

Air Handling Piping System

Air-Pro[®]

Compressed Air Piping System



Piping • Fittings • Valves • Welding Equipment

Another
Corrosion
Problem
Solved.[™]



www.asahi-america.com

Air-Pro® Compressed Air Piping System



Developed in 1992, Air-Pro® piping system has been installed with confidence for over 20 years in industries as vast as airplane manufacturing, hospitals and railroad yards. Air-Pro® revolutionized the use of thermoplastics for air transport. Unlike PVC systems, Air-Pro® meets the requirements set by California OSHA Unfired Pressure Vessel Safety Order 462 (m) (3).

Engineers and designers continue to exclusively specify Air-Pro® due to its reliability, large size range, ease of installation and low cost of ownership. Air-Pro® includes all necessary adapters to transition from existing, failing metal or ABS systems.

Supply Range

Pipe and Fittings

- 20 - 110mm (1/2" - 4") SDR7, 230psi
- 160 - 315mm (6" - 12") SDR11, 150psi

Valves

- Ball Valves
- Tapping Saddles

Seals and O-rings

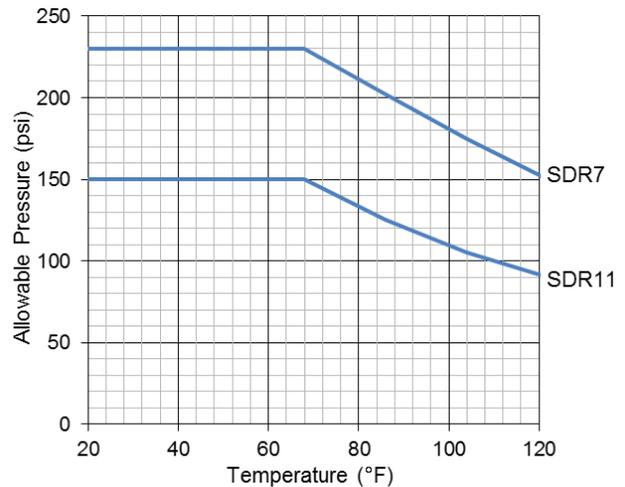
- FKM

Welding Methods



Pressure Rating

50 Year Life



Resin & Manufacturing

The specially formulated polyethylene (PE) resin is resistant to synthetic and mineral oils found in compressor lubricants that tend to corrode metals and attack solvent cements used to join ABS piping.

The chemical resistance of Air-Pro® has proven reliability in acids, alkalis and hydrocarbons. In addition to chemical resistance, humidity that often forms in a compressed air system, which can cause considerable problems in metallic piping, has no negative impact on Air-Pro®.



System Benefits

- Increased compressor efficiency due to low friction.
- Thermal fusion is more reliable than compression fittings on aluminium systems.
- Lightweight materials reduce transportation costs.
- No scrap value for construction site thieves.
- Wide temperature range (-22°F to 140°F).
- Excellent chemical resistance.
- High pressure load resistance (230psi at 68°F).
- Rodent and bacteria resistant.



Short Specification

| | |
|----------------------------|---|
| Material: | ASTM D3350 cell classification PE346544C meets Cal/OSHA requirements for transport of compressed air. Resin shall comply with FDA Code of Federal Regulators (CFR), Title 21, Chapter 1: Section 177.1520 determining suitability for contact with foodstuff. |
| Pipe Production: | Dimensions and tolerances shall exceed ISO 15494 requirement. |
| Fitting Production: | Dimensions and tolerances shall exceed ISO 15494 requirement. |
| Pressure Rating: | <p>Pipe shall be pressure rated in accordance with ASTM D2837 and DIN 8077 for hydrostatic design basis. Pipe shall be manufactured to standard dimensional ratio (SDR) 7 and 11.</p> <p>Based on continuous service life of 50 years at 68°F (20°C).</p> <p>SDR7: 230psi (PN16)</p> <p>SDR11: 150psi (PN10)</p> <p>PN = Nominal pressure in bar.</p> |
| Joining: | <p>Available methods shall be according to the schedule below:</p> <p>DVS 2208-1 Socket: 20mm through 110mm (1/2" - 4").</p> <p>DVS 2207-1 Contact Butt: 160mm (6") through max product size.</p> |



Please visit our web site: www.asahi-america.com for a full detailed sample specification.



System Comparison

Air-Pro® is the air handling product of choice for national automotive, airplane and railroad manufacturers because it can be installed throughout a plant allowing for future branches and expansions with no system downtime.

At a fraction of the cost of stainless steel, Air-Pro® can be installed in minutes, not hours.

Air-Pro® has a lower environmental impact than heavy metals such as steel or iron. Its shipping costs and carbon footprint are drastically reduced from conventional systems and Air-Pro® can be completely recycled.

Because of a better surface finish, Air-Pro® reduces operating costs by increasing compressor efficiencies.

Air-Pro®, although completely recyclable, offers no value to construction site thieves who may steal copper, stainless and aluminium.

Unlike aluminium systems, Air-Pro® can be buried underground.

PVC is not allowed in most states to be used for compressed air due to the dangerous and catastrophic failure modes of such systems. Air-Pro® meets Cal/OSHA requirements for transport of compressed air.

ABS and glue used to join the ABS systems are not resistant to many lubricants and some manufacturers have discontinued their ABS products for air use. Asahi/America offers a transition fitting which can adapt from failing ABS systems to Air-Pro®.

System Comparison

| | Pressure | Weight | Material Cost | Install Cost | Changes | Corrosion |
|-----------------|----------|--------|---------------|--------------|---------|-----------|
| Air-Pro® | ★ | ★ | ★ | ★ | ★ | ★ |
| ABS | - | ★ | ★ | ★ | ★ | - |
| PVC | - | - | - | - | - | - |
| Aluminum | - | ★ | ★ | ★ | ★ | - |
| Copper | ★ | - | - | - | - | - |
| Black Iron | ★ | - | ★ | ★ | - | - |
| Galvanized | - | - | - | - | - | - |
| Steel | - | - | - | - | - | - |
| Stainless Steel | - | - | - | - | - | - |



Resistance to Corrosion and Lubricants

Moisture in the air will eventually cause corrosion and scaling on all metal systems, regardless of coatings or pretreatment. Even galvanized steel eventually loses its protective coating and then rusts.

Trace amounts of compressor lubricants are present in all compressed air systems that use lubricated compressors. Air-Pro® is the only plastic system designed to be resistant to all compressor lubricants including:

- Synthetic blends
- Polyalpha-olefin (POA)
- Polyol-ester (POE)
- Diesters

Air-Pro® is rodent, microorganism and bacteria resistant.



System Design and Installation

Installation of thermoplastic systems have considerable differences when compared to metal and should be performed by properly trained personnel.

- Blue Air-Pro® is not UV resistant and must be installed with sufficient protection if exposed to direct sunlight.
- Do not install when the ambient temperature is below 40°F (5°C), or when wind or rain are present.
- Allow 24-48 hours for ambient temperature acclimation before welding.
- All piping systems should be pressure tested according to applicable standards.
- Maximum test pressure is 72.5psi over the maximum allowable operating pressure.

Support Spacing

Thermoplastics must be supported more frequently than rigid metal piping to avoid excessive bending. Asahi/America recommends utilizing pipe clips designed for plastic piping, which fully support the circumference and do not create point loads on the pipe wall. Support distances shown in the table below have been calculated using compressed air with a density of 1.3 kg/m³ (water density = 1,000 kg/m³).

Support Spacing (inches)

| Size | | 68°F (20°C) | 86°F (30°C) | 104°F (40°C) | 122°F (50°C) | 140°F (60°C) |
|------|-------|----------------|----------------|-----------------|-----------------|-----------------|
| mm | inch | | | | | |
| 20 | 1/2 | 33 | 31 | 28 | 26 | 25 |
| 25 | 3/4 | 38 | 36 | 33 | 30 | 29 |
| 32 | 1 | 45 | 39 | 37 | 35 | 34 |
| 40 | 1-1/4 | 52 | 49 | 45 | 41 | 39 |
| 50 | 1-1/2 | 60 | 57 | 53 | 48 | 46 |
| 63 | 2 | 70 | 67 | 62 | 56 | 54 |
| 75 | 2-1/2 | 79 | 75 | 70 | 63 | 61 |
| 90 | 3 | 89 | 85 | 78 | 71 | 68 |
| 110 | 4 | 102 | 97 | 89 | 81 | 78 |
| 160 | 6 | 107 | 102 | 97 | 92 | 84 |
| 200 | 8 | 121 | 115 | 110 | 105 | 100 |
| 250 | 10 | 136 | 131 | 126 | 121 | 110 |
| 315 | 12 | 152 | 147 | 142 | 134 | 123 |

Continuous supports or V-troughs may be used to increase the support spacing of Air-Pro®.



Supported by pipe clips

System Design and Installation

Change of Length Due to Thermal Expansion:

Change in length due to thermal expansion must be considered if the temperatures during installation and operation are different.

Plastic has the property of expanding under heat.

The calculation of the change in length of Air-Pro® pipe is based on the following formula:

$$\Delta L = \alpha \cdot \Delta T \cdot L$$

ΔL = change in length due to the temp. change [mm]

α = linear expansion coefficient [mm/m/K]

ΔT = difference in temperature [K]

L = pipe length [m]

The length change results from the difference between the installation temperature and the maximum and minimum pipe wall temperature (installation, operation, shut-down).

Calculation of minimum straight length (following DVS 2210, part 1)

Changes in length are caused by a changing operating temperature.

Axial movement compensation should be provided outside of the installed pipes.

In many cases, changes in the direction of the pipe layout can be used to compensate changes in the length.

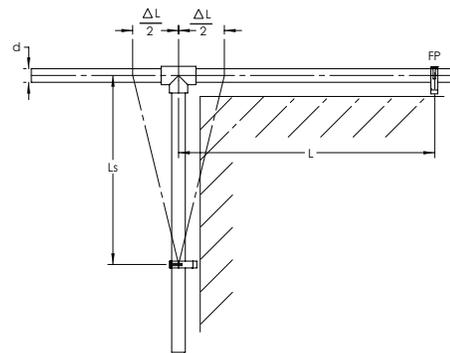
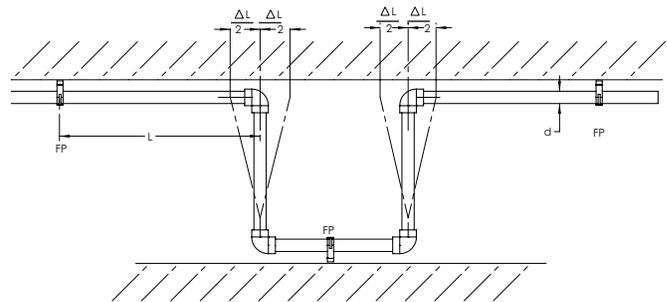
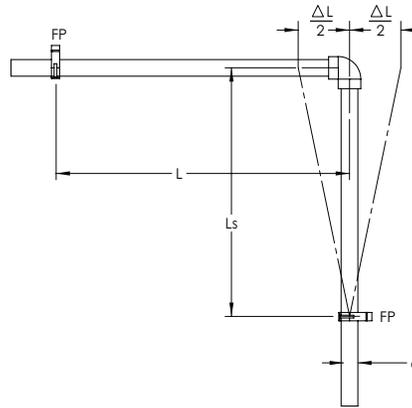
Prestressing method – Installation

For this method, it is required to enter $\Delta L/2$ to calculate the minimum straight length as part of the change in length as compensated by prestressing by $\Delta L/2$.

This means that, in practice, the bent side is already prestressed by half of the change in the length $\Delta L/2$.

Advantages of the prestressing method:

- The minimum straight length can be reduced.
- Perfect installation during operation, as the expansion is hardly visible.



The minimum straight length is based on the following:

$$L_s = C \cdot \sqrt{d_a \cdot \Delta L}$$

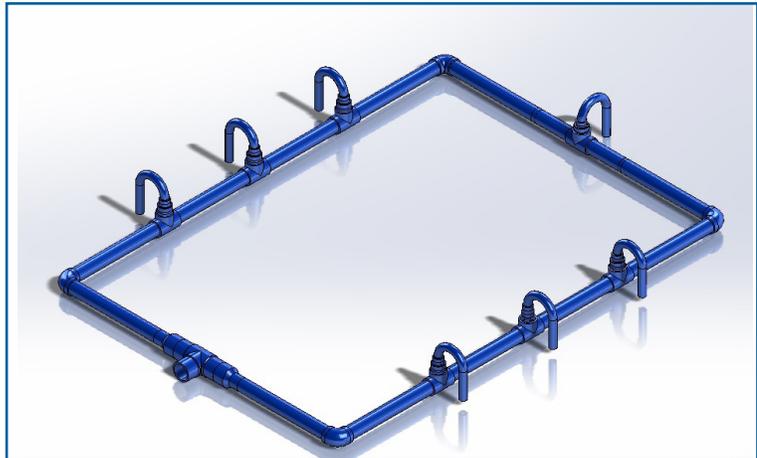
- L_s = minimum straight length [mm]
- d_a = pipe outside diameter [mm]
- ΔL = change in length [mm]
- C = material coefficient $C=26$ (PE)



System Design and Installation

Condensate Drains

- Goosenecks are designed to prevent condensate, which forms due to pressure and temperature changes, from reaching the point of use.



Examples of a gooseneck design

- Water drains offer maximum protection from damaging downstream instruments. Drains can be incorporated into Air-Pro® using one of the following mechanical connections.

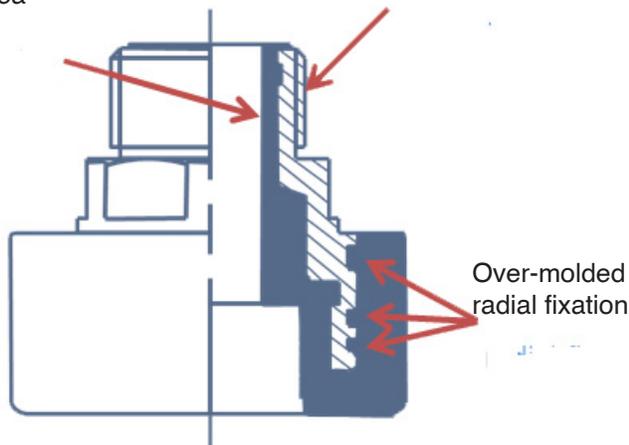
Threaded Connections

- Air-Pro® threaded joints have a nickel-plated brass core for corrosion resistance and full pressure rating.
- It is recommended to lightly coat threads with molybdenum sulfide to prolong life.
- Always use PTFE tape to ensure a leak-proof connection. Torque must not exceed 29.5 ft-lbs.

Threaded Adapters

Air-Pro®
flow area

Nickel-plated
NPT¹



1) To use PTFE tape, lightly wipe thread surface with fine emery cloth.

System Design and Installation

Approximation formula for calculating the pipe inside diameter

The pipe inside diameter is normally calculated by means of an approximation formula assuming that the compressed air temperature is equivalent to the intake temperature.

A suitable approximation can be achieved by the following equation:

$$di = \sqrt[5]{\frac{450 \times L \times V^{1.85}}{\Delta p \times p}}$$

| | | |
|------------|----------------------------|-------|
| di | pipe inside diameter | [mm] |
| L | nominal length of pipeline | [m] |
| V | flow rate | [l/s] |
| Δp | pressure drop | [bar] |
| p | excess operating pressure | [bar] |

System Design and Installation

Nomogram

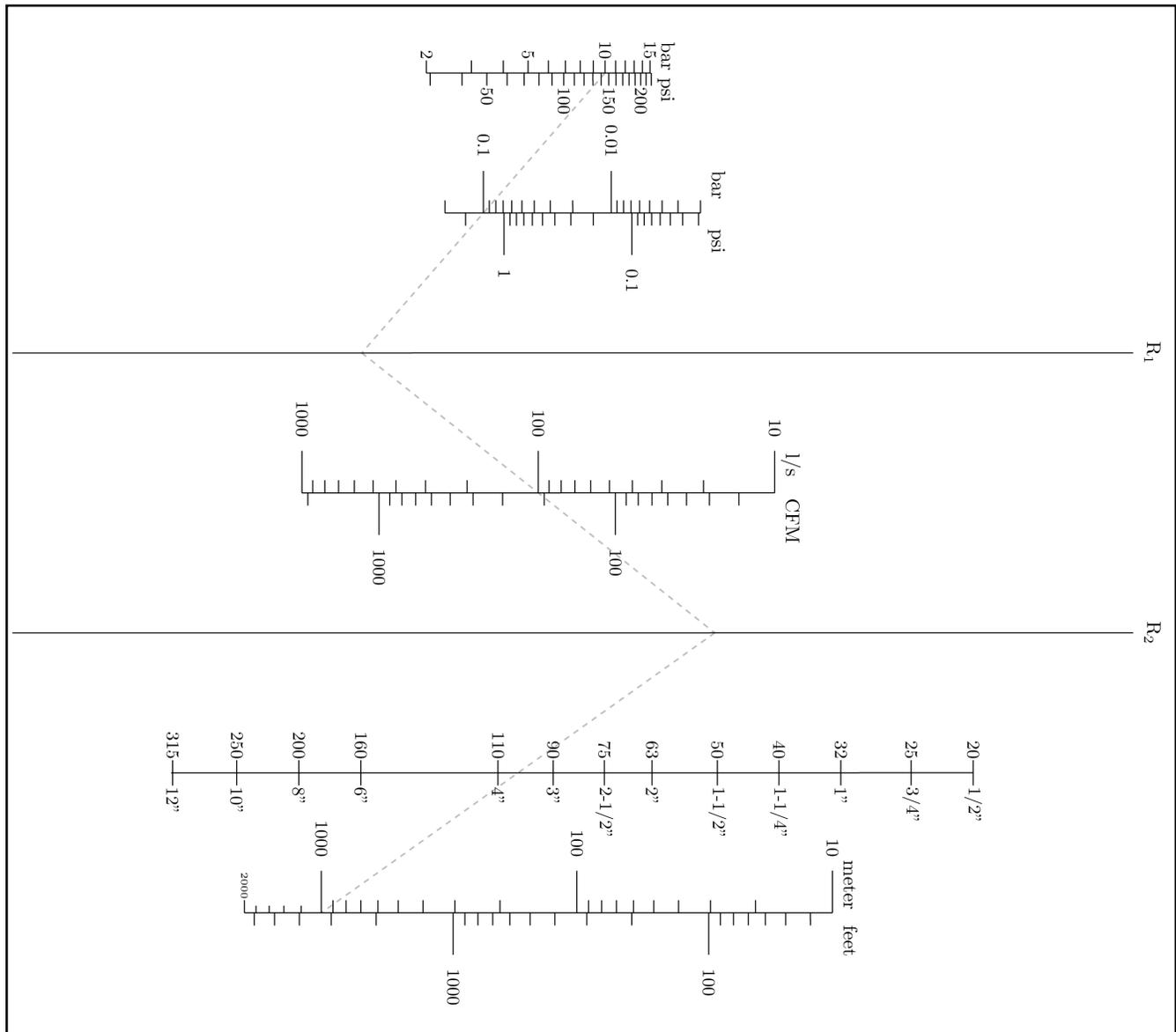
Nomogram for calculating the pipe outside diameter

A second and more simple method is the calculation of the pipe outside diameter by using a nomogram based on the approximation formula.

The nomogram shown below is specially adapted to Air-Pro® pipes and relates directly to results in the required outside diameter.

The outside diameter can be calculated by entering the known parameters such as pressure drop, operating pressure, flow rate and length of piping system through its created intersections.

Another advantage of the nomogram is the fact that when four parameters are known, the fifth can easily be calculated.

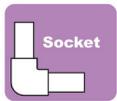


System Design and Installation

Thermofusion

Properly trained installers are critical to overall system performance. Asahi/America recommends plastic pipe contractors maintain certifications according to DVS thermofusion guidelines. Asahi/America is proud to offer job site training according to DVS guidelines.

Training should be conducted by authorized Asahi/America personnel a maximum of one week prior to beginning the installation.



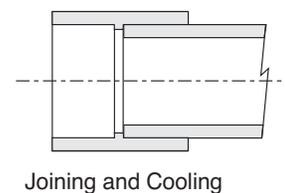
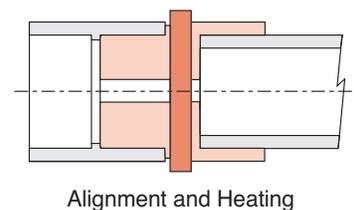
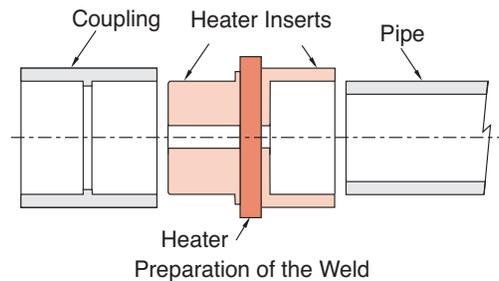
Socket Fusion

The illustration to the right shows socket fusion steps:

- **Melting the Pipe and Fitting:** After peeling the end of the pipe, insert the pipe and the fitting onto the heater bushings simultaneously and hold for the heating time.

- **Making the Joint:** After the heating time, pull the pipe and fitting off the heater bushings and immediately insert the pipe into the socket of the fitting up to the socket depth.

- **Curing:** After insuring the pipe has been inserted properly, allow the new fitted joint to cool for the specified time before moving the joint.



Welding Equipment



Hand Held Socket

20 - 63mm (1/2" - 2")



Bench Socket

20 - 110mm (1/2" - 4")



System Design and Installation



Butt Fusion

Butt fusion thermally bonds pipe and components by heating the face of the components. Once elevated to the material-specific melting temperatures, the component faces are pressed against each other.

Bench top welding tools are capable of welding up to the maximum size available in the piping system. Welding equipment up to 160mm (6") can often be used in hard to reach areas like pipe rafters.

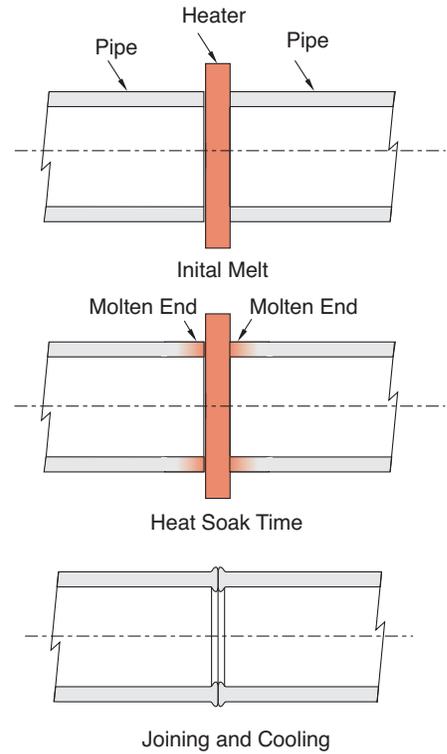
Welding Equipment



Miniplast
20-110mm (1/2" - 4")



Maxiplast
50-160mm (1-1/2" - 6")



Electrofusion

Electrofusion thermally bonds pipe components by heating a section of the component and the electrofusion coupling.

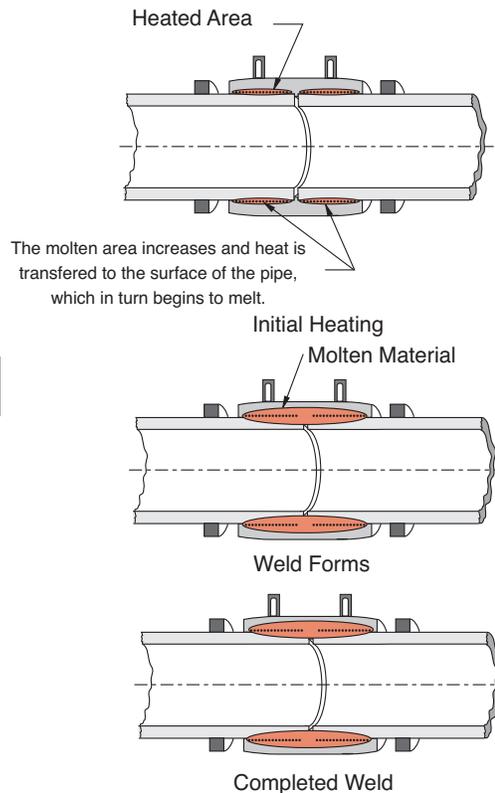
Electrofusion uses electricity to heat and imbedded copper wire through resistance. Air-Pro®'s imbedded wire is never exposed to media being transported.

Fittings are available up to 315mm (12") and require the use of an electrical control device, which regulates voltage and current.

Welding Equipment



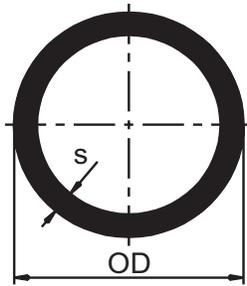
Polymatic
All sizes



Dimensional Data

Socket Fittings

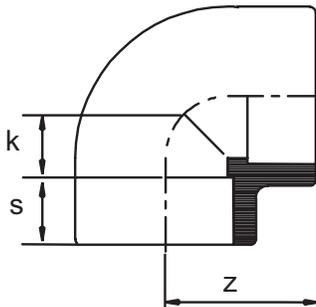
Air-Pro® Pipe
(sold in 16.4 ft lengths)



| Size | | OD (inch) | s (inch) | Weight (lb/ft) | Part # |
|-------------------------|--------|--------------|-------------|-------------------|---------|
| (mm) | (inch) | | | | |
| 20 | 1/2 | 0.79 | 0.110 | 0.10 | 5802005 |
| 25 | 3/4 | 0.98 | 0.138 | 0.16 | 5802007 |
| 32 | 1 | 1.26 | 0.173 | 0.26 | 5802010 |
| 40 | 1-1/4 | 1.57 | 0.217 | 0.40 | 5802012 |
| 50 | 1-1/2 | 1.97 | 0.272 | 0.63 | 5802015 |
| 63 | 2 | 2.48 | 0.339 | 0.99 | 5802020 |
| 90 | 3 | 3.54 | 0.484 | 2.01 | 5802030 |
| 110 | 4 | 4.33 | 0.594 | 3.01 | 5802040 |
| Butt Fusion Only | | | | | |
| 160 | 6 | 6.30 | 0.575 | 4.48 | 5803060 |
| 200 | 8 | 7.87 | 0.717 | 6.99 | 5803080 |
| 250 | 10 | 9.84 | 0.894 | 10.89 | 5803010 |
| 315 | 12 | 12.40 | 1.126 | 17.21 | 5803120 |

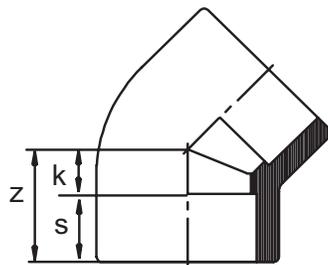
Air-Pro® systems 20-110mm are blue. SDR 7.4 and rated at 230psi.
Air-Pro® pipe systems 160-315mm are black, SDR 11 and rated at 160psi.
Blue Air-Pro® pipe available upon request fittings; remain black 160-315mm.

Socket 90



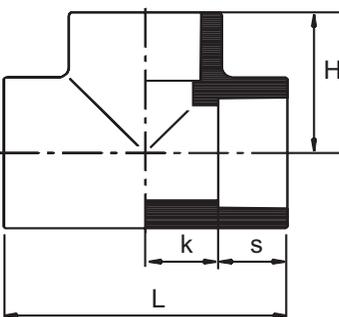
| Size | | Z (inch) | s (inch) | k (inch) | Part # |
|------|--------|-------------|-------------|-------------|---------|
| (mm) | (inch) | | | | |
| 20 | 1/2 | 1.177 | 0.626 | 0.551 | 5805005 |
| 25 | 3/4 | 1.378 | 0.709 | 0.669 | 5805007 |
| 32 | 1 | 1.547 | 0.760 | 0.787 | 5805010 |
| 40 | 1-1/4 | 1.815 | 0.831 | 0.984 | 5805012 |
| 50 | 1-1/2 | 2.055 | 0.953 | 1.102 | 5805015 |
| 63 | 2 | 2.421 | 1.043 | 1.378 | 5805020 |
| 90 | 3 | 3.311 | 1.382 | 1.929 | 5805030 |
| 110 | 4 | 3.937 | 1.693 | 2.244 | 5805040 |

Socket 45



| Size | | Z (inch) | s (inch) | k (inch) | Part # |
|------|--------|-------------|-------------|-------------|---------|
| (mm) | (inch) | | | | |
| 20 | 1/2 | 1.063 | 0.630 | 0.433 | 5808005 |
| 25 | 3/4 | 1.240 | 0.689 | 0.551 | 5808007 |
| 32 | 1 | 1.468 | 0.799 | 0.669 | 5808010 |
| 40 | 1-1/4 | 1.673 | 0.846 | 0.827 | 5808012 |
| 50 | 1-1/2 | 1.984 | 0.961 | 1.024 | 5808015 |
| 63 | 2 | 2.402 | 1.102 | 1.299 | 5808020 |
| 90 | 3 | 3.256 | 1.445 | 1.811 | 5808030 |
| 110 | 4 | 3.886 | 1.681 | 2.205 | 5808040 |

Socket Tee



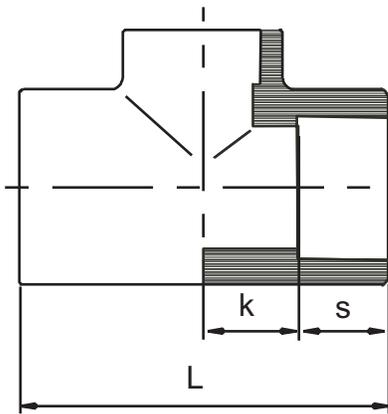
| Size | | L (inch) | H (inch) | s (inch) | k (inch) | Part # |
|------|--------|-------------|-------------|-------------|-------------|---------|
| (mm) | (inch) | | | | | |
| 20 | 1/2 | 2.362 | 1.177 | 0.626 | 0.551 | 5820005 |
| 25 | 3/4 | 2.756 | 1.378 | 0.748 | 0.630 | 5820007 |
| 32 | 1 | 3.126 | 1.547 | 0.760 | 0.787 | 5820010 |
| 40 | 1-1/4 | 3.701 | 1.831 | 0.846 | 0.984 | 5820012 |
| 50 | 1-1/2 | 4.252 | 2.134 | 0.972 | 1.161 | 5820015 |
| 63 | 2 | 4.933 | 2.461 | 1.142 | 1.319 | 5820020 |
| 90 | 3 | 7.268 | 3.594 | 1.488 | 2.106 | 5820030 |
| 110 | 4 | 8.150 | 4.075 | 1.654 | 2.421 | 5820040 |



Dimensional Data

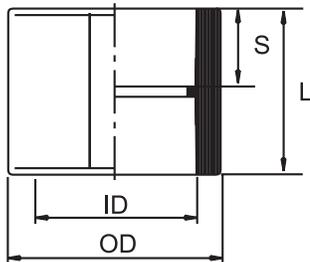
Socket Fittings

Socket Reducing Tee



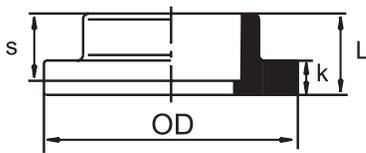
| Size | | L | H | s1 | s2 | k | Part # |
|-------|---------------|--------|--------|-------|-------|--------|---------|
| (mm) | (inch) | (inch) | (inch) | | | (inch) | |
| 25/20 | 3/4 x 1/2 | 2.657 | 1.240 | 0.720 | 0.618 | 0.608 | 5824101 |
| 32/20 | 1 x 1/2 | 3.094 | 1.551 | 0.776 | 0.610 | 0.772 | 5824130 |
| 32/25 | 1 x 3/4 | 3.094 | 1.535 | 0.776 | 0.689 | 0.772 | 5824131 |
| 40/20 | 1-1/4 x 1/2 | 3.504 | 1.772 | 0.843 | 0.618 | 0.909 | 5824166 |
| 40/25 | 1-1/4 x 3/4 | 3.476 | 1.724 | 0.858 | 0.717 | 0.880 | 5824167 |
| 40/32 | 1-1/4 x 1 | 3.583 | 1.772 | 0.846 | 0.748 | 0.945 | 5824168 |
| 50/20 | 1-1/2 x 1/2 | 4.213 | 1.949 | 1.012 | 0.622 | 1.094 | 5824208 |
| 50/25 | 1-1/2 x 3/4 | 4.213 | 1.996 | 0.992 | 0.705 | 1.114 | 5824210 |
| 50/32 | 1-1/2 x 1 | 4.213 | 2.067 | 0.945 | 0.748 | 1.161 | 5824211 |
| 50/40 | 1-1/2 x 1-1/4 | 4.213 | 2.067 | 0.965 | 0.827 | 1.142 | 5824212 |
| 63/25 | 2 x 3/4 | 5.079 | 2.559 | 1.126 | 0.709 | 1.413 | 5824248 |
| 63/32 | 2 x 1 | 5.059 | 2.559 | 1.126 | 0.748 | 1.404 | 5824249 |
| 63/40 | 2 x 1-1/4 | 5.059 | 2.539 | 1.126 | 0.846 | 1.404 | 5824250 |
| 63/50 | 2 x 1-1/2 | 5.059 | 2.539 | 1.126 | 0.945 | 1.404 | 5824251 |

Socket Coupling



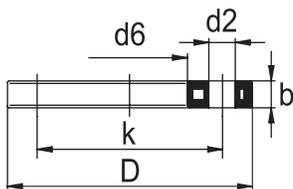
| Size | | L | OD | ID | S | Part # |
|------|--------|--------|--------|--------|--------|---------|
| (mm) | (inch) | (inch) | (inch) | (inch) | (inch) | |
| 20 | 1/2 | 1.378 | 1.181 | 0.787 | 0.634 | 5816005 |
| 25 | 3/4 | 1.535 | 1.374 | 0.984 | 0.709 | 5816007 |
| 32 | 1 | 1.677 | 1.681 | 1.260 | 0.787 | 5816010 |
| 40 | 1-1/4 | 1.811 | 2.035 | 1.575 | 0.866 | 5816012 |
| 50 | 1-1/2 | 2.024 | 2.520 | 1.968 | 0.965 | 5816015 |
| 63 | 2 | 2.335 | 3.169 | 2.480 | 1.110 | 5816020 |
| 90 | 3 | 3.059 | 4.496 | 3.543 | 1.378 | 5816030 |
| 110 | 4 | 3.543 | 5.244 | 4.331 | 1.681 | 5816040 |

Socket Stub End



| Size | | L | OD | s | k | Part # |
|------|--------|--------|--------|--------|--------|---------|
| (mm) | (inch) | (inch) | (inch) | (inch) | (inch) | |
| 20 | 1/2 | 0.827 | 1.772 | 0.630 | 0.382 | 5833005 |
| 25 | 3/4 | 0.906 | 2.283 | 0.669 | 0.374 | 5833007 |
| 32 | 1 | 0.984 | 2.677 | 0.748 | 0.382 | 5833010 |
| 40 | 1-1/4 | 1.043 | 3.071 | 0.866 | 0.433 | 5833012 |
| 50 | 1-1/2 | 1.181 | 3.465 | 0.941 | 0.472 | 5833015 |
| 63 | 2 | 1.319 | 4.016 | 1.083 | 0.543 | 5833020 |
| 90 | 3 | 1.654 | 5.433 | 1.358 | 0.630 | 5833030 |
| 110 | 4 | 1.890 | 6.220 | 1.614 | 0.736 | 5833040 |

PPG Backing Ring



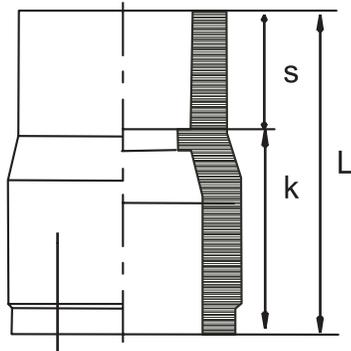
| Size | | D | k | d2 | d6 | b | # Holes | Part # |
|------|--------|--------|--------|--------|--------|--------|---------|---------|
| (mm) | (inch) | (inch) | (inch) | (inch) | (inch) | (inch) | | |
| 20 | 1/2 | 3.740 | 2.380 | 0.630 | 1.102 | 0.472 | 4 | 5046005 |
| 25 | 3/4 | 4.016 | 2.750 | 0.630 | 1.339 | 0.472 | 4 | 5046007 |
| 32 | 1 | 4.488 | 3.120 | 0.630 | 1.654 | 0.630 | 4 | 5046010 |
| 40 | 1-1/4 | 5.118 | 3.500 | 0.630 | 2.008 | 0.630 | 4 | 5046012 |
| 50 | 1-1/2 | 5.236 | 3.880 | 0.630 | 2.441 | 0.709 | 4 | 5046015 |
| 63 | 2 | 6.378 | 4.750 | 0.787 | 3.071 | 0.709 | 4 | 5046020 |
| 90 | 3 | 7.638 | 6.000 | 0.787 | 4.370 | 0.709 | 8 | 5046030 |
| 110 | 4 | 9.016 | 7.500 | 0.787 | 5.236 | 0.709 | 8 | 5046040 |



Dimensional Data

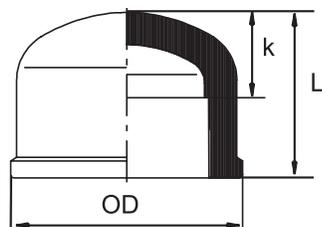
Socket Fittings

**Spigot x Socket
Reducing Bushing**



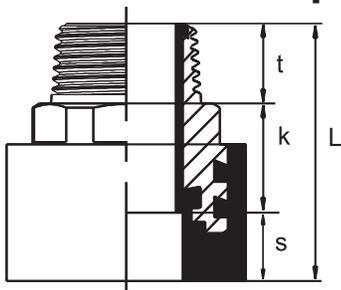
| Size | | L | s | k | Part # |
|--------|---------------|--------|--------|--------|---------|
| (mm) | (inch) | (inch) | (inch) | (inch) | |
| 25/20 | 3/4 x 1/2 | 1.496 | 0.618 | 0.878 | 5829101 |
| 32/20 | 1 x 1/2 | 1.732 | 0.614 | 1.118 | 5829130 |
| 32/25 | 1 x 3/4 | 1.732 | 0.697 | 1.035 | 5829131 |
| 40/20 | 1-1/4 x 1/2 | 1.949 | 0.61 | 1.339 | 5829166 |
| 40/25 | 1-1/4 x 3/4 | 1.949 | 0.689 | 1.260 | 5829167 |
| 40/32 | 1-1/4 x 1 | 1.968 | 0.78 | 1.189 | 5829168 |
| 50/20 | 1-1/2 x 1/2 | 2.165 | 0.646 | 1.52 | 5829208 |
| 50/25 | 1-1/2 x 3/4 | 2.138 | 0.697 | 1.441 | 5829210 |
| 50/32 | 1-1/2 x 1 | 2.146 | 0.701 | 1.445 | 5829211 |
| 50/40 | 1-1/2 x 1-1/4 | 2.126 | 1.004 | 1.122 | 5829212 |
| 63/25 | 2 x 3/4 | 2.520 | 0.709 | 1.811 | 5829248 |
| 63/32 | 2 x 1 | 2.520 | 0.787 | 1.732 | 5829249 |
| 63/40 | 2 x 1-1/4 | 2.500 | 0.827 | 1.673 | 5829250 |
| 63/50 | 2 x 1-1/2 | 2.520 | 0.965 | 1.555 | 5829251 |
| 90/63 | 3 x 2 | 3.366 | 1.1902 | 2.264 | 5829338 |
| 110/63 | 4 x 2 | 3.465 | 1.122 | 2.343 | 5829420 |
| 110/90 | 4 x 3 | 3.445 | 1.476 | 1.968 | 5829422 |

Socket Cap



| Size | | OD | L | k | Part # |
|------|--------|--------|--------|--------|---------|
| (mm) | (inch) | (inch) | (inch) | (inch) | |
| 20 | 1/2 | 1.280 | 1.063 | 0.445 | 5812005 |
| 25 | 3/4 | 1.484 | 1.201 | 0.587 | 5812007 |
| 32 | 1 | 1.831 | 1.358 | 0.661 | 5812010 |
| 40 | 1-1/4 | 2.283 | 1.496 | 0.886 | 5812012 |
| 50 | 1-1/2 | 2.756 | 1.850 | 1.161 | 5812015 |
| 63 | 2 | 3.406 | 2.362 | 1.583 | 5812020 |
| 90 | 3 | 4.685 | 3.150 | 2.504 | 5812030 |
| 110 | 4 | 5.512 | 3.701 | 3.004 | 5812040 |

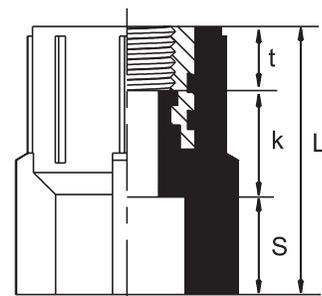
Socket MNPT Adapter



| Size | | L | s | k | t | Part # |
|------|--------|--------|--------|--------|--------|---------|
| (mm) | (inch) | (inch) | (inch) | (inch) | (inch) | |
| 20 | 1/2 | 2.244 | 0.591 | 1.043 | 0.610 | 5859005 |
| 25 | 3/4 | 2.402 | 0.669 | 1.102 | 0.669 | 5859007 |
| 32 | 1 | 2.598 | 0.709 | 1.181 | 0.709 | 5859010 |
| 40 | 1-1/4 | 2.795 | 0.827 | 1.142 | 0.827 | 5859012 |
| 50 | 1-1/2 | 3.031 | 0.945 | 1.142 | 0.945 | 5859015 |
| 63 | 2 | 3.268 | 1.083 | 1.102 | 1.083 | 5859020 |

- Nickel-plated brass threads
- 230psi rated

Socket FNPT Adapter



| Size | | L | S | k | t | Part # |
|------|--------|--------|--------|--------|--------|---------|
| (mm) | (inch) | (inch) | (inch) | (inch) | (inch) | |
| 20 | 1/2 | 1.598 | 0.62 | 0.386 | 0.591 | 5853005 |
| 25 | 3/4 | 1.606 | 0.62 | 0.386 | 0.709 | 5853007 |
| 32 | 1 | 1.850 | 0.71 | 0.386 | 0.787 | 5853010 |
| 40 | 1-1/4 | 1.949 | 0.79 | 0.386 | 0.827 | 5853012 |
| 50 | 1-1/2 | 2.268 | 0.91 | 0.386 | 1.004 | 5853015 |
| 63 | 2 | 2.567 | 1.04 | 0.386 | 1.142 | 5853020 |

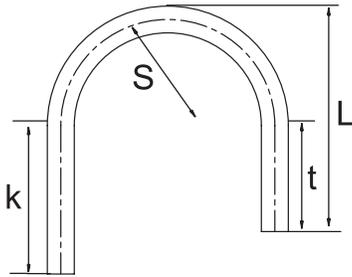
- Nickel-plated brass threads
- 230psi rated



Dimensional Data

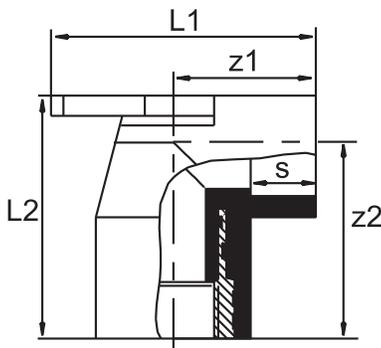
Socket Fittings

Spigot Gooseneck



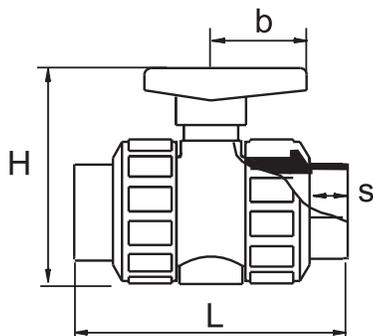
| Size (mm) | Size (inch) | L (inch) | S (inch) | k (inch) | t (inch) | Part # |
|-----------|-------------|----------|----------|----------|----------|---------|
| 20 | 1/2 | 10 | 5 | 7 | 5 | 5835005 |
| 25 | 3/4 | 9 | 5 | 7 | 4 | 5835007 |
| 32 | 1 | 10 | 5 | 7 | 5 | 5835010 |

Air-Pro® Socket 90 x FNPT w/ MTG Bracket



| Size (mm) | Size (inch) | L1 (inch) | L2 (inch) | z1 (inch) | z2 (inch) | S (inch) | Part # |
|-----------|-------------|-----------|-----------|-----------|-----------|----------|---------|
| 20 | 1/2 | 2.559 | 2.362 | 1.398 | 1.772 | 0.551 | 5857005 |

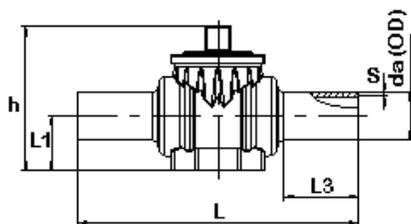
Socket Ball Valve



| Size (mm) | Size (inch) | L (inch) | H (inch) | b (inch) | S (inch) | Part # |
|-----------|-------------|----------|----------|----------|----------|---------|
| 20 | 1/2 | 3.787 | 1.890 | 1.673 | 0.571 | 5801005 |
| 25 | 3/4 | 4.370 | 2.126 | 2.165 | 0.630 | 5801007 |
| 32 | 1 | 4.724 | 2.244 | 2.165 | 0.709 | 5801010 |
| 40 | 1-1/4 | 5.433 | 3.031 | 2.559 | 0.807 | 5801012 |
| 50 | 1-1/2 | 6.339 | 3.465 | 2.953 | 1.071 | 5801015 |
| 63 | 2 | 7.480 | 3.760 | 3.425 | 1.457 | 5801020 |
| 90 | 3 | 11.181 | 6.220 | 5.315 | 1.398 | 5801030 |

Air-Pro® ball valves sizes 20-63mm are rated 230psi.
Air-Pro® ball valve size 90mm are rated 150psi.

Air Pro® Ball Valve



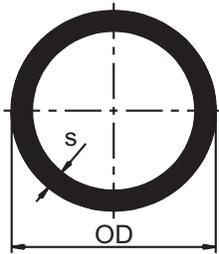
| Size (mm) | Size (inch) | L (inch) | L1 (inch) | L3 (inch) | h (inch) | S (inch) | Part # |
|-----------|-------------|----------|-----------|-----------|----------|----------|---------|
| 32 | 1 | 11.26 | 1.81 | 3.15 | 5.91 | 0.118 | 5881010 |
| 50 | 1-1/2 | 12.91 | 2.45 | 3.74 | 7.87 | 0.181 | 5881015 |
| 63 | 2 | 16.14 | 3.03 | 4.53 | 8.86 | 0.228 | 5881020 |
| 90 | 3 | 20.51 | 3.94 | 5.32 | 10.83 | 0.323 | 5881030 |
| 110 | 4 | 23.43 | 4.80 | 5.91 | 12.28 | 0.394 | 5881040 |



Dimensional Data

Electrofusion and Butt Fittings

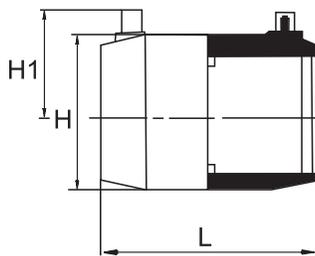
Air-Pro® Pipe
(sold in 16.4 ft lengths)



| Size | | OD (inch) | s (inch) | Weight (lb/ft) | Part # |
|------|--------|--------------|-------------|-------------------|---------|
| (mm) | (inch) | | | | |
| 160 | 6 | 6.30 | 0.575 | 4.48 | 5803060 |
| 200 | 8 | 7.87 | 0.717 | 6.99 | 5803080 |
| 250 | 10 | 9.84 | 0.894 | 10.89 | 5803010 |
| 315 | 12 | 12.40 | 1.126 | 17.21 | 5803120 |

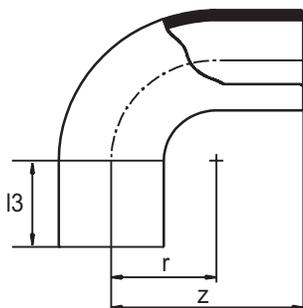
Air-Pro® pipe systems 160-315mm are black, SDR 11 and rated at 160psi.
Blue Air-Pro® pipe available upon request; fittings remain black 160-315mm.

Electrofusion Coupling



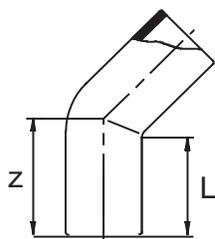
| Size | | L (inch) | H (inch) | H1 (inch) | Part # |
|------|--------|-------------|-------------|--------------|---------|
| (mm) | (inch) | | | | |
| 20 | 1/2 | 2.953 | 1.181 | 1.437 | 5817005 |
| 25 | 3/4 | 3.189 | 1.378 | 1.457 | 5817007 |
| 32 | 1 | 3.504 | 1.654 | 1.693 | 5817010 |
| 40 | 1-1/4 | 3.898 | 2.087 | 1.929 | 5817012 |
| 50 | 1-1/2 | 4.370 | 2.638 | 2.087 | 5817015 |
| 63 | 2 | 5.000 | 3.268 | 2.205 | 5817020 |
| 90 | 3 | 5.591 | 4.528 | 2.913 | 5817030 |
| 110 | 4 | 5.984 | 5.512 | 3.268 | 5817040 |
| 160 | 6 | 7.165 | 7.874 | 4.252 | 5817060 |
| 200 | 8 | 8.543 | 9.646 | 5.079 | 5817080 |
| 250 | 10 | 9.449 | 12.205 | 6.260 | 5817100 |
| 315 | 12 | 10.236 | 15.354 | 7.835 | 5817120 |

Elongated 90



| Size | | z (inch) | r (inch) | I3 (inch) | Part # |
|------|--------|-------------|-------------|--------------|---------|
| (mm) | (inch) | | | | |
| 160 | 6 | 12.638 | 6.535 | 6.102 | 5811060 |
| 200 | 8 | 14.882 | 8.189 | 6.693 | 5811080 |
| 250 | 10 | 17.323 | 10.039 | 7.677 | 5811010 |
| 315 | 12 | 21.260 | 12.480 | 8.661 | 5811120 |

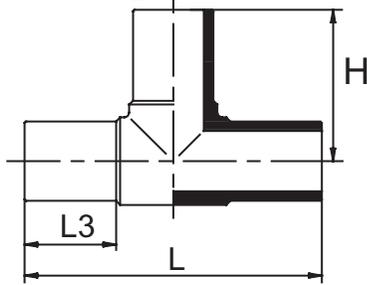
Elongated 45



| Size | | z (inch) | L (inch) | Part # |
|------|--------|-------------|-------------|---------|
| (mm) | (inch) | | | |
| 160 | 6 | 6.161 | 4.587 | 5809060 |
| 200 | 8 | 6.772 | 4.803 | 5809080 |
| 250 | 10 | 8.543 | 6.220 | 5809100 |
| 315 | 12 | 9.882 | 6.968 | 5809120 |

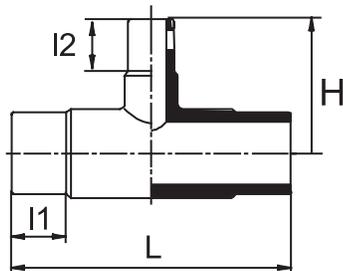


Elongated Tee



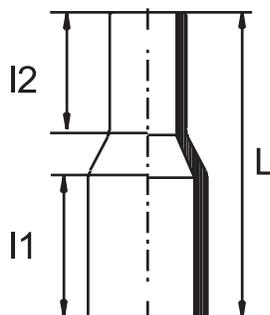
| Size | | L | H | L3 | Part # |
|------|--------|--------|--------|--------|---------|
| (mm) | (inch) | (inch) | (inch) | (inch) | |
| 160 | 6 | 16.063 | 7.972 | 3.937 | 5823060 |
| 200 | 8 | 21.653 | 10.827 | 5.315 | 5823080 |
| 250 | 10 | 24.488 | 12.205 | 5.827 | 5823100 |
| 315 | 12 | 29.646 | 14.764 | 6.693 | 5823120 |

Elongated Reducing Tee



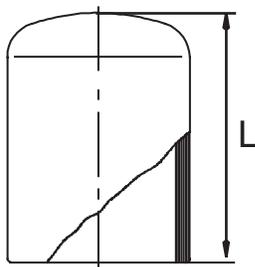
| Size | | L | H | I1 | I2 | Part # |
|---------|---------|--------|--------|--------|--------|---------|
| (mm) | (inch) | (inch) | (inch) | (inch) | (inch) | |
| 160/110 | 6 x 4 | 11.417 | 7.618 | 3.858 | 3.268 | 5825532 |
| 200/110 | 8 x 4 | 21.653 | 9.449 | 5.276 | 4.055 | 5825585 |
| 200/160 | 8 x 6 | 21.653 | 10.433 | 5.276 | 4.488 | 5825627 |
| 315/110 | 12 x 4 | 21.496 | 11.417 | 6.693 | 3.937 | 5825628 |
| 315/200 | 12 x 8 | 22.638 | 12.205 | 6.693 | 4.724 | 5825660 |
| 315/250 | 12 x 10 | 26.378 | 13.110 | 6.693 | 5.905 | 5825673 |

Elongated Conc. Reducer



| Size | | L | I1 | I2 | Part # |
|---------|---------|--------|--------|--------|---------|
| (mm) | (inch) | (inch) | (inch) | (inch) | |
| 160/110 | 6 x 4 | 8.740 | 3.858 | 3.465 | 5831532 |
| 200/160 | 8 x 6 | 9.921 | 4.409 | 4.016 | 5831585 |
| 250/160 | 10 x 6 | 12.362 | 6.102 | 4.449 | 5831627 |
| 250/200 | 10 x 8 | 12.362 | 6.102 | 4.921 | 5831628 |
| 315/200 | 12 x 8 | 14.764 | 7.047 | 5.236 | 5831660 |
| 315/250 | 12 x 10 | 14.764 | 6.693 | 6.102 | 5831673 |

Elongated Cap



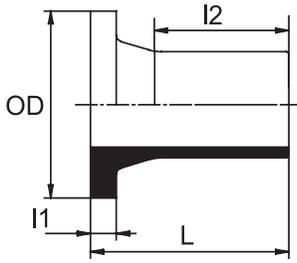
| Size | | L | Part # |
|------|--------|--------|---------|
| (mm) | (inch) | (inch) | |
| 160 | 6 | 6.594 | 5813060 |
| 200 | 8 | 7.146 | 5813080 |
| 250 | 10 | 9.055 | 5813010 |
| 315 | 12 | 10.315 | 5813120 |



Dimensional Data

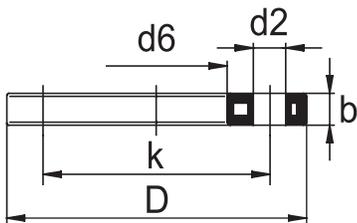
Electrofusion and Butt Fittings

Elongated Stub End



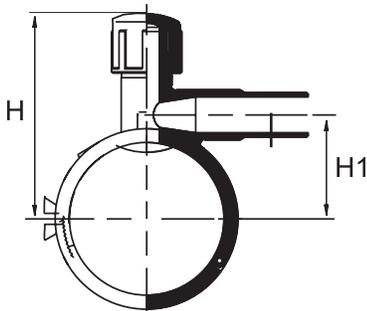
| Size (mm) | Size (inch) | OD (inch) | L (inch) | I1 (inch) | I2 (inch) | Part # |
|-----------|-------------|-----------|----------|-----------|-----------|---------|
| 160 | 6 | 8.346 | 7.146 | 0.984 | 4.980 | 5832060 |
| 200 | 8 | 10.551 | 7.146 | 1.260 | 4.626 | 5832080 |
| 250 | 10 | 12.598 | 10.827 | 1.378 | 7.953 | 5832010 |
| 315 | 12 | 14.567 | 15.039 | 1.378 | 11.890 | 5832120 |

Ductile Iron Backing Ring



| Size (mm) | Size (inch) | D (inch) | k (inch) | d2 (inch) | d6 (inch) | b (inch) | # Holes | Part # |
|-----------|-------------|----------|----------|-----------|-----------|----------|---------|---------|
| 63 | 2 | 6.378 | 4.750 | 0.787 | 3.071 | 0.709 | 4 | 5048020 |
| 90 | 3 | 7.638 | 6.000 | 0.787 | 4.370 | 0.709 | 8 | 5048030 |
| 110 | 4 | 9.016 | 7.500 | 0.787 | 5.236 | 0.709 | 8 | 5048040 |
| 160 | 6 | 11.142 | 9.500 | 0.866 | 7.008 | 0.945 | 8 | 5048060 |
| 200 | 8 | 13.583 | 11.750 | 0.866 | 9.291 | 0.945 | 8 | 5048080 |
| 250 | 10 | 16.220 | 14.250 | 0.984 | 11.339 | 1.063 | 12 | 5048100 |
| 315 | 14 | 19.173 | 17.000 | 0.984 | 13.307 | 1.260 | 12 | 5048120 |

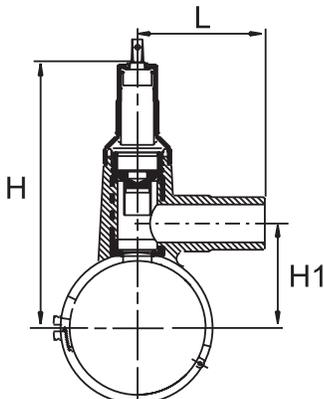
Reducing Electrofusion Tapping Saddle



| Size (mm) | Size (inch) | H (inch) | H1 (inch) | Part # |
|-----------|-------------|----------|-----------|---------|
| 63/32 | 2 x 1 | 5.039 | 2.165 | 5839249 |
| 90/32 | 3 x 1 | 5.433 | 2.559 | 5839336 |
| 90/50 | 3 x 1-1/2 | 6.142 | 2.559 | 5839337 |
| 90/63 | 3 x 2 | 6.142 | 2.559 | 5839338 |
| 110/32 | 4 x 1 | 6.024 | 3.150 | 5839401 |
| 110/50 | 4 x 1-1/2 | 6.732 | 3.150 | 5838415 |
| 110/63 | 4 x 2 | 6.732 | 3.150 | 5839420 |
| 160/25 | 6 x 3/4 | 7.717 | 4.134 | 5839514 |
| 160/32 | 6 x 1 | 7.717 | 4.134 | 5839516 |
| 160/50 | 6 x 1-1/2 | 7.717 | 4.134 | 5839523 |
| 160/63 | 6 x 2 | 7.717 | 4.134 | 5839530 |

Air-Pro® pipe electrofusion saddles are rated at 150psi.

Reducing Electrofusion Tapping Saddle w/Valve

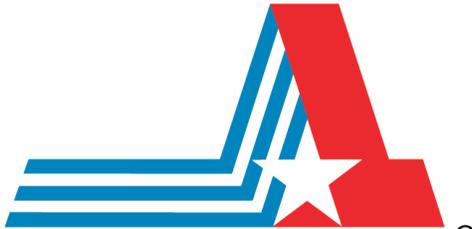


| Size (mm) | Size (inch) | L (inch) | H (inch) | H1 (inch) | Part # |
|-----------|-------------|----------|----------|-----------|---------|
| 63/32 | 2 x 1 | 4.528 | 8.150 | 2.165 | 5838249 |
| 90/32 | 3 x 1 | 4.528 | 8.543 | 2.559 | 5838336 |
| 110/63 | 4 x 2 | 5.905 | 11.811 | 3.937 | 5838420 |
| 160/63 | 6 x 2 | 5.905 | 12.795 | 4.921 | 5838530 |
| 200/63 | 8 x 2 | 5.905 | 13.583 | 5.709 | 5838581 |

Air-Pro® pipe electrofusion saddles are rated at 150psi.



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