

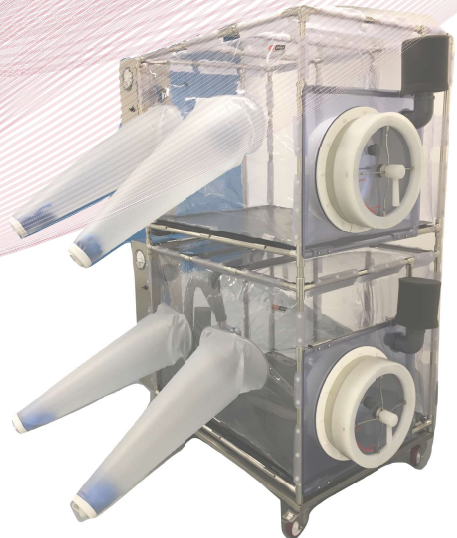
NKP

isotec

Operation Manual

Flexible Film Isolators

Positive or negative pressure



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The company reserve the right to alter specifications and materials due to circumstances such as shortages and improvement of materials together with improvements and modifications in design which may incorporated from time to time . Every care will be taken to ensure that the information and description are truthful and accurate but all sizes and weights are approximate only and are listed for your guidance only. Any improvements or modifications which may be introduced do not place us under any obligation to make similar changes in articles already sold before introduction

2. Introduction

NKP manufacture a wide range of isolator systems which are used extensively in many facilities as well as individually designed isolators to meet your specific requirements. This operating guide has been designed to provide technical information and general advice on the maintenance of your isolator.

This manual is not able to cover all topics which you may require for your specific applications and will not replace your own standing operating procedures. Please contact us if you need any further information or advice.

NKP staff will perform the assembly of the frame and components of your isolator when first delivered. The assembly and fitting of replacement parts however is described in this manual.

The use of Isolators requires often special equipment and chemicals for sterilisation, some of them may be harmful. Please always observe and follow your local licence restrictions and health and safety regulations.

For service requirements / annual maintenance plans we recommend to use our own service technicians. Please contact us if you want to take advantage of this service.

3. Specifications:

Flexible film Isolator

Breeding or maintenance isolator

For use under positive pressure or negative pressure (full details are described in manual).

Technical data:

Volts: 230V

Amps: 0.46

Watt: 105

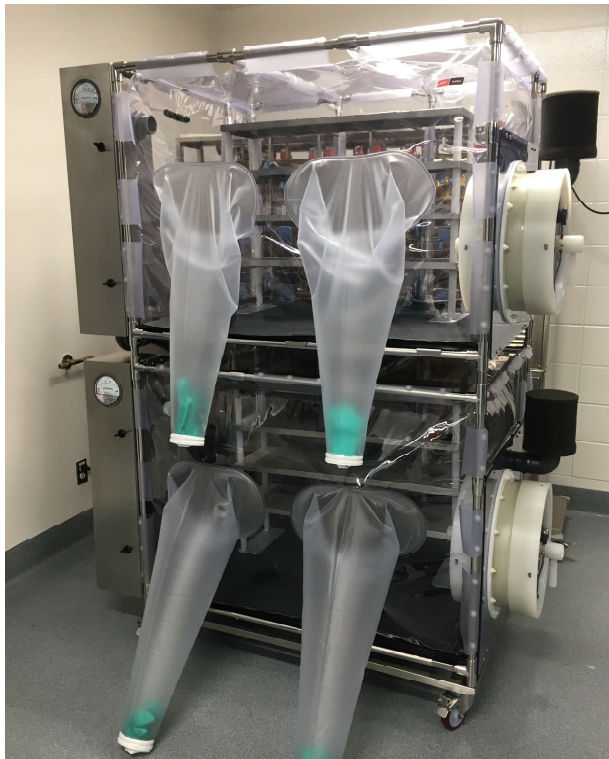
Frequenz: 50/60Hz

Features include:

- HEPA filtration at 99.997%. Each filter is supplied with an individual certificate of performance. A perforated screen and either a filter canister or a stainless steel mesh housing with rougher filter cover protects the filter media.
- A regulating valve is fitted for the easy adjustment of isolator pressure and airflow on the inlet.
- A pressure differential gauge is fitted for the monitoring of the internal isolator pressure, range 0–250 Pascal pressure.
- Supply grommets are fitted as standard to allow the introduction of cables or tubes into the isolator.
- The isolator canopy is supported by a 1" (25mm) stainless steel tube frame with quick release assembly,
- Mobile castor base including two front locking to allow the

isolator system to be movable.

- The air supply is from a sealed unit, centrifugal direct drive fan.
- The isolator canopy is manufactured from optically clear PVC
- Quadro lock entry port system – one hand operation and spray nozzle access on outside
- Temperature and humidity gauge sited internally or externally for easy monitoring



4. General care of the Isolator

Our Isolator systems are manufactured to be operated in any licenced animal facility with fairly low maintenance requirements. Lighting, humidity and temperature are determined by the environment of the room the isolators are located in. The animal room is required to provide the desired conditions.

To ensure a long working life of the Isolator and especially the filters, a reasonable clean environment and regular cleaning with mild soap / pure water is recommended.

O-rings and seals should be regularly checked and treated using a mild lubricant e.g. petroleum jelly in order to prevent early cracking.

Canopy and fittings are visually inspected on a regular basis.

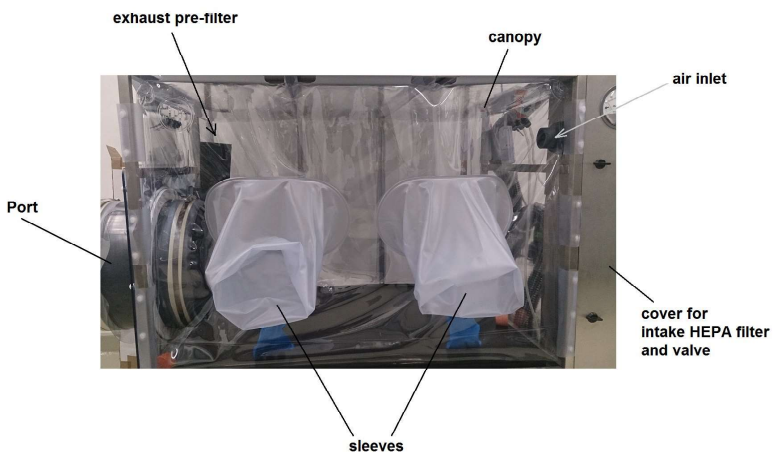
5. Setup prior use

After delivery, after recommissioning or after the Isolator has been out of use for some period of time the following procedures should be carried out:

- Gentle cleaning
- Leak Test
- Setting to either positive or negative pressure
- Sterilisation
- Import of material - setting up for use
- Sterility test

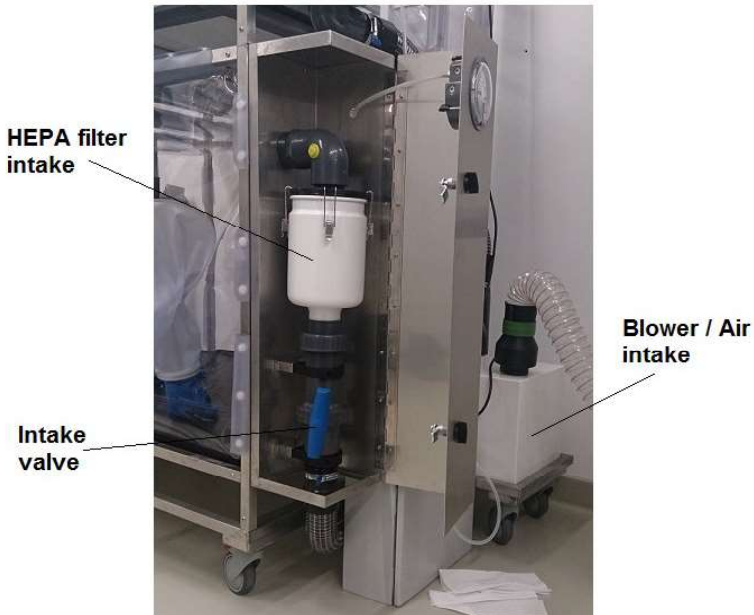
5.1 Initial Set-up for Leak Test

1. Introduce into the isolator the two No.49 bungs (stoppers).
2. Check all construction work has been completed.
3. Remove any internal rougher filters from the tubing reaching into the Isolator.
4. Make sure the black vacuflex ducting is connecting the filter cabinet to the positive outlet of the fan unit.
5. Check a thin 1/4" (6mm) plastic hose is connecting the positive Pressure Differential Gauge through a grommet hole with the canopy.
6. Close both the inner and outer port doors or caps.
7. Follow leak test (pressure leak test) procedure in section 6.1 of this manual.
8. Follow sterilisation procedures either from this manual or as detailed in your standard operating procedures in conjunctions with regulations of your Health & Safety department.



5.2 Setting Isolator to positive pressure

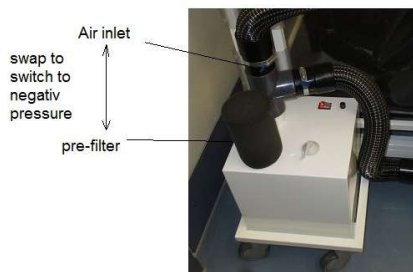
1. Ensure No.49 rubber bungs (stoppers) have been removed from the tubing reaching into the Isolator.
2. Connect the rougher filter assembly to the plain end of the tubing at air outlet which is usually on the port side.
3. Adjust the airflow/pressure by use of the regulating valve in the filter cabinet of the air inlet. The optimum working pressure is between 50 and 100 Pascal's.
4. Before introducing animals into the isolator, ensure the venting of sterilisation gases has been completed also ensure swab culture results and any other sterility testing are to your satisfaction.



5.3 Setting Isolator to negative pressure

Before running the Isolator in negative pressure a leak test to check the integrity of the canopy and components should be performed using the positive pressure setup. Once satisfactory the switch to negative pressure can be performed.

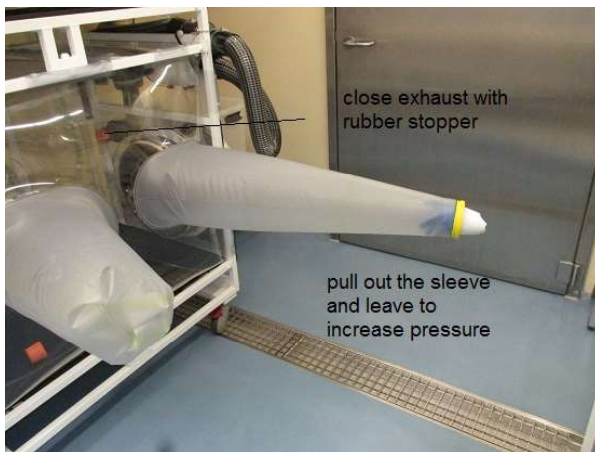
1. Ensure No.49 rubber bungs (stoppers) have been removed from the tubing reaching into the Isolator.
2. Connect the internal rougher filter to the tubing reaching into the Isolator located near the HEPA filter Unit housing.
3. Remove the black vacuflex ducting from the positive outlet of the fan unit and re-fit to the negative pressure inlet.
4. Fit the 8" x 3" rougher filter assembly to the positive outlet of the fan unit.
5. Connect the 1/4" (6mm) plastic hose to the negative connection of the Pressure Differential Gauge and check the connection to the canopy.
6. Adjust the airflow/pressure by use of the regulating valve in the filter cabinet. The optimum working pressure is around 50 Pascal's and is to be read as negative pressure in this setting.
7. Before introducing animals into the isolator ensure the venting of sterilisation gases has been completed and check the swab culture results are to your satisfaction.



5.4 Leak Test of the system

Pressure Leak Test (Positive Pressure only)

1. Firstly visually examine all areas of the isolator canopy for obvious holes or tears, pay particular attention to welds, sleeves and gloves that should be repaired or replaced as necessary.
2. Make sure all connections are tight and closed.
3. Close the inner and outer port caps/doors.
4. With the fan running place a bung into the exhaust filter tube, open up the airflow regulating valve to its maximum and allow the isolator to inflate above 250 Pascal's on the pressure differential gauge. Place another bung into the inlet filter tube. Remove you second arm last and try keeping as much pressure inside the canopy when closing the inlet with the bung.
5. Check the Pascal's pressure reading which has been



let pressure build up

maintained and note this down. The reading should be as high as possible (above 200 Pascal).

6. Close the airflow regulating valve and turn off the fan unit.



pressure reading needs to be monitored.

7. Make a note of the pressure and the time. The leak test period is approx. 20 minutes.
8. At the end of the 20 minutes if no more than 10% of the pressure should be lost to deem as a PASS. If more than 10% of the pressure is lost then the isolator has FAILED.

If the isolator has failed the pressure decay leak test first repeat the check for any obvious loose connections or openings. Give special attention to the tubing connection, filter connections and doors and seals. Also make sure the bungs are tight inside the tube when closing these. After re-tightening any loose connections try the test again. Should it still turn out unsuccessful, the following procedures will need to be followed:

Option A

Test via detected air movement only – recommended to avoid extensive cleaning after procedure is performed

- use a smoke stick or very fine paper strips which move easily with any airflow
- close the air outlet with a bung
- increase the pressure to maximum – then reduce airflow by turning down the valve or speed of the fan to reduce stress on the seams
- use the smoke stick or fine paper strips and move along all seams of the isolator watching out for any air movement – disturbance until the leak is found
- details of areas as in Option B

Option B

Test using a soapy solution or / leak spray which will produce bubbles – thorough cleaning required after procedure

Introduce 500ml of a soapy solution or sterilisation solution like 0.5% Tegodor into the isolator, increase pressure to 15mm (150 Pascal) then spray each of the following areas in turn until the leak is found:

- a) Inlet and outlet filter attachments.
- b) Gloves and sleeves
- c) Entry port attachments.
- d) All welds.
- e) Isolator panels.

While spraying each area, look for bubbles being produced on the outside of the canopy, once the leak has been found, repair as necessary and repeat the pressure test as described.

5.5 Sterilisation Procedures

Assuming the isolator is new or has not been used before, it should be relatively clean. During delivery and construction dust and grit can enter the isolator therefore this must be removed prior to the sterilisation process.

There are many methods of sterilisation for isolators, described below is a general description using a liquid sterilisation solution in conjunction with a compressor and atomising gun. Please check with your health and safety officer and general regulations which sterilisation method is the best one for your application.

PROTECTIVE CLOTHING / MASK MUST BE WORN

Preparation

Before sterilisation, a leak test should be performed to insure the integrity of the isolator and it's add on components are intact. Fit the 2 No.49 bungs to the inlet filter and exhaust filter barrels. Then spray and clean with a weak degreasing agent, such as a 3% solution of Tegodor, and irradiated/autoclaved cloth/kitchen roll all the internal surfaces of the isolator canopy, the sleeves and gloves. If an internal animal rack is fitted this should be cleaned/degreased as well.

Dry off with sterile wipes or irradiated/autoclaved kitchen roll. When this process is completed remove all waste materials from within the isolator and dispose of according to your health and safety requirements.

Pre-sterilisation

Introduce into the isolator any irradiated/autoclaved sundries which are possible to withstand the following sterilisation procedure – please observe general import procedures to work as clean as possible. To import completely sterile is not necessary at this stage but starting with items as clean as possible will help with the sterilisation process. Gloves and protective clothing is to be worn when handling these goods and sprayed as their entry is made.

Sterilisation

- Prepare at least 300ml of your sterilisation solution for sterilizing the inside of the isolator.
- Use the compressor ideally with 2 connecting tubings – one of them coiled.
- Connect the coiled tubing to your atomiser gun and place inside the port/ Isolator together with the bottle of sterilisation solution.
- Feed the end of the tubing through the access nozzles of the port cap /door and connect to the second tubing which is connected to the compressor.
- Check the inner cap/ door is present inside the isolator.
- Fit the outer port cap/door to the entry port, and make sure they are securely closed.
- Spray all surfaces with your sterilisation solution.
- Place the atomiser and tubing back into the port and

- close the inner cap/door.
- PROTECTIVE CLOTHING / MASK NEED TO BE WORN
 - Remove the outer cap/door and remove atomiser and tubing from the outer cap/door.
 - Close the Port and spray again through the nozzles and close them tightly.
 - Leave for a period of 12 hours.

After 12 hours have expired the isolator needs to be vented. For this purpose you need to follow procedures to minimise exposure to the room /staff.

Described below are two options:

1. Fit a fume cover to the outside exhaust filter and flexible hose and seal with tape. The hose should be long enough to reach a fume extract system or an open window. Remove the bungs and ventilate overnight or a minimum period of 12 hours.
2. If the sterilisation method is not as toxic the removal of the bungs inside the isolator and switch on the fan unit. The Isolator should ventilate also for at least 12 hrs.

After ventilation perform test procedures as you decide for your application.

NKP Isotec is able to provide you with additional advice and protocols for several procedures – ranging from sterilisation and first imports to removal of contaminated or infectious material – please talk to us for further information.

It is advisable to keep a log of all procedures undertaken.

6. Replacements

6.1 HEPA Filter Change (Negative & Positive Pressure)

If the HEPA filter needs to be changed because the filter has reached its expected lifetime (which is approximately 2-3 years) or if too much dust has clogged the filter the following procedure can be observed (pressure gauge shows increased pressure to normal - Exhaust filter is clogged, a decrease in pressure suggests that the inlet filter is clogged).

We recommend not to change filters when the isolator is still in full operation as the risk of contaminating the Isolator during this process is very high if the sterilisation procedures are not followed properly. We recommend to irradiate the HEPA filter prior to installation.

Only experienced staff should be conducting the procedure to ensure the utmost care is taken not to compromise the health status of the animals inside the isolator.

If at all possible the filters should be changed when not in use/ after a project has been finished and the Isolator is empty.

New Component Parts

NKP-Isotec HEPA Filter (FI- HEPA)

Tools / Equipment Required:

Sterilisation solution

Atomiser

Compressor

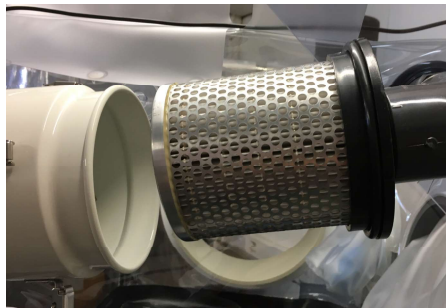
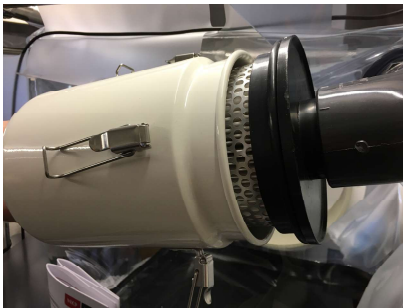
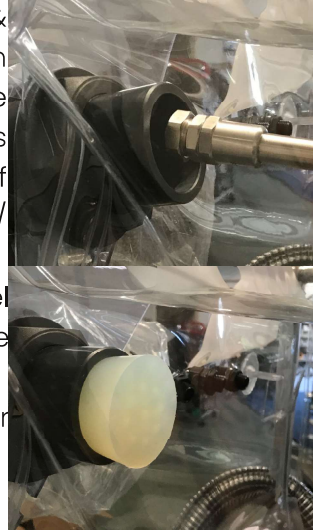
Waste bag, tape

External inlet and exhaust filter changing procedures

Spray an amount of sterilant (your Health & Safety department will be able to advise on quantity and strength); from inside the isolator into the barrel nipple opening, this will also help with the decontamination of the inside of the HEPA filter (infection studies/ reduce allergens).

Place a No.49 bung (stopper) into the barrel nipple opening inside the isolator to provide an airtight seal.

Remove the external filter housing or rougher filter.



Wearing protective clothing (hat, mask and gloves), partially unscrew the external filter. (cover in decontamination plastic bag if contaminated / infectious material may be inside / or to avoid exposure to potential allergens)

Place a large plastic bag around the old HEPA filter and secure in place around the filter elbow.



Carefully remove the old HEPA filter into the bag and close immediately by twisting and seal with some tape.



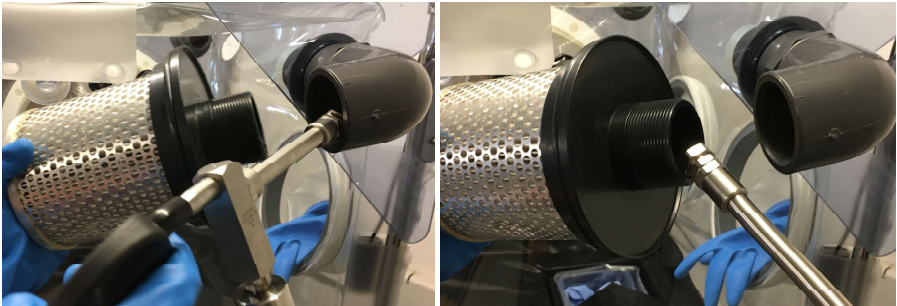
The sealed bag containing the filter can be placed in an additional bag if required, marked "Hazardous Waste", decontaminated and disposed of accordingly.

Spray the inside of the elbow to decontaminate for the second time – cover if pathogens require this and incubate for a sufficient time.



Dry the inside of the elbow – spray sufficiently with disinfectant and fit the new HEPA filter. For Filter change when Isolator in use use only Irradiated Filters!

Optional - apply a 1/8" (3mm) bead of sealant to the new HEPA filter element before screwing it back into place for extra security. Experience shows that the screw fixture provides already an airtight seal which is sufficient for most applications.



Treat any cloths, which were used for drying the elbow or any other area, as "hazardous Waste" and also dispose of accordingly if applicable.

Re-fit the filter housing.

Remove the No.49 bung (stopper) only after sufficient incubation time for the sterilisation solution.

NOTE: Should you wish to change over your isolator system from negative pressure to positive pressure or positive pressure to negative pressure, it is recommended that the isolator system be decontaminated, new filters fitted to the correct configuration and re-sterilised. Failure to do this could result in contamination and may have adverse effects on your research or breeding program.

6.2 Glove Change (Negative & Positive Pressure) under sterile conditions

The gloves are the weakest part of an isolator and damage can happen easily. The check of the gloves should be a routine procedure performed every time the operator is working on the isolator. Once a whole or suspected damage is detected, immediate action should be taken to secure the isolator and replace the glove as soon as possible.

First action

Secure the Isolator by clamping the sleeve where the damage has been detected using one of the NKP sleeve clamps.



do not clamp to far at the top, as this makes it difficult to attach the glove-change-bag

clamp off, avoiding folds in the sleeve!

leaving enough space for new glove to be fitted

Component Parts

2 Sleeve Clamps (NKP)
Glove change bag (NKP)
Replacement Glove
Replacement Glove Cuff (or existing)
Replacement 3" (75mm) 'O' Ring (or existing)
1" (25mm) White Stretch Tape (NKP)
Sterilisation solution
Atomiser gun / compressor
Waste Bag and Paper Towels
Personal protective clothing

Tools

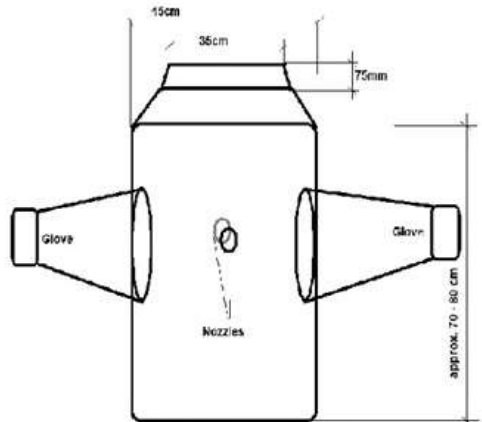
Scissors

Procedure

After clamping the sleeve, the Isolator contents are now safe and the damaged glove can be removed, by taking off the tape and simply pulling the glove with its fittings out of the sleeve. The area below the clamp on the sleeve is now "compromised" and not clean! This clamp has to stay in place until the glove change is complete!!!

A simple way to replace the glove is to now assemble a new glove with the cuff and O-Ring as described in Appendix B. To sterilise the area inside the sleeve and glove spray or pour some of your sterilant inside the sleeve before fitting the new glove (point 5-appendix B). With this version you need to be aware that there is a risk of incomplete decontamination if not performed properly.

The safest way to achieve a glove change in sterile conditions is the use of the “NKP Glove changing Bag”:



There are spray nozzles at the front and the back of the glove-change-bag to enable easy spraying of sleeve and clamps

1. Attach sleeve clamp to affected sleeve
2. Remove the tape around the glove cuff to remove the damaged glove
3. Assemble glove with the cuff as described in appendix B up to step 4 only!
4. Clean the sleeve on the Isolator if any apparent dirt is visible and dry off as much as possible.
5. Using the glove change bag and second clamp place the assembled glove inside the bag and attach to the sleeve. Do not forget the second O-Ring.
6. Clamping it securely ABOVE the current clamp.

7. Using the help of a second person if possible spray all items inside the bag carefully with your sterilisation solution. Take special care to cover the area around the clamp – inside the sleeve covering all areas well
8. Incubate according to your sterilisation procedures (at least 30mins)
9. Attach the glove to the sleeve following steps 5 to 9 / glove assembly appendix B – inside the glove change bag.
10. Making sure the glove has the correct orientation and is securely attached you can carefully remove the second clamp and glove change bag wearing suitable personal protection
11. Dry the area on the glove assembly carefully without removing the glove again from the sleeve until as dry as possible
12. Follow step 10 and secure the glove with the tape.



Dispose of any waste as per your Health and Safety instructions for chemical hazardous waste.

6.3 Fitting of a replacement Isolator Canopy

When the canopy needs to be replaced the procedure from removal to being able to use the isolator is quite time intensive and needs good planning.

Prior to fitting the new canopy, the old canopy needs to be safely removed to ensure the re-fitting of a new one.

Make sure all contents are removed and the inside of the Isolator is decontaminated if necessary.

If you feel uncomfortable performing these procedures we are happy to install the canopy for you.

We do not recommend to buy replacement canopies to keep in stock, as the PVC material will age and will not flatten out as nicely.

Tools required:

- flat head screwdriver
- posi drive screwdriver
- 5mm allen key
- 14 mm spanner or ratchet drive socket
- scissors
- cloth, binbag, alcohol/water

6.3.1 Identification of correct canopy

Each isolator canopy has an identification number, which is individual to that canopy. This number is situated on a disc on the opposite end of the canopy to the entry port. Please note this number down when enquiring about ordering a new canopy with NKP Isotech to ensure you will receive the correct type of the canopy. Especially on older Isolators the size may be a very specific one and you may have to



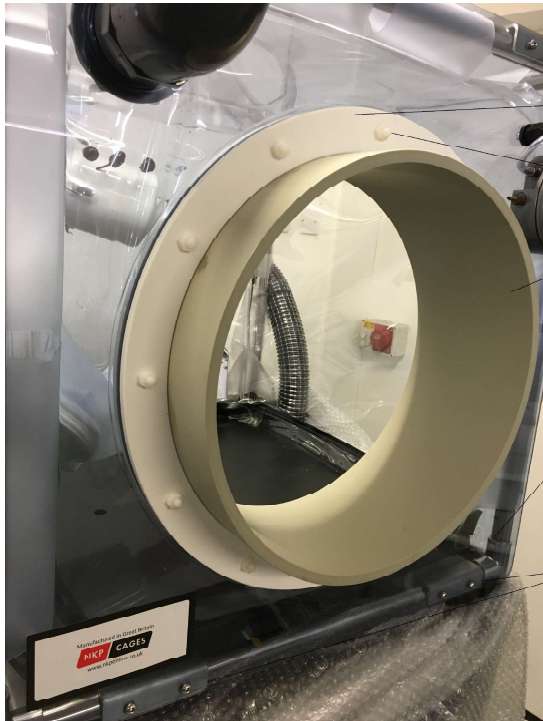
Identify the isolator canopy handing in relation to the handing of the frame work (Left and right handed)

6.3.2 Removal of the Canopy and Entry Port System

- remove inlet and outlet connections to HEPA filters (grey elbows and nuts)
- the filter cabinet may need to be unscrewed and fully removed or at least screws are loosened to be able to remove the flaps of the canopy. You need this access also when fitting the new canopy.



- Remove all caps and screws around the Port
- Remove the white ring fixing the port to the port plate
- Unscrew the port plate (Brackets) and remove from the



Port ring

Screws

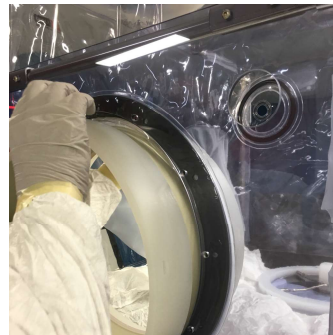
Port tube

Port plate

Port plate brackets

frame

- Push the port towards the inside of the Isolator until fully detached from the canopy - this may be a little difficult as the port is sealed to the canopy with silicon.



- Remove the port and all parts from inside the canopy
- Clean the port and assembly to remove all residues of the silicon, which is easiest achieved by rubbing over the dried on silicon whilst wearing rubber gloves
- Keep all parts in a save place ready for installation of the new canopy
- Unclip all the hanging flaps.



- Remove the old canopy carefully from the frame via the front
- if your canopy has a removable base - take this out of the canopy floor - ready for the replacement canopy to re-use
- disposal of the PVC foil (decontaminated if necessary) as normal waste or special plastic PVC recycling

6.3.3 Fitting of the replacement canopy

Unpack the canopy.

DO NOT USE KNIVES TO UNPACK THE CANOPIES FROM THE BUBBLE WRAP PACKAGING AS DAMAGE MAY BE CAUSED.

Place the canopy on the centre supports (canopy channels) of the external framework.

Allow a period of time for the PVC to reach room temperature, as the foil can be more easily moved - damage can occur if the PVC material is too cold!

Ensure the sleeves / arms of the isolator canopy are to the front. Unfold the isolator canopy and raise the centre top section to allow some air into the canopy.

Starting at the very top of the canopy - from the very middle of the roof to the port end section. Fasten the hanging flaps all around the frame, working across the top and then down the sides.

Inspect the canopy for any obvious signs of damage.

Allow the isolator canopy to hang for at least 20 minutes before proceeding with any other construction.

Once the canopy is fully fitted the re-attach all grommets, Filters and port and any other connections.



6.3.4 Fitting of the Entry Port System

Component Parts (Port) – depending on style used

1 x Port tube with fixed flange attached

1 x Inner port door

1 x Outer port door with spray nozzle

1 x Loose white port ring (split)

12 x M8 nylon nuts, bolts, caps and 'O' rings

1 x Tube of sealant

1 x Port plate

12 x M6 x 20mm screws and 24 x washers/spacers

Tools Required

Sealant gun / silicon

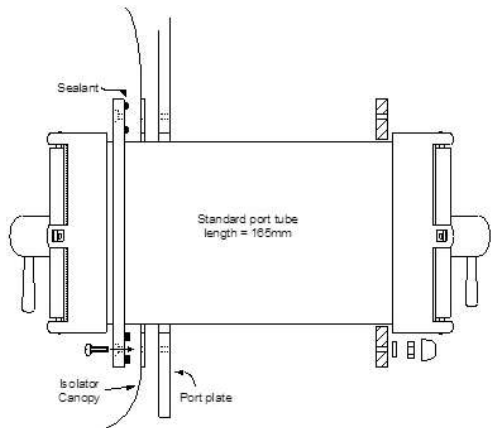
Flat head screwdriver

14 mm spanner or ratchet drive socket

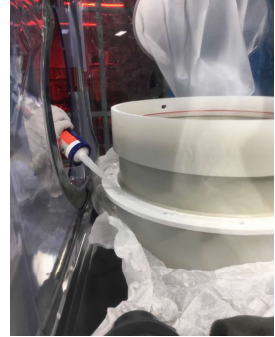
5 mm allen key

scissors

Before proceeding with the fitting of the Entry Port System, ensure all components and tools are readily available. Use the instructions below.



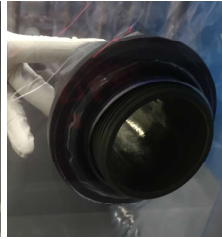
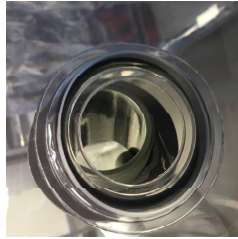
1. Introduce to the inside of the isolator canopy, via the entry port gasket, the inner port door and the port tube. To allow the port tube flange to pass through the port gasket, it may be necessary to undo some of the securing tunnels of the isolator canopy. Excessive force is not required.



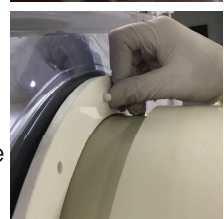
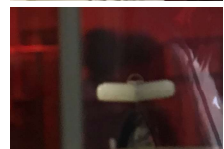
2. Fit to the 12 x M8 nylon bolts the 12 x small 'O' rings, the 'O' rings must be fitted as they seal the bolts thread, then place the bolts and 'O' rings inside the canopy.



3. Position the port tube on the floor of the canopy so that the inner collar is sitting on the floor (shorter side).
4. Now the port plate can be attached again to the frame
5. Next attach the nut and elbow of the HEPA filter exhaust as it is easier to fit whilst the port is not fitted



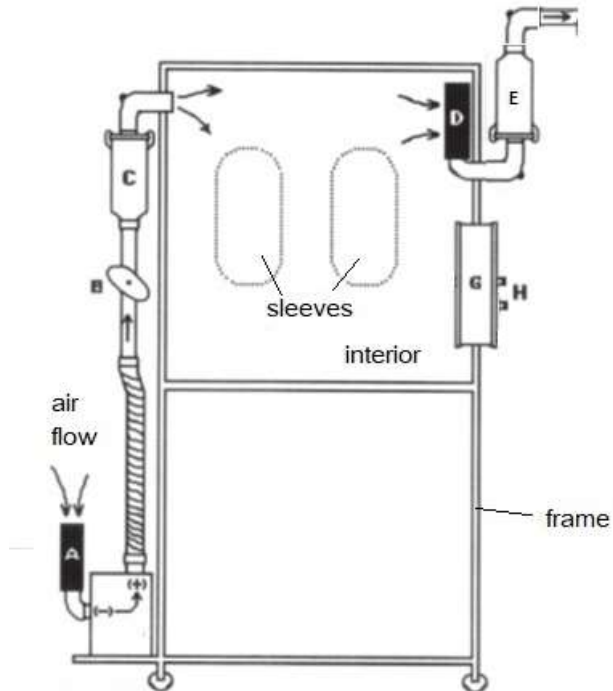
6. Working through the port gasket, apply to the welded flange of the port sealant in a wave formation, making sure behind each of the screw holes is some silicon.
7. Turn the port tube on its side facing as it will be fitted and move into the gasket
8. Using the top screw pushing through the hole of the port flange from the inside, locate on the canopy.
9. Push the screw through the hole of the port, canopy and port plate.
10. Locate the outer white port ring over the port and align with the screw. If a split port ring is used locate the gap at the bottom of the port
11. secure the location by attaching the nut over the screw from the outside – screw only lightly to hold in place
12. Secure the port location
13. Push the outer port collar through the port gasket, offer the top M8 bolt with 'O' ring to the top hole in the port gasket and push through, continue with all 12 bolts, allowing the sealant on the welded flange to adhere to the gasket. This operation should be performed slowly to avoid sealant being spread unnecessarily.
14. The port will now be held in place by the screws.



15. Continue to push through the port plate holes the remaining 10 x M8 bolts and fit nuts, but do not tighten straight away.
16. Progressively tighten up the nuts (working your way from opposite screws) so that approximately 1-2 mm of bolt protrudes from the nut. If the correct amount of sealant has been applied to the welded flange, the sealant will begin to evenly seep from between the welded flange and the isolator canopy gasket. **DO NOT OVER TIGHTEN THE NUTS.**
17. Fit the inner and outer port doors.
18. **DO NOT USE THE PORT ASSEMBLY FOR AT LEAST 2 HOURS TO ALLOW THE SEALANT TO CURE.** Failure to follow this instruction may result in a leak test failure.
19. Attach the fliter units back in place.

7. Appendix A – schematic of the Isolator – Airflow

7.1. Positive pressure



A – intake prefilter

B – Intake valve

C – Intake HEPA filter

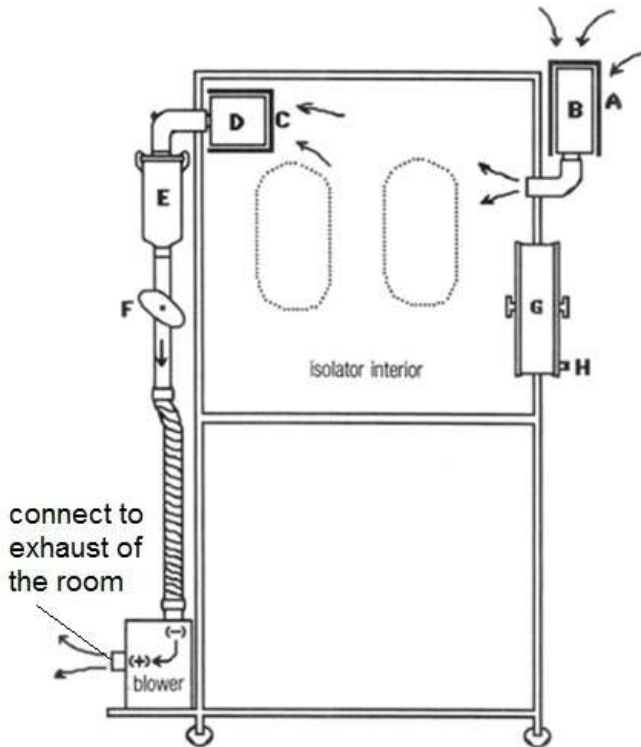
D – Exhaust pre-filter

E – HEPA filter exhaust

G – port

H – spray nozzles

7.2. Negative pressure



- A – intake prefilter
- B – HEPA filter intake
- C – exhaust pre-filter
- D – HEPA filter exhaust (optional)
- E – HEPA filter exhaust
- F – Exhaust air flow valve
- G – port
- H – spray nozzles

8. Appendix B – Glove assembly

Component Parts

Required number of pairs of gloves (choose gloves according to your application – refer to chemical penetration charts)

2 per pair two ringed tapered glove cuffs

2 per pair 3" (75mm) 'O' rings

1" (25mm) White Stretch Tape



Tools Required

Sharp scissors

1. Insert into open end of a glove a 2-ringed tapered glove cuff with the narrowest end towards the fingers of the glove; push the cuff evenly into the glove until a tight fit is achieved.
2. Fit to the cuff ring furthest away from the fingers a 3" (75mm) 'O' ring.
3. Cut off the excess glove material so that the glove material is flush with the top of the glove cuff (no glove material should protrude past the glove cuff).



- secure the glove/cuff assembly 1" (25mm) with white stretch tape. Ensure the tape is evenly applied, pulling gently but consistently, without creases or air bubbles. The tape should cover the lower channel of the glove cuff, the 3" (75mm) 'O' ring, the cut part of the glove and the flat section of the glove cuff.



- Insert a completed glove assembly into the sleeve opening of the isolator. Ensure a left-hand glove is fitted to a left-hand sleeve and so on.



- Pull the sleeve so that all twists/creases are removed from the sleeve, with your hand in the glove to be fitted, orientate the glove to the required position.

8. Feed the sleeve material down to the bottom of the glove assembly and secure in place with an 'O' ring.

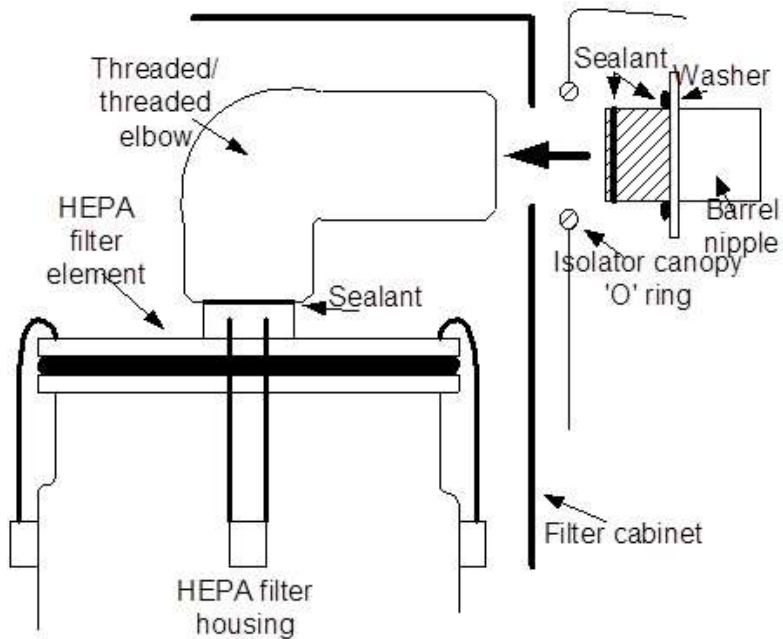


9. Check that all creases are removed.
10. Using the 1" (25mm) white stretch tape to this connection so that the 'O' ring of the sleeve and the glove assembly is completely covered and sealed with no creases or air bubbles.



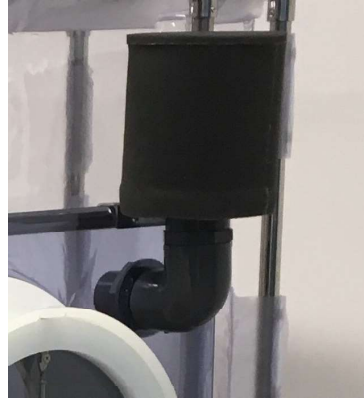
9. Appendix C – Filter positions

Inlet – HEPA assembly



Outlet HEPA assembly *with or without casing

Exhaust Filter assembly can be without casing - in this case the exhaust air from the Isolator will be released into the room.



Filter assembly with Aluminium casing will allow connection to a room exhaust. An additional valve will be fitted to control airflow



HEPA Filter attachment – procedure

The procedure is the same for the inlet and outlet filter. The only difference is the direction of the elbow. For the outlet the HEPA is usually screw on facing towards the ceiling, for the inlet facing towards the floor.

Components

NKP Type HEPA Filter Element
Pre Filter for HEPA / Inlet
2" Threaded/Threaded Elbow
2" Hex Nipple
Sealant

Tools

Sealant Gun

1. Apply a 1/4" (6mm) bead of sealant to the Hex nipple where the threaded section meets the washer.
2. Apply a 1/8" (3mm) bead of sealant to the threaded section of the Hex nipple approximately 1/4" (6mm) from the end.
3. Introduce the Hex nipple into the isolator canopy via the entry port.
4. Push the threaded section of the Hex nipple through the 27/8" 'O' ring, which is welded into the isolator canopy at the entry port end of the canopy.



5. Repeat item No.4 pushing the Hex nipple through the pre-cut hole in the port plate.
6. Take the threaded/threaded elbow and screw the longest section to the protruding threaded section of the barrel nipple, tighten up the elbow so that sealant escapes from between the barrel nipple washer and the 'O' ring welded into the canopy. Ensure the elbow is secure and positioned with the short section of the elbow facing up.
7. Optional: Apply a 1/8" (3mm) bead of sealant around the threaded section of the filter element approximately 1/2" (13mm) into the elbow.
8. Screw the filter element fully into the short section of the elbow.
9. Smooth the sealant which has escaped from this joint with a gloved finger to ensure a seal.
10. Slide the rougher filter cover assembly over the filter element or attach Filter housing.

