For your safety

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 not lost or damaged.
- Only 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 certified original 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.

2. Definitions of alert icons

Alert icons are used in this document to provide 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

1.2 Product overview

This variant of the Dräger PAS Colt Series provides respiratory protection for escaping from a contaminated environment using breathing air from the air cylinder.

The equipment is available as a 10 minute, 15 minute or 20 minute version. These are the nominal escape durations, which are determined by the capacity (volume and pressure rating) of the air cylinder selected. The actual escape duration is also dependent on the rate at which the wearer uses air from the cylinder (the breathing rate).

The features of the equipment are:
- The carrying system is a bandolier shoulder harness and waist belt with a hip mounted cylinder holster.
- The pressure reducer (Fig 1, Item 2) connects directly on to the air cylinder, and reduces the cylinder pressure to the medium pressure required at the lung demand valve (Fig 1, Item 1).
- The Dräger cylinder and lung demand valve are described below.

Optional features:
- The pressure reducer (Fig 1, Item 2) connects directly on to the air cylinder, and reduces the cylinder pressure to the medium pressure required at the lung demand valve (Fig 1, Item 1).
- The Dräger cylinder and lung demand valve are described below.

1.2.1 Air cylinder

Cylinders are available with a 200 bar or 300 bar working pressure rating, and in steel, aluminium or composite materials. The pressure in the air cylinder is shown on a contents indicator on the cylinder. Only air cylinders listed in the Dräger certification are approved for use with the PAS Colt. Contact Dräger for further information.

1.2.2 Lung demand valve (LDV)

A variety of Dräger lung demand valves are available with this equipment, with the coupling (Fig 2, Item 1) selected to match the face mask coupling (see table below).

<table>
<thead>
<tr>
<th>LDV coupling</th>
<th>Face mask coupling</th>
<th>Type (PPE)</th>
<th>Coupling type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A/P</td>
<td>Positive pressure</td>
<td>Push-in – Dräger specific</td>
<td></td>
</tr>
<tr>
<td>AE/P</td>
<td>Positive pressure</td>
<td>Screw-in – M45 x 3 to EN 148-3</td>
<td></td>
</tr>
<tr>
<td>N/RA</td>
<td>Negative pressure</td>
<td>Screw-in – 40 mm round thread to EN 148-1</td>
<td></td>
</tr>
</tbody>
</table>

During use, the lung demand valve activates as the wearer breathes in, thus regulating the breathing air supply into the face mask in response to the breathing rate of the wearer.

- Positive-pressure systems: when the lung demand valve is activated, the internal valve remains open until closed by the user. Positive-pressure valves have a reset switch (Fig 2, Item 2) that closes the valve when the product is not in use. Pressure in the valve reduces the intrauterine pressure valve to switch off the air flow through the lung demand valve.
- Negative-pressure systems: when the lung demand valve is activated, the internal valve remains open until closed by the user. Positive-pressure valves have a reset switch (Fig 2, Item 2) that closes the valve when the product is not in use. Pressure in the valve reduces the intrauterine pressure valve to switch off the air flow through the lung demand valve.

2.2.2 Intended use

When this product is used with an approved face mask, air cylinder and lung demand valve, it provides the wearer with respiratory protection when escaping from contaminated or oxygen-deficient conditions. It is intended for use in applications where a high level of respiratory protection is required. The equipment is intended to be used only for escape applications.

3 Use

**WARNING**

This unit is required to allow the wearer to escape to a safe area. The equipment is intended to be used in applications where a high level of respiratory protection is required. The equipment is intended to be used only for escape applications.

2.1.2 Lung demand valve (LDV)

During use, the lung demand valve activates automatically as the wearer inhales. When selecting the type and duration of escape equipment it is essential to consider escape routes and potential hazards.

The cylinder pressure ensures that the requirements for breathing air according to EN 12021.

3.1 Preparation for use

3.1.1 Visual inspection

Carry out a visual inspection, checking that the full breathing apparatus includes all appropriate components and accessories. Check that all components are clean and undamaged, paying particular attention to pneumatic components, hoses and connectors, Tygon hose, neoprene seals and rubber. Any damage that may affect the operation of the breathing apparatus include impact, abrasion, cutting, corrosion and discoloration. Report damage to service personnel and do not use the apparatus until faults are rectified.

3.1.2 Fitting the cylinder

**CAUTION**

If the PAS Colt is a 300 bar unit fitted with ChargAir, the pressure reducer will not accept a 200 bar cylinder. Do not attempt to connect a cylinder only genuine Dräger spare parts and accessories, or the proper functioning of the product may be impaired.

1. Ensure that the cylinder is fully charged, with the pointer of the cylinder pressure indicator inside the green area.
2. Open the cylinder valve slowly, but fully, to pressurize the system, and then close the cylinder valve.
3. Check for audible leaks. If there is any leak, investigate and repair the leak before use (see Section 4). If necessary, use a soapy solution to locate the leak.
4. Press the front button (Fig 5) (fold back the rubber cover to press the button and then immediately refill the rubber cover) to ventilate the system.
5. Positive-pressure systems: press the reset button (Fig 2, Item 2) to switch off the valve.

3.1.4 Putting on the PAS Colt (ready position)

See also Fig 1 which shows the PAS Colt worn in the ready position.

1. Ensure that the pointer of the cylinder pressure indicator is inside the green area.
2. Open the waist belt buckle and fully extend the waist belt 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 pull the shoulder strap tight.
5. Grip the cylinder valve with the left hand and lift the belt with both hands (Fig 2, Item 1) to allow the wearer to escape.
6. Check that the face mask port is connected to the face mask, and that the face mask is secure and comfortable on the face. Pull down to adjust the mouthstrap.
7. Check that the face mask port and the lung demand valve coupling are connected to the face mask, on to the face mask with the face mask port and the coupling in position. Check the attachment by gently attempting to pull them apart.
8. Loose coupling: screw into the port of the face mask and tighten hand tight. When the lung demand valve is fitted to the coupling, the connector can screw to allow for head and body movement of the wearer.
9. Pull the neck strap stud into the hole in the strap head and then insert the neck strap stud into the hole in the strap head.
10. Place the hose on to the hose port over the head and the head harness.

3.2 During use

3.2.1 Putting on the face mask

**WARNING**

Correct fit of the face mask can only be achieved if the complete mask seal makes contact with skin. Head, hair, facial hair (including beard stubble and mutton chops), and eye glasses should not interfere with the mask seal and are not permitted in the space. The wearer must conform to the seating requirements of the face mask. The face mask seal is clean and undamaged, paying particular attention to pneumatic components, hoses and connectors, Tygon hose, neoprene seals and rubber. Any damage that may affect the operation of the breathing apparatus include impact, abrasion, cutting, corrosion and discoloration. Report damage to service personnel and do not use the apparatus until faults are rectified.

**NOTICE**

Refer also to the face mask Instructions for Use.

1. Positive-pressure systems: press the reset button (Fig 2, Item 2) to switch off the valve.
2. Open the cylinder valve slowly, but fully, to pressurize the system. Hold the metal strap (Fig 7, Item 7) and then pull the rubber strap (Fig 7, Item 2) and snap the strap head in the head harness Centre plate on back of the head.
3. Spread the head strap (Fig 6). Place the chin into the chin cup of the head harness, and then pull the rubber strap (Fig 7, Item 2) and snap the strap head in the head harness Centre plate on back of the head.
4. Referring to Figure 7, pull the inner strap (lower 1) and then upper straps (2) evenly towards the back of the head. If necessary, tighten the centre strap (Fig 6).
5. Breathe normally and immediately leave the hazardous area by the shortest and safest escape route.
6. The wearer must be in a safe area before the air cylinder is empty. When the face mask is removed, take the lung demand valve from the face mask if necessary and continue to breathe normally.
3.3 Drop-down cylinder holster (optional accessory)

- To release the drop-down cylinder holder:
  a. Hold the cylinder valve with the left hand and, with the right hand, press and hold the red button to open the locking mechanism (Fig. 8).
  b. Left the cylinder and holder clear of the locking mechanism and then release the red button (Fig. 9).
  c. Lower the cylinder unit until it is supported by the harness straps (Fig. 10). The holster is held by two harness straps, one fixed and one adjustable.
  d. Hold the cylinder valve to move the cylinder and holster as required.

- To reconnect the drop-down cylinder holster, align and press the roller on the holster into the locking mechanism.

3.4 After use

**WARNING**
Do not remove the equipment until in safe area, clear of hazard.

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

1. Loosen the face mask straps. Position the mask, as the seal between the mask and the face is broken, press the reset button (Fig. 2, Item 2) to switch off the valve.
2. Remove the face mask and fully extend all of the straps of the head harness.
3. Fully close the cylinder valve.
4. Press the front button (Fig. 5) (fold back the rubber cover to press the button and then immediately refit the rubber cover) to fully vent the system.
5. Remove the lung demand valve from the face mask (Fig. 11 – push-in coupling shown).
6. Open the waist belt buckle, lift the shoulder strap buckle to loosen the shoulder strap.

Carry out the after use maintenance tasks in the maintenance table (see Section 5.1).

4 Troubleshooting

The troubleshooting guide shows fault diagnosis and repair information applicable to breathing apparatus users. Further troubleshooting and repair information is available in Instructions for Use supplied with associated equipment (e.g. face mask and cylinder).

Contact service personnel or Dräger when the remedial information indicates a service task, or if the symptom remains after all remedial actions have been attempted.

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Fault</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-pressure air leak or failed leak test</td>
<td>Low pressure in the cylinder</td>
<td>Discard, clean and reconnect the connector and retest</td>
</tr>
<tr>
<td></td>
<td>Faulty hose or component</td>
<td>Replace the hose and any component</td>
</tr>
<tr>
<td>Air leak from medium-pressure hose connection at the pressure reducer (safety relief valve)</td>
<td>Faulty O-ring, retainer, spring or pressure reducer</td>
<td>Service task</td>
</tr>
<tr>
<td>High or low medium-pressure</td>
<td>Pressure Reducer fault</td>
<td>Service task</td>
</tr>
</tbody>
</table>

5 Maintenance

5.1 Maintenance table

Service and test the breathing apparatus, including out-of-use apparatus, in accordance with the maintenance table. Record all service details and test results. Refer also to the Instructions for Use for the lung demand valve, face mask and other associated equipment.

Additional inspection and testing may be required in the country of use to ensure compliance with national regulations.

Daily check – If the PAS Colt is held in a ready-for-use condition, check daily that the pressure of the cylinder pressure indicator is inside the green area. Charge the cylinder if it is in the red area (see Section 5.2.2).

5.2 Air cylinder charging

**WARNING**
High-pressure air release may cause injury to the user or other personnel near the breathing apparatus. Close the cylinder valve and fully vent the system before attempting to disconnect the air cylinder.

1. Close the cylinder valve and press the front button (Fig. 5) (fold back the rubber cover to press the button and then immediately refit the rubber cover) to fully vent the system.
2. Disconnect the cylinder valve from the pressure reducer.
3. Carefully remove the cylinder from the hoster. To prevent damage, ensure that the hand wheel of the pressure reducer remains clear of the cylinder.

5.3 Cleaning and disinfecting

**CAUTION**
Cleaning agents and disinfectants listed below are not manufactured by Dräger and have been reviewed only for compatibility when used to clean or disinfect the subject Dräger products. Read and comply with all safety precautions provided by the manufacturers of such agents and disinfectants.

Do not exceed 30 °C for washing, disinfecting and rinsing solutions. Do not exceed 65 °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, this from occurring.

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

5.2.1 Removing the cylinder

**WARNING**
High-pressure air release may cause injury to the user or other personnel near the breathing apparatus.

- 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.

- To prevent ingress of moisture into the cylinder, ensure that the cylinder valve remains closed until connected to the charging unit.

- Charge to the rated working pressure of the cylinder. Dräger recommend a charge rate of 27 bar/minute (rapid charging will increase the temperature resulting in an incomplete charge).

- To prevent overcharging of the cylinder, Dräger recommend using a pressure-limiting device on the charging compressor.

5.2.2 Air cylinder charging

**WARNING**
Air quality for compressed-air cylinders must conform to requirements of EN 12021.

- 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.

- To prevent ingress of moisture into the cylinder, ensure that the cylinder valve remains closed until connected to the charging unit.

- Charge to the rated working pressure of the cylinder. Dräger recommend a charge rate of 27 bar/minute (rapid charging will increase the temperature resulting in an incomplete charge).

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Cleaning agents and disinfectants listed below are not manufactured by Dräger and have been reviewed only for compatibility when used to clean or disinfect the subject Dräger products. Read and comply with all safety precautions provided by the manufacturers of such agents and disinfectants.

- 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 exceed 30 °C for washing, disinfecting and rinsing solutions. Do not exceed 65 °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, this from occurring.

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

Cleaning and disinfecting materials:

- Cleaning agents – Selspot (concentration: 0.5 % – 1 %) or Safetywash (concentration: 0.7 %)
- Disinfecting agents – Invidin Rapid (concentration: 1.5 %) or Safetywash (concentration: 20 %; meets the requirements of EN 1276:2000 as a barrier disinfectant)
- Use only clean lint-free clothes

6 Storage

6.1 Storage preparation

- Extend the shoulder straps, waist belt and the straps of the face mask.
- For storage, place the face mask in a protective bag (contact Dräger for supply of a suitable bag).
- Route rubber hoses in such a way that the bend radius is not too acute and the hose is not stretched, compressed or twisted.

6.2 Storage conditions

- Store the equipment between -15 °C and +25 °C. Ensure that the environment is dry, free from dust and dirt, and does not subject the equipment to wear or damage due to abrasion. Do not store the equipment in direct sunlight.
- Fix the breathing apparatus securely to any raised mounting point to prevent it from falling.

7 Disposal

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

8 Technical data

High-pressure connector: 200 bar or 300 bar, standard G5/8” as per EN 144-2.