

Welding Respiratory Protection

What are welding fumes?

Welding fumes are a complex mixture of metallic oxides, silicates and fluorides. Fumes are formed when a metal is heated above its boiling point and its vapours condense into very fine particles (solid particulates).

Can the composition of welding fumes vary?

Yes, welding fumes contain oxides of the metals in the material being welded.

- Fluxes containing silica or fluoride produce amorphous silica, metallic silicates & fluoride fumes.
- Fumes from mild steel welding contain mostly iron with small amounts of additive metals (chromium, nickel, manganese, molybdenum, vanadium, titanium, cobalt, copper etc.).
- Stainless steels have larger amounts of chromium or nickel in the fume and lesser amounts of iron.
- Nickel alloys have much more nickel in the fume and very little iron.

How do coatings change the composition of welding fumes?

Vapours or fumes can come from coatings and residues on metal being welded. Some ingredients in coatings can have toxic effects. These ingredients include:

- metal working fluids, oils and rust inhibitors
- zinc on galvanized steel (vaporizes to produce zinc oxide fume)
- cadmium plating
- vapours from paints and solvents
- lead oxide primer paints
- some plastic coatings

What are welding gases?

Welding gases are gases used or produced during welding and cutting processes like shielding gases or gases produced by the decomposition of fluxes or from the interaction of ultraviolet light and high temperatures with gases or vapours in the air.

Gases used in welding and cutting processes include:

- shielding gases such as carbon dioxide, argon, helium, etc.
- fuel gases such as acetylene, propane, butane, etc.
- oxygen, used with fuel gases and also in small amounts in some shielding gas mixtures

Gases produced from welding and cutting processes include:

- carbon dioxide from the decomposition of fluxes
- carbon monoxide from the breakdown of carbon dioxide shielding gas in arc welding
- ozone from the interaction of electric arc with atmospheric oxygen
- nitrogen oxides from the heating of atmospheric oxygen and nitrogen
- hydrogen chloride and phosgene produced by the reaction between ultraviolet light & the vapours from chlorinated hydrocarbon degreasing solvents (e.g., trichloroethylene, TCE)

Gases are also produced from the thermal breakdown of coatings:

- Polyurethane coatings can produce hydrogen cyanide, formaldehyde, carbon dioxide/ monoxide, oxides of nitrogen & isocyanate vapours.
- Epoxy coatings can produce carbon dioxide and carbon monoxide.
- Vinyl paints can produce hydrogen chloride.
- Phosphate rust-inhibiting paints can release phosphine during welding processes.



On 14 January 2019, the HSE shared with the Industry and Regulatory Forum on Local Exhaust Ventilation (LEV) that they have raised enforced control measures for welding operations in the UK. Enforcement of the raised control standards is with immediate effect under COSHH Regulation 7. [Full details here](#)

The raised enforced control standards are highlighted below:

- **All forms of welding fume can cause cancer. Control is required**
- **Indoor welding tasks require the use of LEV. If LEV is unable to control fume capture then Respiratory Protective Equipment (RPE) is also required.**
- **Outdoor welding requires use of RPE.**

Some considerations for you when writing/ reviewing your risk assessments

Key phrases from the HSE Bulletin	Implication	Potential Consequences to consider in line with your own risk assessments
"no safe level of exposure"	There is no Workplace Exposure Limit or WEL	<ul style="list-style-type: none"> ○ A nuisance organic vapour filter can only be used for comfort when the contaminant is below the WEL ○ When there is no safe level of exposure, you should look to reduce the contaminant as low as reasonably practicable ie use the highest possible level of protection
"Irrespective of duration"	There is no 'its only a 2 minute job' anymore	<ul style="list-style-type: none"> ○ Whenever welding, LEV and suitable and sufficient RPE should be used
LEV should always be used to contain the fume	There is a requirement to correctly use LEV	<ul style="list-style-type: none"> ○ If LEV is not already in place, customers should look to invest in it
If after implementing LEV there is any visible fume still present		
Must use suitable and sufficient RPE	Need to know what the contaminant is – is it just particle or are there gas/vapour contaminants also present	<ul style="list-style-type: none"> ○ Correct filters need to be chosen for the potential exposure. ○ If unsure, then we recommend using our solutions along with P3 and ABE gas/vapour filters.
	<p>Need to be clean shaven to wear any tight fitting respirator.</p> <p>If staff have facial hair, then a powered respirator, or airline breathing apparatus with a loose fitting hood is required</p>	<ul style="list-style-type: none"> ○ Either the company need to implement and enforce a clean shaven policy..... Or ○ The company will need to invest in powered respirators/ airline breathing apparatus with loose fitting hoods. ○ These need to be certified to at least TH2 level to give an APF of 20 ○ If there are gas/vapour contaminants present, the respirator needs to have proper gas/vapour filters – nuisance level are not acceptable
Minimum APF for welding is 20	This could rule out half masks if gas/vapour filters are required	<ul style="list-style-type: none"> ○ Must be at least a FFP3 or P3R if only particle contaminant ○ If there is gas and vapour present, half masks only have an APF of 10 when using a gas or gas/particle combination, so a powered respirator would be required with an APF of at least 20

On the basis of the above raised HSE control standards, if you are certain that the only hazard is particulate in nature, a respirator with just P3 filter could be sufficient. If you are unsure of the contaminant and levels, or are welding on Stainless Steel, Galvanised Steel, Aluminium or any metal which has coatings such as paint or residues such as rust inhibitors, our advice would be either airline or SR 500 powered respirator with P3 + ABE filter, combined with your choice of headtop as enclosed.

HSE Guidelines & Key Messages available at the [HSE website link here](#)

Please note that in all instances, where practicable, Local Exhaust Ventilation should be considered before implementing RPE or in conjunction with RPE. Information for guidance and should be considered in line with your own risk assessment.

Short-term effects of overexposure to welding fumes include:

Irritation of the eyes, nose and throat; coughing, shortness of breath, bronchitis, increased risk of infection of the respiratory tract, fluid in the lungs and a flu-like illness often called metal fume fever.

Long-term effects of overexposure to welding fumes include:

Cancer: Welders' health face a 30 to 40 percent increased risk of lung cancer. The most likely carcinogenic components of welding fumes are hexavalent chromium and nickel. Exposure to manganese often results in damage to the central nervous system. The link between this nerve damage & welding fumes is currently under investigation.

COPD: Permanent illness such as Chronic Obstructive Pulmonary Disease (COPD), where serious long-term lung damage causes conditions such as chronic bronchitis, emphysema and refractory (non-reversible) asthma

UV RADIATION

UV radiation affects health, and welders are the largest occupational group exposed to it. Short-term effects of UV radiation include:

skin sunburn; damage accumulates during the day and does not become visible until a few hours later.

Welders' flash, also known as arc-eye and snow-blindness.

Long-term effects of UV radiation include:

Damage to the retina which may ultimately result in loss of vision.

Recent research indicates that exposure to UV radiation can adversely affect the immune system.

Before PPE/RPE

Look at ways to remove or minimise welding fume with suitable local exhaust ventilation (LEV). This may not always be appropriate, or they might not reduce exposure enough. Often respiratory protection (RPE) has to be provided as well. You will need to make sure that the RPE is:

- adequate for the amount and type of contaminant – RPE has an Assigned Protection Factor (APF) which shows how much protection it gives the wearer. The general level for welding fume is at least an APF of 20 .
- suitable for the work – disposable masks or half masks can become uncomfortable to wear for long periods.
- Powered RPE helps minimise this. Consider it when people are working for more than an hour without a break;
- compatible with other items of protective equipment;
- fits the user. Face fit testing is needed for ALL tight-fitting masks;
- worn correctly. Anyone using tight-fitting masks also needs to be clean shaven.

Sundström Safety UK recommends the following respiratory solutions where exposure to most welding fume is present or likely to occur.

Option 1. Only suitable for people who are clean shaven and for shorter duration tasks

Half mask SR 900 with SR 905 Remote Filter & SR 952 Twin Hose; 510 P3 R particle filter and relevant gas filter; optional Welding Shield SR 591

Option 2. Suitable for people who are clean shaven or with facial hair and/or for longer duration tasks

Fan SR 500* with SR 510 P3 R particle filter and relevant gas filter if required

* SR 500 must be combined with suitable headtop dependent on individual choice and/or whether the user is clean shaven

Option 3. Suitable for people who are clean shaven or with facial hair and/or for longer duration tasks

Airline breathing apparatus as per the enclosed details – choice of headtop dependent on individual choice and/or whether the user is clean shaven

Filter Selection

Please refer to the table opposite to determine the hazard relevant to your situation and the relevant filter and please note the following:

* Isocyanates – used, for example, as a hardener in polyurethane – PU; if you expect to encounter these, please refer to our isocyanate guide.

** SR 315 filter – for use with SR 900;

SR 515 filter – for use with SR 500

The following noted here are recognised as carcinogens:

- Nickel
- Nickel Oxide
- Quartz
- Cadmium
- Cadmium Oxide
- Formaldehyde
- Chromium (VI) compounds

For a fuller list of carcinogens, please refer to [The International Agency for Research on Cancer \(IARC\)](#); part of the World Health Organization (WHO)

Substance formed	Working material, electrode or welding method	Filter
ACROLEIN	Paint, glue, plastic, fat, oil.	SR 510 P3 R + SR 315 ABE1/ SR 515 ABE1**
LEAD, LEAD OXIDE	Paints, principally minium.	SR 510 P3 R
HYDROGEN CYANIDE	Polyurethane paints and polyurethane plastic.	SR 510 P3 R + SR 315 ABE1/ SR 515 ABE1**
FLUORIDES	Basic electrodes, polytetrafluoroethylene.	SR 510 P3 R
HYDROGEN FLUORIDE	Basic electrodes, polytetrafluoroethylene.	SR 510 P3 R + SR 315 ABE1/ SR 515 ABE1**
FORMALDEHYDE	Paint, glue, plastic, fat, oil.	SR 510 P3 R + SR 315 ABE1/ SR 515 ABE1**
PHOSGENE	When there are fumes from tri- or other chlorocarbons in the workplace.	SR 510 P3 R + SR 315 ABE1/ SR 515 ABE1**
ISOCYANATES*	Polyurethane paints and polyurethane plastic.	Compressed air or filter protection. See attached file.
IRON, IRON OXIDE	Cast steel and ironwork.	SR 510 P3 R
CADMIUM, CADMIUM OXIDE	Certain red and yellow paints, some alloys, cadmium-plated material.	SR 510 P3 R
CALCIUM OXIDE	Basic electrodes.	SR 510 P3 R
CARBON MONOXIDE, CARBON DIOXIDE	Paint, glue, plastic, fat, oil, MAG welding with carbon monoxide as shielding gas.	Compressed air or filter protection. See attached file.
COPPER, COPPER OXIDE	Copper and copper alloys. Certain electrodes.	SR 510 P3 R
CHROMIUM, CHROMIUM TRIOXIDE	Stainless steel.	SR 510 P3 R
QUARTZ	Acidic electrodes.	SR 510 P3 R
MANGANESE, MANGANESE DIOXIDE	Most types of steel, especially abrasion-resistant special steel. Certain electrodes.	SR 510 P3 R
NICKEL, NICKEL OXIDE	Stainless steel.	SR 510 P3 R
NITROUS GASES	Primarily gas welding.	Compressed air.
OIL MIST	Paint, glue, plastic, fat, oil.	SR 218 A2
OZONE	TIG, MIG and MAG welding, especially in aluminium.	SR 510 P3 R + SR 315 ABE1/ SR 515 ABE1**
HYDROGEN CHLORIDE	Chlorinated rubber, vinyl paints	SR 315 ABE1
ZINC OXIDE	Galvanised sheet metal. Zinc-bearing paints, e.g. shop primer.	SR 510 P3 R

Welding Auto Darkening Filters CE Shade Selection Guide

Process	Current (Amps)																						
	1.5	6	10	15	30	40	60	70	100	125	150	175	200	225	250	300	350	400	450	500	600		
Covered Electrodes	8						9			10			11			12			13			14	
MAG	8						9			10			11			12			13			14	
TIG	8		9			10			11			12			13								
MIG with heavy metals	8						9			10			11			12			13			14	
MIG with light metals	8						9			10			11			12			13			14	
Air-arc gouging	10						11			12			13			14			15				
Plasma jet cutting	8						9			10			11			12			13				
Micro-plasma arc welding	4	5	6	7	8	9	10	11	12														
	1.5	6	10	15	30	40	60	70	100	125	150	175	200	225	250	300	350	400	450	500	600		
NOTE: The term "heavy metals" applies to steels, alloy steels, copper and its alloys, etc.																							
***From CE EN 169:2002																							

In order to minimise outlay, our Welding Shields are supplied without auto darkening filters; they will accept a standard 90 x 110 auto darkening filter so if you already have one of these, you can use it and save costs. Alternatively, you can choose one of our industry leading offers, details below & page 12

There are some key considerations when selecting an auto darkening filter:

Considerations	Sundström Solutions
Optical Quality	1/1/1/1 – the highest possible Switching time is 1/10,000 (0.1 msec)
Angle Dependency class (This is a new classification of EN379. This marking may not be indicated on older models.)	1 (the fourth of the 1's in the optical quality above) This is very important as most older ADF's and many current ones do not offer this, leaving welders open to potential flashes when welding in tight spaces.
Active Viewing Area	5684 mm ² (8.8 sq in) One of the largest available
Light State	EN 3 or 4 light enough to grind in most tasks
Dark State	EN 9-13 Do bear in mind that the darkness is for comfort and does not protect the eye from long-term damage caused by UV light
Level of UV/IR Protection	Sundström lens protect to shade 16 from IR at all times Best-in-class eye protection (competitors are between 13 and 14) The magenta colour reflects IR making it almost impossible to burn the eyes
Warranty	3 years Industry leading and peace of mind that you are buying quality – made to both protect and last
Solar or Battery Powered	Solar (with lithium battery back-up)
Inspected to ANSI / CE / CSA standard	Yes to CE EN379
Water and Dust Resistance	Yes

Please note that in all instances, where practicable, Local Exhaust Ventilation should be considered before implementing RPE or in conjunction with RPE. Information for guidance and should be considered in line with your own risk assessment.

Option 1. SR 900 System - Only suitable for people who are clean shaven

Arco Code	Description
<p>SR 900 Mask in 3 sizes</p> <p>small 163200</p> <p>medium 163300</p> <p>large 163400</p>	<p>Sundström Half Mask SR 900 designed and developed for the toughest applications. Excellent fit with superior wearer comfort.</p> <ul style="list-style-type: none"> • Soft, yet very durable mask body • Deep nose bridge & face seal provide a comfortable, secure fit • Three sizes available to ensure the best possible fit • Extremely low inhalation & exhalation resistance reduces wearer fatigue <p>Assigned Protection Factor 20</p>
<p>SR 905 Welders set 160700</p>	<p>SR 905 Remote Filter Welders Set Welders full set, includes: SR 905 remote filter complete with Leather Belt, SR 952 Twin Hose complete with FR Hose Protection Includes stainless steel pre-filter spark protection The SR 900 Half Mask can also be combined with the SR 500 Fan Unit in option 2 and Sundström Airline solutions in option 3.</p> <p>This combination is only suitable for people who are clean shaven.</p>
<p>SR 591 Welding Shield 1C3700</p>	<p>Sundström SR 591 Welding Shield The SR 591 is designed for use either by itself or in combination with the SR 900 as part of a welding respiratory protection system. The welding shield is designed for easy use and operation. Adjustable head harness for best comfort. The SR 591 can be used with standard welding filters, or equipped with Sundström welding filters; please see enclosed welding options</p>

Filters

<p>166800</p>		<p>Pre-filter SR 221; designed to remove large particles the SR 221 Pre-filters are used to extend the life of the main filter. The SR 221 should always be used for particle, gas & combined filters.</p>
<p>1C6600</p>		<p>Particle filter SR 510 P3 Particle filter SR 510 P3 R is a mechanical filter that provides protection against all types of particles (dust, fume, fog, spray, asbestos), even bacteria, viruses and radioactive pollution. The particle filter can easily be combined with gas filters from the Sundström filter range in order to provide protection also against gases and vapours, e.g. during spray painting.</p>
<p>A1: 165400 A2: 165500</p>		<p>Gas Filter A1, SR 217 & Gas Filter A2, SR 218 <i>Extended duration/higher fume concentrations over SR 217 A1</i> SR 217 A1 or SR 218 A2 filter protect against organic compounds with a boiling point above 65°C.</p>
<p>ABE1: 167100 ABE2: 163100</p>		<p>Gas Filter ABE1, SR 315 & Gas Filter ABE2, SR 294 <i>Extended duration/higher fume concentrations over SR 315 ABE1</i> SR 315 ABE1 protects against the following types of gases and vapours: A - organic gases and vapours, with boiling points > +65 °C B - inorganic gases and vapours E - acidic gases and vapours</p>

Option 2. Fan with chosen headtop for staff with facial hair or clean shaven

Arco Code	Description
<p>160100</p> <p>Delivered c/w:</p> <p>Standard belt Standard battery Battery charger 2 x SR510 P3 filters 10 x SR221 Pre-Filters</p>	<p>Sundström SR 700 Powered Respirator (provides protection from particles only); a small, lightweight powered respirator, specially designed to protect workers from hazardous dust and toxic particles.</p> <ul style="list-style-type: none"> • Easy-to-use, one-button control • High airflow rates of 175 with boost option to 225 L/min • Automatic flow control, ensuring accurate airflow, regardless of filter clogging or battery condition <p>• Alarm system and clear display, incorporating both sound and light, to alert the user to change filters or charge the battery</p> <p>• Robust casing allowing easy cleaning and provides long lifespan</p> <p>• Lithium ion battery with a charging time of 2 hours and an operating time of up to 8 hours</p> <p>Tested and approved according to EN 12941:1998 and EN 12942:1998</p>
<p>1C8500</p> <p>Delivered c/w:</p> <p>Leather belt Standard battery Battery charger 2 x SR510 P3 filters 2 x SR 336 Steel Net Disc Spark Arresters 10 x SR221 Pre-Filters</p>	<p>Sundström SR 500 Powered Respirator (Welding); can be used as an alternative to filter respirators in all situations for which these are recommended. This applies particularly to work that is hard, warm or of long-duration.</p> <ul style="list-style-type: none"> • Easy-to-use, one-button control • High airflow rates of 175 with boost option to 240 L/min • Automatic flow control, ensuring accurate airflow, regardless of filter clogging or battery condition • Alarm system and clear display, incorporating vibration, sound and light, <p>to alert the user to change filters or charge the battery</p> <p>• Robust casing allowing easy cleaning and provides long lifespan</p> <p>• Lithium ion battery; charging time of 2 hours and an operating time of up to 8 hours</p> <p>Tested and approved according to EN 12941:1998 and EN 12942:1998</p>
<p>1C9908 B205014 B205015</p>	<p>Replacement Leather belt SR 503 Heavy Duty Leather Belt SR 553, Standard size Heavy Duty Leather Belt SR 553, Large size</p> <p>Leather belt options suitable for use in welding and hot works and which can be retrofitted to any SR 500 or SR 700</p>



Then you need a headtop; if clean shaven you can use SR 900 Half Mask as below
Please note that Sundström welding shields are supplied without auto darkening filters; please refer to enclosed welding accessories for options

Mask in 3 sizes

small
163200

medium
163300

large
163400



SR 905
Welders set
160700



1C3700



Sundström Half Mask SR 900 designed and developed for the toughest applications. Excellent fit with superior wearer comfort.

- Soft, yet very durable mask body
- Deep nose bridge & face seal provide a comfortable, secure fit
- Three sizes available to ensure the best possible fit
- Extremely low inhalation & exhalation resistance reduces wearer fatigue
- Can be connected to SR 500 fan unit in Option 2 for extra comfort when undertaking jobs that are hot or of long duration

The SR 952 hose from the SR 905 Welders Set can be used to connect the SR 900 to SR 700 or SR 500 fan unit

Assigned Protection Factor 40 when used with any Sundström Fan Unit

Sundström SR 591 Welding Shield

The SR 591 is design for use either by itself or in combination with the SR 900 as part of a welding respiratory protection system. The welding shield is designed for easy use and operation. Adjustable head harness for best comfort.

The SR 591 can be used with standard welding filters, or equipped with Sundström welding filters; please see enclosed welding options

For staff with facial hair, you will require a loose fitting headtop (can also be worn by clean shaven staff)
Sundström offer a variety of Helmets, Shields & Hoods, but the 2 listed below are most suited to welding:
Please note that Sundström welding shields are supplied without auto darkening filters; please refer to enclosed welding accessories for options

1C3800



Sundström SR 592 Welding Shield

The SR 592 welding shield is designed to provide protection in arc welding, MIG, MAG and TIG welding, and plasma cutting. The shield protects the eyes, head and neck of the welder against radiation from the arc, environmental radiation and welding spatter. The filtered air blown into the shield pressurizes the shield and prevents contaminated surrounding air from reaching the user.

- Tested and approved against high speed particles 45 m/s.
- The supply air keeps the visor demisted
- Adjustable head harness
- Adjustable face seal
- Replaceable, flexible breathing hose

Assigned Protection Factor 40

SR 584
Welding
Shield
complete
with SR580
as shown
1C5700



Sundström SR 584/580 Welding shield with Full Hard Hat

The SR 584/SR 580 welding shield is designed to provide protection in arc welding, MIG, MAG and TIG welding, and plasma cutting. The shield protects the eyes, head and neck of the welder against radiation from the arc, environmental radiation and welding spatter. The filtered air blown into the shield pressurizes the shield and prevents contaminated surrounding air from reaching the user.

- Combined respiratory and head protection
- Hinged visor protects against impact, liquid splashes & molten metal
- Airflow keeps visor de-misted
- Universal attachment for hearing protectors
- Large field of view
- Simple to change visor

Assigned Protection Factor 40

160180
160170



Welding Shield Knob complete - Knob x2; Washer x2

SR 584 Welding Shield Adapter - R&L Adapter

Can be retrofitted to existing SR 580 in order to use SR 584 Welding Shield

Filters

Choose the appropriate filter combination from the list of hazards above

166800



Pre-filter SR 221; designed to remove large particles the Sundström SR 221 Pre-filters are used to extend the life of the main filter. The SR 221 should always be used for particle, gas & combined filters.

1C6600



Particle filter SR 510 P3 R is a mechanical filter that provides protection against all types of particles (dust, fume, fog, spray, asbestos), even bacteria, viruses and radioactive pollution. The particle filter can easily be combined with gas filters from the Sundström filter range in order to provide protection also against gases and vapours, e.g. during spray painting.

1C6700



Gas filter A2, SR 518

The Sundstrom SR 518 A2 protects against organic compounds with a boiling point above 65°C.

1C6800



Gas filter ABE1, SR 515

protects against the following types of gases & vapours:

- A - organic gases and vapours, with boiling points above 65 °C
- B - inorganic gases and vapours
- E - acidic gases and vapours

Option 3.

Airline breathing apparatus for staff with facial hair or clean shaven

You may require a filter to remove any residual water or oil from the air supply.
If your compressed air supply is already filtered and gives breathable (potable) air, the SR 99-1 wouldn't be required.

Arco Code

Description

160800



Sundstrom SR 99-1 Air Filter Unit

The SR 99-1 compressed air filter is used for producing clean breathing air from ordinary compressed air. The SR 292 main filter consists of a carbon filter part (500g) surrounded by two P3 particulate filters.

- Pre-filter, which has a pressure-controlled/ automatic drain
- Collects coarse particles, water and oil
- Can be placed on the floor or wall mounted
- Inlet connection 1/2" BSP
- Inlet pressure 6-10 bar
- Outlet connection - one CEJN & one unplugged
- Flowrate 900 litres per minute
- Can be expanded up to 3 users with couplings below

B112290

Safety Coupling (female) to allow a 2nd user

B133041

Y coupling to allow up to 3 users (must be used with Safety Coupling above)

Next you need an airline hose to connect from the air source/SR 99-1 filter to your airline regulator

4M: 1A3203
6M: 1A3202
8M: 1A3201



SR 360 Coiled Airline Hose 4 metre

SR 360 Coiled Airline Hose 6 metre

SR 360 Coiled Airline Hose 8 metre

8/12 mm plastic spiral coiled hose made of Polyurethane. The surface of the hose has a coating that provides good protection against sparks, e.g. during welding. Delivered complete with CEJN safety couplings for direct connection to the Sundström SR 99-1 and to Sundström compressed air fed respiratory devices.

10M: 160190
20M: 160210
30M: 160220



SR 359 Airline Hose 10m

SR 359 Airline Hose 20m

SR 359 Airline Hose 30m

9.5/18 mm rubber hose, made of polyester reinforced EPDM. Antistatic, heat resistant. The hoses are delivered complete with CEJN safety couplings for direct connection to the Sundström SR 99-1 and to Sundström compressed air fed respiratory devices.

Then you need an airline regulator to connect your chosen headtop

1A4000



The SR 507 compressed air attachment is especially intended for applications involving heavy and sustained work, in environments in which the pollutants have poor warning properties or are particularly toxic. The flow meter and warning whistle for temporary and continuous monitoring of the air flow rate are included. The SR 507 is designed for connection to the headtops below –

ALL with an APF of 40:

SR 520; SR 530; SR 540; SR 540EX; SR 561; SR 562; SR 580; SR 590 & SR 900 Half Mask

- Flow meter; Warning whistle; Belt mounted control valve
- Airflow rate 175 up to 260 l/min; Working pressure 5-7 bar (500-700 kPa)
- Working temperature: -10°C to +50°C

Approved to EN 14594:2005, 3A 3B.

Then you need a headtop – Half mask for use by staff who are clean shaven
Please note that Sundström welding shields are supplied without auto darkening filters; please refer to enclosed welding accessories for options

**SR 900 Mask
in 3 sizes**

**small
163200**

**medium
163300**

**large
163400**



Sundström Half Mask SR 900 designed and developed for the toughest applications. Excellent fit with superior wearer comfort.

- Soft, yet very durable mask body
- Deep nose bridge & face seal provide comfortable, secure fit
- Three sizes available to ensure the best possible fit
- Extremely low inhalation & exhalation resistance reduces wearer fatigue
- Can be connected to SR 500 fan unit in Option 2

160703



SR 951 Single Hose – for connection of SR 900 to SR 507

Breathing hose intended for use with Sundström SR 900

- PU with helical spring made of PC/ABS.
- Flexible, low weight and chemical-resistant

Assigned Protection Factor 40 when used with Sundström airline solution

1C3700



Sundström SR 591 Welding Shield

The SR 591 is design for use either by itself or in combination with the SR 900 as part of a welding respiratory protection system. The welding shield is designed for easy use and operation. Adjustable head harness for best comfort.

The SR 591 can be used with standard welding filters, or equipped with Sundström welding filters; please see enclosed welding options

Loose fitting headtops for staff with facial hair (can also be worn by clean shaven staff)
Please note that Sundström welding shields are supplied without auto darkening filters; please refer to enclosed welding accessories for options. Both options Assigned Protection Factor 40

1C3800



Sundström SR 592 Welding Shield

The SR 592 welding shield is designed to provide protection in arc welding, MIG, MAG and TIG welding, and plasma cutting. The shield protects the eyes, head and neck of the welder against radiation from the arc, environmental radiation and welding spatter. The filtered air blown into the shield pressurizes the shield and prevents contaminated surrounding air from reaching the user.

- Tested and approved against high speed particles 45 m/s.
- The supply air keeps the visor demisted
- Adjustable head harness
- Adjustable face seal
- Replaceable, flexible breathing hose

**SR 584
Welding
Shield
complete
with SR580
as shown
1C5700**



Sundström SR 584/580 Welding shield with Full Hard Hat

The SR 584/SR 580 welding shield is designed to provide protection in arc welding, MIG, MAG and TIG welding, and plasma cutting. The shield protects the eyes, head and neck of the welder against radiation from the arc, environmental radiation and welding spatter. The filtered air blown into the shield pressurizes the shield and prevents contaminated surrounding air from reaching the user.

- Combined respiratory and head protection
- Hinged visor protects against impact, liquid splashes & molten metal
- Airflow keeps visor de-misted
- Universal attachment for hearing protectors
- Large field of view
- Simple to change visor

**160180
160170**



Welding Shield Knob complete - Knob x2; Washer x2

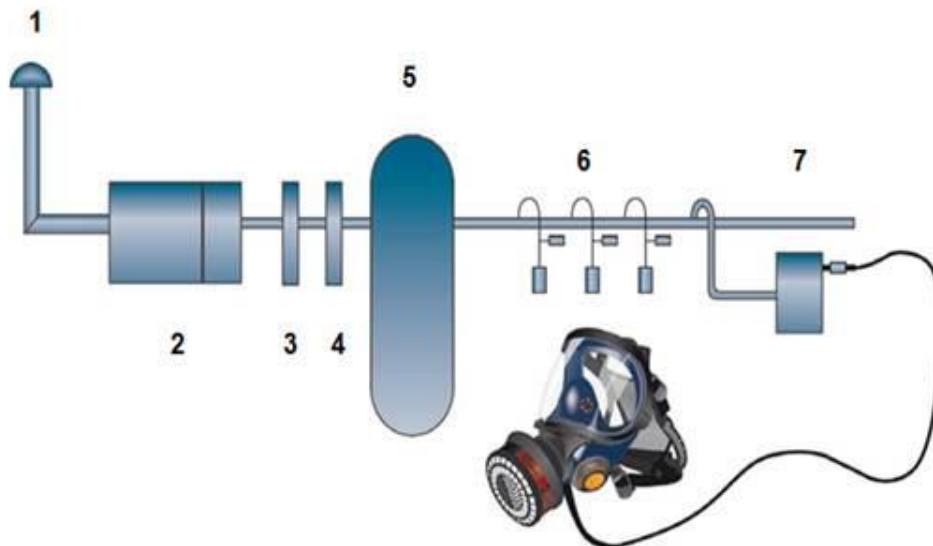
SR 584 Welding Shield Adapter - R&L Adapter

Can be retrofitted to existing SR 580 in order to use SR 584 Welding Shield

Please note the following points around compressed airline breathing apparatus:

- The compressor air intake must be positioned such that there is no risk of contaminated air being sucked into the system.
- The air needs to be of breathable quality and in all instances it will contain a certain amount of water and oil; the levels are very much dependent on the quality and age of the given compressor.
- Regulations require that the air quality is checked at least every 3 months to ensure that the air being supplied is of breathable quality.
- The majority of airline breathing solutions on the market incorporate a carbon filter within their airline regulator to do this. Whilst this lowers the initial outlay, the filter cartridges tend to be replaced monthly and therefore cost in use is quite high. The carbon filter will normally only protect against vapours, so any particle contaminants (including liquid forms of oil or water) will not be effectively filtered.
- The Sundström way is to put the SR 99-1 filter unit between the airline and the regulator which has a number of benefits:
 - It makes the regulator lighter and more comfortable to wear
 - The filter has a longer life – typically around 12 months as the filter is much larger so is more cost effective. Filters are replaceable and the unit itself has a very long life 10+ years
 - You can run up to 3 people off each SR 99 filter unit (with additional attachments) which further improves cost in use
 - The filter consists of both c.450g of Activated Carbon, which protects against oils, organic gases and vapours, such as solvents, with boiling points > +65 °C. and 2 P3 particle elements which protects against all types of particulate pollutants, e.g. dust, mist and smoke; meaning you can use the filter on any quality of compressed air (including roadside compressors) and be confident of receiving clean air
 - The SR 99 also incorporates a pre-collector which removes any remaining water and oil in liquid form which further improves air quality and prolongs the filter life.

The below diagram demonstrates a full airline breathing system, points 1-6 are the responsibility of the customer and if you were using a belt worn cartridge, you would connect at point 6. If your system does not incorporate all the elements enclosed (to take an extreme example think of a roadside compressor) then the SR 99-1 will ensure that the air is clean and breathable.



1. The compressor air intake must be positioned such that there is no risk of contaminated air being sucked into the system.
2. Compressor with cooler dryer and automatic draining.
3. A water and oil separator is placed near the cooler dryer.
4. An adsorption dryer can be installed after the oil and water separator.
5. Reservoir for pressure equalisation.
6. Outlets for breathing must have a different connector to other outlets to prevent confusion.
7. A compressed air filter type Sundström SR 99 is connected as close to the workplace as possible and in turn connected to a facemask, helmet or hood via a suitable Sundström Airline Attachment and Hose.

Sundstrom welding accessories protect the user from flames, heat & coarse particles. A full range are available on request; listed below are our most popular accessories

1C2900
For use with all solutions



Welding Shield Protective hood, SR 59018

The hood covers the neck and shoulders from flames, heat, and coarse particles generated in applications such as grinding.

1C3300
For use with all hose solutions except SR 952 twin hose



Welding Shield Protective hose cover SR 59021

Sundstrom FR Proban protective hose cover protects the breathing hose from flames, heat and coarse particles.

Shade 3:
1C9929
Shade 5:
1C9930



SR 588-1 Green Visor Shade 3

SR 588-2 Green Visor Shade 5

For use with the Sundström SR 580 headtop only

These shields protect against light emissions arising during welding and cutting operations in two different shades. The shields have also a very good optical clarity

Shade 3

Shade 5



B149975



Sundstrom PK 5 SR 336 Steel Net Disc Spark Arresters

Consists of a disc punched out of stainless steel mesh. The disc is fitted at the bottom of the pre-filter holder and protects the filters against sparks and spatter that occurs during welding, flame cutting, grinding and similar work.

Auto-darkening filters protect the user against harmful ultra-violet and infrared UV/IR rays, both in the dark and light state. No matter what shade the filter is set to the UV/IR protection is provided. When used properly, the filter will prevent your eyes from being burned by optical radiation. All Sundström ADF's Approved to CE EN379

1C6500

**R06-4508 WELDING FILTER
EN 4/5-13**

For
SR 591
&
SR 592

Please note,
will not fit SR
584/580
Or SR 590



Light Shade	4
Dark Shade	5-9/9-13
Enclosure Integrity	Dust & Water Resistant
Optical Class	1
Diffusion of Light Class	1
Variation in Luminous Transmittance Class	1
Angle Dependency Class	1
Switching Time (secs)	1/10,000 (0.1 msec)
UV / IR Protection	Up to Shade 16
Viewing Area	5684 mm ²

**T06-4009 WELDING FILTER,
EN 4/9-13**

1C0900

Fits all
Sundström
welding
headtops



Light Shade	4
Dark Shade	9-13
Enclosure Integrity	Dust & Water Resistant
Optical Class	1
Diffusion of Light Class	1
Variation in Luminous Transmittance Class	1
Angle Dependency Class	2
Switching Time (secs)	1/15,000 (0.15 msec)
UV / IR Protection	Up to Shade 16
Viewing Area	4464 mm ²