1 For your safety

1.1 General safety statements

- Before using this product, carefully read the Instructions for Use.
- Strictly follow the Instructions for Use. The user must fully understand and strictly observe the instructions. Use the product only for the purposes specified in the Intended Use section of this document.
- Do not dispose of the Instructions for Use. Ensure that they are retained and appropriately used by the product user.
- Only fully trained and competent users are permitted to use this product.
- Comply with all local and national rules and regulations associated with this product.
- Only trained and competent personnel are permitted to inspect, repair and service the product. Dräger recommends a Dräger service contract for all maintenance activities and that all repairs are carried out by Dräger.
- Properly trained service personnel must inspect and service this product as detailed in the maintenance section of this document.
- Use only genuine Dräger spare parts and accessories, or the proper functioning of the product may be impaired.
- Do not use a faulty or incomplete product, and do not modify the product.
- Notify Dräger in the event of any component fault or failure.

1.2 Definitions of alert icons

Alert icons are used in this document to provide and highlight text that requires a greater awareness by the user. A definition of the meaning of each icon is as follows:

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, could result in physical injury or damage to the product or environment. It may also be used to alert against unsafe practices.

NOTICE

Indicates additional information on how to use the product.

2 Description

2.1 Product overview

The Dräger PAS Colt PPH (positive-pressure hood) provides respiratory protection for use in a contaminated or oxygen-deficient environment to escape to a safe breathing environment or to a designated holding area.

In the designated holding area the PAS Colt PPH air cylinder can be recharged, and then kept fully charged, by a charging air source (ChargAir). This allows the wearer to breathe normally in the holding area, and then to escape a safe breathing environment when a full evacuation is possible.

The main features of the product are:

- The carrying harness is a bandolier shoulder harness and waist belt.
- The air cylinder is a carbon-composite cylinder fitted in a hip-mounted cylinder holster. The cylinder pressure is shown on the gauge (Fig 1, Item 4), and when the cylinder is full it provides a nominal duration of 15 minutes.
- The cylinder valve has an automatic activation device that is operated by removing a two-pronged locking clip (Fig 1, Item 1). The clip is connected by a strap to a sprung-gate clip (Fig 1, Item 6) that automatically pulls the locking clip as the escape hood is removed from its storage pouch.
- The pressure reducer (Fig 1, Item 2) reduces the cylinder pressure to a medium pressure, which is the pressure required at the lung demand valve (Fig 1, Item 5).
- The ChargAir connector (Fig 1, Item 7) is a male coupling that is used with a charging air source to rapidly refill the air cylinder while the wearer is breathing from the equipment. The ChargAir connector contains a pressure-relief valve (Fig 1, Item 3) that prevents over charging and possible cylinder damage by opening to relieve pressure at a set level above 200 bar. If the pressure-relief valve activates, the breathing apparatus must be returned to Dräger for inspection and repair for safety reasons.
- The ChargAir outputs in the holding area must be female Aeroquip couplings (FD17-1003-04-04).
- The escape hood (Fig 2) has a rubber ring that seals around the neck, and an internal nose cup that fits over the nose and mouth to supply air to the wearer.
- The lung demand valve regulates the breathing air supply to the wearer during use. The valve is switched on by the inhalation of the wearer (first-breath activation), and can be switched off by pressing a reset button (Fig 2, Item 1) when required.

2.2 Intended use

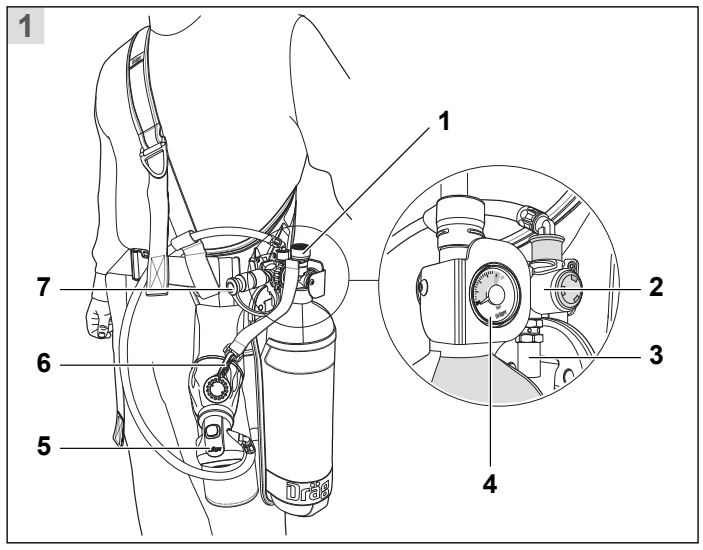
When this product is used with an approved air cylinder it provides the wearer with respiratory protection for: escaping from contaminated or oxygen-deficient conditions; or for remaining in a holding area with a compatible charging air source.

The air cylinder used with this product must be a certified Dräger cylinder; otherwise the operation of the product may be impaired. Contact Dräger for further information.

Operating temperature range: -15 °C to 60 °C.

2.3 Approvals

The European standards, guidelines, and directives according to which this product is approved are specified in the declaration of conformity (see declaration of conformity or www.draeger.com/product-certificates).



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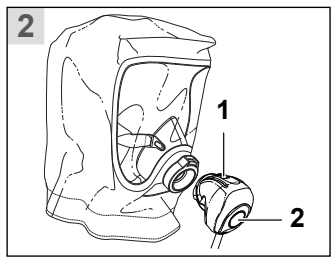

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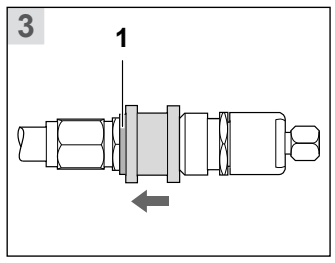

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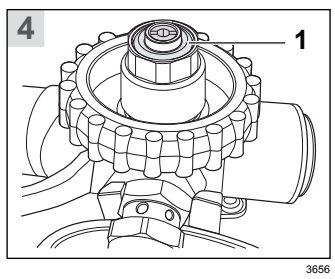

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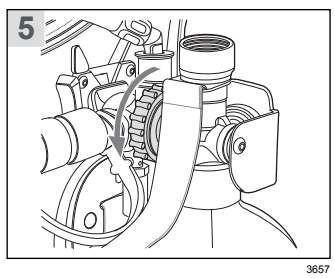

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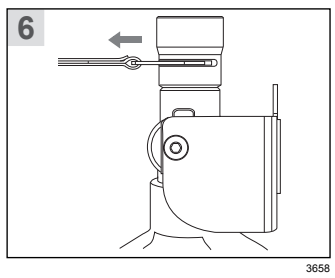

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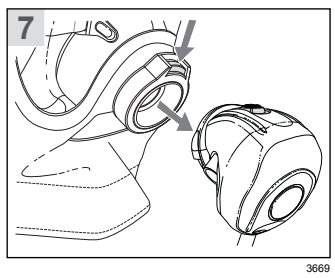

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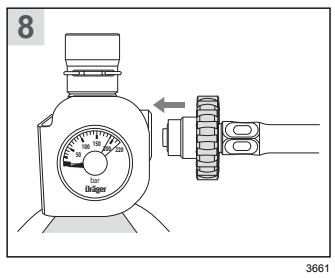

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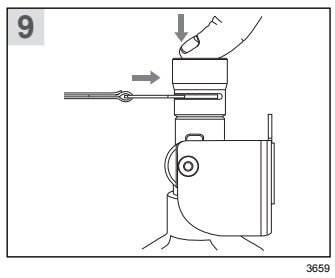

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3 Use

WARNING

The time required to allow the wearer to escape to a safe area must be within the capacity of the equipment. When selecting the type and duration of escape equipment it is essential to consider potential hazards, storage location and escape route.

3.1 Preparation for use

WARNING

On receipt of the PAS Colt PPH from Dräger, the product is not configured for immediate operational use. The cylinder automatic activation device is not connected, and the air cylinder may be discharged. Carry out the following procedure to prepare the product for use.

Immediately following removal of the equipment from its packaging:

1. If the air cylinder is supplied discharged, see Section 4.2.5 for cylinder charging instructions.
2. Fit the air cylinder and connect the automatic activation device (see Section 4.2.2).

3.2 Putting on the carrying harness

Refer also to Fig 1.

1. Check that the pointer of the cylinder pressure gauge is inside the green area, and the cylinder automatic activation device is properly connected (Fig 1, Items 1 and 6).
2. Open the waist belt buckle and fully extend the waist and shoulder strap.
3. Place the left arm through the shoulder harness, taking the harness over the head and on to the right shoulder, positioning the strap diagonally across the body with the cylinder positioned against the left hip.
4. Loop the waist belt around the waist and fasten the buckle – do not tighten.
5. Hold the cylinder valve with the left hand and lift until the waist belt is in line with the waist. Then tighten the waist belt strap until the equipment is secure and comfortable on the waist. Pull down to adjust the shoulder strap.

3.3 Putting on the hood and escape procedure

NOTICE

Remove protective head gear before putting on the hood.

1. Remove the hood from the pouch. This action removes the locking clip (Fig 1, Item 1), automatically activating the cylinder valve.
2. Place both hands inside the neck seal and stretch the hood over the head.
   - Wearers with spectacles – take care when stretching the neck seal over the spectacles.
   - Wearers with long hair – tuck the hair inside the hood.
3. Position the nose cup over the nose and mouth, and inhale to activate the breathing air supply. The duration of the cylinder air begins from the time of the first-breath activation of the lung demand valve.

NOTICE

The actual breathing time available from the cylinder depends on the wearer's air-use rate. Higher breathing rates associated with increased physical effort would reduce the available escape time. The wearer **must** be able to reach the required area before the air cylinder is empty.

4. Breathe normally and immediately proceed to one of the following areas:
   - A safe breathing environment (see Section 3.3.1).
   - A designated holding area with a ChargAir breathing air supply (see Section 3.3.2).

3.3.1 Safe breathing environment

WARNING

Do not remove the hood until in a safe breathing environment.

CAUTION

Do not drop or throw down equipment as damage could occur.

Once in a safe breathing environment:

1. Remove the hood and continue to breathe normally.
2. Press the reset button (Fig 2, Item 1) to switch off the air flow through the lung demand valve.
3. Carefully roll the escape hood to ensure that the visor is not creased. Insert the hood into the pouch with the visor in the lower portion of the pouch as shown in Fig 1.

3.3.2 Designated holding area (ChargAir use)

WARNING

The ChargAir source shall meet the requirements for breathing air according to EN 12021.

If the ChargAir system is used in a potentially contaminated environment, ensure that all couplings are free of contaminants before connecting the couplings.

CAUTION

The ChargAir source pressure must not exceed 200 bar. Using a ChargAir source of higher pressure could activate the ChargAir pressure-relief valve and damage the valve seat. If the ChargAir pressure-relief valve activates, the breathing apparatus must be returned to the nearest Dräger branch or agent for inspection and repair at the first opportunity.

1. Ensure that the charging source outlet connector is compatible with the ChargAir connector on the PAS Colt PPH (Fig 1, Item 7).
2. Remove the protection caps from the ChargAir connectors.
3. Ensure that the hoses are not bent or kinked and push the ChargAir connectors together until a click is heard and the ring (Fig 3, Item 1) is visible behind the sleeve on the female coupling.
   - Filling the cylinder begins immediately.
   - The cylinder is full when the pointer of the cylinder pressure gauge is inside the green area. This can be within 60 seconds, although the filling time and final pressure are dependent on the pressure and volume of air in the cylinder and the charging air source.
   - Due to rapid compression of cylinder air, a small temperature increase occurs during refilling. The system will top-up the cylinder as it cools if it remains connected to the charging air source.
4. Keep the ChargAir system connected and breathe normally until a full evacuation is possible.
5. When required, disconnect the quick coupling by pulling the sleeve of the female coupling away from the male coupling (see the arrow in Fig 3). As the coupling separates, a hiss or pop may be heard as the shut-off valves in the couplings close. The duration of the cylinder air begins from the time of disconnecting from the ChargAir connector.
6. Immediately proceed to a safe breathing environment (see Section 3.3.1).

3.4 After use

After any use, the product must be checked and then returned to the ready-for-use condition. The after use maintenance tasks (see Section 4.1.2) must be carried out by Dräger or trained service personnel to prepare the product for use.

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4 Preparing and maintaining the PAS Colt PPH

The tasks in this section must be carried out to prepare and maintain the PAS Colt PPH in a ready-for-use condition.

4.1 Maintenance periods

4.1.1 Daily checks

It is essential that escape apparatus is ready for use at all times, and Dräger therefore recommend a daily check. If the customer's on-site risk assessment concludes that less regular checks are acceptable, this can be extended to a maximum of one month. It is the customer's responsibility to ensure that the equipment is ready for use at all times.

- Check that the pointer of the cylinder pressure gauge is inside the green area. Charge the cylinder if it is in the red area (see Section 4.2.5).
- Ensure that the automatic activation device of the cylinder valve is properly connected (Fig 1, Items 1 and 6).

4.1.2 Maintenance table

Dräger recommend that regular inspection, testing and servicing of the breathing apparatus is carried out in accordance with the table below. The table applies also to out-of-use (stored) equipment.

Additional inspection and testing may be required in the country of use to ensure compliance with national regulations governing the use, maintenance, examination and testing of this product.

Component /System	Task	After use	Every month	Every year	Every 10 years
Complete equipment	Visual inspection (see Note 1 and Section 4.2.1)	❍	❍		
	Leak test (see Section 4.2.6)	❍			
	Functional tests (see Note 3)			❍	
Lung demand valve O-ring	Check and lubricate if necessary (see Note 2)	❍			
Pressure reducer	Basic overhaul. Contact Dräger for the Repair Exchange (REX) service				❍
Cylinder valve	Basic overhaul. Contact Dräger for the Repair Exchange (REX) service				❍
Cylinder	Charge to correct pressure (see Section 4.2.5)	❍			
	Cylinder pressure test and recertification; and check the test date on the cylinder (composite cylinders over 15 years old must be retired)	Carry out in line with national regulations			

Notes

❍ Dräger recommendations

1. Clean the equipment if it is dirty. If it the equipment has been exposed to contaminants, disinfect any components that come into direct and prolonged contact with the skin.
2. As a guide, lubricant should be felt on the fingers but not seen. If relubrication is required, lightly apply Dow Corning® Molykote® 111 (other lubricants are not tested and may damage the equipment).
3. These maintenance tasks may only be carried out by Dräger or trained service personnel. Details of the tasks are contained in the technical manual which is issued to service personnel that have attended a relevant Dräger maintenance course.

4.2 Maintenance tasks

4.2.1 Visual inspection

Carry out a visual inspection, checking the full breathing apparatus including all component parts and accessories. Check that the equipment is clean and undamaged, paying particular attention to pneumatic components, hoses and connectors. Typical signs of damage that may affect the operation of the breathing apparatus include impact, abrasion, cutting, corrosion and discoloration. Report dirty or damaged equipment to Dräger or trained service personnel, and do not use until faults are rectified and the product is cleaned.

4.2.2 Fitting the cylinder

CAUTION

Fitting a cylinder that is charged above 200 bar could activate the ChargAir pressure-relief valve and damage the valve seat. If the ChargAir pressure-relief valve activates, the breathing apparatus must be returned to the nearest Dräger branch or agent for inspection and repair at the first opportunity.

1. Ensure that the cylinder is fully charged, with the pointer of the cylinder pressure gauge inside the green area.
2. Check that the threads of the valve port and the pressure reducer handwheel are undamaged, and the O-ring (Fig 4, Item 1) is in position and undamaged.
3. Fully insert the cylinder into the carrying holster. To prevent damage, ensure that the cylinder remains clear of the handwheel of the pressure reducer while inserting the cylinder.
4. Align the cylinder with the pressure reducer and tighten the handwheel (anticlockwise) hand tight (Fig 5).
5. Press the reset button (Fig 2, Item 1) to ensure that the lung demand valve is switched off.
6. If the escape hood is not in its pouch, carefully roll the hood to ensure that the visor is not creased. Insert the hood into the pouch with the visor in the lower portion of the pouch as shown in Fig 1.
7. Connect the sprung-gate clip of the automatic activation device to the hood (Fig 1, Item 6).

4.2.3 Removing the cylinder

WARNING

High-pressure air release may cause injury to the user or other personnel near the breathing apparatus. Ensure that the locking clip is fitted in the cylinder valve and fully vent the system before attempting to disconnect the air cylinder.

When the cylinder valve outlet is open to atmosphere (not connected to the pressure reducer or a charging adaptor), **do not** remove the locking clip unless the cylinder is completely discharged. Removing the locking clip would immediately exhaust high-pressure cylinder air. To fully discharge the cylinder, see Section 4.2.4.

1. Ensure that the locking clip is fitted in the cylinder valve (Fig 1, Item 1), and disconnect the sprung-gate clip (Fig 1, Item 6) from the hood.
2. Press the front button (Fig 2, Item 2) to fully vent the system.
3. Disconnect the pressure reducer from the cylinder valve.
4. Carefully remove the cylinder from the holster. To prevent damage, ensure that the handwheel of the pressure reducer remains clear of the cylinder.

4.2.4 Fully discharging the air cylinder

1. Ensure that the pressure reducer is connected to the cylinder valve.
2. Remove the locking clip from the cylinder valve (Fig 6).
3. Press the release button and remove the lung demand valve from the hood (Fig 7).
4. Press the front button (Fig 2, Item 2) of the lung demand valve and allow the cylinder to fully vent. Do not direct the air toward the face, eyes or skin.
5. When the cylinder is empty, reconnect the lung demand valve to the hood. Check the security of the attachment by gently attempting to pull the coupling apart.

4.2.5 Air cylinder charging

WARNING

Air quality for compressed-air cylinders shall meet the requirements for breathing air according to EN 12021.

NOTICE

Do not use the ChargAir system for normal cylinder filling. The ChargAir system is intended for emergency use only.

- The charging connector is a G5/8 connector as per EN 144-2:1999.
- Refer also to the instructions supplied with the cylinder and the charging unit for recharging the cylinder.
- Only charge compressed-air cylinders which:
  - Conform to national standards.
  - Feature the original manufacturer's test date and test mark.
  - Have not exceeded the test date indicated on the cylinder by the last testing station.
  - Are not damaged.
- Dräger recommend a charge rate of 27 bar/minute (rapid charging will increase the temperature resulting in an incomplete charge).
- To prevent over charging of the cylinder, Dräger recommend using a pressure-limiting device on the charging compressor.

1. Remove the cylinder (see Section 4.2.3).
2. Connect the charging adaptor to the cylinder valve (Fig 8).
3. If the cylinder is still pressurized, approximately match the charging line pressure to the cylinder pressure.
4. Remove the locking clip from the cylinder valve (Fig 6).
5. Recharge the cylinder to 200 bar (the pointer of the cylinder pressure gauge inside the green area).
   - Compression of cylinder air can cause a small temperature increase during refilling, resulting in an incomplete charge. If necessary, top-up the cylinder when it cools.
6. When the cylinder is fully charged, refit the locking clip: press the button down against the spring and insert the locking clip into the slot (Fig 9), ensuring that the button remains in the locked (down) position.
7. Vent pressure from the charging hose and then remove the charging adaptor from the valve.
8. Refit the cylinder (see Section 4.2.2).

4.2.6 Leak test

WARNING

If breathing apparatus fails to meet any of the standards or parameters described in the leak test, or if an immediate leak is evident, there is a system fault. Report the fault to trained service personnel or contact Dräger. Do not use the breathing apparatus until the fault condition is rectified.

1. Ensure that the pointer of the cylinder pressure gauge is inside the green area.
2. Press the reset button (Fig 2, Item 1) to ensure the lung demand valve is switched off.
3. Remove the locking clip from the cylinder valve (Fig 6) to pressurize the system and then refit the locking clip: press the button down against the spring and insert the locking clip into the slot (Fig 9), ensuring that the button remains in the locked (down) position.
   - There should be no audible leak. If there is any leak, investigate and repair the leak before use. If necessary, use a soapy solution to locate the leak.
4. Press the front button (Fig 2, Item 2). A small amount of air will vent from the system.
5. Press the reset button (Fig 2, Item 1) to switch off the air flow through the lung demand valve.

4.3 Cleaning and disinfecting

CAUTION

Do not exceed 60 °C for drying, and remove components from the drying facility immediately when dry. Drying time in a heated dryer must not exceed 30 minutes.

Do not immerse pneumatic or electronic components in cleaning solutions or water.

If water is trapped and then freezes inside the pneumatic system of the breathing apparatus (such as the lung demand valve), operation will be impaired. Prevent any liquid from entering, and thoroughly dry the breathing apparatus after cleaning to prevent this from occurring.

Do not lubricate or allow oil, grease or other contaminants to contact ChargAir fittings or hoses.

For information about suitable cleaning and disinfecting agents and their specifications refer to document 9100081 on www.draeger.com/IFU.

Refer also to the Instructions for Use for the lung demand valve, face mask and other associated equipment.

- Use only clean lint-free cloths

1. Clean the breathing apparatus manually using a cloth moistened with cleaning solution to remove excess dirt.
2. Apply disinfecting solution to all internal and external surfaces.
3. Rinse all components thoroughly with clean water to remove all cleaning and disinfecting agents.
4. Dry all components using a dry cloth, in a heated dryer or in air.
5. Contact service personnel or Dräger if disassembly of pneumatic or electronic components is required.

5 Troubleshooting

There is no user troubleshooting on the PAS Colt PPH. Contact Dräger or trained service personnel to report any issues with the product.

6 Storage

Dräger recommend that the PAS Colt PPH is stored in a cool dry environment, in a location where it is not subject to wear or damage due to abrasion. Note also the following:

- Extend the shoulder strap and the waist belt.
- Route rubber hoses in such a way that the bend radius is not too acute and the hose is not stretched, compressed or twisted.
- Fix the apparatus securely to any raised mounting point to prevent it from falling.

7 Disposal

When required, dispose of the PAS Colt PPH in accordance with national or local regulations for waste disposal.

8 Order list

Description	Quantity	Order code
Dow Corning® Molykote® 111	100 grams	3331247

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