



**Basic Training Program**

in

# Personal Breathing Protection

**YOUR RESPIRATOR**



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# Your half mask filter respirator



*Some examples of half mask filter respirators*

## What is it?

The main parts of a half mask filter respirator are:

- A **face piece** that covers your nose and mouth
- A **filter** or filters
- A system of one-way **valves**
- A **head harness** that keeps your respirator securely on your face

## How does it work?

The valves enable you to breathe in through the filter which cleans the contaminated air before it reaches your lungs. The air you breathe out is released through the exhalation valve(s) without any contaminated air leaking in.

## Where can it be used?

A half mask filter respirator (in good order, correctly worn, with good facial seal, and fitted with the appropriate filter or filters) can be used for protection against dust, aerosols, gas, vapour, smoke, fume, bacteria, viruses, mould and other air-borne materials in atmospheres containing enough oxygen for human breathing.

## Where **can't** it be used?

A half mask filter respirator **cannot** be used:

- If you can't achieve adequate facial seal around the rim of the mask
- If the air is oxygen-deficient
- If the air contains unknown substances
- If the air contains substances that are Immediately Dangerous to Life and Health
- If you are working in a confined space
- If the concentration of contaminants is greater than local permissible levels for the use of half mask filter respirators
- If the wrong type of filter(s) has been fitted
- If a filter needs to be replaced for any reason (too old, used up, damaged, among other reasons)
- If local regulations or legislation prohibits the use of half mask filter respirators

## What are the limitations?

- All of the cases above
- The breathing resistance of both the filter and the respirator requires a certain added effort to breathe, both in and out. This will affect the way you feel and your work capacity. It is important to select filters and respirators with the lowest possible breathing resistance.
- Some filters are less resistant to aerosols, moisture, humidity, oil mist and other 'wet' conditions. Those filters should not be used in such atmospheres.

## Respirator use and maintenance

### **First of all...**

...make sure you are familiar with your respirator, know how to put it on and how to adjust it for the best possible fit.

### **Before you don your respirator, check that:**

- it is the right kind of respirator
- it is your respirator
- it is clean
- it is not damaged in any way
- it is fitted with the right type of filter/cartridge
- the filter/cartridge does not need to be replaced for any reason (expiry date, wrong type, damage, etc.)

### **After you don your respirator, check that:**

- it does not leak (most manufacturers will tell you how to perform a quick leakage test)

### **When you remove your respirator:**

- Check that it has not been damaged
- Clean it or have it cleaned, according to instructions
- Store it according to instructions

## Your full face filter respirator



*Some examples of full face filter respirators*

### What is it?

The main parts of a full face filter respirator are:

- An **inner mask** that covers your nose and mouth
- An **outer mask** with **visor** that covers your eyes and face
- A **filter** or filters
- A system of one-way **valves**
- A **head harness** that keeps your respirator securely on your face

### How does it work?

The valves enable you to breathe in through the filter which cleans the contaminated air before it reaches your lungs. The air you breathe out is released through the exhalation valve(s) without any contaminated air leaking in.

The full face respirator not only filters out harmful materials from the air you breathe, but also protects your face and eyes from dust, gas, liquid splashes and impact.

### Where can it be used?

A full face filter respirator (in good order, correctly worn, with good facial seal, and fitted with the appropriate filter or filters) can be used for protection against dust, aerosols, gas, vapour, smoke, fume, bacteria, viruses, mould and other air-borne materials in atmospheres containing enough oxygen for human breathing.

### Where **can't** it be used?

A full face filter respirator **cannot** be used:

- If you can't achieve adequate facial seal around the rim of the mask
- If the air is oxygen-deficient
- If the air contains unknown substances
- If the air contains substances that are Immediately Dangerous to Life and Health
- If you are working in a confined space
- If the concentration of contaminants is greater than local permissible levels for the use of full face filter respirators

- If the wrong type of filter(s) has been fitted
- If a filter needs to be replaced for any reason (too old, used up, damaged, among other reasons)
- If local regulations or legislation prohibits the use of full face filter respirators

## What are the limitations?

- All of the cases above
- The breathing resistance of both the filter and the respirator requires a certain added effort to breathe, both in and out. This will affect the way you feel and your work capacity. It is important to select filters and respirators with the lowest possible breathing resistance.
- Some filters are less resistant to aerosols, moisture, humidity, oil mist and other 'wet' conditions. Those filters should not be used in such atmospheres.

## Respirator use and maintenance

### **First of all...**

...make sure you are familiar with your respirator, know how to put it on and how to adjust it for the best possible fit.

### **Before you don your respirator, check that:**

- it is the right kind of respirator
- it is your respirator
- it is clean
- it is not damaged in any way
- it is fitted with the right type of filter/cartridge
- the filter/cartridge does not need to be replaced for any reason (expiry date, wrong type, damage, etc.)

### **After you don your respirator, check that:**

- it does not leak (most manufacturers will tell you how to perform a quick leakage test)

### **When you *remove* your respirator:**

- Check that it has not been damaged
- Clean it or have it cleaned, according to instructions
- Store it according to instructions

## About filters/cartridges for your respirator



*Some examples of filters/cartridges*

There are three main types of filters/cartridges:

- Particle filters
- Gas filters/cartridges
- Combination filters/cartridges

### ***What are they?***

- **Particle filters** protect *only* against particles, that is, dust, aerosols, smoke, mould, bacteria and so on. A particle filter does NOT protect against gases and vapours.
- **Gas filters/cartridges** protect *only* against gases and vapours. There are different kinds of gas filters/cartridges for different kinds of gases. A gas filter/cartridge does NOT provide protection against particles.
- **Combination filters/cartridges** protect against *both* particles and gases. Different combination filter/cartridges are used depending on the gas or vapour present in the air.

### ***When is a filter “used up”?***

There is a big difference between the way particle filters and gas filters/cartridges are used up:

- **Particle filters** simply absorb more and more particles, and will eventually clog up and become more difficult to breathe through.
- **Gas filters/cartridges** absorb gas until they become saturated. After this, the filter will simply not absorb any more gas. There is no difference in breathing resistance, and you will probably not be able to tell by smell or taste that the filter has become ineffective. The gas goes right through a ‘spent’ filter. This is why it is very important to replace gas filters/cartridges before they are used up. This has to be done according to a time schedule based on the type and concentration of the gas or vapour.
- **Combination filters** become used up when either the particle component becomes clogged up and hard to breathe through, or when the time is up for the gas component.

### ***Limitations***

- Some types of particle filters may not be able to absorb very small particles
- Some types of particle filters may not be able to absorb wet particles (aerosols, oil mist, etc.)
- Some types of particle filters may be affected by humidity and temperature

- No gas filter/cartridge will ‘tell’ you when it needs to be replaced
- All filters have a certain breathing resistance. A filter with a high resistance will affect your work performance

## **Summary**

- **Know your respirator, how to fit it and how to maintain it**
- **Always make sure your respirator and filter(s) are in perfect working order**
- **Before each shift, test for leakage**
- **Use only the correct type of filter/cartridge for your work place**

## **About your supplied air respirator**

Supplied air respirators come in two major types:

- Face pieces with supplied air connection
- Loose-fitting hoods, helmets or blouses with supplied air connection



*The picture shows a typical supplied air hood*

### **What is it?**

A supplied air respirator is a respirator to which clean air is pumped through a hose or air line from a remote source.

### **What are the advantages?**

A supplied air respirator has three main advantages:

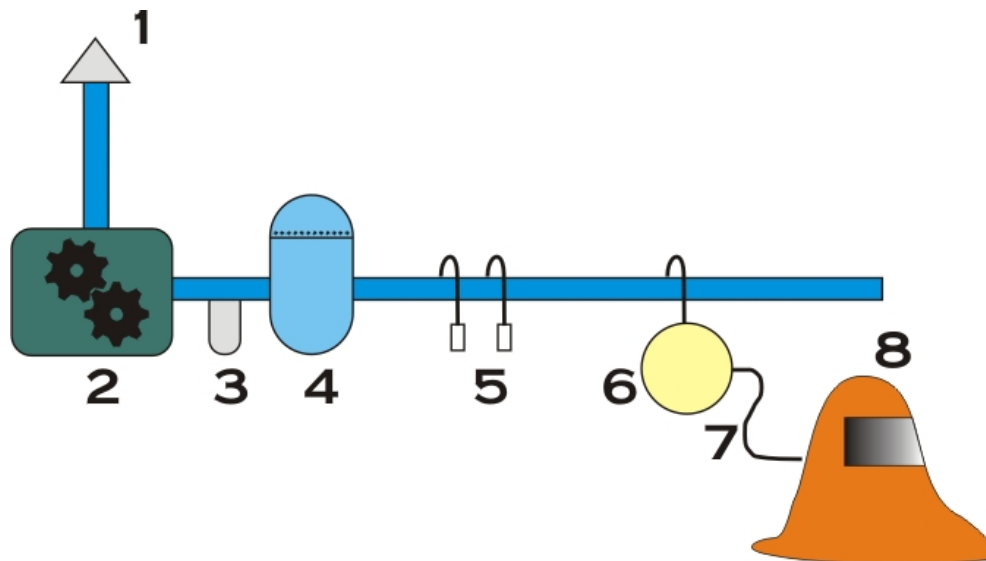
- It is independent of the surrounding atmosphere
- It does not rely on facial seal (as long as the air supply is of positive pressure at all times)
- Positive pressure air supply means that there is no breathing resistance

### **What are the limitations?**

- Comprehensive supply equipment (pumps, filters, condensation traps, air conduits, regulators, pressure controls etc.)
- Restricted mobility. User is always hooked up to the supply through a hose
- Very little time (usually one minute or less in loose-fitting respirators) to clear the area if air supply should fail, unless back-up equipment is fitted

## How does it work?

A properly set up supplied air system is a permanent installation that comprises a chain of important parts before the air reaches your lungs:



1. Air intake (located in a place where the air is clean)
2. Compressor, equipped with refrigerated dryer and automatic drainage
3. Water (condensation) and oil traps
4. Receiver (a tank which serves to even out pressure variations)
5. Outlets for air tools, such as spray guns
6. Compressed air filter which removes any impurities from the breathing air
7. Breathing hose, odour free
8. Supplied air respirator

## Use and maintenance

- Keep your respirator, visor, and breathing hose clean
- Pay special attention to the hose connector and make sure it is free of dirt and grime
- Make sure that the air intake, compressor and all parts of the air supply are in good working order
- Always ensure that your respirator is connected to an outlet for filtered breathing air. It should be impossible to connect your respirator to an unfiltered outlet intended for air tools.
- Make sure you know what to do if the air supply should be interrupted (compressor failure, supply hose cut, connector accidentally released etc.)
- Always leave the work area before removing your hood or face piece. Do not take it off until you are in an area where the air is safe to breathe