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DEZEGA

SCSRs & SCBAs



Company Profile



MineARC Systems is the global leader in the manufacture and supply of emergency safe refuge solutions for the mining, tunnelling, chemical processing and disaster relief industries.

With over 20 years' experience, our dedication to ongoing research and development is driven by our key focus to continually offer the best and most advanced safety solutions on the market.

Our team of qualified engineers, electrical designers and technical experts form a global network across several international locations including;

- Perth, Western Australia
- Johannesburg, South Africa
- Dallas, Texas
- Santiago, Chile
- León, Mexico
- Beijing, China
- Reading, UK



DEZEGA is one of the world's largest developers and suppliers of mine rescue equipment.

They specialise in the design and manufacture of closed circuit breathing equipment, engineered for use by;

- mine rescue teams
- escape of miners and workers from irrespirable atmospheres that pose an Immediate Danger to Life and Health (IDLH)
- escape of civilians in the case of fire and smoke

DEZEGA products are utilised in more than 50 countries across the globe, with over 500,000 self-rescuers standing by, ready to protect miners worldwide.

DEZEGA SCSRs

This allows MineARC to provide 24 hour service and engineering support to our expanding list of clients in over 60 countries across the globe.

All MineARC Refuge Chambers and Safe Havens comply with the highest international regulations and recognised 'world's best practice' industry guidelines. Our key focus on quality control and product advancement has meant that MineARC Refuge Chambers have successfully saved lives in multiple real life industrial emergencies around the globe.

www.minearc.com

DEZEGA consists of:

- Management company
- Production facilities, located in Europe and Asia
- Modern Research and Development Center (R&D Center)
- Representative offices in 5 regions worldwide

They design, produce, distribute and service their products with the sole purpose of protecting users in situations when nothing else can help them survive.

www.dezega.com



Explore DEZEGA's market-leading range of SCSRs and SCBAs; designed for *that moment*, sold & serviced by MineARC Systems.

DEZEGA SCSRs

DEZEGA's range of portable waist and shoulder-worn self-rescuers are designed for escape from irrespirable atmospheres over long, medium and short-haul routes. DEZEGA SCSRs contain a cartridge with chemically bound

oxygen (KO₂). As oxygen is released, the active cartridge substance simultaneously absorbs carbon dioxide, and thus the self-rescuer completely isolates the user's respiratory organs from the irrespirable atmosphere.

Ci-30 KS

- ✓ 30 minute minimum duration
- ✓ EN and AU certified
- ✓ Compact design at 2.5kg weight
- ✓ Automatic starter device - begins when the lid is detached
- ✓ Moisture indication
- ✓ Rugged construction with abrasion resistant case



CARBO-60

- ✓ 60 minute minimum duration
- ✓ EN and AS/NZS certified
- ✓ 10-year shelf life
- ✓ Compact design at 2.9kg weight
- ✓ Automatic starter device - begins when self-rescuer lock lever is opened



CARBO-70

- ✓ 70 minute minimum duration
- ✓ GOST certified
- ✓ Compact design at 2.78kg weight
- ✓ Automatic starter device - begins when lid is removed
- ✓ Optional moisture indication
- ✓ Rugged construction with abrasion resistant case



DEZEGA
Ci-30 KS SCSR

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Ci-30 KS SCSR

The DEZEGA Ci-30 KS is a closed-circuit breathing apparatus, ensuring the user does not inhale outside gases after donning. The device provides the user with both an oxygen source and a carbon dioxide neutraliser (scrubber).

Chemically bound oxygen reacts with the carbon dioxide exhaled by the user; ultimately absorbing the CO₂ and allowing breathable air to circulate within the device.

The Ci-30 KS features an automatic starter, in which oxygen generation begins automatically when the self-rescuer is donned and exhalation is detected.



Designed specifically for underground mining, the Ci-30 KS is housed in an anti-deformation, ruggedised casing. This ensures the life-saving equipment is kept free from damage, particularly in mines with highly abrasive surfaces and narrow passageways.



The moisture indicator is a transparent capsule with hydrophobic material, installed in the self-rescuer casing on the top of the unit.

Should the indicator change colour from blue to pink, this is a sign that moisture has infiltrated the capsule; resulting in a risk of case leakage and untimely cartridge activation. The self-rescuer must then be checked with a DEZEGA testing unit.

This 30-minute waist belt-worn self-rescuer is made for markets that accept the European and Australian Standards.

In case of dense smoke or irritating gas emissions, it is important to protect the eyes. As such, the Ci-30 KS self-rescuer comes equipped with protective goggles with an anti-fogging coating to improve vision during an escape.



Nominal rated duration in accordance with EN 13794:2002 and AS/NZS 1716:2012	
- Escape (35 l/min)	30 min
- Waiting for rescue (10 l/min)	90 min
Temperature of inhaled gas	50°C
Maximum breathing resistance	1 kPa
Average CO ₂ content	1.5%
Weight carried	2.5 kg
Shelf life	10 years

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CARBO-60 SCSR



DEZEGA CARBO-60

Quickly proving itself as the best self-rescuer on the market, this European certified unit has been designed with user working conditions in mind.

The DEZEGA CARBO-60 is a closed-circuit breathing apparatus, designed for everyday carry or in storage at changeover stations along escape routes. The self-rescuer can be worn on the waist with or without a pouch or with shoulder belts. In case of an emergency, the total donning time for the CARBO-60 is 15 seconds.

Most importantly, the CARBO-60 provides a minimum of 60 minutes of breathable air in critical times of need.

Great attention has been paid to ergonomic factors, with the device able to be worn on the shoulder, on the waist or in a pouch.



Fully Automatic Self-Starter

The starter activates automatically once the self-rescuer lock lever is opened. Oxygen fills the breathing bag and allows user to start breathing in the first seconds after activation. The CARBO-60 self-rescuer uses pendulum breathing circuit.

Exhaled gas passes through the mouthpiece, heat and moisture exchanger and breathing tube into the regenerative cartridge. In the regenerative cartridge the exhaled gas is purified from carbon dioxide and enriched with oxygen and then moves into the breathing bag. Once the breathing bag is completely filled, any extra gas is removed from breathing bag through the relief valve.

This 70-minute waist or shoulder-worn self-rescuer is made for markets that accept the EN 13794:2002 and AS/NZS 1716:2012 standards.

Rated duration in accordance with EN 13794:2002 and AS/NZS 1716:2012 at lung ventilation, not less:	
- 10 l/min (waiting for rescue)	180 min
- 35 l/min (normal walking)	60 min
Temperature of inhaled gas	50°C
Maximum breathing resistance	0.75 kPa
Average CO ₂ content	1.5%
Weight carried	2.9 + 0.1 kg
Shelf life	7 years

DEZEGA CARBO-70 SCSR



DEZEGA CARBO-70 SCSR

The DEZEGA CARBO-70 is a closed-circuit breathing apparatus, ensuring the user does not inhale outside gases after donning. The device provides the user with both an oxygen source and a carbon dioxide neutraliser (scrubber).

Chemically bound oxygen reacts with the carbon dioxide exhaled by the user; ultimately absorbing the CO₂ and allowing breathable air to circulate within the device.

The CARBO-70 features an automatic starter, in which oxygen generation begins automatically when the device is opened.

Designed specifically for underground mining, the CARBO-70 is housed in an anti-deformation, ruggedised casing. This ensures the life-saving equipment is kept free from damage, particularly in mines with highly abrasive surfaces and narrow passageways.



Optional Moisture Indicator

The moisture indicator is a transparent capsule with hydrophobic material, installed in the self-rescuer casing on the top of the unit.

Should the indicator change colour from blue to pink, this is a sign that moisture has infiltrated the capsule; resulting in a risk of case leakage and untimely cartridge activation. The self-rescuer must then be checked with a DEZEGA testing unit.

This 70-minute waist or shoulder-worn self-rescuer is made for markets that accept the GOST standards.

In case of dense smoke or irritating gas emissions, it is important to protect the eyes. As such, the CARBO-70 self-rescuer comes equipped with protective goggles with an anti-fogging coating to improve vision during an escape.



Nominal rated duration in accordance with GOST 12.4.292-2015 and Technical Regulation of Customs Union 019/2011	
- 35 l/min (Escape)	70 min
- 10 l/min (Waiting for rescue)	210 min
Temperature of inhaled gas	45°C
Maximum breathing resistance	980 Pa
Average CO ₂ content	1.5%
Weight carried	2.8 kg
Shelf life	7 years

DEZEGA SCSR Accessories



DEZEGA SCSR Storage Rack

MineARC's DEZEGA Storage Rack has been designed to house up to 84 SCSRs; providing sites with a robust yet portable option when it comes to managing this critical safety device.

The storage rack is compatible with the Ci-30KS, CARBO-60 and CARBO-70 devices.

Constructed from hard-wearing powder coated steel, and featuring a unique sheltered design, the DEZEGA Storage Rack keeps self-rescuers protected even in outdoor, undercover areas; providing a convenient and space saving solution for many sites.

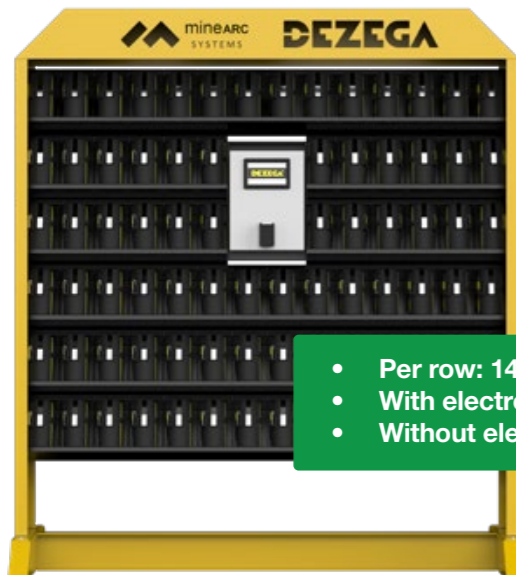
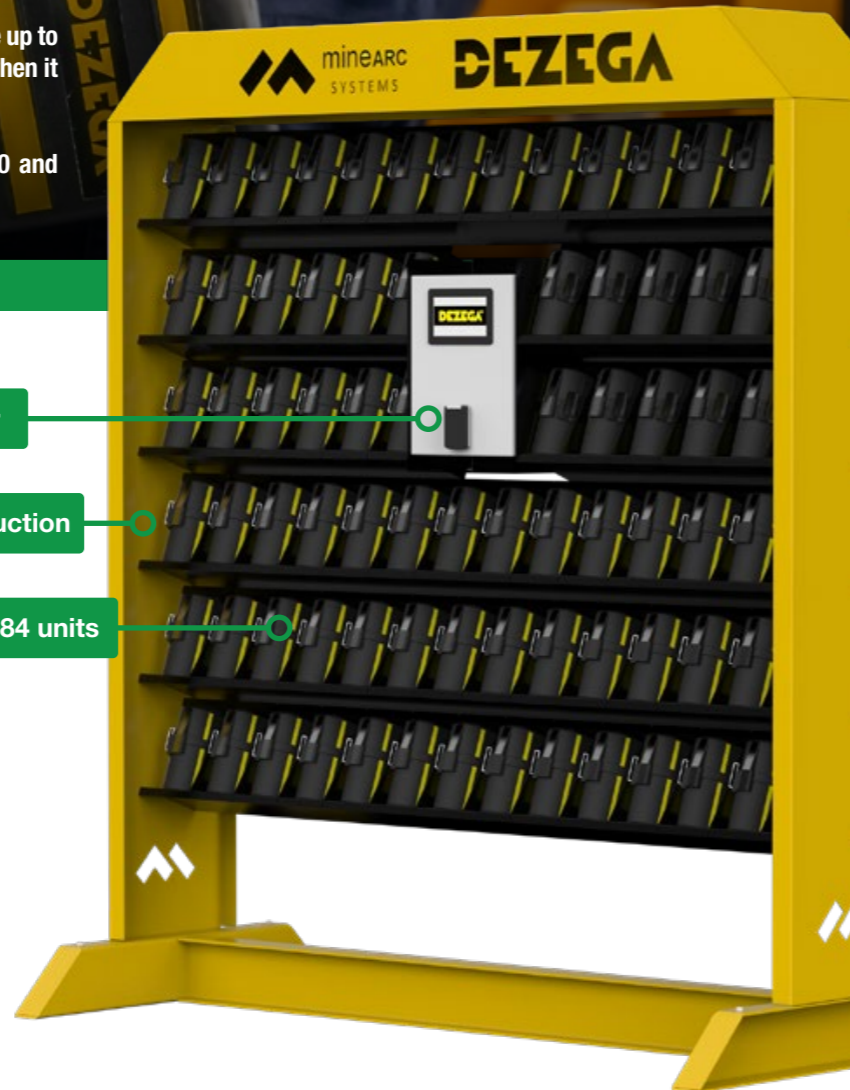
The rack comes with an optional RFID reader, allowing personnel to pair their self-rescuer to their ID number and digitally tag on for the day.

- ✓ Fits up to 84 self-contained self-rescuers
- ✓ Assign SCSRs to personnel with optional RFID reader
- ✓ Hard-wearing, powder coated steel frame
- ✓ 2mW x 2.25mH x 1mD

RFID Reader

Steel construction

House up to 84 units



- Per row: 14 units
- With electronics: 80 units
- Without electronics: 84 units



Ci-30 KS SCSR



CARBO-60/70 SCSR

DEZEGA SCSR Training Equipment

DEZEGA Training Kit

The DEZEGA Training Kit allows personnel to practice the donning procedure and experience breathing conditions until the process becomes second nature. This greatly reduces the risk of failure to don an SCSR and efficiently escaping from irrespirable environments.

The Training Kit is to be used in conjunction with the DEZEGA Trainer C or CARBO T, as shown below.

Exactly replicates the particularities of donning and breathing in any DEZEGA SCSR:

- humidity
- temperature
- breathing resistance
- CO₂ and O₂ concentration

Operating time with disposable kit	15 minutes
Self-rescuer service life	5 years
Length	198 mm
Width	112 mm
Height	200 mm
Weight	2.5kg



The DEZEGA Training Kit has been tested in accordance with the Technical Reference Guide 'Escape Breathing Apparatus for Underground Mining Applications'.



DEZEGA Trainer C

The DEZEGA Trainer C can train personnel with breathing in specific working conditions as well as in the donning and usage of the Ci-30 KS SCSR.

- Imitator cartridge is included with DEZEGA Trainer C
- Reusable case can hold three different types of cartridges
- Replaceable breathing hoses and mouthpieces are available, allowing multiple personnel to train on the same unit



DEZEGA CARBO-T

DEZEGA CARBO-T can train personnel with breathing in specific working conditions as well as in the donning and using of the CARBO-60 and CARBO-70 SCSRs.

- Imitator cartridge is included with DEZEGA CARBO-T
- Reusable case can hold three different types of cartridges
- Replaceable breathing hoses and mouthpieces are available, allowing multiple personnel to train on the same unit

Testing and Maintenance

Chemical oxygen is moisture-sensitive. Although all DEZEGA SCSR cases are leak-proof, improper storage and wear might cause undetectable leaks. A moisture indicator will react to the slightest degree of leakage.



The SCSR testing device can be utilised to ensure that the case has no critical damage and the unit is in working condition. This device should be used for regular inspections, as well as in the case of a moisture indicator turning white or pink.

Sites can purchase their own SCSR testing device, or units can be tested and serviced by MineARC Systems team of technical experts.

DEZEGA SCBAs



DEZEGA P-70

Compressed Oxygen SCBA

Introducing the newest technology in compressed oxygen breathing apparatus; with positive pressure for rescue and firefighting works in mines, tunnels, other underground and confined spaces.

- ✓ Smallest and lightest in it's class
- ✓ Simple and reliable mechanical structure, based on 37 years' experience
- ✓ Automatic control and alarming system
- ✓ Ergonomic harness with 4 adjustment points
- ✓ Improved breathing conditions
- ✓ Does not require special tools for assembling and daily maintenance
- ✓ Easy componentry replacement
- ✓ Unique lung demand valve for additional oxygen supply during increased inhalation
- ✓ Additional air cooling due to location of separator bag over oxygen cylinder
- ✓ Option of connecting the breathing circuits of 2 BAs



DEZEGA P-70

Compressed Oxygen SCBA



Rated working duration	240 min (4 hrs)
Weight of fully charged BA including mask and ice	14kg
Soda lime cartridge capacity	2.3kg
Oxygen volume	500L
Constant oxygen flow	1.8 ±0.1 L/min
Dimensions	582x403x175mm
Operation temperature	-20 ... +60°C
Inhaled gas temperature	≤36°C
Pressure in breathing circuit	Positive
Breathing resistance	0 ... +7 mbar
Certifications	IS 10245 EN certification coming soon



SCBA Spare Parts

D-VISION Face Mask

Professional full-face mask, specifically designed to ensure optimum breathing conditions in any DEZEGA compressed oxygen SCBA. This mask provides maximum comfort and minimises user fatigue during wear.

Also fits other closed-circuit SCBAs with central bush with a thread 5/16" (standard connection)

- Rubber or silicone construction
- Shock and scratch-proof shield with wipe
- Easily adjustable harness
- Large diaphragm to enhance speech articulation
- Six size combinations available for the best seal possible
- Optional hydration system integration



D-SORB Soda Lime Absorber

During use, a mixture of gases including carbon dioxide is exhaled back into the SCBA. In a closed circuit apparatus this gas cannot be released into the atmosphere, and instead must be neutralised with a specific chemical agent, usually called an absorber or scrubber.

D-SORB granules are ideally shaped and fitted in a cartridge so as to absorb the maximum amount of carbon dioxide. Optimal formula and granulometrics ensure comfortable breathing.

- Allows for lower breathing resistance
- High absorbency
- Rubbing endurance



CLEAR-VISION Anti-Fogging Solution

CLEAR-VISION is a liquid spray, designed to clean and provide anti-fogging and antistatic effects to goggles and masks.

- Clean transparent parts of glasses, visors and full face masks
- Prevent glass from fogging
- Coat surfaces with antistatic properties



SCSR Pouch

Protective pouch, designed specifically to house the DEZEGA Ci-30KS and CARBO SCSRs, enabling easier access during an emergency scenario.

- Velcro closure
- Robust belt loops
- Reflective, high-vis decals



SCBA Testing and Maintenance

DEZEGA CheckUp Breathing Apparatus Test Set

The DEZEGA CheckUp Breathing Apparatus Test Set ensures that a closed-circuit SCBA is in workable condition, and each joint is accurately tuned. This testing set is compatible with any DEZEGA SCBA as well as closed or open circuit SCBAs by other manufacturers.

Checks the following elements of an assembled closed-circuit SCBA:

- Leak-tightness
- Continuous oxygen flow by positive and negative pressure
- Pressure to activate relief valve
- Pressure to activate demand valve
- Pressure when demand valve provides given oxygen flow rate
- Oxygen flow by emergency valve
- Leak-tightness of face mask



Checks the following closed-circuit SCBA joints:

- Continuous oxygen supply by emergency valve and demand valve
- Leak-tightness of regenerative cartridge and cooler
- Pressure to activate safety valve of the reducer
- Relief valve opening pressure

Sites can purchase their own SCBS CheckUp Test Set, or equipment can be tested and serviced by MineARC Systems team of technical experts.

Masterline Oxygen Booster

The Masterline Oxygen Booster is an electric pump that is used for pumping 100% pure oxygen. It allows the user to fill oxygen cylinders to 4,500 psi from a low-pressure supply; an example of which being a Self-Contained Breathing Apparatus.

Due to an innovative seal design and cooling method, Masterline Oxygen Boosters can fill oxygen cylinders to near ambient temperature, whilst operating at a very low 77dBA noise level. An optional vacuum pump is available as well as several other customisations.

Features:

- Electrically driven
- Use up to 4,500 PSI for oxygen
- Fill up to four cylinders at any one time
- Sealed bearings
- Cooling fan and finned aftercooler
- Inlet shut-off valve
- Adjustable pressure switch
- Hour meter

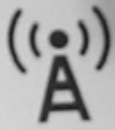


Maintenance:

Masterline boosters are completely oil-free and use only two low friction dry seals. The seals can be replaced in about 20 minutes with only a few tools. The piston guide is the only other part that requires regular maintenance. This is done by simply sliding it off the piston.



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MineARC Systems - Built for Safety.

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