

# Beta 90 FreshAir / Delta 90 FreshAir

Protecting welders from the inside out



Welding and fabrication can be a hazardous business. Operating in potentially harmful environments, Welders are exposed to fumes, dust, arc radiation and noise. Health and safety risks must be taken seriously and protective equipment must be used to avoid short and long term health issues.



**A single welder can produce up to 40 grams of airborne fume and particulates per working hour.** Typically we breath 4000 litres of air per 8 hour work shift, and therefore our lungs can be exposed to significant contamination for long periods. Welding fume is composed of elements dangerous to human health. If unprotected, tiny fume particles can pass deep into the lung structure causing a variety of short- and long-term health issues.

## Protecting welders from the inside out

Kemppi range of welder's respirators are designed to provide necessary protection against the associated health and safety risks of welding – and to ensure everyday user comfort.





**Beta 90 FreshAir**



**Delta 90 FreshAir**

### Why buy

- Protection for arc welding, plasma cutting, gouging and grinding operations
- Provides safe, clean and cool breathing air
- Positive pressure design makes breathing effortless
- Light-weight 900 g battery powered filter pack or airline supply
- Air flow reduces weld lens misting
- Three stage flip lens for welding, tacking and grinding operations
- Lightweight and comfortable
- Standard or automatic welding lens options
- Welding and grinding rated to EN175B
- Filter efficiency no less than 99.998 % of the airborne particles

### Respiratory protection for welding and grinding

**Beta 90 FreshAir is a lightweight head unit providing protection against welding, grinding and associated airborne fume and dust contamination.**

**Designed for welders working in all positions,** Beta 90 FreshAir provides improved protection for the eyes, face and lungs. The multi-point head harness ensures maximum adjustment and comfort, and the 3-stage flip lens makes welding, tacking and grinding operations effortless and safe. The shield design also incorporates a perimeter deflection rim, offering additional protection in overhead welding applications. Further protection and comfort is provided by the dual-skin hatch design, which reduces heat transfer to the welders face.

**Beta 90 FreshAir can be combined with either a battery powered FreshAir filter pack or locally supplied breathing air sources.** Cool and clean breathing air is channeled through a filter and directed over the welders face, and the adjustable fabric face seal creates a safe and easy breathing zone for all day welder comfort. Due to the 'positive pressure' principle, any harmful airborne welding fumes and dust contamination is eliminated, and this also prevents the welding lens from misting.

### Respiratory protection for welding in hard hat work areas

**Delta 90 FreshAir is a robust unit providing all round protection for welding in extreme conditions, such as shipbuilding, mining and construction sites.**

**Delta 90 FreshAir integrates head, face and respiratory protection in one high strength unit,** providing welder's maximum protection and comfort. In addition, high quality hearing protection can also be integrated as an optional extra.

**Delta 90 FreshAir can be combined with either a rechargeable, battery powered FreshAir filter pack or locally supplied breathing air sources.** Cool, clean, filtered breathing air is channeled over the welders face, eliminating harmful airborne welding fume and dust contamination. The adjustable face seal, combined with the 'positive air pressure' design, creates a safe and easy breathing zone for all day welder comfort and prevents the welding lens from misting.

### Why buy

- Welding and hard hat protection
- Provides safe, clean and cool breathing air
- Positive pressure design makes breathing effortless
- FreshAir prevents welding lens misting
- Choose battery powered filter pack or airline supply
- Mounting for optional high quality ear defenders
- Choose from standard or automatic welding lens options
- Meets hard hat standard EN397 and welding certification EN175

# FreshAir Flow control with alarm:

Battery powered – Filter pack – Blower unit – Comfort belt – Connection hose – Mains battery charger



*FreshAir Flow control with alarm incorporates an intelligent warning system, including visual and acoustic signals if the battery is drained, the filter is clogged or the airflow is insufficient.*

## Main filter cartridge, pre-filter and odour filter

- **Main particle filter PSL R**, provides protection against all types of particulate contaminants such as dusts, non-toxic and toxic fumes, solid and liquid aerosols, bacteria and viruses. The filter separates no less than 99.998 % of the airborne particles.
- **Certification:** EN 12941, type PSL R
- **Temperature range of storage and service:** 0...+ 40 °C
- **Dimensions:** (diameter / height): 132 / 55 mm
- **Filter weight:** 100 g
- **Optional pre-filter** prolongs the main filter life, preventing premature clogging by larger particles. Adhesive tapes placed on both sides of the pre-filter make fitting fast and easy. Made from 100 % PES and suitable for all filtration.
- **Odour filter** removes unpleasant odours and thus provides additional user comfort.

## Efficient, intelligent, lightweight and compact

The **FreshAir Flow control with alarm** is a blower and filter unit designed to provide protection against particulate contaminant associated with welding and fabrication operations, such as dust, non-toxic and toxic fumes, solid and liquid aerosols, bacteria and viruses. Despite its compact shape and low weight, the unit is designed for long-term operation in welding environments.

The **rechargeable battery powered system provides total freedom of movement in the workplace**, when compared to the static, airline fed option. Reliable respiratory protection is based on the overpressure created in the breathing zone of the head top unit. The positive pressure and fresh, filtered air eliminates difficulty in breathing, prevents fogging of the welding lens and improves user comfort throughout the working day.

The **Flow control system automatically maintains the chosen air-flow rate** and the intelligent warning system provides both visual and acoustic signals if the battery is drained, the filter is clogged or the airflow is insufficient. The rechargeable NiMH battery ensures operations for up to 10 hours. The airflow is manually adjustable from 140 l/min up to 210 l/min, and the advanced flow control system allows the operator to manage airflow and battery life.

## Welding lens choice

Beta 90 FreshAir and Delta 90 FreshAir units are fitted as standard with an EW11 welding filter lens. You can upgrade either unit with Kemppe's optional automatic darkening filter (ADF) pack, for added welding safety and convenience. ADF packs are available in either fixed shade EW 11 or variable EW 9-13 with sensitivity and grinding mode settings.

## FreshAir supply choice

Choose either the battery powered PAPR filter pack unit (Powered Air Purification Respirator), which provides complete independence of movement in workshop or site, or the airline fed solution, which uses your local breathing air supply channeled through a FreshAir pre-filter to remove contaminants and odours before supplying the headtop via a FreshAir regulator valve.

## Respiratory protection factor

The protection factor provided from Beta 90 FreshAir and Delta 90 FreshAir positive pressure units meets the European TH2/SA2 standard levels under EN 12941/A2 and EN 14594:2005. The units provide respiratory protection against airborne contamination not exceeding 250 mg/m<sup>3</sup>, providing that 250 mg/m<sup>3</sup> is below the IDLH level (Immediate Danger to Life and health). The units are not designated for use in environments where the oxygen level is below 17 % by volume, or as respiratory devices for escape purposes.

## FreshAir PRESSURE flow control system

**FreshAir PRESSURE flow control system** provides an ideal solution for workplaces equipped with breathing quality, compressed air supplies and distribution systems, or a mobile compressor. In addition, the belt mounted FreshAir Flow Control valve is equipped with a pressure gauge for easy workplace airflow monitoring of the supply.

**FreshAir PRESSURE Flow control provides a high level of protection from a variety of airborne contaminants.** The adjustment valve on the belt unit enables the user to regulate the air flow between 170 and 400 l/min and therefore adapt the air flow to individual needs, providing comfortable and reliable respiratory protection in accordance with EN 14594.

**Beta 90 FreshAir and Delta 90 FreshAir head tops** can be connected in combination with the FreshAir PRESSURE Flow control system. Ideal for long work periods and more static work place locations where mobility is not a key requirement. FreshAir PRESSURE Flow control system benefits from lower initial purchase and operating costs.

**FreshAir PRESSURE Conditioner** is an in-line filter station designed for improving the quality of supplied air. The strong metal pressure container incorporates a high capacity combined filter. The FreshAir PRESSURE conditioner removes particles and unpleasant odours from airline supply systems, substantially improving the quality of the breathing air. The quick couplings allow single-handed assembly of the device and the outlet connection is prepared for two operators. A standard pressure gauge measures the outlet pressure.



*FreshAir flow control filter pack automatically regulates the fan motor speed to compensate filter clogging and battery state.*



*The comfort belt mounts the battery powered FreshAir filter pack and also provides additional back support throughout the working day.*



*FreshAir pressure flow control valve regulates supply air flow and includes an air supply monitoring gauge*



*The rechargeable NiMH 4.8/4.5Ah battery lasts up to 10 hrs of operation. Purchasing a second battery ensures you always have a back-up power supply ready charged.*

# Positive pressure systems

**PAPR – Powered Air Purifying Respirators** – are the most advanced group of personal protective equipment providing a high level of protection even for long lasting applications. Battery powered portable fan units drive the local air through a particulate or chemical filter and blow it into the breathing zone.

**Advantages:** Major user advantages are derived from the excellent mobility and independence of movement provided by the battery powered filter pack, providing positive over pressure by the fan forcing air into the breathing zone, hood or helmet. This eliminates difficulty in breathing associated with negative pressure respirators and reduces the importance of a good facial fit.

**Limitations:** Higher initial purchase price and maintenance cost. Use is limited by the life time of the battery powered fan unit. Cannot be used in oxygen deficiency environments (<17%).

**Airline systems.** These respirators provide clean, fresh air to the user from a stationary air source such as a compressor.

**Advantages:** Airline respirators may be used for long periods and provide a high degree of protection from a variety of air contaminants. They provide minimal breathing resistance and discomfort, are light weight, moderate initial cost and low operating costs.

**Limitations:** Unexpected loss of the air source eliminates all protection to the user. Air must be delivered to the mask or hood through a hose which can be awkward to manoeuvre and may easily tangle, crimp or burn.

**Applications:** These respirators can be used for protection from most air contaminants.



## Technical specifications

### FreshAir Flow Control

Airflow	140 – 210 l/min at 8 adjustable flow rates
Weight of the blower unit incl. filter and battery	900 g
Noise level	55 – 61 dB
NiMh battery lifetime	500 – 700 charging cycles
One charging cycle	10 – 14 hours
Belt size	80 – 100 cm
Recommended temperature range	10 – 40 °C
Recommended humidity range	20 – 80 % Rh
Certification	EN 12 941 TH2

### FreshAir Pressure Flow Control

Minimum air flow	170 l/min-1
Maximum air flow	> 400 l/min-1
Weight of unit	250 g
Inlet connection	
Outlet connection	MINI DN 5
Noise level	61 dB
Belt size	60 – 150 cm
Supply pressure range	300 – 1000 kPa
Recommended temperature range	10 – 60 °C
Recommended air humidity range	20 – 80 % Rh
Certification	Class 2A

### FreshAir Pressure Conditioner

Maximum air flow	500 l/min
Weight without filter	6300 g
Weight including filter	6800 g
Inlet connection	Compatible with RECTUS series 25, 26 a CEYN320
Outlet connection	Compatible with RECTUS series 25, 26 a CEYN320
Recommended temperature range	10 – 60 °C
Recommended air humidity range	20 – 80 % Rh
Certification	If the requirements of TP-610050-1 are met, it complies with EN 12 021



Kemppi FreshAir welding respirators provide an economic solution for high level personal protection.



Optical magnifying lenses can also be fitted for improved visibility and close, low current work.



Kemppi auto darkening welding filter (9873058) can be fitted to either Beta 90 FreshAir and Delta 90 FreshAir.

# Why use respiratory protection?

## Hazardous materials can enter your body in three ways:

- Ingestion** – through the mouth
- Absorption** – through the skin, eyes
- Inhalation** – through the lungs

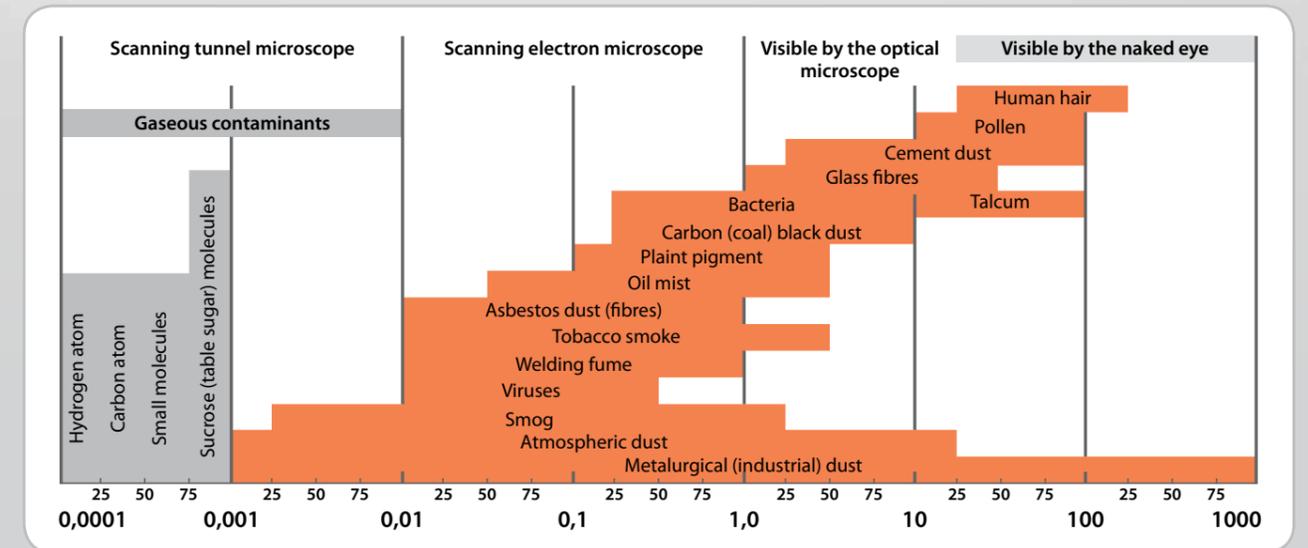
The most common route of exposure for most health hazards is **inhalation**. This includes breathing in dust, fumes, oil mist, and vapours from solvents and various gases.

Health hazards in the workplace are a major concern for both employers and employees. However, it is important to remember that hazardous materials only present a health hazard when they come into contact with your body.

Occupational lung diseases are the number one cause of work-related illness in terms of frequency, severity, and preventability. Most occupational lung diseases are caused by repeated, long-term exposure, but even a severe, single exposure to a hazardous agent can damage the lungs.

A single welder can produce up to 40 grams of airborne fume and particulates per working hour. Typically we breath 4000 litres of air per 8 hour work shift and therefore our lungs can be exposed to significant contamination for long periods. Welding fume is composed of elements dangerous to human health. If unprotected, tiny fume particles can pass deep into the lung structure causing a variety of health issues. Occupational lung diseases are preventable!

## Size comparison of various types of airborne pollutants (in $\mu\text{m}$ )

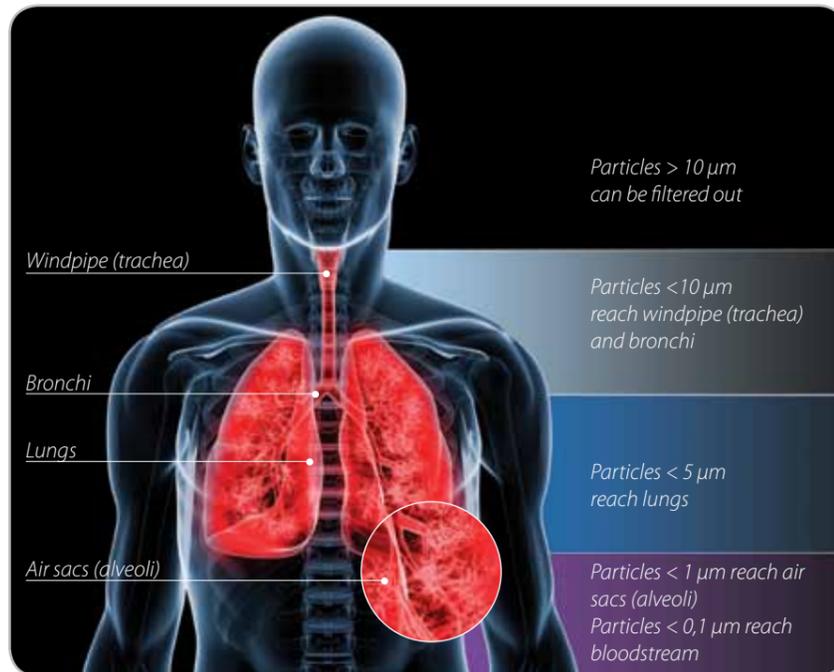


## The breathing process

To better understand how harmful substances can enter your body by inhalation, let's take a closer look at the breathing process. Whenever you take a breath, oxygen rich air is taken into your body through your mouth and nose, travels down your windpipe and into the lungs. Inside your lungs, there are tiny air sacs called alveoli. These delicate air sacs transfer the oxygen from the inhaled air into your blood. At the same time as the oxygen is being absorbed into your bloodstream, carbon dioxide is being transferred from your bloodstream into the air sacs. When you breathe out, you are ridding your body of gaseous wastes.

### The risks caused by airborne contaminants mainly depend upon:

- The physical, biological and chemical properties of the contaminants, their size and form
- Concentration in the ambient air and time of exposure
- Volume of inhaled air (the more rapid respiration, the more airborne contaminants are inhaled)



1  $\mu\text{m}$  = 0,001 mm. The smallest particle visible by the naked eye is about 20  $\mu\text{m}$ . A human hair is about 80  $\mu\text{m}$  in diameter. Single grain of talcum powder is 10  $\mu\text{m}$ .

# Hazards caused by airborne particles

**Our respiratory system has very effective mechanisms for filtering out normal pollutants from the air we breath.** The filtering system in the nose and mouth prevents large foreign particles from getting into the body, where they can cause health hazards. But when the lungs are exposed to high concentrations of dust, toxic vapors, cigarette smoke, welding fumes etc., the filtering mechanisms can become overloaded and damaged. Once damaged, various bacteria, viruses, etc. are more likely to grow in the lungs, causing infections such as pneumonia. That is why workers in dusty occupations are known to be more susceptible to tuberculosis, bronchitis and other respiratory diseases than workers in non-dusty occupations.

Gases and vapours can also enter the body through the respiratory system. Some chemicals have damaging local effects on the lungs, others are absorbed into the bloodstream and have potentially damaging effects on various target organs. Target organs are those parts of the body that particular chemicals always affect, the central nervous system (brain and spinal cord), the heart, lungs, kidneys and liver.



Workplace processes can generate tiny solid particles which are light enough to float in the air, and these are referred to as dusts, fumes and smoke.

## Ordering information

<b>Beta 90 FreshAir with Flow Control pack P1700</b>		<b>Beta 90 FreshAir helmet 9873065</b>		<b>Delta 90 FreshAir helmet 9873066</b>	
Beta 90 FreshAir	9873065	Protection plate	x 1 9873253	Face seal	x 1 W007516
FreshAir Flow Control pack	W007513	Hatch spring	x 2 4300700	Ear muffs	x 1 W007517
<b>Delta 90 FreshAir with Flow Control pack P1701</b>		Safety plate (90x110x1.5)	x 1 9873254	Fixing screws	x 2 W007518
Delta 90 FreshAir	9873066	Filter retaining spring	x 1 3149850	Headband	x 1 W007519
FreshAir Flow Control pack	W007513	Face seal	x 1 W007523	Protection plate, outside	x 10 W007520
<b>Beta 90 FreshAir with Pressure Flow Control pack P1702</b>		Hatch set Beta	4301050	Welding visor	W007522
Beta 90 FreshAir	9873065	Headband	4306370	Head cover	W007827
FreshAir Pressure Flow Control pack	W007515	Sweat band	9873018	Protective neck cover	W007828
<b>Delta 90 FreshAir with Pressure Flow Control pack P1703</b>		Head cover	W007827	Flexi-hose protection cover	W007788
Delta 90 FreshAir	9873066	Protective neck cover	W007828		
FreshAir Pressure Flow Control pack	W007515	Flexi-hose protection cover	W007788		
<b>Beta/Delta welding lens options</b>		<b>FreshAir Flow Control pack W007513</b>		<b>FreshAir Pressure Flow Control pack W007515</b>	
<b>Glass welding filter lens</b>		FreshAir Flow Control with alarm	W007512	FreshAir Pressure Flow Control set (valve and belt)	W007496
DIN 8 90x110	9873241	FreshAir battery charger	Euro plug W007485	FreshAir Pressure Flow Flexi hose	W007501
DIN 9 90x110	9873242	FreshAir Flow Control Flexi hose	W007487	Pressure Noise silencer	W007498
DIN 11 90x110	9873244	FreshAir Flow Control Flow indicator	W007488	Pressure Control valve	W007499
DIN 12 90x110	9873245	Comfort belt	W007489	Pressure Air fitting	W007500
DIN 13 90x110	9873246			Pressure Flow control belt	W007502
DIN 14 90x110	9873247			Pressure Flow indicator RD40x1/7"	W007503
<b>Automatic welding lens</b>		Basic filter, 2 pcs, standard	W007490	Pressure Conditioner unit	W007504
ADF 9-13 welding filter pack	9873058	Flow Control pre-filter 10 pcs	W007492	Pressure Conditioner filter	W007505
Inside protection plate 51x107 mm	5 pcs W007521	Basic odour pre-filter 10 pcs	W007494	Pressure Flow spiral hose 10m	W007506
<b>Magnifying lenses for ADF pack</b>		Heavy duty comfort belt	W007789		
51x108 mm	1,0 9873260	Flow Control sealing ring	for filter W007491		
51x108 mm	1,5 9873261	Battery pack, NIMH 4.8 V/4.5 AH	W007493		
51x108 mm	2,0 9873262	Flow Control filter cover	W007495		
51x108 mm	2,5 9873263				

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