

# INSTALLATION AND ASSEMBLY GUIDE 2020

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# OPERATING CONDITIONS & SAFETY INSTRUCTIONS

## 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 system can only be used to convey compressed air, Vacuum & inert gases and the allowed medium can be in direct contact with the final product or process. However, AIRnet system cannot be used for conveying the finished products, for example, chemicals, food products, cement etc.
- 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.

## AIRNET INSTALLATIONS IN EXPLOSIVE ENVIRONMENTS

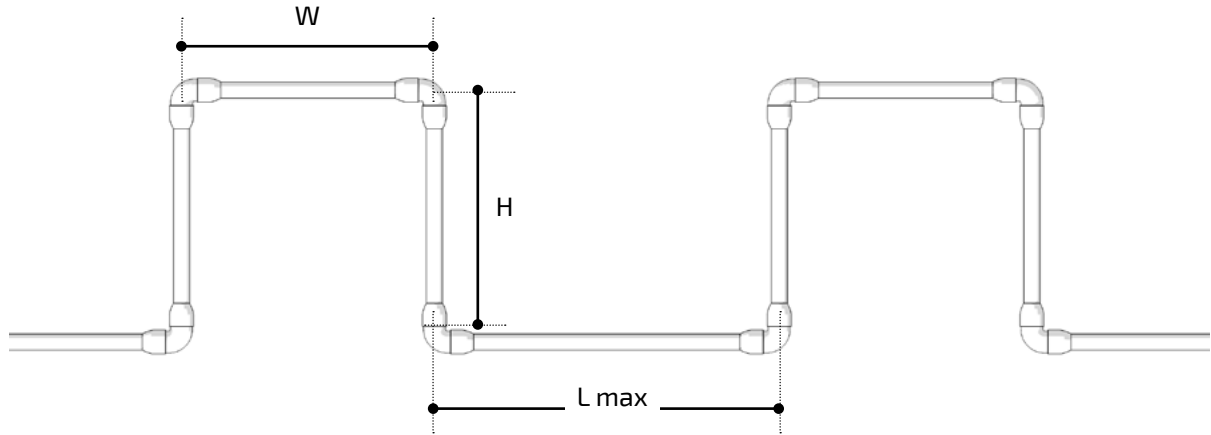
- AIRnet fittings are non-conductive and must be bonded with conductivity strips and conductivity straps (except the D158 / 6" equal socket and the new D100 / 4" equal socket).

- 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.

## 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 5 minutes) and perform a second inspection for leakages or imperfect joints at the final pressure.

## EXPANSION LOOPS



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.

	Ø20 mm / ¾"	Ø25 mm / 1"	Ø40 mm / 1½"	Ø50 mm / 2"	Ø63 mm / 2½"	Ø80 mm / 3"	Ø100 mm / 4"	Ø158 mm / 6"
H	1.5 m / 4.9 ft		2 m / 6.6 ft					
W	0.75 m / 2.5 ft		1 m / 3.3 ft					
Δt	Maximum distance between two expansion joints							
5°C / 9°F	211 m / 692 ft	168 m / 551 ft	187 m / 614 ft	150 m / 492 ft	119 m / 390 ft	94 m / 308 ft	75 m / 247 ft	47 m / 154 ft
10°C / 18°F	159 m / 522 ft	127 m / 417 ft	141 m / 463 ft	113 m / 371 ft	90 m / 295 ft	71 m / 233 ft	57 m / 186 ft	36 m / 118 ft
20°C / 36°F	107 m / 351 ft	85 m / 279 ft	95 m / 312 ft	76 m / 249 ft	60 m / 197 ft	47 m / 154 ft	38 m / 123 ft	24 m / 79 ft
30°C / 54°F	80 m / 262 ft	64 m / 210 ft	71 m / 233 ft	57 m / 187 ft	45 m / 148 ft	36 m / 118 ft	29 m / 94 ft	18 m / 59 ft
40°C / 72°F	64 m / 210 ft	52 m / 171 ft	57 m / 187 ft	45 m / 148 ft	36 m / 118 ft	29 m / 95 ft	23 m / 76 ft	14 m / 46 ft

When using flexibles instead of fixed pipes as expansion loops, any length of flexible can be used.

# INSTALLATION

Diameters 20 - 50 mm / ¾" - 2" (PF Series)

**1 MEASURE**

Ø	S
20 mm / ¾"	39 mm / 1½"
25 mm / 1"	44 mm / 1¾"
40 mm / 1½"	63 mm / 2½"
50 mm / 2"	78 mm / 3 1/16"

**2 CUT** OR

Ø 20-63 mm    2810 0040 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

# INSTALLATION

Diameters 20 - 50 mm / ¾" - 2" (PF Series)

(OPTIONAL: LOOSEN)

360°  
CCW

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

6 LUBRICATE

ALL 2810 0148 00

7 INSERT

8 CHECK

CHECK

(OPTIONAL: TIGHTEN)

360°  
CW

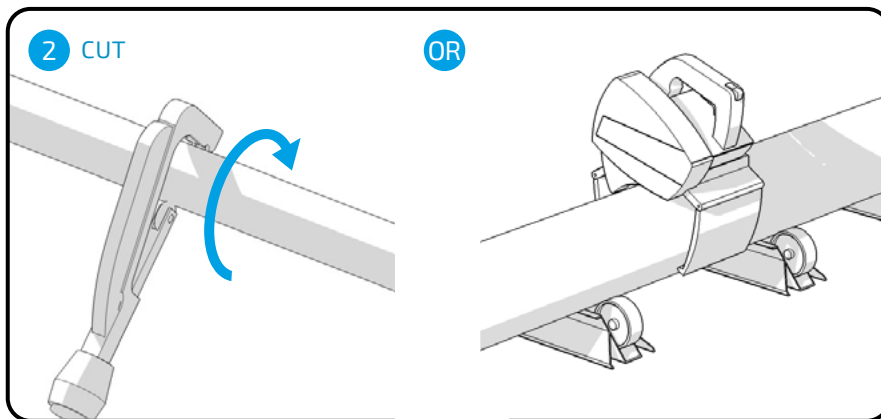
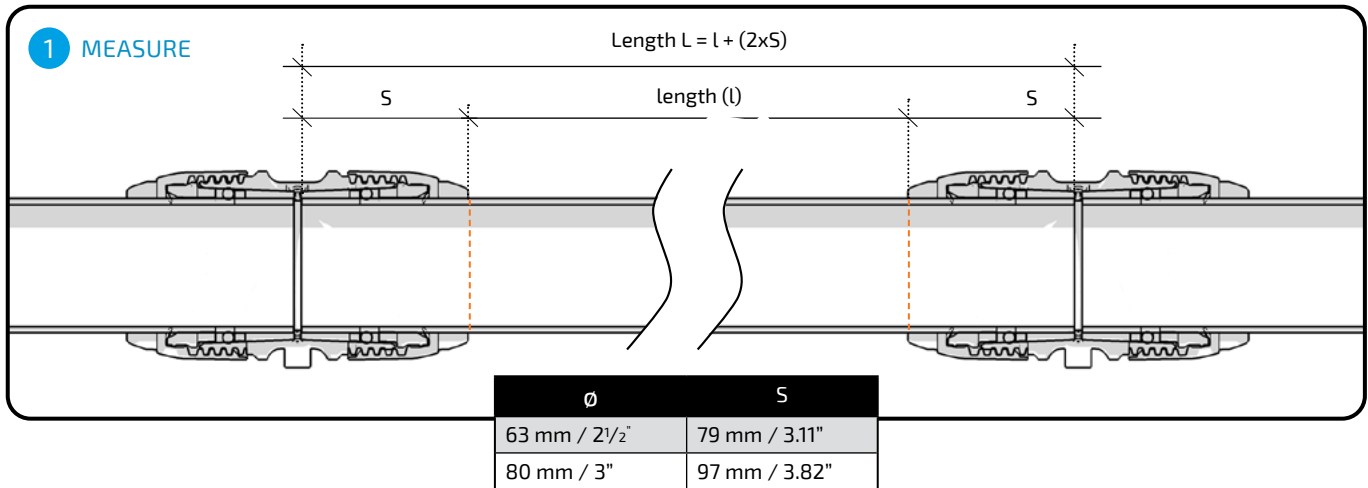
Ø20	2811 1028 00
Ø25	2811 2028 00
Ø40	2811 4028 00
Ø50	2811 5028 00

9 CHECK MARKERS

CHECK

# INSTALLATION

Diameters 63 - 80 mm / 2 1/2" - 3" (Black Series)

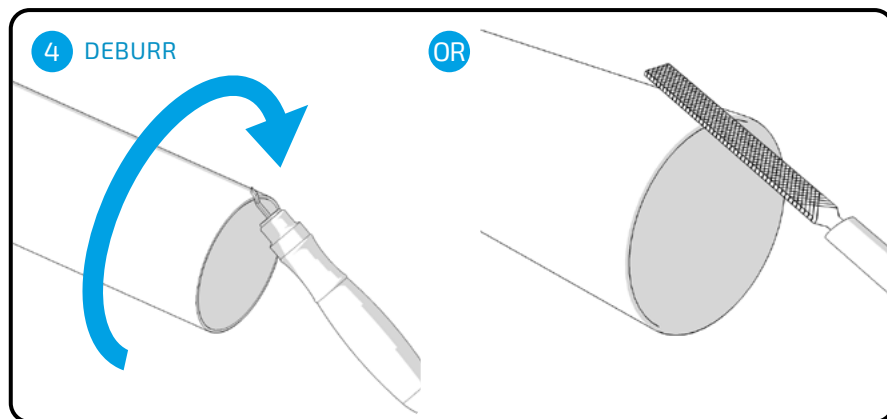
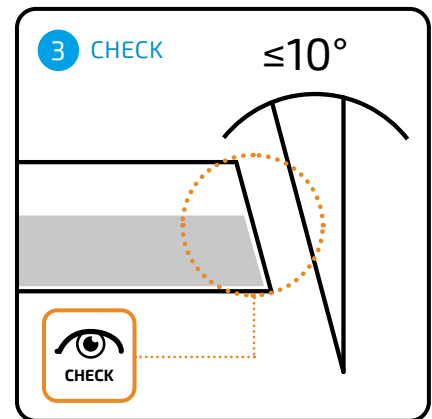


Ø 20-63 mm 2810 0040 00

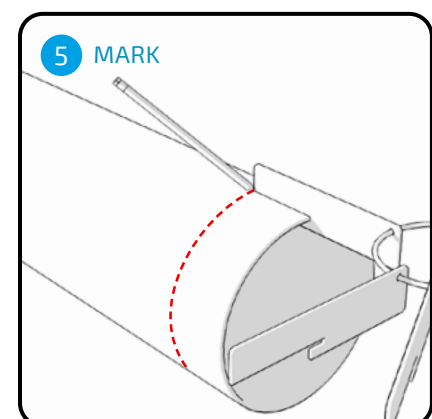
110/120V 2810 0640 80

Ø 40-100 mm 2810 0140 00

220/230V 2810 0540 80



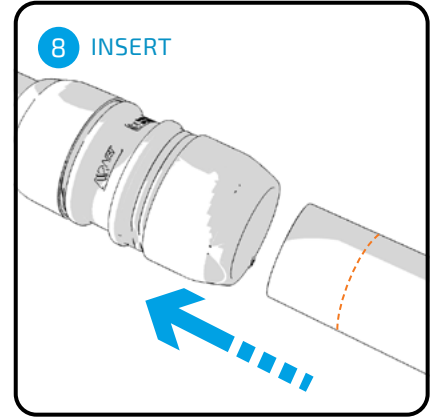
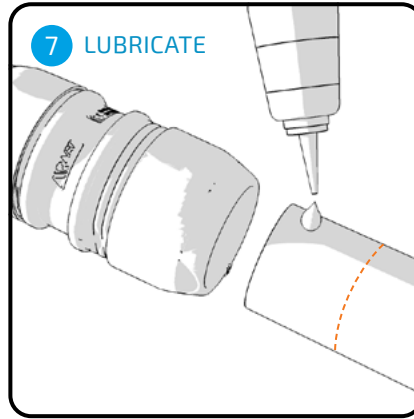
ALL 2810 0641 00



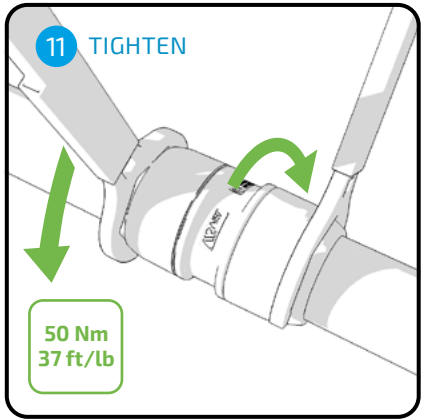
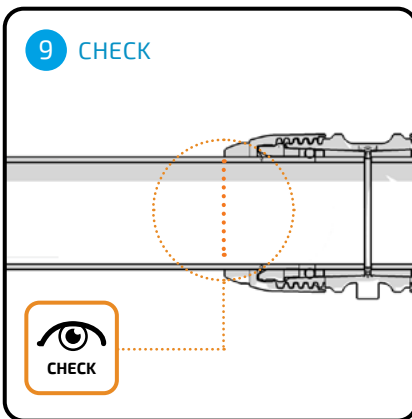
ALL 2811 0229 80

# INSTALLATION

Diameters 63 - 80 mm / 2 ½" - 3" (Black Series)



ALL 2810 0148 00



Torque wrench 2811 0028 80

63mm torque head 2811 6128 80

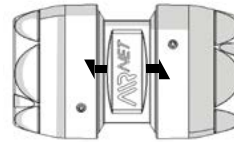
80mm torque head 2811 7128 80



# INSTALLATION

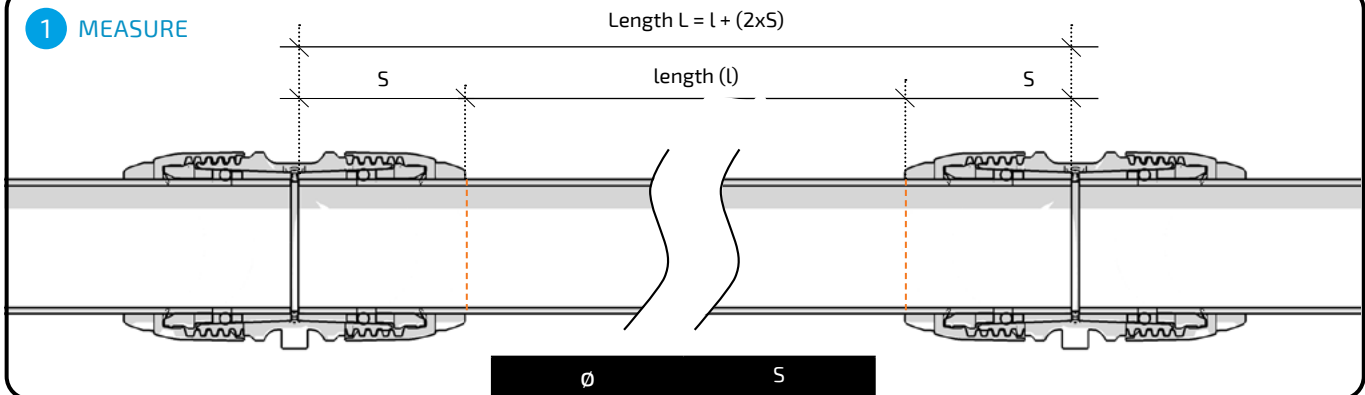
## Diameters 63 - 80 mm / 2 1/2" - 3" (PM Series)

### DIFFERENCE BETWEEN BLACK SERIES AND PM SERIES



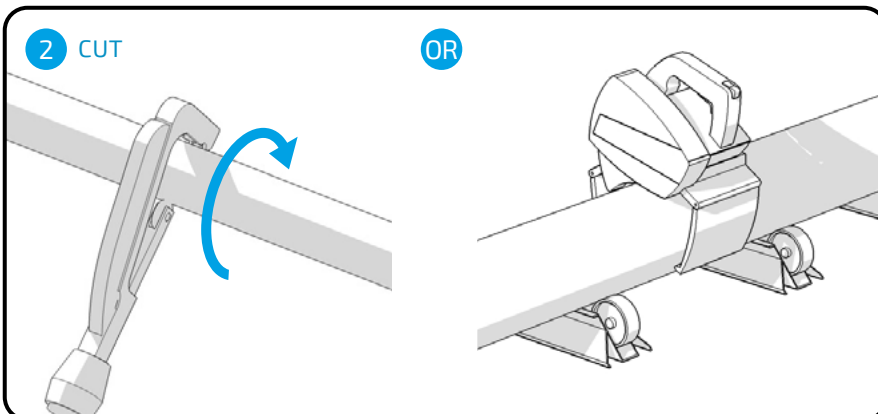
Black Series	Pre-Marked (PM) Series
Torque at 50 Nm	Torque till marking
Insertion depth Ø 63 / 2 1/2": 78 mm	Insertion depth Ø 63 / 2 1/2": 73 mm (Δ 5 mm)
Insertion depth Ø 80 / 3": 97 mm	Insertion depth Ø 80 / 3": 95 mm (Δ 2 mm)
	Better quality and reliability
	Safety screw on the nut
	Light weight
	Easy to assemble (pre-marked)

### 1 MEASURE

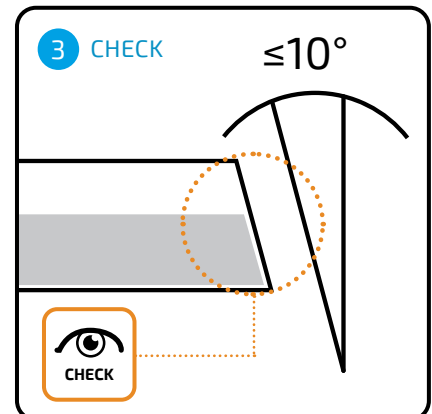


### 2 CUT

OR



### 3 CHECK



Ø 20-63 mm 2810 0040 00

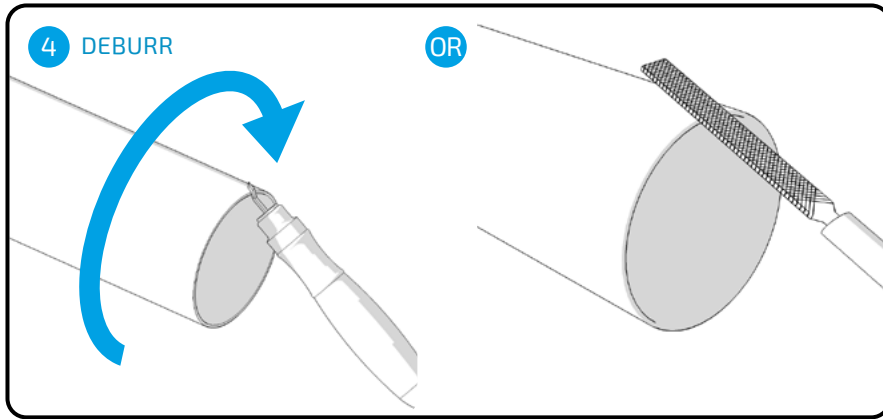
110/120V 2810 0640 80

Ø 40-100 mm 2810 0140 00

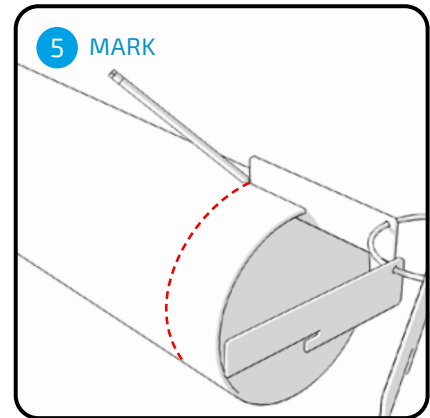
220/230V 2810 0540 80

# INSTALLATION

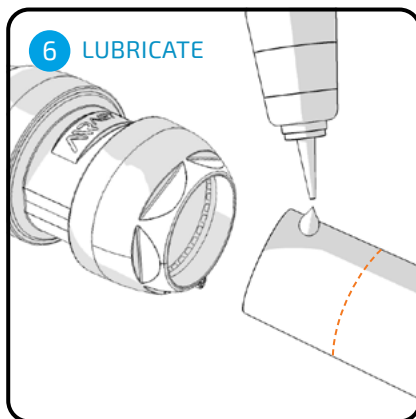
Diameters 63 - 80 mm / 2 ½" - 3" (PM Series)



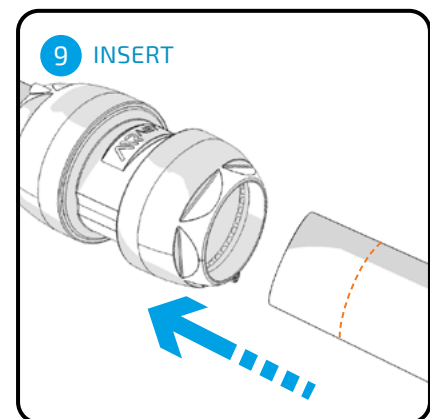
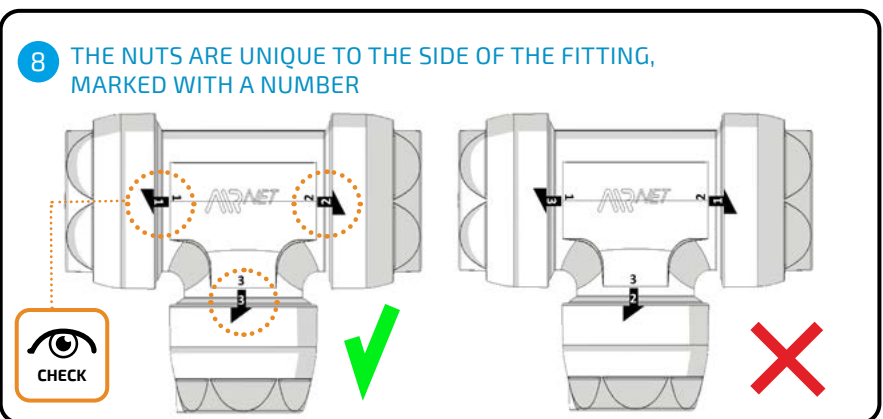
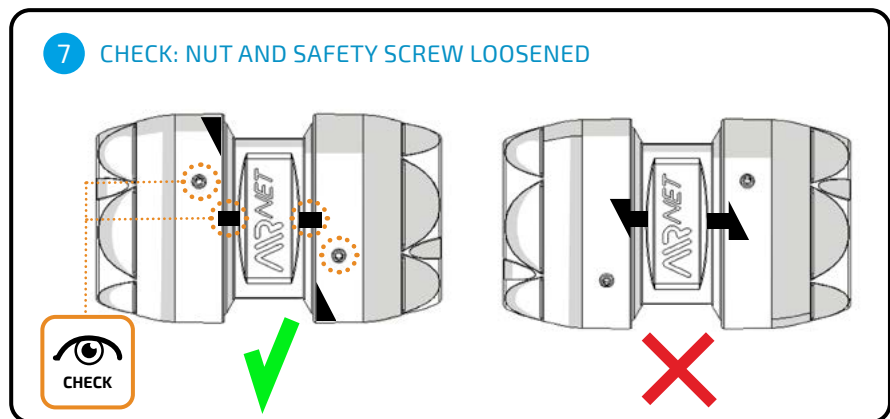
ALL 2810 0641 00



ALL 2811 0229 90

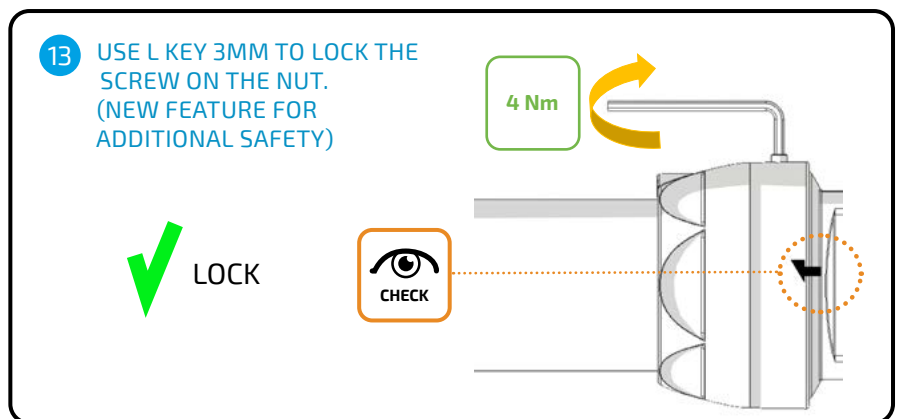
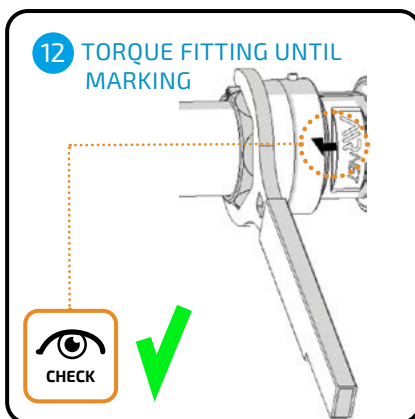
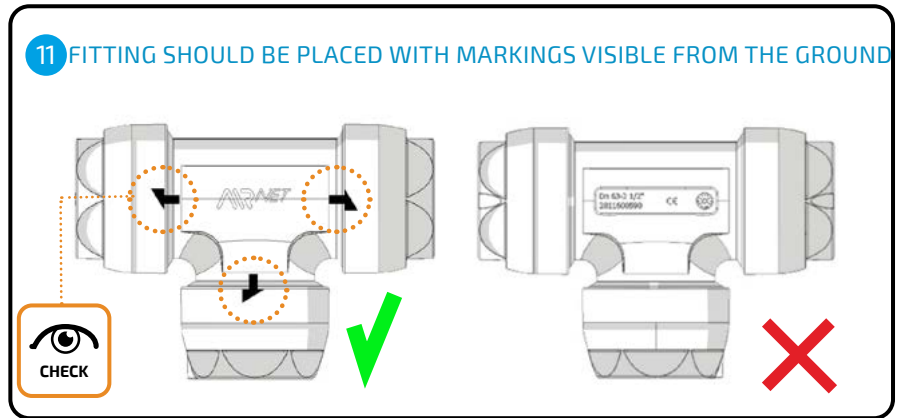
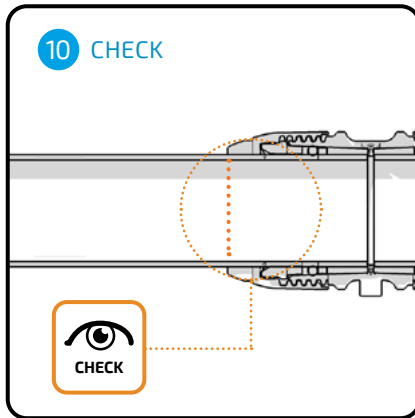


ALL 2810 0148 00



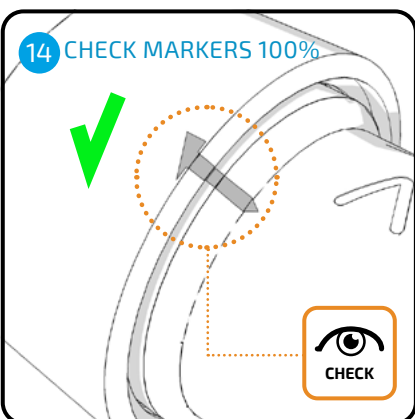
# INSTALLATION

Diameters 63 - 80 mm / 2 ½" - 3" (PM Series)



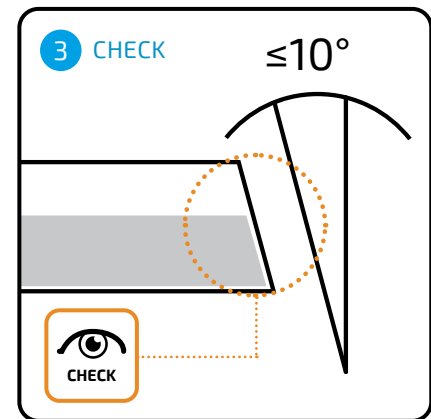
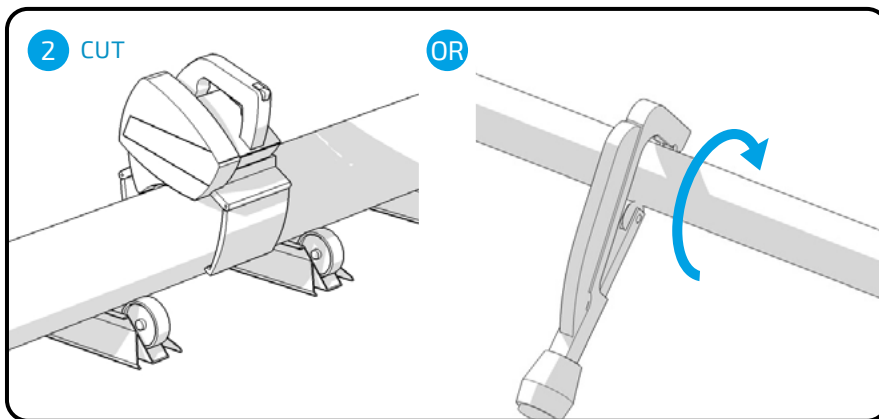
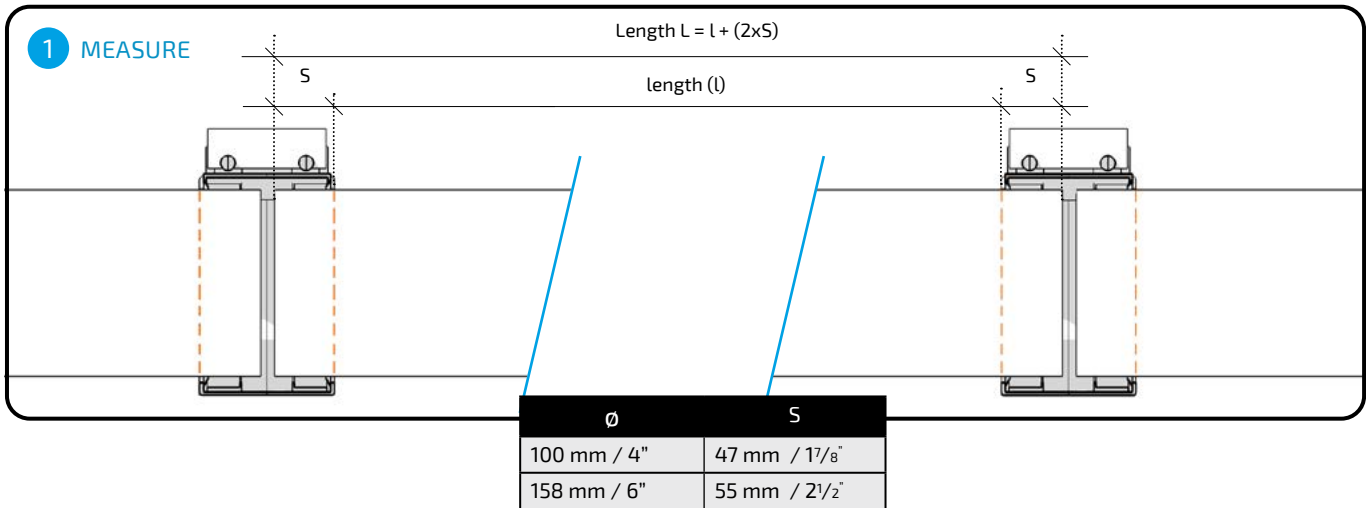
New torque wrenches / spanners:

- 63 mm spanner 2811 6028 90
- 80 mm spanner 2811 7028 90
- 63 mm body wrench 2811 6628 90
- 80 mm body wrench/63 mm adapter union nut wrench 2811 7728 90
- 80 mm adapter union nut wrench 2811 7728 91



# INSTALLATION

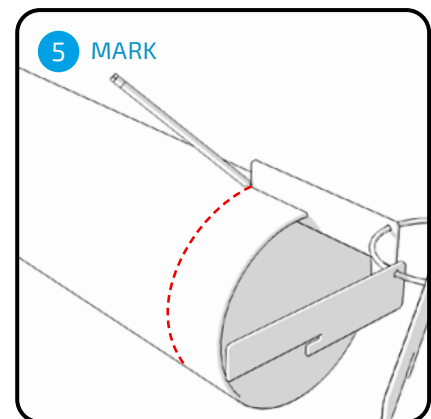
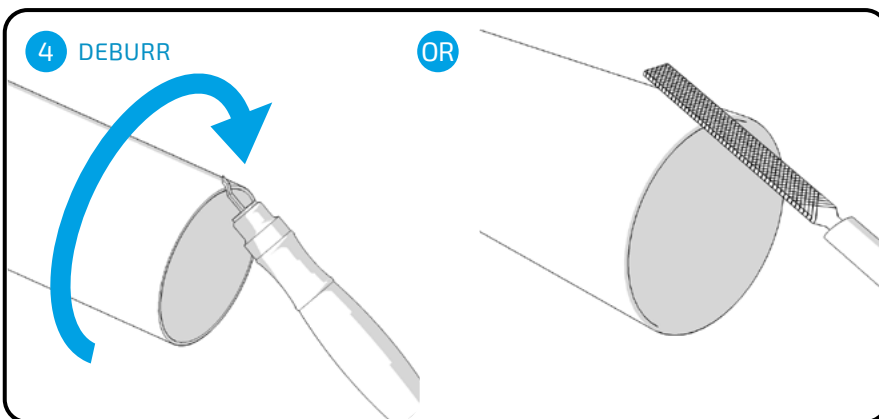
Diameter 100 - 158 mm / 4" - 6"



110/120V 2810 0640 80

$\varnothing$  100-158 mm 2810 0240 00

220/230V 2810 0540 80

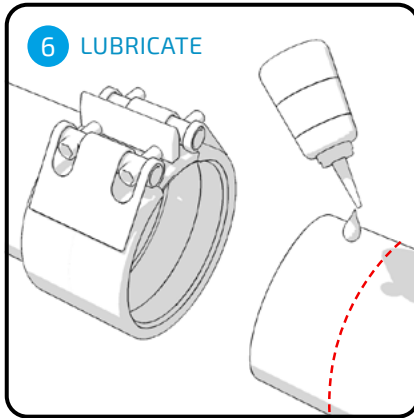


ALL 2810 0641 00

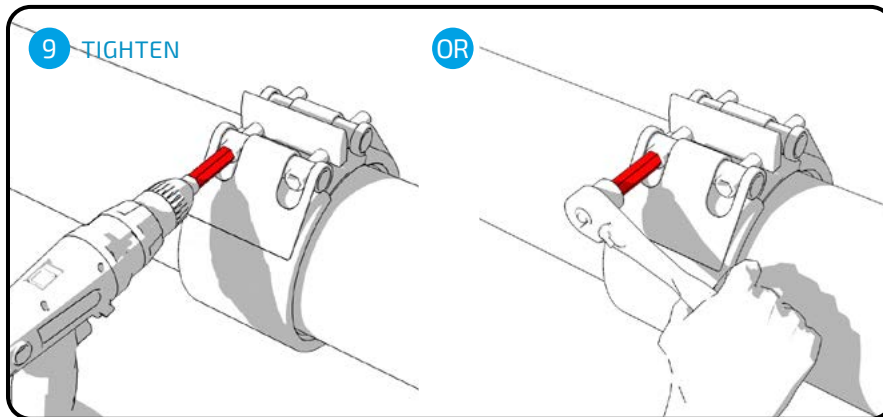
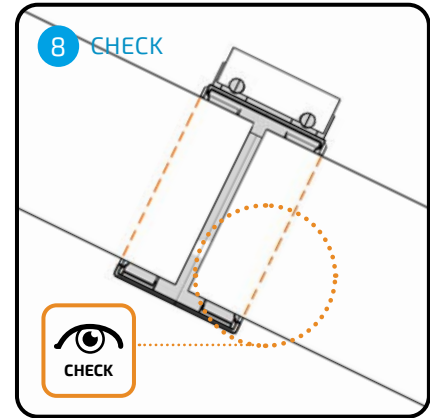
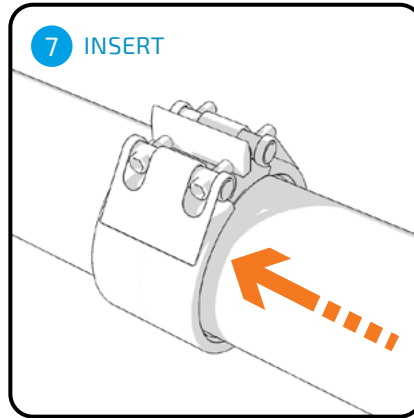
ALL 2811 0229 80

# INSTALLATION

Diameter 100 - 158 mm / 4" - 6"

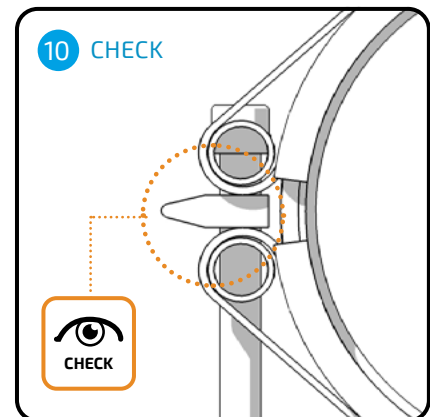


ALL 2810 0148 00



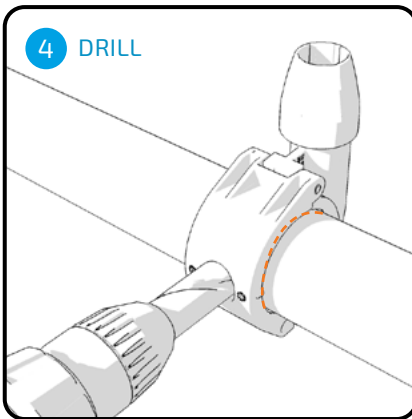
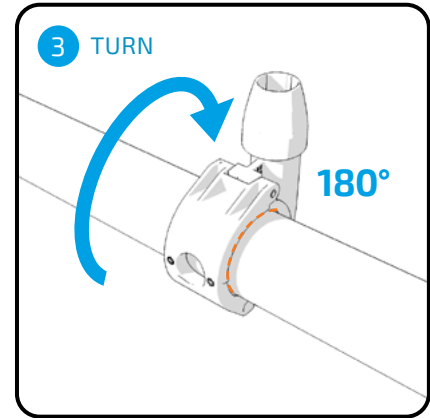
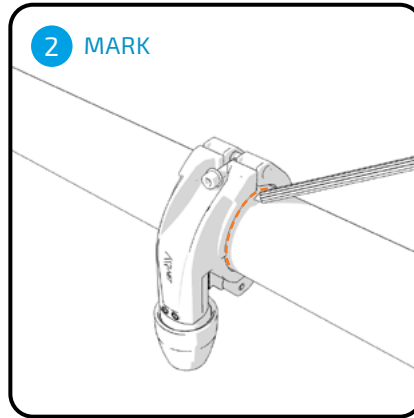
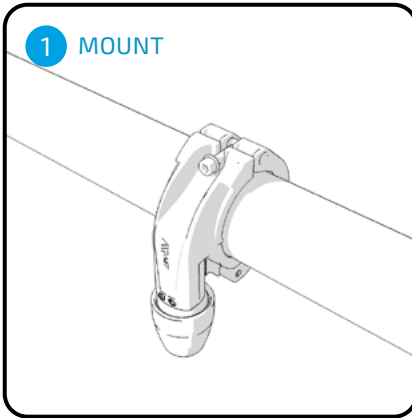
Hexagon Socket - D100 4027 1323 08

Hexagon Socket - D158 0462 3601 23



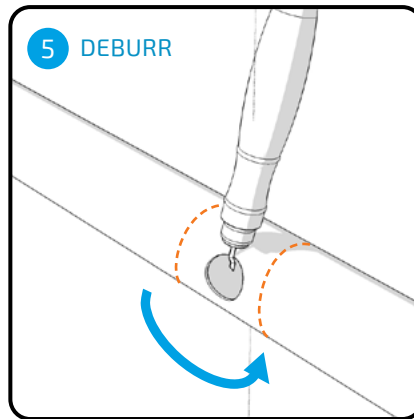
# INSTALLATION

## Quickdrop Assembly



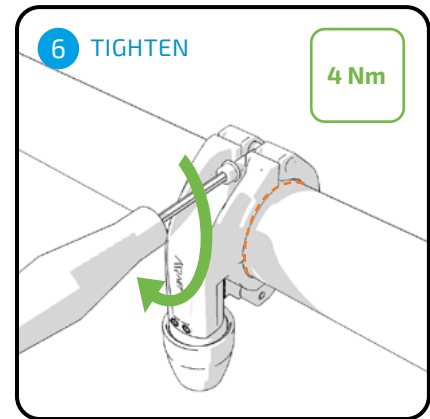
Ø 25 mm drill bit 2810 0143 00

Ø 40-80 mm drill bit 2810 0243 00

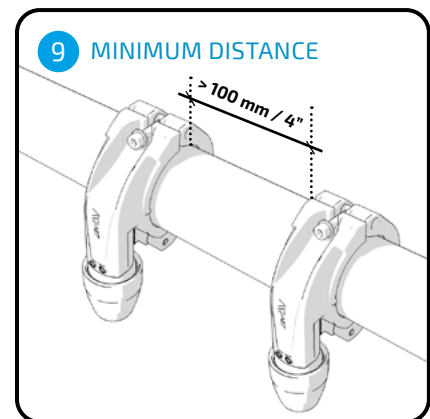
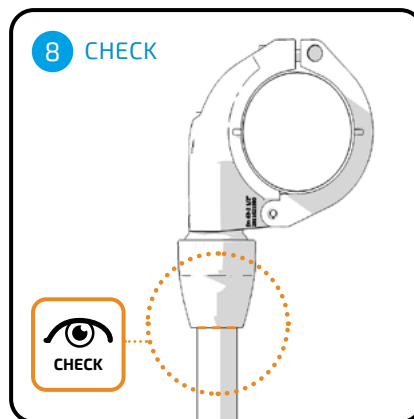
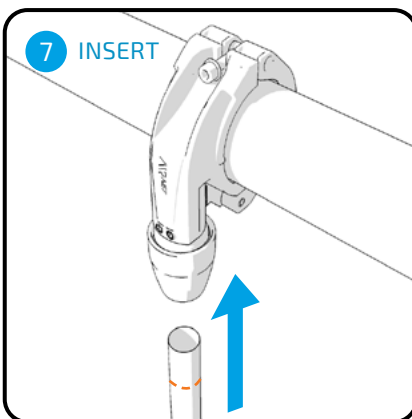


Heavy Duty 2810 0641 00

Light Duty 2810 0042 00

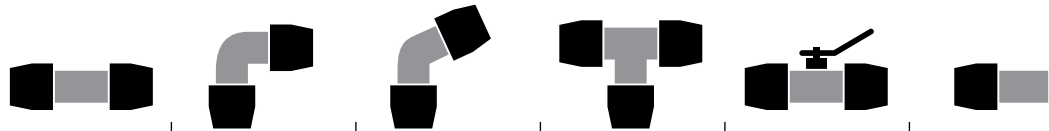


ALL 2811 0149 00

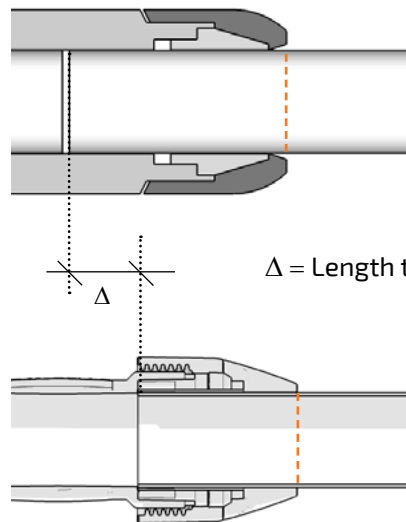


# INSTALLATION

Replace Classic Series with new PF Series  
 Diameters 20 - 50 mm / ¾" - 2"




$\Delta$						
ø 20 mm	21.5 mm	9 mm	9 mm	8 mm	8 mm	13 mm
ø 25 mm	19 mm	14.5 mm	13 mm	6 mm	8 mm	20 mm
ø 40 mm	38 mm	23 mm	28 mm	23 mm	9 mm	35 mm
ø 50 mm	37.5 mm	32 mm	35 mm	32 mm	0 mm	34 mm
ø ¾"	7/8"	¾"	¾"	1/4"	1/4"	1/2"
ø 1"	¾"	1/2"	1/2"	1/4"	1/4"	¾"
ø 1½"	1½"	7/8"	1½"	7/8"	¾"	1¾"
ø 2"	1½"	1¼"	1¾"	1¼"	0"	1¾"



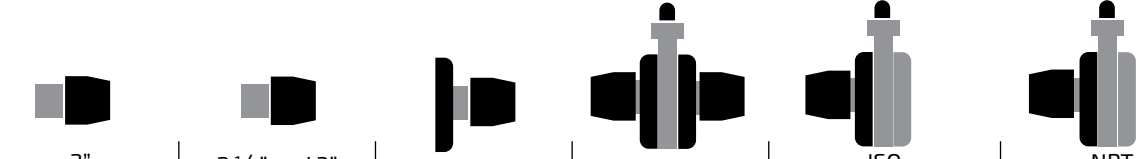
$\Delta$  = Length to be cut off before replacement

# INSTALLATION

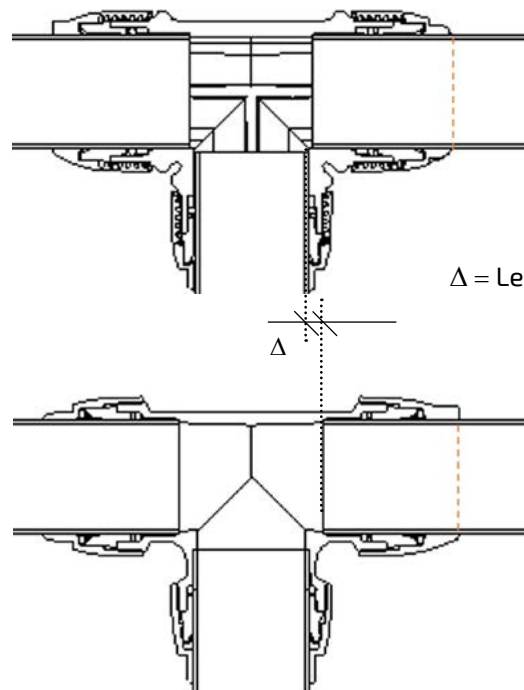
Replace Black Series with new PM Series  
 Diameters 63 – 80 m / 2 1/2" – 3"



$\Delta$						
$\phi$ 63 mm	/	/	4 mm	/	Change pipe D50	5 mm
$\phi$ 2 1/2"	/	/	5/32"	/	Change pipe D50	3/16"
$\phi$ 80 mm	/	/	6 mm	7 mm	7 mm	/
$\phi$ 3"	/	/	1/4"	1/4"	1/4"	/



$\Delta$	2"	2 1/2" and 3"			ISO	NPT
$\phi$ 63 mm	4 mm	16 mm	/	/	/	/
$\phi$ 2 1/2"	5/32"	5/8"	/	/	/	/
$\phi$ 80 mm	/	12 mm	6 mm	8 mm	11 mm	14 mm
$\phi$ 3"	/	1/2"	1/4"	1/3"	2/5"	1/2"

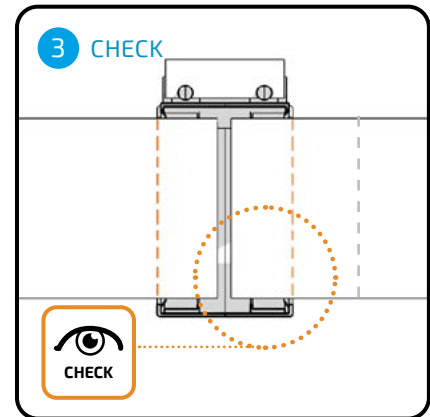
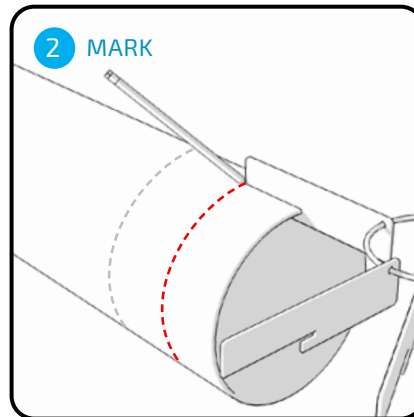
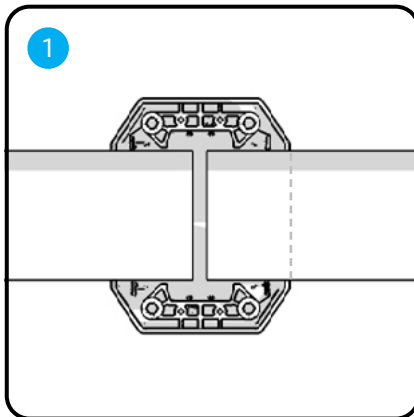


$\Delta$  = Length to be cut off before replacement



## INSTALLATION

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



2811 0229 80

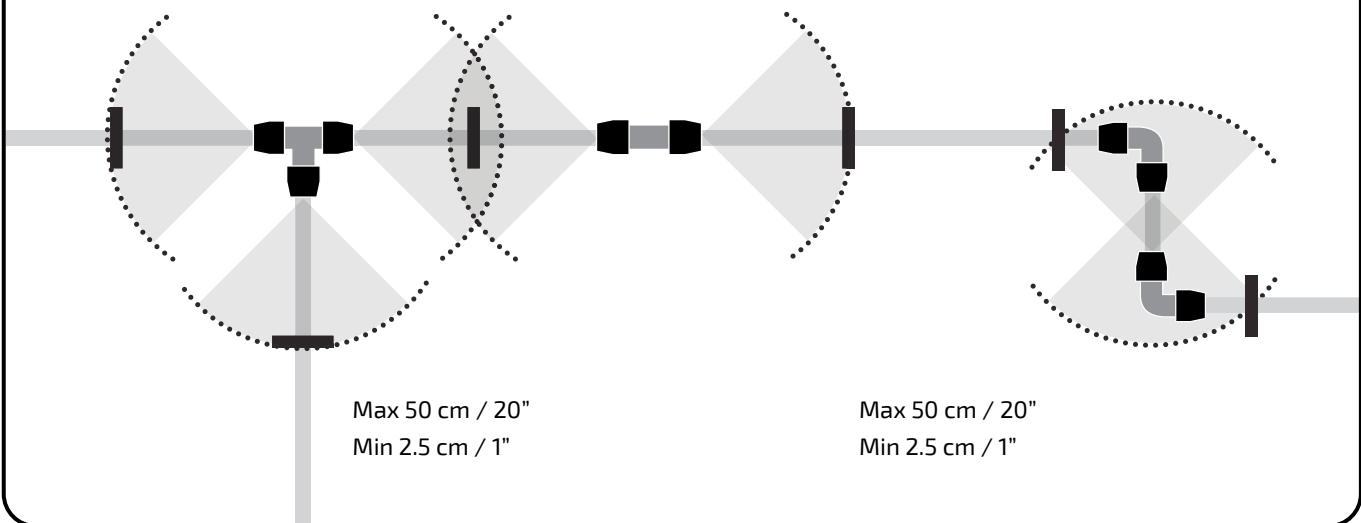
Note: When replacing the old D100 fitting with the new D100 fitting, only a new marking is needed, no cutting of pipes.

# INSTALLATION

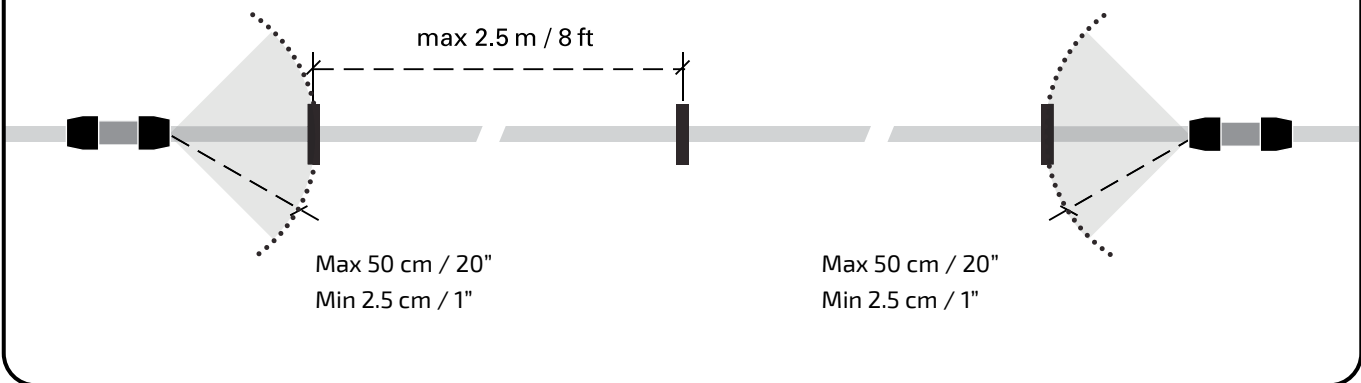
## Pipe Clips Installation

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"



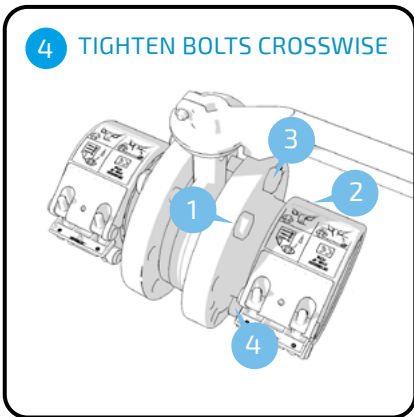
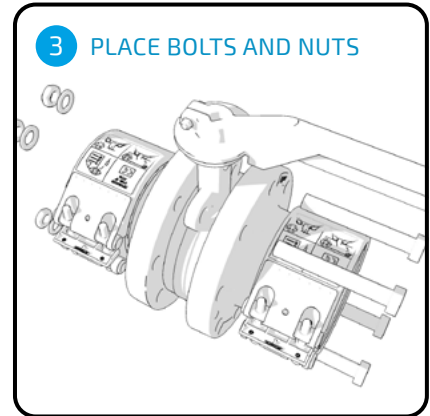
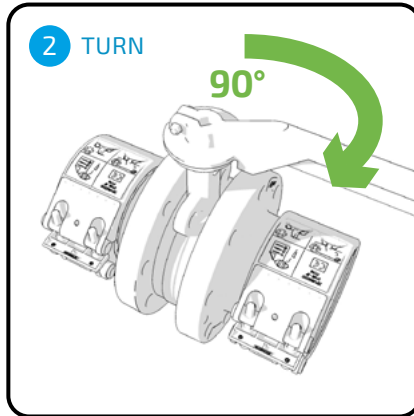
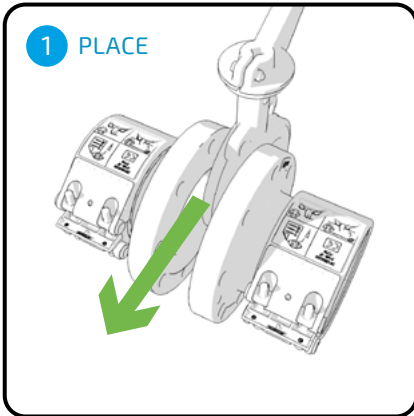
**Rule #2:** Maximum 2.5 m / 8 ft between 2 pipe clips



# INSTALLATION

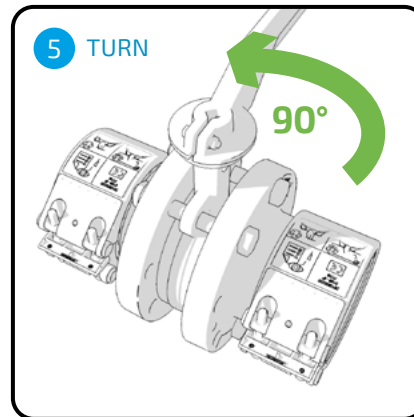
## Butterfly Valve Installation

Diameters 100 – 158 mm / 4" – 6"



**D100**  
16 Nm  
12 lbs/ft

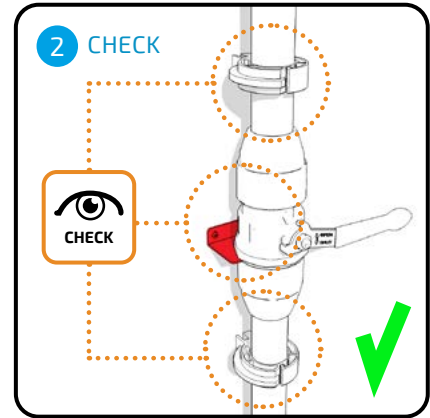
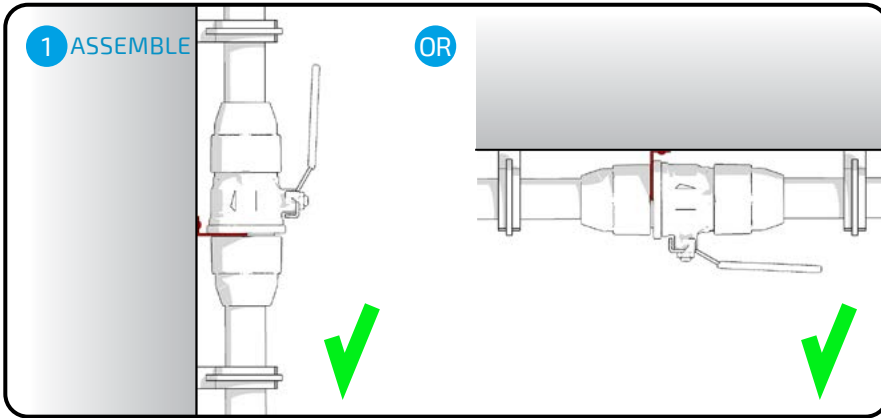
**D158**  
38 Nm  
28 lbs/ft



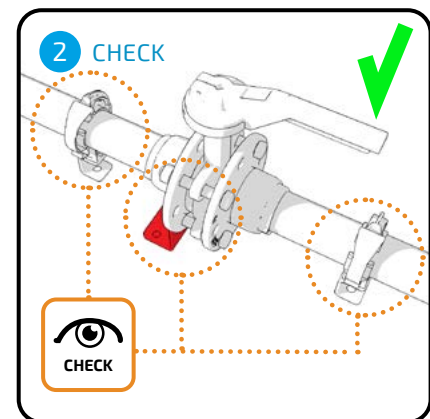
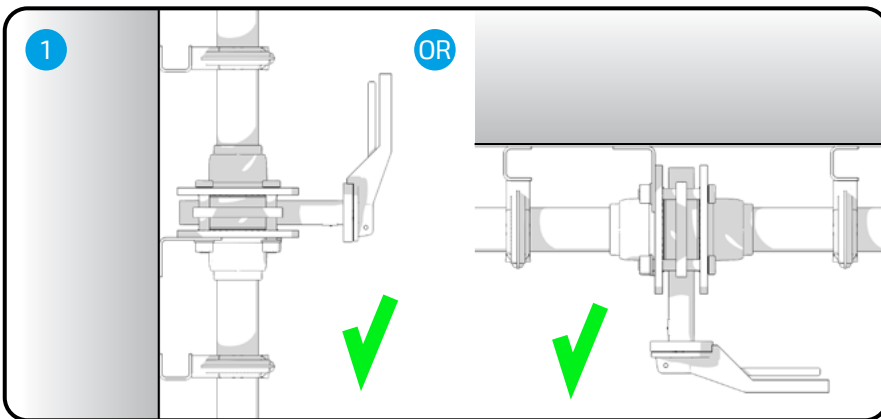
# INSTALLATION

## Valve Support

Diameters 20 – 50 mm / ¾" - 2"

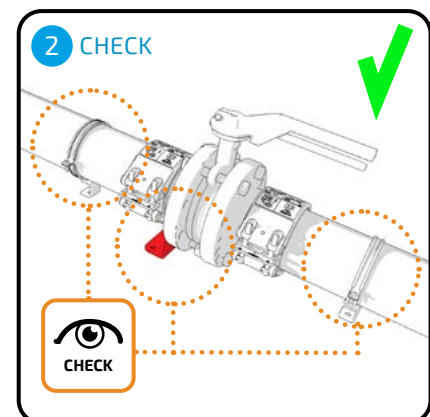
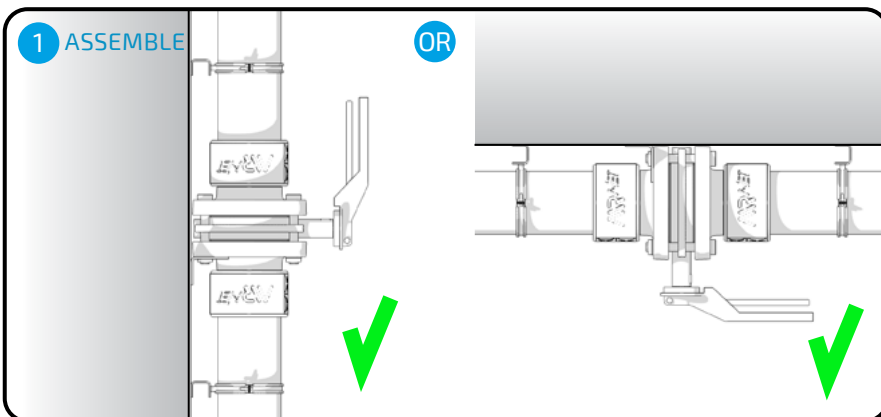


Diameters 63 – 80 mm / 2½" – 3"



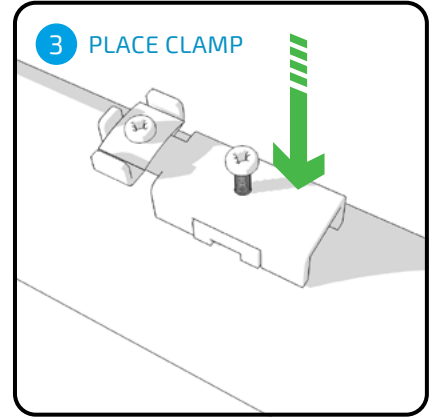
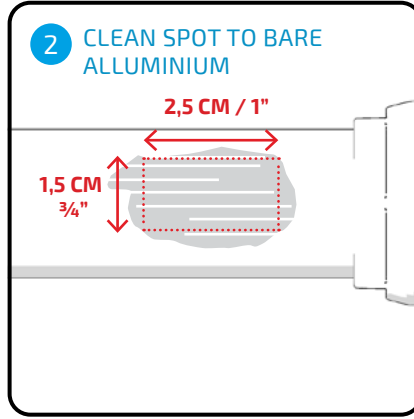
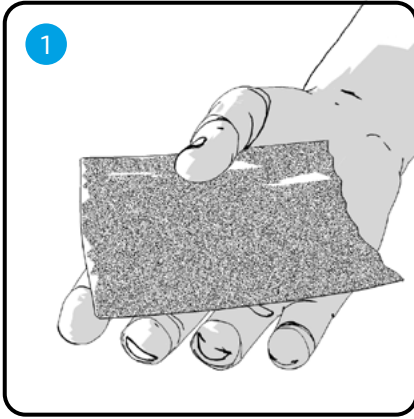
Note: The butterfly valves for 63 mm and 80 mm are delivered pre-assembled with the flanges.

Diameter 100 – 158 mm / 4" – 6"

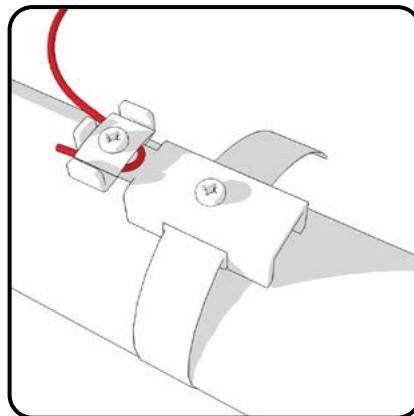
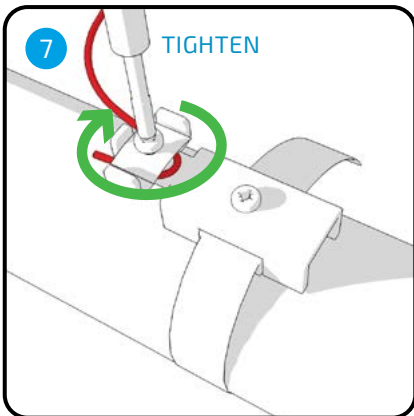
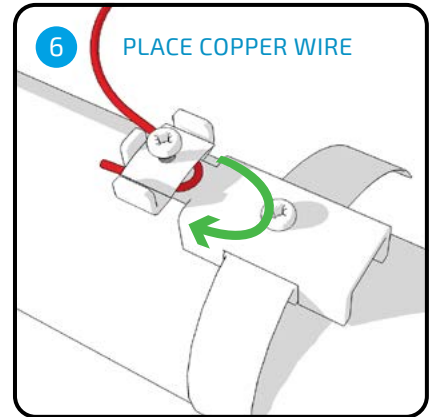
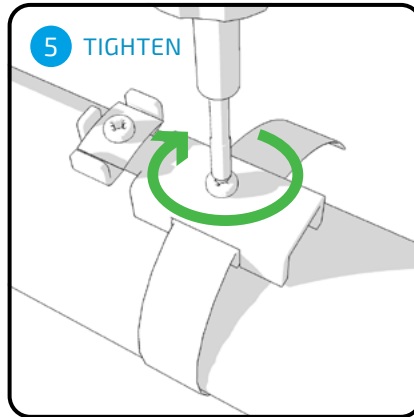
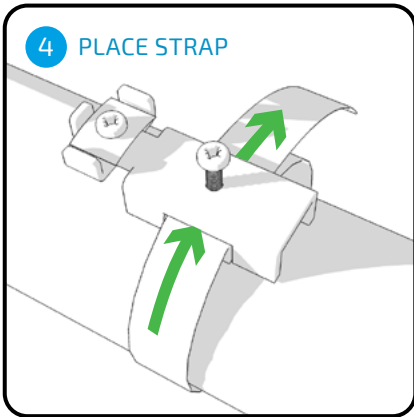


# INSTALLATION

## Mounting Conductivity Strap

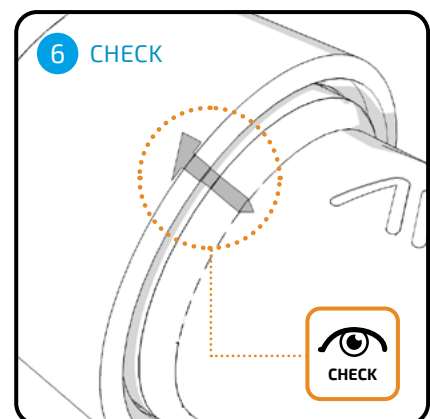
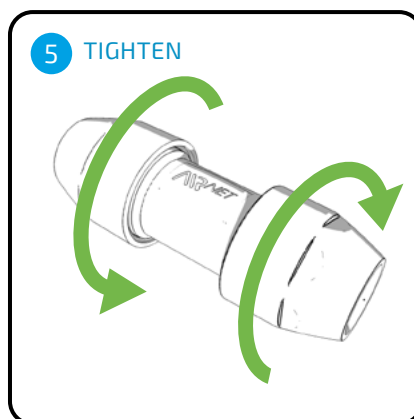
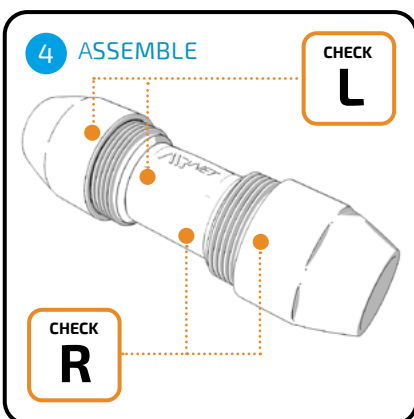
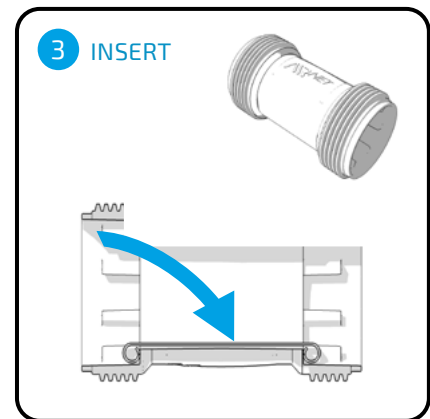
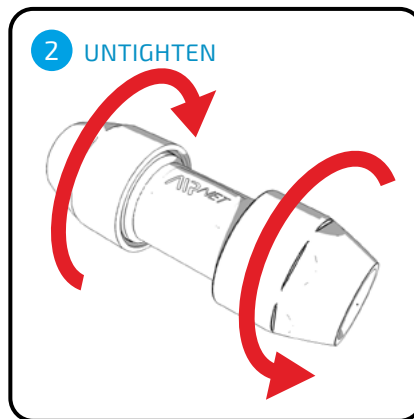
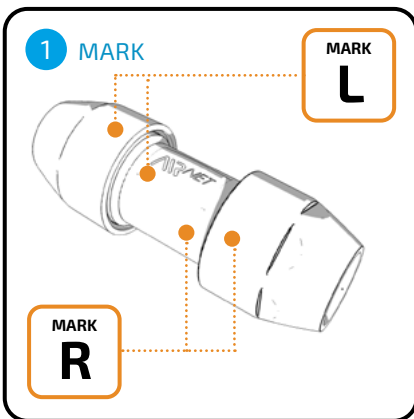
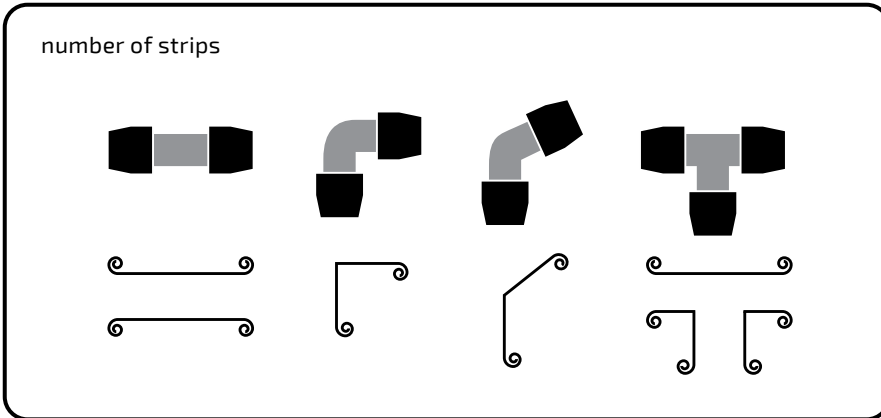


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# INSTALLATION

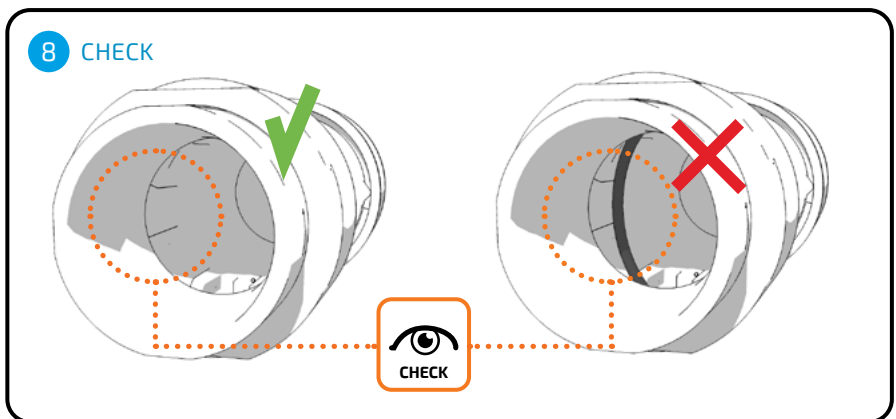
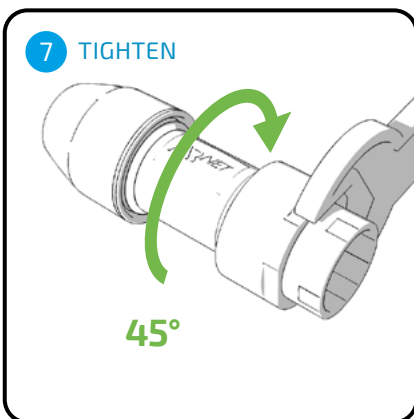
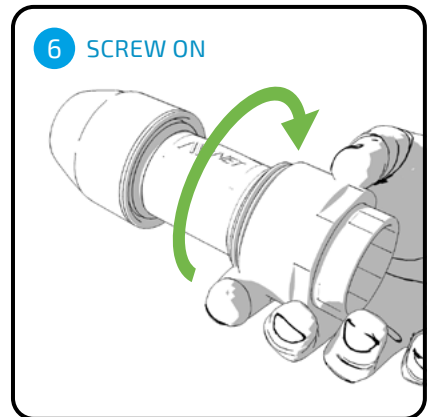
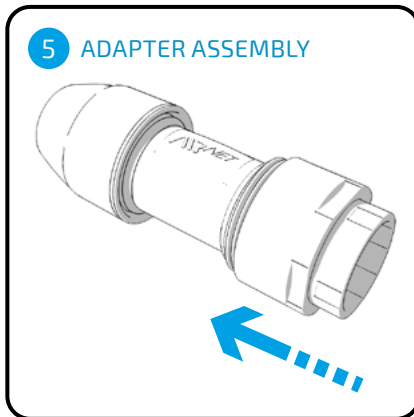
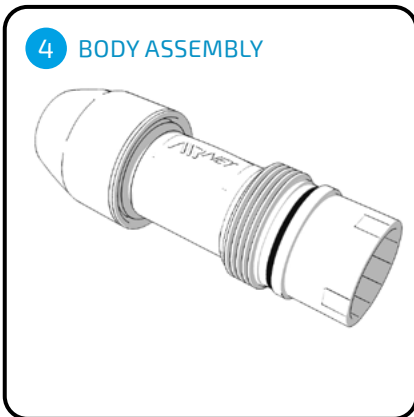
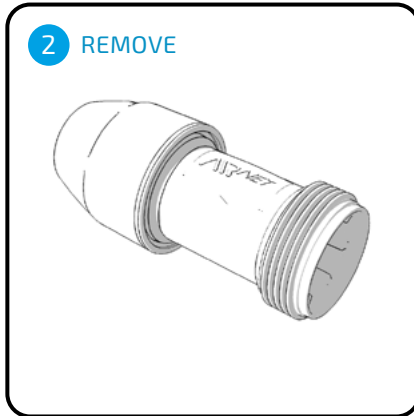
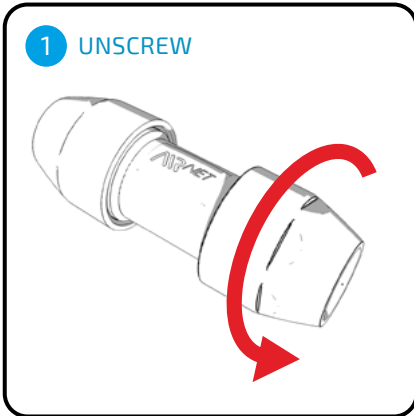
## Mounting Conductivity Strip (PF Series only)



# INSTALLATION

## Adapter Union

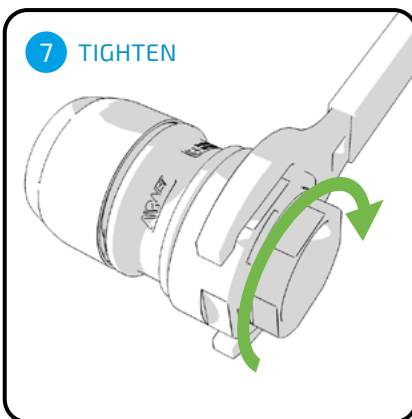
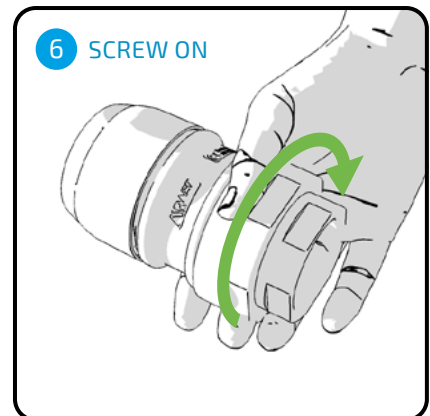
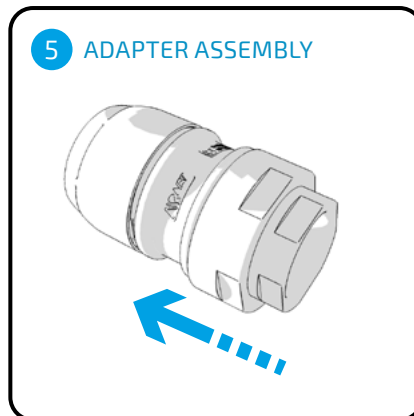
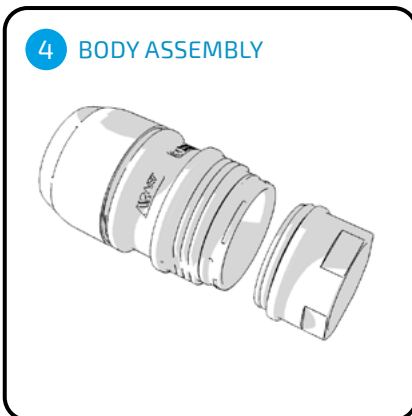
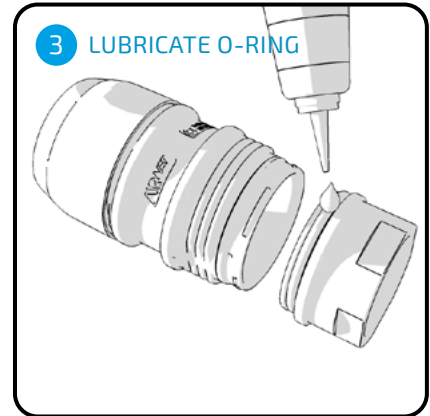
PF series Diameters 20 – 50 mm / ¾" - 2"



# INSTALLATION

## Adapter Union

Black Series Diameters 63 – 80 mm / 2½" – 3"

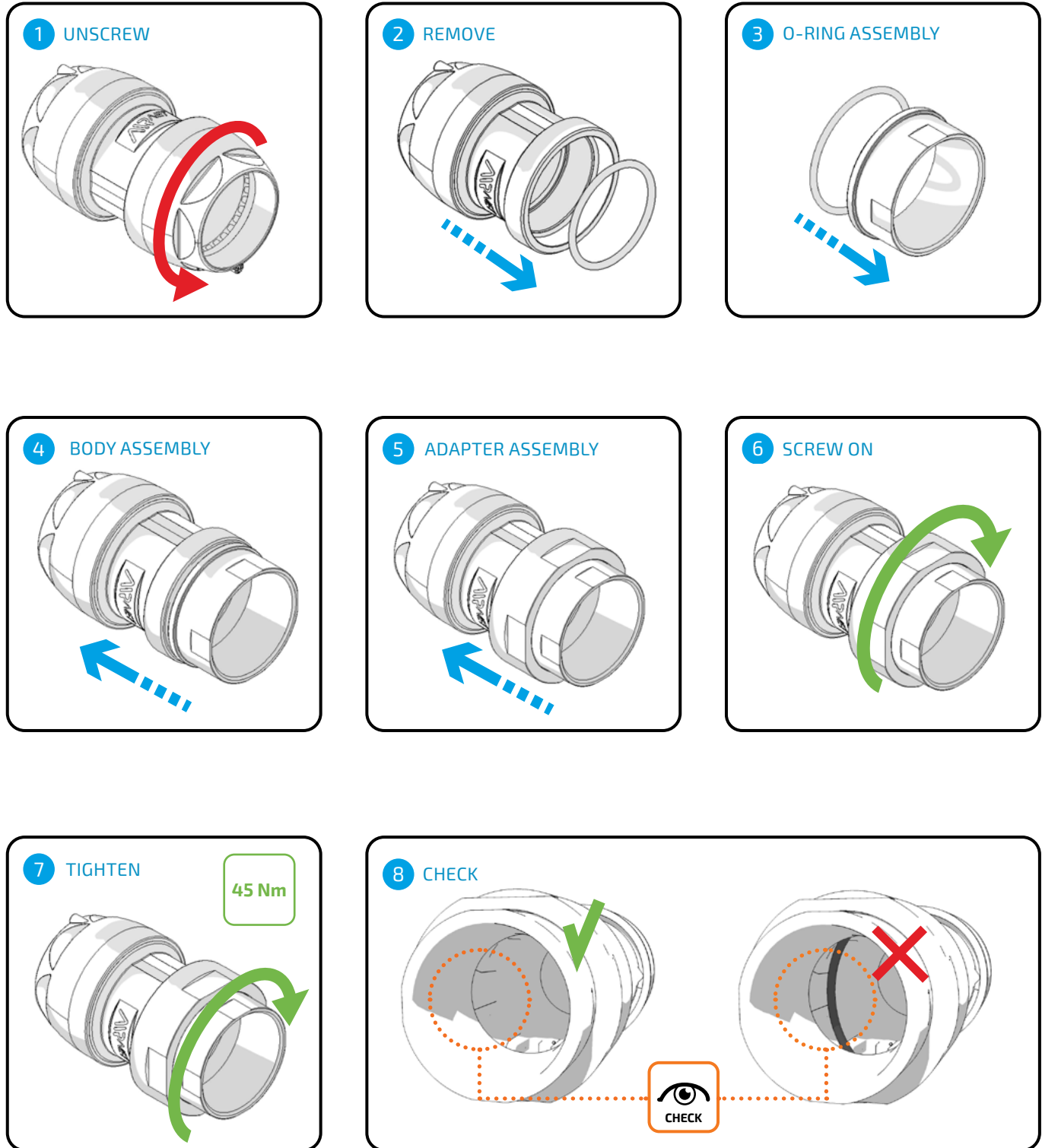




# INSTALLATION

## Adapter Union

PM Series Diameters 63 – 80 mm / 2 ½" – 3"



## 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.