Installation and assembly guide 2018

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OPERATING CONDITIONS

• AIRnet pipes and fittings are designed to convey compressed air and vacuum. The system can also be used for nitrogen, helium, argon, neon, xenon and krypton.

• AIRnet pipes and fittings must only be used within the pressure and temperature specifications referred to in the AIRnet Component List.

• AIRnet fittings are sensitive to direct UV radiation. In case of direct exposure, shield the fittings. (AIRnet pipes offer excellent resistance to UV radiation.)

• AIRnet pipes and fittings should be protected against rain, snow, and guano.

• AIRnet pipes and fittings must be appropriately protected against violent impacts.

• AIRnet pipes and fittings are not suitable for direct contact with soil.

• AIRnet pipes and fittings should not be used as support for electrical equipment or earth conductors.

• AIRnet pipes should never be connected directly to a source of vibrations (use hoses instead).

• Ensure accessibility of the AIRnet system for possible future expansion or maintenance.

• Pressure relief valves must be installed where needed to ensure that the system working pressure cannot exceed the maximum working pressure of the AIRnet system.

SAFETY INSTRUCTIONS

• Installation, adjustments and repair work of an AIRnet system must be performed by authorized trained personnel.

• Installers must use the necessary protection means (PPMs). When working at heights, use a harness for personal protection, and ensure that tools are securely fastened to prevent them from falling.

• Installers must comply to all local safety requirements related to the application(s) in scope. Special care must always be taken to prevent suffocation risks when working with other gases than air.

• Before any installation, adjustment, repair work or other non-routine checks, relieve the AIRnet system of pressure and effectively isolate the system from all sources of pressure.

• Only genuine AIRnet parts should be used when installing, adjusting or repairing an AIRnet system.

• All plugs and caps must be removed before installing the AIRnet pipes.

• Check the surface of the AIRnet pipes before installing. There should be no relevant scratches, abrasions, dents etc.

• Use only solvents or chemicals which do not damage the materials of AIRnet.

• Before using the AIRnet system, installers must ensure that all necessary test controls and applicable rules for the specific installation are complied with.

• At initial start up of the AIRnet system, apply a test pressure of 1.5 bar to identify leakage or imperfect joints. After performing an inspection, increase the pressure gradually and constantly (max. 1 bar every 30 seconds) and perform a second inspection for leakages or imperfect joints at the final pressure.

AIRNET INSTALLATIONS
IN EXPLOSIVE ENVIRONMENTS

• AIRnet fittings are non-conductive and must be bonded with conductivity strips and conductivity straps (except the D158 / 6” equal socket and the new D100 / 4” equal socket).

• AIRnet installations in explosive environments must always be earthed.

• AIRnet bonding and the earthing must be checked at frequent intervals to secure that the system cannot be electrically charged.

• Cutting, deburring and assembly of AIRnet pipes may create sparks. Necessary precautions in explosive atmospheres must be taken.
Long straight pipes will expand or contract due to temperature variations. To compensate for this effect, expansion loops are required. The number of expansion loops depends on the total length of the straight line and the maximum temperature variation. An expansion loop is a U-shaped construction that compensates the variation in length.

The below table clarifies the maximum possible straight distance vs. the temperature variation. When the length of the straight line exceeds the maximum, expansion loops are required to compensate for the variation in length.

<table>
<thead>
<tr>
<th>Δt</th>
<th>5°C / 9°F</th>
<th>10°C / 18°F</th>
<th>20°C / 36°F</th>
<th>30°C / 54°F</th>
<th>40°C / 72°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>1.5 m / 4.9 ft</td>
<td>2 m / 6.6 ft</td>
<td>1 m / 3.3 ft</td>
<td>0.75 m / 2.5 ft</td>
<td>1 m / 3.3 ft</td>
</tr>
<tr>
<td>Ø20 mm / ¾&quot;</td>
<td>Ø25 mm / 1&quot;</td>
<td>Ø30 mm / 1⅜&quot;</td>
<td>Ø40 mm / 1⅜&quot;</td>
<td>Ø50 mm / 2&quot;</td>
<td>Ø63 mm / 2½&quot;</td>
</tr>
<tr>
<td>Maximum distance between two expansion joints</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5°C / 9°F</td>
<td>211 m / 692 ft</td>
<td>159 m / 522 ft</td>
<td>107 m / 351 ft</td>
<td>80 m / 262 ft</td>
<td>64 m / 210 ft</td>
</tr>
<tr>
<td>10°C / 18°F</td>
<td>168 m / 551 ft</td>
<td>127 m / 417 ft</td>
<td>95 m / 312 ft</td>
<td>64 m / 210 ft</td>
<td>52 m / 171 ft</td>
</tr>
<tr>
<td>20°C / 36°F</td>
<td>187 m / 614 ft</td>
<td>141 m / 463 ft</td>
<td>95 m / 312 ft</td>
<td>71 m / 233 ft</td>
<td>57 m / 187 ft</td>
</tr>
<tr>
<td>30°C / 54°F</td>
<td>150 m / 492 ft</td>
<td>113 m / 371 ft</td>
<td>76 m / 249 ft</td>
<td>57 m / 187 ft</td>
<td>45 m / 148 ft</td>
</tr>
<tr>
<td>40°C / 72°F</td>
<td>119 m / 390 ft</td>
<td>90 m / 295 ft</td>
<td>60 m / 197 ft</td>
<td>45 m / 148 ft</td>
<td>36 m / 118 ft</td>
</tr>
</tbody>
</table>

When using flexibles instead of fixed pipes as expansion loops, any length of flexible can be used.
Diameters 20 - 50 mm / 3/4”- 2”
(PF Series)

1. **MEASURE**

   Length \( L = l + (2 \times S) \)

<table>
<thead>
<tr>
<th>Ø</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 mm / ¾”</td>
<td>39 mm / 1½”</td>
</tr>
<tr>
<td>25 mm / 1”</td>
<td>44 mm / 1¾”</td>
</tr>
<tr>
<td>40 mm / 1½”</td>
<td>63 mm / 2¾”</td>
</tr>
<tr>
<td>50 mm / 2”</td>
<td>78 mm / 3¾”</td>
</tr>
</tbody>
</table>

2. **CUT**

   OR

   2810 0400 00
   110/120V 2810 0640 80
   220/230V 2810 0540 80

3. **CHECK**

   ≤10°

4. **DEBURR**

   OR

   Ø 20-50 mm 2810 0141 00
   Heavy Duty 2810 0641 00
   Light Duty 2810 0042 00

5. **MARK**

   ALL 2811 0229 80

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Diameters 20 - 50 mm / ³/₄”- 2”
(PF Series)

6 LUBRICATE

7 INSERT

8 CHECK

9 CHECK MARKERS

(OPTIONAL: LOOSEN)

(OPTIONAL: TIGHTEN)

Ø20  2811 1028 00
Ø25  2811 2028 00
Ø30  2811 3028 00
Ø40  2811 4028 00
Ø50  2811 5028 00

ALL  2810 0148 00

Diameters 20 - 50 mm  /  ³/₄”- 2”
(PF Series)
Diameters 63 - 80 mm / 2 1/2"- 3"
(Black Series)

1. MEASURE

<table>
<thead>
<tr>
<th>ø</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>63 mm / 2 1/2&quot;</td>
<td>79 mm / 3.11&quot;</td>
</tr>
<tr>
<td>80 mm / 3&quot;</td>
<td>97 mm / 3.82&quot;</td>
</tr>
</tbody>
</table>

Length L = l + (2xS)

2. CUT

3. CHECK

≤10°

4. DEBURR

5. MARK

ALL 2810 0040 00
110/120V 2810 0640 80
110/120V 2810 0040 00
220/230V 2810 0540 80
ALL 2810 0641 00
ALL 2811 0229 80
Diameters 63 - 80 mm / 2 1/2" - 3"
(Black Series)

6 LOOSEN

7 LUBRICATE

8 INSERT

9 CHECK

10 TIGHTEN

11 TIGHTEN

Torque wrench 2811 0028 80
63mm torque head 2811 6128 80
80mm torque head 2811 7128 80
INSTALLATION

Diameter 100 - 158 mm / 4" - 6"

1. **MEASURE**
   
   \[ \text{Length} \, \text{L} = \text{I} + (2 \times \text{S}) \]

<table>
<thead>
<tr>
<th>Ø</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>100 mm / 4&quot;</td>
<td>47 mm / 1\frac{1}{2}&quot;</td>
</tr>
<tr>
<td>158 mm / 6&quot;</td>
<td>55 mm / 2\frac{1}{2}&quot;</td>
</tr>
</tbody>
</table>

2. **CUT**
   
   [Images showing cutting process]

   - 110/120V: 2810 0640 80
   - 220/230V: 2810 0540 80
   - Ø 100-158 mm: 2810 0240 00

3. **CHECK**
   
   ≤10°

4. **DEBURR**
   
   [Images showing deburring process]

   - ALL: 2810 0641 00
   - OR: 2810 0641 00

5. **MARK**
   
   [Images showing marking process]

   - ALL: 2811 0229 80
**INSTALLATION**

**Diameter 100 - 158 mm / 4" - 6"**

6. **LUBRICATE**

7. **INSERT**

8. **CHECK**

9. **TIGHTEN**

OR

10. **CHECK**

Hexagon Socket - D100  4027 1323 08

Hexagon Socket - D158  0462 3601 23

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**ALL**  2810 0148 00
Quickdrop Assembly

1. MOUNT
2. MARK
3. TURN 180°
4. DRILL
   - Ø 25 mm drill bit: 2810 0143 00
   - Ø 40-80 mm drill bit: 2810 0243 00
5. DEBURR
6. TIGHTEN 4 Nm
   - Heavy Duty: 2810 0641 00
   - Light Duty: 2810 0042 00
   - ALL: 2811 0149 00
7. INSERT
8. CHECK

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**INSTALLATION**

**Replace Classic Series with new PF Series**

Diameters 20 - 50 mm / ¾" – 2"

<table>
<thead>
<tr>
<th>Δ</th>
<th>Ø 20 mm</th>
<th>Ø 25 mm</th>
<th>Ø 40 mm</th>
<th>Ø 50 mm</th>
<th>Ø ¾”</th>
<th>Ø 1”</th>
<th>Ø 1½”</th>
<th>Ø 2”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length to be cut off before replacement</td>
<td>21.5 mm</td>
<td>19 mm</td>
<td>38 mm</td>
<td>37.5 mm</td>
<td>⅛”</td>
<td>⅜”</td>
<td>1½”</td>
<td>1½”</td>
</tr>
<tr>
<td></td>
<td>9 mm</td>
<td>14.5 mm</td>
<td>23 mm</td>
<td>32 mm</td>
<td>⅜”</td>
<td>⅜”</td>
<td>⅞”</td>
<td>1¼”</td>
</tr>
<tr>
<td></td>
<td>9 mm</td>
<td>13 mm</td>
<td>28 mm</td>
<td>35 mm</td>
<td>⅜”</td>
<td>⅞”</td>
<td>1⅛”</td>
<td>1¼”</td>
</tr>
<tr>
<td></td>
<td>8 mm</td>
<td>6 mm</td>
<td>23 mm</td>
<td>32 mm</td>
<td>⅛”</td>
<td>⅜”</td>
<td>⅝”</td>
<td>0”</td>
</tr>
<tr>
<td></td>
<td>8 mm</td>
<td>8 mm</td>
<td>9 mm</td>
<td>0 mm</td>
<td>¼”</td>
<td>⅜”</td>
<td>⅝”</td>
<td>1⅝”</td>
</tr>
<tr>
<td></td>
<td>13 mm</td>
<td>20 mm</td>
<td>35 mm</td>
<td>34 mm</td>
<td>½”</td>
<td>⅝”</td>
<td>1⅝”</td>
<td>1⅝”</td>
</tr>
</tbody>
</table>
Replace Classic Series with new Black Series
Diameters 63 – 80 mm / 2½” - 3"

1. [Diagram]

Note: When replacing the Classic Series with the Black Series only a new marking is needed, no cutting of pipes.

Replace old D100 fittings with new D100 fittings
Diameter 100 mm / 4"

1. [Diagram]

Note: When replacing the old D100 fitting with the new D100 fitting, only a new marking is needed, no cutting of pipes.
Pipe Clips Installation
Diameters 20 - 158 mm / ¾” – 6”

**Rule #1:** Every side of a fitting should have minimum 1 pipe clip within a distance of max 0.5 m / 20”

![Diagram of pipe clips installation with rule #1 highlighted]

**Rule #2:** Maximum 2.5 m / 8 ft between 2 pipe clips

![Diagram of pipe clips installation with rule #2 highlighted]
Butterfly Valve Installation
Diameters 100 – 158 mm / 4” – 6”

1. PLACE
2. TURN 90°
3. PLACE BOLTS AND NUTS

4. TIGHTEN BOLTS CROSSWISE
   - D100: 16 Nm / 12 lbs/ft
   - D158: 38 Nm / 28 lbs/ft

5. TURN 90°
Valve Support
Diameters 20 – 50 mm / ¾” - 2”

1. ASSEMBLE

2. CHECK

Note: The butterfly valves for 63 mm and 80 mm are delivered pre-assembled with the flanges.

Diameters 63 – 80 mm / 2½” – 3”

1. ASSEMBLE

2. CHECK

Diameter 100 – 158 mm / 4” – 6”

1. ASSEMBLE

2. CHECK

For more information, visit www.airnet-system.com
Mounting Conductivity Strap

1. PLACE CLAMP
2. CLEAN SPOT TO BARE ALUMINIUM
   - 2.5 CM / 1"
   - 1.5 CM / ¾"
3. PLACE STRAP
4. PLACE COPPER WIRE
5. TIGHTEN
6. TIGHTEN
Mounting Conductivity Strip
PF Series only

1. MARK
2. UNTIGHTEN
3. INSERT
4. ASSEMBLE
5. TIGHTEN
6. CHECK

number of strips
Adapter Union
PF series  Diameters 20 – 50 mm / ¾”– 2”

1. UNSCREW
2. REMOVE
3. O-RING ASSEMBLY
4. BODY ASSEMBLY
5. ADAPTER ASSEMBLY
6. SCREW ON
7. TIGHTEN
8. CHECK

45°
Adapter Union
Black Series  Diameters 63 – 80 mm / 2½” – 3”

1. UNSCREW

2. REMOVE

3. LUBRICATE O-RING

4. BODY ASSEMBLY

5. ADAPTER ASSEMBLY

6. SCREW ON

7. TIGHTEN
AIRnet installation Instructions

Appendix A: ISO 8573-1:2010

AIRnet fulfills the requirements of ISO 8573-1:2010 (1.2:0) provided that:

• A system purge is executed with compressed air after the installation, for at least 24 hours
• A properly sized certified point of use particle filter is used
• Only NSF approved lubricant 2810 0248 00 is used
• The intake air of the compressed air system fulfills the requirements of ISO 8573-1:2010 (1.2:0)

Without a point of use filter installed, AIRnet fulfills ISO 8573-1:2010 (2.2.0).
AIRnet ball valves and butterfly valves are excluded from the certificate.
When applicable, always check the compatibility of AIRnet components with the applied cleaning processes.