



Operating Manual G1 Integrated SCBA System



Order No.: 10165342/04



The Safety Company

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1 Safety Regulations

1.1 Correct Use

The MSA G1 - referred to hereafter also as device - is a pressure-demand self-contained breathing apparatus (SCBA) operating independent of the ambient air for use in firefighting in atmospheres immediately dangerous to life or health.

Breathable air according to EN 12021 is supplied to the user from a compressed air cylinder via a pressure reducer, a lung governed demand valve and a face piece. The exhalation air is released directly into the ambient atmosphere.

In combination with a certified Facepiece (Full Face Mask) the device protects the wearer against inhalation of hazardous substances and mixtures, harmful biological agents and oxygen deficiency.

DANGER!

This device is a pure gas protection device. It is not suitable for underwater diving.

WARNING!

Only trained individuals should be allowed to use the device after ensuring sufficient knowledge on donning and general use of the device. Failure to follow this warning can result in serious personal injury or death.

WARNING!

Read this manual carefully before using the device. The device will perform as designed only if it is used and maintained in accordance with the manufacturer's instructions. Otherwise, it could fail to perform as designed and persons who rely on this device for their safety could sustain serious personal injury or death.

Before use the product operability must be verified. The product must not be used if the function test is unsuccessful, it is damaged, a competent servicing/maintenance has not been made, genuine MSA spare parts have not been used.

1.2 Liability Information

MSA accepts no liability in cases where the device has been used inappropriately or not as intended. The selection and use of the device are the exclusive responsibility of the individual operator.

Product liability claims, warranties and guarantees made by MSA with respect to the device are voided, if it is not used, serviced or maintained in accordance with the instructions in this manual.

1.3 Safety and Precautionary Measures

- Approved for use at temperatures between -40 °C and +60 °C depending on facepiece certification. For detailed information, see chapter 18.
- The device may be used in explosive atmospheres according to the class stated in the ATEX certification. For detailed information, see chapter 18.
- The ATEX class of any other equipment used together with this device has to be regarded as well. The lowest class sets the limit.
- If the device is used in an explosive atmosphere, dissipative clothes and footwear must be used in conjunction with dissipative grounds. When used in explosive atmospheres there must be direct contact between the head harness of the mask and the head. Do not use head coverings (e.g. fire hoods) under the head harness.
- Compatibility with other types of Personal Protective Equipment (PPE) worn during use of the device (e. g. clothing and helmets) has to be ensured according to Directive 89/656/EC.
- Use of the device in a vicinity that generates strong electrostatic charges in explosive atmospheres is not allowed.
- Do not expose the device to any substances that will or might attack any part of the SCBA, causing the SCBA to not perform as designed and approve



Only use breathable air quality in accordance with EN 12021 and other applicable national regulations.

1.4 **Approval**

The device described in this operating manual complies with Directive 89/686/EC or Regulation (EU) 2016/425, respectively. The device is a self-contained open circuit compressed air breathing apparatus according to EN 137:2006, Type 2.

The function of the electronic components were not assessed for the certification in accordance with Directive 89/686/EC or Regulation (EU) 2016/425, because even in case of a complete failure of all electronic components, the respiratory protection provided by MSA G1 remains unchanged.

1.5 **Contact Information**

In the event of a product concern, contact the local MSA authorized repair center or distributor, they will provide the necessary information to MSA for issue resolution. To report any serious concerns or to inquire about the products, go to MSAsafety.com for information on the local MSA authorized repair center or distributor.

2 Description

The G1 SCBA is a pressure-demand self-contained open circuit breathing apparatus (SCBA) operating independent of the ambient air for use in atmospheres immediately dangerous to life or health.

Breathable air is supplied to the user from a compressed air cylinder via a pressure reducer, a lung governed demand valve (LGDV) according to EN 137:2006 and a full face mask according to EN 136:1998 (see Operating Manual of full face mask). The exhalation air is released directly into the ambient atmosphere.

The integrated alarm and control unit (ADSU) provides the user with the ability to monitor movement through a motion sensor. When a user remains motionless for 30 seconds, the ADSU device goes into full alarm to alert those around the user. The control module monitors cylinder pressure, battery status and visually indicates different alarm status of the G1 SCBA.

The G1 SCBA consists of the following components:

No.	Device with integrated electronics	No.	Device with pneumatics only
1	G1 Facepiece	1	G1 Facepiece
2b	G1 Demand Valve (LGDV, Lung Governed Demand Valve) with medium pressure connection	2a	G1 Demand Valve (LGDV, Lung Governed Demand Valve)
3	G1 Heads Up Display (HUD) part of both full face mask and LGDV		
4	G1 Pressure Reducer with low pressure warning device	4a	G1 Pressure Reducer
4b	with Single Line (SL) manifold		
5	G1 Control Module		
6	G1 Power Module		
7	Cylinder and Valve Assembly, optional alphaCLICK 2	7	Cylinder and Valve Assembly, optional alphaCLICK 2
9	G1 Carrier and Harness Assembly	9	G1 Carrier and Harness Assembly
	Optional components:		Optional components:
8	Quick fill	8	Quick fill
10	G1 Voice Projection Speaker		
11	Long Range Radio for SCBA Telemetry		
12	Buddy Breather	12	Buddy Breather

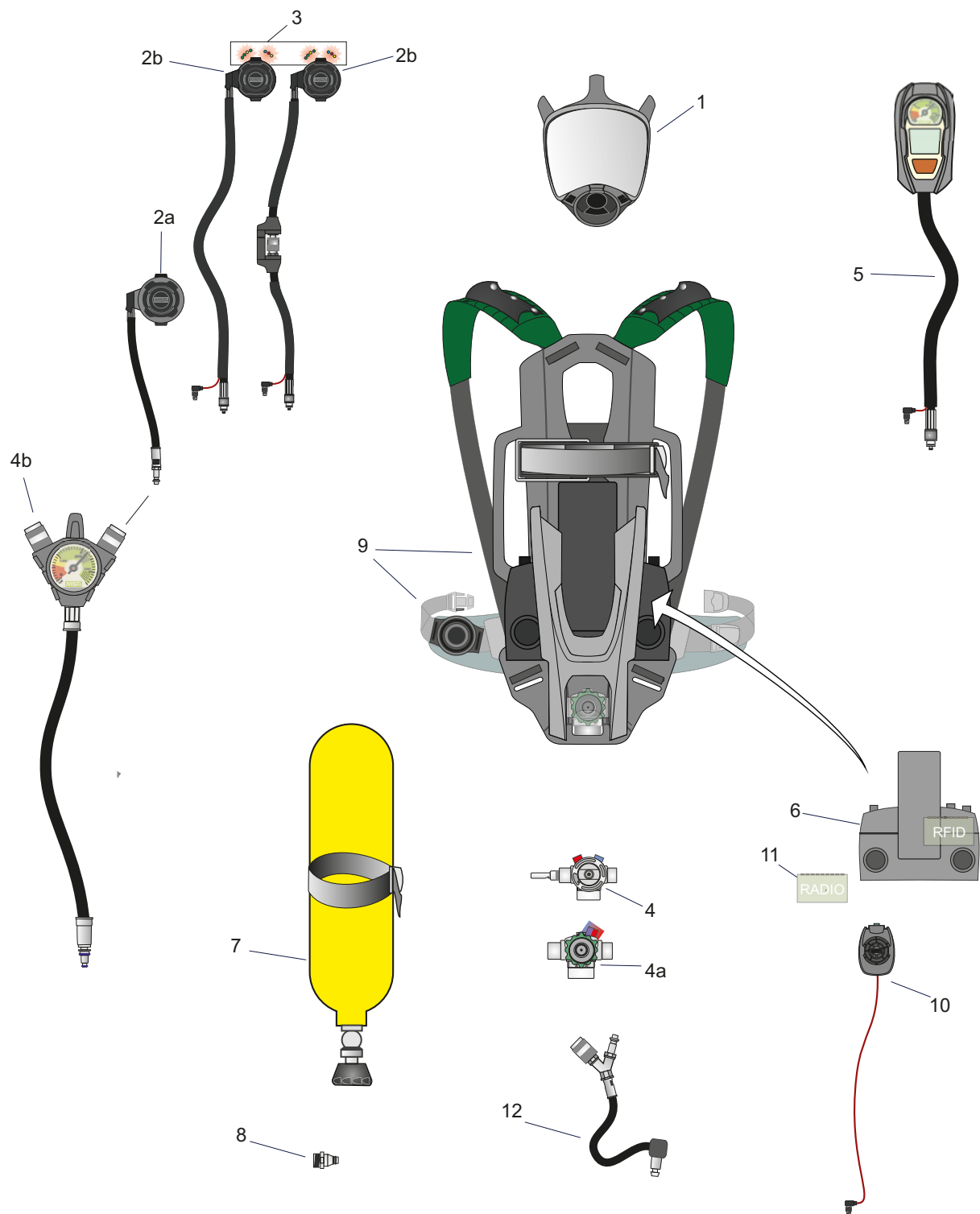


Fig. 1 System Overview (schematic representation)

2.1 G1 Facepiece (Full Face Mask)

The full face mask provides breathable air from the LGDV.

The inhalation air flows from the component housing of the mask past the inhalation valve to the inside of the lens (thus keeping the lens fog-free) and then through the inlet valves into the nosecup.

The exhalation air passes through the exhalation valve directly to the ambient air.

Fixed Push-to-Connect component housing only: If in a safe atmosphere no demand valve is attached, ambient air can be inhaled directly through an open port to facilitate breathing and speaking with no resistance.

The faceblank is made of a special soft rubber compound and assures a snug, comfortable fit and a tight seal. The mask and the nosecup are available in 3 sizes (small, medium, large).

The mask is available with different head harnesses and different component housings.



2.1.1 Mask Versions

Harness Versions

The mask is available with different head harnesses; Kevlar (textile) 4-point or rubber (5-point). The rubber head straps are numbered to indicate the correct tightening sequence.

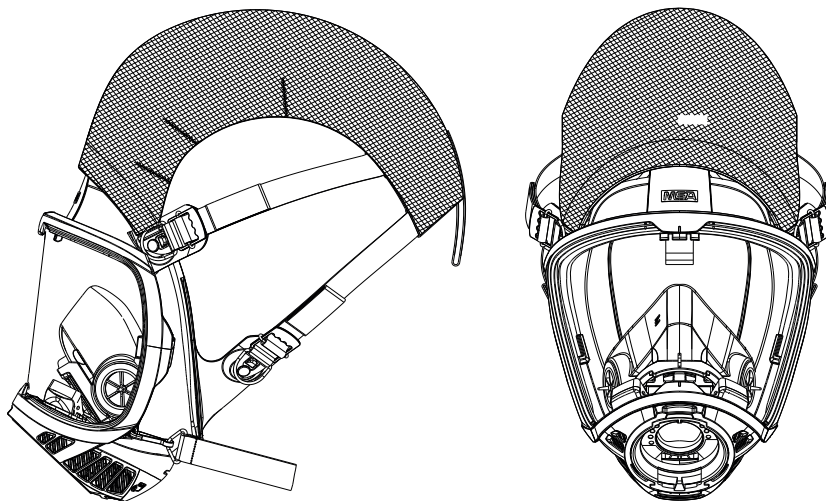


Fig. 2 Kevlar (textile) harness

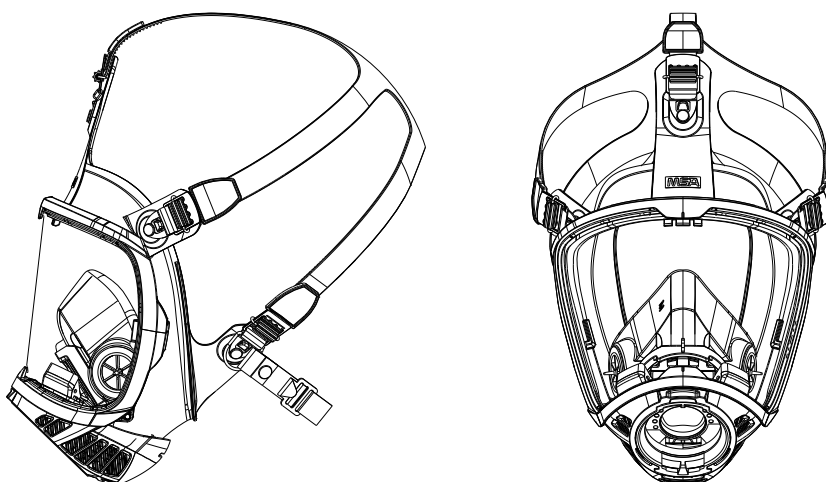


Fig. 3 Rubber harness

Component Housing Versions

The mask is available with the following component housing:

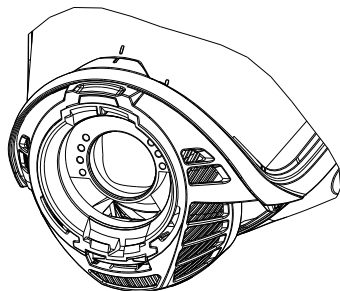


Fig. 4 Fixed Push-To-Connect

2.2 G1 Demand Valve (LGDV)



The mask mounted G1 Demand Valve is a pressure-demand LGDV, which maintains a positive pressure in the full face mask while the SCBA is in use. The positive pressure LGDV reduces the pressure coming from the pressure reducer further to provide breathable air to the user. The LGDV is connected to the full face mask with a fixed position Push-To-Connect (PTC) connection.

The purge cover allows users to activate the LGDV manually or provide a quick burst of air during use.

In the version with integrated electronics, the LGDV houses an optional electronic module which provides HUD functionality and microphone placement. The microphones are activated when the LGDV is connected to the full face mask and the user begins breathing. Inhalation noise is not amplified by the system. The top button of the LGDV also serves as a buddy light, it lights up yellow or red if the cylinder pressure falls below a certain threshold.

For the version with integrated electronics, the hose for the LGDV is available in two options, continuous or quick connect. The continuous hose provides an uninterrupted connection from the pressure reducer to the LGDV. A quick connect coupling is positioned on the chest between the pressure reducer and LGDV to enable LGDV removal from the SCBA for testing or repair. Both types of hoses for electronic versions have integrated wiring and hoses.

In the pneumatics only version, the LGDV is connected to the SL manifold via a quick connect coupling.

2.3 G1 Heads-Up Display (HUD) (Electric Version Only)

The HUD is integrated into the LGDV and projects different colored light into the full face mask to indicate current cylinder pressure and alarm status of the device. The HUD allows users to make conclusions about cylinder pressure and alarm status while wearing the SCBA. Status information is provided from the SCBA while operating power is received from the central power module. The HUD consists of 7 LEDs separated to 3 on the left and 4 on the right side to improve visibility and clarity. An integrated ambient light sensor in the LGDV varies the LED intensity depending to environmental light conditions. (optional setting).



2.4 Cylinder and Valve Assembly

The cylinder and valve assembly (see also chapter 11) stores high pressure air which will be reduced to provide the user breathable air. Cylinders are available in multiple sizes. The valve assembly provides the user the ability to open the pressure to the rest of the system. The valve assembly consists of a handwheel for opening and closing the valve and a threaded high pressure connection according to EN 144.

Optionally, an alphaCLICK 2 quick connection is available. In this case, the pressure reducer is equipped with the male part of the coupling. The female part (alphaCLICK 2 adaptor) is screwed into the cylinder valve.

2.5 G1 Pressure Reducer

The pressure reducer reduces the cylinder pressure to medium pressure, which is in turn further reduced by the LGDV to a pressure that is respirable by the user. The pressure reducer incorporates a fail safe design which ensures air flow to the user in the event of a malfunction within the pressure reducer.

The pressure reducer incorporates a medium pressure relief valve, and a cylinder connector with a sintered filter to capture particulates that may be in the air stream.

The pressure reducer is marked with a serial number, followed by the year of manufacture (two digits).

For the electronic version, the pressure reducer contains a primary low pressure warning signal. In the pneumatics only version, the pressure reducer is connected to the SL manifold containing a pressure gauge (showing the cylinder pressure), a warning whistle for low pressure alarm, a connector for the LGDV and a second connector for emergency situations.

Primary Low Pressure Warning Device

The primary low pressure warning device is an acoustic warning device (signal whistle). It triggers a continuous warning signal when the cylinder pressure drops below 55 ± 5 bar.

Depending on pneumatics the low pressure warning device is located at the G1 Pressure Reducer next to the Cylinder and Valve Assembly (Fig. 5) or within the Single Line (SL) Manifold (Fig. 6 "SL manifold").



Fig. 5 Standard warning whistle

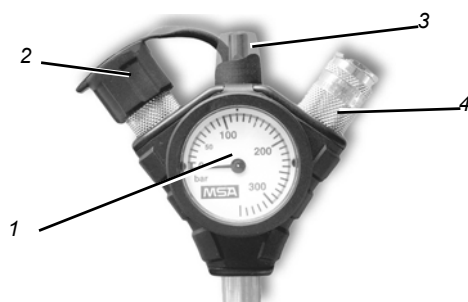


Fig. 6 SL manifold

- 1 Pressure gauge
- 2 Second connection

- 3 Warning signal [signal whistle]
- 4 Lung governed demand valve coupling

Quick-Fill Coupling (optional)

The Quick-Fill coupling (see also chapter 12) can be used to recharge the cylinder in extraordinary situations while it is attached to the SCBA.

2.6 G1 Harness and Carrier Assembly

The harness and carrier assembly consists of:

- Backplate (houses the pressure reducer, and, if present, the power module and battery module)
- Cylinder retainer to hold the cylinder
- Shoulder pads
- Adjustable pull straps
- Hip belt
- Waist belt
- LGDV retainer

Shoulder Straps

The shoulder straps provide weight distribution across the shoulder, friction pads to prevent slippage of the straps, increased visibility with retroreflection material, and steel buckles for a secure fit. The serviceable shoulder straps allow the user to easily access the hoses without having to disconnect them from the SCBA. The tunnels on these straps are released using snap buttons to ease in swapping or repair of components. The inside and outside of the shoulder straps are identifiable by print/stitching. A full face mask clip can also be attached to either shoulder strap.

The control module, LGDV, and optional voice projection speaker can be positioned either on the left or right shoulder strap. Typically the LGDV and voice projection speaker are placed on the left shoulder and the control module is placed on the right shoulder. The LGDV keeper can be positioned in multiple locations including the hip belt. The LGDV and the LGDV retainer must be on the same side of the user.

Hip Belt

The hip belt is available in two versions:

- Adjustable Hip Belt - The adjustable hip belt provides the user three positions for ideal comfort. The hip belt can be adjusted by one-hand and can be adjusted while worn. The hip belt also has a swivel feature to allow it to move with the user.
- Basic Hip Belt - The classic hip belt is a fixed position, non-swivel unit that provides a low profile, light weight hip belt option for the user.

2.7 G1 Alarm and Control Unit (Automatic Distress Signal Unit, ADSU) (Version with Integrated Electronics Only)

The alarm and control device is a combination of the control module located on the chest and the power module integrated into the backplate of the SCBA. The integrated motion sensor detects movements and goes into full alarm when the user remains motionless for 30 seconds. The G1 alarm and control unit uses acoustic and visual alarm indications.

G1 Control Module (Version with Integrated Electronics Only)

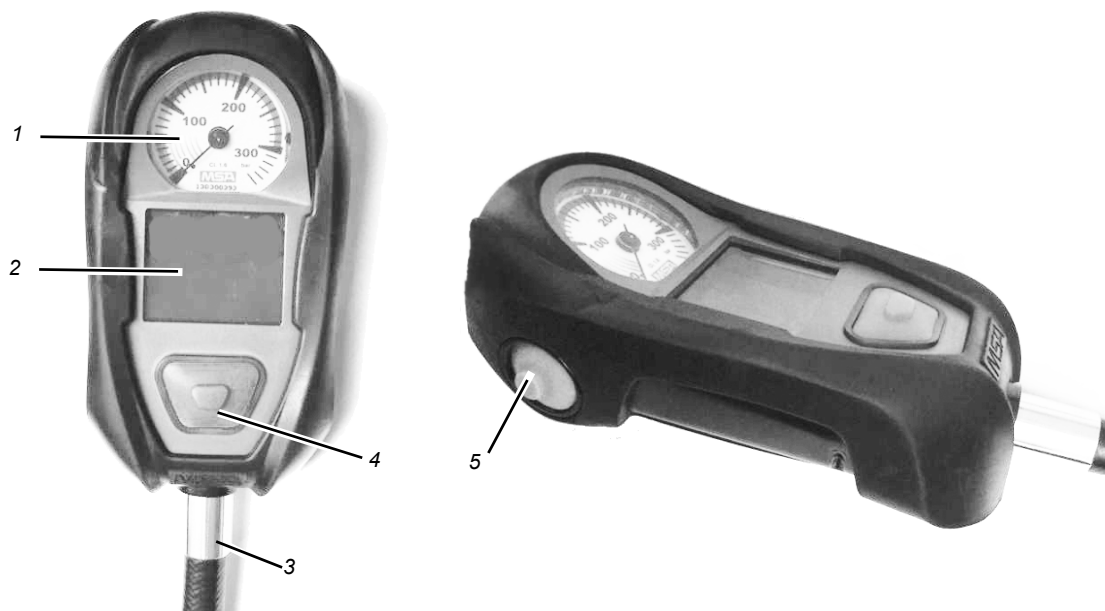


Fig. 7 Control module

- | | |
|------------------------|----------------|
| 1 Analog gauge | 4 Manual alarm |
| 2 Color display | 5 Reset button |
| 3 Power/pressure inlet | |

The G1 control module is the user's interface with the SCBA and ADSU device.

The control module is assembled to the high pressure air source and to the power module by a pneumatics and electronic hose assembly. The unit combines an analog gauge and graphical display to provide current status information of the SCBA:

- numeric cylinder pressure
- battery status
- alarms
- power module status
- remaining service time
- Telemetry radio link and evacuation status

The control module automatically lights up the analog gauge and turns the display on when the user lifts the unit up from the chest.

Furthermore the control module serves the user with a manual alarm button that activates the full acoustic and visual alarms of the device.

2.7.1 G1 Power Module (Version with Integrated Electronics only)

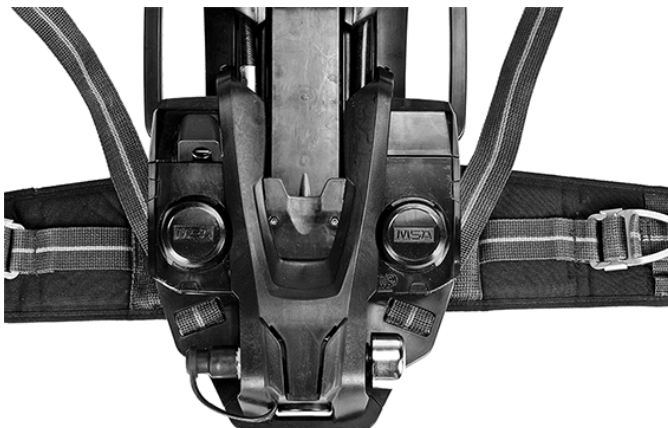


Fig. 8 Power module

The power module serves as the power supply and provides all of the information for the control module, LGDV and voice projection speaker.

The power module is connected to the backplate. It connects to the battery module, emits audible alarms and pre-alarms and has 4 buddy lights.

The battery module is equipped with six C-cell batteries (see also chapter 13.5 "Batteries"). The system notifies the user when the batteries need to be replaced by emitting an audible tone from the power module, displaying an empty battery icon on the display of the control module, and a flashing yellow LED on the HUD within the full face mask.

The power module is also equipped with a Quick-Fill light, which activates when low pressure alarm (configurable to medium pressure alarm) occurs, to make it easier to see the optional Quick-Fill connector in the dark.

The power module has a data logging feature that records information about the SCBA while the control module is turned on. This data log memory can be accessed using the MSA alphaCONTROL 2 Software.

The power module contains an internal real time clock. This clock can be reset using the MSA alphaCONTROL 2 Software. By default, the internal clock is set to Central European Standard Time.

NOTICE

Before placing the SCBA in service, verify that the internal clock is set to the appropriate time as per the user's geographic location using the G1 alphaCONTROL 2 Software. Failure to do so can result in inaccurate data logging.

2.8 Telemetry (Long range radio) Module (Version with Integrated Electronics Only)

The telemetry module allows the firefighter a two-way communication with Incident Command unit. The firefighter's vital statistics such as cylinder pressure, approximate remaining service time, motion alarm, low battery alarm, and thermal alarms are transmitted back to Incident Command. The telemetry module allows incident command to remotely evacuate firefighters and transmits manual alarms from the firefighter. The radio transmitter is located inside of the power module. For details see Chapter 15.

2.9 G1 Voice Projection Speaker (Optional for Version with Integrated Electronics)



The voice projection speaker amplifies and clarifies the speech from the full face mask during use. When inhaling, the breathing sound will not be amplified. The voice projection speaker is turned OFF when the complete SCBA is turned OFF and can also be activated/deactivated with its button. Pressing of the button is acknowledged by a beep.

3 Size Selection

Regardless of facial dimensions and respirator sizing charts, an actual respirator fit test, either qualitative or quantitative, is recommended according to EN 529:2005 to ensure the correct respirator size selection.

- (1) Fit test the respirator size relative to your facial features and dimensions. The safety administrator or program manager might assist in selecting the initial size to try.
- (2) Carefully don the mask and conduct a negative pressure seal check. See donning instructions for procedure.
- (3) If the full face mask does not pass the negative pressure seal check or feels uncomfortable, try the next nearest size relative to your face.

Once the proper size is selected, the respirator must pass a negative pressure seal check every time the full face mask is donned to ensure proper fit before using the respirator.

If other than facial seal leakage is detected, the condition must be investigated and corrected before another check is carried out.

The full face mask must also pass the negative pressure seal check before the user attempts to enter a toxic atmosphere.

The full face mask will not furnish protection unless all inhaled air is drawn from the SCBA only.

4 Visual Inspections

For inspection intervals of the device see chapter 13.1. Conduct a visual inspection upon receipt.



WARNING!

- ▶ Do NOT examine the SCBA before it is decontaminated, cleaned, and disinfected if there is a risk of exposure to hazardous contaminants. Obey the applicable decontamination procedures, clean and disinfect the SCBA, then examine it.
 - ▶ If the SCBA shows damage, deterioration, or any of the conditions listed in the Visual Inspections section, remove the SCBA from service and return it to an MSA trained and certified repair technician.
 - ▶ Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by MSA.
- Failure to obey these warnings can result in serious personal injury or death.



WARNING!

If the SCBA shows any of the conditions listed in the Visual Inspections section, remove the SCBA from service. Make sure an MSA trained and certified repair technician corrects the unsatisfactory condition before returning the SCBA to service.

Failure to follow this warning can result in serious personal injury or death.



WARNING!

Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by MSA.

Failure to follow this warning can result in serious personal injury or death.



WARNING!

Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer. Failure to follow this warning can result in serious personal injury or death.

All Components

- (1) Inspect all components for deterioration, dirt, cracks, debris, tears, holes, stickiness, signs of heat or chemical related damage or other visible signs of damage.
- (2) Inspect all straps (shoulder straps, pull straps, hip belt, waist straps, full face mask head harness) for tears, cuts, wear, abrasion, missing buckles or straps.
- (3) Perform all component specific inspections listed below.

4.1 Full Face Mask (see also Full Face Mask Operating Manual)

- (1) Inspect the lens for cracks, scratches, deformation, and color change.
- (2) Check the full face mask rubber for a tight seal and secure fit to the lens ring.
- (3) Ensure the exhalation valve is clean and operates easily. The valve must move off the seat and return when released (from inside the full face mask).
- (4) Inspect the full face mask inlet for damage. Ensure the inhalation valve is in place.
- (5) Inspect the nosecup to ensure the check valve are in place and the nosecup is secure to the component housing.

4.2 Lung Governed Demand Valve

- (1) Ensure that moisture or debris is not present, especially inside the LGDV and in the microphone ports.



WARNING!

DO NOT use any sharp objects to remove dirt or debris from the microphone ports. Rinse with water to flush ports out. Allow ports to dry fully before placing back into service. Failure to follow this warning could result in serious personal injury or death.

- (2) Ensure the O-ring and seal ring are free of debris and not damaged or missing.

4.3 Pressure Reducer

- (1) Threaded Connect: Unthread the handwheel from the cylinder valve (if present).
 - a) Inspect for thread damage.
 - b) Ensure an O-ring present and not damaged.
 - c) Replace the O-ring if damaged.
- (2) If the SCBA is equipped with an alphaCLICK 2 Quick Connect:
 - a) Inspect the quick connect fittings.
 - b) Ensure that the openings are clear and free of debris and other contaminants.
 - c) Ensure that the quick connect fittings operate properly and are secured.
- (3) alphaCLICK 2 Quick Connect: Turn the quick connect counterclockwise a quarter of a turn and pull away from cylinder valve to release (if present).
 - a) Inspect the quick connect for damage.
 - b) Inspect the adapter for damage.
- (4) Inspect the high pressure relief valve for damage.
 - a) Ensure the relief valve label is not damaged and that the relief valve ports are not showing.
 - b) If damaged, remove the SCBA from service and replace the relief valve.
- (5) Reattach handwheel to the cylinder valve.
 - a) Threaded Connection: Ensure that the handwheel is handtight (no tools).
 - b) alphaCLICK 2 Quick Connect: Push the quick connect coupling onto the adapter. Pull on the quick connect coupling to ensure it is connected properly.

4.4 Cylinder and Valve Assembly

- (1) Check the test date on the cylinder approval sticker located on the cylinder neck or on the cylinder label.
 - a) Observe national regulations for inspection intervals.

Make sure that the cylinder in use is approved as part of the MSA G1 SCBA system and fulfills all requirements to be in operation according to the cylinder manual and relevant national regulations.

4.5 Carrier Assembly

- (1) Operate the latch on the cylinder band to ensure that it opens and closes properly and that it holds the cylinder securely.
- (2) Ensure that the hip belt is attached securely.
- (3) If applicable (power module present): Ensure the power module and pressure reducer are secured to the backplate by the lower cover.

4.6 Control Module

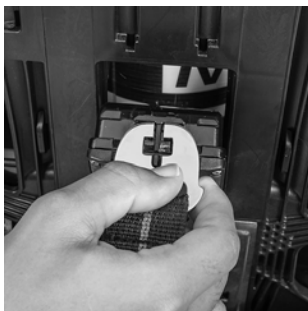
- (1) Check the displays for cracks and other visible damage.
- (2) Ensure the buttons are not damaged or missing.
- (3) Ensure the hose assembly is securely attached to the control module.
- (4) Ensure the needle and gauge face on the gauge are clearly visible and that the gauge stem is not bent.

4.7 Power Module

- (1) Make sure the power and battery modules are attached securely to the backplate.
- (2) Make sure there is no dirt or debris on the covers on the piezo emitters on both sides of the power module.

4.8 Battery Module (Alkaline or Rechargeable)

- (1) Unlock the battery module with the battery removal tool.
 - a) Push the removal tool into the slot in the battery module and click into place.
 - b) Pull the removal tool and the battery module out of the power module.



- (2) Remove the battery module from the power module.
- (3) Check the battery module for visible damage, ensure that the connection seal is in place and undamaged.
- (4) Reinsert the battery module and turn off the alarm and control device.

4.9 Record Keeping

Available as an accessory, the MSA TecBOS.Tech software - stand-alone or as part of the SmartCHECK test bench - provides assistance for inventory management, due date monitoring and service records.

5 Functional Tests



WARNING!

If the SCBA does not operate correctly for all functional tests, remove the SCBA from service. Make sure an MSA trained and certified repair technician corrects the unsatisfactory condition before returning the SCBA to service. Failure to obey this warning can result in serious personal injury or death.

If the SCBA has passed the visual inspection successfully, conduct the functional tests.

If any part of the SCBA fails the functional test, do not use the SCBA and return the device to a certified repair technician.

NOTE: The functional checks must be conducted with a full cylinder. Before starting the tests, check the pressure gauge on the cylinder valve to verify that the cylinder is full.

5.1 Check that the LGDV and Full Face Mask Can Hold a Negative Pressure (Before Use only)

- (1) Connect compressed air cylinder (see chapter 11.3 "Changing the Cylinder") and open the cylinder valve.
- (2) Close the cylinder valve and purge any air from the system using the purge cover on the LGDV.
- (3) Hold the full face mask against the face to create an effective seal.
- (4) Attach LGDV to the full face mask and inhale until the full face mask begins to collapse against the face.
- (5) Hold breath for approximately 10 seconds.

Negative pressure should be maintained and the full face mask should remain collapsed against the face for the entire 10 seconds.

Do not use the SCBA if negative pressure cannot be maintained in the full face mask.

5.2 Tightness Check of the Pressure Reducer

- (1) Connect compressed air cylinder (see chapter 11.3 "Changing the Cylinder").
- (2) Open cylinder valve and check operating pressure on pressure gauge.
The pressure value must read minimum 270 bar for 300 bar cylinders.
- (3) Close cylinder valve.
After 60 seconds the pressure drop in the pressure gauge must not exceed 10 bar.
- (4) Check warning device (see chapter 5.6 "Control Module, Power Module, HUD, and Primary Low-Pressure Warning Device Operation").

5.3 Check Function of LGDV (Before Use only)

- (1) Push the release buttons on the side of the LGDV to ensure the LGDV is shut off.
- (2) Open the cylinder valve and ensure the valve is completely open.
- (3) If applicable: Observe the LED display.
The LEDs must illuminate in a sequenced pattern.
After the sequence is completed, the corresponding system pressure will be displayed.
- (4) Attach the LGDV to the full face mask.
- (5) Ensure proper attachment by pulling on the LGDV.
- (6) Don the full face mask or hold the full face mask against the face to create an effective seal.
- (7) Inhale sharply to start air flow.
- (8) Breathe normally.
 - a) Ensure proper LGDV response.

- b) The LGDV should NOT make any unusual sounds including whistling, chattering, or popping
- (9) Remove the full face mask from the face.
- (10) Ensure that air flows freely.
- (11) Push the LGDV release buttons.
 - a) Ensure that air flow stops.

5.4 Tightness Check of LGDV with Universal Test Device

Check that the LGDV is tight both without medium pressure and with medium pressure.

Without Medium Pressure

- (1) Switch off LGDV.
- (2) Connect LGDV to universal test device using the connecting adapter.
- (3) Generate positive pressure of +7.5 mbar on test device and hold for 60 s.
The pressure change must not exceed 1 mbar in 60 seconds.

With Medium Pressure

- (1) Switch off LGDV.
- (2) Connect medium pressure line to a pressure reducer and open cylinder valve.
- (3) Connect LGDV to universal test device using a connecting adapter.
- (4) Observe pressure change.
The pressure change must not exceed 1 mbar in 60 seconds.

5.5 Checking the Closing Pressure

- (1) Switch off LGDV and connect to medium pressure.
- (2) Connect to test equipment via test adapter line.
- (3) Close all lines of the test equipment.



WARNING!

Use a test adapter line to prevent damage to test equipment not protected against positive pressure. Close the connection between LGDV and test equipment.

- (4) Switch on LGDV by pushing the flush button.
- (5) Open test adapter line.
 - a) Release a volume flow of 5 l/min through test equipment vent.
- (6) Close vent.
The static pressure must be less than 3.9 mbar.

5.6 Control Module, Power Module, HUD, and Primary Low-Pressure Warning Device Operation



When testing the control module, lay the control module down flat to check the white light illuminating the pressure gauge and to check if the graphical display and the analog gauge match within a 10 bar range.

Manual alarm can be reset using the green buttons on the control module.

Verify proper function of the HUD, control module, power module, and low pressure warning device by observing the control module gauge and display when the alarms sound. Perform this test with a full cylinder.

- (1) Pressurize the system by opening the cylinder valve.
 - a) Observe the starting sequence of the LEDs on the LGDV.
 - b) Listen for the power module to sound and for the primary low pressure warning alarm to sound briefly.
 - c) Ensure that the buddy lights are flashing green.
 - d) Ensure the pressure gauge and LCD display (if configured) show the correct pressure.
- (2) Allow the control module to remain motionless for approximately 20 seconds.
 - a) Listen for the power module to sound repeated tones of the pre-alarm.
 - b) Verify that the buddy lights are flashing red.
 - c) Verify that the red LED is flashing in the HUD.
- (3) Shake the control module to reset the alarm before the unit goes into full alarm.
- (4) Allow the control module to remain motionless until the full alarm sounds (30 seconds).
 - a) Listen for the power module to sound the tones of the full alarm.
 - b) Verify that the buddy lights are flashing red.
 - c) Verify that the red LED is displayed in the HUD.
 - d) Verify that shaking the control module does not reset the full alarm.
- (5) Reset the motion alarm by pressing the left reset button (green) on the side of the control module twice within approximately one second.

- (6) To check the manual activation of the alarm, press and hold the alarm button on the front of the control module until the alarm activates.
 - a) Listen for the power module to sound the tones of the full alarm.
 - b) Verify that the buddy lights are flashing red.
 - c) Verify that the red LED is displayed in the HUD.
- (7) Reset the alarm by pressing the right reset button (green) on the side of the control module two times within approximately one second.
- (8) Close the cylinder valve fully.
- (9) Activate flushing mode of lung governed demand valve, releasing all air pressure until the pressure drops below 55 bar \pm 5 bar for a 300 bar system
 - A flashing red LED must display in HUD at the appropriate pressure.
 - The primary low pressure warning device should be alarming.
 - All of the buddy lights should be flashing red.
 - The pneumatic light should illuminate.
 - The alarms should continue until the air pressure is 15 bar or less.
- (10) When the system pressure falls below 15 bar, turn the control module off (sleep mode) by pressing the reset button (green) two times within approximately one second.
- (11) Keep purge pressed to release any remaining pressure in the system.
- (12) Release purge.

If the primary low pressure warning device, control module, power module, or HUD does not function properly, the SCBA must be removed from service.

Check function of SL Manifold - Low Pressure Warning Device (if applicable)

- (1) Connect LGDV.
- (2) Pressurize the system by opening the cylinder valve.
- (3) Close the cylinder valve fully.
- (4) Observe the pressure gauge.
- (5) Activate flushing mode of lung governed demand valve, releasing all air pressure
Warning must sound at 55 bar \pm 5 bar for a 300 bar system

5.7 Voice Projection Speaker Function

- (1) Pressurize the system and ensure the alarm and control unit and HUD are turned ON.
- (2) Attach the LGDV to a full face mask and begin breathing air. This will activate the LGDV and start the voice amplification.
- (3) Talk into the full face mask to ensure the voice projection speaker is operating properly.
- (4) Press and hold the ON/OFF button on the voice projection speaker until the audible tone sounds and the unit turns OFF.
The LED on the voice projection speaker should be OFF.
- (5) Press and hold the on/off button on the voice projection speaker until the audible tone sounds and the unit turns ON.

6 Donning



WARNING!

- ▶ Before entering the hazardous area, the device must be put on. The device must be worn on the body at all times and not removed while in the hazardous area to avoid electrostatic discharge in potentially explosive atmospheres.
 - ▶ Before entering the hazardous area, check the complete G1 electronic devices for mechanical damage including damage to the conductive coatings of the housings.
 - ▶ If the SCBA does not function properly as described in this section, the SCBA must be removed from service and must be checked and corrected for proper operation by an MSA trained or certified repairperson before using.
 - ▶ The full face mask may not seal properly with your face if you have a beard, gross sideburns or similar physical characteristics. An improper facial seal may allow contaminants to leak into the full face mask, reducing or eliminating respiratory protection. Do not use this device if such conditions exist.
 - ▶ The full face mask seal must be checked before each use.
 - ▶ A nose cup must be installed in the full face mask.
 - ▶ In order to guarantee a proper fit for those wearing glasses, the G1 spectacle kit **must** be worn since ordinary glasses **cannot** be worn under the full face mask.
 - ▶ Never remove the full face mask except in a safe, non-hazardous, non-toxic atmosphere.
 - ▶ Users must wear suitable protective clothing and precautions must be taken so that the device is not exposed to atmospheres that may be harmful to it.
- Failure to follow these warnings can result in serious personal injury or death.

6.1 Preparation

The device must have passed all visual inspections and functional tests (see previous chapters) before use.

(1) Ensure that the cylinder is fully pressurized.

(2) Check cylinder connection:

Threaded connect:

✓ Check that the handwheel is hand-tight (no tools).

alphaCLICK 2 (Quick connect):

✓ Ensure secure connection by pull on quick connect coupling.

(3) Pull on the cylinder band assembly to ensure the cylinder band is attached securely.

(4) Only applicable when control module and power module are present: Check battery status by pressing and holding both reset buttons until the battery icon appears.

The battery icon will shut off after approximately 10 seconds.

(5) Loosen the shoulder straps as far as possible.

(6) Loosen the waist belt straps as far as possible.

(7) Only applicable when control module and power module are present: Tag in the user's information with ID Tag. See "Personnel ID Tag" section for more information.

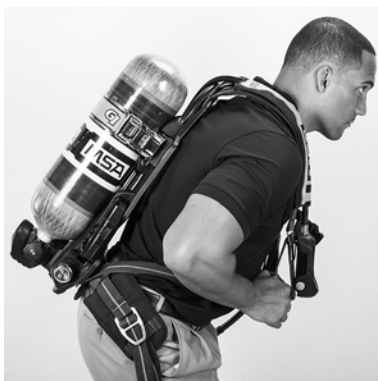
6.2 SCBA Donning Procedure



- (1) Slide the right arm through the right shoulder strap.



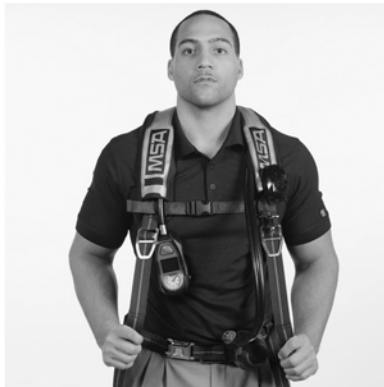
- (2) Slide the left arm through the left shoulder strap.
a) Check correct orientation of shoulder straps.



- (3) Bend forward slightly; resting the carrier on the back.



- (4) Fasten the waist belt and pull forward on the waist strap pull tabs to tighten for a snug fit.
a) Most of the SCBA weight should be carried on the hips.



- (5) Stand up straight. Pull down on the shoulder strap pull tabs to tighten straps. Adjust the waist belt if necessary.



- (6) The adjustable hip belt can be adjusted while wearing the SCBA.

Loosen or release the waist buckle.

Reach behind to find the hip belt.

Pull the level towards the user and push up or down depending on the adjustment needed.

Release the tab and pull up or down to ensure the hip belt is locked in.



- (7) Tuck in the shoulder straps and waist strap ends.
a) They must be tucked in and lay flat across the body.



- (8) Grasp the LGDV and push the side buttons to release the LGDV from the LGDV retainer.



- (9) Reach behind and fully open the cylinder valve.



WARNING!

During system pressurization, listen for the sound of hissing or popping. If you hear hissing or popping, remove the SCBA from service, and return it to an MSA trained and certified repair technician.

Failure to obey this warning can result in serious personal injury or death.



- (10) As the system pressure rises from 0 to 15 bar, both visible and audible alerts activate automatically, indicating that the SCBA is functioning properly. The following indications must occur (if applicable, depending on components present):

Brief sound from the pressure reducer primary low pressure warning device

Chirp from the power module and voice projection speaker (if available)

Pressure display on the HUD

Buddy light flashing green on power and control module

Pneumatics version only:

Low pressure warning device is active between 0 and 55 bar \pm 5 bar for a 300 bar system

Pressure reading on the gauge of the SL manifold.



WARNING!

If the primary low-pressure warning device does not alarm, the power module does not make a sound, or the buddy lights or HUD lights do not come on, remove the SCBA from service. Make sure an MSA trained and certified repair technician corrects the unsatisfactory condition before returning the SCBA to service.

Failure to obey this warning can result in serious personal injury or death.

No air should flow from the LGDV. If it does, repeat previous steps.

- (11) Ensure the control module and the HUD pressure indicators show a full cylinder.
- (12) Listen for air leaks and watch the pressure indicators (pressure gauge, control module, HUD) for 10 seconds.
- (13) The product is now ready for use.

6.3 Full Face Mask Donning Procedure (see also Facepiece Operating Manual)

The full face mask is either carried using the neck strap in front of the chest or using the clip on the shoulder strap. To ensure protection from dirt and debris, ensure the full face mask opening is towards the user's body.



- (1) Spread the harness with both hands.



- (2) Position the chin into the chin cup.



- (3) Pull the head straps over your head.
a) Ensure that the harness is sitting correctly and is not twisted.



- (4) Adjust mask and tighten the straps firmly and evenly.
a) Tighten the lower straps first by pulling them straight back, not out.
Tighten the temple straps in the same manner.
If present, tighten the top strap for best visibility and fit.

**WARNING!**

Ensure that the top of the full face mask seal **directly** contacts the user's forehead. Ensure that there is no hair between the full face mask's seal and the user's skin.

Failure to follow these warnings can result in serious personal injury or death.

6.3.1 Leak Check

In order to check the full face mask-to-face tightness a leak check must be performed before each use.



- (1) Seal the inlet (component housing) with the palm of your hand or by attaching the non-pressurized regulator.



- (2) Check tightness.
- (3) Inhale and hold breath for a few seconds.
The mask must stay collapsed on face.
- (4) Exhale.
The exhalation valve should open and release the pressure inside the mask.
- (5) If necessary retighten the straps.
 - a) If the leak check fails, re-don the mask.
 - If the leak check still fails, the mask must not be used.

6.3.2 Installing the Push-to-Connect LGDV



- (1) Grasp the LGDV and insert it into the full face mask by pushing inward.
 - a) Check proper engagement by pulling on the LGDV to ensure that the LGDV is securely attached to full face mask.



- (2) Check proper engagement by pulling on the LGDV to ensure that the LGDV is securely attached to full face mask.



WARNING!

DO NOT use the SCBA unless the LGDV is connected properly. A LGDV that is not installed correctly can separate from the full face mask unexpectedly. Failure to follow these warnings can result in serious personal injury or death.

- (3) Inhale sharply to start the air flow.

NOTE: If the SCBA passes all tests, it is ready for use. These tests must be performed every time before entering a hazardous atmosphere. If the SCBA fails to meet any of the tests, the condition(s) must be corrected before using the SCBA.

7 During Use

WARNING!

Before use, the product operability must be verified. The product must not be used if:

- ▶ the function test is unsuccessful,
- ▶ the product is damaged,
- ▶ proper servicing/maintenance has not been made or
- ▶ genuine MSA spare parts have not been used.

Take into account the following factors which may affect the duration or the service life:

- ▶ the degree of physical activity of the user;
- ▶ the physical condition of the user;
- ▶ the degree that the user's breathing rate is increased by excitement, fear, or other emotional factors;
- ▶ the degree of training or experience which the user has had with this or similar equipment;
- ▶ whether or not the cylinder is fully charged;
- ▶ the condition of the SCBA.

Leave a contaminated area immediately if:

- ▶ Breathing becomes difficult
- ▶ Dizziness or other distress occurs
- ▶ You taste or smell the contaminant
- ▶ You experience nose or throat irritation
- ▶ SCBA not functioning according to the instructions or training.

DO NOT use the carrier and harness assembly as a vertical raising or lowering device.

Do NOT use this product as a self-contained underwater breathing apparatus. This will result in a rapid loss of air which could result in serious injury or loss of life.

Return to a safe atmosphere immediately if discoloration, crazing, blistering, cracking, or other deterioration of the full face mask lens material is observed.

Misuse or abuse of the HUD, the control module, power module, voice projection speaker or the equipment to which they are attached, or using this equipment in a manner or situation not intended by the manufacturer, or may result in personal injury or death to user or persons dependent on the user or damage to the equipment.

Use device only in an ambient temperature range of $-40\text{ }^{\circ}\text{C}$ to $+60\text{ }^{\circ}\text{C}$.

Misuse and/or failure to follow this warning can result in serious injury or death.

Periodically check the pressure indicated on chest mounted pressure indicator during use. The control module continually displays the cylinder pressure while the HUD indicates when each segment of the total cylinder pressure has been reached.

When the needle on pressure indicator reaches the red zone on the gauge face, the primary low pressure warning device alarms, the HUD (if applicable) will display a flashing red pressure LED, and the alarm button on the control module and buddy lights on the power module will flash red. The HUD, control module, and primary low pressure warning device indicate when cylinder pressure drops below these approximate values:

- $55\text{ bar} \pm 5\text{ bar}$ for a 300 bar system

Immediately return to fresh air if:

- SCBA free-flows (provides air when not inhaling).
- Low pressure warning device sounds.
- HUD low pressure indicator lights and flashes red.
- Control module alarm button flashes red.
- When the HUD, control module, or low pressure warning device indicates 35% cylinder pressure, immediately return to fresh air.
- If the air flow in the SCBA is reduced: Immediately keep purge pressed. Immediately return to fresh air.

7.1 Cold Weather Operation

Moisture can cause problems in the SCBA if it freezes. However, moisture can cause freezing problems even if the surrounding air is above freezing. Air flowing from the cylinder through the pressure reducer and LGDV drops from cylinder pressure to close to atmospheric pressure very quickly. This causes the air to expand and creates a cooling effect. Although the surrounding temperature may be warmer than 0°C, the temperature inside the LGDV may be lower.

Prior to storage of the SCBA at temperatures below -18°C, verify that the battery module is equipped with fully charged batteries.

- (1) Any water inside could turn to ice and restrict airflow. To keep moisture from entering the full face mask mounted LGDV, keep the LGDV in the LGDV retainer when not in use.
- (2) When the SCBA is away from heat, water spray can freeze on the LGDV surface. Ice can build up and bind the side buttons. Before entering or re-entering a hazardous atmosphere, ensure the side buttons are ice-free and operating properly.
- (3) Moisture can enter through the cylinder valve or coupling nut when cylinders are replaced on the SCBA. When replacing cylinders, ensure moisture or contamination does not enter the system. Remove any ice from these fittings.
- (4) Wipe the pressure reducer threads and cylinder valve threads before installing a new cylinder. Water can contaminate the system and freeze.
- (5) When cleaning the SCBA, ensure water does not enter the LGDV.
- (6) Thoroughly dry the full face mask and full face mask mounted LGDV after cleaning and disinfecting.
- (7) Ensure that the Quick-Fill protection cap is in place before storing the SCBA.

NOTICE

Install new batteries in the alkaline battery modules before storing the SCBA at temperatures below 0°F (-18°C) for an extended period of time. Make sure the rechargeable battery module is fully charged before storing the SCBA at temperatures below 0°F (-18°C) for an extended period of time.

During use in cold temperatures, the SCBA can lose and gain connection with the telemetry module. If the connection to the telemetry module is disconnected, the device will try to reconnect. The breathing performance of the SCBA is not affected by the telemetry module.

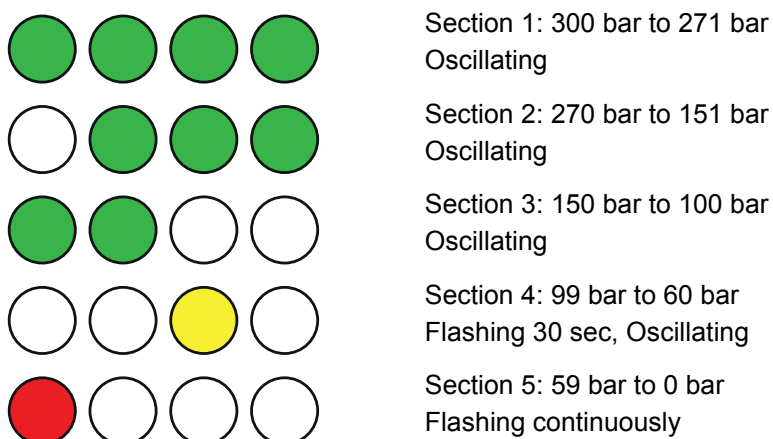
8 G1 Heads-Up Display (HUD) (Version with Integrated Electronics only)

8.1 G1 HUD Pressure Status

The G1 HUD provides the pressure and alarm status to the user through light pipes into the full face mask. The pressure status is on the right side of the user, while the alarm status is on the left side of the user. The pressure status indicators are divided into five sections. These five sections are based on percentage of the maximum pressure of the cylinder. Each section has a corresponding quantity and color of LEDs associated with them.

Oscillating Mode

Oscillating mode shows the pressure status on an interval basis. The LEDs cycle from a low light level to a high light level periodically. The LEDs are always on and the brightness changes over time during the pressure ranges of section 1 through 4. Once section 5 is reached the LEDs activate and stay flashing until the unit is shutdown.



8.2 G1 HUD Alarm Status

The status LEDs let the user know about primary and secondary alarms on the SCBA. These status LEDs use the following three icons:

- Battery icon
- Running man icon
- Caution triangle

Alarm	Illuminated Icon			Icon shown
Motion Pre-Alarm				Red Flashing*
Motion Full Alarm				Red Solid
Manual Alarm				Red Solid
Electronics Failure				Red Flashing*
Primary Thermal Alarm (Optional)				Red Flashing*
Secondary Thermal Alarm (Optional)				Blue Flashing*
LCD Thermal Alarm				Blue Flashing*
Pressure Drop Alarm (Optional)				Blue Flashing*
Evacuate (with telemetry option only)				Red Flashing*
Evacuate Confirmed (with telemetry option only)				Red Solid*
Low Battery Alarm				Yellow Flashing*

* Check control module for more information

NOTE: For optional alarms, refer to the MSA alphaCONTROL 2 Software to configure these alarms.

G1 HUD Buddy Light

The G1 HUD is equipped with a buddy light that utilizes the top button on the LGDV. The buddy light on the LGDV is the only one that does not light green. The buddy light lights up yellow or red if the cylinder pressure falls below a certain threshold. It will illuminate yellow at section 4 of the pressure range. It will illuminate red when the pressure reaches section 5 or a primary alarm goes off. Primary alarms are considered motion and manual alarms and primary thermal alarm. All other alarms are considered secondary alarms and only alert the user.

G1 HUD Light Sensor

The G1 HUD is also equipped with an ambient light sensor that analyzes the surround light and changes the intensity of the LEDs to ensure they are easy to see. The ambient light sensor is located in the LGDV. Light is captured by the LGDV button and travels inside the LGDV to the sensor. There are multiple settings to the light sensor. Under bright light conditions, the LEDs are brightened to their maximum intensity. When in very dark surroundings, the LEDs are dimmed to their lowest intensity to ensure they do not blind the user.

9 Control Module (ADSU) (Version with Integrated Electronics only)

WARNING!

- ▶ The control module has the ability to display calculated remaining service time counting down to 0 bar (default) or 35% of the rated service pressure or to medium pressure alarm. The user must determine which option has been selected for the control module in service.
 - ▶ Actual time remaining may be less than the calculated time displayed. Increases in breathing rate may reduce remaining time more than expected. Use time indicator as general guide only. The time displayed is based on the continuation of the average breathing rate over the last three minutes. Increases in the breathing rate after checking the displayed time may result in less remaining time than anticipated.
- Failure to follow this warning can result in serious personal injury or death.

9.1 Alarms

The G1 Control Module contains a motion sensor that detects motions of the user automatically. The related motion alarm is reached within 30 seconds, those 30 seconds are split into 3 levels: No motion detected:

1. Level	for approx. 17.5 seconds, deactivated by moving
2. Level	for approx. 20 seconds, deactivated by moving
3. Level	for approx. 25 seconds, deactivated by reset button press
4. Level	for 30 seconds, full motion alarm, deactivated by reset button press

With optional telemetry module only the full motion alarm is transmitted to the G1 base station and displayed within the accountability software.

When the SCBA is not in use, it is in sleep mode. During sleep mode, the SCBA periodically checks for system changes and wakes as needed. The conditions that wake the system from sleep mode include battery installation, system pressurization, or activation of the ALARM button on the control module.

The control module also wakes from sleep mode when the user pushes and holds the RESET button to check the battery status without pressurizing the system. If the user holds the RESET button after the battery symbol appears, the control module goes into service mode, which provides additional details about product usage. Only trained personnel are authorized to use service mode.



Start-up Sequence

WARNING!

If the control module displays a "Do Not Use" icon during start-up, the SCBA must be removed from service and must be checked and corrected for proper operation by an MSA trained or certified repair technician.

Failure to follow this warning can result in serious personal injury or death.

Once the device leave sleep mode, it will enter a start-up sequence that will provide the user information on the state of the unit for operation.

Step 1		<ul style="list-style-type: none"> • The logo screen displays on the control module showing the MSA logo and a user and/or team name if assigned to the device. • The buddy lights on the power and control module cycle through red, yellow, and green. • The power module plays the start-up tone. <p>During this process, the device is performing a self-test to ensure the device is operating correctly.</p>
Step 2		<p>The self-test screen displays the results of the self-test to the user.</p> <ul style="list-style-type: none"> • A successful self-test will display a "Go" icon to indicate the unit can be put into service. • If maintenance is required, a "maintenance" icon will appear indicating the unit should be removed from service after use. • If the device should not be used, a "Do Not Use" icon will display on the control module and the full alarm from the power module will be alarmed. At this point, the device will not continue to operate. The SCBA must be removed from service and must be checked and corrected for proper operation by an MSA trained or certified repair technician before using.
Step 3	The primary screen displays and the product can be used.	

9.1.1 Use



Primary Screen

The primary screen provides all critical information to the user. To illuminate the screen either pick up the control module or press the RESET button. Three options of information can be displayed on the primary screen: pressure status, time remaining calculation, or breathing time.


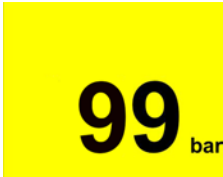



Fig. 9 Primary Screen

The pressure status is a configurable option in the control module and is set as the default. The settings can be changed by using the MSA alphaCONTROL 2 Software. The two other options for the primary screen are time remaining calculation or breathing time.






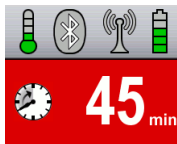
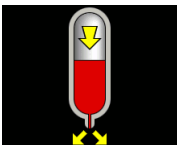
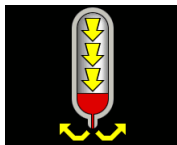

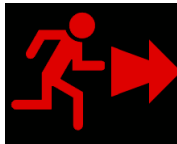




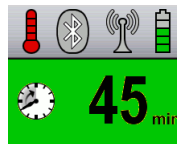
Options	Screen
Option 1	 <p>Pressure status provides the user the pressure of the system.</p>
Option 2	 <p>Time remaining feature calculates the amount of air used and estimates how long it will take to use the remaining air in the cylinder.</p>


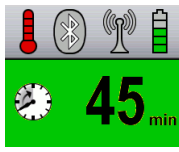


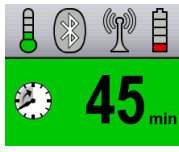

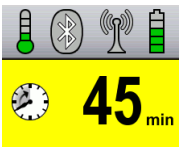
The background color of the screen corresponds with the system pressure:

	Green indicates pressure of 100 bar or higher.
	Yellow indicates pressure between 99 bar and 60 bar.
	Red indicates pressure lower than 59 bar.

9.2 Primary Alarms

Below is the list of alarms the alarm and control device is capable of indicating to the user. Optional alarms can be activated by using the MSA alphaCONTROL 2 Software.

Alarm Type	HUD	Control Module	Buddy Lights	Sound
Motion pre-alarm	Red Attention Flashing			Red Pre-alarm
Motion/manual full alarm	Red Attention Solid			Red Full Alarm
Low pressure alarm	Red Pressure Flashing			Red Optional sound (See alphaCONTROL 2 Software)
Pressure drop alarm (optional)	Blue Attention Flashing			Red Optional sound (See alphaCONTROL 2 Software)
Evacuate (if equipped)	Red Evacuation Flashing			Red Sweep
Evacuation confirmed (if equipped)	Red Evacuation Solid			Red None
Hardware failure	Red Attention Flashing			Red Full Alarm
Thermal Alarm Primary (optional)	Red Attention Flashing			Red Optional sound (See alphaCONTROL 2 Software)
Thermal Alarm Secondary (optional)	Blue Attention Flashing			Based on pressure Optional sound (See alphaCONTROL 2 Software)

Alarm Type	HUD	Control Module	Buddy Lights	Sound
Thermal Alarm Confirm (Primary)	Red Attention Solid			Red None
LCD Temp Alarm	Blue Attention Flashing			Based on Pressure None
Low Battery	Yellow Battery Flashing			Based on Pressure Beep every 10 seconds
Medium Pressure Alarm	None			Yellow Optional sound (See alphaCONTROL 2 Software)

9.3 Secondary Alarms

Icon



The attention icon flashes for an active and new warning or is steady for an old/ seen warnings that have been viewed.



Evacuation alarm, the running man icon is visible on the primary screen if the evacuation has been confirmed.

The buddy light status remains based on pressure status for secondary alarms.

9.4 Thermal Alarm



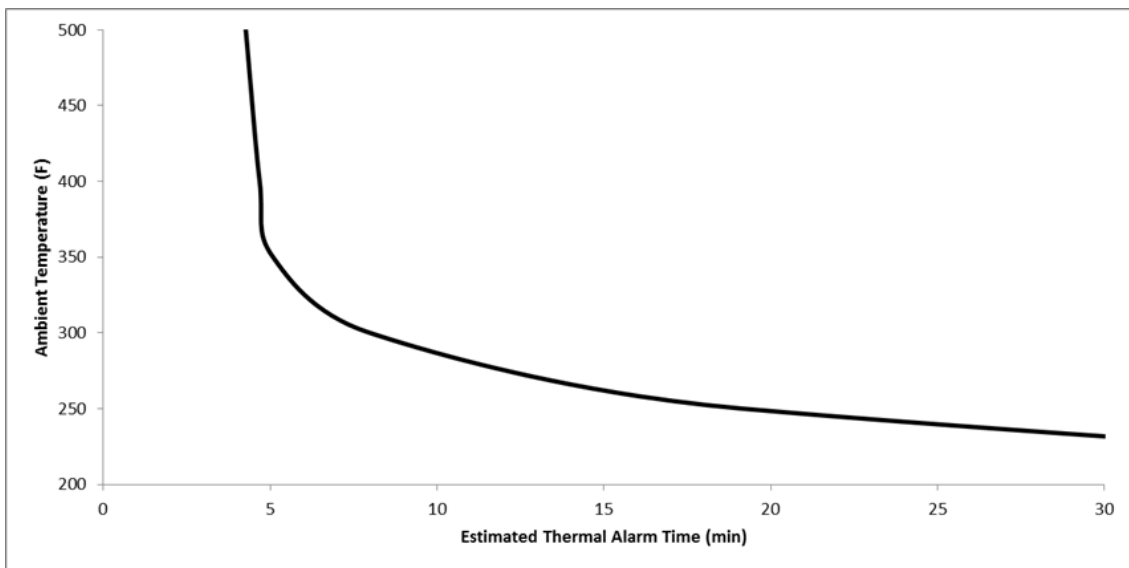
WARNING!

Although the thermal alarm provides an indication that the temperature/time curve is exceeded, because of variations in individuals and protective clothing, the curve may not represent the threshold to injury accurately. Use the thermal alarm only as a reference to increasing temperature/time. Do not use the thermal alarm as a substitute for standard operating procedures for escape from temperature/time extremes.

Failure to obey this warning can result in serious personal injury or death.

If the option for the thermal alarm is activated, the control module monitors thermal conditions. The thermal alarm can be set as a primary or secondary (default) alarm. If the user is exposed to more than the preset limit of thermal load (temperature/time), the secondary alarm shows on the control module and the power module emits a tone every 5 seconds.

The following figure shows the thermal alarm activation curve for the control module. The temperature/time limits correspond to this graph. The thermal alarm activates if the preset limit exceeds the curve shown on the graph. Depending on the severity of conditions, the alarm will self-cancel. This may occur even though the temperature is above the thermal curve.

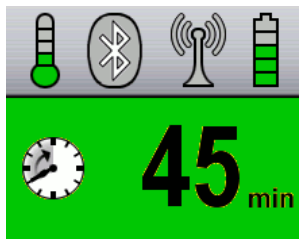


NOTE: This chart was generated from data obtained in a laboratory setting and is for reference only. Conditions are highly variable in an actual-use scenario. Users of the thermal alarm option should develop procedures for the use of this feature.

9.5 Secondary Alarm Icons

The secondary alarm icon indicates either the thermal alarm, battery alarm, or radio connection loss occurred. These icons will remain on the main screen until the condition is corrected by the system (example: radio connection is re-established).

The evacuate alarm can be cleared by restarting the SCBA or by receiving the "rest evacuation alarm" message from alphaCONTROL.



Secondary Screen















The secondary screen provides the user information if needed by the user. To switch to the secondary screen, press the RESET button once.

The secondary screen displays

- temperature icon
- short range radio icon
- long range radio icon (only with telemetry option)
- battery icon
- time remaining calculation

Similar to the primary screen, the time remaining calculation is configurable to pressure status, time remaining or breathing time.

The icons on the screen indicate different states of the device. The chart below explains the different states of the device.

Icons					
Thermal	Bluetooth		Long Distance Radio (LDR)		Battery
 Low Heat Load		Connection established		Good connection, LDR logged on at base	 5 green segments: 80-100% battery charge
 High Heat Load		Connection lost		LDR was logged on but link is now lost	 4 green segments: 60-79% battery charge
		No Connection		LDR hardware error (failure of spi communication / detected at startup and live)	 3 green segments: 40-59% battery charge
				LDR ready to log on, but no base found	 2 yellow segments: 20-39% battery charge
			No icon	LDR not installed or disabled	 1 red segment: 0-19% battery charge Change/exchange battery, do not use device

NOTE: To get the most out of the batteries, it is recommended to only change the batteries once they reach the low battery alarm (1 red segment).

9.6 ID Tagging

The G1 was designed to allow the user to tag the SCBA during the use of the product.



- (1) Press and hold the RESET button until the RFID symbol appears.



- (2) Place the ID Tag on the user side of the backplate, on the left side of the power module.
 - a) The control module will display the ID tag information and beep once complete.

- (3) If the control module does not display the ID tag information, repeat steps 1 and 2.

The G1 Control Module also allows the user to tag the SCBA while the unit is turned off.



- (1) Press and hold BOTH green RESET buttons at the same time until the RFID symbol appears.



- (2) When the battery icon is displayed on the screen, press the ALARM button and RFID symbol will appear.



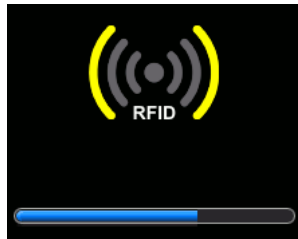
- (3) Place the ID Tag over the RFID reader on the power module. The RFID reader is located on the SCBA backplate on the user's right side.

The control module will display the ID tag information and beep once complete.

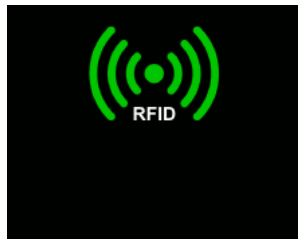
- (4) If the control module does not display the ID tag information, repeat steps 1 and 2.

9.7 Screen Displays During Tagging

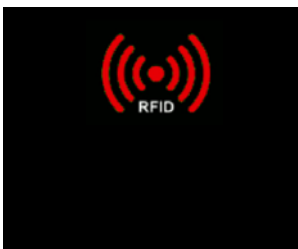
To start the tagging procedure, press the RESET button until the RFID screen appears.



RFID screen



Personal ID TAG read



RFID could not be read - try again or check ID Tag note message on control unit

When the device has read the tag, it confirms with a beep.

9.8 Button Functions

RESET Buttons (green)



Both reset buttons have the same function, instead of pressing one button twice when advised.

Pressing either button performs the following, depending on context:

Single press to:

- Activate the backlight and refresh the HUD (when in intermittent mode)
- Toggle between primary and second screen

Double press to:

- Reset motion pre-alarm (or shake control module to reset)
- Reset motion full alarm
- Confirm evacuation
- Turn off device (when below 15 bar)
- Clear primary alarms

ALARM Button

Activates full alarm by pressing and holding the ALARM button. This will occur when either the unit is OFF or ON.

9.9 Turning OFF the Control Module

- (1) Upon returning to fresh air, close the cylinder valve completely and release all pressure from the SCBA.
- (2) When the pressure falls below 15 bar, turn the control module off by double pressing the reset button (green).

The shutdown sequence will display on the screen and the lights on the control module and the power module will stop flashing.

10 After Use

10.1 Removing the SCBA



(1) Grasp the LGDV buttons.



(2) Push the release buttons and pull the LGDV out of full face mask.



(3) Close the cylinder valve fully.



(4) Press the purge button to release system pressure.



- (5) When the pressure falls below 15 bar, turn the control module off by depressing the reset button (green) two times within approximately one second.

NOTE: The HUD and voice projection speaker (if equipped) will automatically turn itself OFF, within 60 seconds after the SCBA has been depressurized. A red LED will flash until the HUD turns off.



- (6) Stow the LGDV in the LGDV retainer when it is not in use.



- (7) To remove the carrier and harness, press in on the waist belt buckle release button.
(8) Disconnect the chest strap buckle (if used).



- (9) To loosen the shoulder straps, grasp the pull tabs and push them out and away from the body.



- (10) Slip the left arm out of the shoulder strap first, then remove the harness.

NOTE: Be sure to replace the cylinder with a fully charged one. Complete Inspection, Cleaning and Disinfecting Procedures outlined in this manual. Ensure that the complete SCBA is clean and dry. Ensure that full face mask head harness straps and harness adjustment straps are fully extended. Place the complete SCBA in the storage case or suitable storage location so that it can be easily reached for emergency use. (See storage instructions.) In situations where users share the SCBA, the LGDV must be cleaned and disinfected using a disinfectant (see chapter 13.4) to prevent cross contamination between users.

10.2 Removing the Full Face Mask



- (1) Loosen the head harness by pulling the buckles forward using your fingers.



- (2) Grip the chin straps and pull the head harness forward over the head.



- (3) Grip the front of the mask (as shown) and pull the mask away and down from the user.

11 Cylinders

11.1 Safety Precautions for MSA Self-Contained Breathing Apparatus Cylinders

The operating manual of the cylinders has to be regarded.



WARNING!

- ▶ This system must be supplied with respirable or higher quality air according to EN 12021.
- ▶ DO NOT drop the cylinder or bump the valve knob. An unsecured cylinder can become an airborne projectile under its own pressure if the valve is opened even slightly.
- ▶ Never carry or move a cylinder by the handwheel. If a cylinder is removed from a horizontal shelf by grasping the handwheel, the weight of the cylinder can cause the cylinder to rotate downward causing the valve to open slightly.
- ▶ Avoid dropping the cylinder or bumping the handwheel.
- ▶ Use the handwheel only to open and close the cylinder valve.
- ▶ A valve could partially open causing the cylinder to become an airborne projectile under its own pressure and result in serious personal injury or death.
- ▶ Remove from service if cylinder shows evidence of exposure to high heat or flame: e.g., paint turned to a brown or black color, decals charred or missing, gauge lens melted, or elastomeric materials distorted.
- ▶ Use this device only after receiving proper training in its use. Use in accordance with this label and MSA apparatus instructions.
- ▶ Do not use unless the cylinder is filled to the maximum working pressure.
- ▶ Do not alter, modify, or substitute any components without approval of the manufacturer.
- ▶ Inspect frequently. Maintain according to manufacturer's instructions. Repair only by properly trained personnel.
- ▶ The instructions for use of the cylinder and valve assembly have to be regarded. Misuse can result in serious injury or death.

Breathing apparatus cylinders should be fully recharged as soon as possible after use.

Cylinders should not be stored partially charged:

If used partially charged, the duration of the SCBA is reduced.

For maximum safety, the cylinders should be stored full or at a pressure above ambient but less than 7 bar.

Prior to recharging, cylinders must be examined externally for evidence of high heat exposure, corrosion, or other evidence of significant damage.

If there is any doubt about the suitability of the cylinder for recharge, it should be returned to a certified hydrostatic test facility for expert examination and testing.

Always check to be sure the retest date is within the prescribed period and that the cylinder is properly labeled to indicate its gaseous service. New labels are restricted items which are not available except through certified hydrostatic test facilities.

When replacing cylinder valves or after the retesting of cylinders, make sure the proper cylinder valve, burst disc, and O-ring are installed prior to cylinder recharging. Determine the maximum service pressure of the cylinder. All cylinders shall be filled to the designated service pressure only.

11.2 Installing Quick Connect Adapter (alphaCLICK 2) to Cylinder

- (1) Use only a fully charged cylinder and inspect the external thread of the cylinder valve to ensure they are not damaged and free of dirt and debris.

The bore of the cylinder valve must be undamaged and free from dirt and debris.

If the cylinder valve is damaged, remove from service and return it to a MSA trained or certified repair technician.

- (2) Inspect the internal threads and nipple of the male adaptor to ensure it is not damaged and free of dirt and debris.

Ensure that the O-ring is installed on the nipple and free of dirt and debris.

- (3) Thread the adaptor with a specific torque of 20-30 Nm onto the cylinder valve.

11.3 Changing the Cylinder

Removing the Cylinder

- (1) Lay the backplate of the SCBA horizontal with cylinder facing up.
- (2) Ensure there is no pressure in the system before replacing a cylinder.
- (3) Close the cylinder valve.
- (4) Press purge until air no longer discharges from the LGDV.
- (5) Disconnect the handwheel assembly:

Threaded connect:

- ✓ Unthread handwheel from cylinder valve assembly.

alphaCLICK 2 connect:

- ✓ Turn the handwheel on the coupling side first clockwise, when the stop is reached, push downwards in the direction of the pressure reducer.
 - ✓ The cylinder adaptor releases from the alphaCLICK 2 coupling.
- (6) Hinge up cylinder buckle at cylinder strap and thus loosen the strap.



When exchanging compressed air cylinders of the same diameter, only the cylinder buckle needs be opened.

- (7) Lift cylinder at the valve and pull out of cylinder strap.
- (8) Close high pressure connection cylinder valve with protection cap (not required for alphaCLICK 2).

Attaching the Cylinder

alphaCLICK 2 connect:

- ✓ If necessary, thread the alphaCLICK 2 cylinder adaptor with a specific torque of 20-30 Nm into the cylinder valve.
- (9) Lay the backplate of the SCBA horizontal with cylinder facing up.
 - (10) Slide the fully charged cylinder into the carrier, with cylinder valve gauge facing away from the backplate.
 - (11) Open cylinder buckle on the cylinder strap eliminating any tension and extend the strap.
 - (12) Push compressed air cylinder through the cylinder strap with the cylinder valve toward the pressure reducer, so that it lies on the central support.

Threaded connect:

- ✓ Thread cylinder valve onto pressure reducer, if necessary, bring the SCBA with valve up into a vertical position.

alphaCLICK 2 connect:

- ✓ Align the compressed air cylinder with the alphaCLICK 2 axially to the coupling and fit on the alphaCLICK 2 coupling.
- ✓ Close the coupling by pushing together using a light force and checking that the arrow of the indicator ring is vertically aligned with the backplate.

**CAUTION!**

Never push the coupling system together using excessive force.

- (13) Tighten cylinder strap by pulling the free end.

NOTICE

Do not overtighten the cylinder strap! Damage can occur when using excessive force to close the cylinder buckle and the SCBA might not be ready for use. The final fastening tension will be achieved when closing the cylinder buckle.

- (14) Check position of compressed air cylinder, retighten if necessary.
- (15) Hinge cylinder buckle down until it catches.
- (16) Fasten end of the cylinder retaining strap onto Velcro strip.
- (17) Briefly open cylinder valve and check for escaping air, retighten if necessary.
- (18) To check that the cylinder is secure, place one hand on the backplate and grasp the cylinder valve with the other hand. Try to pull the cylinder and valve down and out away from the carrier. Make sure that the strap holds the cylinder securely in the carrier.
- NOTE:** If the cylinder feels loose, check that the latch engages with the proper slot on the band. Ensure that the latch is fully tightened. Do not use the SCBA if the cylinder is not held securely in the carrier.
- (19) Align the handwheel assembly to the cylinder valve.

Threaded connect:

- ✓ Before installing the threaded handwheel, check that the O-ring inside the handwheel coupling nut is present and free of damage. If the O-ring is damaged, it must be replaced before the SCBA is used.
- ✓ Thread the handwheel coupling nut onto the cylinder threads. The handwheel should be hand-tight (no tools).

alphaCLICK 2 connect:

- ✓ Before installing ensure there is no dirt or debris on either the male or female end of the coupling. Ensure the adapter on the cylinder valve is tight.
- ✓ Push the quick connect coupling onto the cylinder valve adapter until an audible snap is heard. The handgrip will rapidly rotate approx. 45° counter clockwise indicating that the valve is connected to the pressure regulator.
- ✓ Grasp the handwheel firmly and pull on it to ensure the handwheel is fully attached.

11.4 Charging Cylinders

- (1) Appropriately connect the cylinder to the filling system and refill.
NOTE: For cylinders with alphaCLICK 2, the adapter must be removed before filling unless the filling system has been adapted for the alphaCLICK 2.
- (2) Terminate the filling when the pressure reaches the maximum service pressure and allow the cylinder to cool to room temperature.
NOTE: Some cylinders may only be filled with a limited speed. Observe the cylinder operating manual.
- (3) If necessary, top-off the cylinder such that the service pressure is attained with the cylinder at a temperature of 20 °C.
- (4) Close the valves on the cylinder and the filling system and remove the cylinder.
- (5) Apply a leak solution to determine if there is any leakage between the cylinder and the valve.
If there is no leakage, the cylinder is ready for use.

**WARNING!**

Never fill cylinders in explosive atmospheres. Enter areas with explosive atmospheres only after the filled cylinder has cooled down.

12 Quick-Fill Coupling

The Quick-Fill coupling is a male Quick-Fill inlet for use by Rapid Intervention Teams for emergency filling operations. The system also includes an automatically resetting pressure relief valve.

12.1 Precautions

- The Quick-Fill coupling can only be used to fill approved SCBA cylinders.
- The user is responsible for the air supply, which must meet the requirements of EN 12021.
- The user also is responsible for connecting the Quick-Fill hose to an appropriate secondary air supply.
- The cylinder must be inspected for damage before charging.
- If topping off the cylinder using the QUICK-FILL coupling, it is recommended to wait until after the cylinder has cooled from initial fill. Topping off a cylinder after it has cooled will ensure proper service time.



WARNING!

- ▶ DO NOT use the Quick-Fill coupling as a second man connection such that two users are sharing the air supplied by one approved SCBA cylinder simultaneously.
 - ▶ The Quick-Fill coupling must be used by trained personnel only.
 - ▶ DO NOT lubricate the Quick-Fill couplings. Do not permit oil, grease, or other contaminants to come in contact with the Quick-Fill couplings.
 - ▶ The hose assemblies and fittings are designed to be used with breathable air according to EN 12021.
- Misuse can result in serious injury or death.

NOTE: The Quick-Fill coupling may be used for transfill operations as described in this manual. Standard operating procedures should be developed for use of the Quick-Fill coupling.

12.2 Filling Instructions

A secondary air supply stores compressed breathing air until needed to refill SCBA air cylinders. When transfilling, the secondary air supply pressure must be greater than SCBA cylinder pressure. Examples of air supplies include: cascade air cylinder refilling systems; high pressure compressor systems with a fixed reservoir; or a portable air system such as the MSA RIT Bag.



WARNING!

DO NOT connect a high pressure SCBA to a secondary air supply with a pressure greater than 300 bar. The high pressure SCBA is rated for a maximum working pressure of 300 bar. Misuse can result in serious injury or death.

- (1) Connect the Quick-Fill hose to the secondary air supply.
- (2) Turn the air supply on.



CAUTION!

If there are leaks from either female fitting, or along the hose, depressurize the hose and correct the problem. Such leakage can result in increased fill time.

Attach the Quick-Fill hose to the Quick-Fill coupling:

- (3) Remove the rubber dust cap from the male inlet fitting on the Quick-Fill coupling. Be sure that the cylinder valve is fully opened.
- (4) Remove the rubber dust cap from the female fitting on the Quick-Fill hose.
- (5) Push the female fitting of the hose onto the male fitting of the Quick-Fill coupling until it snaps in place.

- (6) Pull on the hose to be sure the connection is secure.
*Filling immediately begins when the female fitting fully engages with the Quick-Fill coupling.
After approximately 60 seconds, the pressure between the secondary air supply and the SCBA cylinder will be equal.*

NOTE: Some cylinders may only be filled with a limited speed. Observe the cylinder manual.

NOTE: If the secondary air supply does not have a sufficient volume of air, the SCBA cylinder will not reach full service pressure.

- (7) Compare the cylinder pressure gauge and the remote pressure gauge to the secondary air supply pressure gauge reading.
If the readings are the same, pressure is equal.
- (8) To disconnect the Quick-Fill hose after transfilling, pull the gray sleeve back.
*The hose fitting and the Quick-Fill coupling will separate.
A hiss or pop may be heard as the fittings separate and the high pressure air is sealed off.
Listen for any leaks from the Quick-Fill coupling.*
- (9) Immediately install the dust cover on the Quick-Fill coupling.
The SCBA cylinder is ready for service if the cylinder pressure gauge needle is on the appropriate color band.

13 Maintenance and Care of the SCBA

This device should be regularly checked and serviced by trained specialists. Inspection and service records must be maintained. Always use original parts from MSA.

Repairs and maintenance must be carried out only by authorised service centres or by MSA. Changes to devices or components are not permitted and will result in loss of approval.

MSA is liable only for maintenance and repairs carried out by MSA.

Inspect the entire SCBA after it has been cleaned and disinfected.



WARNING!

If the device does not meet any of the following inspections, it must be removed from service.



WARNING!

Take care not to damage the device during carriage or transport.



MSA recommends the following maintenance intervals. If necessary and considering the usage, intervals may be shorter than indicated.

Observe national laws and regulations!

In case of doubt, ask your local MSA contact person.

13.1 Maintenance Intervals

Component	Work to be performed	Before use	After use	Annually	Every 40 months*	Every 120 months*
G1	Cleaning		X	X	X	
	Visual, function and tightness check	X	X	X		
	Overhaul					X or after 600 hours of active use**
alphaCLICK 2 coupling	Cleaning		X	X		
	Lubrication / greasing			X		
	Functional check			X		
LGDV	Cleaning		X		X	
	Visual, function and tightness check	X	X***	X		
	Diaphragm replacement				X	
	Overhaul					X or after 600 hours of active use**
Mask/Cylinder	See Mask/Cylinder/Quick-Fill Operating manuals.					

* Applicable national regulations must be observed

** For SCBA apparatus that are frequently used, MSA recommends a complete overhaul after approx. 600 hours.

For example, this corresponds to 1200 applications with a duration of 30 minutes.

*** Visual test of diaphragm only after use in aggressive media or under extreme conditions, function and tightness test always.

13.2 Masks

For detailed instructions see Full Face Mask manual.

13.3 Lung Governed Demand Valve

(1) Verify that all hoses are properly connected and check them carefully for cracks.

13.4 Cleaning and Disinfection



If during the cleaning and disinfection process water and solutions with recommended detergents are used the pressure reducer and the demand valve should be pressurized.

13.4.1 Cleaning

Faultless mechanical cleaning is an absolute precondition for disinfection; only totally clean breathing apparatus components can be effectively disinfected. Use a mild cleaning detergent.

- Do not use solvents [e.g. acetone, spirit, thinners, alcohol, petrol].
- Flush thoroughly with clear, flowing water of drinkable quality.
- Laundry: At 40°C using mild detergent.
- Cleaning: Chemical cleaning is not permitted because of the foam filling.
- Clean hoses, pressure reducer and pressure gauge preferable by hand.
- If you want to clean under water:
Pressurise the pressure reducer and seal the warning signal [e.g. with a flexible tube].



WARNING!

Penetration of water causes danger of icing inside if the device is not dried carefully.

- When cleaning the pressure reducer the hoses remain connected to the pressure reducer.



WARNING!

The pressure reducer must be pressurized if submerged in water.

Make sure that no water penetrates high and medium pressure cavities.

- Shake out humidity from pressure reducer.



WARNING!

For cleaning, do not use organic solvents, such as nitrous dilution, alcohol, spirits, gasoline, trichloroethylene, etc.

Pre-cleaning

- (1) Open cylinder valve of the mounted compressed air cylinder fully.
- (2) Remove rough dirt from breathing apparatus with water hose. Here, we recommend using a mild detergent.
- (3) Close cylinder valve, release air from apparatus with lung governed demand valve.

Cleaning, light Soiling

- (4) Clean device manually using a brush, damp cloth or similar.
- (5) Air-dry device completely.

Cleaning, heavy Soiling



In the event of heavy soiling the compressed air breathing apparatus should be partially dismantled.



- (1) Remove compressed air cylinder.
- (2) Disconnect LGDV.
- (3) Separate harness assembly and cylinder cover from other device components.



- (4) Remove the shoulder strap from the slots of the backplate.

- (5) Clean harness assembly and cylinder cover in a washing machine at max. 40°C.
- (6) Clean hoses, cylinder with combination valve assembly with pressure reducer and pressure gauge preferably by hand with a damp cloth.

NOTICE

Do not submerge the pressure reducer in water.

- (7) Blow out pressure reducer via ventilation bore holes.
- (8) Completely dry all compressed air breathing apparatus components in a drying cabinet at max. 40 °C.

13.4.2 Disinfection

- Definition: Destruction or deactivation of micro-organisms - bacteria, fungi, spores on and in infected objects and areas.
- All apparatus components that have come into contact with the saliva or exhalation air of the user must be disinfected.
- Observe material compatibility and manufacturer's recommendation of the disinfectant. Permissible disinfectant: Incidin® Rapid, Ecolab® Healthcare, Sekumatic® FDR depending on the disinfection/washing procedure. See instructions for use of the disinfection agent.

- During disinfection gloves must be worn. The combination of concentration and duration is listed on the packing of the disinfectant. The data quoted must always be complied with. Arbitrary and uncontrolled addition of disinfectant can be as harmful to the next user as for the apparatus itself.
- No detergent must be added to the disinfectant since this may cause detergent flaws or loss of efficiency of the disinfectant.
- Thoroughly remove the disinfectant with plenty of hand warm drinking water.
- When disinfecting the pressure reducer the hoses remain connected to the pressure reducer.

13.4.3 Cleaning/Disinfection Mask

The cleaning/disinfection of the masks is performed in accordance with the cleaning intervals in the mask manual. For cleaning/disinfection instructions see Full Face Mask manual.

13.4.4 Cleaning/Disinfection Lung Governed Demand Valve



WARNING!

While cleaning make sure that no fluids penetrate the LGDV through the medium pressure hose. Fluids can damage the components on the inside.



It is recommended to pressurize the LGDV when using liquids for cleaning and disinfection.

- (1) Switch off LGDV.
- (2) Lock medium pressure hose with seal cap or connect to the medium pressure.
- (3) Pre-cleaning: Clean LGDV on the outside. Ensure that no dirt penetrates the inside.
- (4) Cleaning: Clean LGDV in the wash basin and rinse with plenty of hand warm drinking water.
- (5) Disinfect device and rinse with lots of hand warm drinking water.

Permissible disinfectant: Incidin® Rapid, Ecolab® Healthcare, Sekumatic® FDR depending on the disinfection/washing procedure. See instructions for use of the disinfection agent.

13.4.5 After Cleaning/disinfection LGDV

- (1) Connect switched off LGDV to medium pressure.
- (2) Push flush button, fully blow out moisture for at least 20 s.
- (3) Uncouple from medium pressure.
- (4) Switch on LGDV with flush button.
- (5) Dry completely in a drying cabinet at max. 50 °C.

13.4.6 Compressed Air Cylinder

For cleaning instructions of the cylinder, see cylinder manual.

13.5 Batteries



WARNING!

- ▶ Replace the alkaline batteries following the use of the SCBA were the low battery alarm became active.
- ▶ Changing of alkaline batteries must be performed in a non-hazardous environment.
- ▶ Battery modules must only be removed and installed in a non-hazardous environment.
- ▶ Use only approved alkaline batteries in the alkaline battery module.
- ▶ Use of other alkaline batteries, or a combination of batteries from different manufacturers, will affect the performance of the unit and void the Intrinsic Safety Approval.
Failure to follow this warning could result in serious injury or death.



WARNING!

DO NOT dispose of the batteries in fire. They may explode. Follow national regulations for proper disposal of batteries.

Misuse can result in serious injury or death.



WARNING!

Use only approved alkaline batteries in the alkaline battery module. Use of other batteries, or a combination of batteries from different manufacturers, will affect the performance of unit and void the Intrinsic Safety Approval.



CAUTION!

Do not use force to remove or replace the battery pack, otherwise the power module could get damaged.



Battery status can be checked while the SCBA is still in the jump seat, the battery pack can also be replaced without taking the SCBA out of the jumpseat.

With the exception of Energizer EN93, the temperature class for the following list of batteries is T4. The temperature class for Energizer EN93 batteries is T3C

- | | |
|--------------------------------|----------------------------------|
| • Duracell Procell PC1400 | • Industrial Panasonic Powerline |
| • Duracell MN1400 | • Rayovac Ultra Pro LR14 |
| • Duracell Quantum LR14 | • Rayovac LR14 |
| • Panasonic Evolta C-LR14 | • Rayovac Fusion |
| • Panasonic Industrial LR14XWA | • Energizer EN93 |
| | • Energizer E93 |

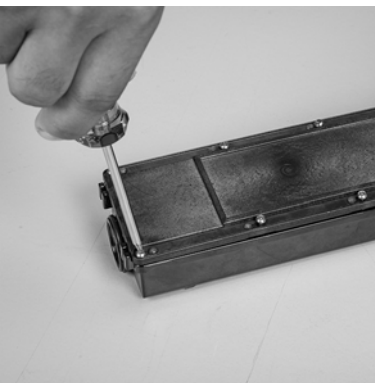
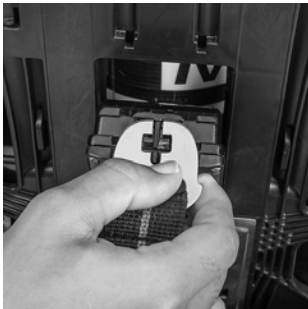
NOTE: The temperature class is T4 when the above alkaline cells are installed within the alkaline battery pack, except the temperature class is T3C when the Energizer EN93 alkaline cells are installed within the alkaline battery pack.

Replacing the Batteries in the Battery Module

The battery module is installed on the user side of the SCBA in the middle of the backplate.

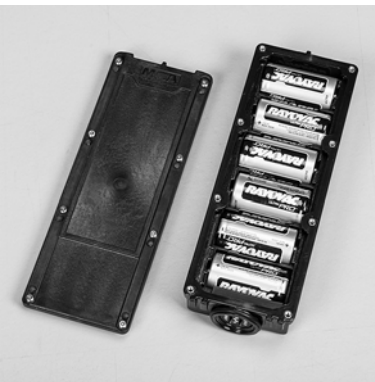


- (1) Unlock the battery module with the battery removal tool.
 - a) Push the removal tool into the slot in the battery module and click into place.
 - b) Pull the removal tool and the battery module out of the power module.

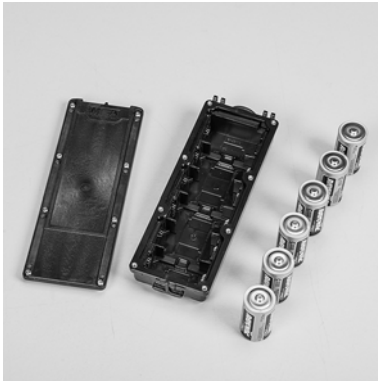


Open the battery module:

- (2) Loosen the Torx screws in the battery housing lid.



- (3) Remove the battery housing lid.



- (4) Remove all 6 batteries.
- (5) Check the inside of the battery module for damage, battery acid, corrosion, dirt and debris.
- (6) Ensure the battery contacts are in place and secure.
- (7) Insert 6 fresh C-cell batteries, ensuring the + contacts are in alignment.
- (8) Check the cover of the battery module for damage, dirt and debris, make sure the gasket is still in place and does not have any nicks or tears.
 - a) Replace cover if necessary.



Close battery module:

- (9) Place the battery lid on the housing and install the screws until the lid makes contact with the standoffs (0,45 Nm max torque).



NOTE: This is the position of the battery lid to the housing once the screws are tightened.



Install the battery module in the power module:

- (10) Make sure before inserting the battery pack that the power module is clean and that no pins or grooves are damaged.



(11) Insert the battery pack into the power module, ensure to align it with the grooves in the power module.

- a) Release the battery module and push in its top.
- b) The battery module will click into place.

(12) To make sure that the battery pack fits securely, push on the opposite side of the power module, the battery pack should not move.

13.5.1 Rechargeable Battery Module

WARNING!

Do not use a rechargeable battery module which shows signs of damage, such as bulging, swelling, leaking fluid, a cracked housing, or damaged contacts. Failure to follow this warning can result in a loss of electronics functionality and serious personal injury or death.

WARNING!

Use only battery charger MSA 10170546 with rechargeable battery module MSA 10161002. Do not remove or install the rechargeable battery module in an environment with explosive concentrations of combustible gases, vapors, or mists. Failure to follow this warning will void Intrinsic Safety approval and may result in an explosion or fire.

CAUTION!

Recharge the rechargeable battery module if the low battery alarm has activated. Failure to follow this warning may result in a loss of electronics functionality during subsequent product use.

CAUTION!

- ▶ Do not use force to remove or replace the rechargeable battery module. Do not attempt to open the rechargeable battery module housing. The rechargeable battery module does not contain replaceable cells.
 - ▶ Only use the battery charger indoors.
 - ▶ Do not charge a rechargeable battery module in temperatures below 0 °C or above 40 °C. Do not use a damaged battery charger. Replace the charger if the cord is damaged or worn, or if the case is cracked or distorted.
- Failure to follow these warnings may result in damage and inoperability of the battery module and power module.

CAUTION!

Do not attempt to charge alkaline battery modules with the charger. Failure to follow this warning may result in damage to the battery charger.

- (1) Place the charger horizontally on a flat surface and in a dust-free area with a temperature range between 0°C and 40°C. The ideal temperature is 21°C.

- (2) Plug the charger into a 230 V, 50 Hz standard outlet. The charger can be used internationally with the appropriate adapter up to 240 VAC.

NOTE: The rechargeable battery module is installed on the user side of the SCBA in the middle of the backplate.



- (3) Unlock the rechargeable battery module with the battery removal tool.
 - a) Push the removal tool into the slot in the rechargeable battery module and click into place.
 Pull the removal tool and the rechargeable battery module out of the power module.

- (4) Ensure that the rechargeable battery module and charger connectors are free of water or debris.

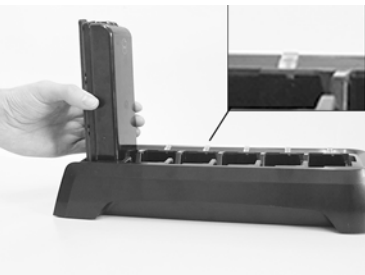
- (5) Insert the rechargeable battery module into the charger, and note the charging indicator:

Charger LED Indications

Condition	Indication
No Battery or Charging Error	Off
Charging	Red
Charge Complete	Green

When the rechargeable battery module is charging, the LED will be red. When the rechargeable battery module is fully charged, the LED will be green. The rechargeable battery module can stay connected to the charger until the battery is needed.

NOTE: In a discharged condition, the rechargeable battery module may charge for up to 8 hrs. Charging times will vary for rechargeable battery modules in partial charge states. If the charging LED turns off while the rechargeable battery module is installed, remove the rechargeable battery module from the charger, and then insert the rechargeable battery module back into the charger. If charging does not resume, the rechargeable battery module may be exhausted or defective.



Install the rechargeable battery module in the power module:

- (6) Make sure before inserting the rechargeable battery pack that the power module is clean and that no pins or grooves are damaged.



- (7) Insert the rechargeable battery pack into the power module, ensure to align it with the grooves in the power module.

a) Release the rechargeable battery module and push in its top.

The rechargeable battery module will click into place.

- (8) To make sure that the rechargeable battery pack fits securely, push on the opposite side of the power module, the rechargeable battery pack should not move.

NOTE: It is recommended that the rechargeable battery modules be removed from the SCBA and re-charged once a month during normal use.



WARNING!

Do NOT dispose of the batteries in a fire. Batteries can explode.
Failure to obey this warning can result in serious injury or death.

Do not dispose of batteries as ordinary trash.

Dispose of or recycle the rechargeable battery module in accordance with all applicable federal, state, and local regulations. Contact the local municipality for instructions about the correct disposal of rechargeable batteries.

14 Personalization

Personalization of the SCBA is only possible when SCBA is equipped with power module and control unit. Accountability software usage requires long range radio capabilities. The ID Tag has a space for the user to place a label in which the ID information can be written on the outside of the ID Tag for easy identification. Before using the ID Tag, inspect for damage or cracks in the case. If damage is found, discard and replace the ID tag.

14.1 Name (Identification - ID) Tag

Name Tags can be used to assign a user's name to the SCBA. The name assigned to the SCBA will be displayed for that SCBA on the MSA Accountability Software when SCBA is equipped with telemetry. Additionally the Name Tag is used within the data log of the SCBA itself.

The name Tag must be scanned into the power module at start of each shift (every 24 hours by default) or prior to each use.

NOTE: MSA's A2 Software can be used to change this default to allow a name ID to be permanently assigned to the SCBA until a new name Tag has been scanned.

14.2 Team Tag

A team ID Tag can also be used to assign a team/truck and position to the SCBA. If a team ID Tag has been scanned into the control module but a name ID Tag has not been scanned, the team ID will be displayed on the SCBA monitoring software to provide accountability even if the firefighter forgot to scan the name ID Tag.

Once a team ID Tag has been scanned into the control module, the team ID will remain with the SCBA until another team ID Tag has been scanned. If a team ID or name ID has not been assigned to the SCBA, the power module serial number will be displayed as the firefighter's ID when logged onto the base station.

14.3 Base station ID

A base station ID can be used to assign a specific base station ID to an SCBA. When more than one base station is present and actively monitoring at an incident, an SCBA with an assigned base station will search for the preferred base station first to log on to, and if it does not find the assigned base station within 20 seconds, it will search for the first available base station and log on to it. If a base station ID has not been assigned to the SCBA, it will log on to the first base station that it finds once the unit has been turned on. Once a base station ID tag has been scanned into the power module, this base station ID will remain with the SCBA until another base station ID tag has been scanned.

15 Telemetry Module

The telemetry module is designed to let the SCBA to communicate with a remote base station while in use. SCBAs with a telemetry module transmit vital statistics such as cylinder pressure, thermal alarm (if enabled), service time remaining, and PASS alarm to the base station. The base station can send an evacuation command to the SCBA. The telemetry module uses a special version of the power module.

All basic functions of the SCBA are the same as those described in the During Use section of this manual except for the following differences:

- **Turning the control module ON:** When the control module is activated in the presence of a remote base station, the SCBA automatically begins to log on to that base station. When the SCBA is successfully logged on to the base station, a radio link indicator will appear on the display of the control module.
- **Evacuation Signal:** The SCBA has the ability to receive an evacuation signal from the remote base station after it has been successfully logged on to the base station. When an evacuation signal has been sent by the base station, the “running man” icon will appear, and flash, on the display of control module and a unique audible alarm will be emitted from the power module. The evacuation signal must be manually confirmed by the user by pressing the reset button (green) twice within approximately one second. This confirms the evacuation signal by sending a confirmation signal back to the base station. Once the evacuation signal has been manually confirmed by the user, the “running man” icon will stop flashing and remain on the display until the control module has been turned off.
- **Motion Alarm:** The alarm will sound and function normally with the telemetry module. When the SCBA emits a full alarm, a signal is automatically sent to the base station to alert Incident Command.
- **Thermal Alarm:** When the SCBA is exposed to temperature conditions that warrant a thermal alarm, a signal is automatically sent to the base station to alert Incident Command.
- **Low Battery:** When the power module reaches a low battery condition, a signal is automatically sent to the base station to alert Incident Command.
- **Data Log:** The data logging feature of the control module logs the status of the radio link to the base station as well as any evacuation signals that the SCBA has received.
- **Radio Link Indicator:** The control module has a radio link indicator on the secondary screen. When this icon is displayed, the SCBA is logged on to a base station and within range. When the radio link indicator is red, it means the radio contact has been lost or interrupted. When the radio link indicator is grey, it means the radio contact was never established.
- **Turning the control module Off:** To turn the control module off, press the reset button (green) twice within approximately one second. If the SCBA is logged on to the base station, there will be a delay between the two presses of the reset button and the actual shutdown of the device. Before the control module completely turns off, the base station must remove the SCBA from its registry. This causes the slight delay between pressing the reset button and the actual shutdown of the device.

15.1 Scanning the ID Tag into the Power Module

Prior to pressurization of the SCBA and during use, the user can “tag in” to the SCBA. The most recent ID Tag data that is stored in the power module will be used as the identification for the SCBA in the data log or on the MSA Accountability System Software. If no ID Tag data has been assigned to the SCBA, the power module serial number will be used as its identification on the base station PC screen.

Tagging In when Unit is Off

- (1) Take the ID tag and place in hand as shown.
- (2) Place the tag in front of the RFID reader located on the power module.

The RFID reader is located on the user's right hand side of the backplate



- (3) Press and hold BOTH green RESET buttons at the same time until the RFID symbol appears.



- (4) Keep the tag located at the power module until the blue bar moves across the screen.
 - a) If the tag was successful, the information will be displayed on the tag. If it is not, repeat the steps above until the tag information is displayed on the screen.

Tagging In During Use

- (1) Take the ID tag and place in hand.
- (2) Place the tag in front of the RFID reader located on the power module.

The RFID reader is located on the user's right hand side of the backplate



- (3) Press and hold BOTH green RESET buttons at the same time until the RFID symbol appears.



- (4) Keep the tag located at the power module until the blue bar moves across the screen.
 - a) If the tag was successful, the information will be displayed on the tag. If it is not, repeat the steps above until the tag information is displayed on the screen.



WARNING!

When using an ID Tag with the G1 power module, the ID Tag must touching the power module during this process. If the tag is not, the device can lockup. To fix the lockup, the batteries must be removed for 30 seconds and then reinstalled.
Misuse can result in serious injury or death.

15.2 Using the Base Station with the Telemetry Module

The telemetry module is designed to work in conjunction with a remote base station unit. This base station unit must be connected to a personal computer or notebook computer before use. Refer to the MSA alphaCONTROL 2 Software Instructions for more information.



WARNING!

Follow the PC or notebook computer manufacturer's recommendations regarding exposure to environmental conditions to prevent damage to the computer.
Failure to obey this warning can cause computer failure and the loss of monitoring capability on the PC or notebook computer.

15.3 Using the SCBA with Telemetry Module



CAUTION!

If the signal strength indicator does not show on the control module display or the base station has not logged the SCBA on, the base station cannot monitor the user's status.

- (1) To activate the control module, open the cylinder valve or push and hold the ALARM button. An icon representing the SCBA user shows on the computer screen of the base station.
- (2) When the base station makes contact with the SCBA and all initial information has been obtained, the radio link indicator shows in the upper left corner of the control module display.
- (3) Monitor the status of the radio link indicator on the display of the control module. If the indicator is yellow, the SCBA is out of range from the base station. When the SCBA is within range of the base station, the radio link indicator is green.



CAUTION!

If the signal strength indicator does not appear on the control module display or the base station has not logged the unit on, the base station cannot monitor the status of that user.

Logging the SCBA off of the Base Station

- (1) Once the user has returned to fresh air the control module may be turned off.
- (2) Close the cylinder valve and purge the remaining air from the system. When the pressure falls below 15 bar, turn the control module off (sleep mode) by pressing the reset button twice in approximately one second. (When the SCBA is logged on to a base station, there may be a delay between the two rapid presses of the reset button and the actual shutdown of the control module. Before the control module completely turns off, the base station must log off the SCBA and send out a final confirmation signal.

If the SCBA is logged on to a base station, Incident Command can send an evacuation signal to the SCBA. When the base station sends an evacuation signal, the running man icon flashes on the display of control module and the power module emits a unique audible alarm. The user must push the green RESET button twice within approximately 1 second to confirm the evacuation signal. When the evacuation signal is confirmed, the running man icon stops flashing and shows steady on the display until the control module is turned off.

16 Safekeeping and Storage

16.1 Storage



WARNING!

Prior to storage of the SCBA at temperatures below -18°C, verify that the power module is equipped with full charge batteries. Verify that the control module displays a full charge battery status icon and that the HUD does not display low battery status indicators.

DO NOT drop the cylinder or bump the valve knob. An unsecured cylinder can become an airborne projectile under its own pressure if the valve is opened even slightly.

Misuse can result in serious injury or death.

- Do not store the SCBA or spare cylinders within or near an area where the SCBA can or might be exposed to any substances that will or might attack any part of the SCBA, causing the SCBA to not perform as designed and approved.
- Prior to storing the SCBA in a jumpseat, ensure there is no interference between the SCBA and the seat. Ensure the SCBA and cylinder can be removed easily without damaging the components.
- Do not store the SCBA for extended periods with the batteries installed in the electronic components if the SCBA is not intended for service. If the SCBA is in service, ensure that the batteries in the electronic components have an adequate charge.
- Do not store the SCBA with an empty or partially filled cylinder. Always install a fully-charged cylinder so that the SCBA is ready for use.
- Complete Inspection and Cleaning and Disinfecting Procedures outlined in this manual. Ensure the entire SCBA is clean and dry.
- Ensure the full face mask head harness adjustment straps are fully extended. Place the complete SCBA in the storage case or suitable storage location so it can be easily reached for emergency use.
- For prolonged storage of the SCBA, remove the batteries from all electronic components and housings to prevent battery corrosion. Store the units in a cool, dry place.

16.2 Full Face Mask



WARNING!

In order to avoid damage to or the deformation of the masks keep no additional loose objects in the mask container.

For the safekeeping of the full face mask, a full face mask pouch or container should be used. MSA rubber products are protected by an anti-aging agent that can become visible as a light coating. This coating is harmless and can be removed during cleaning.

To ensure a long life of rubber components, follow ISO 2230 by storing them in a cool, dry place protected from ultraviolet radiation.

17 Buddy Breather

Two SCBAs equipped with a G1 Buddy Breather System can share a common air supply during emergency escape. The Buddy Breather System is an Emergency Breathing Support System (EBSS).

NOTE: Activating the Buddy Breather changes both the donor and receiver to Escape Only, and the user must immediately evacuate to fresh air outside the hazard zone.

Both users will receive medium pressure air from the donor's pressure reducer and cylinder. The duration of the remaining air supply will be reduced to approx. 50%.



CAUTION!

Use this emergency escape breathing system for life threatening emergencies and simulated training exercises only. All other adequate means of escape must be considered before using this device.

During use, the air supply and consequentially the remaining service time is reduced to approx. 50%. Before connecting two users make sure the air supply is sufficient for both users to escape; otherwise do not use the system.

DO NOT use the system if the donor's low pressure warning device is alarming. Using the system at this time can result in both users running out of air during escape.

Exercise extreme care while connected together. Mobility and range of motion will be limited when donor's and receiver's breathing apparatus are connected.

Maintain slack in the air lines during maneuvering and while connected together. DO NOT pull on the hoses. Pulling on the rescue hose to the medium pressure hose could separate the hoses from fittings and result in air leaks.

If the above measures cannot be followed or to provide greater escape protection, use the Quick-Fill System if present. Use of Quick-Fill maintains approval while transfilling and does not exhibit the above hazards.

17.1 Use

The G1 Buddy Breather System contains two quick-connection fittings, capable of connecting with both male and female fittings on another user's manifold.

- (1) Quick-connect fittings require a single action to connect: Push the coupler firmly over the plug to engage.
- (2) Quick-connect fittings require two actions to disconnect:
 - a) Push the two sides of the quick-connect towards each other. The plug should advance into the coupler end.
 - b) Slide the coupler's outer sleeve away from the plug. Pull the plug out of the coupler. Ensure that the Quick-connect plug on the manifold black is protected by the supplied dust cap.



WARNING!

DO NOT install or attempt to use any hose assembly or fitting other than those supplied by MSA for the G1 Buddy Breather System. Misuse can result in serious injury or death.

17.2 Inspection Before Use

Emergency Breathing Hose

- (1) Inspect the elbow connection to the G1 First Stage Regulator as well as the hose connection to the elbow.
 - a) Ensure the hose is properly secured.
- (2) Inspect the dust cover.
 - a) Ensure that the cover is securely attached to the male and female quick-connect fittings.
- (3) Ensure the emergency breathing hose is coiled in the pouch such that it is not twisted.

- a) Position the manifold end of the hose toward the flap opening to ensure that it is accessible in an emergency breathing situation.

Pouch

- (1) Inspect the pouch for cuts, tears, abrasions or signs of damage due to heat or chemical exposure.
 - a) Verify that the pouch can securely stow and protect the emergency breathing hose.
 - b) Verify that the pouch is securely attached to the carrier and harness.
- (2) Verify that each snap on the pouch flap is in place and securely fastened.

Hose Restraint

- (1) Inspect the hose restraint for cuts, tears, abrasions or damage due to heat or chemical exposure.
- (2) Verify that the hose restraint is securely attached to the emergency breathing hose and to the backplate.

17.3 Preparation for Use

Before Entering a Toxic Environment

- (1) Ensure proper Buddy Breather connection to the first stage regulator, as described in the inspection before use.
- (2) Don the apparatus as described in the donning section.

17.4 Providing or Obtaining Emergency Breathing Support



WARNING!

Follow these procedures to connect and disconnect the emergency breathing system hardware. Individual development of operating procedures and sufficient training is required to use this equipment in actual emergency conditions. Misuse can result in serious injury or death.

17.5 Hose Connection Procedure



- (1) Open up the snaps and hook and loop fastener on the flap of the waist-mounted storage pouch.



- (2) Locate the manifold end of the emergency breathing hose and remove it from the pouch.

- (3) Remove the dust cover from the quick-connect fittings on the donor's manifold.

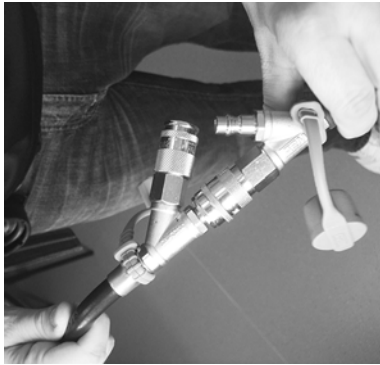
- (4) Open up the snaps and hook and loop on the flap of the receiver's waist-mounted storage pouch.

- (5) Locate the manifold end of the emergency breathing hose and remove it from the receiver's pouch.

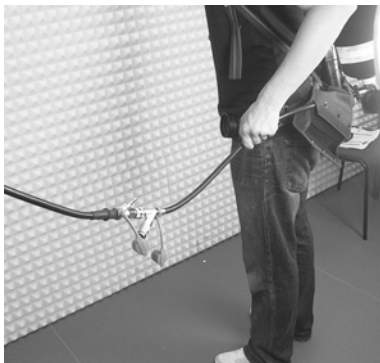


- (6) Connect the donor's and receiver's manifold blocks using a male and female quick-connect fitting with a single action.

NOTE: Each manifold has both male and female quick-connect fittings to either supply or receive air.



- (7) Check for full engagement by pulling on the quick-connect to ensure that the female socket does not separate from the male plug.



- (8) Check that the hose is properly routed and not tangled with any other part of the apparatus (for example neck strap, chest strap, etc.).

- (9) Upon reaching a safe, non-toxic atmosphere, a staging area or after performing other egress procedures, uncouple the receiver's hose at the quick-connect.
- (10) Replace the dust cap on the manifold fittings.



WARNING!

The receiver's facepiece or regulator must be removed upon disconnection from the donor's air supply. Misuse can result in serious injury or death from suffocation.

18 Certification

18.1 Complete Device

Approvals	<p>The compressed air breathing apparatus conforms to the Directive 89/686/EC or Regulation (EU) 2016/425, respectively, and Directive 2014/34/EU. It is a self-contained open circuit compressed air breathing apparatus in accordance with EN 137:2006, type 2.</p> <p>The function of the electronic components were not assessed for the certification in accordance with Directive 89/686/EC or Regulation (EU) 2016/ 425, because even in case of a complete failure of all electronic components, the respiratory protection provided by MSA G1 remains unchanged.</p>
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0158

DEKRA

DEKRA Testing and Certification GmbH, Dinnendahlstr. 9,
44809 Bochum, Germany

18.2 Marking for the SCBA G1

BVS 15 ATEX H 010 X



Pneumatic (P)

II 3G IIB TX
II 3D TX

$-40\text{ °C} \leq T_a \leq +60\text{ °C}$



Electronic (E)

II 3G IIB TX

$-30\text{ °C} \leq T_a \leq +60\text{ °C}$

TX: The permissible surface temperature depends on device configuration. The permissible surface temperature of any other equipment used together with this SCBA has to be regarded as well. The lowest class sets the limit.

Ensure that the device is not submitted to temperatures that exceed those permitted for any part of equipment used together with the device.

Full face mask: see operating manual for Full Face Mask and Mask/Helmet Combination.

The ATEX class of any other equipment used together with this device has to be regarded as well. The lowest class sets the limit.

The Declaration of Conformity can be found under the following link: <https://MSAsafety.com/DoC>

18.3 G1 Electronic Components

18.3.1 Marking, Certificates and Approvals According to the Directive 2014/34/EU (ATEX)

Manufacturer: Mine Safety Appliances
Company,
1000 Cranberry Woods Drive,
Cranberry Township, PA 16066
USA

Product: SCBA Electronics Type G1

Type of protection: EN 60079-0:2012, EN 60079-11:2012

Marking:  II 1G Ex ia IIC T4 Ga
-40 °C ≤ T_x ≤ +60 °C

TX: The permissible surface temperature depends on device configuration. The permissible surface temperature of any other equipment used together with this SCBA has to be regarded as well. The lowest class sets the limit.

Ensure that the device is not submitted to temperatures that exceed those permitted for any part of equipment used together with the device.

EC-Type Examination Certificate: BVS 14 ATEX E178 X

Battery: 6 x 1,5 V Alkaline battery size C
LR14, Terminal battery voltage = 9V

- Energizer E93
- Duracell Procell PC1400
- Duracell MN1400
- Panasonic Industrial LR14XWA
- Panasonic Evolta C-LR14
- Industrial Panasonic Power-line

RF module type alphaLRR IECEx: frequency: 868 MHz or 915MHz
RF output power: 0,5 W

Bluetooth Module: frequency: 2.4 GHz
RF output power: < 10 mW

RFID Module: frequency: 13.56 MHz
RF output power: < 100 mW

RFID Tag type LOGI TAG™ 161 HF:
The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG™ 161 HF in hazardous areas shall not exceed 2 W for Group IIC.

Special conditions for safe use:

- Properly donning and doffing of the self-contained breathing apparatus shall be done only in non-hazardous areas.
- Before entering the hazardous area, the complete self contained breathing apparatus electronics type G1 has to be checked for mechanical damages including the conductive ink layers of the housings.
- The disconnection of the alkaline battery pack and the changing of the batteries is only allowed in non hazardous area.
- Replace only batteries of the same type
- The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG 161 ICODE SLIX in hazardous areas shall not exceeded 2 W for Group IIC.
- The ambient temperature range is $- 30\text{ }^{\circ}\text{C} \leq T_a \leq + 60\text{ }^{\circ}\text{C}$.

Quality Assurance Notification: 0080

Year of Manufacture: see Label

Serial No. see Label

18.3.2 Marking and Certificates according to IECEx

Manufacturer:	Mine Safety Appliances Company, 1000 Cranberry Woods Drive, Cranberry Township, PA 16066 USA	
Product:	SCBA Electronics Type G1	
Type of protection:	IEC 60079-0:2011, IEC 60079-11:2011	
Marking:	Ex ia IIC T4 Ga -30 °C ≤ TX ≤ +60 °C TX: The permissible surface temperature depends on device configuration. The permissible surface temperature of any other equipment used together with this SCBA has to be regarded as well. The lowest class sets the limit. Ensure that the device is not submitted to temperatures that exceed those permitted for any part of equipment used together with the device.	
EC-Type Examination Certificate:	IECEx BVS 14.0120 X	
Battery:	6 x 1,5V Alkaline battery size C LR14, Terminal battery voltage = 9V <ul style="list-style-type: none"> • Energizer E93 • Duracell Procell PC1400 • Duracell MN1400 • Panasonic Industrial LR14XWA • Panasonic Evolta C-LR14 • Industrial Panasonic Power-line 	
RF module type alphaLRR IECEx:	frequency:	868 MHz or 915 MHz
	RF output power:	0,5 W
Bluetooth Module:	frequency:	2.4 GHz
	RF output power:	< 10 mW
RFID Module:	frequency:	13.56 MHz
	RF output power:	< 100 mW
RFID Tag type LOGI TAG 161 ICODE SLIX:		

The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAG 161 ICODE SLIX in hazardous areas shall not exceed 2 W for Group IIC

Special conditions for safe use:

- Properly donning and doffing of the self-contained breathing apparatus shall be done only in non-hazardous areas.
- Before entering the hazardous area, the complete self contained breathing apparatus electronics type G1 has to be checked for mechanical damages including the conductive ink layers of the housings.
- The disconnection of the alkaline battery pack and the changing of the batteries is only allowed in non hazardous area.
- Replace only batteries of the same type
- -The maximum RF radiation power of the antenna used for activation of the RFID Tag type LOGI TAGTM 161 HF in hazardous areas shall not exceeded 2W for Group IIC.
- The ambient temperature range is $-30\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$.

Quality Assurance Notification: 0080

Year of Manufacture: see Label

Serial No.: see Label

18.4 Australia

The LRR frequency for Australia is 915 - 928 MHz.

19 Ordering Information

19.1 SCBA

Description	Part No.
G1 SCBA, LGDV, alphaCLICK, HUD, voice amplifier	10160436
G1 SCBA, LGDV, HUD, voice amplifier	10160438
G1 SCBA, LGDV, HUD	10160437
G1 SCBA, LGDV, alphaCLICK, HUD	10160445
G1 SCBA, LGDV, alphaCLICK, no electronics	10160444
G1 SCBA, LGDV, no electronics	10160443
G1 SCBA, LGDV, TM AUS, HUD, alphaCLICK, voice amplifier	10177916
G1 SCBA, CL, LGDV, no electronics, CFA, AUS	
<ul style="list-style-type: none"> • Reducer: no QF, whistle, handwheel • Buddy Breather with two caps • Classic Line: 2nd stage + coupling line, standard gauge • Swivel + height adjustment 	10191336
G1 SCBA, LGDV, full electronics, CFA, AUS	
<ul style="list-style-type: none"> • Reducer: no QF, whistle, handwheel • Buddy Breather with two caps • 2nd stage cont. + HUD + control module + voice amplifier • Swivel + height adjustment 	10191337

19.2 Cylinders

Description	Part No.
Compressed Air Cylinders, Steel	
6 litre/300 bar, filled	D5103967
6 litre/300 bar, empty	D5103986
6 litre/300 bar, filled, with flow restrictor	10015960
6 litre/300 bar, filled, with ratchet valve	10024010
6 litre/300 bar, empty with flow restrictor	10084896
Compressed Air Cylinders; Composite	
6 litre/300 bar, filled	D5103947
6 litre/300 bar, empty	D5103976
6.8 litre/300 bar, filled	D5103962
6.8 litre/300 bar, empty	D5103979
6.8 litre/300 bar, filled, with flow restrictor	10015961
6.8 litre/300 bar, filled, with ratchet valve	D5103973
6.8 litre/300 bar, empty, with ratchet valve	D5103980
6.9 litre/300 bar, filled	10055167
6.9 litre/300 bar, empty	10055168
6.9 litre/300 bar, filled, with ratchet valve	10055169
6.9 litre/300 bar, empty, with ratchet valve	10055170
6.9 litre/300 bar, filled, with flow restrictor	10072889
6.9 litre/300 bar, empty, with flow restrictor	10072888
9.0 litre/300 bar, empty, with ratchet valve [All composite]	D5103982

19.3 Accessories

Description	Part No.
APR adapter for G1 mask	10144231
G1 spectacle kit for prescription glasses	10144230
RFID tag for G1	10083875
RFID reader/writer for G1	10158407
Battery removal tool	10164450
RFID tag, G1 (pack of 5)	10178063
Battery Pack BG, Alkaline, G1, EU	10166609-SP
Overhaul, EN, G1, LGDV	10177846
Control Module, G1, 300 bar	10152107-SP
G1 Charger Assembly, Europe	10170546
G1 Charger Assembly, Australia	10170548
G1 Charger Assembly, UK	10170547

19.4 Telemetry

Description	Part No.
alphaCONTROL 2 - Software	10153880
alphaBASE, receiver box incl. alphaCONTROL 2 - Software	10058214
alphaBASE, battery-powered (incl. 2 batteries and charger) for Xplore tablet PC incl. alpha CONTROL 2	10070795
Xplore TABLET PC (including power supply and operating system)	10068805
Xplore TABLET PC, alphaBASE (battery powered), accessories (i.e. 2 batteries, charger) in rugged case; alphaCONTROL 2 software is readily installed	10076041

19.5 Full Face Mask**19.5.1 ATO Code**

For this product, order numbers have been replaced by an ATO (Assemble To Order) code.

To order a mask according to EN136 PC with a medium sized faceblank, a medium nose cup, rubber head harness, rubber neck strap and Push-To-Connect connector piece, the ATO code would be **E-M/I-M-E-R-P**:

Application	Faceblank		Nosecup	Head Harness	Neck Strap	Regulator
	Size Face-blank	Faceblank Material				
E - Europe EN 136 PC	S/I - Small Hycar		S - Small	4 - 4-point Adjustable	0 - None	I - Fixed Push-To-Connect
			M - Medium		C - Cloth	P - Push to Connect
			L - Large	E - Rubber EU with buckles	R - Rubber	M - M45 x 3
						E - ESA ("M"+ ESA-Adapter)
C - Europe EN 136 PC	M/I - Medium Hycar		S - Small	4 - 4-point Adjustable	0 - None	I - Fixed Push-To-Connect
			M - Medium		C - Cloth	P - Push to Connect
			L - Large	E - Rubber EU with buckles	R - Rubber	M - M45 x 3
						E - ESA ("M"+ ESA-Adapter)
A - Europe EN 136 APEC	L/I - Large Hycar		S - Small	4 - 4-point Adjustable	0 - None	I - Fixed Push-To-Connect
			M - Medium		C - Cloth	P - Push to Connect
			L - Large	E - Rubber EU with buckles	R - Rubber	M - M45 x 3
						E - ESA ("M"+ ESA-Adapter)

The following table shows all possible configurations that can be ordered for the G1

A - Application	B - Size	C - Material	D - Nosecup	E - Head Harness	F - Neck Strap	G - Regulator
	Faceblank					
E - Europe EN136 PC (Standard lens "P")	S/I - Small Hycar		S - Small	4 - 4 PT Adjustable	0 - None	1 - Fixed Push-To-Connect
			M - Medium	E - Rubber EU with buckles	C - Cloth	P - Push to Connect
			L - Large		R - Rubber	M - M45 x 3
						E - ESA ("M" + ESA-Adapter)
	M/I - Medium Hycar		S - Small	4 - 4 PT Adjustable	0 - None	1 - Fixed Push-To-Connect
			M - Medium	E - Rubber EU with buckles	C - Cloth	P - Push to Connect
			L - Large		R - Rubber	M - M45 x 3
						E - ESA ("M" + ESA-Adapter)
	L/I - Large Hycar		S - Small	4 - 4 PT Adjustable	0 - None	1 - Fixed Push-To-Connect
			M - Medium	E - Rubber EU with buckles	C - Cloth	P - Push to Connect
			L - Large		R - Rubber	M - M45 x 3
						E - ESA ("M" + ESA-Adapter)
C - Europe EN136 PC (Anti-scratch lens "H")	S/I - Small Hycar		S - Small	4 - 4 PT Adjustable	0 - None	1 - Fixed Push-To-Connect
			M - Medium	E - Rubber EU with buckles	C - Cloth	P - Push to Connect
			L - Large		R - Rubber	M - M45 x 3
						E - ESA ("M" + ESA-Adapter)
	M/I - Medium Hycar		S - Small	4 - 4 PT Adjustable	0 - None	1 - Fixed Push-To-Connect
			M - Medium	E - Rubber EU with buckles	C - Cloth	P - Push to Connect
			L - Large		R - Rubber	M - M45 x 3
						E - ESA ("M" + ESA-Adapter)
	L/I - Large Hycar		S - Small	4 - 4 PT Adjustable	0 - None	1 - Fixed Push-To-Connect
			M - Medium	E - Rubber EU with buckles	C - Cloth	P - Push to Connect
			L - Large		R - Rubber	M - M45 x 3
						E - ESA ("M" + ESA-Adapter)
A - Europe EN 136 APEC (Anti-fog lens "A")	S/I - Small Hycar		S - Small	4 - 4 PT Adjustable	0 - None	1 - Fixed Push-To-Connect
			M - Medium	E - Rubber EU with buckles	C - Cloth	P - Push to Connect
			L - Large		R - Rubber	M - M45 x 3
						E - ESA ("M" + ESA-Adapter)
	M/I - Medium Hycar		S - Small	4 - 4 PT Adjustable	0 - None	1 - Fixed Push-To-Connect
			M - Medium	E - Rubber EU with buckles	C - Cloth	P - Push to Connect
			L - Large		R - Rubber	M - M45 x 3
						E - ESA ("M" + ESA-Adapter)
	L/I - Large Hycar		S - Small	4 - 4 PT Adjustable	0 - None	1 - Fixed Push-To-Connect
			M - Medium	E - Rubber EU with buckles	C - Cloth	P - Push to Connect
			L - Large		R - Rubber	M - M45 x 3
						E - ESA ("M" + ESA-Adapter)

For local MSA contacts, please visit us at ***MSAsafety.com***

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