Chemical Protective Suits
Instructions for Use
AlphaTec® MANUAL PRESSURE TEST KIT
Contents of AlphaTec® Manual Pressure Test Kit (487 090 078):
1) Face plate for non-encapsulating/type T suits 
2) Inflation adapter for encapsulating/type CV/VP1 suits 
3) Rubber sealing plugs for TRELLCHEM® Exhalation valves 
4) Sealing plugs for AlphaTec® Exhalation valves 
5) AlphaTec® Pressure test adapter (AlphaTec® adapter) 
6) Manometer/Pressure gauge 
7) Timer 
8) Tool for TRELLCHEM® Exhalation valve
2. Suits with AlphaTec® Exhalation Valves

The table below shows which components, and how many of each component, are required to perform a pressure test on a gas-tight suit which is equipped with AlphaTec® Exhalation valves:

<table>
<thead>
<tr>
<th>TEST COMPONENT</th>
<th>SUIT TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CV/VP1</td>
</tr>
<tr>
<td>Sealing plug</td>
<td>1</td>
</tr>
<tr>
<td>Retaining collar*</td>
<td>2</td>
</tr>
<tr>
<td>AlphaTec® adapter*</td>
<td>1</td>
</tr>
<tr>
<td>Inflation adapter</td>
<td>1</td>
</tr>
<tr>
<td>Face plate</td>
<td>-</td>
</tr>
</tbody>
</table>

* Each sealing plug is delivered with a retaining collar.
* Each AlphaTec® adapter is delivered with a retaining collar.

Sealing plug  Retaining collar  AlphaTec® adapter  Inflation adapter
Step 1: Connect the inflation adapter to the AlphaTec® adapter

Applies to: Type CV/VP1, T with attached mask and Freeflow suits

1) Parts to start with: Inflation adapter (grey).
2) Unscrew the plate and nut on the Inflation valve.
3) Place the retaining collar over the AlphaTec® adapter and screw it onto the inflation adapter.

Step 2: Fit the AlphaTec® adapter on the Exhalation valve

Applies to: Type CV/VP1, T with attached mask and Freeflow suits

1) To remove outer valve cover, first rotate cover clockwise so the cover lug is 6-8 mm past the valve body stop.
2) Carefully insert a thin blade (do not use a knife) between the cover lug and the body stop. Then turn the valve cover anti-clockwise and remove.
3) Carefully remove the membrane/diaphragm.
4) Push the AlphaTec® adapter (black), into the valve.
5) Tighten the retaining collar.
**Step 3: Plug/seal off Exhalation valve/s**

**Applies to: Type CV/VP1, T and Freeflow suits**

Now, plug the remaining exhalation valves (1 pce in type CV/VP1/T suits and 3 pcs in type Freeflow suits).

1) To remove outer valve cover, first rotate cover clockwise so the cover lug is 6-8 mm past the valve body stop.
2) Carefully insert a thin blade (do not use a knife) between the cover lug and the body stop. Then turn the valve cover anti-clockwise and remove.
3) Insert the sealing plug and push it in place.
4) Place the retaining collar over the sealing plug and tighten clockwise.

**Step 4: Continue as follows**

Type CV/VP1/Freeflow suits: Go to page 11 (EU) or 13 (US)
Type T suits: Go to page 9
Type T with attached mask: Go to page 10
3. Suits with TRELLCHEM® Exhalation Valves

The table below shows which components, and how many of each component, are required to perform a pressure test on a gas-tight suit which is equipped with TRELLCHEM® Exhalation valves:

<table>
<thead>
<tr>
<th>TEST COMPONENT</th>
<th>CV/VP1</th>
<th>T</th>
<th>T with attached mask</th>
<th>FREEFLOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rubber plug</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>Inflation adapter</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Face plate</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Step 1:** Connect the inflation adapter to the exhalation valve

*Applies to: Type CV/VP1, T with attached mask and Freeflow suits*

1) Open the suit. Take out one exhalation valve and instead mount the inflation adapter. 
   *NOTE: The washer shall be on the inside.*
**Step 2:** Plug/seal off Exhalation valve/s

**Applies to:** Type CV/VP1, T and Freeflow suits

Now, plug the remaining exhalation valves (1 pce in type CV/VP1/T and 3 pcs in type Freeflow suits).

1) Tighten the other exhalation valve from inside and fit the rubber sealing plug.

**Step 3:** Continue as follows

Type CV/VP1/Freeflow suits: Go to page 11 (EU) or 13 (US)
Type T suits: Go to page 9
Type T with attached mask: Go to page 10
4. Type T: Mounting the face plate

1) Mount the face place. First insert the plate into the suit and place it under the face seal.
2) Arrange the face seal edge so it is outside the screws and NOT in contact with the screws (this would risk damage the face seal when sealing)!
3) Put the ring on top and tighten the wing nuts hard.
4) Continue with the pressure test: Go to page 11 (EU) or 13 (US)
5. Type T with attached mask: Plugging the mask

Pictures are showing attached Dräger Panorama Nova mask, but the procedure is similar also with other brands.

1) Request mask plugs from the mask supplier.
2) First attach the lower plug, and then the upper plug.
3) Continue with the pressure test: Go to page 11 (EU) or 13 (US)
6. Pressure test according to European standard

**Test method:** ISO 17491-1 (replaces EN 464)

**Preparation:**
- Check that both O-rings are in place inside the Bayonet rings.
- Check that the gloves are not obviously damaged/have holes.
- If the suit is fitted with Regulating valve/Passthrough, set it on “0” and put on the outside protective cap (see picture below).

1) Connect the manometer to the quick connector on the inflation adapter (type CV/VP1/T with attached mask/Freeflow) or the face plate (type T).

2) Inflate the suit with an air pistol through the valve on the inflation adapter (type CV/VP1/T with attached mask/Freeflow) or through the valve on the face plate (type T) to a pressure of 1750 Pa/17.5 mbar/178 mm water column/7.0 inch water gauge.
3) Lower the pressure to 1700 Pa/17.0 mbar/173 mm water column/6.8 inch water gauge using the valve on the adapter/face plate. This is the pre-test expansion pressure.
4) Maintain this pressure for 10 minutes, adding air if necessary.
5) Adjust the pressure to 1650 Pa/16.5 mbar/168 mm water column/6.6 inch water gauge. This is the test pressure.
6) Set and start the timer and wait for 6 minutes.

**Do not touch the suit during this period of time.**

7) Note the pressure after 6 minutes. If this pressure is 1350 Pa/13.5 mbar/138 mm water column/5.4 inch water gauge or more, the suit has passed the test. Note the final pressure in the suit log.
8) After the pressure test is completed, disconnect the manometer from the inflation adapter or face plate. Remove the inflation adapter or face plate and remove the sealing plug from the other exhalation valve.
9) Ensure that the removed diaphragm is clean and free from dust. To re-fit, push diaphragm centre over the retaining pin in the valve body.
10) Re-fit the exhalation valve covers taking care not to cross thread. Screw the valve cover clockwise onto the valve body, turning the cover until there has been 3 clicks on the cover lug and valve body stop.

**If the suit does not pass this test, the suit shall be removed from service and, if possible, repaired.**
7. Pressure test according to American standard

Test method: ASTM F 1052

Preparation:
• Check that both O-rings are in place inside the Bayonet rings.
• Check that the gloves are not obviously damaged/have holes.
• If the suit is fitted with Regulating valve/Passthrough, set it on “0” and put on the outside protective cap (see picture below).

1) Connect the manometer to the quick connector on the inflation adapter (type CV/VP1/T with attached mask/Freeflow) or the face plate (type T).

2) Inflate the suit with an air pistol through the valve on the inflation adapter (type CV/VP1/T with attached mask/Freeflow) or through the valve on the face plate (type T) to a pressure of 5.0 inch/125 mm water gauge (1245 Pa/12.5 mbar). This is the pre-test expansion pressure.
3) Maintain this pressure for at least 1 minute in order to fill out wrinkles and allow the material to settle. Extend the time if air temperatures inside and outside the suit are not equal.

4) Adjust the pressure to 4 inch/100 mm water gauge (996 Pa/9.96 mbar). This is the test pressure.

5) Set and start the timer and wait for 4 minutes.

   Do not touch the suit during the test period of time.

5) Note the pressure after 4 minutes. If this pressure is 3.1 inch/80 mm water gauge (797 Pa/7.97 mbar) or more, the suit has passed the test.

6) Note the final pressure in the suit log.

7) After the pressure test is completed, disconnect the manometer from the inflation adapter or face plate. Remove the inflation adapter or face plate and remove the sealing plug from the other exhalation valve.

8) Ensure that the removed diaphragm is clean and free from dust. To re-fit, push diaphragm centre over the retaining pin in the valve body.

9) Re-fit the exhalation valve covers taking care not to cross thread. Screw the valve cover clockwise onto the valve body, turning the cover until there has been 3 clicks on the cover lug and valve body stop.

   If the suit does not pass this test, the suit shall be removed from service and, if possible, repaired.
8. Pressure gauge/Manometer

8.1 Handling

• Handle the pressure gauge carefully.
• Store in the AlphaTec® Pressure Test-kit box at all times when not in use.
• Store at normal room temperature and never exceed the temperature range -20 to +60 °C.
• Protect the pressure gauge from moist and dust.
• Do not subject the pressure gauge to negative pressures/suction or pressures more than the maximum reading on the dial.
• If physically damaged or the zero point is not possible to set, the pressure gauge should be replaced.

8.2 Calibration

Before and after use, the zero point of the pressure gauge should be checked visually, i.e. the needle should indicate zero when not subjected to any pressure (disconnected).

If necessary, the zero point may be adjusted by means of the zero-screw on the dial (see pictures below). This must, of course, be done with the pressure gauge disconnected. Acceptable deviation from the zero point is marked on the dial “CL.1.6”, meaning the accuracy is 1.6 % (DIN 16005).

The pressure gauge may be calibrated by the user against a calibrated pressure gauge or a water column gauge. It would be advisable and good practice to perform such a calibration once a year.

Carefully take off the little white plug. Use a small flat screw driver to access & adjust the zero-screw +/-

The pressure test of a suit is a relative measurement and minor variations in the specific pressure, at which it is performed, will not affect the test result.
### 9. List of spare parts & accessories

<table>
<thead>
<tr>
<th>Description &amp; Name</th>
<th>Article no</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Test-kits:</strong></td>
<td></td>
</tr>
<tr>
<td>Test-kit All (CV/VP1/Freeflow/T)</td>
<td>487 090 078</td>
</tr>
<tr>
<td>Test-kit type CV, VP1, TE</td>
<td>487 090 077</td>
</tr>
<tr>
<td>Test-kit type T</td>
<td>487 090 076</td>
</tr>
<tr>
<td><strong>Upgrading kits:</strong></td>
<td></td>
</tr>
<tr>
<td>Upgrading kit for Test-kit All (type CV/VP1/Freeflow/T)</td>
<td>487 090 195</td>
</tr>
<tr>
<td>Upgrading kit for Test-kit type CV/VP1</td>
<td>487 090 194</td>
</tr>
<tr>
<td>Upgrading kit for Test-kit type T</td>
<td>487 090 193</td>
</tr>
<tr>
<td><strong>Spare parts for the Test-kit:</strong></td>
<td></td>
</tr>
<tr>
<td>Timer</td>
<td>K71 900 200</td>
</tr>
<tr>
<td>Cuff clip (for old Trellring system)*</td>
<td>K73 300 700</td>
</tr>
<tr>
<td>Manometer</td>
<td>K71 800 100</td>
</tr>
<tr>
<td>Manometer incl. hose and couplings</td>
<td>487 090 313</td>
</tr>
<tr>
<td>Rubber sealing plug for TRELLCHEM® Exhalation valve</td>
<td>K72 506 450</td>
</tr>
<tr>
<td>Sealing plug for AlphaTec® Exhalation valve</td>
<td>487 090 191</td>
</tr>
<tr>
<td>Face plate with inflation valve and nipple for type T suits</td>
<td>487 090 198</td>
</tr>
<tr>
<td>Inflation adapter for suits type CV/VP1/Freeflow (can be used on its own only on suits with TRELLCHEM® Exhalation valve)</td>
<td>487 090 172</td>
</tr>
<tr>
<td>AlphaTec® Pressure Test Adapter (for use with the inflation adapter, when testing suits with AlphaTec® Exhalation valve)</td>
<td>487 090 192</td>
</tr>
</tbody>
</table>

* Cuff clips are no longer part of the AlphaTec™ Manual Pressure Test-kit