

Dräger MRC 5000 Refuge Chambers

During an emergency, Dräger-Simsa mine refuge chambers provide mining personnel both shelter and breathing protection with the highest quality and safety standards. The robust and highly portable construction, as well as a low cost of maintenance, makes them ideally suited for diverse underground conditions.





Benefits

Strengthened by a long history in the mining industry

When miners go underground, they should feel confident that everything possible has been done for their safety. We have been working on this goal with the mining industry for more than 100 years. The legendary closed-circuit breathing apparatus Dräger PSS® BG 4, which is the chosen form of protection for mine rescue teams around the globe, is one example of the unwavering reliability of Dräger products. This safety philosophy has proven its value in the toughest operating conditions worldwide. Using the same safety concept the Dräger-Simsa mine refuge chambers are built on technology that you can rely on.

Designed for extreme underground mining conditions

Dräger-Simsa mine refuge chambers are designed to provide a safe atmosphere in the harshest metal and non-metal underground mining conditions. The heavy duty double steel wall layers are full seamwelded to improve strength, rock fall resistance and hull pressure integrity. A hardened base with a sleigh type design in addition to forklift slots and lifting lugs allow for the safe and easy transportation of chambers inside the mine.

Benefits

Fail-safe breathing air supply

The availability of a breathable atmosphere is critical during an underground emergency. Dräger-Simsa MRC 5000 has redundant air supply systems to ensure that the provision of safe and clean breathing air cannot be compromised during operation. The mine air supply is filtered and released into the chamber. If mine air supply is interrupted, and personnel have to remain inside the refuge for a longer period of time, the air inside the chamber is regenerated. The oxygen system releases a controlled amount of oxygen and the air within the chamber is recirculated through an air scrubbing system where carbon dioxide (CO₂) is removed using Dräger[®]sorb soda lime. An automatic pressure system provides a minimum 100 Pa positive pressure to prevent the ingress of contaminants into the refuge chamber and maintain a safe atmosphere.

Carbon monoxide – monitoring & control

The concentration of carbon monoxide (CO) within the Dräger-Simsa MRC 5000 is constantly monitored. Should a build-up of CO be detected during operation, the CO catalysis must be activated by the user, to keep the concentration at a safe level.

Breathing air regeneration system and power backup systems

In an emergency situation, external power or air supply may not be readily available. The Dräger-Simsa MRC 5000 are self-sufficient and do not depend on external air or power supplies to keep occupants safe. The air inside the chamber is regenerated by the CO₂ scrubbing materials in the breathing air regeneration system. The breathing protection unit has a dedicated battery backup system and each fan works independently. High pressure cylinders replenish the oxygen in the chamber based on the needs of the occupants. A gas monitoring system monitors the atmosphere in the chamber and alerts the occupants when adjustments are required to the oxygen supply and/or scrubbing functions. Furthermore, the necessary energy for air conditioning, instrumentation, and illumination systems is supplied from a maintenance-free battery backup system which together with the inverter/charger system ensures the continuous power supply for possible periods of up to 96 hours. The air conditioning system provides the chamber with an interior temperature and humidity at acceptable conditions.

Gas detection technology for monitoring and alarm activation

Inside the Dräger-Simsa MRC 5000, the internal atmosphere is continuously monitored at all times for CO₂, CO and O₂ deficiency using Dräger's industrial range of gas detection equipment. Dräger gas sensors provide quick response time and are built for longevity. If predefined alert thresholds are exceeded, the gas monitors emit both visual and acoustic warning signals to warn the occupants rapidly of potential gas hazards. This provides the opportunity to quickly adjust the systems and thus maintain a safe atmosphere.

Vorteile

Moving with you – the mobile refuge solution

The risk of entrapment in front mine developments can be minimized by using small and portable refuge chambers. The Dräger-Simsa mine refuge chambers are highly portable and can be fitted with transport attachments. Optionally, all Dräger-Simsa mine refuge chambers can be outfitted with wheels for additional mobility during transportation inside and outside the mine.

Support without compromise

To ensure your chamber is always ready for use, we recommend having the MRC 5000 checked by Dräger-Simsa authorized technical service agents at regularly intervals. Our comprehensive and worldwide service network ensures we can be onsite quickly for all your maintenance and repair needs. Dräger-Simsa ensures the proper operation of the refuge chambers, offering a permanent technical assistance with a stock of all required consumables such as Dräger soda lime, filters and gas detection components including sensors. Dräger service technicians are able to support with leakage tests and the calibration of gas detection equipment.

Related products

D-1973S-2015



Dräger Refuge Chamber

Every mine has unique hurdles and logistics. Dräger has the competence to design and produce mine refuge chambers tailored to a customer's specific needs. A modular system is available to support the mine's individual escape and rescue plan using high quality Dräger products and offering the highest possible protection to the occupants.

D-35118-2011



Dräger Oxy 3000/6000

Thanks to the robust and state-of-the-art design, the Dräger Oxy 3000/6000 ensures not only immediate oxygen supply for up to 30/60 minutes upon donning, but also a ten-year service lifetime without additional testing and maintenance.

D-5124-2014



Dräger ChargeAir System

The Dräger ChargeAir system opens up a new possibility to enhance self-escape and first response capability of underground personnel. It offers good communication possibilities and allows the simultaneous charge of up to five SCBAs in minutes.

Standard System Components



D-38295-2015

Number of occupants and duration

- One standard chamber layout, only varying in length, suits different numbers of occupants.
- Designed for 8, 10, 12, 16 or 20 occupants
- Stand-alone duration time up to 24/36 hours (96 hours optionally available)



D-38302-2015

Steel structure

- Single outside wall 6 mm/0.24 in, air-tight welded steel structure
- I-Shape skid, hinges and forklift pockets for transport
- Escape hatch with access from inside and outside
- Brackets for air and oxygen cylinders
- Overhead storage



D-38295-2015

Dräger BPU 7000 and oxygen supply

The breathing protection unit is equipped with an integrated CO₂ absorber to remove carbon dioxide from the air. An automatic positive pressure system provides a minimum 100 Pa positive pressure in the chamber to reduce the entrance of contaminants to a minimum and to provide an uninterrupted power supply. Oxygen is supplied by oxygen cylinders and can be controlled by a pressure reducer with an external hand wheel.



D-20045-2020

Gaswarnsystem

- The concentration of O₂, CO₂ and CO inside the chamber is continuously monitored by a gas detection system. The operations manual and wall-mounted instructions are provided inside the chamber to guide the user in case thresholds are exceeded or not achieved.
- Internal gas monitoring with Dräger Pac® 6500 and 8000 units for CO₂, CO and O₂

Standard System Components

Electrical system

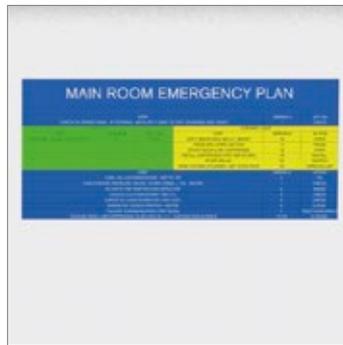
- Batteries for all electrical functions and AC-Unit
- Input connection: 230 V, 50/60 Hz
- Air conditioning unit
- External status lights (green and red)

Paint

The exterior painting based on inorganic corrosion resistant epoxy material offers protection to the outside wall. Inorganic based water paint, which is free of chemicals is used for the interior of the chamber.

Communication

The refuge chamber is equipped with a communication device mounting according to customer needs. It is preferred to install these items at the Dräger facility to ensure the air tightness of the chamber is measured and tested with all wiring in place.



D-38297/2015

Labeling and documentation

In case of an emergency the chamber is activated step-by step following the airlock and/or main room activation plan illustrated inside the chamber.

- IFU
- Wiring diagram/troubleshooting checklists
- Rigging instruction
- Weekly and monthly test and inspection procedure and spare part list

Optionale Systemkomponenten

D-38301-2015



Airlock

When persons are passing through the airlock, hazardous substances can infiltrate the refuge chamber. An air lock with an air purging system is provided as a preventative measure to reduce the infiltration of gases into the main chamber.

D-14286-2017



Internal gas monitoring systems

The Dräger gas detection instrument X-am® 8000 is the innovative solution for the simultaneous and continuous measurement of up to five gases inside the chamber. In case the adjustable alarm limits are exceeded or oxygen levels are too low, audible and visual alarms are activated within the chamber.

D-15002-2010



Internal and external fixed gas monitoring system

The internal and external gas monitoring system measures concentration of CO₂, CO and O₂ outside and inside the chamber. The Dräger Polytron 8000 is a microprocessor-based transmitter equipped with electrochemical Dräger sensors. This way, you can detect CO₂, CO and O₂ in the ambient air. The results are also displayed inside the chamber for the occupants.

D-38294-2015



Positive pressure with mine air

The chamber can be connected to an external air supply. The air is filtered from oil, water and small particles. As long as the external supply is operating the chamber works in externally supported mode.

Optional System Components

Insulation

The special design of the double steel wall incorporates a 50 mm / 2.0 in separation of the layers filled with fireproof mineral wool insulation. The inner steel wall measures 3 mm / 0.12 in to ensure a high safety level against dangers from the surroundings.

Transportation

Built-in transportation wheels ease the transportation of the Mine Refuge Chamber in the mine.

Monitoring system for refuge chamber

- Temperature monitoring (internal/external)
- Differential pressure switch
- Battery voltage level
- Mine air pressure switch and CO monitoring
- Status light monitoring and motion sensor
- Door switch for battery cabinet and main door
- Interactive touch screen panel
- Data transmission with ethernet

Step-down transformer

- Transformer to convert the incoming 1,000 Volts to 230 Volts AC, 50 – 60 Hz

Accessories



CO₂-absorption with soda lime

The Drägersorb® 400 S is a soda lime for the absorption of carbon dioxide (CO₂) and other acidic gases under usual air conditions in rooms or environment (low humidity, moderate temperature) including chambers and refuge rooms. The Dräger CO₂ absorption cartridges CH 16720 which are also used in submarines worldwide provide for the required absorption capacity.



Dräger standard filter for CO reduction

Whether used in chemical industry or automobile industry, shipbuilding, metal processing industry or by public utility services – for decades Dräger respiratory protection filters have been a synonym for experience and safety worldwide. They clean breathable air of contaminants in a low-cost and effective manner. This quality filter has the standard Rd40-thread (EN 148-1).

Technical data

Persons	Height	Width	Length with Airlock	Length without Airlock	Weight (24 hours)	Weight (36 hours)
8	2.160 mm	2.070 mm	4.540 mm	3,540 mm	5.400 kg	5.900 kg
10	2.160 mm	2.070 mm	5.000 mm	4,000 mm	5.900 kg	6.400 kg
12	2.160 mm	2.070 mm	5.540 mm	4,540 mm	6.200 kg	6.700 kg
16	2.160 mm	2.070 mm	6.540 mm	5,540 mm	7.000 kg	7.500 kg
20	2.160 mm	2.070 mm	7.540 mm	6,540 mm	8.200 kg	8.700 kg

Ambient temperature range 0 °C up to 45 °C/32 °F up to 113 °F

Electrical supply voltage 230 V, 50/60 Hz

Positive pressure (option) min. 100 Pa

Applicable Norms and Standards*

EN 12021	Compressed air for breathing apparatus
2014/68/EU	Pressure device directive
IEC 60364	Low voltage electrical installations

* Other Norms and Standards and Configurators are available depending on Region

Notes

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CORPORATE HEADQUARTERS

Drägerwerk AG & Co. KGaA
Moislinger Allee 53–55
23558 Lübeck, Germany

www.draeger.com

REGION EUROPE

Dräger Safety AG & Co. KGaA
Revalstraße 1
23560 Lübeck, Germany
Tel +49 451 882 0
Fax +49 451 882 2080
info@draeger.com

REGION MIDDLE EAST, AFRICA

Dräger Safety AG & Co. KGaA
Branch Office
P.O. Box 505108
Dubai, United Arab Emirates
Tel +971 4 4294 600
Fax +971 4 4294 699
contactuae@draeger.com

REGION ASIA PACIFIC

Draeger Singapore Pte. Ltd.
61 Science Park Road
The Galen #04-01
Singapore 117525
Tel +65 6872 9288
Fax +65 6259 0398
asia.pacific@draeger.com

REGION CENTRAL AND SOUTH AMERICA

Dräger Indústria e Comércio Ltda.
Al. Pucurui - 51 - Tamboré
06406-100 - Barueri - SP
Tel. +55 (11) 4689-4900
relacionamento@draeger.com

SALES INTERNATIONAL

CANADA

Draeger Safety Canada Ltd.
2425 Skymark Avenue, Unit 1
Mississauga, Ontario, L4W 4Y6
Tel +1 905 212 6600
Toll-free +1 877 Drager 1
(+1 877 372 4371)
Fax +1 877 651 0902
Toll-free Fax +1 800 329 8823

Locate your Regional Sales
Representative at:
www.draeger.com/contact

