



Installation and assembly guide 2018

www.airnet-system.com

AIRNET
COMPRESSED AIR • VACUUM • NITROGEN

TABLE OF CONTENT

Operating Conditions, Safety Instructions & Installations in explosive environments	3
Expansion Loops	4
Installation.....	5-22
• Diameters 20 - 50 mm / ¾" - 2" (PF Series).....	5
• Diameters 63 - 80 mm / 2½" - 3" (Black Series).....	7
• Diameters 100 mm - 158 mm / 4" - 6"	9
• Quickdrop Assembly	11
• Replace Classic Series with PF Series.....	12
• Replace Classic Series with new Black Series	13
• Replace old D100 fittings with new D100 fittings.....	13
• Pipe Clips Installation.....	14
• Butterfly Valve Installation.....	15
• Valve Support.....	16
• Mounting Conductivity Strap.....	17
• Mounting Conductivity Strips	18
• Adapter Union Diameters 20 - 50 mm / ¾" - 2" (PF Series)	19
• Adapter Union Diameters 63 - 80 mm / 2½" - 3" (Black Series).....	20

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 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.

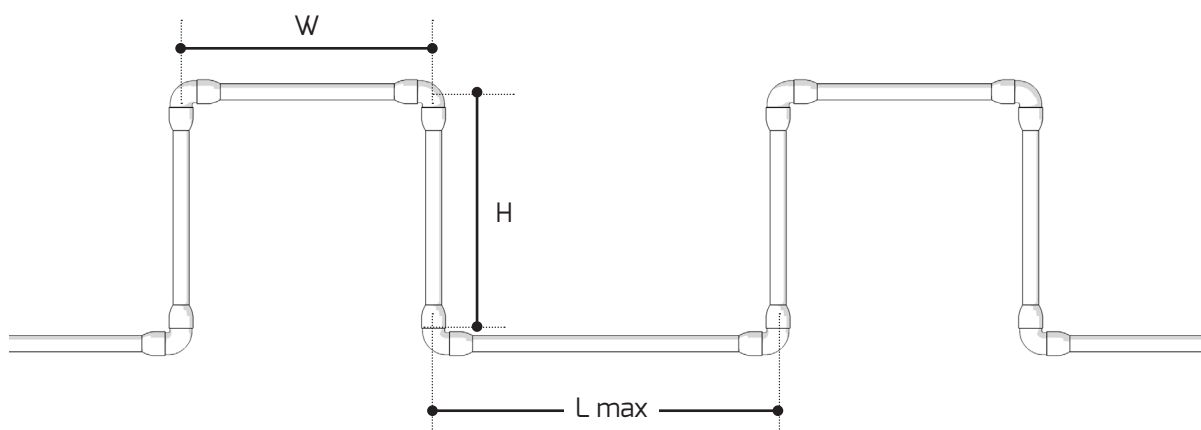
AIRNET INSTALLATIONS IN EXPLOSIVE ENVIRONMENTS

- 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 30 seconds) 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.

Diameters 20 - 50 mm / 3/4" - 2"

(PF Series)

1 MEASURE

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

Ø	S
20 mm / 3/4"	39 mm / 1 1/2"
25 mm / 1"	44 mm / 1 3/4"
40 mm / 1 1/2"	63 mm / 2 1/2"
50 mm / 2"	78 mm / 3 1/6"

2 CUT **OR**

Ø 20-63 mm 2810 0040 00

110/120V 2810 0640 80

220/230V 2810 0540 80

3 CHECK

$\leq 10^\circ$

CHECK

4 DEBURR **OR**

Ø 20-50 mm 2810 0141 00

Heavy Duty 2810 0641 00

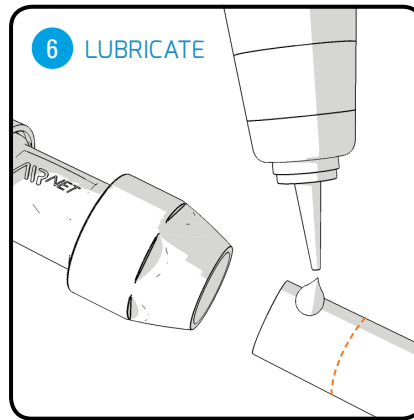
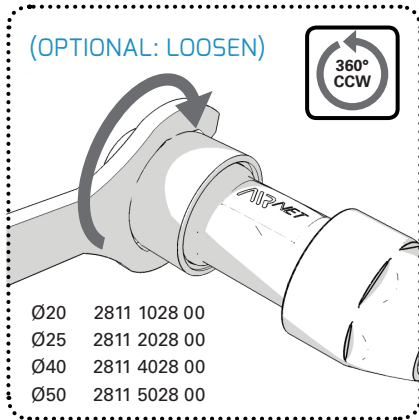
Light Duty 2810 0042 00

5 MARK

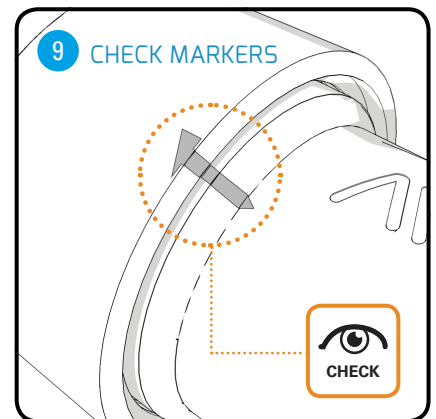
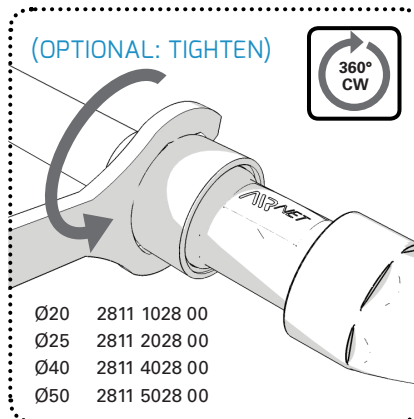
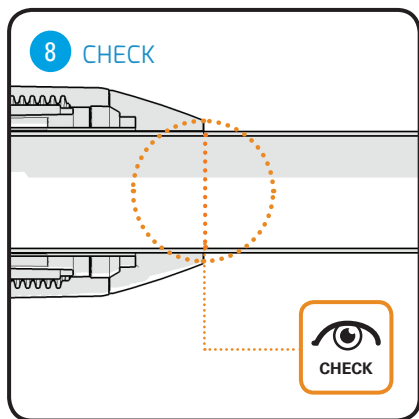
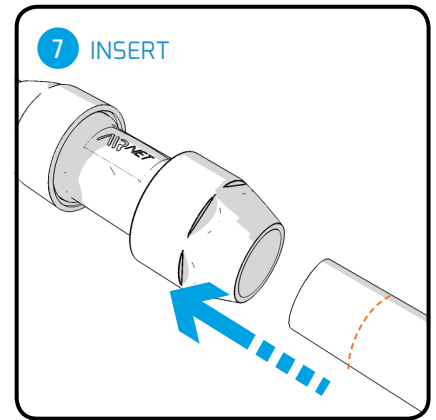
ALL 2811 0229 80

Diameters 20 - 50 mm / 3/4" - 2"

(PF Series)

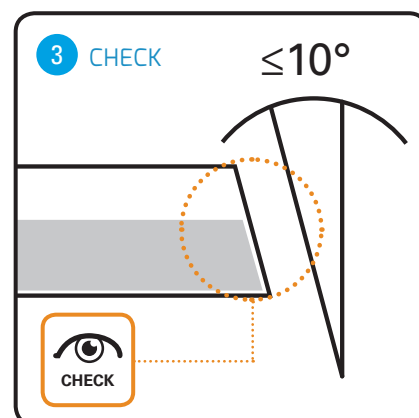
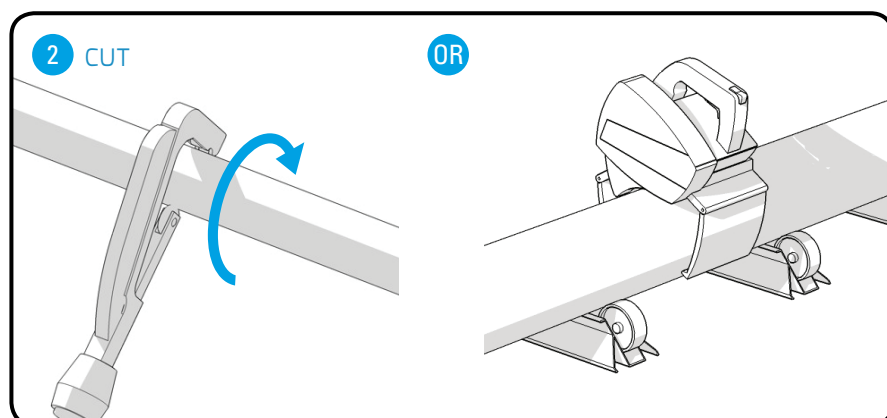
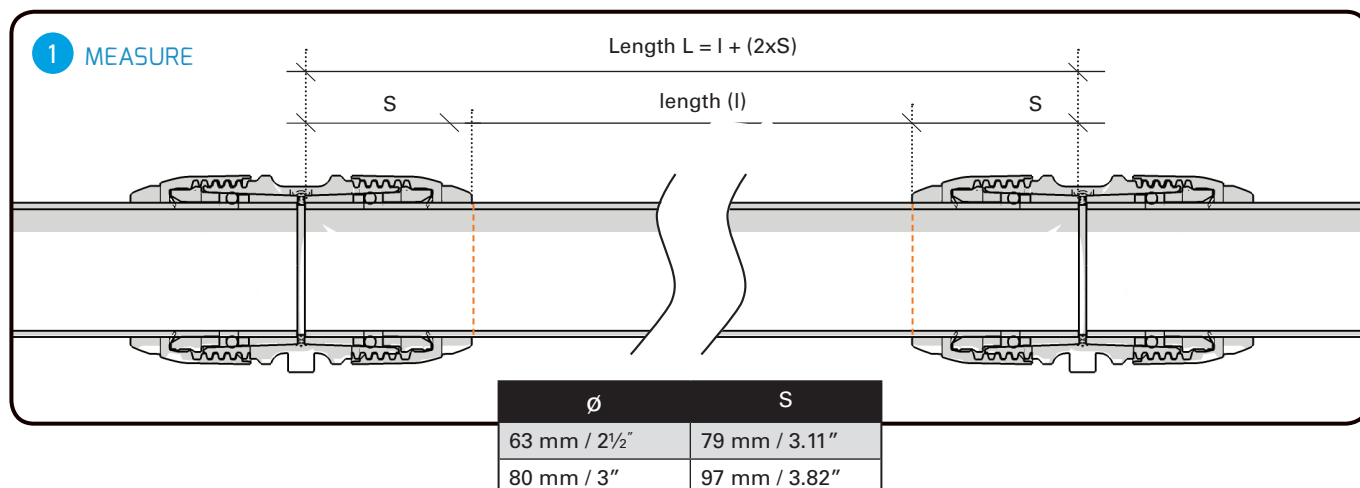


ALL 2810 0148 00

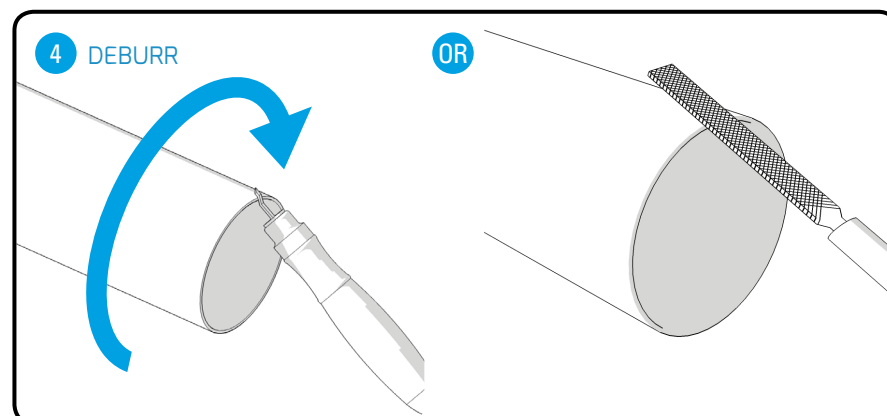


Diameters 63 - 80 mm / 2 1/2"- 3"

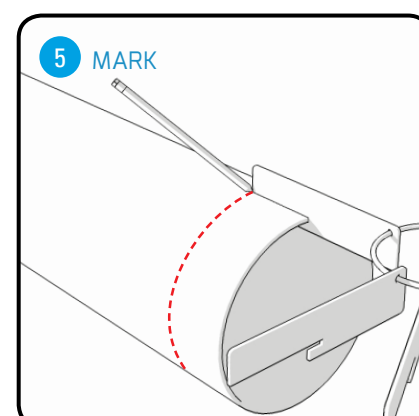
(Black Series)



Ø 20-63 mm	2810 0040 00	110/120V	2810 0640 80
Ø 40-100 mm	2810 0140 00	220/230V	2810 0540 80



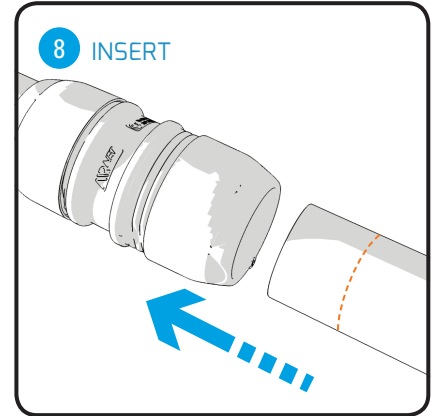
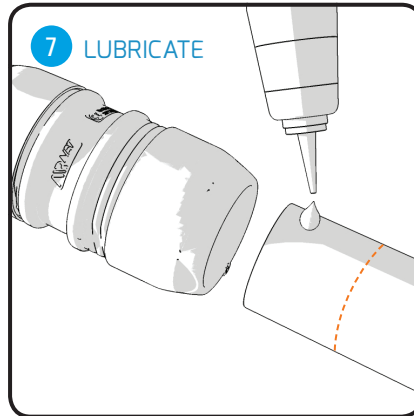
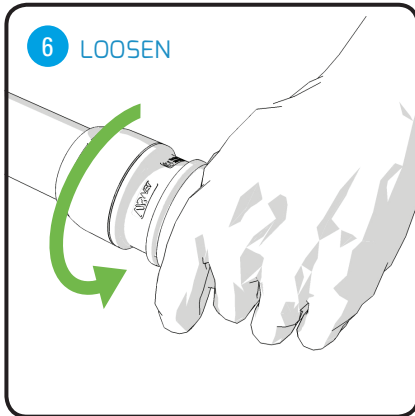
ALL	2810 0641 00
-----	--------------



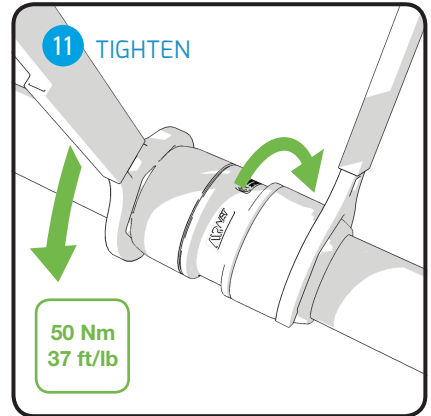
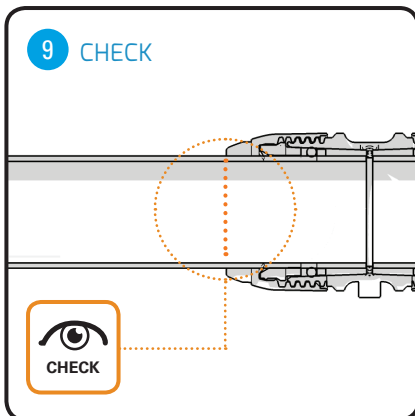
ALL	2811 0229 80
-----	--------------

Diameters 63 - 80 mm / 2 1/2" - 3"

(Black Series)



ALL 2810 0148 00

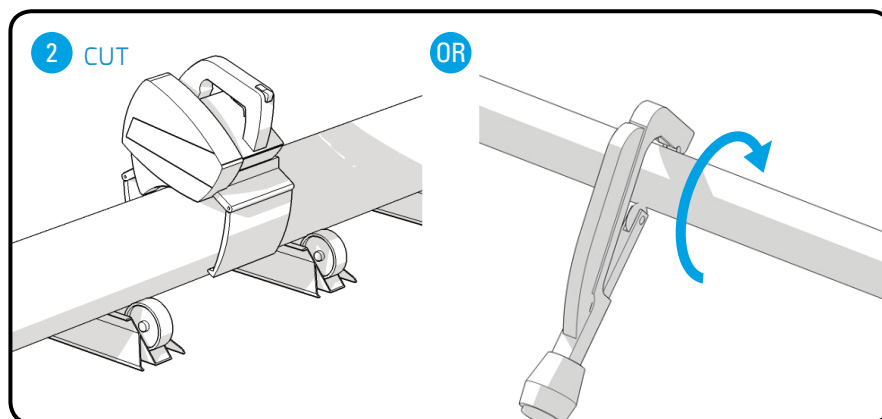
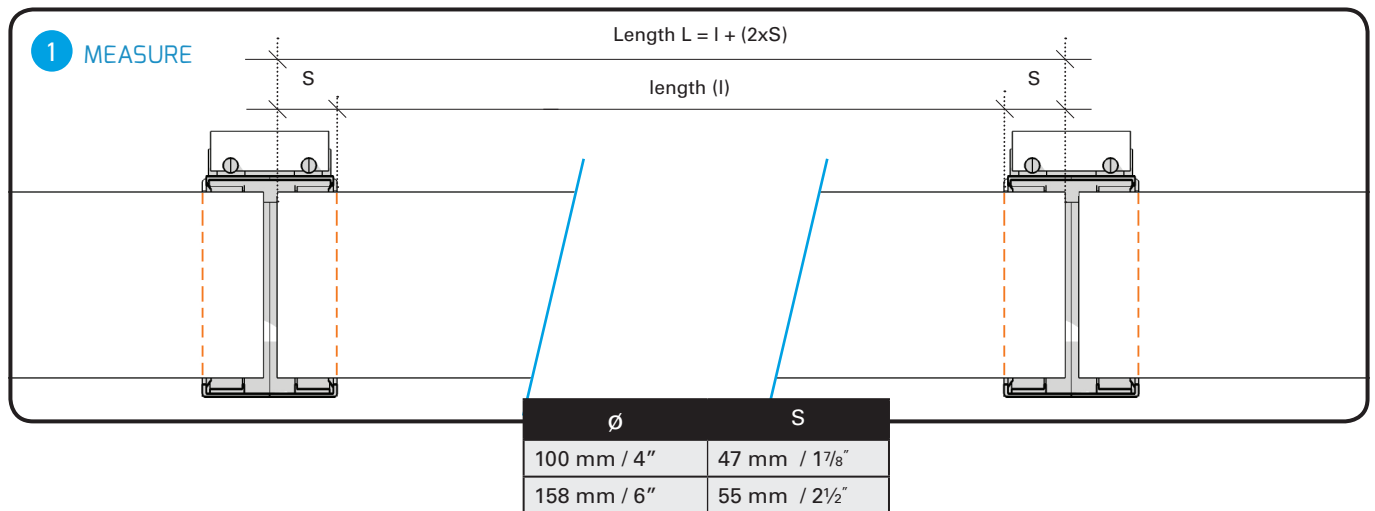


Torque wrench 2811 0028 80

63mm torque head 2811 6128 80

80mm torque head 2811 7128 80

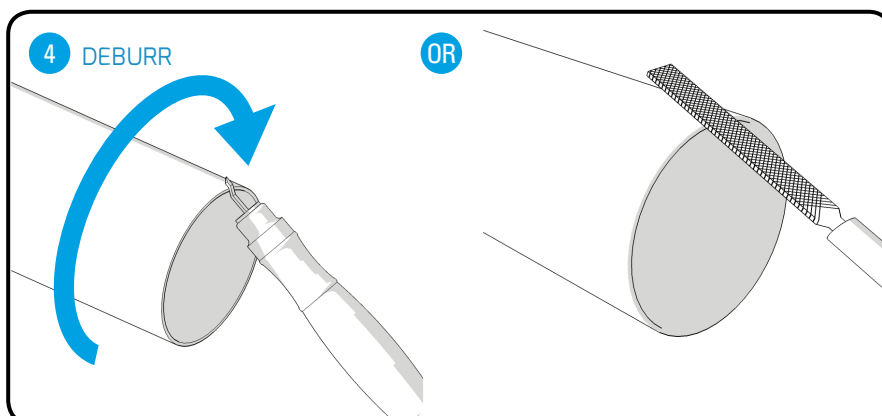
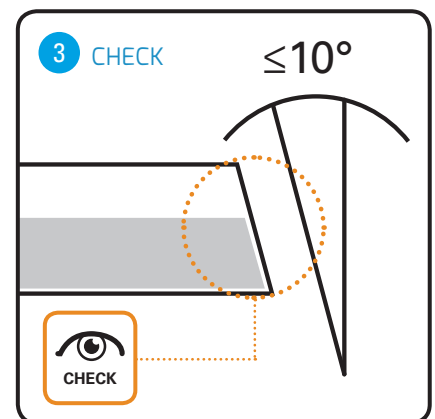
Diameter 100 - 158 mm / 4" - 6"



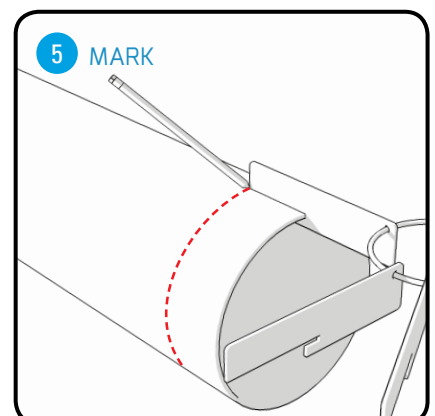
110/120V 2810 0640 80

Ø 100-158 mm 2810 0240 00

220/230V 2810 0540 80

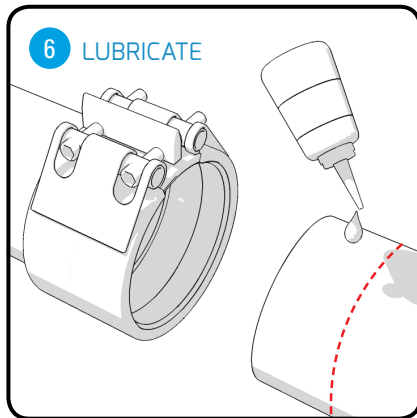


ALL 2810 0641 00



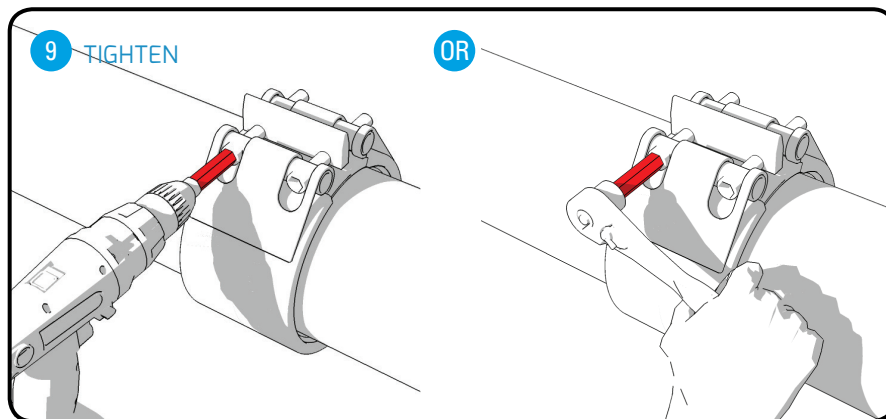
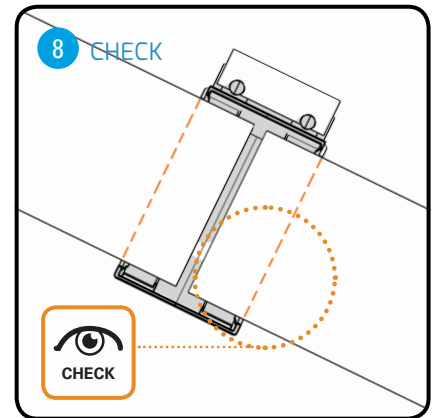
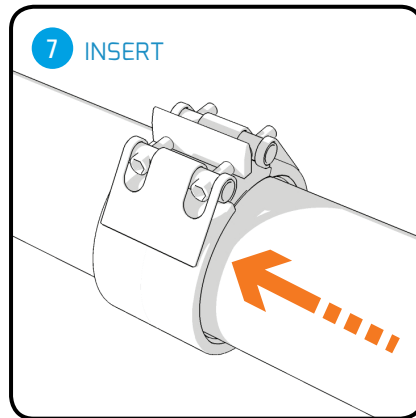
ALL 2811 0229 80

Diameter 100 - 158 mm / 4" - 6"



ALL

2810 0148 00

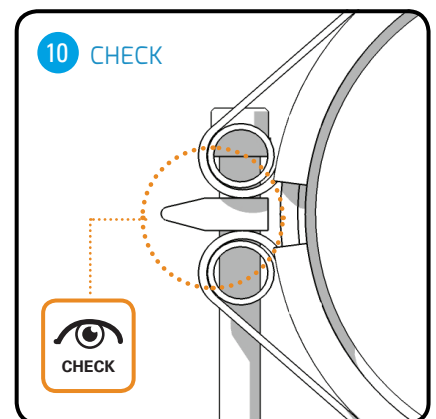


Hexagon Socket - D100

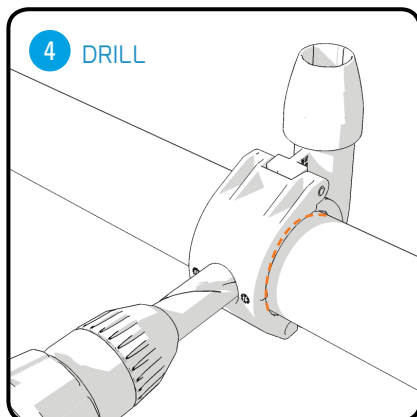
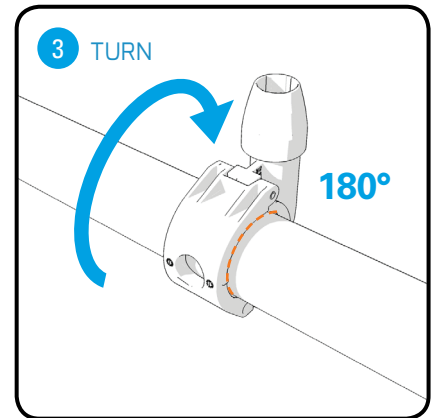
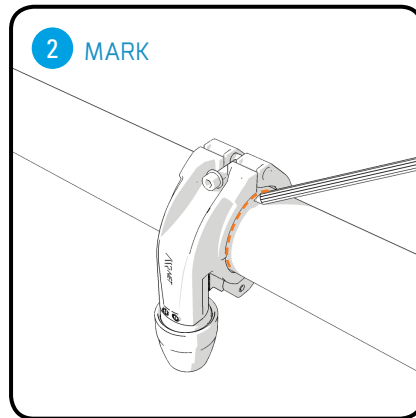
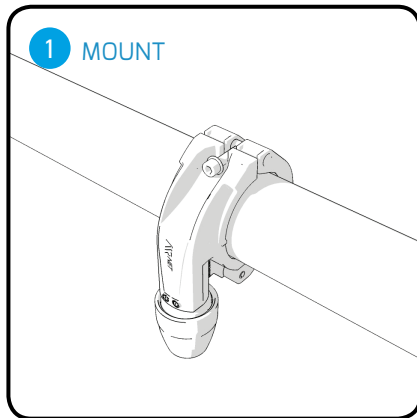
4027 1323 08

Hexagon Socket - D158

0462 3601 23

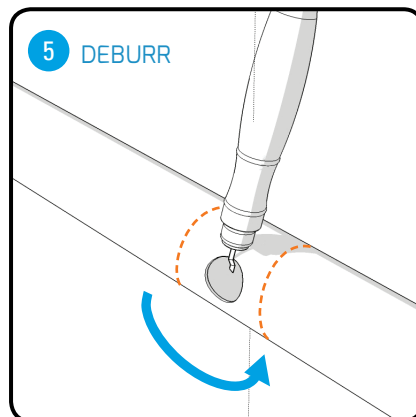


Quickdrop Assembly



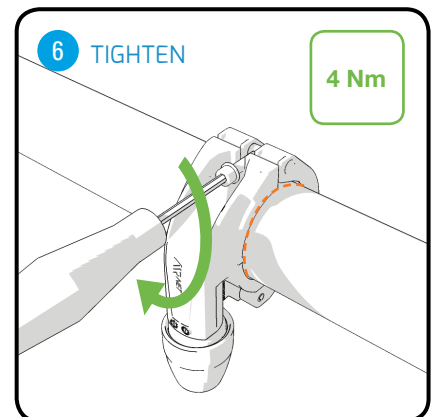
Ø 25 mm drill bit 2810 0143 00

Ø 40-80 mm drill bit 2810 0243 00

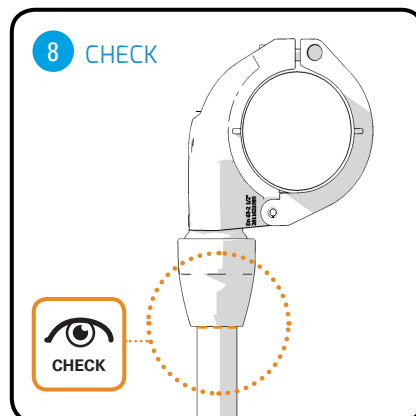
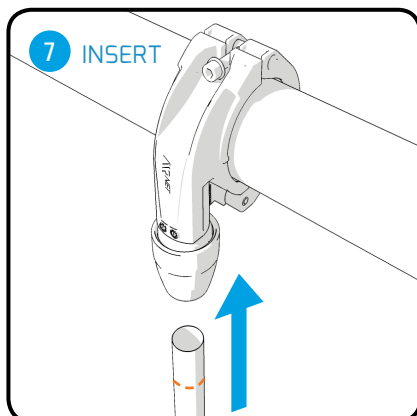


Heavy Duty 2810 0641 00

Light Duty 2810 0042 00



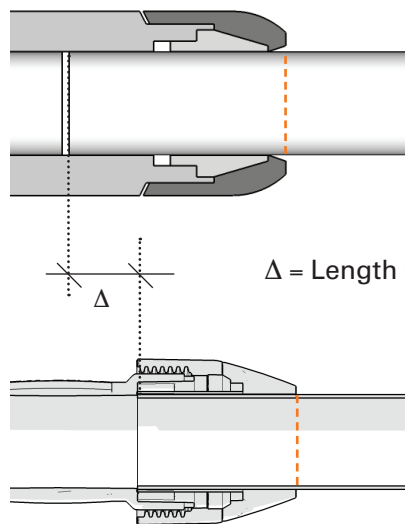
ALL 2811 0149 00



Replace Classic Series with new PF Series

Diameters 20 - 50 mm / $\frac{3}{4}$ " - 2"

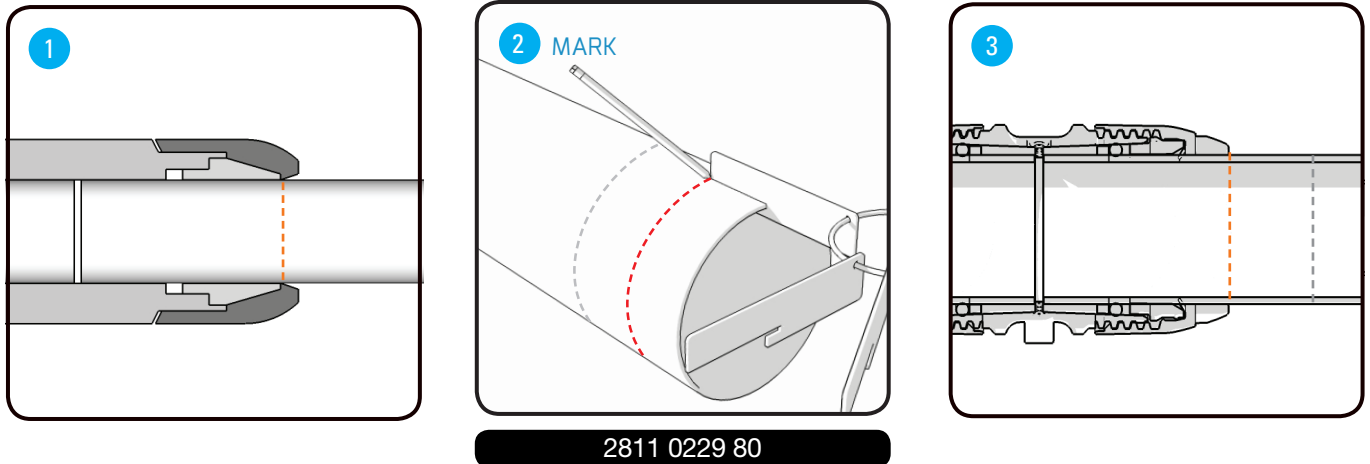
Δ						
ø 20 mm	21.5 mm	9 mm	9 mm	8 mm	8 mm	13 mm
ø 25 mm	19 mm	14.5 mm	13 mm	6 mm	8 mm	20 mm
ø 40 mm	38 mm	23 mm	28 mm	23 mm	9 mm	35 mm
ø 50 mm	37.5 mm	32 mm	35 mm	32 mm	0 mm	34 mm
ø $\frac{3}{4}$ "	$\frac{7}{8}$ "	$\frac{3}{8}$ "	$\frac{3}{8}$ "	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$\frac{1}{2}$ "
ø 1"	$\frac{3}{4}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{1}{4}$ "	$\frac{1}{4}$ "	$\frac{3}{4}$ "
ø 1 $\frac{1}{2}$ "	1 $\frac{1}{2}$ "	$\frac{7}{8}$ "	1 $\frac{1}{8}$ "	$\frac{7}{8}$ "	$\frac{3}{8}$ "	1 $\frac{3}{8}$ "
ø 2"	1 $\frac{1}{2}$ "	1 $\frac{1}{4}$ "	1 $\frac{3}{8}$ "	1 $\frac{1}{4}$ "	0"	1 $\frac{3}{8}$ "



Δ = Length to be cut off before replacement

Replace Classic Series with new Black Series

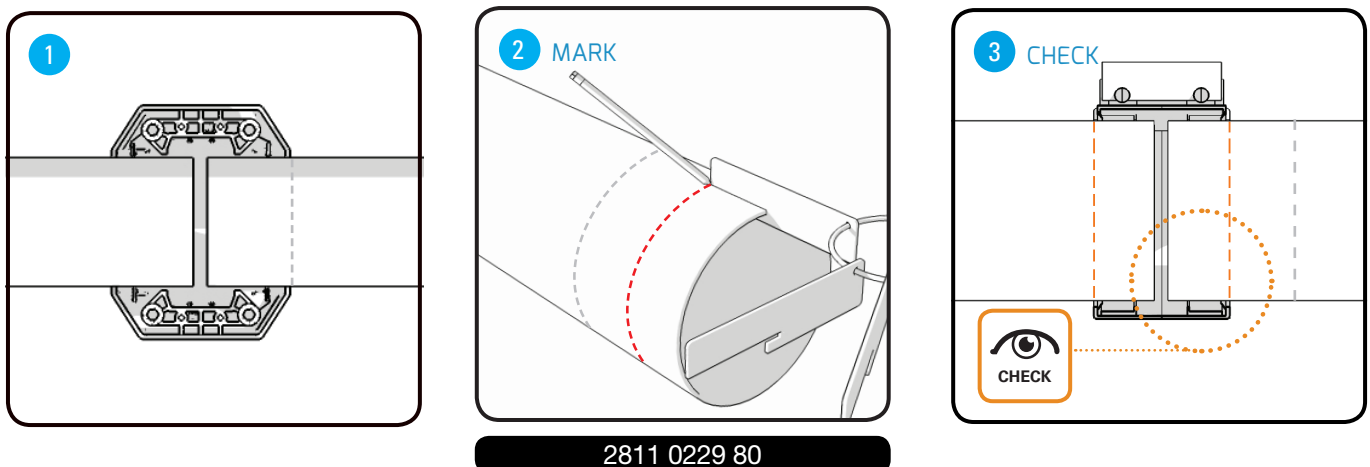
Diameters 63 – 80 mm / 2½" - 3"



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"

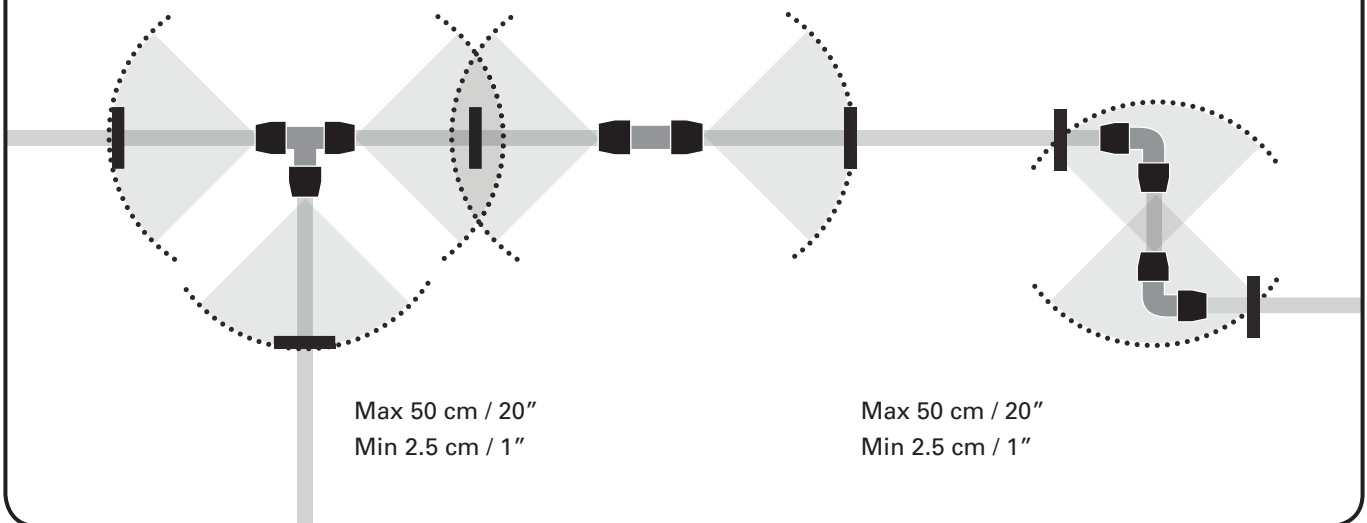


Note: When replacing the old D100 fitting with the new D100 fitting, only a new marking is needed, no cutting of pipes.

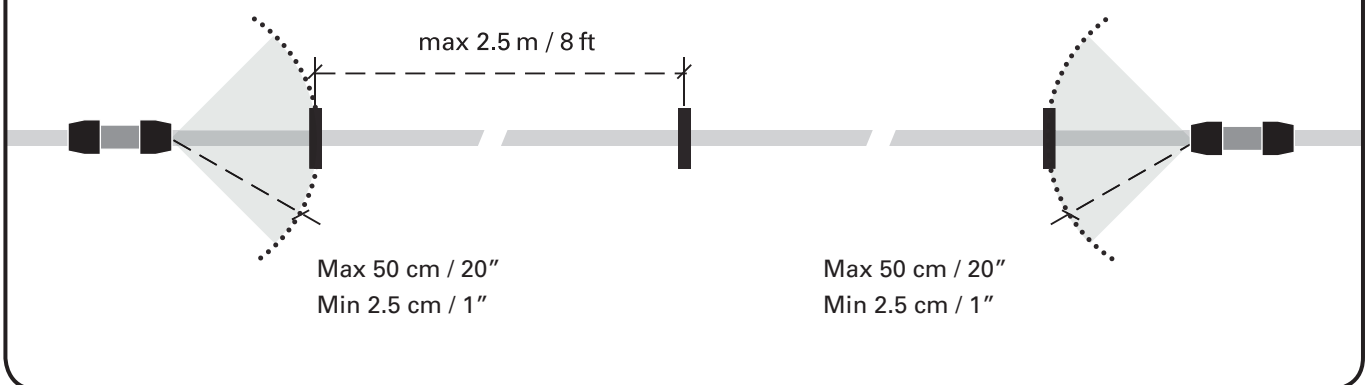
Pipe Clips Installation

Diameters 20 - 158 mm / $\frac{3}{4}$ " - 6"

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

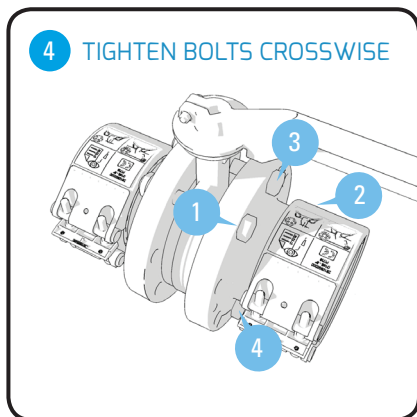
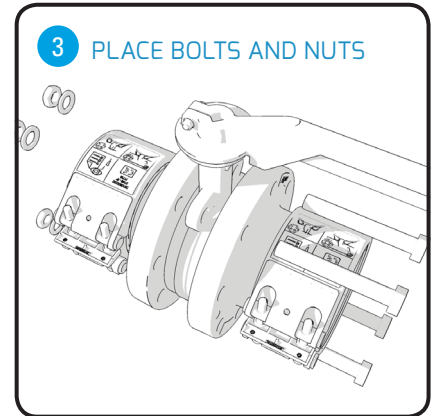
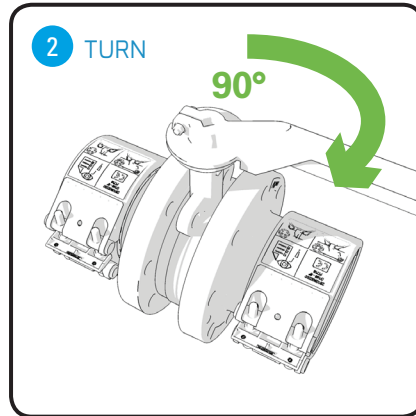
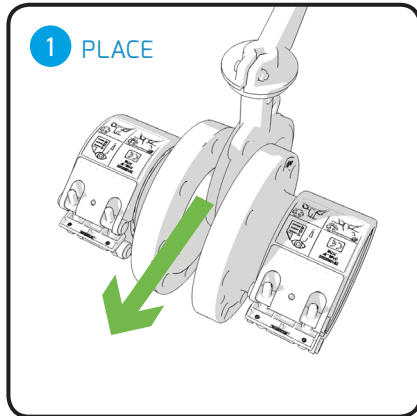


Rule #2: Maximum 2.5 m / 8 ft between 2 pipe clips



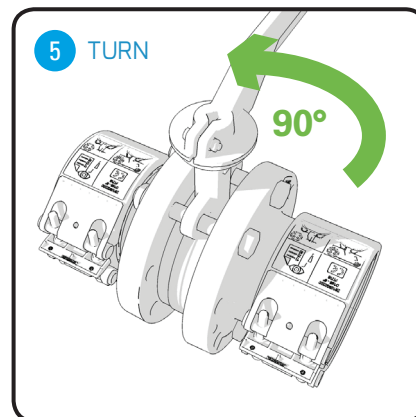
Butterfly Valve Installation

Diameters 100 – 158 mm / 4" – 6"



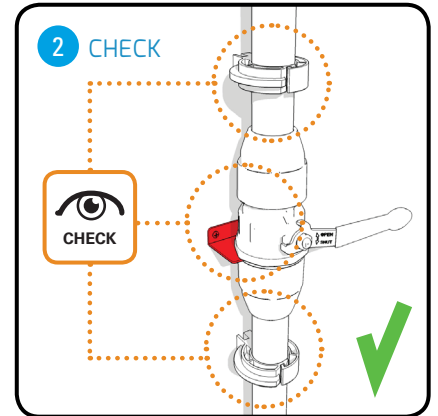
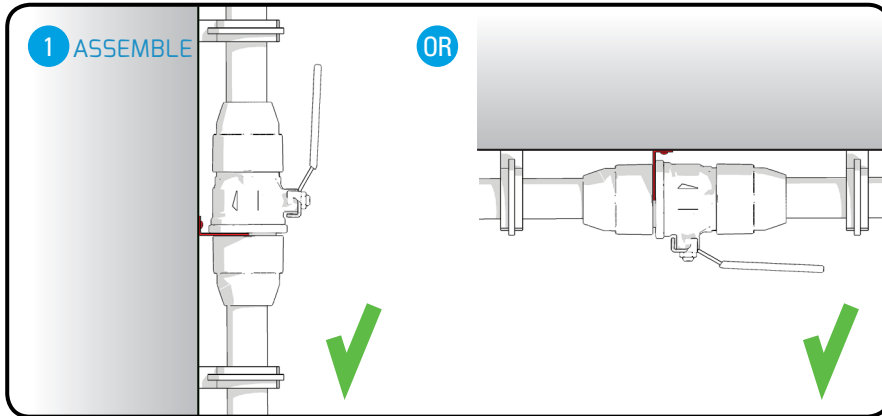
D100
16 Nm
12 lbs/ft

D158
38 Nm
28 lbs/ft

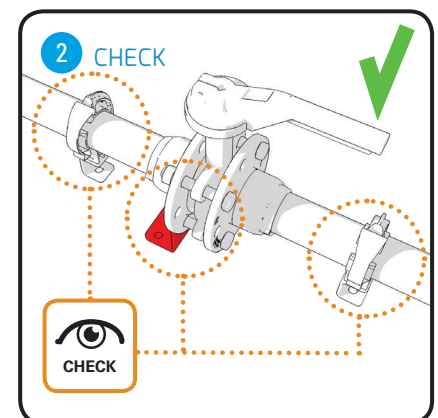
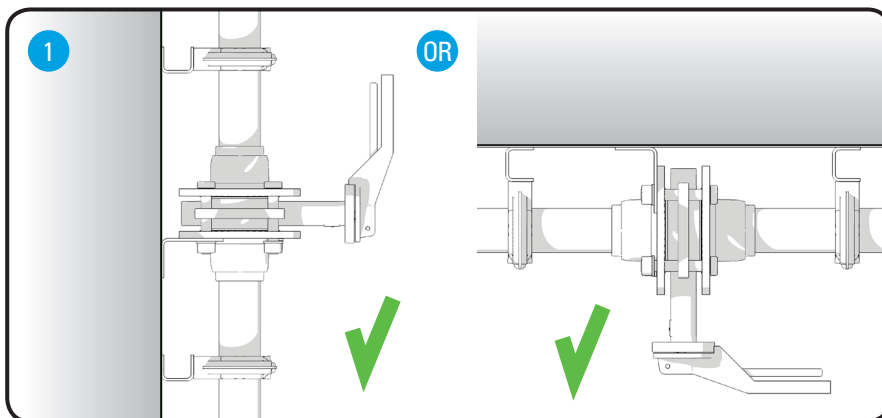


Valve Support

Diameters 20 – 50 mm / $\frac{3}{4}$ " – 2"

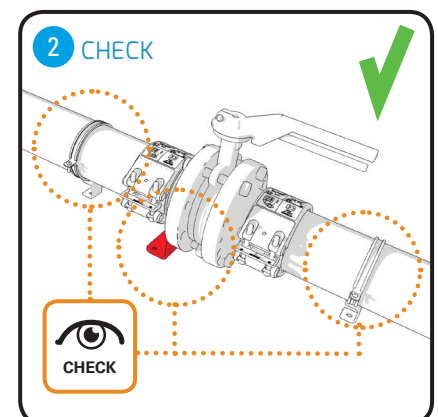
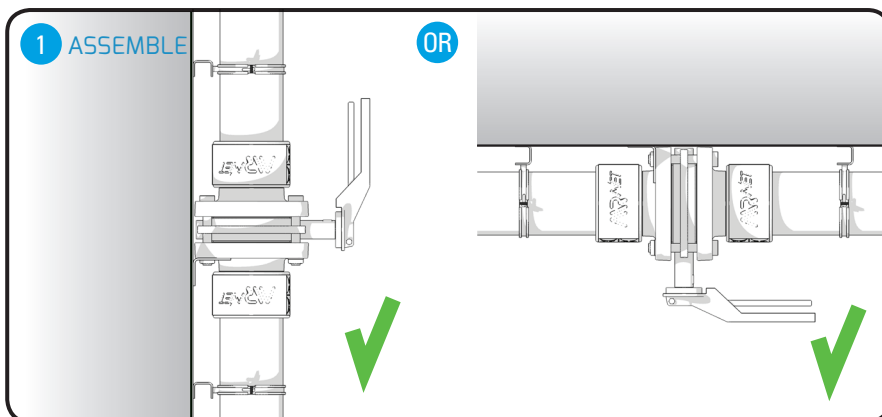


Diameters 63 – 80 mm / $2\frac{1}{2}$ " – 3"

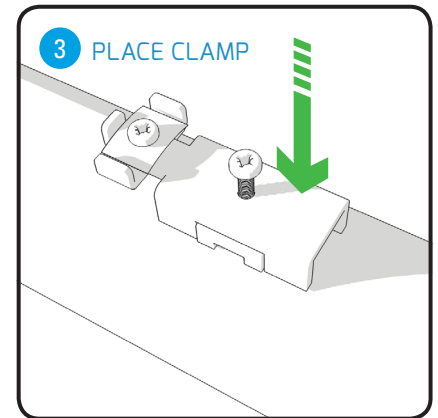
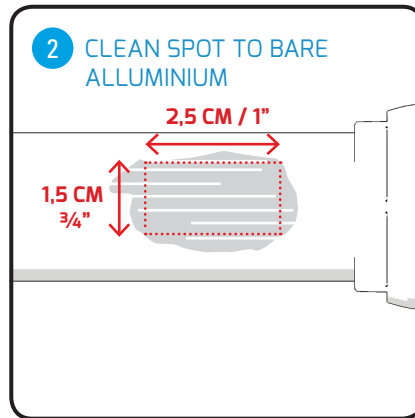
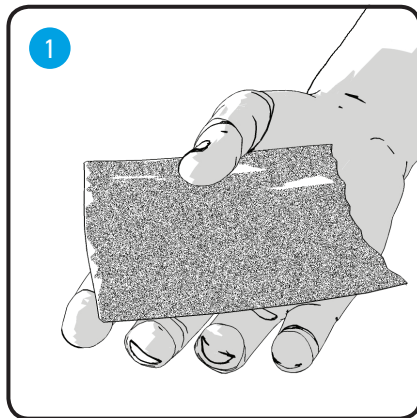


Note: The butterfly valves for 63 mm and 80 mm are delivered pre-assembled with the flanges.

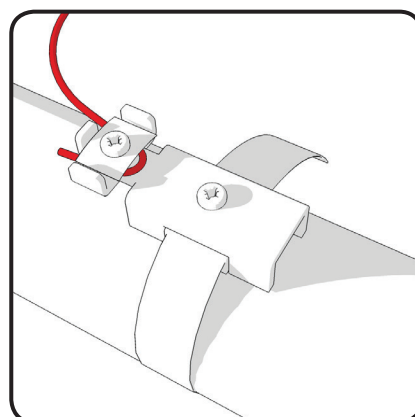
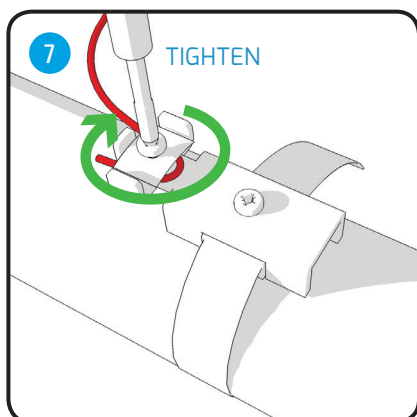
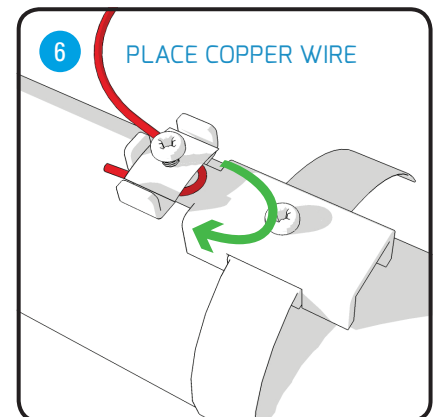
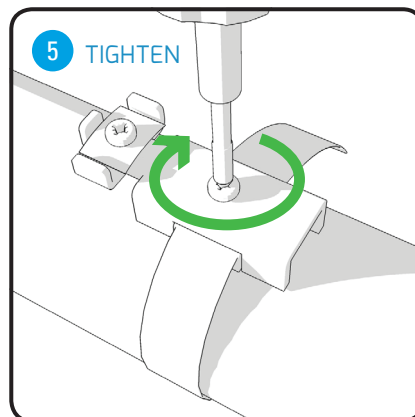
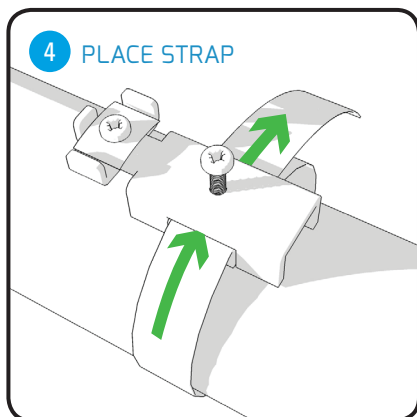
Diameter 100 – 158 mm / 4" – 6"



Mounting Conductivity Strap

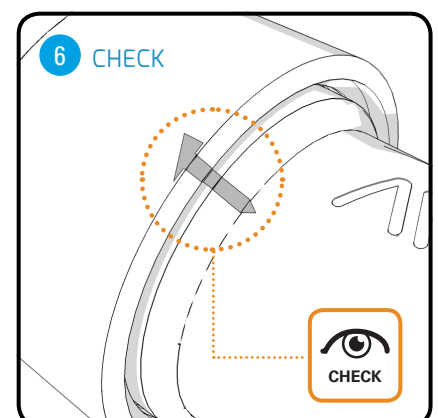
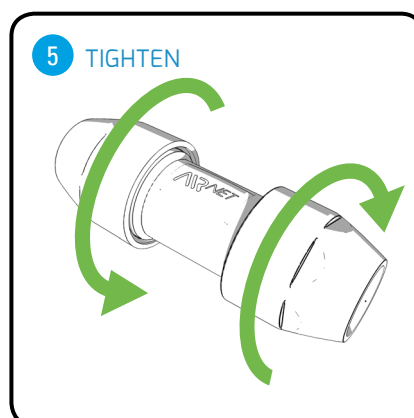
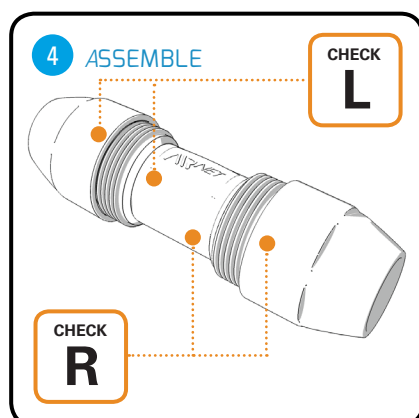
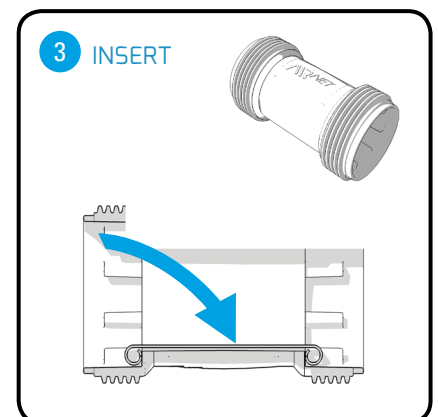
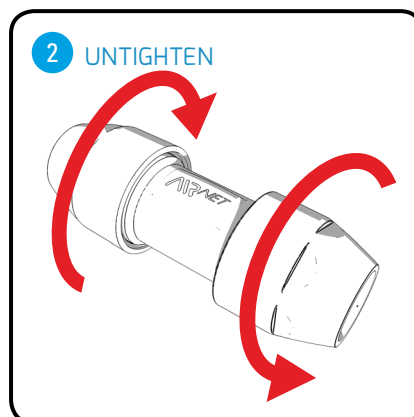
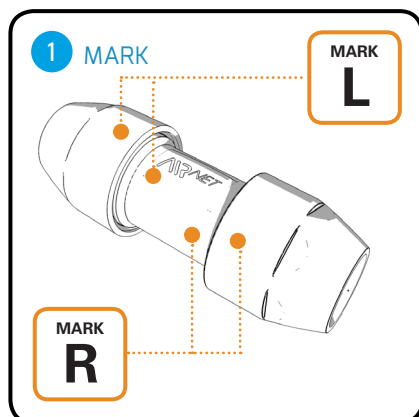
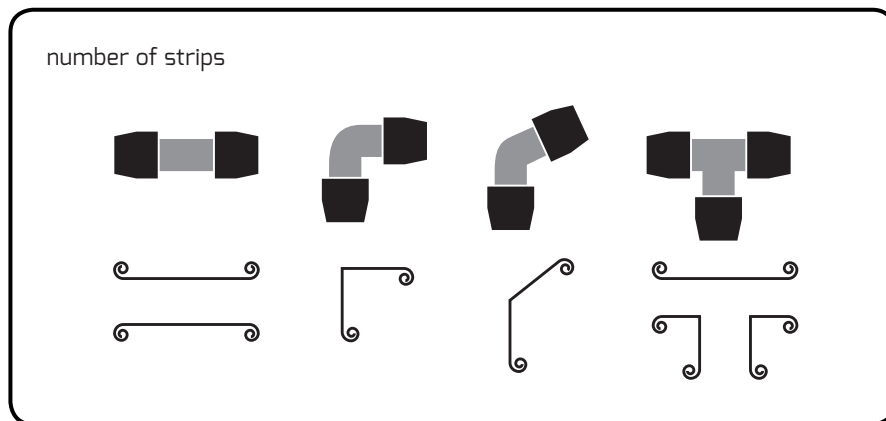


2810 0191 00



Mounting Conductivity Strip

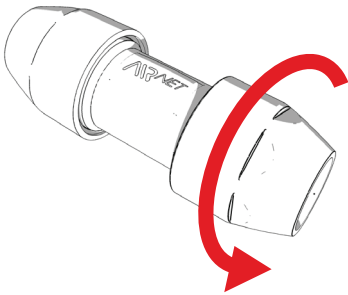
PF Series only



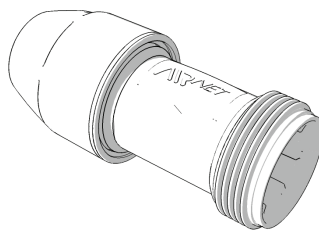
Adapter Union

PF series Diameters 20 – 50 mm / $\frac{3}{4}$ " - 2"

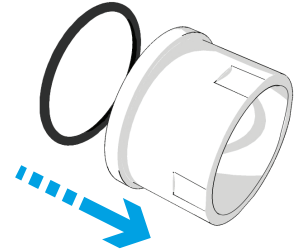
1 UNSCREW



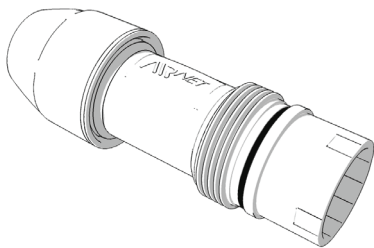
2 REMOVE



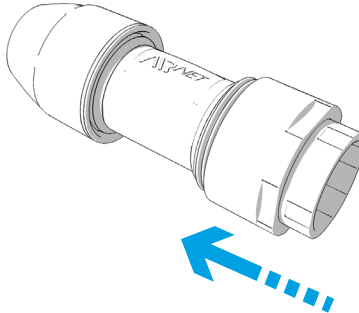
3 O-RING ASSEMBLY



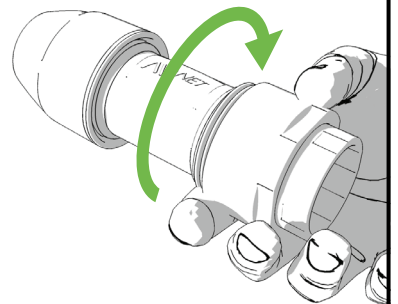
4 BODY ASSEMBLY



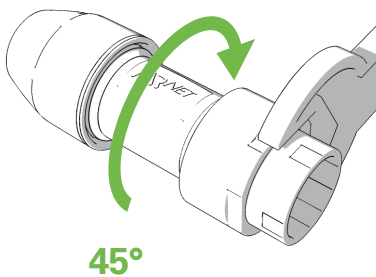
5 ADAPTER ASSEMBLY



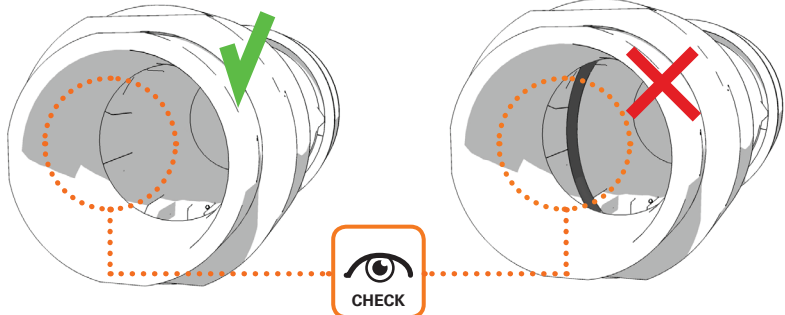
6 SCREW ON



7 TIGHTEN



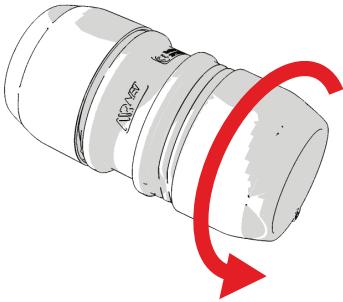
8 CHECK



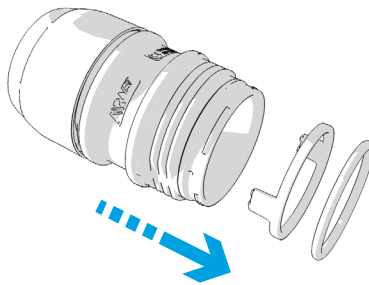
Adapter Union

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

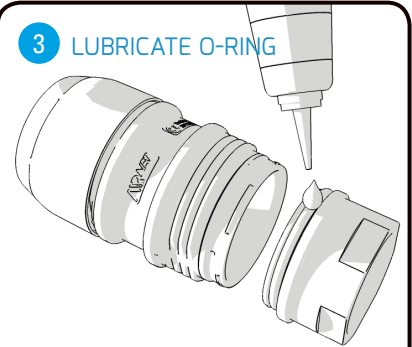
1 UNSCREW



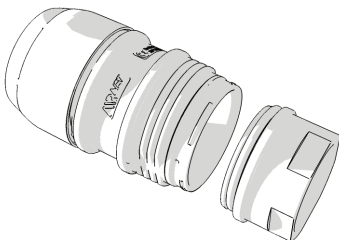
2 REMOVE



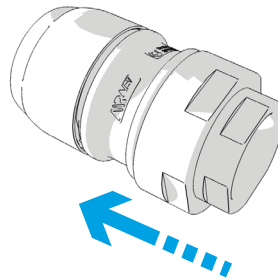
3 LUBRICATE O-RING



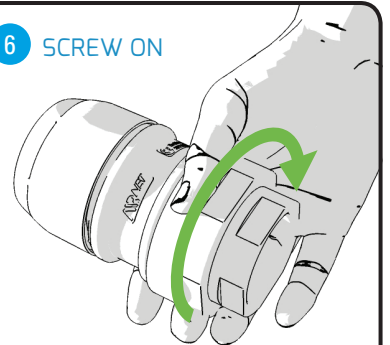
4 BODY ASSEMBLY



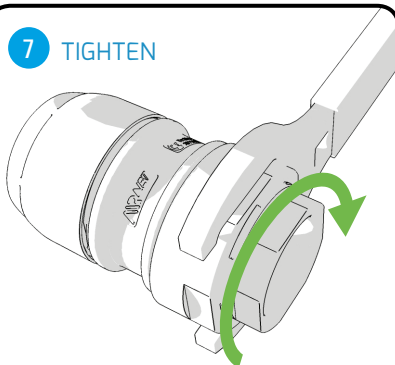
5 ADAPTER ASSEMBLY



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.