

04
2023

Aluminium

Installation and Assembly Guide

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AIRnet Installation Instructions

Notice 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
- Class 0 valves are used
- The inlet air of the AIRnet piping system fulfills the requirements of ISO8573-1:2010 (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.

Notice B: Certified Installer

At AIRnet, we take pride in the quality and safety of our products. That's why we require that all installations are carried out by a certified installer, who is highly trained and equipped to handle all aspects of the installation process.

Notice C: Complete Comprehension

This comprehensive manual must be thoroughly read in its entirety in order to have a complete understanding of the AIRnet assembly process.

Operating Conditions

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 and 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 Product Information Sheet.



AIRnet fittings are sensitive to direct UV radiation. In case of direct exposure, shield the fittings.



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



AIRnet system must be appropriately protected against violent impacts.



AIRnet pipes and fittings are not suitable for direct contact with soil. A watertight PVC pipe suited for underground or outside installations can be installed around the AIRnet pipe.

AIRnet aluminium supports pressure dewpoints up to -40°C and is expected to be operated in C3 and below corrosivity categories according to EN ISO 12944-2.



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



AIRnet pipes should never be connected directly to a source of vibrations (in these cases, use hoses instead).

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

Pressure relief valves must be installed where needed to guarantee that the 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 an electric wire (except the D158 / 6" equal socket and the D100 / 4" equal socket). Please refer to page 39 for more information.

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.

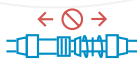
Cutting, deburring and assembly of AIRnet pipes may create sparks. Necessary precautions in explosive atmospheres must be taken.

Safety Instructions

Safety Instructions



AIRnet is not meant to bear weight beside its own weight. Heavier accessories incorporated into the AIRnet system (like filters or valves) need proper supporting.



Do not disassemble the inner parts of the nuts of the AIRnet fittings.



Do not use any other brand fittings or pipes in combination with AIRnet aluminum products.

There are AIRnet parts in the portfolio to interconnect with other piping systems using standard threaded (ISO, NPT) or flange connectors (DIN, ANSI).



Please consider the potential galvanic corrosion when combining parts with different material.

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.



Installation, adjustments and repair work of an AIRnet system must be strictly in line with the instruction guides given in this installation manual.



Installers must use the necessary protection means (PPEs). 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.

Please conduct an LMRA (last minute risk assessment) before commencing an AIRnet installation.

Only genuine AIRnet fittings and tools 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 scratches, abrasions, dents, burs, etc.



Use only solvents or chemicals which do not damage the materials of AIRnet. Please consult page number 14 in this document. If in doubt, contact your AIRnet rep if you need more information about compatible cleaning agents.



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

Never use damaged AIRnet fittings or tools.

AIRnet aluminium Product Information

AIRnet is a reusable aluminum piping system* designed in line with EN 13480-3 to deliver a fast, easy, and reliable distribution network for Compressed Air, Vacuum, Nitrogen, Helium, Argon, Neon, Xenon and Krypton. AIRnet technologies and innovations are based on technical expertise gained from more than 140 years of experience with pressurized air applications and equipment.



PIPES

20 (¾") - 25 (1") - 40 (1 ½") - 50 (2") - 63 (2 ½") - 80 (3") - 100 (4") - 158 (6") mm

Applications	Compressed Air and Vacuum	EN standard
Additional Gasses	Nitrogen, Helium, Argon, Neon, Xenon and Krypton	
Material	Extruded aluminum alloy EN AW-6060 T6 (similar to alloy 6063T5)	EN 755-2 (ASTM B241)
Safety factor	64bar - 4x MAWP for all diameters (burst pressure)	(according to ASME B31.1)
Working pressure	Max 16 bar(g) (Max 232 psig) (D158: max 13 bar (188 psig) acc. ASME B31.1)	
Working temperature	-20°C to 80°C (-4°F to 176°F)	
Vacuum level	13 mbar(a) (0.189 psia)	
Dewpoint	Lowest allowable pressure dewpoint is -40°C (-40°F)	
Outside treatment	Polyester powder paint (according to QUALICOAT Standards)	
Inside treatment	Chrome free conversion treatment	
Colors	Blue RAL 5012, Green RAL 6018 and Grey RAL 7001	

* Except for Black Series system, please refer to page 24.



PF SERIES FITTINGS

20 (¾") - 25 (1") - 40 (1 ½") - 50 (2") mm

Connection	Push to fit technology	EN standard
Materials	Engineered polymer PA6 - GF30 fiberglass reinforcement Aluminum high pressure die casting EN AC-46100 (Similar to A03830) Wrought aluminum alloy EN AW-6026 (Similar to alloy 6082)	EN 1706 (ASTM B85) EN 755-2 (ASTM B221)
Seal fittings	NBR 70 Sh A (PTFE coating on pipe seal)	EN 755-2 (ASTM B241)



PM SERIES FITTINGS

63 (2 ½") - 80 (3") mm

Connection	Torque to grip technology, pre marked	EN standard
Materials	Aluminum high pressure die casting EN AC-43400 (similar to A360) Wrought aluminum alloy 6082	ASTM B85 / EN 1706 ASTM B221
Seal fittings	NBR 70 Sh A	



BIGGER DIAMETERS FITTINGS

100 (4") - 158 (6") mm

Connection	Bolt clamp technology	EN standard
Materials	Aluminum permanent mold casting EN AC-43100 (Similar to A13600) Stainless Steel EN 1.4301 (Similar to alloy 304)	EN 1706 (ASTM B85) EN 10088-2 (AISI 304)
Seal fittings	NBR 70 Sh A	



QUICKDROPS FITTINGS

100 (4") - 158 (6") mm

Connection	Bolt clamp technology Torque to grip technology	EN Standard
Materials	Aluminium high pressure die casting EN AC-44500 (similar to A413) Engineered polymer PA6 - GF30 fiberglass reinforcement	EN 1706 (ASTM B85)
Seal fittings	NBR 70 Sh A (PTFE coating on pipe seal)	



BLACK SERIES FITTINGS

63 (2 1/2") - 80 (3") mm

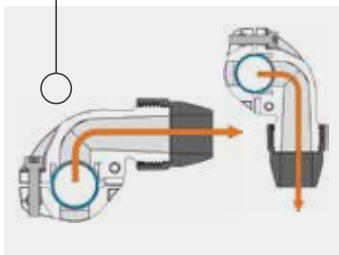
Connection	Torque to grip technology	EN standard
Materials	Aluminum high pressure die casting EN AC-46100 (Similar to A03830) Aluminum permanent mold casting EN AC-43100 (Similar to A13600) Wrought aluminum alloy EN AW-6026 (Similar to alloy 6082)	EN 1706 (ASTM B85) EN 1706 (ASTM B85) EN 755-2 (ASTM B221)
Seal fittings	NBR 70 Sh A	

Guarantee
10
years



AIRnet is fast, easy to install and flexible for the future

Quickdrop design
safeguards leaktight and
condensate free droplines



Time and tooling

- Quick connections with no need to crimp, thread, solder or glue the pipe
- No heavy tooling or machinery required
- PF series and PM series can be connected to any existing network via simple use of adaptor unions and nipple sockets
- PF series is assembled by hand, a push of the pipe into the fitting is all it takes

Modularity

- Easy to handle and easy to work with lightweight materials
- Modular design supports extensions and modifications to meet new demands
- Components are interchangeable and reusable after disassembly
- Quickdrops are easily mounted, both horizontally and vertically

Durable and corrosion
resistant materials



White torque indicators
(PF Series)

AIRnet is reliable, safe, and maintenance free

Sustainability

- Optimized inner body design minimizes flow resistance and pressure drop in the fittings
- Low friction factor and seamless connections minimize pressure drops in the pipe network
- Superior sealing technology ensures a leak free system and maintains performance over time
- Durable and corrosion resistant materials offers a maintenance free system

Safety

- Safety factor of 4 for all diameters (64 bar burst pressure)
- Camera control and automatic assembly guarantee zero defect manufacturing
- Plastic components and pipe clips comply to UL 94 HB and UL 94 V-2 for flammability
- Torque indicators ensure sufficient torquing

LMRA (Last Minute Risk Assessment)

This checklist is a risk assessment to be performed on-site at the customer and must be preceded by a detailed risk assessment.

General

STEP 1: EVALUATION BEFORE THE START OF WORK

	YES	NO	N/A
Do I know what to do and how?			
Am I trained to do this kind of work?			
Is my work equipment suitable and in good condition / inspected?			
Do I have the necessary PPE, and do they offer appropriate protection?			
Do I have a work permit that allows me to start?			
Is my working environment free of slipping, tripping and/or falling hazards?			
Is my work environment sufficiently enlightened?			
Have I identified all energy sources and followed the Lock Out – Tag Out procedure?			
Do I know the VGM regulations of dangerous products that I am going to use?			
Is the atmosphere in and around my work environment safe? (confined space, explosion)			
Is the danger of falling objects excluded?			
Am I sufficiently protected against falls from height?			
Are the weather conditions good?			
Can I lift loads manually in an ergonomic way?			
Is my work environment defined?			
Is there regular supervision when I work in isolation?			
Am I aware of the risks of other activities in my work environment?			
Do I know the locations of first aid equipment (e.g. emergency shower, eyewash bottle)			
Do I know the locations of firefighting equipment (e.g.; extinguisher, reel)			
Do I know the alarm procedure and numbers in the event of a fire or accident?			
Do I know my escape route and evacuation site?			
Have I taken all measures to prevent environmental pollution?			

LMRA (Last Minute Risk Assessment)

**AIRnet
specific**

	YES	NO	N/A
Did I read and understand the installation manual for AIRnet - www.airnet-system.com			
Is scaffolding and/or lifting equipment inspected and in good condition?			
Will the AIRnet system be installed within the limits of the product in terms of environment, pressure and temperature?			
Will the AIRnet system be used for the gasses mentioned in the technical datasheet OR has a written confirmation from the manufacturer been obtained that claims AIRnet can be used for this type of gas?			
Will the AIRnet system be properly earthed (electrically?)			
Did I check for any damage to the AIRnet material due to transport?			
Did I check if the tools used are in good condition and have been maintained as per requirement?			
Did I check if the right tools are available for carrying out the AIRnet installation?			

STEP 2: MEASURES TO ELIMINATE OR REDUCE EXISTING RISKS TO AN ACCEPTABLE LEVEL

STEP 3: PRESENT WHEN FORMATTING THIS LMRA

Name	Date	Signature

Commissioning Report

All AIRnet commissioning has to be registered in the F3 app!

Go to <https://airnetinstructions.com/> to register your installation and get up-to-date information about AIRnet.

Commissioning data to be collected and submitted in the F3 app as shown below:

Certified installer:	Responsible AIRnet champion:
Customer:	Commissioning date (dd/mm/yyyy):
Customer address:	
<input type="checkbox"/> Expansion of existing installation	<input type="checkbox"/> New installation

Before installation

SAFETY

- ☐ All safety instructions at customer site have been acknowledged and applied.
- ☐ The AIRnet installation manual (latest version is available on the website: <https://www.airnet-system.com/en>) has been read and understood. The installation is carried out in accordance with the instructions in this manual.

MEDIUM

- ☐ Compressed air
- ☐ Vacuum
- ☐ Nitrogen
- ☐ Other: _____

	T _{MAX} _____ °C / °F
	T _{AVG} _____ °C / °F
	T _{MIN} _____ °C / °F
	Working pressure _____ bar(g) / psi

AMBIENT CONDITIONS

If installed outdoors: is the installation protected from

- ☐ Direct sunlight?
- ☐ Rain / snow / ice?
- ☐ Wind?

NETWORK LAYOUT

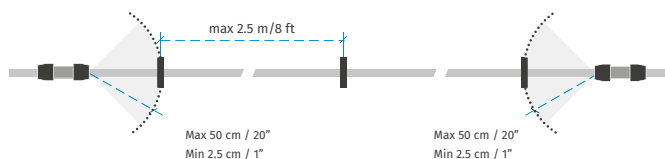
- ☐ To ensure proper draining of condensate, pipes should be sloped at 1-2% and a drain point should be foreseen at every lowest point of the line.
- ☐ Ensure that pressure vessels are bolted to the floor, and that vibrations may not be transmitted to the AIRnet piping.
- ☐ Expansion loops
Number of expansion loops: _____
Longest straight line: _____ m/ft

Installation

A pipe clip has been foreseen within 50cm (20") of every side of every fitting

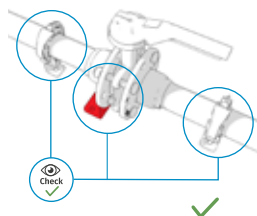
☐ AND

A pipe clip has been foreseen every 2,5m (100") for longer stretches of pipe

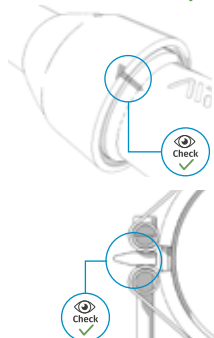


Commissioning Report

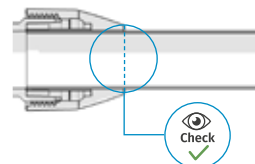
- ☐ All valves and flanges are supported by 2 pipe clips and a dedicated valve support



- ☐ Torque markers have been verified on at least 10% of fittings.
- For PF series 20mm (¾") to 50mm (2")
 - For PM series 63mm (2 ½") and 80mm (3")
 - For Bigger diameters 100mm (4") and 158mm (6").

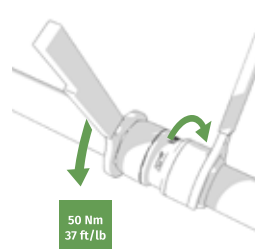


- ☐ Insertion depth markers have been checked on at least 10% of fittings



Black Series

- ☐ Verify torque by re-torquing all fittings with the torque wrench and corresponding head.
- For Black series 63mm (2 ½") and 80mm (3").



Commissioning

- ☐ The installation has been tested according to the procedure below
1. Apply pressure of 1,5 bar / 22 psi to the system.
 2. Check if the pressure is dropping between the end of the line and the vessel. If pressure remains stable, go to point 4.
 3. Use leak finder spray or an ultrasonic leak detector to find the leak. Depressurize the system, rectify the leak and go back to step 1.
 4. Increase pressure gradually (max 1 bar / 14 psi every 5 minutes)
 5. Close the main valve and monitor the pressure at the end of the line for 30 minutes. If the pressure is dropping, go to point 3.
 6. To be checked: 24h before handover

Leaks / disconnections detected during first pressurization at 1,5 bar / 22 psi

- ☐ No
- ☐ Yes, _____ leaks found
- ☐ Yes, _____ disconnections

Leaks / disconnections detected during final pressurization at working pressure

- ☐ No
- ☐ Yes, _____ leaks found
- ☐ Yes, _____ disconnections

- ☐ The pressure difference between the compressor room and final point of use is approved by the customer.

Signatures

AIRnet installer	AIRnet champion	Customer representative

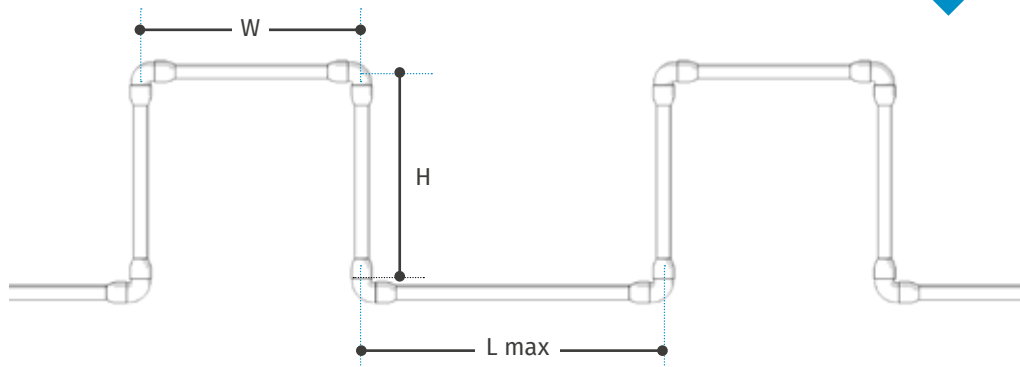
Cleaning Products

Product	Usage in the field	Aluminum of pipes	Blue coating on alu pipes	PF series fittings
Disinfection/sterilization				
Ethyl Alcohol (ethanol) (60-90%)	Seldom, used on small external surfaces	Good	Good	Good
Isopropyl alcohol (isopropanol)	Seldom, used on small external surfaces	Good	Good	Good
Amphoteric		Good	Unknown	Unknown
Quaternary ammonium compounds (QAC)	environmental sanitation of noncritical surfaces	Good	Unknown	Unknown
Glutaraldehyde	high-level disinfectant for medical equipment, not for non-critical surfaces	Good	Unknown	Good (Butanal: partially resistant)
Formaldehyde	Seldom, produces carcinogenic fumes	Good	Unknown	Good (at concentration of 40% or less)
Whole Room disinfection/sterilization				
QAC fogging		Unknown	Unknown	Unknown
Cleaning (components)				
surfactants (detergents in general)		Good	Unknown	Good
Ethylene diamine tetracetic acid (EDTA)		Unknown	Unknown	Good

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 rigid pipes as expansion loops, any length of flexible can be used.

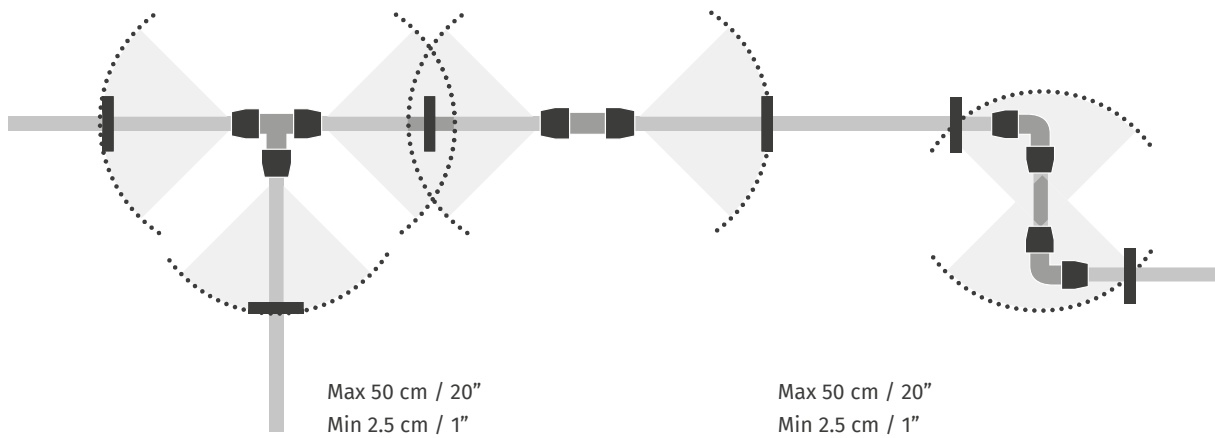
Installation

Pipe Clips Installation Diameters 20 - 158 mm / 3/4" - 6"

Rule #1

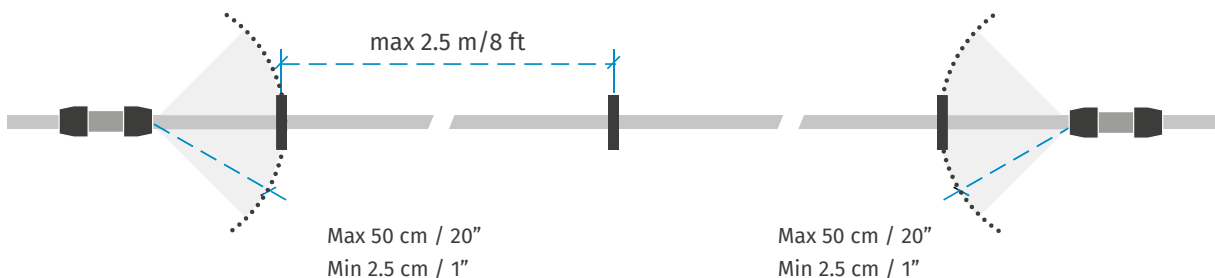
Every side of a fitting should have minimum 1 pipe clip within a distance of max 0.5 m / 20"

Make sure the piping system is rigidly supported to the structure of the building so that movement due to external forces (e.g. wind) are prevented.



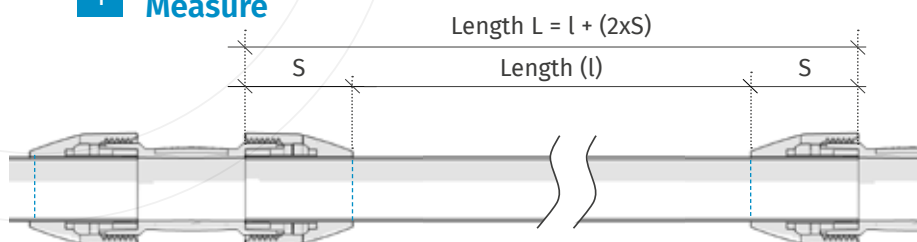
Rule #2

Maximum 2.5 m / 8 ft between 2 pipe clips



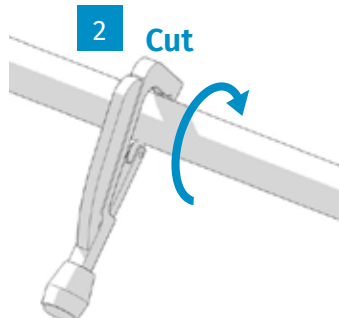
Installation - PF Series Diameters 20 - 50 mm / 3/4" - 2"

1 Measure



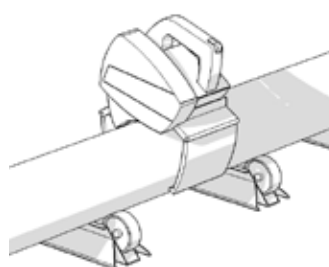
ϕ	S
20 mm / 3/4"	39 mm / 1 1/2"
25 mm / 1"	44 mm / 1 3/4"
40 mm / 1 1/2"	63 mm / 2 1/2"
50 mm / 2"	78 mm / 3 1/2"

2 Cut



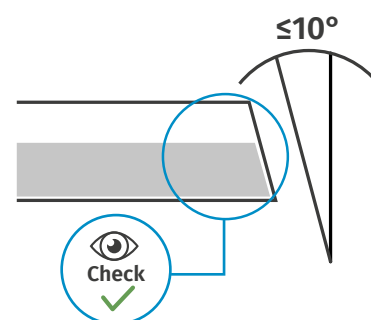
ϕ 20-63 mm 2810 0040 00

OR

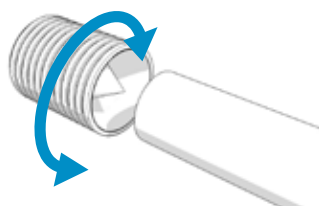


110/120V 2810 0640 80
220/230V 2810 0540 80

3 Check

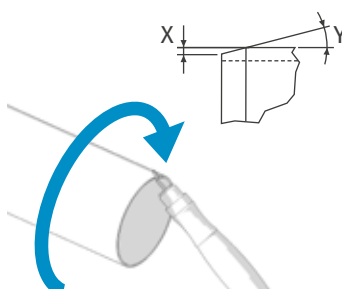


4 Deburr/Chamfer



ϕ 20-50 mm 2810 0141 00

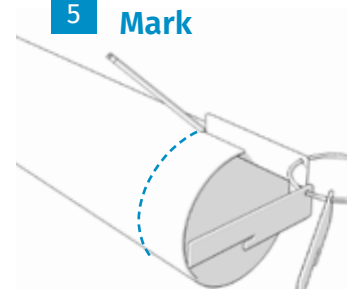
OR



Heavy Duty 2810 0641 00
Light Duty 2810 0042 00

Diameter	X[mm]	Y[°]
D20 2811 1000 00	0.5	15
D25 2811 2000 00	0.5	15
D40 2811 4000 00	0.5	15
D50 2811 5000 00	1	15

5 Mark



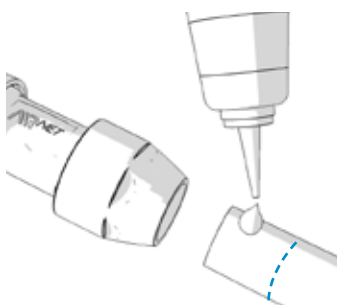
Pipe Marker 2811 0229 80

Installation - PF Series Diameters 20 - 50 mm / 3/4" - 2"



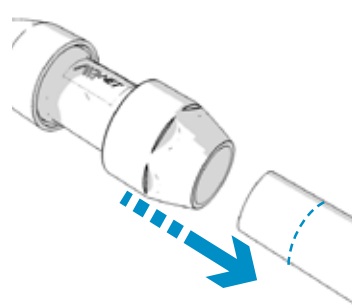
Wrench Ø20	2811 1028 00
Wrench Ø25	2811 2028 00
Wrench Ø40	2811 4028 00
Wrench Ø50	2811 5028 00

6 Lubricate

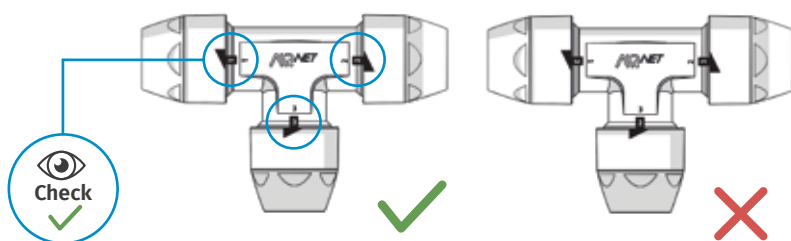


Lubricant	2810 0148 00
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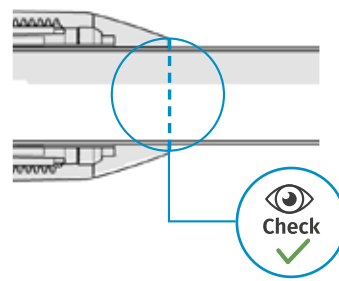
7 Insert



8 The nuts are unique to the side of the fitting

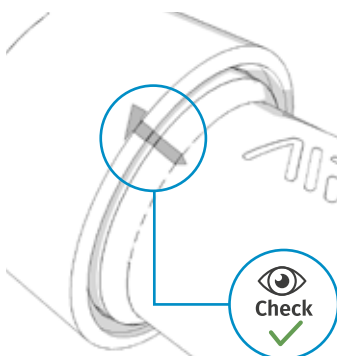


9 Check

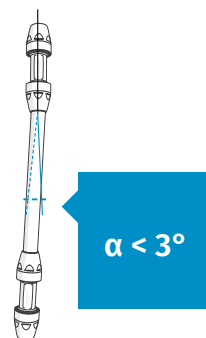


Wrench Ø20	2811 1028 00
Wrench Ø25	2811 2028 00
Wrench Ø40	2811 4028 00
Wrench Ø50	2811 5028 00

10 Check markers



11 Max misalignment 3°

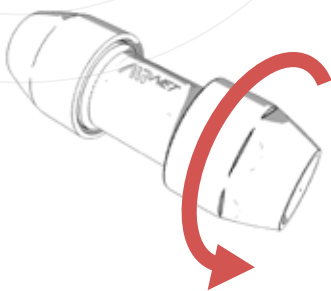


For updated and latest information on the list of chemicals that affects AIRnet, please refer to document number 2946 2422 00.

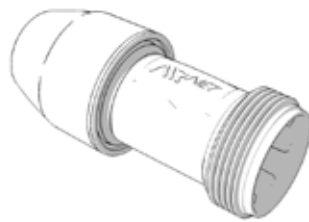
Installation - Adapter Union

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

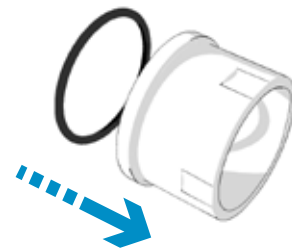
1 Unscrew



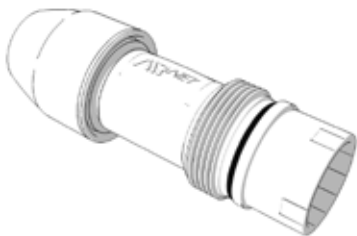
2 Remove



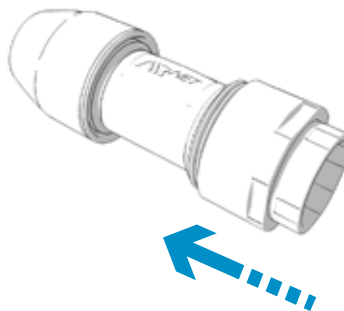
3 O-ring assembly



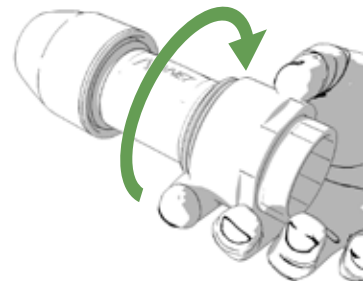
4 Body assembly



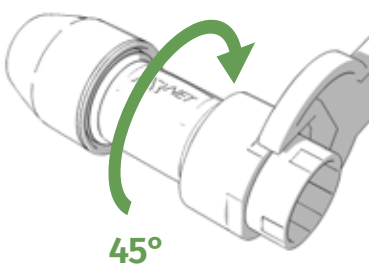
5 Adapter assembly



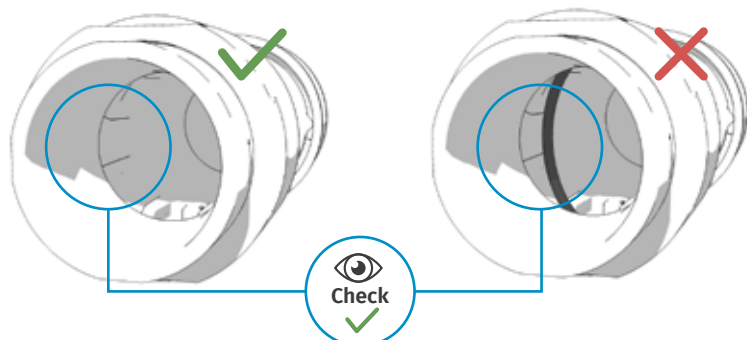
6 Screw on



7 Tighten



8 Check O-ring

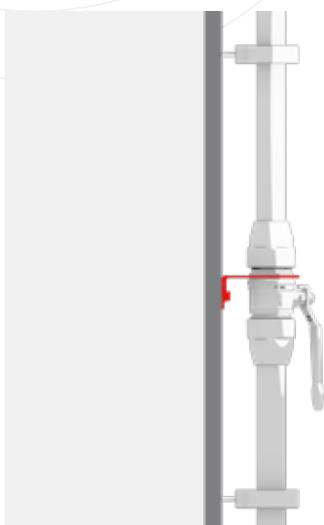


Installation - Valve Installation

PF Series Diameters 20 - 50 mm

/ 3/4" - 2"

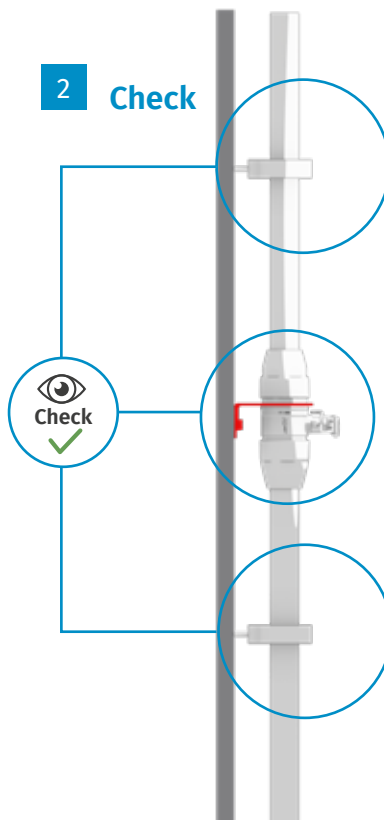
1 Assemble



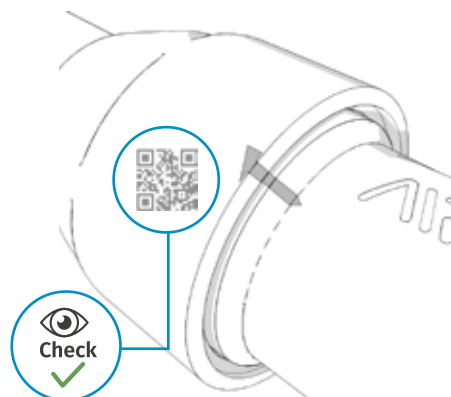
OR



2 Check



(Optional: Check DCM code)



Installation - Valve Installation

PF Series Diameters 20 - 50 mm

/ 3/4" - 2"

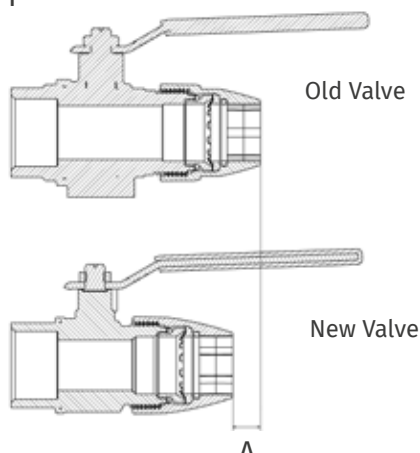
The new valves do not have the same dimension as the old valves. When substituting an old valve for the new version, you will need to use at least one new pipe having extra length according to the difference in length mentioned in the table shown below. The insertion depth of the new valve is the same as the previous one.

Δ	AIRnet	ISO/NPT
ϕ 20 mm	11 mm	7.3 mm
ϕ 25 mm	14 mm	12.4 mm
ϕ 40 mm	/	8.3 mm
ϕ 50 mm	/	6.2 mm

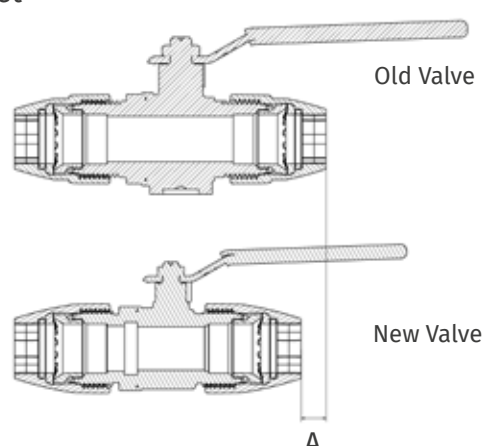
Δ	AIRnet	ISO/NPT
ϕ 3/4"	7/16"	9/32"
ϕ 1"	9/16"	1/2"
ϕ 1 1/2"	/	1 1/32"
ϕ 2"	/	1/4"

	Old Part Number	New Part Number	Description
D20	2811 1051 81	2811 1051 91	AIRnet Valve
	2811 1152 81	2811 1152 91	ISO Valve
	2811 1153 81	2811 1153 91	NPT Valve
D25	2811 2051 81	2811 2051 91	AIRnet Valve
	2811 2252 81	2811 2252 91	ISO Valve
	2811 2253 81	2811 2253 91	NPT Valve
D40	2811 4051 81	2811 4051 91	AIRnet Valve
	2811 4452 81	2811 4452 91	ISO Valve
	2811 4453 81	2811 4453 91	NPT Valve
D50	2811 5051 81	2811 5051 91	AIRnet Valve
	2811 5552 81	2811 5552 91	ISO Valve

ISO/NPT



AIRnet

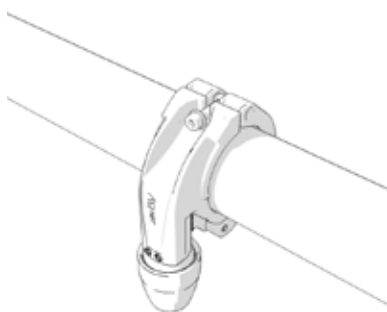


Δ = Length to be added (when cutting the new pipe)

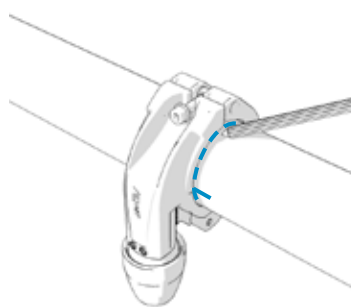
Installation Quickdrop Assembly Diameters 25 - 80 mm / 1" - 3"

System should be
depressurized before
installing the quickdrop!

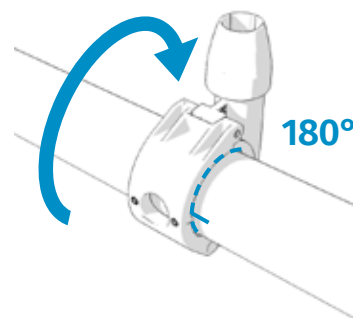
1 Mount



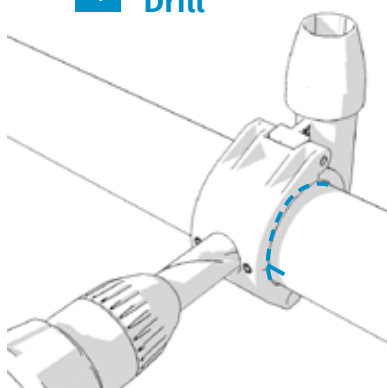
2 Mark



3 Turn

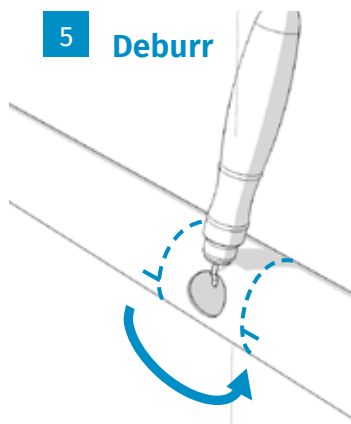


4 Drill



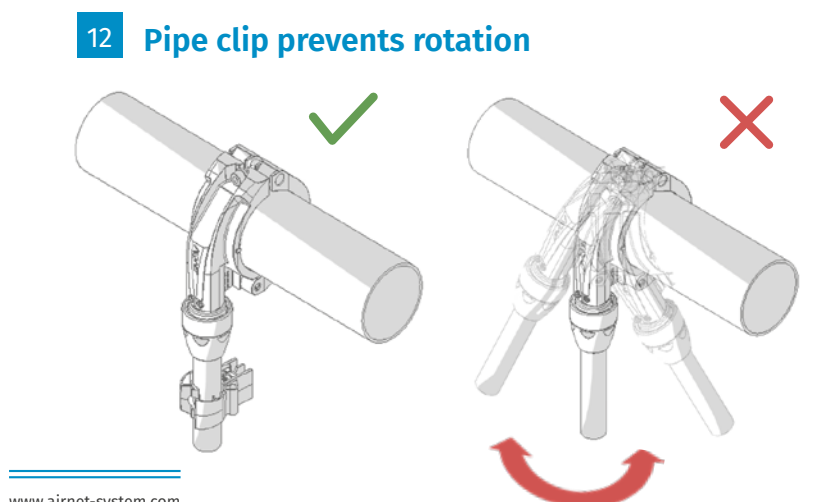
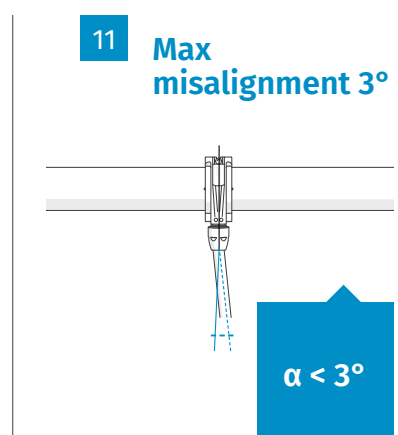
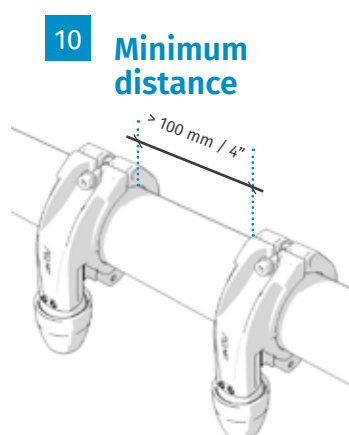
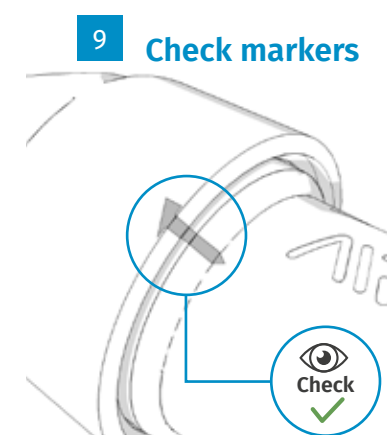
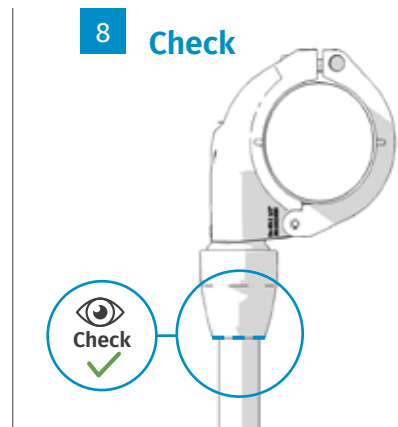
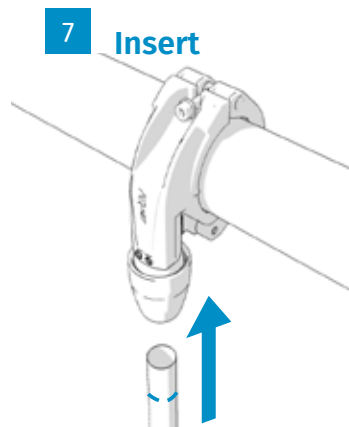
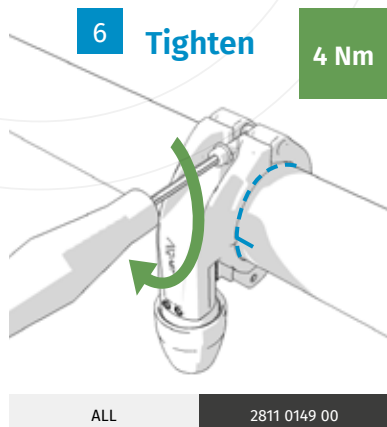
Ø 25 mm drill bit	2810 0143 00
Ø 40-80 mm drill bit	2810 0243 00

5 Deburr



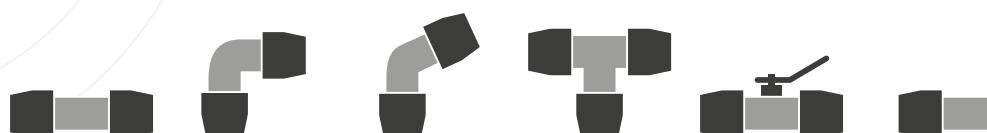
Heavy Duty	2810 0641 00
Light Duty	2810 0042 00

Installation Quickdrop Assembly Diameters 25 - 80 mm / 1" - 3"



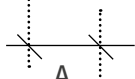
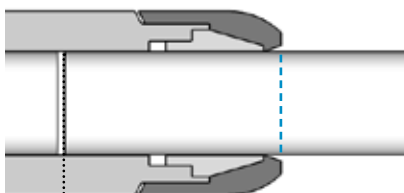
Installation - Replace Classic Series with PF Series

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



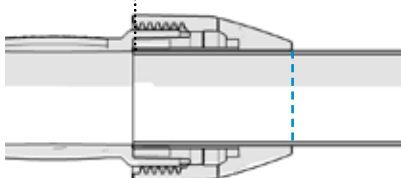
Description	Equal socket	Elbow 90°	Elbow 45°	Equal tee	Ball valve	End cap
Δ						
ϕ 20 mm	21.5 mm	9 mm	9 mm	8 mm	8 mm	13 mm
ϕ 25 mm	19 mm	14.5 mm	13 mm	6 mm	8 mm	20 mm
ϕ 40 mm	38 mm	23 mm	28 mm	23 mm	9 mm	35 mm
ϕ 50 mm	37.5 mm	32 mm	35 mm	32 mm	0 mm	34 mm
ϕ 3/4"	7/8"	3/8"	3/8"	1/4"	1/4"	1/2"
ϕ 1"	3/4"	1/2"	1/2"	1/4"	1/4"	3/4"
ϕ 1 1/2"	1 1/2"	7/8"	1 1/8"	7/8"	3/8"	1 3/8"
ϕ 2"	1 1/2"	1 1/4"	1 3/8"	1 1/4"	0"	1 3/8"

Classic Series



Δ = Length to be cut off before replacement

PF Series



Installation - PM Series

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

Difference between Black Series and pm Series



Black Series	Pre-Marked (PM) Series
Torque at 50 Nm	Torque till marking
Insertion depth \varnothing 63 / 2 1/2": 78 mm	Insertion depth \varnothing 63 / 2 1/2": 73 mm (Δ 5 mm)
Insertion depth \varnothing 80 / 3": 97 mm	Insertion depth \varnothing 80 / 3": 95 mm (Δ 2 mm)
	Decreased risk of installation errors
	Safety screw on the nut
	Light weight
	Easy to assemble (pre-marked)

1 Measure

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

Length (l)

S

\varnothing	S
63 mm / 2 1/2"	73 mm
80 mm / 3"	95 mm

2 Cut

OR

\varnothing 20-63 mm	2810 0040 00
\varnothing 40-100 mm	2810 0140 00

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

3 Check

$\leq 10^\circ$

Check

Installation - PM Series

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

4 Deburr/chamfer

Heavy Duty 2810 0641 00

OR

Diameter	X[mm]	Y [°]
D63 2811 6000 00	1	15
D80 2811 7000 00	1	15

5 Mark

Pipe Marker 2811 0229 90

6 Lubricate

Lubricant 2810 0148 00

7 Check: nut and safety screw loosened

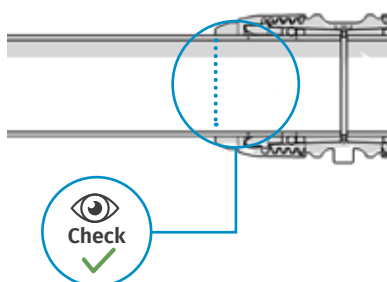
8 The nuts are unique to the side of the fitting, marked with a number

9 Insert

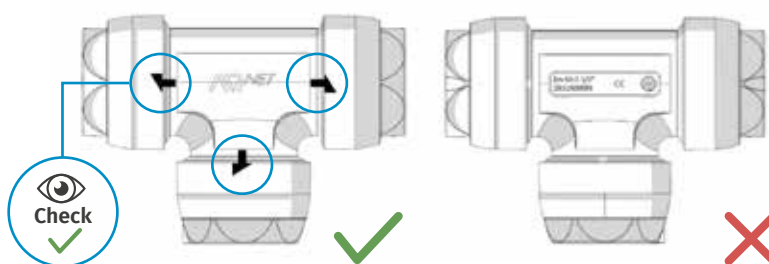
Installation - PM Series

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

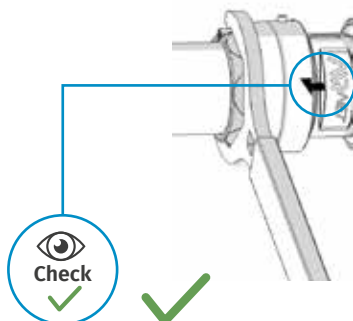
10 Check



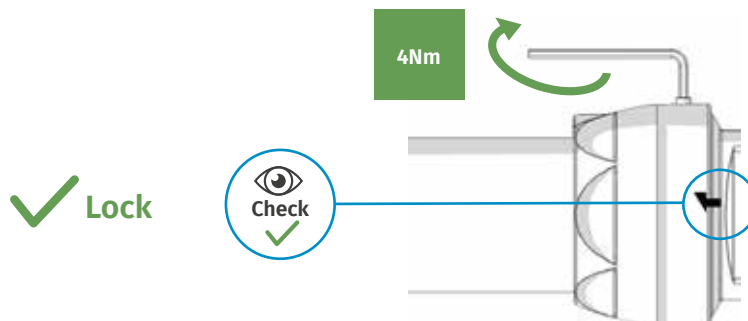
11 Fitting should be placed with markings visible from the ground



12 Torque fitting until marking



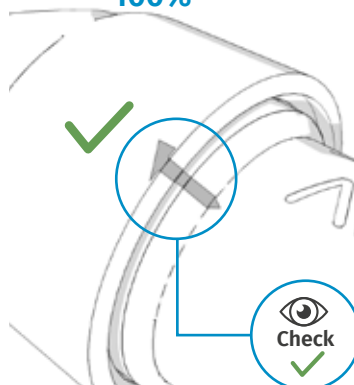
13 Use L key 3mm to lock the screw on the nut. (New feature for additional safety)



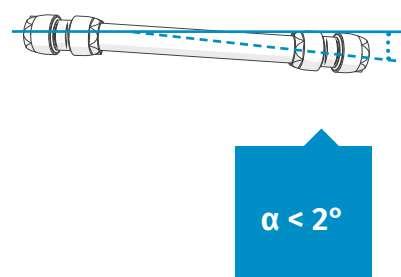
New torque wrenches / spanners:

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

14 Check markers 100%



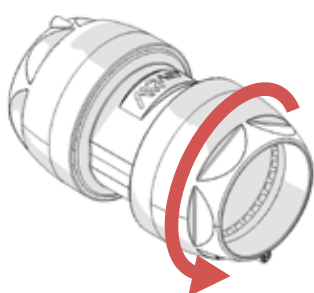
15 Max misalignment 2°



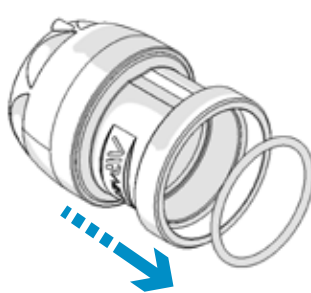
Installation - Adapter Union PM Series

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

1 Unscrew



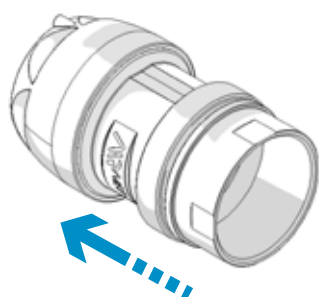
2 Remove



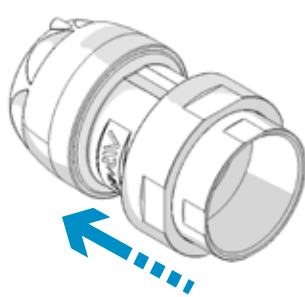
3 O-ring assembly



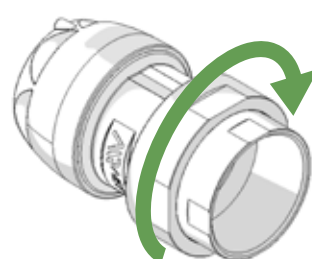
4 Body assembly



5 Adapter assembly

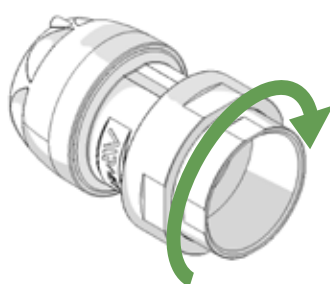


6 Screw on

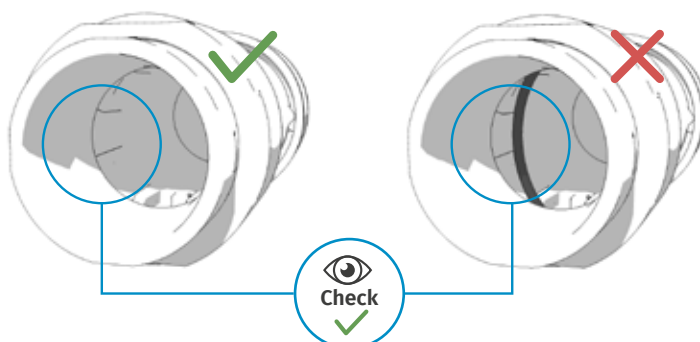


7 Tighten

45 Nm

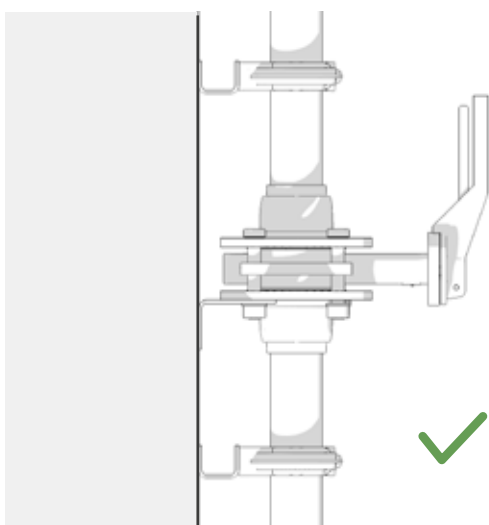


8 Check O-ring

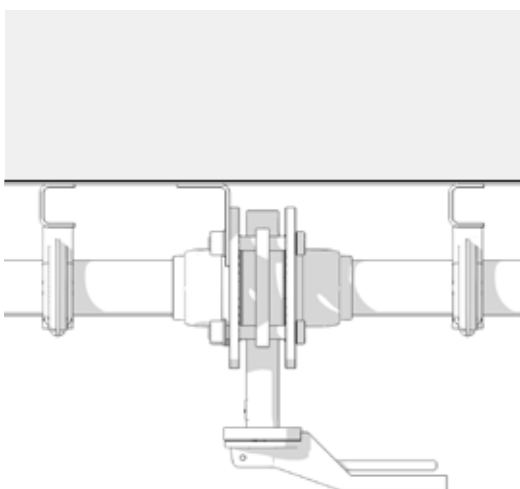


Installation - Adapter Union PM Series Diameters 63 - 80 mm / 2 1/2" - 3"

1



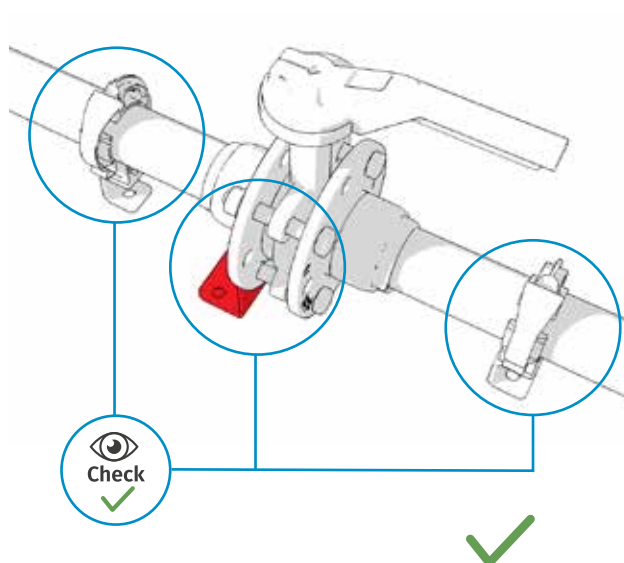
OR



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

2

Check



Installation - Replace Black Series with new PM Series Diameters 63 - 80 mm / 2 1/2" - 3"

You cannot reuse the black series fitting after it has been installed!

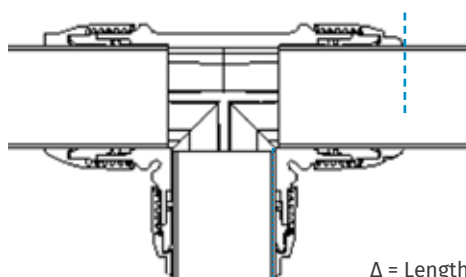


Description	Equal socket	Elbow 90°	Elbow 45°	Equal tee	Reducing tee	Reducing socket
Δ						
ϕ 63 mm	/	/	4 mm	/	Change pipe D50	5 mm
ϕ 2 1/2"	/	/	5/32"	/	Change pipe D50	3/16"
ϕ 80 mm	/	/	6 mm	7 mm	7 mm	/
ϕ 3"	/	/	1/4"	1/4"	1/4"	/



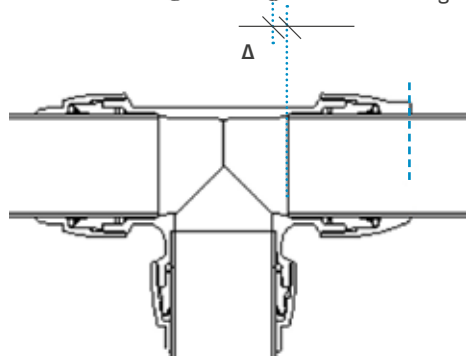
Description	Nipple socket	Nipple socket	Flange	Butterfly valve	Flange with butterfly valve	Flange with butterfly valve
Δ	2"	2 1/2" and 3"			ISO	NPT
ϕ 63 mm	4 mm	16 mm	/	/	/	/
ϕ 2 1/2"	5/32"	5/8"	/	/	/	/
ϕ 80 mm	/	12 mm	6 mm	8 mm	11 mm	14 mm
ϕ 3"	/	1/2"	1/4"	1/3"	2/5"	1/2"

Black Series



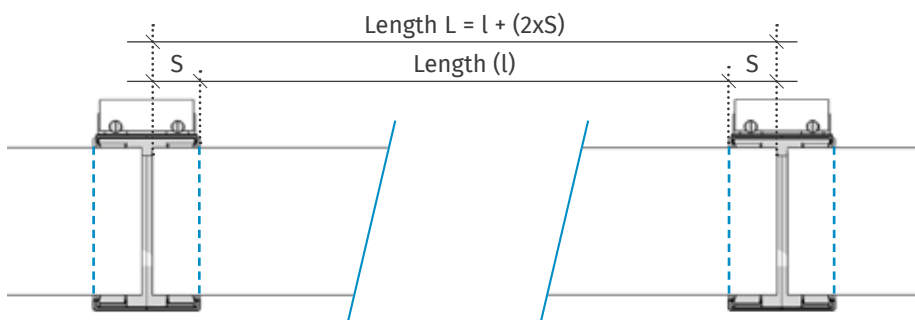
Δ = Length to be cut off before replacement

PM Series



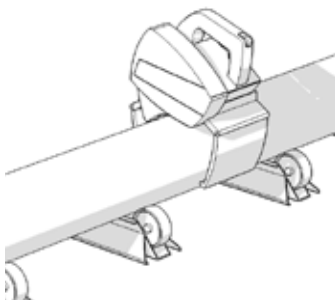
Installation - Diameters 100 - 158 mm / 4" - 6"

1 Measure



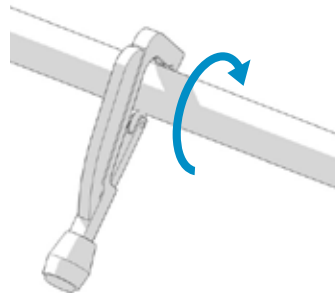
ϕ	S
100 mm / 4"	47 mm / 1 7/8"
158 mm / 6"	55 mm / 2 1/2"

2 Cut



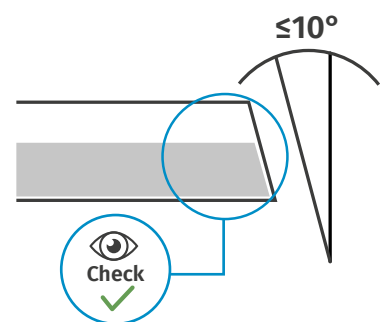
110/120V	2810 0640 80
110/120V	2810 0540 80

OR

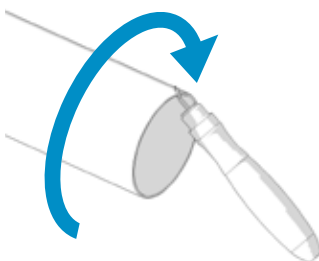


ϕ 100-158 mm	2810 0240 00
-------------------	--------------

3 Check

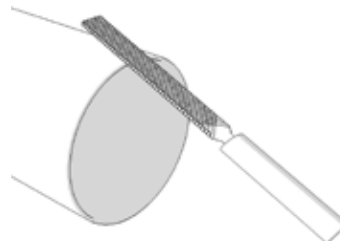


4 Deburr

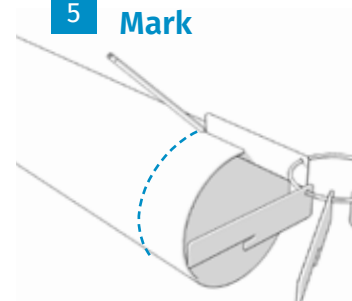


Heavy Duty	2810 0641 00
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OR



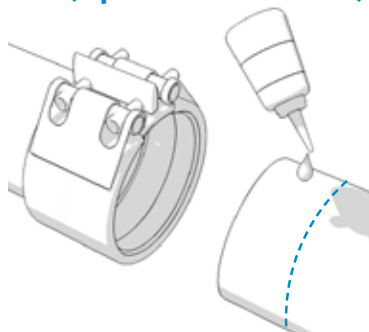
5 Mark



Pipe Marker	2811 0229 80
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Installation - Diameters 100 - 158 mm / 4" - 6"

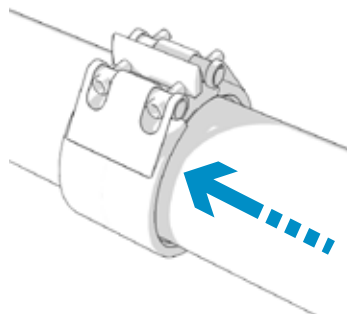
(Optional: Lubricate)



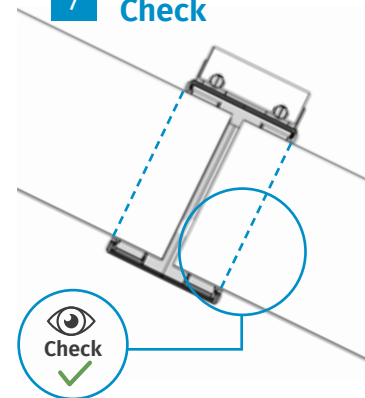
Lubricant

2810 0148 00

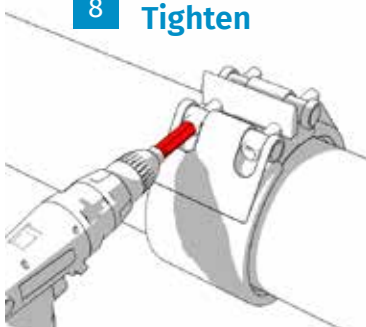
6 Insert



7 Check



8 Tighten



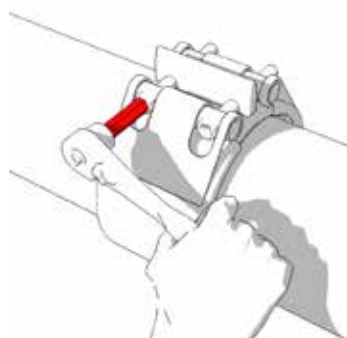
Hexagon Socket - D100

4027 1323 08

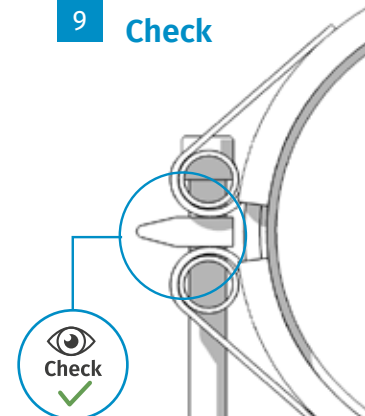
Hexagon Socket - D100

0462 3601 23

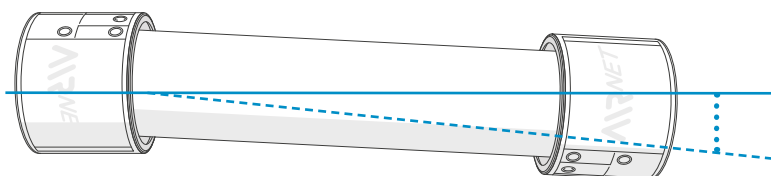
OR



9 Check



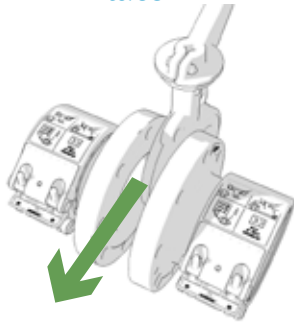
10 Max misalignment 2°



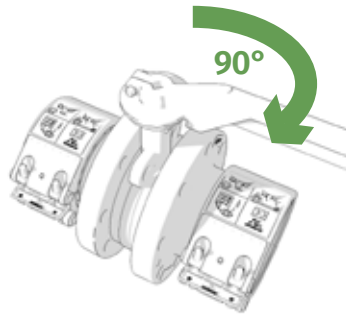
$\alpha < 2^\circ$

Installation - Butterfly Valve Diameters 100 - 158 mm / 4" - 6"

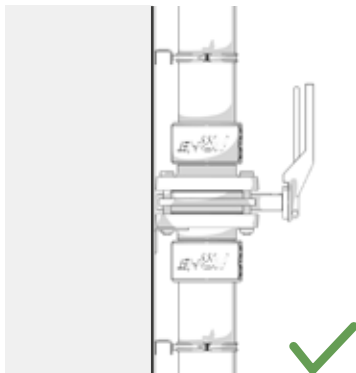
1 Place



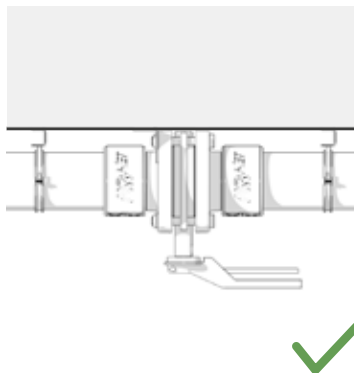
2 Turn



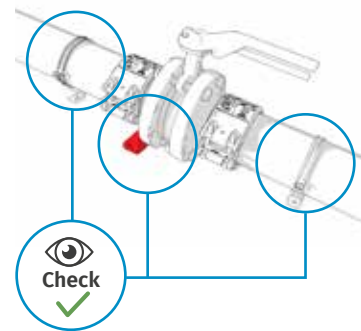
3 Assemble



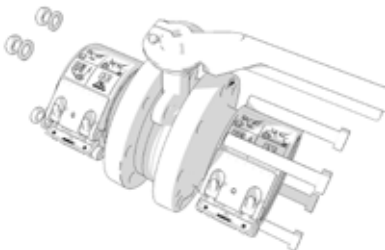
OR



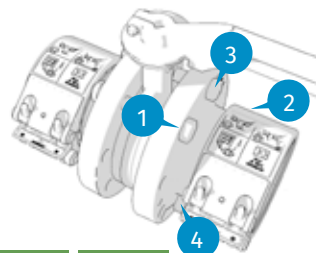
4 Check



5 Place bolts and nuts

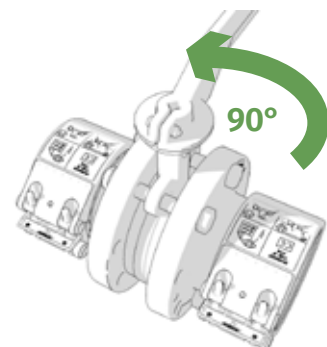


6 Tighten bolts crosswise



D100	D158
16 Nm	38 Nm
12 lbs/ft	28 lbs/ft

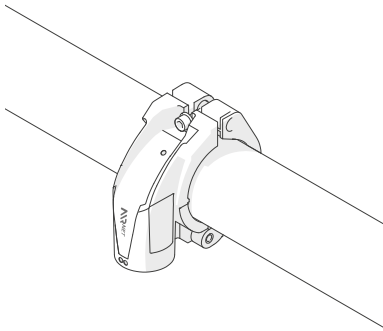
7 Turn



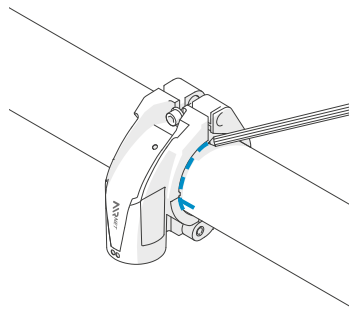
Installation - Quickdrop Assembly Diameters 100 - 158 mm / 4" - 6"

System should be depressurized before installing the quickdrop!

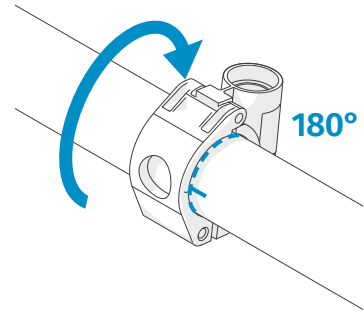
1 Mount



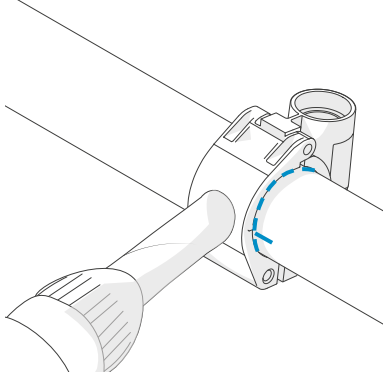
2 Mark



3 Turn

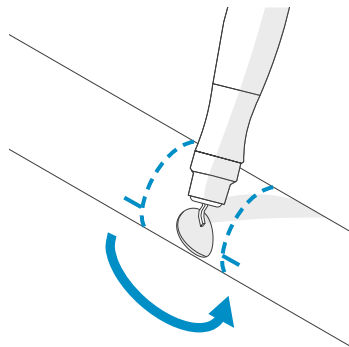


4 Drill



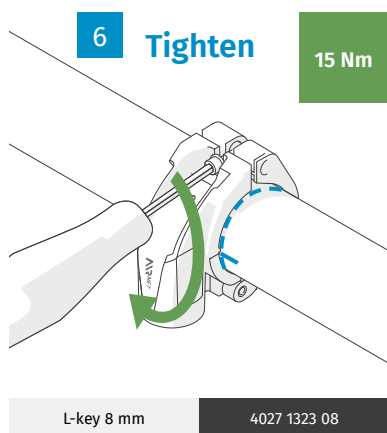
Ø 100-158 mm drill bit	2810 0343 00
Ø 100-158 mm drill bit holder	2810 0344 00

5 Deburr

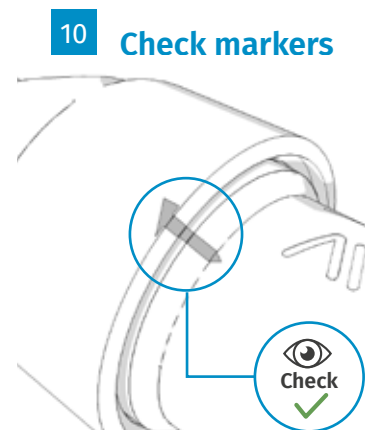
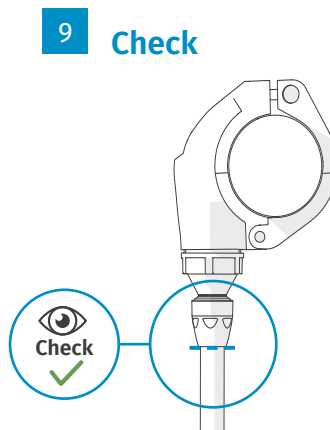
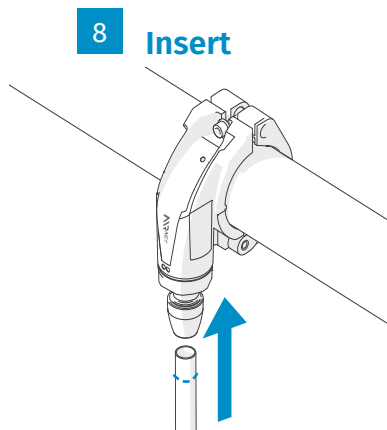
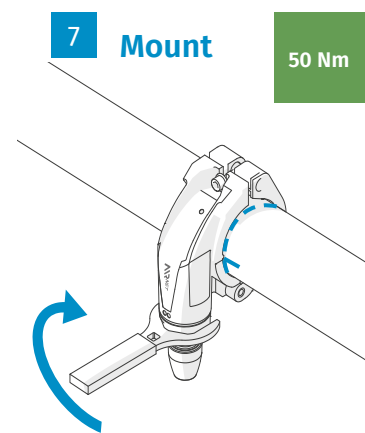


Heavy Duty	2810 0641 00
Light Duty	2810 0042 00

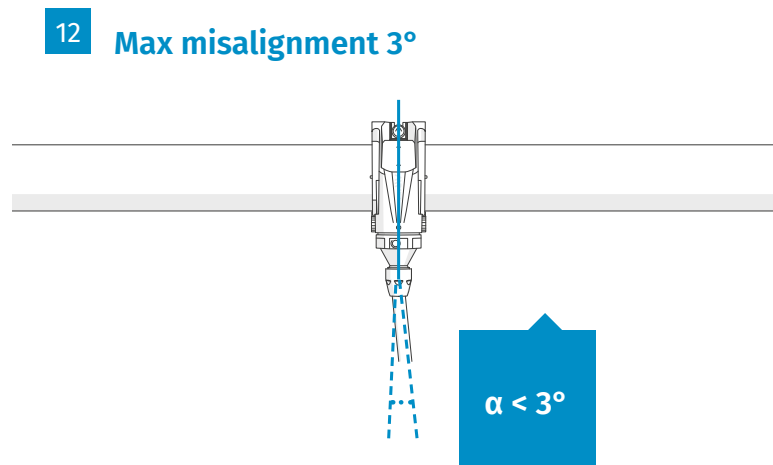
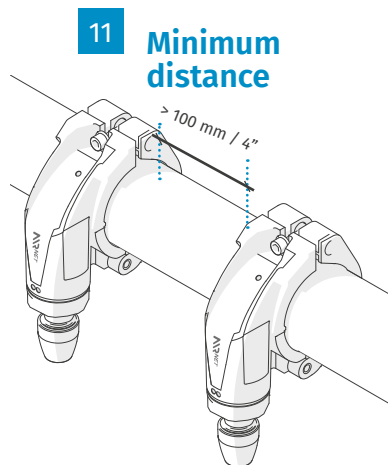
Installation - Quickdrop Assembly Diameters 100 - 158 mm / 4" - 6"



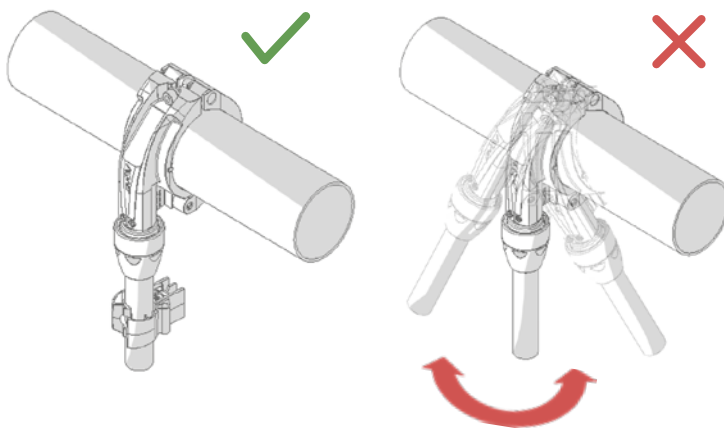
(Optional: Lubricate)



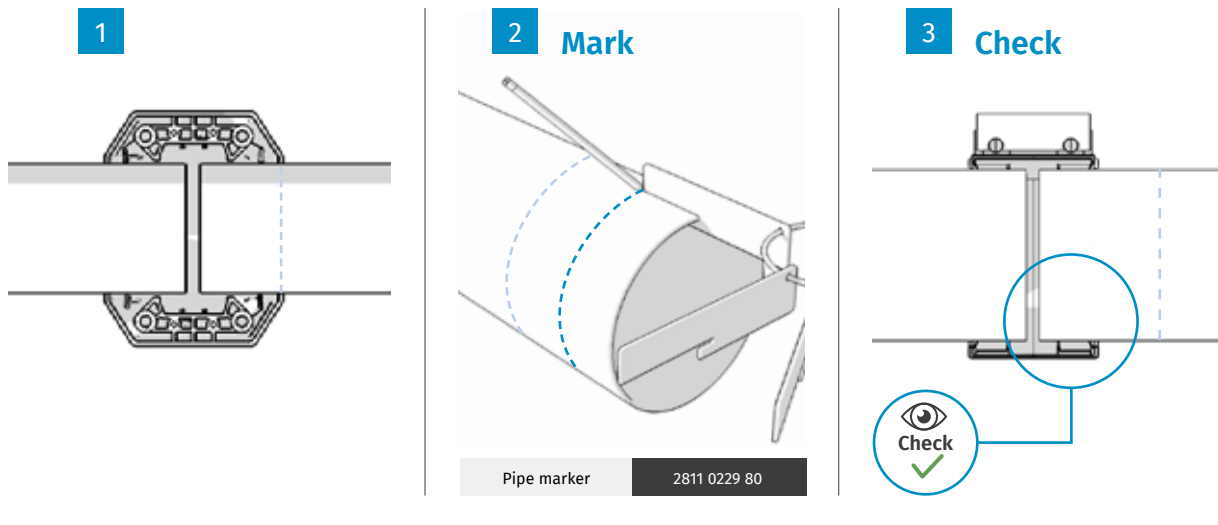
Installation - Quickdrop Assembly Diameters 100 - 158 mm / 4" - 6"



13 Pipe clip prevents rotation

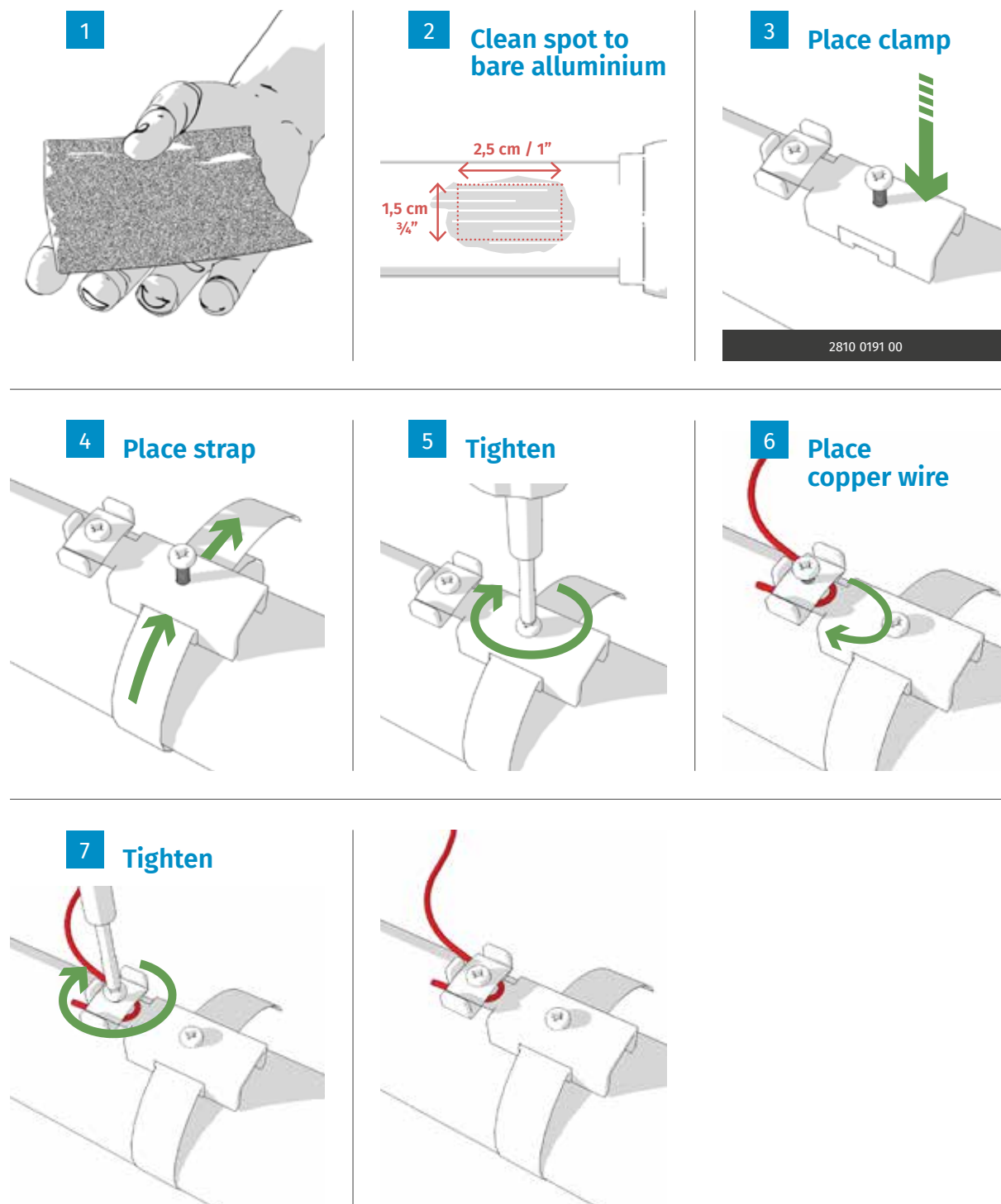


Installation - Replace old D100 Fittings with New D100 Fittings Diameter 100 mm / 4"



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

Installation - Mounting Conductivity Strap





Preserving the power of air