737 778600
Fax : +44 (0) 1737 779441

Donning The Full Suit

Donning the Respirex GTA suit is a very simple matter although it will be necessary for a dresser to assist the wearer in the donning procedure. 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 recorded.

1. Unzip the suit by pulling approximately 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. Fold down the suit to expose the top of the boots (if fitted) or integral socks.

Fig.8

Fig.9

Fig.10

2. The wearer should step into the boots (or integral socks) and lift the suit up to the waist. **Note** : If integral socks are fitted, fold the outer leg up approximately 20-23cms (8" - 9")(see Fig 8), step into protective safety boots (see Fig 9) and roll down the outer leg over the exterior of the boots (see Fig 10). Safety boots should be over sized to allow insertion of integral socks.

Fig.11

Fig.12

3. Arrange the waist belt comfortably and fasten firmly see Fig 11 for front entry suits and Fig 12 for side entry suits.

4. Connect the suit to a compressed air source providing breathing air that conforms to EN 132:1999 Annex A.

5. The wearer should insert his/her arms into the sleeves of the suit (see Fig 13) for front entry suits and (see Fig 14) for side entry suits.

Fig.13

Fig.14

6. The dresser should lift the hood over the wearer's head.

7. The dresser should fasten the gas tight zip following the reverse of the procedure outlined in step 1 (see Figs 15 & 16).

Fig.15

Fig.16

The suit should appear as in Figs 17 & 18.

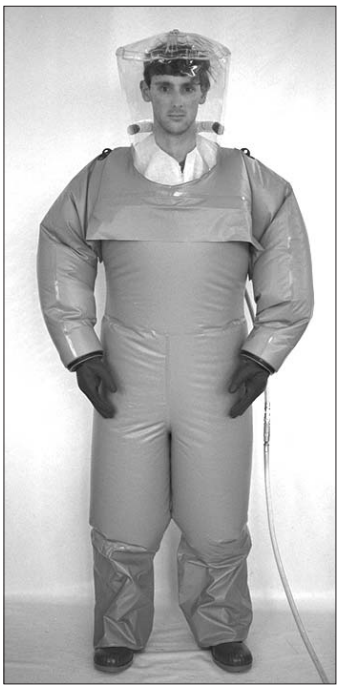


Fig.17

Fig.18

Removing The Wearer For The Garment

Firstly the suit must be decontaminated sufficiently to safely remove the wearer from the garment (see **Decontamination & Cleaning**). It will be necessary for a dresser to aid the wearer to remove the suit (it is **ESSENTIAL** that the dresser wears suitable protective clothing).

1. The dresser should carefully open the zip following the procedure in step 1 on page 7.
2. Disconnect the suit from the compressed air source.
3. The wearer should remove his/her arms from the sleeves of the suit.
4. The dresser should lift the hood back over the wearer's head.
5. Lower the suit to the waist and unfasten the waist belt.
6. Fold the suit down to the top of the boots so that the wearer can step out of the suit. The outer surface of the suit should be kept away from the wearer at all times.

The above procedures must be carried out in a clean area away from contamination. After use decontaminate according to your company procedures.

Once the suit has been decontaminated and cleaned the zip should be lubricated using Max.Wax.

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 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 a thread sealant such as Loctite 542 (Respirex Part No. C00221).
10. Plug the suit onto an airline and check the flow of air through the air system.

Replacing The Removable Visor

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 disc at the top and bottom of the removable visor on to the centre discs on the hard visor.
5. Wrap the removable visor around eachside of the hard visor, lining up all the fixing discs and pressing together (see Fig 19).

Fig.19

Replacing The Exhalation Valve Diaphragm

1. Using the Hexagon Key (Tool No. B00311) loosen the 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 21).

5. Replace the exhalation valve cap making sure that the location channel on the cap is located over the location key on the valvebody. (The Respirex lettering should be at the top).

6. Replace the centre screw and hand tighten using the Hexagon Key (Tool No. B00311).

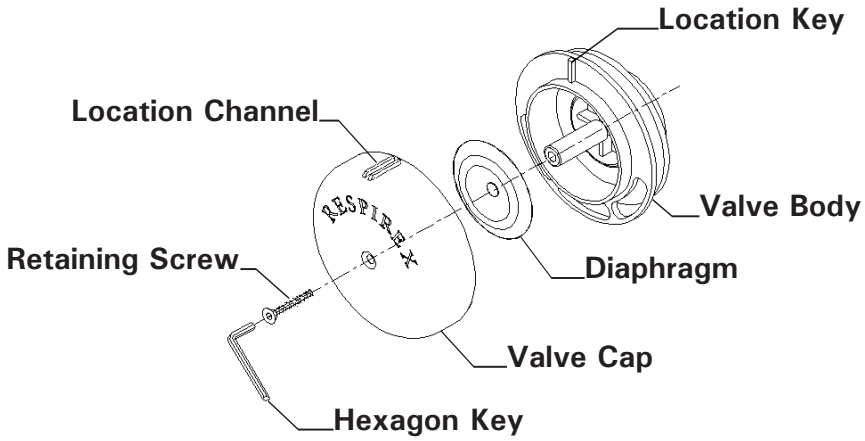


Fig.20

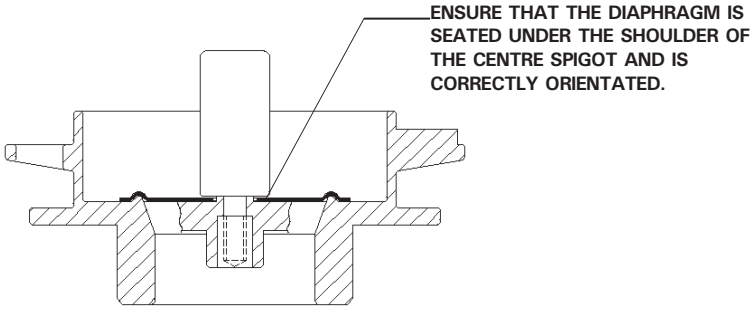


Fig.21

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.

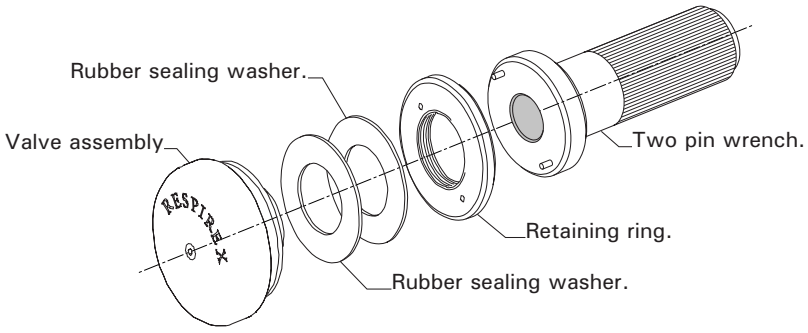


Fig.22

4. Then from the outside of the suit carefully remove the exhlation valve assembly.

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).

Decontamination & Cleaning

Preliminary washing by means of a high pressure shower will remove most of the contaminate from the outer surface of the suit sufficient to allow the wearer to undress from the suit.

Should you not have access to a high pressure shower, the suit can be washed by using copious quantities of water sprayed over the suit for a minimum period of 5 minutes using a suitable detergent and neutralizer. If the garment has been used in acid the recommended neutralizer is a solution of bicarbonate of soda and water (6% bicarbonate of soda w/v). Water will neutralize alkali contamination.

In both the circumstances described above the suit can now be removed for further cleaning.

The Simplair Gas Tight suit (GTA) 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.

Never use a washing machine, spin or tumble drier. 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 sprayed with Synodor to kill all bacteria within the garment.

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

Cleaning Accessories

The outer surface of the garment can be cleaned by using Citrikleen,
Part No. F00938.

The inner surface of the garment can be cleaned by using Respirex Synodor Odor San, Part No.F00936, this will neutralize any bacteria build-up within the suit.

The visor of the face mask can be kept clean by use of Respirex Fog Off, Part No. F00934.

The zip must be regularly lubricated with Max Wax, Part No. F00149.

All these accessories are available from Respirex. Please contact our Customer Services Department on Tel : +44(0) 1737 778600.

Storage

Always store the suit in a dry area of ambient temperature. Decontaminated and cleaned with the zip fully open and waxed.

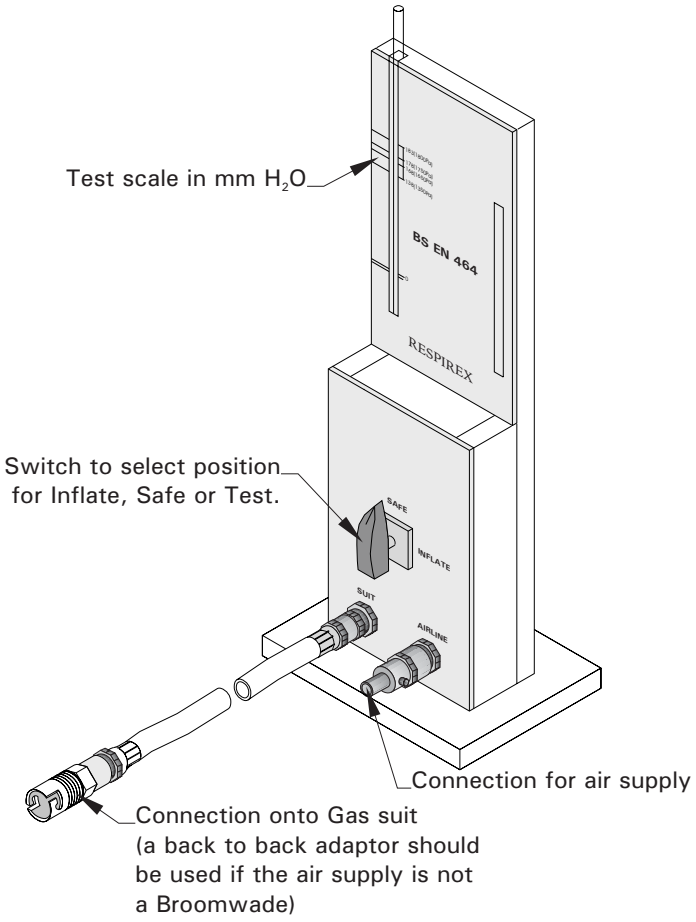
The Respirex Gas Tight Simplair suit (GTA) is supplied with a three point hanging system, there are loops on the head and shoulders that allow the suit to be hung on a three point hanging frame. The hanging frame is designed to allow the suit to be hung without distortions to the visor. (Fig.23).

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. A leak-tightness test (internal pressure test) to EN 464:1994 should be performed at least once a year. A suitable test rig can be supplied by Respirex.

ALWAYS STORE THE SUIT IN A DRY CONDITION.

Fig.23

How To Fill A Test Rig



To do this insert the male instant air plug attached to the length of cord into the socket on the length of hose connected to the 'SUIT' socket on the test rig. Turn the switch to 'TEST'. Place the black tube from the small filling bottle into the 60ml bottle filled with manometer liquid. Squeeze the small bottle and draw up manometer liquid. Once the small bottle is full remove the tube from the 60ml bottle and place into the top of the test rig with the end of the black tube level with the narrow Red band. Squeeze the bottle to empty the liquid into the test rig, repeat the operation until liquid is level with Red filling band. Should an air bubble form agitate the liquid until it clears. This may be done by leaving the valve set at 'TEST' and gently blowing and releasing to make the liquid move up and down in the tube. If the test rig is overfilled place the tube from the small filling bottle into the test rig and suck up any excess liquid. If for any reason the fluid needs 'topping up' repeat instructions as above.

Conducting A Pressure Test

1. Lay the suit out as flat as possible, away from any source of heat and/or currents of air. Seal one of the exhalation valves with the rubber bung provided. Visually inspect the suit and remove any creases and folds as far as is practicable. Leave the suit at ambient temperature (20 ± 5) °C for minimum of 1 hour.

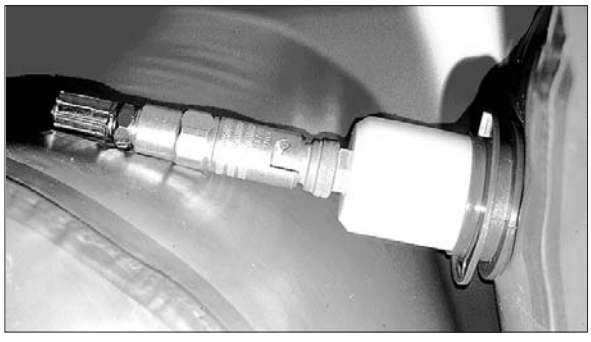


Fig.24

2. Using a 2mm hexagon key loosen the screw from the centre of the other exhalation valve and remove the cap. Carefully stretch the diaphragm over the centre spigot to remove from the exhalation valve body.

3. Push the inflation and test plug into the exhalation valve body until sealed (see Fig. 24).

4. Connect the black hose from the port marked 'SUIT' on the test rig to the airline coupling on the inflation & test plug. Make certain that the rig selector valve is turned to 'SAFE'. Connect a suitable compressed air source providing air at approx 15 PSI (1.03 bar) to the port marked 'AIRLINE' on the test rig.

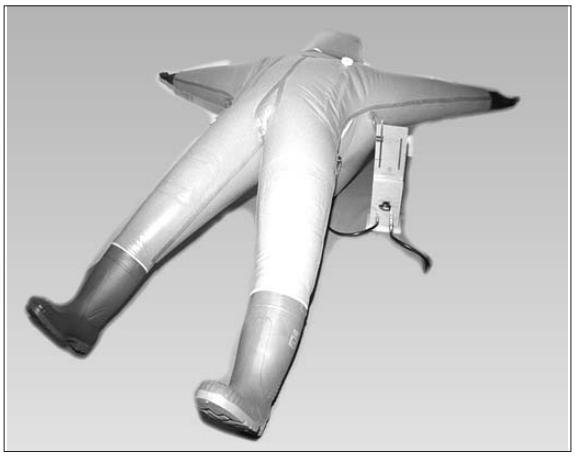


Fig.25

5. Turn the rig selector valve to 'INFLATE'. Inflate the suit carefully to a pressure of (1750 ± 50) Pa. Ensure that any creased areas are unfolded and that the suit takes up its full shape (see Fig 25).

6. Check the inflation level by turning the valve through 'SAFE' to 'TEST'. When the pressure begins to approach the marks inflate a little at a time until the bottom of the red area is reached.

7. As the material stretches the pressure will drop. For 10 minutes keep adding sufficient air to keep the liquid in the Yellow area (1750 ± 50) Pa. After 10 minutes adjust the fluid level to the top of the Green area (1650 ± 50) Pa. Allow a further 6 minutes to elapse and record the drop in pascals. The pressure drop must not be more than 300 Pa to comply with EN 943-1:2002.

8. After completing the pressure test disconnect the hose from the inflation & test plug. Remove the inflation & test plug from the exhalation valve and any other plugs that may have been fitted.

9. Carefully stretch the diaphragm over the centre spigot making sure that it is correctly orientated and that the hole in the diaphragm is located under the shoulder of the spigot. Replace the exhalation valve cap making sure that the location channel on the cap is located over the location key on the exhalation valve body (the RESPIREX lettering should be at the top). Replace the centre screw and hand tighten using a 2mm hexagon key.

Chemical Permeation Testing At Respirex

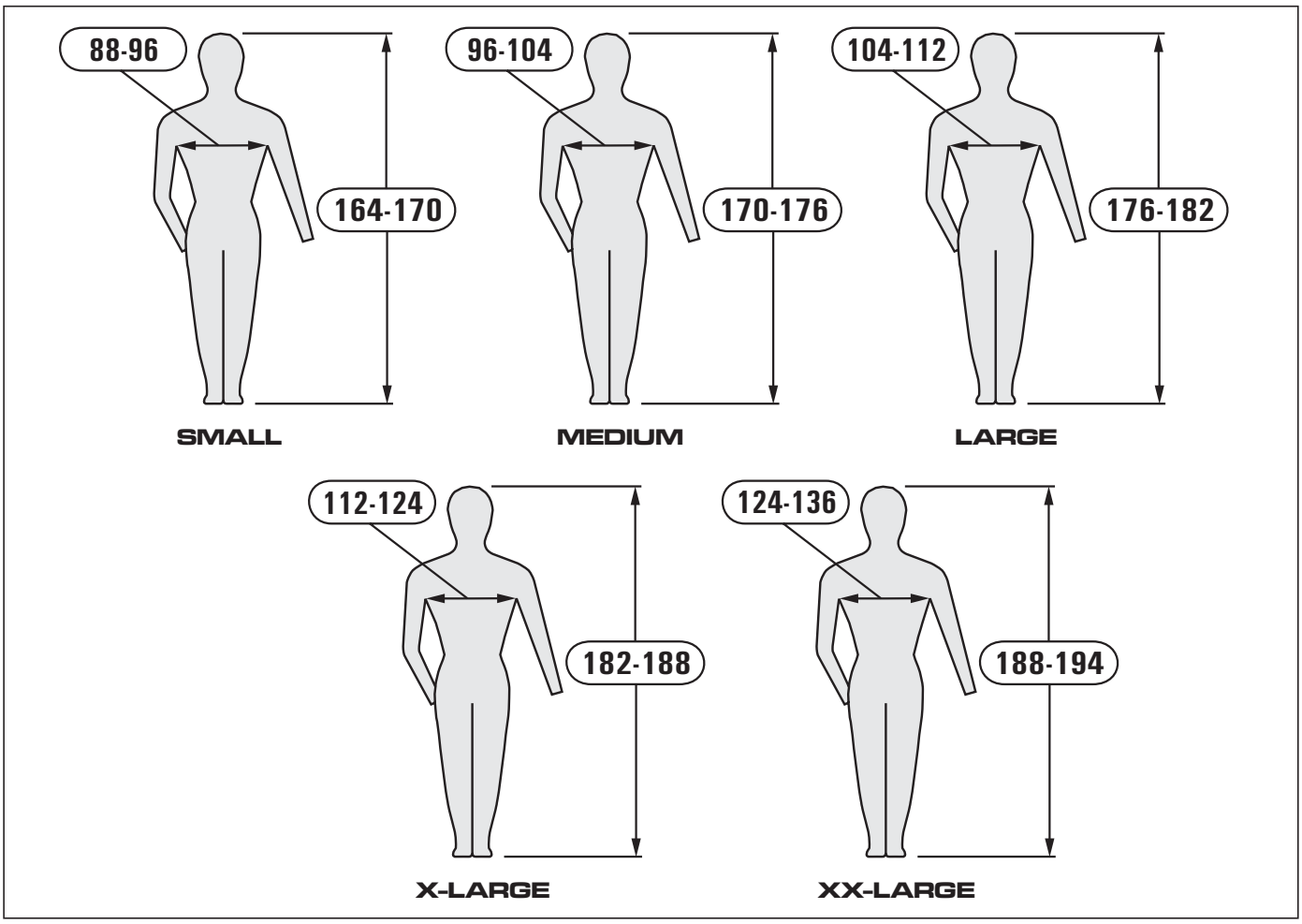
At its headquarters in Redhill, Surrey, Respirex operate a chemical testing laboratory equipped with the latest technology. All the testing is carried out by a fully qualified chemist who is able to test Respirex's own materials against any chemical that the customer requests. In this way the customer can be advised and recommended the most suitable material to use against any challenging chemical encountered in the workplace.

Permeation is the process by which a chemical moves through protective clothing material on a molecular level. The permeation tests are carried out according to both the European standard EN 369:1993 and the American standard ASTM 739. The clothing material is exposed to the challenging chemical in a permeation cell so that breakthrough times and permeation rates can be measured. Breakthrough time is the time taken for the chemical to permeate through the material after continuous contact with the outer surface of a chemical safety suit. Permeation rates, measured in μg (min.cm^2), are an indication of the amount of chemical reaching the person inside the suit after breakthrough occurs.

For advice on chemical permeation or decontamination contact the Respirex laboratory on Tel : +44 (0)1737 778600, Fax : +44 (0) 1737 779441 or Email: laboratory@respirex.co.uk, where our qualified staff will be happy to help you. Contact outside of normal working hours (9.00am-5.00pm) on Tel : +44 (0)1737 778600 answer phone, leave details of your enquiry and we will deal with your query with the minimum of delay.

Sizing

The following pictograms designate the range of height & chest sizes suitable for specific sizes of Gas Tight Simplair suits, 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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