INTERSPIRO

32570C01

SPIROMATIC S8

Operating Instructions

WARNING!
Before use of SPIROMATIC S8 SCBA in an emergency/rescue situation, the user must have been given proper training in its use, have read and understood these Operating Instructions and demonstrated proficiency to a responsible teacher or supervisor. Failure to do so can result in injury or death for the user and can have serious consequences for people to be rescued and/or items of value to be saved.

INTERSPIRO'S LIMITED WARRANTY

INTERSPIRO warrants this product against failure to comply with INTERSPIRO's published specifications for the product and against defects in materials and workmanship for a period of twelve (12) months after date of purchase. Within that period, INTERSPIRO will, at its option, repair or replace the product or refund your purchase price if INTERSPIRO determines the product does not conform to INTERSPIRO's specifications or is defective in material or workmanship.

To make a warranty claim, contact your authorized INTERSPIRO distributor or INTERSPIRO directly. For telephone inquiries please have your product invoice or other proof of purchase available. If you write, include proof of purchase and a written explanation of the problem. Warranty servicing will be provided on-site or at one of INTERSPIRO's authorized service facilities, at INTERSPIRO's discretion. If shipment to an authorized service facility is required, shipping instructions will be provided by INTERSPIRO or your authorized INTERSPIRO distributor. Do not ship any product or component without shipping authorization. All shipping charges to INTERSPIRO's service facility must be prepaid by the customer.

This limited warranty does not apply if the product has been (I) involved in an accident or subjected to misuse, improper maintenance or negligence; (II) altered or repaired in any way that has, in INTERSPIRO's judgement, adversely affected its performance or reliability; (III) used in an application or for a purpose for which the product was not designed or under stresses or conditions exceeding those specified for the product; or (IV) damaged after leaving INTERSPIRO's facility.

This limited warranty is valid only for the original purchaser, and is not transferable.

IMPORTANT! This limited warranty is exclusive and is in lieu of all other warranties, expressed or implied, including any warranty of merchantability or fitness for a particular purpose. INTERSPIRO disclaims all other liabilities and obligations, including, to the extent allowed by law, non-contractual liability for personal injury or property damage based upon its negligence, strict liability or any other ground. To the full extent allowed by law, and regardless of whether liability is asserted on the basis of breach or warranty, negligence, strict liability, breach of contract or otherwise, INTERSPIRO shall not be responsible for special, incidental, consequential or punitive damages, including loss of property, loss of profits or revenues, down-time costs and the cost of substitute equipment (some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you).

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

CAUTIONS AND LIMITATIONS

J. Failure to properly use and maintain this product could result in injury or death.
M. All approved respirators shall be selected, fitted, used, and maintained in accordance with MSHA, OSHA, and other applicable regulations.
N. Never substitute, modify, add, or omit parts. Use only exact replacement parts in the configuration as specified by the manufacturer.
O. Refer to users instructions, and/or maintenance manuals for information on use and maintenance of these respirators.
S. Special or critical users instructions and/or specific use limitations apply. Refer to instruction manual before donning.

CAUTIONS & LIMITATIONS OF USE FOR CBRN SCBA

Q. Use in conjunction with personal protective ensembles that provide appropriate levels of protection against dermal hazards.
R. Some CBRN agents may not present immediate effects from exposure, but can result in delayed impairment, illness, or death.
T. Direct contact with CBRN agents requires proper handling of the SCBA after each use and between multiple entries during the same use.
U. Decontamination and disposal procedures must be followed. If contaminated with liquid chemical warfare agents, dispose of the SCBA after decontamination.

S - Special or Critical User's Instructions

Approved for respiratory protection during entry into or escape from oxygen deficient atmospheres, gases, and vapors at temperatures above -25 degrees F (-32 degrees C).

The Spiromatic S8 LCD of the Digital Display Unit (see section 3.2) is not functional if the S8 SCBA is stored prior to use at -25 degrees F (-32 degrees C). The red and black buttons on the Digital Display Unit (DDU) controlling the PASS functions and the LEDs in the DDU indicating PASS mode (see sections 6.1-6.3) are fully functional if the S8 SCBA is stored at -25 degrees F (-32 degrees C). The LCD of the S8 SCBA DDU functions if the S8 SCBA is stored prior to use at -13 degrees F (-25 degrees C).

The S8 SCBA must be stored ready for use with the breathing hose quick coupling connected to the mask if the S8 SCBA is stored prior to use at -25 degrees F (-32 degrees C).
Note: If the breathing hose quick coupling to the mask is not connected and the S8 SCBA is stored prior to use at -25 degrees F (-32 degrees C), it may be necessary to slightly warm the female quick coupling of the breathing hose in order to be able to make the connection to the mask. It is recommended to keep SCBAs in a warm location between uses. If the breathing hose quick coupling to the mask is not connected and the S8 SCBA is stored prior to use at 0 degrees F (-18 degrees C) or above, the breathing hose of the S8 SCBA will always connect to the mask of the S8 SCBA.

Approved only when compressed air reservoir is fully charged with air meeting the requirements of the Compressed Gas Association Specification G-7-1 for Type 1, Grade D air or higher quality, as well as meeting a dew point level of -65°F (-54°C) or dryer (24 ppm v/v or less), and a maximum particulate level of 5 mg/m^3 air. The breathing air quality must be in accordance with NFPA 1989, Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection. The container shall meet applicable DOT specifications.

SPIROMATIC S8 models that include an integrated PASS are only approved for use as an integrated SCBA/PASS system. If the PASS is not fully functional the SPIROMATIC S8 SCBA must be removed from service.

Emergency Breathing Safety System (EBSS) Special or Critical User's Instructions:

-Activation or engagement of EBSS in either the donor or receiver mode changes the SCBA use to Escape-Only, approved service time for either the donor, or the receiver is no longer applicable.

-Entry approval only restored after re-charge, either host or donor.

-EBSS may not be engaged or activated in donor mode after the donor End-of-Service-Time-Indicator (EOSTI) has activated.

-Users must be fully trained in the operation of EBSS in accordance with a training program conforming to the requirements of NFPA Standards 1404, Fire Service Respiratory Protection Training and 1500, Fire Department Occupational Safety and Health Program.

-Simultaneous connection of more than two users, one donor and one receiver, is not permitted.

-Not suitable for connection in CBRN environment.

End-of-Service-Time-Indicator (EOSTI) 33% set point information:

NFPA 1981, 2013 requires the EOSTI set point of the HUD to be 33% +5/-0% of full cylinder pressure. To meet the NIOSH 42 CFR Part 84 requirement for set point activation of the EOSTI's, the S8 EOSTI 33% (low air alarm whistle) and the HUD EOSTI 33% are set at 35%+/- 2%. The S8 remote analog pressure gauge EOSTI indication is marked with a 1/3 fraction and is marked in red from 1/3 to Empty.

CONTENTS

IMPORTANT INFORMATION TO USER

Please read this information carefully before referring to the apparatus instructions.

The SPIROMATIC S8 breathing apparatus should only be used by adults in good physical and physiological condition.

The SPIROMATIC S8 SCBA must be used in a manner consistent with NFPA 1500, Standard on Fire Department Occupational Safety and Health Program.

The face mask may not seal properly with your face if you have a beard, heavy sideburns or other physical characteristics interfering with the mask's contour.

An improper facial seal may allow non-respirable air to leak into the mask, reducing or eliminating respiratory protection. The seal must be tested before each use.

OSHA 1910.134 requires that before any employee uses a positive pressure tight-fitting facepiece, they must pass an appropriate qualitative or quantitative fit test initially and at least annually thereafter.

Do not use SPIROMATIC S8 in an emergency/rescue situation unless you have received proper training in its use, have read and understood this Instruction manual and demonstrated proficiency to a responsible teacher or supervisor. Special attention must be given to:

- face seal
- test before use
- awareness of different durations at different conditions
- emergency situation (loss of air and free air flow)
- procedure at low-air alarm.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Only holders of a valid INTERSPIRO Service Certificate may service and test SPIROMATIC S8 apparatus.

Failure to comply with these special points can result in respiratory injury or death for the user and may have serious consequences for people to be rescued and/or items of value to be saved.

1 TECHNICAL DESCRIPTION

The SPIROMATIC S8 is a compressed air breathing apparatus for work in a contaminated environment. The apparatus consists of:

- A harness assembly
- An air supply cylinder
- A face mask with breathing valve and by-pass including:
  - -A wireless Heads-Up Display (HUD) inside the face mask
- A regulator unit including:
  - -A Breathing apparatus computer (BAC)
  - -A Digital Display Unit (DDU)
  - -A Rapid Intervention Crew/Company Universal Air Connection System (RIC UAC)
  - -An integrated Personal Alert Safety System (PASS)
    - -Optional tracking senders
  - -Optional telemetry unit
- An extra air/rescue hose connection

The SPIROMATIC S8 self contained breathing apparatus (SCBA) uses clean dry air compressed in a cylinder, carried on the back. The air is fed to a pressure regulator which reduces the cylinder air pressure to a secondary pressure of approximately 110 psi. The air is then supplied to the face piece through the mask mounted breathing valve.

The breathing valve is of the pressure-demand type that releases air on inhalation. The SPIROMATIC S8 operates with positive pressure which keeps toxic gases from leaking into the facepiece. Even if leakage was to occur, the positive pressure keeps surrounding air out of the mask, although under such conditions duration of the air supply may decrease.

A primary audible low air warning device placed at the pressure gauge / DDU is located at the left shoulder in front of the user. A wireless Heads-Up Display (HUD) installed inside the face mask acts as a visual pressure gauge and also provides a secondary visual low air warning at both 1/2 and 1/3 cylinder pressure. The HUD allows both the cylinder pressure and the visual low air warning to always be in the wearer's field of vision. The HUD also includes a low battery indicator.

The apparatus is equipped with a Personal Alert Safety System (PASS) which is an integrated PASS unit designed to meet the NFPA 1982 Standard on PASS for Fire Fighters 2013 Edition. The PASS unit is integrated into the SCBA and is automatically activated by air pressure from the SCBA. Tracking system and telemetry system can be installed as an option.

1.1 Harness Assembly

The SPIROMATIC S8 incorporates a unique double pivoting padded harness assembly. The heavily padded harness includes a rescue/carrying handle. Chest strap and a buddy breathing hose pouch are optional features.

The harness can be adjusted for different body sizes by changing the distance between the hip belt and the shoulder harness. The height adjustment can be made with cylinder mounted on the SCBA.

1.2 Air Supply

The compressed air supply utilize lightweight aluminum/composite cylinders wrapped in fiberglass, kevlar glass or carbon fiber available in 30, 45 and 60 minute duration*.

The cylinders are fitted with a valve which includes a built-in pressure gauge. The cylinder valve is equipped also with a burst disc, designed to rupture and let air out if the cylinder should be inadvertently overcharged.

Caution!
Should the cylinder be exposed to a pressure that causes the burst disc to rupture, it must be returned to an authorized SPIROMATIC S service center for inspection and repair.

Duration*	Charging pressure psi	Approx. content of. free air in cu. ft
60 min.	4500	87
45 min.	4500	66
30 min.	4500	45
30 min.	2216	45

* Duration tested to NIOSH standards.

Limitation!
Approved only when compressed air reservoir is fully charged with air meeting the requirements of the Compressed Gas Association Specification G-7-1 for Type 1, Grade D air or higher quality, as well as meeting a dew point level of -65°F (-54°C) or dryer (24 ppm v/v or less), and a maximum particulate level of 5 mg/m³ air. The container shall meet applicable DOT specifications.

Caution!
Duration is dependent on the user's exertion, physical and emotional condition, as well as on environmental pressure and whether the cylinder was fully charged and whether the facepiece fits. DURATION CAN VARY 50 % OR MORE.

1.3 Face Mask

The outer and inner masks are made from a specially compounded rubber material to ensure a high degree of resistance to ozone ageing and acceptability to the wearer.

The mask is equipped with a large, easily replaceable visor which is held in place by two half frames and two screws. The S8 mask includes a visor meeting the Lens Radiant Heat Resistance Performance and Elevated Temperature Heat and Flame Resistance Performance requirements of NFPA 1981-2013. The S8 mask is available with either a fabric head harness or a rubber head harness. The face piece also has provisions for fitting spectacles.

A speech diaphragm is mounted within the inner mask with a direct outlet to outside the mask to ensure the best possible communication. In addition, an inner cone over the speech diaphragm enhances the speech diaphragm performance. As a further enhancement to speech reproduction an external speech cone is fitted which also acts as a positive security lock for the breathing valve.

The SPIROMATIC S8 facemask is available in three sizes: Small, Large, and X-Large. The standard size facemask is the Large size.

Ambient air hatch open

Ambient air hatch closed

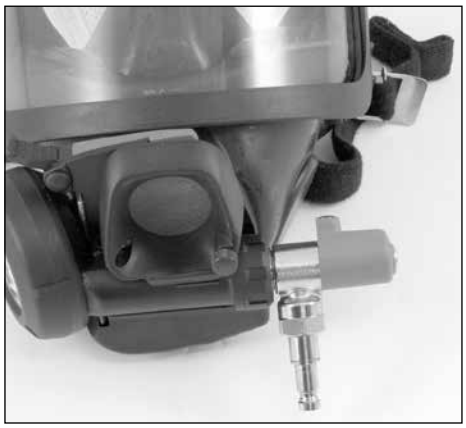
Incorporated into the face mask is an exhalation valve/ambient air hatch. This feature enables the wearer to breathe ambient air when "standing by" thus conserving the supply of compressed air. Closing of the ambient air hatch automatically switches the user to the compressed air supply.

1.4 Breathing Valve and By-pass Valve

The SPIROMATIC S breathing valve has a "plug-in" connection to connect it to the face mask. The outer speech cone locks the breathing valve into position. This feature provides a safe positive connection between the face mask and breathing valve and prevents accidental disconnection.

The by-pass valve overrides the normal automatic function of the pressure demand valve. When the by-pass valve is opened the air will free flow into the mask. To open the valve turn the red knob counter clockwise. To close the valve turn the red knob fully clockwise.

Note!
When the by-pass valve is open the duration time will be shorter. When the by-pass valve is operated the wearer should abort any operation and return to an area of respirable air.



1.5 Regulator Assembly with RIC UAC

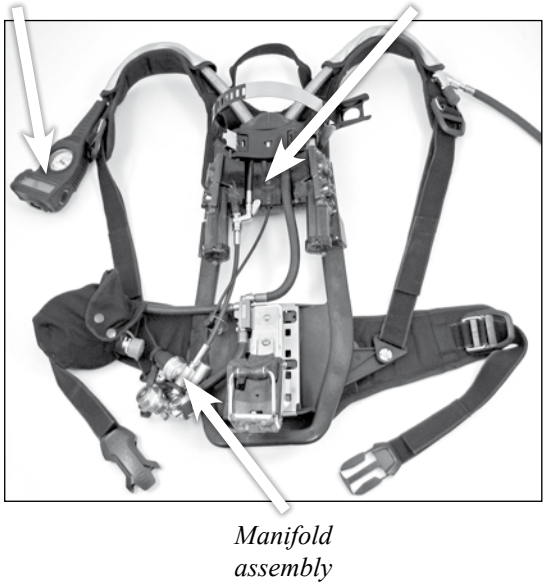
The pressure regulator used in the SPIROMATIC S8 models is a balanced piston pressure reducer with an extremely high flow capacity. The very high capacity ensures that the positive pressure is maintained in the mask even at low cylinder pressures and at extremely high breathing rates.

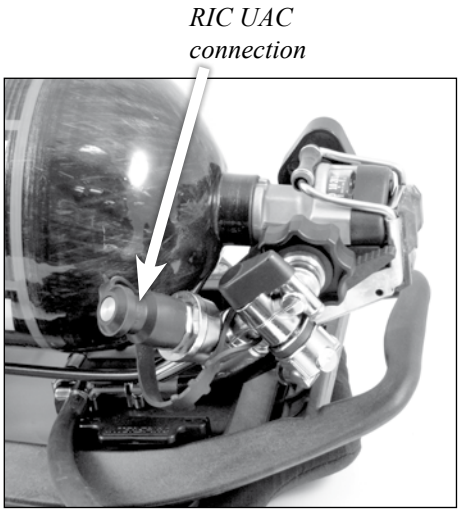
The regulator unit is of a “plug in” type which means that it is pushed into a manifold and locked in place with a locking clip and cover. This modular system enables simple servicing to be carried out with minimum down time for the apparatus by using service exchange of modular components.

The manifold assembly is comprised of a regulator manifold with a handwheel connector for the cylinder valve, a particle filter, and a high pressure Rapid Intervention Crew/Company Universal Air Connection System (RIC UAC).

The RIC UAC will permit replenishing the breathing air cylinder of an SCBA user to be replenished from an independent rescue breathing air supply source while the SCBA victim remains trapped or unable to be removed from the hazardous atmosphere.

The S8 is equipped with a supplied air connector that is conveniently placed on the right shoulder. This makes connection of air line hoses and accessories easy for the user.

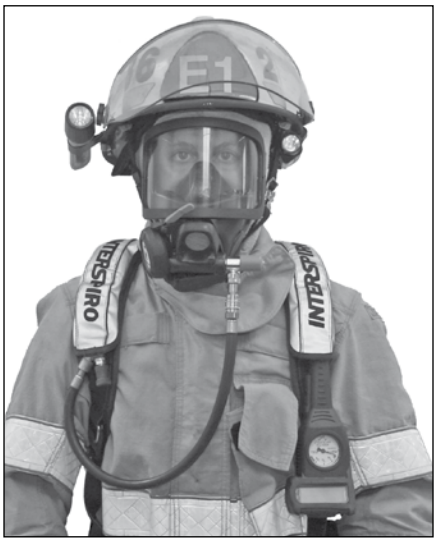




1.6 SpiroGuide Electronics Package Including BAC, HUD and DDU

The SpiroGuide electronics package consists of:

- Breathing Apparatus Computer (BAC)
- Digital Display Unit (DDU)
- Wireless Heads-Up Display (HUD)



The BAC is a computer unit and pressure sensor mounted in the backplate. It is powered by 6 AA batteries.

The wireless HUD is a combination pressure gauge and electronic low air warning device. It also indicates PASS Pre-Alert mode and PASS Alarm mode. The HUD is installed in the face mask.

The BAC and HUD will link together based on an address code received from each other. The BAC and HUD to be used together must linked before use, following the procedure in section 2.7. When the BAC is started it will only connect to the HUD it previously has been linked to.

The HUD includes a light sensor to measure the ambient light. The brightness of the LEDs is automatically adjusted according to the ambient light conditions. The pressure indication displayed in the HUD is refreshed every 2 seconds. The HUD is powered with 2 AAA batteries.

The DDU is located on the left shoulder with the mechanical pressure gauge

and mechanical whistle. The DDU is connected with a cable to the BAC. It is powered from the BAC and has no batteries.

The motion sensor for the integrated PASS and the sensor for measuring absorbed temperature are both located in the display unit.

The BAC, HUD and DDU activates when the SCBA cylinder valve is opened.

1.7 Audible and Visual Low Air Warnings

The SPIROMATIC S8 is equipped with dual redundant low air warning End of Service Time (EOST) indicators.

The primary low air alarm (EOST) is an audible mechanical whistle. The secondary alarms (EOST) indicators are visual flashing yellow and red LED's on the HUD.

Audible Warning and Pressure Gauge
When the primary air supply pressure has dropped to approximately 33 % the audible alarm will start to sound. An analog pressure gauge is located along with the audible mechanical whistle on the left shoulder in front of the user. An optional secondary audible electronic low air warning is available. The sounders for the electronic low air alarm, when activated, are located on both sides of the BAC. The electronic low air warning also has an optional mutable function depending of the preference of the Fire Department. If mutable, the electronic low air warning will be silenced for 10 seconds by pressing the backlight button on the DDU (see section 3.2).

The DDU pressure gauge is a secondary pressure gauge.

HUD Visual Pressure Gauge and Visual Warning, BAC and DDU Visual Warning
A wireless Heads-Up Display (HUD) inside the face mask acts as a secondary visual pressure gauge and also provides visual low air warnings at both 1/2 and 1/3 cylinder pressure. Flashing yellow and red LED's will activate when the primary air supply pressure has dropped to approximately 50% and the flashing red LED only at approximately 33%. The visual flashing red LED will continue to flash until the cylinder content is depleted and the unit is switched off.

Flashing red LEDs are also activated on the BAC and the Digital Display unit at 1/3 cylinder pressure for other firefighters to see.

1.8 Integrated PASS

The PASS is automatically activated by air pressure from the SCBA and put into Sensing mode. The unit may be put into Alarm from Sensing mode at any time by pressing the red alarm button on the DDU.

When in Alarm the unit may be reset to the Sensing mode by first pressing and holding the black backlight button and then simultaneously pressing the red alarm button on the DDU.

The unit may be turned Off by closing the cylinder valve, evacuating air from the system and then pressing and holding the black backlight button and then simultaneously pressing the red alarm button on the DDU.

The internal data logging records dates and times including:
- Power On
- Pre-Alert and Lack of Motion Alarm
- Manual Alarm
- Reset
- Power Off
- Low Battery Warnings.

The data log information can be downloaded to a PC using the data log transfer software "BacTalk" and a USB dongle. Contact Interspiro for additional information.

The PASS can be used without having the SCBA pressurised and is activated by pressing the red alarm button on the DDU. This will activate the PASS and start the Alarm mode, reset the PASS by pressing and holding the black backlight button and then simultaneously pressing the red alarm button on the DDU. The PASS is now in Sensing mode.

1.9 Optional Cylinder Quick Coupling

The SCBA can be equipped with a cylinder quick coupling as an option. The regulator unit is then connected to the cylinder valve by simply pushing them together. When the SCBA is pressurised the quick coupling is locked and not possible to disconnect. With the SCBA evacuated of air the quick coupling can be disconnected by pushing the locking ring and then removing the regulator unit from the cylinder valve.

The quick coupling fits 4500 psi cylinders with the use of an adaptor on the cylinder valve. The adapter is installed on the cylinder valve with a torque of 40 Nm (29.5 lb ft).

Cylinders with the adapter can be re-filled without removing the adapter. Interspiro offers a quick connect cylinder charging adapter, p/n 31602-01, for existing fill hoses.

If the adapter is removed the cylinder can be filled with a standard fill hose.

1.10 Safety Certifications

NIOSH 42 CFR Part Approved and NIOSH CBRN SCBA Approved.

Safety Equipment Institute (SEI) certified according to NFPA 1981, 2013 Edition and NFPA 1982, 2013 Edition.

Certified Intrinsically Safe: UL 913, for use in Class 1, Division 1, Group A, B, C, and D Hazardous Locations.

-INTRINSICALLY SAFE SECURITE INTRINSEQUE PER UL Std. 913 Class I, II, II DIV.1 Gr. A-G CONFORMS TO CAN/CSA C22 No. 157-92. EExiaIIC T4

-FCC ID: 0A3MRF24J40MA

“Warning - substitution of components may impair intrinsic safety.”

PASS is designed to meet the design and performance requirements for personal alert safety systems (PASS) to be used by fire fighters engaged in rescue, fire fighting and other hazardous duties as defined in the NFPA 1982 Standard on PASS for Fire Fighters 2013 edition.

Certifying Agency Contact Information:

NIOSH and/or SEI can be contacted to report any operational malfunctions.

National Institute for Occupational Safety and Health (NIOSH)

Phone: 800-CDC-4636

Safety Equipment Institute (SEI)

1307 Dolley Madison Blvd. Suite 3A

McLean, VA 22101

Phone (703) 442-5732

Fax (703) 442-5756

Interspiro contact information to report any operational malfunctions:

Interspiro Inc

Phone: 262-947-9901

Fax: 262-947-9902

2 PREPARATIONS FOR USE

2.1 Battery Installation / Replacement

To reduce the risk of ignition of a flammable atmosphere, batteries must only be changed in an area known to be non-hazardous.

ATTENTION! Changez de piles que dans une zone non-hazardeuse.

Immediate replacement of the batteries is necessary when the low battery alarm has activated. The Low Battery Alarm will activate when the batteries reach a level of approximately 2 hours of operating time remaining. INTERSPIRO, Inc. assumes no liability for mechanical, electrical or other types of battery failure.

Do not mix battery manufacturers or old with new batteries.

2.2 BAC Battery Installation / Replacement

Always use the specified Duracell Procell MN1500 AA alkaline batteries.

Unscrew the screw securing the battery lid with a phillips screwdriver. Open the battery lid and remove the batteries. Insert three new AA batteries oriented according to the markings on the battery compartment. Close the battery lid and tighten the screw of the battery compartment moderately, a beep will indicate that the batteries are positioned correctly.

Repeat the procedure with 3 AA batteries for the battery compartment on the other side.

2.3 HUD Battery Installation / Replacement

Always use the specified Duracell MN2400 or Energizer E92 AAA alkaline batteries. The HUD must be installed in the fire fighter's face mask so that it is protected from electrostatic charging when in use.

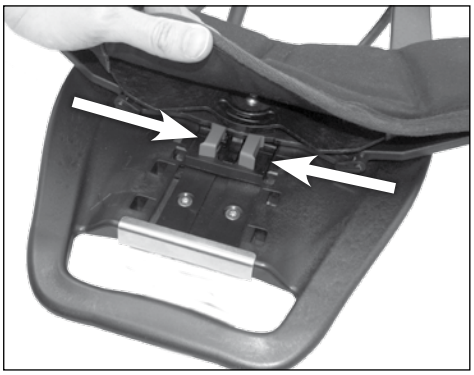
Remove the HUD from the face mask to allow access to the batteries in the two sides of the HUD.

Unscrew the screw securing the battery cover with a phillips screwdriver.

Lift up the locking tab and open the battery compartment cover. Insert the AAA battery oriented according to the marking on the HUD. Close the cover and install the screw. Gently tighten for even gasket pressure ensuring a good seal. Do not over tighten the screw. Repeat for the second battery on the other side.

When closing the battery compartment the HUD will flash all LEDs two times.

2.4 Harness Adjustment



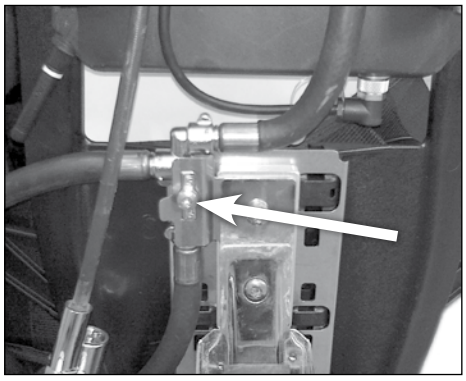
The harness should be adjusted to ensure that the majority of the weight is carried on the hip, not on the shoulder. To accommodate for different body sizes the height of the harness can be adjusted by altering the distance between the hip belt and the shoulder harness.

To adjust the harness push the two red buttons located beneath the hip belt together. Slide the hip belt up or down until it clicks into the correct position.

There are four different positions, S, M, L and XL. The selected position is indicated with red squares next to the letters “S”, “M”, “L” and “XL” engraved in the backplate. The size indication is visible from both sides of the harness.

The height adjustment can be made with cylinder mounted and also with SCBA installed in a fire truck.

2.5 Mounting the Cylinder



1. Make sure the hoses are routed correctly according the picture. In the correct position the raised area showing “INTERSPIRO” on the hose connector is visible in the cut out of the locking plate. Secure the locking plate by tightening the screw.

2. Open the toggle link on the harness and check that the strap loop is big enough for the cylinder to be used. If not, press the small locking hook and enlarge the diameter of the loop.

3. Slide the cylinder into the strap loop and push it in until the valve snaps into its holder and locks (The cylinder valve connection thread should be on the opposite side of the toggle link). Adjust the strap loop by pushing the strap into the guide plate until it fits snugly around the cylinder making sure that the hook on the side engages in one of the oblong holes.

4. Close the toggle link.

FOR VERSION WITH HAND WHEEL CONNECTOR:

5. Connect the regulator unit to the cylinder valve. Tighten the handwheel connector by hand.

FOR VERSION WITH CYLINDER QUICK COUPLING:

5. Align the quick coupling in the regulator unit with the quick coupling adapter on the cylinder valve. Push the regulator unit together with the cylinder valve until it “clicks” into position.

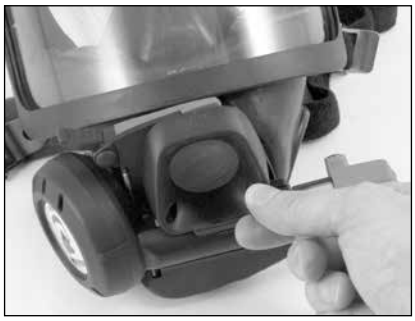
FOR BOTH VERSIONS:

6. Check that the hoses are positioned correctly with the RIC fitting pointing upward and positioned against the cylinder.

2.6 Connecting the Face Mask

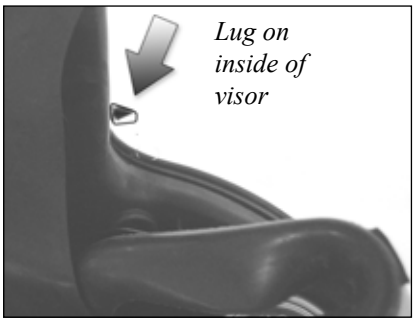
1. Insert the breathing valve into the face mask with the diaphragm housing on the right hand side of the mask as worn. Make sure not to push on the internal speech diaphragm when inserting the breathing valve.

2. Lock it into position by sliding down the outer speech cone and tighten the screw by hand. In the correct position the serial number on the breathing valve is covered by the lip of the speech cone.

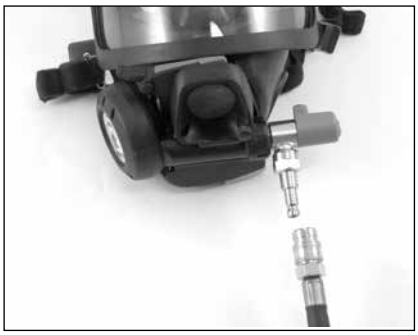


3. Install the HUD inside the face mask between the inside of the mask visor and the nose cup with the LED's facing upward.

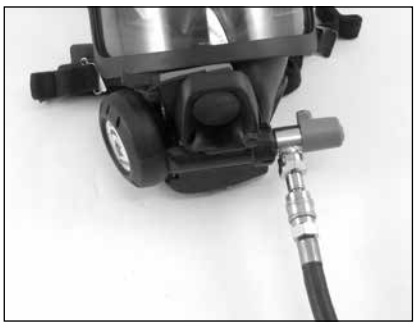
   Note! Small lugs protruding on the inside of the visor (one on each side) secure the HUD inside the mask. The HUD must be fully pushed down inside the mask and secured under the lugs on both sides for the optimal field of vision and viewing of the LED display.



4. Connect the breathing valve to the medium pressure supply hose and the by-pass unit. The locking sleeve of the female quick coupling will automatically move forward and snap into place, locking the breathing hose in place.



5. Pull lightly on the breathing hose to check that the quick connection is securely locked.



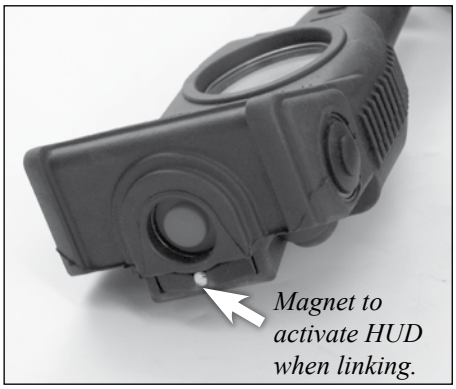
2.7 Linking the HUD

The HUD must be linked together with the SCBA (BAC) before use. The linking only needs to be performed once as long as the same SCBA (BAC) and HUD will be used together. If a SCBA will be used with different HUDs it has to be linked before each use.

The linking of the HUD can only be performed with the SCBA unpressurised. The HUD must be within 2 feet from the BAC during linking. There must be no other units in linking mode within 10 feet of the unit being linked.

1. Press and hold the black button on the Digital Display Unit until the display reads "CONNECTING".

2. Place the magnet located on the top of the Digital Display Unit to the side of the HUD having two LEDs, the right hand side when wearing the mask.
   The red and yellow LED lights up.



3. When removing the Digital display unit the red light goes out and the yellow continues to light. The HUD and BAC are now searching for each other.

4. Within approximately 20 seconds the HUD and BAC will link. The BAC beeps, the Digital display reads "HUD CONNECTED" and all six LEDs in the HUD flash two times.

   Warning! If not all LEDs on the HUD are lit it must immediately be removed from service.

5. Press and release the red button on the Digital display to shut the unit off.

3 UNDERSTANDING THE S8 HUD, DDU AND BAC

3.1 Understanding the Heads-Up Display (HUD)

The wireless HUD contains six LED indicators for user information. The four LED indicators Green (1), Yellow (2), Yellow (3), and Red (4) on the left side (as worn) are for cylinder pressure. The Red (5) and yellow (6) LED on the right side are status indicators.

Pressure reading
The HUD starts automatically when the SCBA is pressurised and presents the cylinder pressure.

Cylinder pressure:	Indicated by HUD LEDs:	
Full to 3/4	Green (1), Yellow (2), Yellow (3), and Red (4)	ON
3/4 to 1/2	Yellow (2), Yellow (3), and Red (4)	ON
1/2 to 1/3	Yellow (3) and Red (4)	Flashing
1/3 to Empty	Red (4)	Flashing

Low Air warning
Flashing Yellow and red LEDs will activate when the primary air supply pressure has dropped to approximately 50 % and the flashing red LED only at approximately 33 %. The visual flashing red LED will continue to flash until the cylinder content is depleted and the unit is switched off.

Note: To meet the NIOSH 42 CFR Part 84 and NFPA 1981-2013 requirements for set point activation of the EOSTI's, the S8 EOSTI 33% (low air alarm whistle) and the HUD EOSTI 33% are set at 35%+/- 2%.

PASS status indication
The red (5) LED in the right side indicates PASS status:

Flashing:	PASS pre-alert
ON:	PASS alarm

Low battery warning
When the battery capacity has fallen to a remaining service time of two hours the Yellow (6) LED on the right side of the HUD starts to flash. This indicates low battery in the HUD or in the BAC.

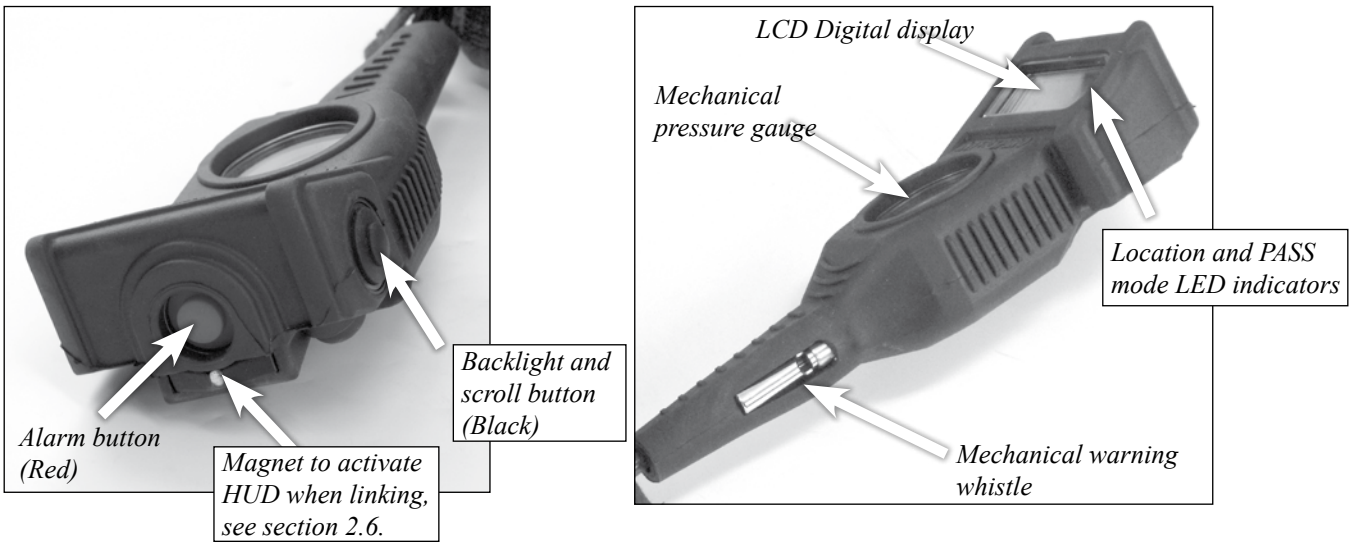
When not pressurized, low battery in the HUD is indicated by the flashing yellow (6) LED.

Note: If the HUD indicates low battery when not pressurized there could be less than 2 hours operation left.

Shutdown
Shutdown of the HUD occurs automatically when the SCBA is switched off. The HUD will shut down with all six LEDs simultaneously flashing 2 times and then shutting off.

If the HUD shuts down during use, the user must leave the contaminated area.

3.2 Understanding the Digital Display



The LCD Digital display can show four different values:

Priority 1: Cylinder pressure symbol

Priority 2: Cylinder pressure in psi

Priority 3: Remaining time

Priority 4: Absorbed temperature

The Priority 1 information is visible on the Display at all times. To activate the backlight press the black backlight button once. The Display is now illuminated for 10 seconds.

To change to Priority 2, Priority 3 and Priority 4 values press the black backlight repeatedly when the backlight is activated, this will toggle between values. When the backlight is switched off after 10 seconds the display returns to show Priority 1 value.

The settings of the Display unit are optional. The priorities may be different or the display may show only one or two different values depending on the settings.

The backlight is automatically illuminated in red for 10 seconds at 50% cylinder pressure or at the "Dynamic Turn Back signal" level (see section 6.4). This is the "Turn Back signal" to the fire fighter during use (see section 6.4). At cylinder pressures above the "Turn Back signal", the backlight is illuminated in the color yellow when the backlight button is pressed. At cylinder pressures below the "Turn Back signal", the backlight color is red when the backlight button is pressed.

The cylinder pressure symbol is displayed as a graphical symbol in four steps, "Full", "3/4", "1/2" and "1/3".

A battery symbol is always shown on top right corner of the display. The symbol show the battery capacity in four steps. With the low battery warning indicating 2 hours battery time remaining the symbol starts to flash and a warning sound is repeated every 20 seconds. The battery symbol and warning sound indicates battery status in the BAC only, not the HUD.

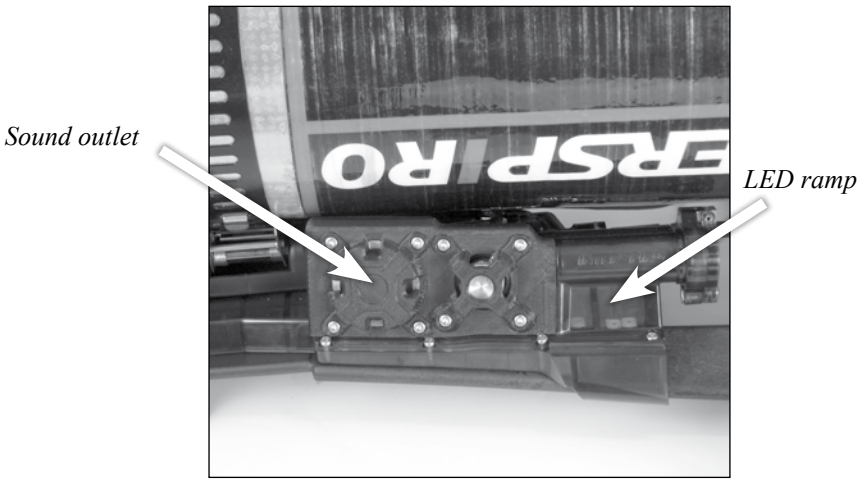
During use, the remaining air time is calculated based on the previous air consumption. Since the value is calculated, the displayed time can be both shorter or longer than the actual remaining time, depending on the previous and future work load and rate of breathing. The remaining time information must only be used as a complement to the cylinder pressure information. Low air warnings must always be heeded, regardless of the remaining time indication. Until the first value is calculated from the air consumption, the display shows "CALC...". The first value is displayed when there has been a significant pressure drop, normally after one to two minutes of breathing.

The remaining time is shown as calculated time remaining in minutes until the "1/3" pressure level is reached.

The absorbed temperature is measured inside the DDU and shown in Fahrenheit.

As an optional setting a temperature alarm can be activated. When the absorbed temperature reaches the pre-set temperature level the alarm will start with warnings beeps and the Display unit will read "TEMP !!!". The "TEMP !!!" indication disappears after 10 seconds or when the black button is pressed. The "TEMP !!!" indication and the warnings beeps are repeated every 20 seconds.

3.3 Understanding the BAC



BAC unit, left side shown

The BAC is positioned between the cylinder and backplate with two identical sides visible to the left and the right of the cylinder. Both sides have an LED ramp working as location lights and indicators for PASS mode and low air warning. The red and yellow flashing LEDs on both sides of the BAC are synchronized to flash with the respective red and yellow LEDs on the Digital Display Unit (DDU). Sound outlets for PASS pre-alert and PASS alarm are located on both sides.

With the low battery warning indicating 2 hours battery time remaining a warning sound is emitted every 20 seconds.

When not pressurized, low battery in the BAC is indicated by flashing red LEDs and sound beeps.

Note: If the BAC indicates low battery when not pressurized there could be less than 2 hours operation left.

4 LEAKAGE AND FUNCTION TEST

Caution!
Prior to and after use, perform a visual inspection of all plastic, rubber and metal parts for damage. If any damaged parts are found the SCBA must be taken out of service and repaired according to the SPIROMATIC S8 Service Manual. Repairs are to be made by INTERSPIRO or a holder of an INTERSPIRO Service Certificate.

1. Open the ambient air hatch by pressing down the hatch lever and gently pushing out the exhalation valve cover.

2. Open the cylinder valve carefully.

3. Turn on the positive pressure by closing the ambient air hatch. A strong flow of air should be heard.

4. Turn off the positive pressure by opening the hatch.

5. The BAC emits a sound and the BAC and DDU LEDs start to flash yellow indicating PASS Sensing mode. The digital display activates.

6. Check that the PASS pre-alert and alarm modes are operational as described in the section 6.2 and section 6.3.

WARNING!
Failure to ensure that the PASS is fully operational prior to use may expose the user to serious injury or loss of life. Although the PASS meets all current NFPA specifications, there is no inherent guarantee against PASS failure. Even the best PASS cannot compensate for abuse or the lack of a PASS training and maintenance program.

Limitation!
SPIROMATIC S8 that include an integrated PASS are only approved for use as an integrated SCBA/PASS system. If the PASS is not fully functional then SPIROMATIC S8 must be removed from service.

Note!
Although PASS can be checked for proper operation, most performance properties of the PASS can not be tested by the end user in the field.

7. With the cylinder valve still open and the positive pressure turned off, check that the cylinder pressure is indicated on the DDU and in the HUD.

8. Read the pressure on the mechanical pressure gauge.

9. Close the cylinder valve. The needle of the mechanical pressure gauge should not move during one minute: If it does - indicating leakage - repairs should be made by an authorized service personnel and the test repeated.

   Note: The cylinder valve pressure gauge, shoulder mounted pressure gauge, and HUD must read full prior to use. NFPA 1404 requires that air cylinders of all SCBA shall be maintained at not less than 90 percent of the rated pressure stamped on the cylinder.

10. With the cylinder closed, open the by-pass valve slightly in order to allow the air to slowly evacuate. Read the mechanical pressure gauge when HUD Yellow and Red LEDs begin to flash. The pressure gauge should read 1/2 full.

    Note: The pressure indication displayed in the HUD is refreshed every 2 seconds.

    Continue to slowly evacuate the air and read the pressure gauge when the mechanical whistle starts to sound, the visual red LED only on the HUD starts to flash, and the red LED on the BAC and DDU starts to flash. The pressure gauge should read 1/3 full.

    For the SPIROMATIC S8 HP (4500 psi), the alarm should sound at approximately 1,575 psi.

    For the SPIROMATIC S8 LP (2216 psi) the alarm should sound at approximately 775 psi.

Note: NFPA 1981-2013 requires the HUD activation set point to be 33% +5/-0%.
To meet the NIOSH requirement for set point activation of the EOSTI's and the NFPA 1981-2013 requirements, the S8 EOSTI 33% (low air alarm whistle) and the HUD EOSTI 33% are set at 35%+/- 2%.

The range for the activation of the EOSTI's (33% low air whistle and 33% HUD flashing Red LED) for the Spiromatic S8 HP (4500 psi) is between 1485 psi to 1665 psi (33% to 37%).

The range for the activation of the EOSTI's (low air whistle and 33% HUD flashing Red LED) for the Spiromatic S8 LP (2216 psi) is between 732 psi to 819 psi (33% to 37%).

Note!
If the sound level of the low air warning whistle seems to be below normal, remove the unit from service. Service the low air whistle according to the INTERSPIRO Service Manual. This must be carried out by a holder of an INTERSPIRO Service Certificate.

Note!
The regulator has a safety nozzle at the high pressure hose connection. The safety nozzle limits the loss of air in the event of a high pressure hose or gauge leak. During a function test of the low air warning it is important that the air pressure be reduced slowly to allow the pressure to pass back through the safety nozzle. If the secondary pressure is reduced more quickly than the high pressure air can be reduced to reach the activation pressure, the whistle may not have sufficient air to sound and the function test should be repeated.

11. When the alarm sounds, turn the by-pass valve to the "OFF" position.

Caution!
The by-pass valve must be returned to its closed position prior to the remaining air being released from the system. Failure to close the by-pass valve will cause the by-pass to be in the "ON" position which will cause a free flow of air when the cylinder is turned on for next use.

12. Turn on the positive pressure to let the system evacuate.

13. To turn the unit off press and hold the black backlight button and then simultaneously press the red alarm button when the system has evacuated fully.

5 DONNING

Caution!
Training in the donning and before use test procedure should be given before use in an emergency situation. The user must demonstrate proficiency to a responsible teacher or supervisor.

1. Extend the shoulder and waist strap buckles and put on the apparatus with the cylinder valve facing downwards.

2. Adjust the shoulder straps so that the apparatus is located firmly and comfortably on your hips by gripping the free ends of the shoulder straps and pulling downwards.

3. Extend the waist strap and insert the male buckle into the female buckle.

4. Move hands to loose ends, pull forward, and tighten.

5. Tuck loose strap ends under the strap.

   Note: An optional chest strap is available. Fully extend the chest strap webbing. Connect the buckle and pull the loose end of the webbing to adjust.

6. Ensure that the by-pass is turned off.

7. Open the ambient air hatch by pressing down the hatch lever and gently pushing out the exhalation valve cover.

8. Reach back with your right hand and open the cylinder valve fully.

9. The BAC emits a sound and the BAC and DDU LEDs start to flash yellow to indicate PASS Sensing mode. The digital display activates.

10. Check that cylinder pressure is then indicated on the HUD LED's.

11. Fully extend the straps of the head harness by grasping the head harness buckles and extending the head harness straps. Don the SPIROMATIC S8 mask by grasping the lower two head harness straps and pulling the head harness over your head. Ensure the mask is properly fitted on your face with the chin positioned in the chin cup. Pull down the back tail of the head harness to position the head harness properly and check that no straps are twisted. Moderately tighten the head harness straps by pulling straight back, not out, beginning with the lower two straps first, the upper two straps next, and then the top center strap. Readjust if necessary.

Important!
The SPIROMATIC S8 facemask is available in three sizes: Small, Large, and X-Large. The standard size facemask is the Large size. The Small mask has a smaller size mask body and the small size inner mask. The X-Large mask has a X-Large mask body and the Large inner mask. The S8 facemask is available with either a fabric head harness or a rubber head harness. Contact Interspiro at (800)-468-7788 for more information.

Note!
OSHA 1910.134 mandates annual fit testing and allows the use of either quantitative or qualitative fit test methods. NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2013 Edition requires fit testing of SCBA face masks and only allows quantitative fit testing. Interspiro recommends that quantitative fit testing be used as the best and most reliable test method. Fit testing must be accomplished prior to using the SPIROMATIC S SCBA and annually thereafter. The OSHA fit testing requires testing in the negative pressure mode and the SPIROMATIC S8 mask requires the use of an Interspiro fit test adapter p/n 95991-01. Contact Interspiro at (800)-468-7788 for additional information.

12. Close the hatch by pushing it back in position and breathe normally from the apparatus. Stop breathing and listen for any leakage. If you hear any leakage, check that your hair is not interfering with the face seal. Readjust the head harness if necessary.

13. Check operation of the by-pass by opening the valve and ensure a good flow of air into the face mask. Close the by-pass.

14. Check the positive pressure by holding your breath and inserting two fingers between the sealing edge and your face. A strong sound of escaping air should be heard. Take out your fingers again. No sound of escaping air should be heard thus indicating that the facepiece is properly sealed against the face.

15. Check that the pressure shown on the mechanical pressure gauge, DDU and HUD reads full. The apparatus is now ready for use.

Warning!
If the cylinder has been charged very fast, the air in the cylinder is warm and the volume available for breathing is reduced.

Caution!
Special training should be given for emergency operations, with particular attention to the by-pass valve and the cylinder valve when the SPIROMATIC S is used with a uniform, chemical suit and tools.

Caution!
When donning the SPIROMATIC S8 SCBA take care that nothing interferes (i.e. helmet, turnout gear, accessories) and remains free and clear with the proper wearing or functioning of the unit. Eye glasses shall not be used when the temple bars interfere with the proper seal of the facemask to the face. If a user must wear corrective lenses while wearing the SCBA, an Interspiro NIOSH Approved spectacle kit must be used. Contact Interspiro at (800)-468-7788 for additional information.

6 DURING USE

6.1 PASS Sensing Mode

In this mode the Digital Display Unit (DDU) is active showing the cylinder pressure symbol, the PASS is activated and the HUD displays pressure according section 3.1. The LEDs on the DDU and BAC are flashing yellow to indicate PASS Sensing mode and to act as location lights.

Check cylinder pressure indication from time to time when using the apparatus.

6.2 PASS Pre-alert

After 20-25 seconds of non-movement the unit enters the PASS pre-alert mode. In this mode escalating sound beeps start and LEDs on the DDU and BAC alternate between flashing yellow and flashing red. The right hand side red LED in the HUD flashes.

By moving the DDU the unit returns to PASS sensing mode.

6.3 PASS Alarm

After 30-35 seconds the unit enters the alarm mode. In this mode an alarm signal is started and the LEDs on the DDU and BAC are pulsing yellow and red. The right hand side red LED in the HUD is lit.

The unit can be put into PASS alarm mode at any time by pressing the red alarm button.

To re-set the PASS to Sensing mode, press and hold the black backlight button and then simultaneously press the red alarm button.

6.4 Low Air Warnings

The user should be aware to begin planning to exit the hazardous environment when the HUD starts to indicate 50% cylinder pressure (see section 3.1), or possibly even earlier according the optional “Dynamic Turn back signal” and the NFPA 1404 air management note below.

The unit can have the optional “Dynamic Turn back signal” activated. This signal activates at a level automatically calculated by the SCBA , the level is set halfway between the initial starting pressure and the low air warning level.

In addition to the flashing yellow and red LEDs in the HUD at 50% cylinder pressure or at the “Dynamic Turn Back signal” level, the backlight of the DDU is automatically illuminated in red for 10 seconds.
At cylinder pressures above the this level, the backlight is illuminated in the color yellow when the backlight button is pressed.
At cylinder pressures below this level the backlight color is red when the backlight button is pressed.

When the air supply has dropped to 33% the mechanical whistle starts to sound, the HUD indicates 33% remaining cylinder pressure (see section 3.1) and the LEDs on the DDU and BAC start to flash red. If equipped, an optional secondary audible electronic low air warning will also be activated when the air supply has dropped to 33% (see section 1.7).

These indications will continue until almost all air has been used up.

Note!
NFPA 1404-2013 Standard for Fire Service Respiratory Protection Training requires written standard operating procedures for training in the use of respiratory protection equipment that shall include an individual air management program. NFPA 1404-2013 states that the air management program shall include the following directives:

(1) The individual shall exit from an IDLH atmosphere before consumption of reserve air supply begins.

(2) The individual shall recognize that the low air alarm notification indicates that the member is consuming the reserve air supply.

(3) The individual and the team shall take immediate action upon activation of the reserve air alarm and shall follow their department’s SOP/SOG.

Caution!
The user must heed the low air warning and start retreating immediately. Correct planning and training for any operation involving the use of breathing apparatus is essential.

Warning!
If the HUD shuts down the user must leave the contaminated area.

Note!
If the apparatus is used at ambient temperatures of 32ºF or below and wetted with water, external icing can cause malfunctions of the acoustic warning device. In the case of low temperatures the apparatus pressure gauge must be read more frequently.

6.5 Emergency Operation

There are two major failure modes which require immediate corrective action: loss of demand air supply and free flow of the air supply.

1. Should you be unable to inhale easily, first verify that you have not run out of air by reading the chest mounted pressure gauge. Then check that the cylinder valve is fully open. If the air supply is insufficient, reach up with your left hand and turn the red by-pass knob to add air. You can regulate the air flow easily by opening and closing this valve. Leave the contaminated area.

   Caution!
   The By-pass should only be used in a loss of demand air supply emergency escape situation. Use of the By-pass in normal SCBA operations is not recommended as it increases air usage, which will shorten the duration of the air supply.

   When used in an emergency escape operation, the By-pass should be regulated only to the flow level required to supply air to the user. Opening the By-pass fully, or to high flow levels, will expose the user to risk of contact with extremely cold air in the mask and additionally, shorten the duration of the air supply.

2. Should the unit free flow, you will notice air blowing into the facepiece and out of the exhalation valve. Use the cylinder valve as the control by reaching back with your right hand and closing the valve, opening as required. Leave the contaminated area.

EMERGENCY ACTIONS IN BRIEF

At loss of air:

1. Fully open cylinder valve

2. Open By-pass and escape.

At free air flow:

1. Regulate flow with cylinder valve and escape.

WARNING
If there is no air flow even with the by-pass open or if there is a sudden and complete loss of the air supply so that there is a total loss of respiratory protection, leave the contaminated area immediately. Follow emergency procedures established by your respiratory protection program.

6.6 Rapid Intervention Crew/Company Universal Air Connection System

The Rapid Intervention Crew/Company Universal Air Connection System (RIC UAC) will permit replenishing the breathing air cylinder of an SCBA user to be replenished from an independent rescue breathing air supply source while the SCBA victim remains trapped or unable to be removed from the hazardous atmosphere. This RIC UAC does not take breathing air from an SCBA being worn by a member of the rescue operation but replenishes the victim's breathing air cylinder from a source of "rescue breathing air" such as a rescue breathing air cylinder or a high-pressure breathing air supply line. The RIC UAC is not a "buddy breathing" device, as it does not permit the sharing of a single SCBA breathing air source between two persons.

WARNINGS AND LIMITATIONS!

- **The system can only be used to fill approved SCBA cylinders.**
- **The system is not to be used as a Buddy breather or any other unapproved use.**
- **Topping off each cylinder is recommended to ensure proper service time.**
- **The air supply pressure should be regulated so as not to exceed the pressure capacity of the cylinder being filled.**
- **If any time during charging a leak is detected, immediately discontinue charging and inspect to determine cause of leak.**
- **Perform the operation and pre-use inspection on the SCBA immediately following filling to check for leaks and proper operation.**
- **The cylinder must be inspected for damage before charging.**
- **The system must not be used to transfer air from one SCBA cylinder to another.**

1. Verify that the cylinder valve is in the open position.
2. Remove the charge port dust plug and rotate the male UAC outwards to the charging position.
3. Verify that the charging whip with the mating female quick coupling is charged with breathing quality air.
4. Rotate the UAC coupling outward and firmly push the female quick coupling with pin straight onto the male charging port of the RIC UAC. The locking sleeve of the female quick coupling will automatically move forward and snap in place, locking the charging hose into place.
5. Allow the cylinder to fill. Charge rate is dependent on the inlet pressure and the pressure remaining in the cylinder.
6. When any audible filling has ended or the cylinder gauge reads full, firmly grasp the female quick coupling and pull back on the locking sleeve to release the female quick coupling and remove it from the charge port.
7. Install the dust plug onto the charge port and store the tether by rotating the cap.

6.7 Emergency Breathing Safety System (EBSS): Buddy Breathing

Limitations!
Buddy Breathing shall only be used for emergency operations. When possible, a rescue team with full cylinders shall be sent in at the scene by officer in charge to attempt the rescue operation.

Caution!
If a rescue is to be attempted by a person already involved in an incident, that person shall have at least 1/2 full cylinder pressure remaining in his/her own cylinder. If the Flashing Yellow and Red LEDs in the HUD have activated when the primary air supply pressure has dropped to approximately 1/2, the donor shall not initiate EEBS operations. Any person attempting a rescue shall communicate with the officer in charge and receive the command from him/her before proceeding.

Emergency Breathing Safety System (EBSS) Special or Critical User's Instructions:
-Activation or engagement of EBSS in either the donor or receiver mode changes the SCBA use to Escape-Only, approved service time for either the donor, or the receiver is no longer applicable.

-Entry approval only restored after re-charge, either host or donor.

-EBSS may not be engaged or activated in donor mode after the donor End-of-Service-Time-Indicator (EOSTI) has activated.

-Users must be fully trained in the operation of EBSS in accordance with a training program conforming to the requirements of NFPA Standards 1404, Fire Service Respiratory Protection Training and 1500, Fire Department Occupational Safety and Health Program.

-Simultaneous connection of more than two users, one donor and one receiver, is not permitted.

-Not suitable for connection in CBRN environment.

During an emergency rescue operation, the following procedure shall be followed.

The person making the rescue shall remove the Y-coupling rescue hose from the left hip pouch of his/her own SCBA and from the person to be rescued. The rescuer shall connect the Y-couplings together.

Push the female connector of one Y-coupling onto the male coupling of the other. The locking sleeve of the quick coupling will automatically move forward and snap into place, locking the hoses together.

Gently pull the hoses to ensure, that the couplings are secure.

The rescuer shall listen for a strong flow of air from the SCBA of the person to be rescued.

A: A strong flow of air would indicate a leakage on the SCBA of the person to be rescued. If a strong leakage is heard, disconnect the rescue hose before the donor loses his/her own air. Then call for a rescue team and use INTERSPIRO's Revitox mask.

B: If a strong flow of air leakage is not heard, proceed together and leave the contaminated area.

7 DOFFING

1. Open the ambient air hatch. Remove the face mask by loosening the lowest head harness straps first.
2. Undo the waist belt buckle.

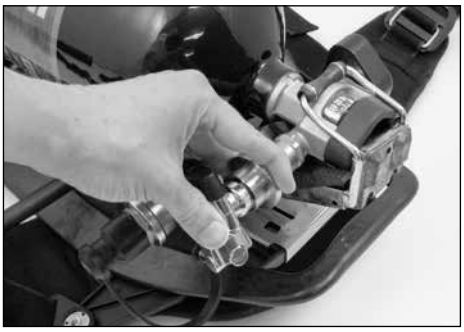
   Note!
   After use or at any stand-by time prior to use, an optional neck strap or an optional clip on the shoulder strap to secure the mask is available. Contact Interspiro for more information.
3. Pull the shoulder strap buckles upwards and the straps will automatically loosen. Take off the apparatus by sliding it under the right arm and forward.
4. Close the cylinder valve.
5. Bleed off the air pressure by turning the positive pressure on (close the ambient air hatch).
6. Press and hold the black backlight button and then simultaneously press the red alarm button to switch the unit off.

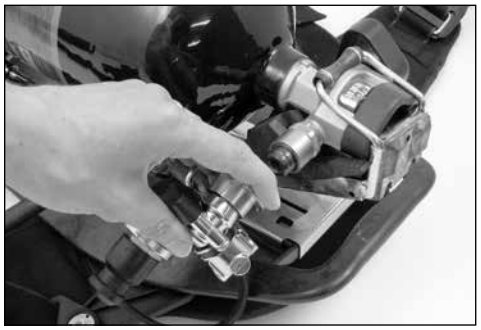
FOR VERSION WITH HAND WHEEL CONNECTOR:

7. Unscrew the handwheel connector of the regulator unit.

FOR VERSION WITH CYLINDER QUICK COUPLING:

7. Pull the ring on the quick coupling away from the cylinder valve and remove the quick coupling from the cylinder valve





FOR BOTH VERSIONS:

8. Remove cylinder from harness by pressing the lever release on left side of the cylinder valve docking device and pushing down and out on cylinder.

8 CLEANING AND MAINTENANCE

Regulations state that respirators must be regularly cleaned and disinfected. Furthermore, respirators that are used by more than one person must be cleaned and disinfected after each use.

Caution!!
Service beyond the following procedures must be handled by a holder of an INTERSPIRO Service Certificate!

8.1 Air Supply

1. Check that the positive pressure is turned off.

   Important!
   Check the pressure on the cylinder pressure gauge and open the cylinder valve before cleaning the apparatus. The air pressure in the cylinder prevents water from entering the regulator.

2. Place the apparatus into water with a mild detergent. The S8 mask with breathing valve, HUD, BAC and DDU with mechanical warning whistle should not be immersed.

   Caution!
   Do not use bleach or solutions containing bleach as it can degrade Kevlar and/or rubber parts.

3. Look for bubbles indicating leaks. Any leakage should be repaired by INTERSPIRO or an authorized Service Agent.
4. Wash the apparatus, the gauge and the warning device thoroughly, using a brush if necessary to remove heavy dirt. The HUD, BAC and DDU can be cleaned with a damp cloth and warm water. Do Not use cleaning solvents.
5. After cleaning, rinse in clean water.
6. Close the cylinder valve. Turn on the positive pressure to vent the system.
7. Let the apparatus dry.
8. Change to a fully charged cylinder.

8.2 Face Mask

1. Unscrew the handscrew on the speech cone. Pull out the screw and turn the speech cone away.

2. Remove the breathing valve from the facemask.

3. Remove HUD from inside the facemask.

   Note!
   Small lugs protruding on the inside of the visor (one on each side) secure the HUD inside the mask.To remove the HUD, grasp the HUD on one side (right or left) and gently pull the HUD towards the middle of the mask. When the HUD is past the inside edge of the lug on the inside of the visor, the HUD will be free to lift up and out of the face mask.

4. Prepare a solution of hospital grade cleaner/disinfectant, i.e.: Georgia Steel FG350 Fresh Gear cleaner/disinfectant or equivalent, using warm (approximately 100 degree F) water. If needed, Georgia Steel FK260 Heavy duty detergent may be used for pre-cleaning to remove common industrial debris from masks prior to disinfecting.

5. The mask should be submerged and scrubbed using a soft bristled brush. In addition to scrubbing the outside surface of the face mask, the inside sealing surfaces of the face mask that touch the face should also be scrubbed using a soft bristled brush. The inside of the visor should not be scrubbed as this could adversely affect the anti-fog coating. To ensure complete disinfection, refer to the respirator cleaner manufacturers instructions.

6. Rinse the face mask well in clean water. Detergent residue may cause rubber components to “gum” up.

7. Dry the mask using a soft towel. Ensure that excess water is removed from the air channels and sealing edges and perform a visual inspection of the face mask before reassembly.

   CAUTION!
   Alcohol or products containing alcohol must not be used for cleaning of the face mask or other rubber based materials.

10. If it is deemed necessary to clean the demand valve and/or regulator, care must be taken to prevent water from entering either of these components. Do not submerge the breathing valve or the HUD. The outside of the breathing valve can be cleaned with a damp cloth and warm water. The outside of the HUD can be cleaned and disinfected using a cloth dampened with the same cleaner/disinfectant used for the face mask.

    Important!
    All parts must be completely dry before re-assembly. This is especially important under extreme cold conditions.

11. Examine the apparatus for any signs of wear or damage.

    Note!
    Any further repairs should only be undertaken by a qualified INTERSPIRO service agent or a holder of a service certificate.

8.3 Reassemble Apparatus

1. Refit fully charged cylinder in accordance with the instructions given in this manual in section 2.5.
2. Fit breathing valve to clean facemask and lock securely into position with the speech cone. Mount the HUD to the facemask.
3. Open ambient air hatch and carry out the leakage and function check as described in this manual in section 4.
4. Close the cylinder valve and evacuate any pressure remaining in the system.
5. Store the apparatus ready for use. The apparatus should be stored in dry conditions, well protected from direct sunlight and extremes of temperature. INTERSPIRO recommends the use of mask bags to protect mask lenses and breathing valves.

8.4 Cylinder Charging

The cylinder must be fully charged with air meeting the requirements of the Compressed Gas Association Specification G-7- I for type I, Grade D air, or higher quality, as well as meeting a dew point level of -65°F (-54°C) or dryer (24 ppm v/v or less), and a maximum particulate level of 5 mg/m^3 air. The breathing air quality must be in accordance with NFPA 1989, Standard on Breathing Air Quality for Fire and Emergency Services Respiratory Protection. The container shall meet applicable DOT specifications.

CAUTION!
The cylinder must be inspected for damage before charging.
Do not overcharge the cylinder. Fill only to the pressure indicated on the cylinder label.
Topping off each cylinder is recommended to ensure proper service time.

8.5 Service and Testing

The below schedule shows the minimum requirements for service and testing as recommended by Interspiro. Local requirements may differ due to regulations and environmental conditions. In case of doubt consult your local Interspiro representative.

				Preventive Maintenance		
#	APPARATUS / COMPONENT	BEFORE USE	AFTER USE	EVERY YEAR	EVERY 2nd YEAR	EVERY 10 YEARS V
1	**Breathing Apparatus**	U	C I U	I II T		
2	**Face Mask & Breathing Valve**		D I I	I		R II
3	**Pressure Regulator & Warning Device**					R II
	a. High pressure connection O-ring(s)				R III	
	b. Inlet filter				R III	
	c. Medium pressure hoses	I		I II		I II+IV
4	**Harness**		I	I		
5	**Cylinder / Cylinder Pack**		I	I II		
	a. Cylinder			Periodic inspection in accordance with national regulations.		
	b. Cylinder valve, service parts			Service is advised to be performed in the same periodic interval as cylinders.		

U = **Short user test**

C = **Cleaning**

I = **Inspection**

D = **Disinfection**

T = **Performance test on a calibrated test unit**

R = **Renew, service parts**

I If necessary.

II Environmental conditions and frequency of use must be considered. Frequent use and/or use in aggressive environments may lead to shorter inspection/maintenance intervals.

III Frequency of use must be considered.

IV Medium pressure hoses older than 15 years (from date of manufacture) shall not be used. This requirement is valid also for all accessory hoses.

V Applies to SCBA's delivered after January 1, 2008. For older equipment, see Product Bulletin

Prior to and after use, perform a visual inspection of all plastic, rubber (elastomeric) and metal parts for damage. Inspect elastomeric parts for splitting, cracking, or holes. If any damaged parts are found the SCBA must be taken out of service and repaired according to the SPIROMATIC S8 Service Manual. Repairs are to be made by INTERSPIRO or a holder of an INTERSPIRO Service Certificate.

To ensure that your SCBA is working properly a complete test at least once a year must be performed, even if it has not been used. These tests are carried out on the SPIROMATIC S test equipment which enables you to test all SPIROMATIC S functions and identify areas requiring repair.

For SCBAs used daily check cylinder pressure every day.

For SCBAs in storage check cylinder pressure every week.

The short user test before and after use is to be carried out in accordance with the instructions in this manual.

DOT requirements for cylinders:

Fully wrapped carbon fiber cylinders: hydrostatic re-test every 5 years, 15 year lifetime.

Fully wrapped kevlar cylinders: hydrostatic re-test every 3 years, 15 year lifetime.

Fully wrapped fiberglass cylinders: hydrostatic re-test every 3 years, 15 year lifetime.

Hoop wrap cylinders: hydrostatic re-test every 3 years, 15 year lifetime.

All aluminum cylinders: hydrostatic re-test every 5 years.

WARNING!
The minimum test and service procedures are intended for normal use only. If the SCBA has been exposed to extreme conditions such as extreme heat or cold, harsh liquids or chemicals, heavy duty dust particles, or extreme shock or vibration, the SCBA must undergo a test and inspection by a holder of an INTERSPIRO Service Certificate. If the SCBA does not meet the values in the SPIROMATIC S Test Instruction or if it shows signs of wear, the SCBA must be taken out of service and repaired according to the SPIROMATIC S8 Service Manual.

WARNING!
Except for cleaning, lubrication, inspection and test procedures according to this Operating Instruction, only the holder of an INTERSPIRO Repair Certificate should service the SPIROMATIC S8 Self-Contained Breathing Apparatus. Work by unauthorized or untrained persons and/or the use of other than INTERSPIRO parts may void the approval and safety of the unit.

8.6 Replacement/Retirement Considerations

When any SCBA component or part shows signs of wear and/or damage, these items must be replaced. The service life of the SCBA can be maintained indefinitely as long as the SCBA meets the values in the SPIROMATIC S Test Instructions.

Units contaminated by chemical or radioactive materials must be disposed of or decontaminated in accordance with all applicable regulatory standards.

Composite cylinders have a 15 year lifetime according to DOT exemption, provided satisfactory hydrostatic testing is accomplished. If damaged, these cylinders may be repaired or condemned according to the Guidelines for the Visual Inspection of Compressed Gas Cylinders in CGA C-6.2.

8.7 Storing the Apparatus

Upon completion of all required service, the SPIROMATIC S should be stored in the carrying case if supplied with the unit, or in the walk away bracket.

When mounting the S8 SCBA in a fire apparatus jumpseat, check that there is no interference between the SCBA and the seat. Check that the SCBA and cylinder are properly secured and can be removed easily without damaging the components.

Store the apparatus ready for use. The apparatus should be stored in dry conditions, well protected from direct sunlight and extremes of temperature.

The mask assembly should be stored in a mask bag.

Store the SPIROMATIC S mask and breathing valve with the positive pressure turned on (Exhalation valve/fresh air hatch in the closed position).

The cylinder must be fully charged and ready for use.

8.8 Marking Recommendations and Restrictions

Special user identification/marking on SCBA equipment must be accomplished in a manner that does not interfere with regulatory labels i.e. NIOSH, NFPA, DOT. Further, manufacturer traceability markings such as embossed serial numbers or part numbers can not be obscured.

Marking of SCBA cylinders and/or other SCBA components may be done with a non-flammable marking medium.

9 SPIROGUIDE ELECTRONICS CONFIGURATION AND PASS DATA LOGGING

The S8 SpiroGuide electronic system has standard default settings for the BAC and DDU.Optional settings, depending on the preference of the Fire Department, are available and can be set by an Interspiro certified service technician using the BACTalk program while the BAC is placed in the “Service mode”. A separate BACTalk User manual describes how the Interspiro certified service technician can change the default configuration settings.

9.1 Default and Configuration Optional Settings for the BAC and DDU

Digital Display Unit (DDU) values
The default settings show four different values in the following order:
Priority 1: Cylinder pressure symbol
Priority 2: Cylinder pressure in psi
Priority 3: Remaining time
Priority 4: Absorbed temperature
The priorities may be set in any different order and any or all of the different values may be turned OFF. (see section 3.2)

Remaining Time Calculation
The default setting calculates the remaining time from FULL (starting cylinder pressure at 90%-100% FULL) to the low air alarm warning level. The Remaining time calculation optional setting is from FULL (starting cylinder pressure at 90%-100% FULL) to zero (EMPTY) cylinder pressure. (see section 3.2)

Electronic Low Air Warning
The default setting is OFF. A mechanical whistle is the primary audible low air warning and can not be silenced in the BACTalk program. The optional electronic low air warning (audible electronic whistle sound) can be turned ON in the

BACTalk program. The electronic low air warning also has an optional mutable function in the BACTalk program depending on the preference of the Fire Department. If mutable, the electronic low air warning will be silenced for 10 seconds by pressing the backlight button on the DDU (see section 3.2 and 6.4)

DDU Turn Back Signal
The default setting is at 50% cylinder pressure (same as the HUD flashing yellow and red LEDs at 50% cylinder pressure, see section 3.1). The backlight of the DDU is automatically illuminated in red for 10 seconds at 50% cylinder

pressure which is the “Turn Back signal” to the firefighter. (see section 6.4). An optional Dynamic Turn Back signal can be used depending on the preference of the Fire Department. The dynamic signal activates at a level automatically calculated by the SCBA. The level is set halfway between the initial starting pressure and the low air warning level.

Integrated PASS
The S8 SCBA with Integrated PASS is the standard S8 default configuration. The S8 SCBA is NFPA 1981 and 1982, 2013 certified including the integrated PASS. As an option, the PASS can be turned OFF in the BAC Talk program. When the PASS is turned OFF, the S8 is certified to NFPA 1981, 2013 as an SCBA.

Start-up Self-Test
An automatic Start-up Self-Test option is available (start-up test default setting is OFF). The automatic start-up test option can be turned ON in the BACTalk program by a certified service technician. There are two start-up tests, a short test and a full test, that are performed when the breathing apparatus is pressurized. The Short Test requires no user interaction. The results of the test are presented on the Digital Display Unit and must be acknowledged by the user before proceeding. The short test checks cylinder pressure and the electronics and warning functions.

During the full test, motion sensor, panic button and the pressure tightness of the breathing apparatus are checked with a minimum of user interaction. Note: The Leakage and function test of the S8 (see section 4) and the checks during donning (see section 5) still need to be performed by the User, even if the automatic Start-up Self-Test option is activated. Generally the Start-up Self-Test option is used only by a certified service technician, but can be activated for all Fire Department user’s depending on the preference of the Fire Department.

9.2 Internal PASS Data Logging

The internal PASS data logging is accessible to Interspiro certified service technicians in the BACTalk program (included as a minimum requirement of NFPA 1982, 2013 PASS data logging is not optional). The log records dates and times including:

- Power On and Power Off
· Pre-Alert and Lack of Motion Alarm
· Manual Alarm
· Reset
· Low Battery Warnings
In addition to PASS data, low air warnings are also included in the data log.

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