

# Confined Space Entry

Solutions for Oil and Gas Workers



*Because every life has a **purpose** ...*



## Confined Space in **OGPC**

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*Confined space is widely spread at oil refining, petrochemical and gas refining plants, in underground compartments, such as oil products storage tanks, underground sewage collectors and many other areas. The hazards which can be faced when entering and working in confined spaces can cause bodily injury, disease and death of the worker.*

Working in confined spaces is estimated to be 100 to 150 times more hazardous than operating on an open site.

Unknown areas and their interior environments with confined space characteristics should always be treated as confined spaces considering all necessary safety precautions.

### **What is a Confined Space?**

An enclosed or partially enclosed space under atmospheric pressure, not intended and not initially designed as working spot, and anytime

- is exposed to atmosphere containing potentially excessive contamination levels,
- experiences lack or excessive content of oxygen,
- causes absorption, or
- has limited means of entry and escape.

### **Examples of Confined Spaces**

- Storage tanks, road tankers, boilers, bins, pipelines and other tank-type compartments
- Cavities, pits
- Mine shafts and tunnels
- Any ship spaces accessed through a hatch or an access point, cargo tanks (except for dry cargo holds)



Entries into the confined spaces conjugate to the uncharted danger of the enclosed atmosphere. For safe work and proactively identifying the danger before each entry, it is necessary to conduct an atmosphere analysis, as well as continuously monitoring the inside atmosphere. Specially designed for sampling, MSA offers a wide portfolio of rugged portable gas detectors and accessories.

### ALTAIR® 4XR Multi-Gas Detector

The versatile 4-gas detector ALTAIR 4XR offers constant gas monitoring as well as a pre-entering atmosphere analysis, ideal for confined space workers.

ALTAIR 4XR has IP 68 rating and withstands multiple drops from 7.5 m, exceeding the military standard MILSTD-810 drop test requirements (25 drops from 1.2 m). It is equipped with MSA XCell® sensors providing longer service life and run time and faster response times that help saving lives.

With its 4-year warranty ALTAIR 4XR is equipped with Bluetooth connectivity allowing real-time awareness with live gas readings and alarm notifications sent via SMS. For additional safety, ALTAIR 4XR features the exclusive MotionAlert man-down alarm and InstantAlert manual alarm.



ALTAIR 4XR



ALTAIR 5X

### ALTAIR® 5X Multi-Gas Detector

The ALTAIR 5X detector with Bluetooth wireless technology, integrated pump and PID option for VOC detection measures up to 6 gases simultaneously. Clearance measurements can be performed remotely using sampling line and floating probe.

Driven by advanced MSA XCell® Sensor Technology, the ALTAIR 5X delivers faster response time, better stability, accuracy, longer service life, and cost savings. Inside, a field-proven integral pump provides consistent gas flow without the problems of externally attached components. Ergonomic design, glove-friendly buttons and a high-contrast display make the ALTAIR 5X multigas detector easy to use for all applications.

### Sampling Accessories

A full range of sampling accessories is available, such as sampling lines of various lengths, floating probe and sampling probes.

The versatile ALTAIR® Pump Probe is a rugged sampling accessory, capable of drawing samples from up to 30 m away. It quickly converts ALTAIR 4XR into a pumped detector for remote confined space sampling applications.



ALTAIR Pump Probe

Sampling Probe

Sampling Line with Floating Probe

### Testing & Calibration

For your bump test and/or calibration needs, you can either opt for our GALAXY® GX2 Automated Test Stand or manual testing using a pressure reducer.



GALAXY GX2 Automated Test Stand

Manual Testing with Test Gas

# Fall Protection



For confined space entries without support points, MSA offers a unique system for personnel and cargo lowering into / rising from a confined space. The universal tripod provides a class B anchor point. Lifting is controlled by the MSA Workman Winch. Self-retractable lanyards serve as fall-arrest devices. The MSA Workman Rescuer provides fast, easy and intuitive fall protection with integral bidirectional retrieval capability.



MSA Workman Tripod

## MSA Workman® Tripod

Weighing just 19.5 kg with a maximum extension length of 245 cm, this aluminium tripod is an ideal anchorage point for work assignments with limited staff. It is suitable for fall arrest, rescue, retrieval or evacuation and loads of up to 140 kg for personnel and 225 kg for materials. Installation is intuitive and fast taking 2 minutes only.



MSA Workman Winch

## MSA Workman® Winch

The winch with built-in energy absorber and a cable length of up to 30 m offers safe entry when no aids such as rungs or conductors are available. The integrated bracket can easily be mounted on the tripod. A double braking system provides secondary protection. In addition, loads of up to 140 kg for personnel and 225 kg for materials can be transported.



MSA Workman Rescuer

## MSA Workman® Rescuer

The appropriate fall arrester with integrated rescue lift and bracket makes mounting on the tripod a simple and very flexible security system. With a 15 m long steel cable, this fall arrester can also be used for work assignments independent of the tripod, on steel beams or fixed single anchorage points.

## MSA V-FORM™ Harness

With lightweight and durable components, the MSA V-FORM range of safety harnesses provides full comfort to the users. The integrated load indicator facilitates rapid visual inspection by the user prior to use. Harness versions with rescue loops allow rescue operations through narrow manholes. Certified according to EN 361, EN 1497 (depending on model).



MSA V-FORM

## MSA Workman® Spreader Bar

When connected to the shoulder loops of the MSA V-FORM harness, the MSA Workman spreader bar can be used for rescuing people from confined spaces. The attached web loops can be used to secure an incapacitated victim's arms when lifting or lowering. Certified according to EN 354.



MSA Workman Spreader Bar



MSA Latchways Standard SRL

## MSA Latchways® Standard SRL

The completely field serviceable device with frictionless Constant Force braking system and 100% full contact locking mechanism is available in a wide range of lengths with both webbing and cable lifelines. The Latchways SRL range is suitable for use in explosive atmospheres.

## MSA Anti-Static Lanyards

This energy absorbing lanyard is designed to offer a perfect solution for working safely at height in a potentially explosive atmosphere. It is made of polyester with 5 conductive threads to achieve the anti-static property. Certified according to EN 355.



MSA Antistatic Lanyard



*In confined space areas with a constantly high potential for hazardous emissions, MSA offers combination supplied airline respirators operated by an airline trolley system to provide proper safety at work. If there is a risk for unexpected hazardous events, an escape device or an oxygen self-rescuer are the right choice to help workers escape from the confined space in case of oxygen deficient or toxic atmosphere.*

### PremAire® Combination Supplied Airline Respirator

This supplied airline respirator with compressed air cylinder provides sufficient breathing air for about 15 minutes for short revisions, inspection work, or, in case of emergency, to bring oneself or a colleague out of the danger zone. A streamlined design offers a first stage pressure reducer and cylinder valve within one assembly, creating a very small size and profile that is less likely to snag when working in confined space or tight places.

In combination with an airline system or simply as a self-rescue device, PremAire Combination is ideal for working independently of the ambient air in all applications with short distances, where a short-duration SCBA is applicable.



PremAire Combination



### PremAire® Escape Emergency Escape Breathing Device

This positive pressure short duration compressed air emergency escape breathing device (EN 402) provides the user with respiratory protection while escaping from toxic atmospheres. The components of the respirator withstand high levels of potential industrial gas leaks and harsh chemical environments. It offers an air supply of 10-15 minutes duration and is equipped with a 3S full face mask or for potential high concentration industrial gas leaks like H<sub>2</sub>S with the innovative Mask-Hood combination.



PremAire Escape

### MASS Trolley System

For applications requiring an extended source of compressed air, MSA offers the MASS Trolley System. This Mobile Air Supply System provides the user with a mobile air source wherever needed. It can be ordered in several configurations and with a variety of accessories to fulfill any unique requirements for working in hazardous and dangerous situations.



### SavOx Self-Rescuer

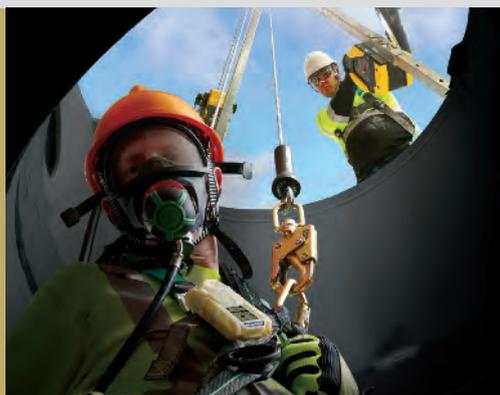
The SavOx is a small and compact self-rescuer with a breathing air supply of approximately 30 minutes (at 40 litres/min). This is particularly suitable for hard and dirty missions due to the robust design with stainless steel housing.

With a low weight of only 2.5 kg, it can easily be attached to the belt and is therefore always ready to use, should self-rescue be necessary.



SavOx

# Head, Eye and Hearing Protection



Regardless of what kind of work is carried out inside a confined space, it is necessary to use preventive personal protective equipment such as helmets and goggles. Working in the field of safety for more than 100 years, MSA offers a wide range of PPE for preventive protection.

## V-Gard® 520 Industrial Helmet

Working in confined spaces is challenging. To ensure your workforce wears their safety helmets and that they stay comfortably on the head through the day MSA has developed the V-Gard 520. This modern helmet is designed without peak so that unrestricted upward vision is guaranteed. New suspensions and optional chinstraps give stable retention on the head even when leaning.



V-Gard 520

## left/RIGHT™ Helmet-Mounted Ear Muffs

left/RIGHT ear muffs feature a unique design to fit ears of all shapes and sizes, for increased comfort and protection. With a range of passive versions (up to 33 dB of SNR) and electronic models featuring ambient sound awareness (CutOff system), left/RIGHT can also be enhanced with Bluetooth communication capabilities, with the recently launched Wireless World versions.



left/RIGHT WW



left/RIGHT Passive

## Altimeter Goggles

The multipurpose Altimeter goggles can be worn with headband or temples. They come with a soft frame for complete coverage and outstanding shock absorption. The Sightgard coating and 18 indirect ventilation holes provide perfect, fog-free vision. Altimeter can be taken from the head without taking off the helmet using the comfortable, adjustable head strap with snap button on the middle band. The headband may be attached to the gutter of the V-Gard 520 helmet using retaining clips.



Altimeter





Rescue is not an easy task. It requires not only operational efficiency and proven actions, but also the mobility. Rescuers all over the world use self-contained breathing apparatus which are capable to protect the user irrespective of operating conditions. MSA's integrated fall protection harness for SCBA and the high performance helmet for a variety of technical rescue missions complete your solution for demanding rescue jobs.

### AirGo pro & AirGo compact SCBA

Ruggedly reliable but yet comfortable, the AirGo pro SCBA is a popular choice for a wide range of maintenance or rescue operations, including firefighting. Broadly padded shoulder straps and hip belts distribute the weight equally to the body. The swivel-mounted hip belt ensures balanced weight distribution.

The AirGo compact SCBA is specifically designed for emergency response and escape. On ships or industrial facilities where such units are mandatory, the AirGo compact is an obvious choice.



AirGo pro



G1 Mask

### G1 Full Face Mask

The G1 mask with its wide distortion free field of vision is not only lightweight and compact with overall low profile design, it's comfortable and built to last. Various mask sizes combined with different harness options or helmet attachment brackets set new standards in wearing comfort. The outstanding single-sealing flange further increases the comfort while the unique airflow prevents lens misting and reduces breathing resistance.

### alphaFP Fall Protection Harness for SCBA

alphaFP can be connected easily to any MSA SCBA backplate and offers the highest safety in exposed situations. Its excellent wearer comfort makes the SCBA harness ideal for height and shaft rescues. alphaFP features hose protection tunnels on the shoulder pads and quick connect buckles between harness and SCBA for ease of mounting or emergency removal during operation.



alphaFP



F2 X-TREM

### F2 X-TREM Helmet

The F2 X-TREM is used by many rescue teams around the world. It provides unmatched protection against impact and other hazards with optimal wearing comfort for long-lasting operations in harsh environments. Available with a large variety of accessories (goggles, lighting, customization, etc.), it is certified to EN 16473:2015 (Helmets for Technical Rescue).

## Ordering Information

Portable Gas Detectors & Accessories	
10178573	ALTAIR 4XR LEL, O <sub>2</sub> , CO, H <sub>2</sub> S, Charcoal
10178569	ALTAIR 4XR LEL, O <sub>2</sub> , CO, H <sub>2</sub> S, Phosphorescent
on request	ALTAIR 4XR LEL, O <sub>2</sub> , CO, H <sub>2</sub> S-LC
10119611	ALTAIR 5X Wireless LEL, O <sub>2</sub> , CO, H <sub>2</sub> S, CO <sub>2</sub>
10119614	ALTAIR 5X Wireless LEL, O <sub>2</sub> , CO, H <sub>2</sub> S
10166730	ALTAIR 5X Wireless LEL, O <sub>2</sub> , CO, H <sub>2</sub> S, PID
on request	ALTAIR 5X Wireless LEL, O <sub>2</sub> , CO, H <sub>2</sub> S-LC
10166741	ALTAIR 5X Wireless LEL, O <sub>2</sub> , CO, H <sub>2</sub> S-LC, PID
10152668	ALTAIR Pump Probe w/o charger
10103191	30 cm Standard Probe Assembly
10082307	5 m Sampling Line with Floating Probe
10128636	GALAXY GX2, ALTAIR 5X/5X PID, 4 Valve, EU Plug
10128640	GALAXY GX2, ALTAIR 4X/4XR, 4 Valve, EU Plug
10105756	Smart Electronic Cylinder Holder, integrated DFR
Fall Protection	
10116521	MSA Workman tripod
10158192	MSA Workman Rescuer fall arrester, 15 m
10147567	MSA Workman winch, 15 m
10129888	Steel carabiner
10169369	Carrying bag for MSA Workman tripod
506222	Pulley
10180196	V-FORM harness with bayonet buckles
10115550	MSA Workman spreader bar
62215-00UK	MSA Latchways Standard SRL, 15 m
10180207	Lanyard, anti-static, single leg, 1,8 m

Head, Eye and Hearing Protection	
GV969-6000840	V-Gard 520 helmet orange, FasTrac III Premium, 4-point chinstrap pre-fitted, metal front lamp bracket, yellow reflection sticker curved
10087425	left/RIGHT ear muffs, headband, yellow, medium attenuation
10087428	left/RIGHT ear muffs, helmet mounted, yellow, medium attenuation
10176719-00	left/RIGHT WW ear muffs, headband
10176719-01	left/RIGHT WW ear muffs, helmet mounted
10153915	Altimeter safety goggles clear UV400, Sightgard Antifog
GA90006	2 brackets for attaching Altimeter to the gutter of the V-Gard 500/V-Gard 520
Respiratory Protection	
PremAire C4-F04-L2-M1-H3-W2-*. *-C07	PremAire Combination Mini, with 3S full face mask, 3 l composite cylinder (empty)
PremAire C3-F04-L2-A1-H3-W2-*. *-C04	PremAire Combination Airline /SCBA, with 3S full face mask, 2 l composite cylinder (charged)
PremAire C5-F04-L2-T1-*. *- *-C04	PremAire Combination Escape, with 3S full face mask, 2 l composite cylinder (charged)
PremAire E1 F01-L1-*. *-H1-*. *- *-C04	PremAire Escape, with 3S full face mask, 2 l composite cylinder (charged)
M0018642	MASS trolley system, 40 m hose, w/o cylinder
10023263	SavOx <sup>1</sup>
Rescue	
10086571	AirGo Pro SCBA with SingleLine technology and Pro padded harness
10023688	AutoMaXX-AS lung governed demand valve
10086572	AirGo compact SCBA with AutoMaXX-AS
D4080801	Wall box type A for AirGo compact with 1 cylinder, ready for use system suspends SCBA from cylinder
G1FP-EM1ME0P	G1 PS-MaXX full face mask, size M
10116541	alphaFP Pro Fall Protection Harness for SCBA, standard size
GA3132100100-JDW00	F2 X-TREM helmet yellow, 3 pt chinstrap, responder goggle, one lamp bracket, three stickers silver
GA1464	Lamp XP LED

<sup>1</sup> also available as trainer version

### Your direct contact

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