

# Ariete® 25

## Blue PP-R Water Supply System

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**REDI**  
le strade dell'acqua



# The Company



Eco-friendly Company Certified 14001



REDI has been working for over 50 years and is specialized in the production of plastic fittings and special pieces for sewage systems and sanitary networks.

REDI has always offered a complete range of products and extremely high quality products and services, aiming at establishing and consolidating long-lasting and profitable business relations. REDI manufactures and offers the following product ranges:

- PVC solvent weld pipes and fittings for above ground drainage (EN 1329/AFNOR NF)
- PP pipes and fittings for non-pressure above ground drainage (EN 1451/DIN 19560)
- PVC non-return valves (Ø 100/400) EN 13564
- PVC rubber ring-sealed for underground drainage (EN1401)
- PVC and PP inspection chambers
- PPR pipes and fittings for cold and hot plumbing
- Ventilation grids
- Surface drainage (EN 1433 / EN1253)

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# System properties



## Ariete® 25 pipes



## Ariete® 25 fittings



**Ariete® 25 system has the following basic properties:**

### 1 Noise deadening

The elasticity of Ariete® 25 deadens almost all vibrations which normally occur in installations using metal pipes, thus providing excellent noise damping at no additional cost.

### 2 Lower pressure losses

Ariete® 25 provides a very smooth inside surface with an insignificant amount of roughness ( $0.0070\mu$ ), with a consequent reduction in pressure losses. This means that no sediment or crusting forms inside the pipe.

### 3 Low thermal conductivity

The low thermal conductivity of Ariete® 25 ( $0.23 \text{ W/m.K}$ ) reduces the heat loss of the fluid conveyed, thus preventing condensation from forming on the external surface of the pipe - a phenomenon that frequently occurs with metal piping under certain ambient conditions.

### 4 Non-toxic

The system Ariete® 25 entirely fulfils the rules regarding the use of plastic materials to carry potable water. Tests carried out by international testing corporation assume its perfect suitability.

### 5 Resistance to chemicals

As a high molecular weight polymer (Polyolefinic), Ariete® 25 provides a high resistance to chemicals and other products, including acids and basic materials such as lime or cement, with which it may come into contact.

### 6 Unaffected by stray current

Ariete® 25, as with the majority of thermoplastics, is a poor electric conductor, therefore there is no deterioration due to stray currents..

***• In case of use of chlorine dioxide system properties could be sensibly altered.***

# Fields of application

**Ariete® 25 pipes and fittings have been designed to convey hot and cold water under pressure**

- Sanitary systems;
- Heating and air conditioning equipment.
- Compressed air installations;
- Irrigation of greenhouses and gardens;
- Transport of liquid foods;
- Industrial applications.

It is possible to transport the chemical substances which are included in the reference table of the regulation. The sizing criteria adopted for pipes and fittings fully satisfy the most recent information acquired for long-term aging resistance and provide a safety factor of 1.3 - 1.9, depending on working temperature, and a minimum operating life of 50 years with pressures up to 10 bar and temperatures of up to 60°C for PN20 (Fig. 1) and 10 Bar 70°C for PN25 (Fig.1 bis).

## Certificates

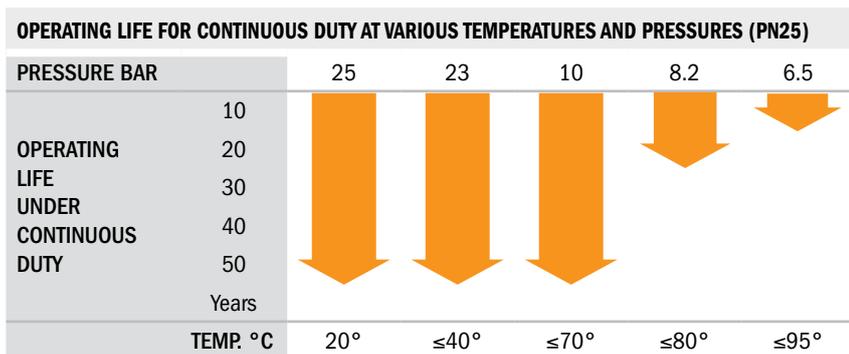
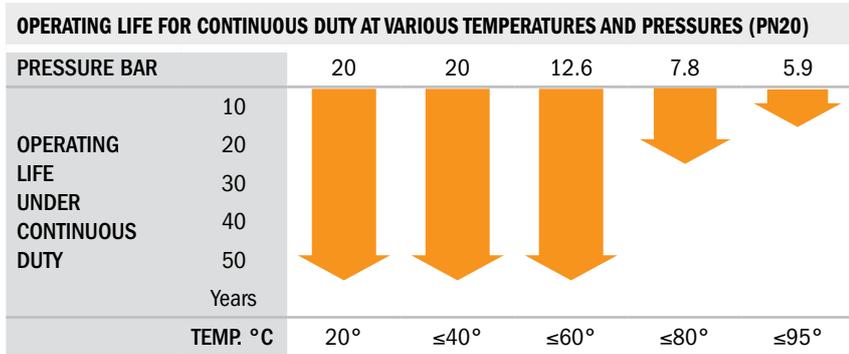


Fig. 1

### Material properties

Characteristics:

The PP-Random type 3 used for the production of the system ARIETE® 25 is characterized by a high molecular weight and by a huge resistance under creep tests, basic characteristic for carrying hot fluids in pressure. It has also a good Charpy index, which gives to the material an easy use also at temperatures below 0°C.

ARIETE® 25 is a system made by pipes and fittings completely realized in Random Polypropylene

Copolymer. This plastic material with particular molecular structure grants a high mechanical resistance and a long lasting life also at high pressure and at high temperatures.

Used in the distribution of hot and cold water in sanitary and air conditioning installations, pipes and fittings of the system ARIETE® 25 are recommended for carrying of potable water and fluids, for industrial use and chemical substance.

This allows ARIETE® 25 to be proposed as a valid alternative to traditional raw materials used in the thermosanitary field.

### Physical characteristics

Property	Units	Test	Sample	Values
Density at 23°C	g/cm <sup>3</sup>	ISO 1183	10x10x4 mm	0,9
Melting MFI 190/5 -	g/10 min	ISO 1133	Powder and granules	0,55
Melting MFI 230/2,16	g/10 min	-	1 weight 3-6 g	0,30
Melting MFI 230/5 -	g/10 min	-	fluency capacity	0,38
Volume MVI 190/5	cm <sup>3</sup> /10 min	-		
Yield stress	N/mm <sup>2</sup>	ISO R 527	ISO 3167 4 mm	24
Elongation at yield	50 mm/min.	-		660
Traction modulus E	N/mm <sup>2</sup>	ISO R 527		980
Bending modulus E	N/mm <sup>2</sup>	-	80x10x4 mm	
Bending stress	N/mm <sup>2</sup>	-	sample coming from moulding close to injection	50 41
Steady sample			Traction bar	65
Non steady sample			following ISO 3167	33
Shore hardness 0,3 -		-	50x25x6 mm	10
Charpy 23°C	KJ/m <sup>2</sup>	same	V shape cut	o.b.
Charpy 0°C	KJ/m <sup>2</sup>	-	45° r=1 mm	o.b.
Charpy	KJ/m <sup>2</sup>	ISO 180/1	80x10x4 mm	42
Charpy -30°C	KJ/m <sup>2</sup>	ISO 180/1	80x10x4 mm	26
Melting point	0°C	ISO 306	10x10x4 mm	125
Dimensional steadiness	0°C	ISO 75	110x10x4 mm	65
Heat steadiness	0°C	ISO 75	110x10x4 mm	49
Heat steadiness	0°C	ISO 75	110x10x4 mm	80
Heat steadiness	0°C	ISO 75	110x10x4 mm	

# Design and installation

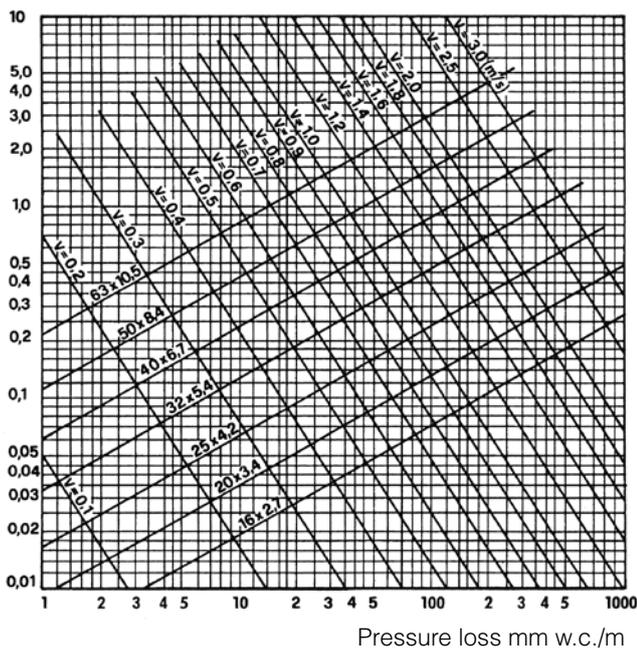


## Design and system installation

The design of the systems (for hot and cold water), calculation, layout and installation, must be made in accordance with applicable standards of each country. In Italy the standard is UNI 9182. For other fields of application, according to requirements, applicable standards should be used.

## Pressure loss diagram for ARIETE® 25 pipes

Flow rate L/s



Pressure loss mm w.c./m  
Fig.2

## Losses of pressure

The pressure loss values for straight runs of ARIETE® 25 pipes can be obtained from diagram (Fig.2).

## Pressure loss in ARIETE® 25 fittings

The data shown in (Fig.3) can be used to determine the resistance ratings of individual fittings. All values are approximate. The pressure loss of all fittings must be taken into account when designing a system. This may be assumed as an additional 3 to 5% of the total system loss.

Ø Ext. fitting dia	16			
	20	32	50	≥63
	25	40	63	
Type of fitting	Resistance coefficient			
	1,5	1,0	0,6	0,5
	2,0	1,7	1,1	0,8
		0,3		
		1,5		
	inlet	0,5		
	outlet	1,0		

Fig.3

**Length variation of PP-Random pipes due to heating (thermal stress)**

PP-Random pipes, if subjected to a variation in temperature, have relatively large thermal expansion. Their longitudinal expansion is about 11 times more than similar steel pipes. This phenomenon must be taken into account during installation, and the possible movement through the whole installation, due to thermal expansion, must be calculated and allowed for in the design phase. The longitudinal thermal expansion coefficient for Ariete® 25 pipes is:

$$\epsilon t = 1,5 \cdot 10^{-4} \text{ (K-1)}$$

Variations in length for pipes up to 10 m long may be obtained from Fig.4 in the following page.

The length variation of a pipe is calculated according to the following formula, and is independent of its diameter and thickness:

$$\Delta L = L \times \Delta t \cdot \epsilon t \text{ (mm)}$$

**Where:**

- $\Delta L$  = linear thermal expansion (mm)
- $\epsilon t$  = longitudinal expansion coefficient mm/m°C
- L = Length of pipe (m)
- $\Delta t$  = temperature difference (°C)

The calculation of the length variation (DL) of the pipe is based on its design temperature.

**Diagram variations in length of ARIETE® 25 pipes**

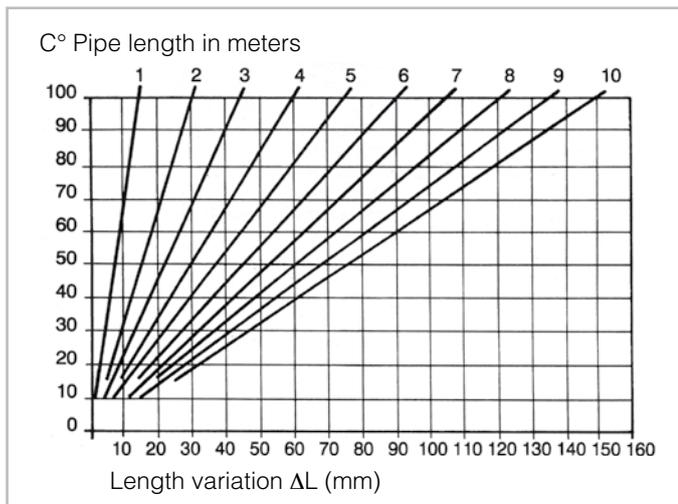


Fig.4

**The calculation is further clarified in the following examples. examples: for 8 m and design temperature + 16°C.**

- 1. minimum temperature of pipe wall = + 9°C (e.g. cold water pipe) difference in  $\Delta t = 16^\circ\text{C} - 9^\circ\text{C} = 7^\circ\text{C}$
- 2. maximum temperature of pipe wall = + 70°C (e.g. hot water pipe) difference in  $\Delta t = 70^\circ\text{C} - 16^\circ\text{C} = 54^\circ\text{C}$

**In case 1:** pipe contraction = 8 m x 7°C x 0.15 = 8.4 mm

**In case 2:** pipe expansion = 8 m x 54°C x 0.15 = 64.8 mm

In most cases the variation in length may be compensated by making a change in the direction of the pipes.

Ensure the piping can move freely along its axial direction.

If a variation in length cannot be compensated for by a change in direction, an expansion curve must be used.

However, axial compensation using expansion curves is not generally ideal and is expensive.

To obtain the necessary compensation, it is necessary to calculate the length of the curve arm. The calculation can be made using the following formula

$$L_s = K \cdot \sqrt{d \cdot \Delta L} \text{ mm}$$

**Where:**

- $L_s$  = arm length (mm)
- d = external diameter of the pipe (mm)
- $\Delta L$  = length variation (mm)
- K = constant depending on the material used (for PP-R = 30).

**Diagram calculation of arm length**

As an indicative value, the  $L_s$  length may be obtained from diagram Fig.5.

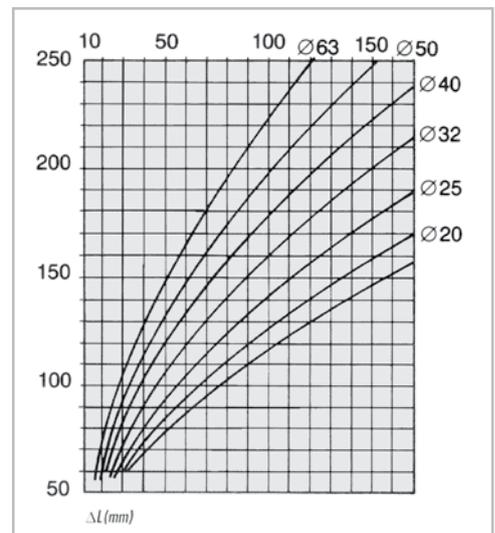


Fig.5

# Assembly instructions and precautions

## Fixed and sliding points

The type and distance between attachment fixings depends upon the installation requirements and any axial expansion of the pipe.

The fixed points must divide the piping installation into sections, where a contraction or expansion is possible, without ever exerting any force on the fixings or fittings. Movement is allowed by using sliding fixings and change in direction arms. The distance between the arm and the distance between fixing points depends mainly upon the operating conditions, the pipe material, and the piping weight (including its fluid).

In practice the distances given in table Fig.6 have been found to be valid.

## Distance between supports in cm at various temperatures

d mm	20° C	30° C	40° C	50° C	60° C	70° C	80° C
16	75	70	70	65	65	60	55
20	80	75	70	70	65	60	60
25	85	85	85	80	75	75	70
32	100	95	90	85	80	75	70
40	110	110	105	100	95	90	85
50	125	120	115	110	105	100	90
63	140	135	130	125	120	115	105
75	150	150	140	140	125	115	105
90	165	160	150	150	140	125	115
110	190	180	170	170	160	140	130
125	200	190	180	180	140	110	90

Fig.6

# Welding using an electrofusion machine

## Electric coupling

The Ariete® 25 PP-Random electrically heated sleeve coupling fitting is the result of studies and of a production technology tested. This electric fitting is equipped with a removable clamping ring.

This system provides a precise clamp when inserting the pipe and is very useful for making repairs; the sleeve fitting can slide freely along the pipe when the stop ring is removed.

The electrofusion machine works on a very simple principle; using a special and exclusive technology, an adequately sized electric resistance is built into the body of the sleeve coupling, which can connect the fitting to the electrofusion machine by means of terminal pins. To make the weld it is only necessary to connect the terminal pins to the machine, press the “Start” button and the current flowing through the resistance, will develop enough heat to create an excellent fusion between the sleeve and the pipe.

## Recommendations for welding with electric sleeves

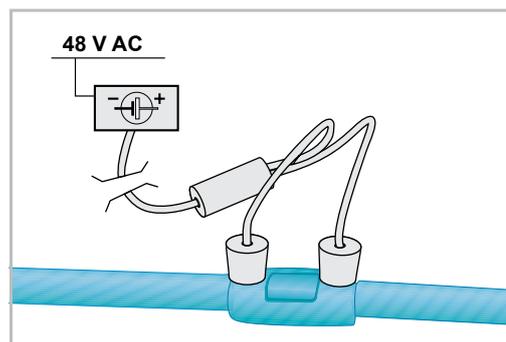
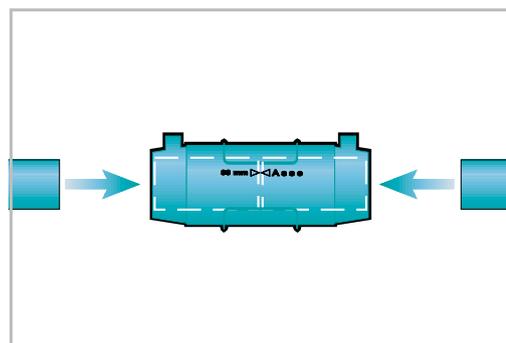
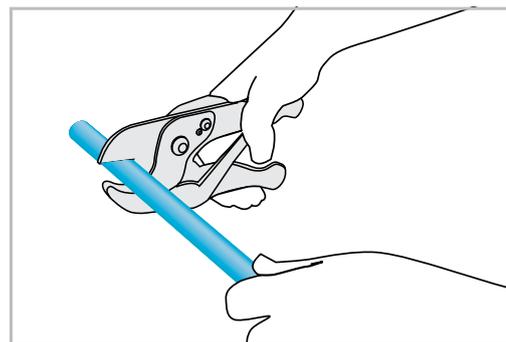
To make an accurate electric sleeve weld, **cut the end parts to be joined carefully**, perpendicular to the axis.

**Insert the pipe into the sleeve**, marking the pipe with a suitable pencil so as to exactly centre the sleeve and to avoid any eventual withdrawal.

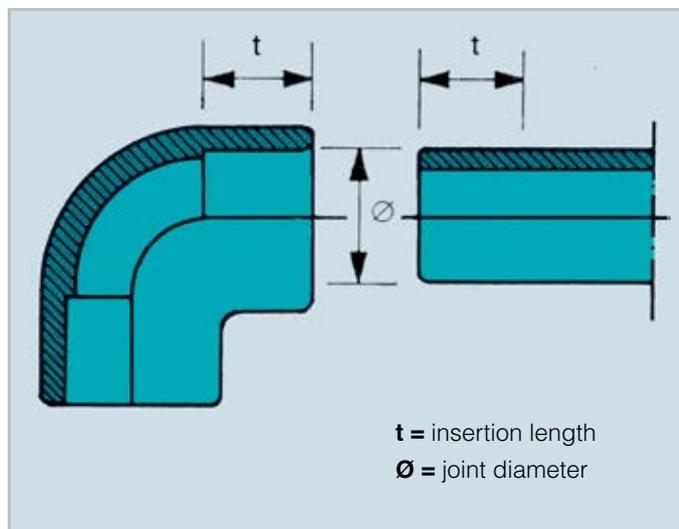
During the welding process and the following cooling phase, do not move or stress any parts for at least 4 minutes.

**Wait at least 2 hours (from the end of the welding process) before any pressure test can be made on the installation.**

**Note:** Dalpex does not accept any responsibility for damage caused by any variation from the above described installation operations and/or welding made using.



# Joining methods



## Polyfusion welding

The principal characteristic of Ariete® 25 and all thermoplastics in general is the possibility to make a molecular bond by means of fusion or welding. This process is carried out using heating elements. The preferred temperature for welding Ariete® 25 is 260°C (± 5). Ariete® 25 pipes are socket welded using a heating element. In this way the pipes and fittings are joined by overlapping. The heating of the end of the pipe and socket of the fitting is made with a spindle and bushing heating element.

## Socket depth table for PP-R fittings

Pipe Ø	t = socket depth
20	14,5
25	16
32	18
40	20,5
50	23,5
63	27,5
75	31
90	35,5
110	41,5
125	46

Fig.7

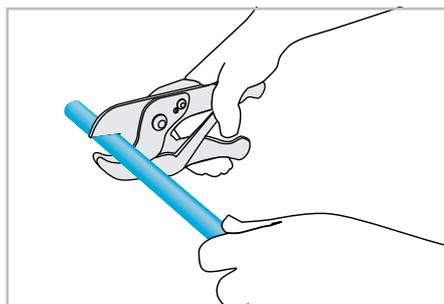
## Welding preparation

Cut the pipe perpendicular and smooth off any sharp corners of the cut.

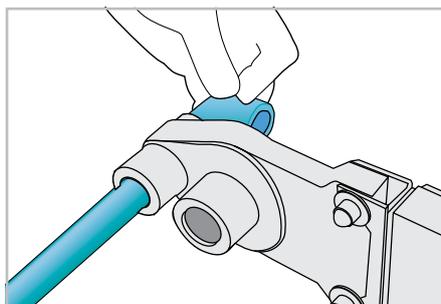
Use alcohol and paper towel to thoroughly clean the end of the pipe and the socket of the fitting. Mark the depth of the socket on the pipe (as shown in Fig.7).

**Note:** check that the heating element has reached the required temperature of 260°C (± 5).

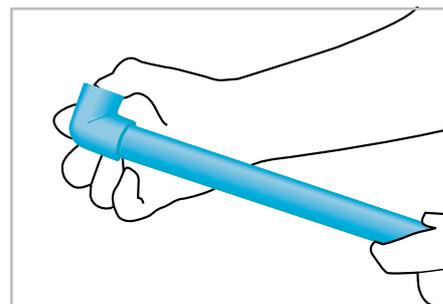
## Instructions for fusion welding



Cut the pipe using shears or a pipe cutter. The cut must be perpendicular to the axis of the pipe.



Heat the pipe and the fitting at the same time.



Quickly, within the allowed time interval, join together the pipe and the fitting, without turning them.

**Making the welded joint**

The pipe is quickly and firmly pushed into the bushing up to the mark, while the fitting is slipped over the spindle. During this operation the pipe and the fitting must be held firmly without any turning movement. The surfaces of the pieces to be joined must be heated according to the time given in Fig.8; after this time, the pieces are withdrawn from the heating element and immediately joined without any turning movement: the

pipe must be inserted up to the mark, that is right up to the bottom of the socket. The two pieces must be held together for the heating time given in Fig.8. The welded joint must not be mechanically stressed until the cooling time has elapsed. After each welding operation, the spindle and bushing of the heating element must be thoroughly cleaned.

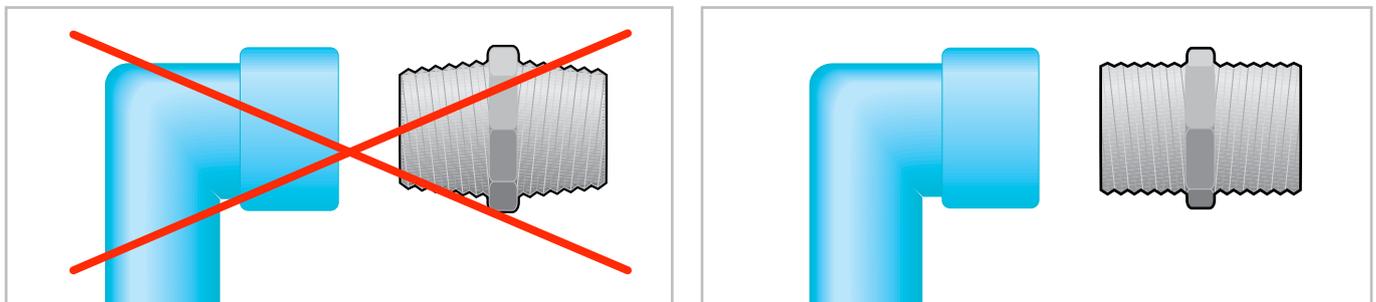
**Indicative times for socket welding with heating element, at an ambient temperature of 20°C.**

Pipe (Ø)	Heating (s)	Max interval. (s)	Cooling (min.)
16	7	4	2
20	7	4	2
25	7	4	2
32	8	6	4
40	12	6	4
50	18	6	4
63	24	8	6
75	30	8	6
90	40	8	8
110	50	10	8
125	50	10	8

Following regulations DVS increase by 50% the length of heating with temperatures below +5° C

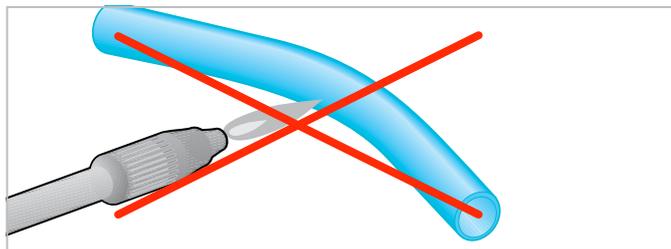
Fig.8

**Threaded joints**

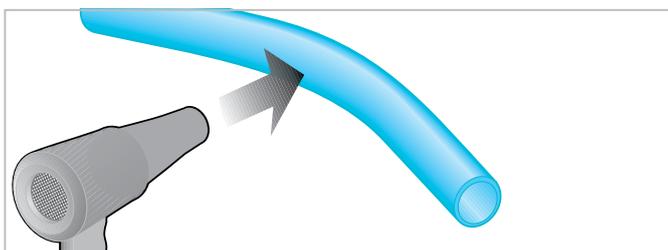


All metal inserts of Ariete® 25 fittings are made of brass, with cylindrical gas threading, and the threading is in accordance with ISO 228 and DIN 2999 standards.

# Assembly instructions and precautions



**The use of a flame is absolutely prohibited.**



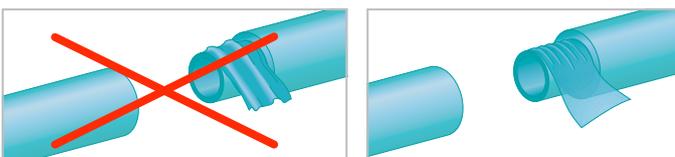
## Bending

Cold bending may be used when the bending radius is at least 8 times the pipe diameter, while for smaller curves the section to be bent must be first heated using a stream of hot air (such as from a hair drier).



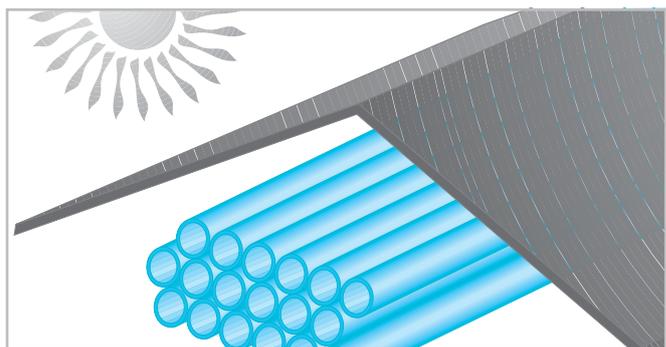
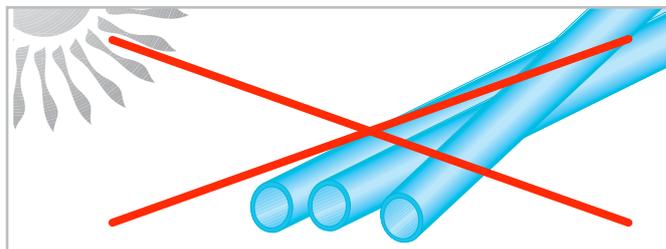
## Low temperatures

When temperatures approach 0°C, Ariete® 25 tends to become fragile and therefore additional measures must be taken during all operations, care must be taken during cutting of the pipes. It is good practice to always drain piping when the water is expected to freeze, since the increase in volume might break the pipe.



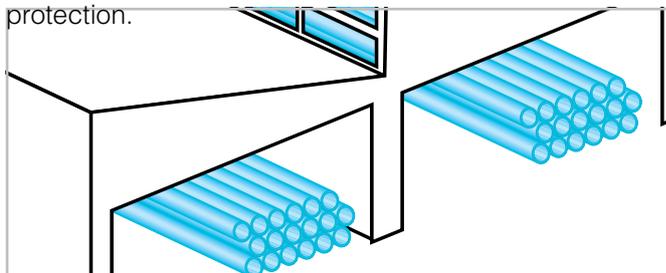
## Sealing

To ensure a good seal, as for metal pipes, wrap with teflon or similar tape. Do not add too much tape.



## Exposure to UV radiation

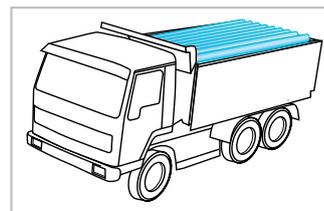
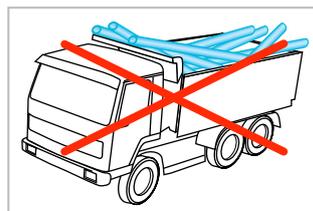
Ariete® 25 is an up-to-date product designed and manufactured for years of service. Although the material has been stabilized against UV radiation, it is recommended that PP-R piping is not installed in positions exposed to UV rays, without adequate protection.



## Storage

Consequently, Ariete® 25 pipes and fittings must be stored carefully and protected against sunlight.

The height of the pipe's pile should be no more than 1,5 mt.



## Transportation - Installation

During these phases, the surfaces of Ariete® 25 pipes must be protected against damage and cracking. All handling must be made with maximum care, never install any damaged pipe or fittings.

# Ariete® 25 FIBER PLUS

In cooperation with the laboratories of the Aliaxis, has developed a new compound representing a revolutionary improvement in the area of PP-R system: Ariete® 25 FIBER PLUS 3 LAYER.



## Low thermal expansion

- longitudinal expansion reduced by 70%

## High flow rate

- 20% higher flow rate with ariete® 25 fiber plus sdr 7,4

## No uv transparency

- no growth of algae
- no growth of bacterias

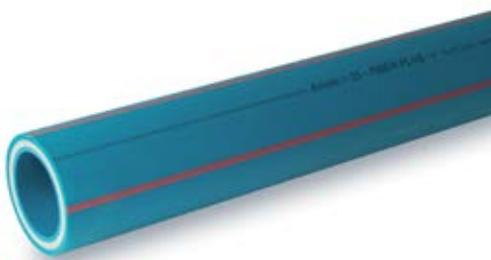
## High temperature resistance

- higher temperature resistance
- higher pressure resistance

MATERIAL	Pressure stage	Pipe series	Colour	Identif.	Pack.
PP-R Type 3	PN16 - SDR 7,4 (PN20)	3,2 DIN 80077 - 80078 UNI EN ISO 15874	Blue	4 red stripes	lengths of 4 mt.

## FIBER PLUS Pipe

Ref.	Ø ext. (mm)	Ø int. (mm)	Thick. (mm)	Pack	Note
2070903	20	14,4	2,8	100	
2070904	25	18,0	3,5	40	
2070905	32	23,2	4,4	40	
2070911	40	29,0	5,5	20	
2070912	50	36,2	6,9	20	
2070913	63	45,8	8,6	20	
2070914	75	54,4	10,3	12	
2070915	90	65,4	12,3	8	
2070901	110	79,8	15,1	4	
2070902	125	90,8	17,1	4	



# Fittings and pipes PP-R

## Pipes PN25 - SDR 5 series 2 (Lengths 4 mt)

Ref.	Ø ext. (mm)	Ø int. (mm)	Thick. (mm)	Pack (mt)	Note
2011204	20	11,8	4,1	100	
2011211	25	14,8	5,1	80	
2011212	32	19,0	6,5	56	
2011213	40	23,8	8,1	40	
2011214	50	29,8	10,1	32	
2011215	63	37,6	12,7	20	



## Pipe PN20 - SDR 6 series 2,5 (Lengths 4 mt)

Ref.	Ø ext. (mm)	Ø int. (mm)	Thick. (mm)	Pack (mt)	Note
2010905	20	13,2	3,4	100	
2010913	25	16,6	4,2	80	
2010920	32	21,2	5,4	56	
2010923	40	26,6	6,7	40	
2010930	50	33,2	8,3	32	
2010932	63	42,0	10,5	20	
2010933	75	50,0	12,5	16	
2010934	90	60,0	15,0	12	
2010901	110	73,2	18,3	8	



## Pipe PN16 - SDR7,4 series 3,2 (Lengths 4 mt)

Ref.	Ø ext. (mm)	Ø int. (mm)	Thick. (mm)	Pack (mt)	Note
2010603	20	14,4	2,8	100	
2010604	25	18,0	3,5	80	
2010605	32	23,2	4,4	56	
2010611	40	29,0	5,5	40	
2010612	50	36,2	6,9	32	
2010613	63	45,8	8,6	20	
2010614	75	54,4	10,3	16	
2010615	90	65,4	12,3	12	
2010601	110	79,8	15,1	8	
2010602	125	90,8	17,1	4	



### Pipe PN10-SDR11 Series 5\* (lengths 4 mt)



Ref.	Ø ext. (mm)	Ø int. (mm)	Thick. (mm)	Pack (mt)	Note
2010303	20	16,2	1,9	100	
2010304	25	20,4	2,3	80	
2010305	32	26,0	2,9	56	
2010311	40	32,6	3,7	40	
2010312	50	40,8	4,6	32	
2010313	63	51,4	5,8	20	
2010314	75	61,2	6,8	16	
2010315	90	73,6	8,2	12	
2010301	110	90,0	10,0	8	
2010302	125	102,2	11,4	4	

\* Available on order subject to minimum quantities

### Bypass bend PN25



Ref.	Ø (mm)	Pack	Note
2170701	20	100	
2170703	25	50	
2170705	32	50	
2170702*	20	100	
2170704*	25	50	

\* Short radius

### Bypass bend PN20



Ref.	Ø (mm)	Pack	Note
2170601	20	100	
2170603	25	50	
2170605	32	50	
2170602*	20	100	
2170604*	25	50	

\* Short radius

### Female/Female bypass bend PN25



Ref.	Ø (mm)	Pack	Note
2170201	20	50	
2170202	25	40	

**Coupling**

Ref.	Ø (mm)	Pack	Note
2100504	20	200	
2100505	25	150	
2100511	32	100	
2100512	40	50	
2100513	50	20	
2100514	63	10	
2100515	75	5	
2100520	90	5	
2100501	110	4	
2100502	125	4	

**Reduced male/female**

Ref.	Ø A	Ø B	Pack	Note
2101113	25	20	200	
2101114	32	20	100	
2101115	32	25	100	
2101120	40	20	30	
2101121	40	25	30	
2101122	40	32	30	
2101123	50	25	30	
2101124	50	32	30	
2101130	50	40	30	
2101131	63	25	20	
2101132	63	32	20	
2101133	63	40	20	
2101134	63	50	20	
2101135	75	40	5	
2101140	75	50	5	
2101141	75	63	5	
2101142	90	50	5	
2101143	90	63	5	
2101144	90	75	5	
2101101	110	63	4	
2101102	110	75	4	
2101103	110	90	4	
2101104	125	110	4	



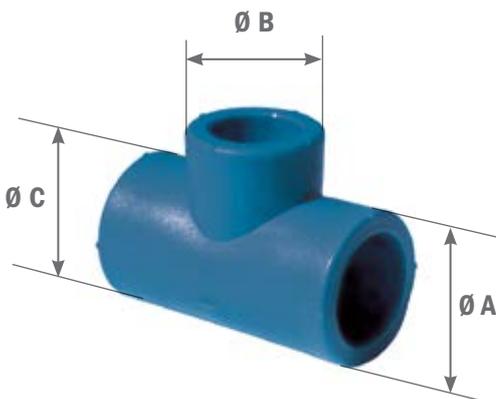


**Reduced "T" fitting**

Ref.	Ø (mm)	Pack	Note
2100704	20	100	
2100705	25	100	
2100711	32	50	
2100712	40	20	
2100713	50	10	
2100714	63	10	
2100715	75	5	
2100720	90	5	
2100701	110	3	
2100702	125	3	

**"T" fitting**

Ref.	Ø A	Ø B	Ø C	Pack	Note
2100913	25	20	20	100	
2100914	25	20	25	100	
2100915	25	25	20	100	
2100920	32	20	20	50	
2100921	32	20	25	50	
2100922	32	20	32	50	
2100923	32	25	20	50	
2100924	32	25	25	50	
2100930	32	25	32	50	
2100931	32	32	25	50	
2100932	40	20	40	20	
2100933	40	25	40	20	
2100934	40	32	40	20	
2100940	50	25	50	10	
2100941	50	32	50	10	
2100942	50	40	50	10	
2100944	63	25	63	10	
2100945	63	32	63	10	
2100950	63	40	63	10	
2100951	63	50	63	10	
2100953	75	40	75	5	
2100954	75	50	75	5	
2100955	75	63	75	5	
2100960	90	50	90	5	
2100961	90	63	90	5	
2100962	90	75	90	5	
2100901	110	63	110	3	
2100902	110	75	110	3	
2100903	110	90	110	3	
2100904	125	110	125	3	



**90° Elbow**

Ref.	Ø (mm)	Pack	Note
2100104	20	200	
2100105	25	100	
2100111	32	50	
2100112	40	30	
2100113	50	20	
2100114	63	10	
2100115	75	5	
2100120	90	5	
2100101	110	4	
2100102	125	4	

**Male/Female 45° elbow**

Ref.	Ø (mm)	Pack	Note
2101901	20	200	
2101902	25	80	
2101903	32	40	

**90° Elbow with branch**

Ref.	Ø (mm)	Pack	Note
2101701	20	100	

**45° Elbow**

Ref.	Ø (mm)	Pack	Note
2100304	20	200	
2100305	25	100	
2100311	32	50	
2100312	40	30	
2100313	50	20	
2100314	63	10	
2100315	75	5	
2100320	90	5	
2100301	110	4	
2100302	125	4	





### Male/Female 45° Elbow

Ref.	Ø (mm)	Pack	Note
2102101	20	200	
2102102	25	80	
2102103	32	40	



### Cross-shaped fitting

Ref.	Ø (mm)	Pack	Note
2101501	20	100	
2101502	25	50	
2101503	32	40	



### Cap

Ref.	Ø (mm)	Pack	Note
2101304	20	200	
2101305	25	100	
2101311	32	100	
2101312	40	50	
2101313	50	20	
2101314	63	10	
2101315	75	5	
2101320	90	5	
2101301	110	4	
2101302	125	4	

**Male threaded joint**

Ref.	Ø (mm)	Ø thread	Pack	Note
2130403	20	1/2"	100	
2130404	20	3/4"	100	
2130411	25	1/2"	100	
2130412	25	3/4"	100	
2130405	25	1"	50	
2130415	32	3/4"	20	
2130413	32	1"	20	
2130414	32	1" 1/4	20	
2130420	40	1"	10	
2130421	40	1" 1/4	10	
2130423	50	1" 1/4	10	
2130422	50	1" 1/2	10	
2130424	63	1" 1/2	10	
2130430	63	2"	10	
2130431	75	2"	5	
2130432	75	2" 1/2	5	
2130433	90	3"	4	
2130401	110	4"	4	

**Female threaded joint PN25**

Ref.	Ø (mm)	Ø thread	Pack	Note
2130311	20	3/8"	100	
2130304	20	1/2"	100	
2130305	20	3/4"	100	
2130312	25	1/2"	100	
2130313	25	3/4"	100	
2130315	32	3/4"	20	
2130314	32	1"	20	
2130320	40	1"	10	
2130321	40	1" 1/4	10	
2130323	50	1" 1/4	10	
2130322	50	1" 1/2	10	
2130324	63	1" 1/2	10	
2130330	63	2"	10	
2130331	75	2"	5	
2130332	75	2" 1/2	5	
2130333	90	3"	4	
2130301	110	4"	4	





### Straight union shank and nut

Ref.	Ø (mm)	Ø thread	Pack	Note
2131302	20	1/2"	100	
2131303	20	3/4"	100	
2131305	25	3/4"	50	
2131304	25	1"	50	
2131311	32	1"	20	
2131315	32	1" 1/4	20	
2131321	40	1" 1/4	10	
2131320	40	1" 1/2	10	
2131322	50	1" 1/2	10	
2131312	50	2"	10	
2131313	63	2"	5	
2131323	63	2" 1/2	5	
2131324	75	2" 1/2	5	
2131314	75	3"	5	



### Female threaded "T" fitting

Ref.	Ø (mm)	Ø thread	Pack	Note
2130502	20	1/2"	100	
2130503	20	3/4"	40	
2130504	25	1/2"	40	
2130505	25	3/4"	40	
2130512	32	1/2"	20	
2130513	32	3/4"	20	
2130511	32	1"	20	
2130520	40	3/4"	10	
2130514	40	1"	10	
2130515	40	1" 1/4	10	
2130524	50	3/4"	10	
2130521	50	1"	10	
2130523	50	1" 1/4	10	
2130522	50	1" 1/2	10	
2130531	63	1" 1/4	10	
2130530	63	1" 1/2	10	
2130532	63	2"	10	



### Male threaded "T" fitting

Ref.	Ø (mm)	Ø thread	Pack	Note
2130601	20	1/2"	100	
2130602	20	3/4"	40	
2130603	25	1/2"	40	
2130604	25	3/4"	40	
2130611	32	3/4"	20	
2130605	32	1"	20	

**Male threaded 90° elbow PN25**

Ref.	Ø (mm)	Ø thread	Pack	Note
2130211	20	1/2"	100	
2130212	20	3/4"	50	
2130213	25	1/2"	50	
2130214	25	3/4"	50	
2130220	32	3/4"	20	
2130215	32	1"	20	

**Female threaded 90° elbow PN25**

Ref.	Ø (mm)	Ø thread	Pack	Note
2130114	20	3/8"	100	
2130112	20	1/2"	100	
2130113	20	3/4"	50	
2130115	25	1/2"	50	
2130120	25	3/4"	50	
2130122	32	3/4"	20	
2130121	32	1"	20	
2130123	40	1"	10	
2130124	40	1" 1/4	10	
2130131	50	1" 1/4	10	
2130130	50	1" 1/2	10	
2130133	63	1" 1/2	10	
2130132	63	2"	10	

**Female threaded 90° male elbow**

Ref.	Ø (mm)	Ø thread	Pack	Note
2130901	20	1/2"	100	
2130902	25	1/2"	50	
2130903	25	3/4"	50	

**90° elbow shank and nut**

Ref.	Ø (mm)	Ø thread	Pack	Note
2131403	20	1/2"	100	
2131404	20	3/4"	100	
2131405	25	3/4"	50	
2131401	25	1"	50	
2131402	32	1"	20	
2131411	32	1" 1/4	20	





**Male threaded 90° elbow with double fixing lug**

Ref.	Ø (mm)	Ø thread	Pack	Note
2130202	20	1/2"	100	
2130203	25	1/2"	50	
2130204	25	3/4"	50	



**Female threaded 90° elbow with double fixing lug**

Ref.	Ø (mm)	Ø thread	Pack	Note
2130103	20	1/2"	100	
2130104	25	1/2"	50	
2130105	25	3/4"	50	



**Female threaded 90° elbow with branch**

Ref.	Ø (mm)	Ø thread	Pack	Note
2130102	20	1/2"	100	



**Metal/plastic adaptor joint spigot type**

Ref.	Ø (mm)	Ø thread	Pack	Note
2131101	20	3/4"	50	
2131102	25	1"	50	
2131103	32	1" 1/4	20	
2131104	40	1" 1/2	10	
2131105	50	2"	10	
2131111	63	2" 1/2	10	
2131112	75	3"	5	

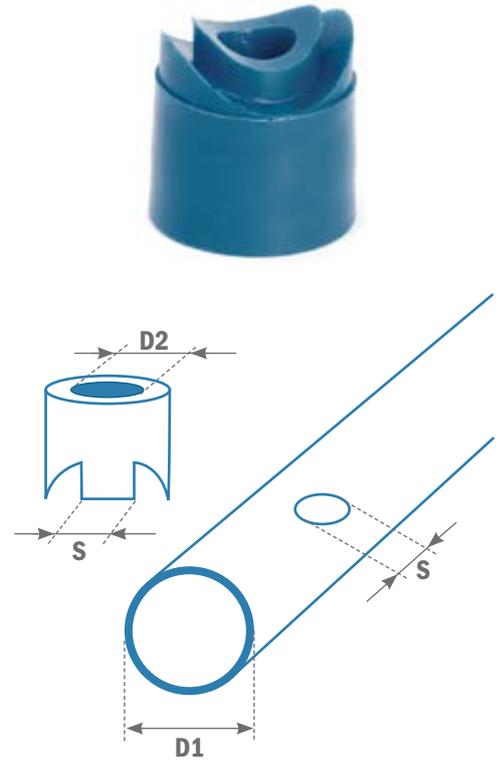


**Metal/plastic adaptor joint socket type**

Ref.	Ø (mm)	Ø thread	Pack	Note
2131201	20	3/4"	50	
2131202	25	1"	50	
2131203	32	1" 1/4	20	
2131204	40	1" 1/2	10	
2131205	50	2"	10	
2131210	63	2" 1/2	10	
2131211	75	3"	5	

### Coupling saddle type

Ref.	D1	D2	S	Cutter	Matrices	Pack	Note
2170407	40	20	25	2300129	2300218	10	
2170406	40	25	25	2300129	2300218	10	
2170411	50	20	21	2300130	2300214	10	
2170412	50	25	21	2300130	2300214	10	
2170413	63	20	21	2300130	2300220	10	
2170416	63	25	25	2300129	2300217	10	
2170420	75	20	21	2300130	2300222	10	
2170421	75	25	21	2300130	2300222	10	
2170422	75	32	32	2300131	2300223	10	
2170423	90	20	21	2300130	2300224	10	
2170424	90	25	21	2300130	2300224	10	
2170430	90	32	32	2300131	2300230	10	
2170401	110	20	21	2300130	2300231	10	
2170402	110	25	21	2300130	2300231	10	
2170403	110	32	32	2300131	2300232	10	



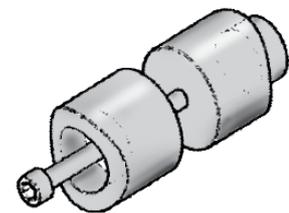
### Threaded coupling saddle type

Ref.	D1	D2	S	Cutter	Matrices	Pack	Note
2130449	40	1/2"	25	2300129	2300218	10	
2130443	50	1/2"	21	2300130	2300214	10	
2130447	63	1/2"	25	2300129	2300217	10	
2130451	75	1/2"	21	2300130	2300222	10	
2130453	90	1/2"	21	2300130	2300224	10	
2130440	110	1/2"	21	2300130	2300231	10	
2130448	50	3/4"	25	2300129	2300216	10	
2130446	63	3/4"	25	2300129	2300217	10	
2130452	75	3/4"	32	2300131	2300223	10	
2130454	90	3/4"	32	2300131	2300230	10	
2130441	110	3/4"	32	2300131	2300232	10	



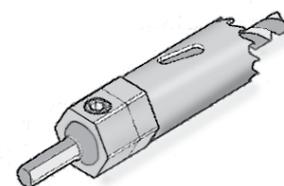
### Matrices for coupling saddle type

Ref.	D1	D2	S	Pack	Note
2300213	40	20/25	21	1	
2300218	40	20/25	25	1	
2300214	50	20/25	21	1	
2300216	50	20/25	25	1	
2300215	50	32	32	1	
2300217	63	20/25	25	1	
2300220	63	20/25	21	1	
2300222	75	20/25	21	1	
2300223	75	32	32	1	
2300224	90	20/25	21	1	
2300230	90	32	32	1	
2300231	110	20/25	21	1	
2300232	110	32	32	1	



### Device for coupling saddle type

Ref.	Ø Cutter	Pack	Note
2300129	25	1	
2300130	21	1	
2300131	32	1	





### Screw tap wall-recessed type

Ref.	Ø (mm)	Pack	Note
2250201	20	20	
2250202	25	20	
2250203	32	20	



### Long screw tap wall-recessed type

Ref.	Ø (mm)	Pack	Note
2250204	20	20	
2250205	25	20	
2250210	32	20	



### Screw tap with knob wall-recessed type

Ref.	Ø (mm)	Pack	Note
2250301	20	20	
2250302	25	20	
2250303	32	20	



### Screw tap with handwheel

Ref.	Ø (mm)	Pack	Note
2250401	20	20	
2250402	25	20	
2250403	32	20	

### Spare parts for screw tap

Ref.	Description	Pack	Note
0140401	Standard screw 1/2" compl.	1	
0140501	Long screw 1/2" compl.	1	
0140402	Standard screw 3/4" compl.	1	
0140502	Long screw 3/4" compl.	1	
0122301	Beta handle, 3P, alloy compl.	1	
0131901	Handwheel compl. D.60	1	
0131101	Chromed shell, closed	1	
0131103	Chromed shell, open	1	
0131201	Rosette	1	
0121701	Extension for screw tap	1	
0121801	Extension for screw	1	

**Ball valve wall-recessed type**

Ref.	Ø (mm)	Pack	Note
2250711	20	20	
2250712	25	20	
2250713	32	20	

**Ball valve with handle**

Ref.	Ø (mm)	Pack	Note
2250603	20	20	
2250604	25	20	
2250605	32	20	

**Compact ball valve PP-R**

Ref.	Ø (mm)	Pack	Note
2250721	20	20	
2250722	25	20	
2250723	32	20	
2250724	40	10	
2250730	50	5	
2250731	63	4	
2250732	75	4	

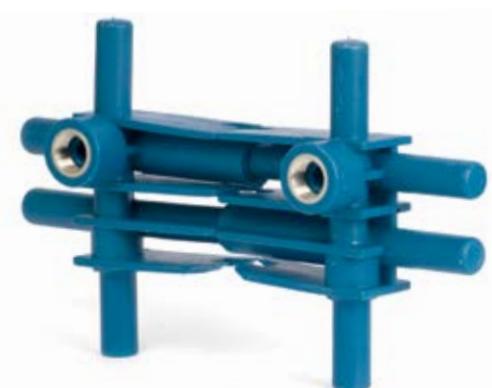
**Spare parts for ball valve**

Ref.	Description	Pack	Note
0121501	Spare kit for B.V.		
0121505	Spare kit for B.V. with handle	1	
2250901	Extension kit for B.V.	1	



### Module with drain elbow

Ref.	Dimension	Pack	Note
2170802	20x160	10	



### Module without drain elbow

Ref.	Dimension	Pack	Note
2170803	20x160	10	



### Drain elbow

Ref.	Dimension	Pack	Note
2171001*	40 (elbow)	1	

\* Per l'anello di bloccaggio: consultare listino "PP"

**Flange PP/steel**

Ref.	Ø (mm)	Pack	Note
2190301	32	1	
2190302	40	1	
2190303	50	1	
2190304	63	1	
2190305	75	1	
2190310	90	1	
2190311	110	1	
2190312	125	1	

Ø32-75 4 holes

Ø90-125 8 holes

**Stub flange**

Ref.	Ø (mm)	Pack	Note
2171201	32	1	
2171202	40	1	
2171203	50	1	
2171204	63	1	
2171205	75	1	
2171210	90	1	
2171211	110	1	
2171212	125	1	

**Gasket for flange**

Ref.	Ø (mm)	Pack	Note
2190201	32	1	
2190203	40	1	
2190205	50	1	
2190207	63	1	
2190209	75	1	
2190211	90	1	
2190213	110	1	
2190215	125	1	





### Electric coupling

Ref.	Ø (mm)	Pack	Note
2190102	20	50	
2190103	25	30	
2190104	32	20	
2190105	40	10	
2190111	50	10	
2190112	63	10	
2190113	75	5	
2190114	90	5	
2190101	110	4	
2190106	125	4	

\* Welding voltage 48 V



### Pressure test pin

Ref.	Ø (mm)	Ø filetto	Pack	Note
2131501	20	1/2"	50	
2131502	25	3/4"	20	
213151R*	20	1/2"	50	

\* Colour: red



### Welding machine for electric couplings

Ref.	Ø (mm)	Pack	Note
2171602	7/11	20	



### Hole repairing matrix

Ref.	Ø (mm)	Pack	Note
2300253	7	1	
2300254	11	1	

### Matrices for polyfusion device

Ref.	Ø (mm)	Pack	Note
2300234	16	1	
2300235	20	1	
2300240	25	1	
2300241	32	1	
2300242	40	1	
2300243	50	1	
2300244	63	1	
2300245	75	1	
2300250	90	1	
2300251	110	1	
2300252	125	1	



**Polyfusion device with stand**

Ref.	Size	Pack	Note
2300202*	16÷63	1	
2300203*	16÷125	1	

\* Matrices not included

**Polyfusion device complete with metal case**

Ref.	Size	Pack	Note
2300205	20÷32	1	
2300211	20÷63	1	

**Welding press complete-case and matrices**

Ref.	Size	Pack	Note
2300255*	20÷90	1	
2300260*	25÷125	1	

\* Available on order

**Welding machine for electric coupling (Low voltage 8-48 V)**

Ref.	Size	Pack	Note
2300301*	20÷110	1	

\* Available on order

**Template**

Ref.	Interasse	Pack	Note
2300132	150 - 160 - 170 - 200 - 210	1	

**Pipe cutting pliers**

Ref.	Material	Size	Pack	Note
2300123	Steel body	0÷42	1	
2300124	Steel body	0÷75	1	



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