

Air-Pro™ **Compressed Air** **Piping System**



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Air-Pro™ Compressed Air Piping System

The Air-Pro™ piping system is specifically constructed for compressed air. Corrosion resistant to compressor synthetic oils and mineral oils, light-weight, quick to install, and with minimal system pressure drop, Air-Pro is the system of choice in numerous compressed air applications.



Air-Pro Features:

- Available in sizes ½" to 12" with socket, butt and electrofusion fittings in a variety of styles including tees, reducing tees, 90s and 45s
- Fast, low-cost installations
- Operating pressures from 150 to 230 psi
- Constructed from specially engineered (Solvay Eltex TUB 124 blue) PE 100 high-density polyethylene (HDPE) resin, which is extremely ductile, light-weight and corrosion resistant
- Chemically resistant to compressor synthetic oils and mineral oils that traditionally attack glued and metal systems



Material Properties

Advantages of PE 100 in compressed air supply

- Excellent resistance to compressor oils and aggressive ambient air
- Superior stress cracking resistance
- High creep rupture strength
- High pressure load resistance PN 16 at 20°C
- Wide temperature range (between -30°C and +60°C)
- Exceptional weldability
- Easy, clean, rapid and safe installation
- Corrosion resistant (compressed air not polluted by corrosive deposits from the piping)
- Low frictional resistance resulting in decreased pressure drops and increased flow rates when compared to metal pipes of the same internal diameter
- Lower flow noise level compared to pipes made from other materials

Additional properties

- Low specific weight of 0.96g/cm³ (PVC 1.40g/cm³, steel 7.86g/cm³)
- Very good chemical resistance
- Excellent resistance to rapid crack growth
- High weathering resistance
- No electrical conductivity
- Outstanding abrasion resistance
- No deposits or growth
- Frost resistant
- Very good thermal insulating property
- Rodent resistant
- Resistant to any microbial corrosion

Chemical Resistance

PE 100 provides an excellent chemical resistance to a multitude of media based on acids, alkalis and hydrocarbons.

As a result, polyethylene has been accepted as an excellent material used for industrial piping systems.

The humidity that often forms in a compressed air system, which can cause considerable problems in metallic piping, has no negative impact on the above positive properties. Special emphasis is to be put on the resistance to compressor oils, which is usually considered a serious problem for some other plastics (e.g. ABS).



There are, of course, some limitations such as contact with free chlorine or solvents at high temperatures.

Chemical Resistance Guidelines

In case of doubt, our Engineering Department is available to help you assess the media and to support you in the planning and design process.

We recommend using gaskets made from NBR as a standard sealing material.

The chemical resistance of any other sealing material is of great importance for the chemical resistance of a compressed air piping system, and it must be dimensioned appropriately.

This applies to profile packing for flange connections, as well as to gaskets in shut-off devices (ball valves and shut-off butterfly valves).

For thread adaptors, we recommend the use of PTFE tape on threaded connections.

Depending on the resistance required, we are able to supply alternative elastometers.

In the event that the ambient air contains aggressive media, it is required to carry out a separate testing of the sealing material. In this case, please do not hesitate to contact our Engineering Department for further assistance.

Materials Properties Chart



	Property	Standard	Unit	PE100
	Specific density at 23° C	ISO 1183	g/cm ³	0.95
	Melt flow index MFR 190/5 MFI range	ISO 1133	g/10 min	0.5 T003
		ISO 1872/1873		
Mechanical Properties	Tensile stress at yield	ISO 527	MPa	25
	Elongation at yield	ISO 527	%	9
	Elongation at break	ISO 527	%	>600
	Impact strength unnotched at +23°C Impact strength unnotched at -30°C	ISO 179	kJ/m ²	no break no break
	Impact strength notched at +23°C Impact strength notched at 0°C Impact strength notched at -30°C	ISO 179	kJ/m ²	16 6
	Ball indentation hardness acc. Rockwell	ISO 2039-1	MPa	46
	Flexural strength (3.5% flexural stress)	ISO 178	MPa	24
	Modulus of elasticity	ISO 527	MPa	110
	Vicat-Softening point VST/B50	ISO 306	°C	77
Thermal Properties	Heat deflection temp. HDT/B	ISO 75	°C	75
	Linear coefficient of thermal expansion	DIN 53752	K ⁻¹ x 10 ⁻⁴	1,8
	Thermal conductivity at 20 °C	DIN 52612	W/(m·K)	0,4
	Flammability	UL94 DIN 4102	--	94-HB B2
Electrical Properties	Specific volume resistance	VDE 0303	OHM cm	>10 ¹⁶
	Specific surface resistance	VDE 0303	OHM	>10 ¹³
	Relative dielectric constant at 1 MHz	DIN 53483	--	2,3
	Dielectric strength	VDE 0303	kV/mm	70
	Physiologically non-toxic	EEC 90/128	--	Yes
	FDA	--	--	Yes
	Color	--	--	blue

Installation Tips



Compared to metallic piping systems, the installation of Asahi/America's Air-Pro piping system displays some significant differences.

- Prevent mechanical stress (bending and pushing) of the pipes during installation at temperatures of approximately 41°F/5°C.
- Installations carried out at temperatures below 40°F/5°C are not recommended.
- Follow prescribed installation instructions provided by factory.

Therefore, we recommend every installer be trained in the correct techniques for installation and welding Air-Pro products.

Pressure testing

Any newly-installed piping systems must be pressure-tested before being commissioned.

Before carrying out the pressure tests, let the weld joints cool down completely (this takes less than 30 minutes after the last weld, depending on size).

Installation Guidelines

The pressure test is to be carried out according to the relevant standards (e.g. DVS 2210, part 1, ASME B31.3).

The required test pressure typically amounts to 1.5 x operating pressure. During the pressure test, provide suitable protection to prevent ambient temperature changes (due to insulation). As a test medium, we recommend water.

Supporting distances

The support distance normally depends on the mechanical properties of the pipe material, the pipe dimension, the specific weight of the flow media, the operating temperature and the piping layout.

The support distances shown in the tables refer to compressed air used as flow medium with a density of 1.3kg/m³.

The calculation of the support distances is based on a maximum deflection between two pipe clips of L/500, ie; 1/500 of span.

To achieve wider support distances, especially in the case of smaller diameters (dia 20 – 40mm), pipe holders for continuous pipe support can be used.

In the case of vertical pipings, the specified distances can be increased by about 50 percent.

To achieve the optimum pipe support suitable for plastics, we recommend the use of our pipe clips. These are made from polypropylene and have been developed especially for plastic piping systems.

Supporting Distances Chart

Pipe Diameter		Wall Thickness		20° C / 68° F	30° C / 86° F	40° C / 104° F	50° C / 122° F	60° C / 140° F
mm	in	mm	in	in	in	in	in	in
20	1/2"	2.8	0.11	33	31	28	26	25
25	3/4"	3.5	0.138	38	36	33	30	29
32	1"	4.4	0.173	45	39	37	35	34
40	1-1/4"	5.6	0.221	52	49	45	41	39
50	1-1/2"	6.9	0.272	60	57	53	48	46
63	2"	8.7	0.343	70	67	62	56	54
75	2-1/2"	10.3	0.406	79	75	70	63	61
90	3"	12.5	0.492	89	85	78	71	68
110	4"	15.2	0.598	102	97	89	81	78
160	6"	14.6	0.575	107	102	97	92	84
200	8"	18.2	0.717	121	115	110	105	100
250	10"	22.7	0.894	136	131	126	120.5	110
315	12"	28.6	1.126	152	147	141.5	134	123

Air-Pro™ Compressed Air Piping System Installation Guidelines

Change of length due thermal expansion

Plastic has the property of expanding under heat.

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

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

ΔL = change in length due to the temperature change [in]

α = linear expansion coefficient [in/in/°F]

ΔT = difference in temperature [°F]

L = pipe length [in]

The temperature difference, ΔT 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, the changes in the direction of the flow can be used to compensate changes in the length.

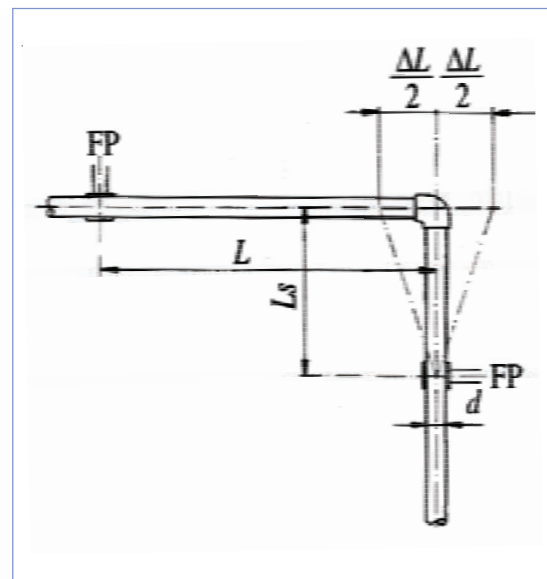
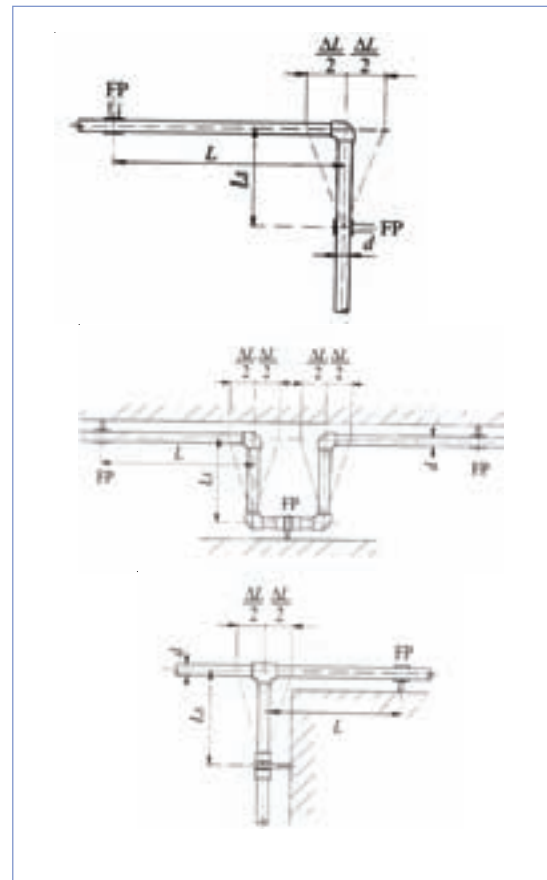
Prestressing method – Installation

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:

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

L_s = minimum straight length [mm]

da = pipe outside diameter [mm]

ΔL = change in length [mm]

C = material-based constant for PE 100 = 26

Air-Pro™ Compressed Air Piping System Installation Guidelines

Diagram showing minimum straight length L_s

Example:

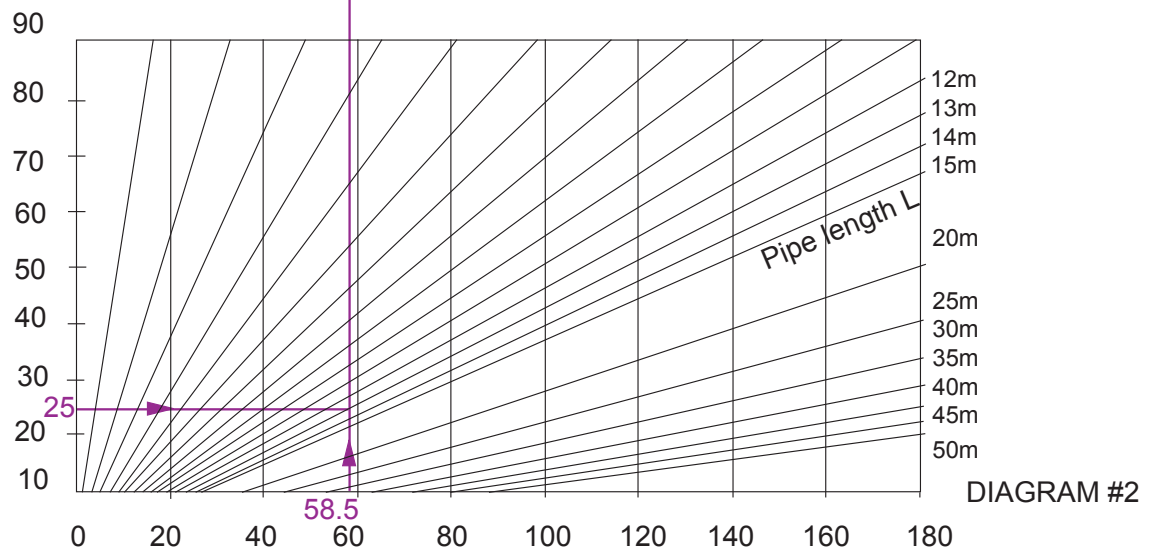
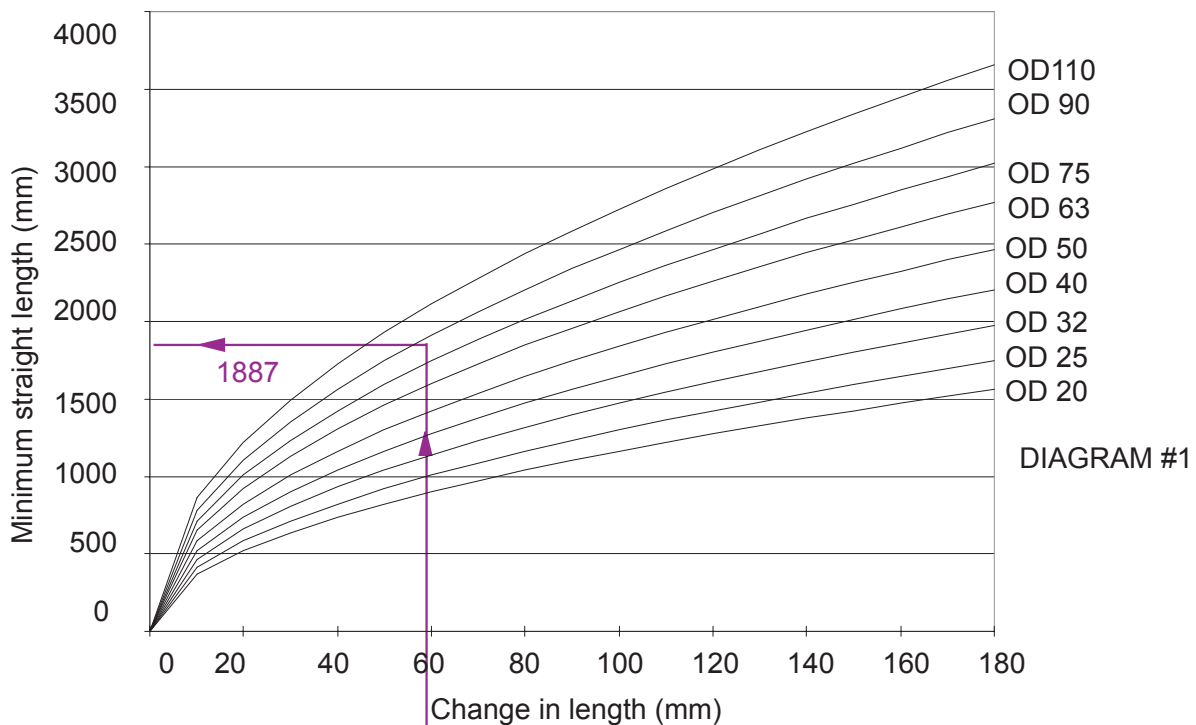
Temperature difference (operating and installation temperature) DT: 25°C

Length of pipe: $L = 13$ m

Theoretical longitudinal expansion: DL: 58.5 mm

For the minimum straight length of a pipe Ø 90 mm, please start with diagram 2 to calculate the change in length. Afterward, please follow the vertical line to the diagram 1, up to the intersection of the pipe Ø 90 mm line, and then turn to the left.

Minimum straight length:
 $L_s = 1887$ mm



Air-Pro™ Compressed Air Piping System Installation Guidelines

Condensate Drains

Apart from the minimum straight lengths and expansion bends required for changes in length, there are also flow deviations used which serve as consumer protection.

The so-called “goose-neck” is often used for the installation of tees from the main piping to the point-of-use connections.

This prevents the condensate that is formed, due to temperature and pressure changes (especially in the case of systems without effective air-drying), from reaching the connections and thus from corroding and damaging the equipment.

Basically, there are two possibilities of prevention:

Version 1 – Goose Neck

A possible installation is shown by the figure below. This version is the most cost-effective of the versions detailed, and offers sufficient protection in most cases.

Version 2 – Water Drains

This method offers a maximum of protection for the connected devices and should be installed in the case of complicated devices.



Example of goose-neck design

Tapping Saddle



Preparation of welding seam, the welding area must be scraped in order to remove the oxidized layer. A scraper knife easily accomplishes this task.

After scraping, the welding area and tapping saddle weld zone should be cleaned with a cleaning solvent such as isopropyl alcohol. Remove residues of cleaning agents or condensation water with clean/absorbent paper.



Example of tapping saddle installation

Preparations before welding tapping saddle

Open the tapping saddle and place around the desired welding area. Align the location of the tapping saddle as required. A clamping device is required in order to properly lock the saddle in place. Proper seating tension is controlled by means of the clamping device. **A red indicator is raised as the required pressure is reached.**

Performing the welding process

Ensure the tapping saddle is in the desired location and connect the leads from the electrofusion machine to the tapping saddle. The Polymatic electrofusion tool will visually confirm proper connection once achieved. Each tapping saddle is provided with a welding bar code. The bar code is scanned into the Polymatic and an audio signal will acknowledge the data input. After the welding parameters have been fed in, the trademark, dimension and outside temperature are shown on the display. The operator now confirms these values.

During the whole welding process (including cooling time) the clamping device shall remain installed. The end of the welding process is indicated by an audio signal. **The clamping device is removed after 20 minutes.** The entire cooling period should be followed prior to tapping.

Tapping of the tapping valve

Once the cooling time is up, under pressure tapping may begin. However, tapping should only be completed after installation of the branch line has been completed. The cutter, being an integrated part of the tapping valve, is turned clockwise by the respective tapping attachment until it reaches the stop. As soon as the pipe has been tapped this way, the cutter is turned back, now allowing the pipe to be connected.

The process is now complete. Standard tapping saddle branch lines will now remain open. Installation of tapping saddles with integral valves allow the branch line to be turned off and on as required.

Screwed Connections

Thread parts with metal insert

When connections to male or female threads are required, ensure that the full effective thread length is engaged and that an appropriate sealing material such as PTFE tape has been used.

Note:

The tightening torque must not exceed 29.5 lb.ft.

The quality of the welded joints depends on the qualification of the welder, the suitability of the machines and appliances as well as compliance with the welding guidelines. The welding joint can be checked through non-destructive and/or destructive methods.

The welding process should be supervised. Method and size of the supervision must be agreed upon by the parties. It is recommended to document the method data in welding protocols or on data medium.

BASIC WELDING OPTIONS:

SIZE RANGE:

- **Socket Fusion (1/2 – 4")**
- **Electrofusion (1/2 – 12")**
- **Butt Fusion (6 – 12")**

PRESSURE RANGE:

- 230 psi at 70°F 20 – 100 mm (1/2 – 4")
Socket Fusion
- 150 psi at 70°F 160 – 315mm (6 – 12")
Butt & all electrofusion

SOCKET FUSION

Benefits of Socket Fusion

- **Equipment is light-weight**
- **Maneuverable in tight restraints**
- **Material is light-weight**
- **Flexible and bendable**
- **Requires no prior experience**

When using socket welding, pipe and fittings are lap-welded. The pipe end and fitting socket are heated up to welding temperature by means of a socket-like and spigot-like heating element and, afterward, are joined.



SOCKET WELDING TIPS:

- Cleaning of the pipe and fitting. Bevel or peel, dependent upon size
- Pressing the pipe and fitting on the heating element for preheating
- Remove and join the pipe and fitting together
- Leaving the joint without load during the cooling time
- Visual control of the joint
- Recommended procedure: By hand, up to OD 40mm (1 1/4"). Use welding equipment for dimensions > OD 40mm (1 1/4")

ELECTROFUSION

Benefits of Electrofusion

- **Excellent for tight quarters**
- **Perfect repairs, additions and changes**

With electrofusion welding, pipes and fittings are welded by means of resistance wires, which are located within the electrofusion socket. A transformer for welding purposes supplies electric power.

The shrinking stress of the electrofusion fitting creates the necessary welding pressure, which guarantees an optimal weld.

The method distinguishes itself by an extra-low safety voltage as well as by high automation.

ELECTROFUSION WELDING PREPARATION TIPS:

Mark Depth



Secure and Connect Leads



Peel Surface



Scan Bar Code



Clean Weld Area



Insert and Align



Start Weld



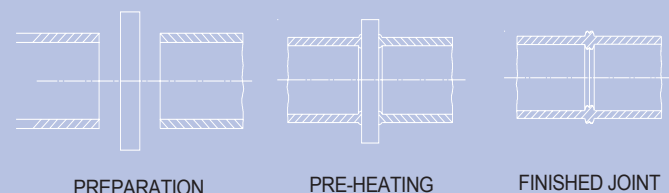
BUTT FUSION

Benefits of Butt Fusion

- **Easy machine operations**
- **Fittings can be re-used**
- **Easy line repair**
- **Quality can be inspected**

The welding faces of the parts to be joined are aligned under pressure onto the heating element (alignment). Then, the parts are heated up to the welding temperature under reduced pressure (pre-heating) and joined under pressure after the heating element has been removed (joining).

TYPICAL BUTT FUSION WELD:



Sample Specification

1.0 Scope: All requirements are for Air-Pro (HDPE) high pressure rated compressed air pipe and fittings. Applicable to applications that require the transport of compressed air.

2.0 Materials: Pipe and fitting material shall be made of Solvay Eltex TUB 124 blue high density polyethylene material according to ASTM D-3035. All components shall be molded or extruded according to ASTM D-1248.

3.0 Pipe: Pipe shall conform to the requirements of ASTM D-2837-88 for establishing a hydrostatic basis. In addition, the pipe shall be a dimensional ratio (SDR) pipe with a wall thickness to meet or exceed 230 psi at 68 degrees F for piping through 4" normal diameter.

3.1 Pipe shall be provided by Asahi/America, Inc. with no approved equals.

4.0 Fittings: Pressure fittings shall conform to the same requirements as outlined for piping in guidelines 3.0 and 3.1. In addition, all fittings through 4" shall be injected molded.

5.0 Pipe Joining Procedure: All pipe and fittings up to 4" shall be prepared using socket fusion techniques as outlined in ASTM D-2657, section 8. The temperature, times and pressures of fusion shall be according to the printed literature of Asahi/America, Inc.

5.1 Pipe Joining Equipment: Pipe joining equipment shall be Proweld socket fusion equipment as supplied by Asahi/America, Inc. of Malden, MA.

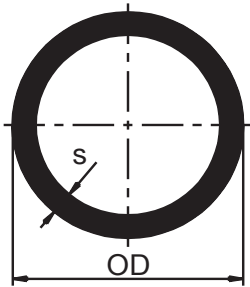
Quick Specification for Air-Pro Compressed Air System

Pipe and fittings are to be manufactured of the same Solvay Eltex TUB 124 blue high density polyethylene resin and sized according to an SDR pressure rated system to 230 psi at 68 degrees F. The system is to be joined via the socket fusion method. All fittings through 4" are to be injected molded.

Sample Specifications



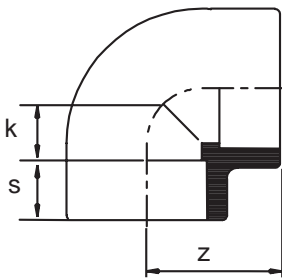
Air-Pro™ Pipe (sold in 16.4 ft lengths)



Size (mm)	Size (inch)	OD (inch)	s (inch)	Weight (lb/ft)	Part#
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	5803100
315	12	12.40	1.126	17.21	5803120

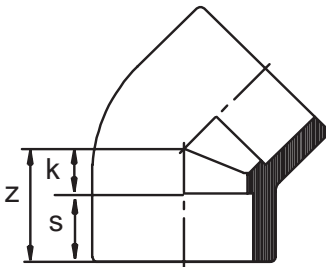
Air-Pro Systems 20-110mm are blue. SDR 7.4 and rated at 230psi.
Air-Pro™ Pipe Systems 160-315mm are black, SDR 11 and rated at 160psi.
Blue Air-Pro™ pipe available upon request fittings remain black 160-315.

Socket 90



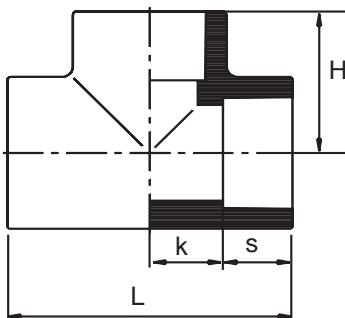
Size (mm)	Size (inch)	z (inch)	s (inch)	k (inch)	Part#
20	1/2	1.177	0.626	0.551	5805005
25	3/4	1.378	0.709	0.669	5805007
32	1	1.547	0.760	0.787	5805010
40	1-1/4	1.815	0.831	0.984	5805012
50	1-1/2	2.055	0.953	1.102	5805015
63	2	2.421	1.043	1.378	5805020
90	3	3.311	1.382	1.929	5805030
110	4	3.937	1.693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

Socket 45



Size (mm)	Size (inch)	z (inch)	s (inch)	k (inch)	Part#
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



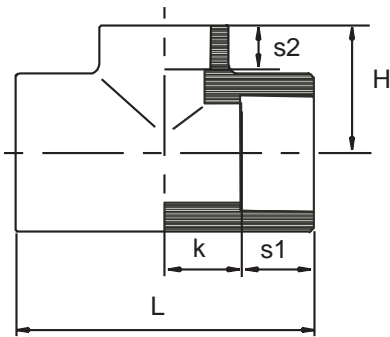
Size (mm)	Size (inch)	L (inch)	H (inch)	s (inch)	k (inch)
20	1/2	2.362	1.177	0.626	0.551
25	3/4	2.756	1.378	0.748	0.630
32	1	3.126	1.547	0.760	0.787
40	1-1/4	3.701	1.831	0.846	0.984
50	1-1/2	4.252	2.134	0.972	1.161
63	2	4.933	2.461	1.142	1.319
90	3	7.268	3.594	1.488	2.106
110	4	8.150	4.075	1.654	2.421

Socket Fittings

Air-Pro™

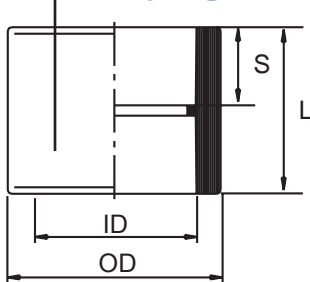
Dimensional Guidelines

Socket Reducing Tee



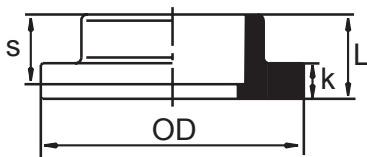
Size (mm)	Size (inch)	L (inch)	H (inch)	s1 (inch)	s2 (inch)	k (inch)	Part#
25/20	3/4x1/2	2.657	1.240	0.720	0.618	0.608	5824101
32/20	1x1/2	3.094	1.551	0.776	0.610	0.772	5824130
32/25	1x3/4	3.094	1.535	0.776	0.689	0.772	5824131
40/20	1-1/4x1/2	3.504	1.772	0.843	0.618	0.909	5824166
40/25	1-1/4x3/4	3.476	1.724	0.858	0.717	0.880	5824167
40/32	1-1/4x1	3.583	1.772	0.846	0.748	0.945	5824168
50/20	1-1/2x1/2	4.213	1.949	1.012	0.622	1.094	5824208
50/25	1-1/2x3/4	4.213	1.996	0.992	0.705	1.114	5824210
50/32	1-1/2x1	4.213	2.067	0.945	0.748	1.161	5824211
50/40	1-1/2x1-1/4	4.213	2.067	0.965	0.827	1.142	5824212
63/25	2x3/4	5.079	2.559	1.126	0.709	1.413	5824248
63/32	2x1	5.059	2.559	1.126	0.748	1.404	5824249
63/40	2x1-1/4	5.059	2.539	1.126	0.846	1.404	5824250
63/50	2x1-1/2	5.059	2.539	1.126	0.945	1.404	5824251

Socket Coupling



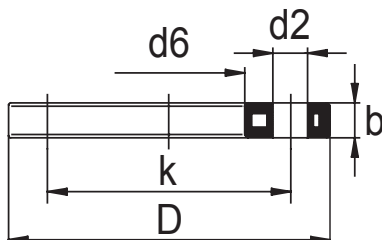
Size (mm)	Size (inch)	L (inch)	OD (inch)	ID (inch)	s (inch)	Part#
20	1/2	1.378	1.181	0.787	0.634	5816005
25	3/4	1.535	1.374	0.984	0.709	5816007
32	1	1.677	1.681	1.260	0.787	5816010
40	1-1/4	1.811	2.035	1.575	0.866	5816012
50	1-1/2	2.024	2.520	1.968	0.965	5816015
63	2	2.335	3.169	2.480	1.110	5816020
90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

Socket Stub End

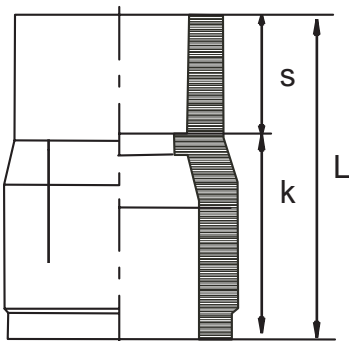


Size (mm)	Size (inch)	L (inch)	OD (inch)	s (inch)	k (inch)	Part#
20	1/2	0.827	1.772	0.630	0.382	5833005
25	3/4	0.906	2.283	0.669	0.374	5833007
32	1	0.984	2.677	0.748	0.382	5833010
40	1-1/4	1.043	3.071	0.866	0.433	5833012
50	1-1/2	1.181	3.465	0.941	0.472	5833015
63	2	1.319	4.016	1.083	0.543	5833020
90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

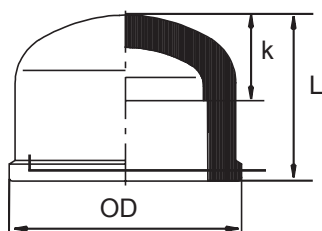
PPG Backing Ring



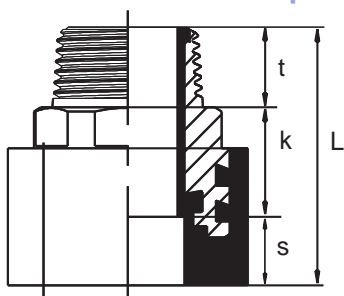
Size (mm)	Size (inch)	D (inch)	k (inch)	d2 (inch)	d6 (inch)	b (inch)	# Holes	Part#
20	1/2	3.740	2.380	0.630	1.102	0.472	4	5046005
25	3/4	4.016	2.750	0.630	1.339	0.472	4	5046007
32	1	4.488	3.120	0.630	1.654	0.630	4	5046010
40	1-1/4	5.118	3.500	0.630	2.008	0.630	4	5046012
50	1-1/2	5.236	3.880	0.630	2.441	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

**Spigot x Socket
Reducing Bushing**


Size (mm)	Size (inch)	L (inch)	s (inch)	k (inch)	Part#
25/20	3/4x1/2	1.496	0.618	0.878	5829101
32/20	1x1/2	1.732	0.614	1.118	5829130
32/25	1x3/4	1.732	0.697	1.035	5829131
40/20	1-1/4x1/2	1.949	0.61	1.339	5829166
40/25	1-1/4x3/4	1.949	0.689	1.260	5829167
40/32	1-1/4x1	1.968	0.78	1.189	5829168
50/20	1-1/2x1/2	2.165	0.646	1.52	5829208
50/25	1-1/2x3/4	2.138	0.697	1.441	5829210
50/32	1-1/2x1	2.146	0.701	1.445	5829211
50/40	1-1/2x1-1/4	2.126	1.004	1.122	5829212
63/25	2x3/4	2.520	0.709	1.811	5829248
63/32	2x1	2.520	0.787	1.732	5829249
63/40	2x1-1/4	2.500	0.827	1.673	5829250
63/50	2x1-1/2	2.520	0.965	1.555	5829251
90/63	3x2	3.366	1.1902	2.264	5829338
110/63	4x2	3.465	1.122	2.343	5829420
110/90	4x3	3.445	1.476	1.968	5829422

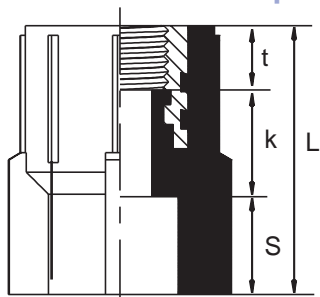
Socket Cap


Size (mm)	Size (inch)	OD (inch)	L (inch)	k (inch)	Part#
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 (mm)	Size (inch)	L (inch)	s (inch)	k (inch)	t (inch)	Part#
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
- 230 psi rated

Socket FNPT Adapter


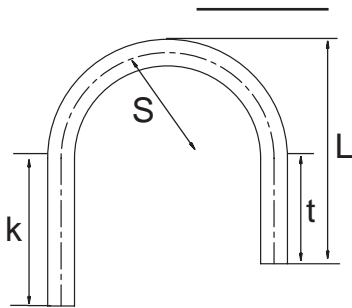
Size (mm)	Size (inch)	L (inch)	s (inch)	k (inch)	t (inch)	Part#
20	1/2	1.598	0.62	0.386	0.591	5853005
25	3/4	1.606	0.62	0.386	0.709	5853007
32	1	1.850	0.71	0.386	0.787	5853010
40	1-1/4	1.949	0.79	0.386	0.827	5853012
50	1-1/2	2.268	0.91	0.386	1.004	5853015
63	2	2.567	1.04	0.386	1.142	5853020

- Nickel plated brass threads
- 230 psi rated

Socket Fittings

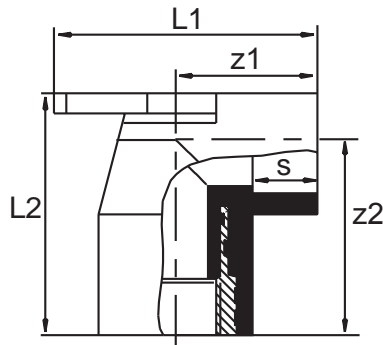
Air-Pro™
Dimensional Guidelines

Spigot Gooseneck



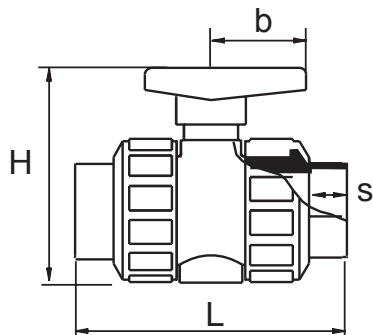
Size (mm)	Size (inch)	L (inch)	S (inch)	k (inch)	t (inch)	Part#
20	1/2	10	5	7	5	5835005
25	3/4	9	5	7	4	5835007
32	1	10	5	7	5	5835010

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



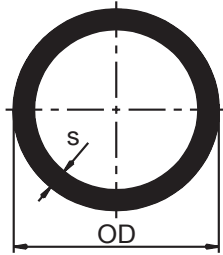
Size (mm)	Size (inch)	L1 (inch)	L2 (inch)	z1 (inch)	z2 (inch)	s (inch)	Part#
20	1/2	2.559	2.362	1.398	1.772	0.551	5857005

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	1.516	5801030

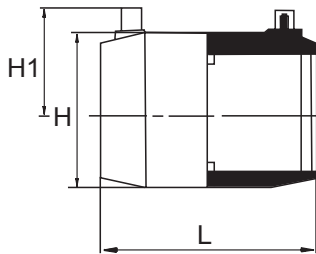
Air-Pro™ Ball Valves sizes 20-63mm are rated 230 psi.
Air-Pro™ Ball Valve size 90-mm are rated 150 psi.



Size (mm)	Size (inch)	OD (inch)	s (inch)	Weight (lb/ft)	Part#
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	5803100
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 160-315.

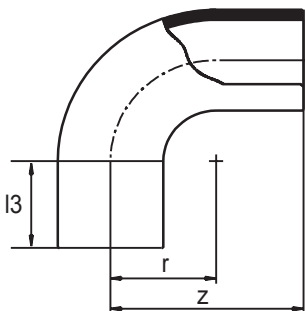
Electrofusion Coupling



Size (mm)	Size (inch)	L (inch)	H (inch)	H1 (inch)	Part#
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

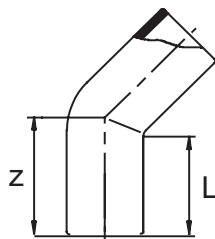
Systems w/electrofusion coupling are rated at 150 psi.

Elongated 90



Size (mm)	Size (inch)	z (inch)	r (inch)	I3 (inch)	Part#
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	5811100
315	12	21.260	12.480	8.661	5811120

Elongated 45



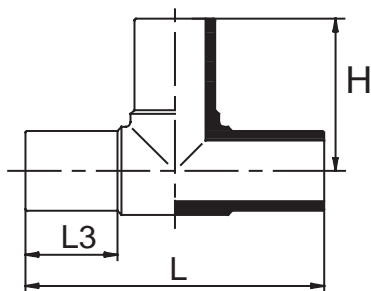
Size (mm)	Size (inch)	z (inch)	L (inch)	Part#
160	6	6.161	4.587	5809060
200	8	6.772	4.803	5809080
250	10	8.543	6.220	5809100
315	12	9.882	6.968	5809120

Butt & Electrofusion Fittings

Air-Pro™

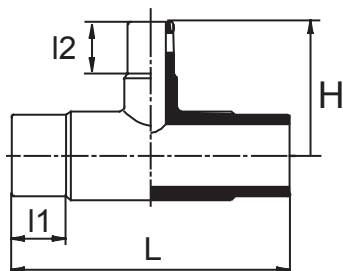
Dimensional Guidelines

Elongated Tee



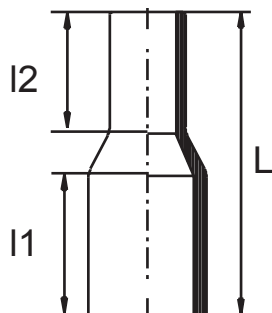
Size (mm)	Size (inch)	L (inch)	H (inch)	I3 (inch)	Part#
160	6	16.063	7.972	3.937	5823060
200	8	21.653	10.827	5.315	5823080
250	10	24.488	12.205	5.827	5823100
315	12	29.646	14.764	6.693	5823120

Elongated Reducing Tee



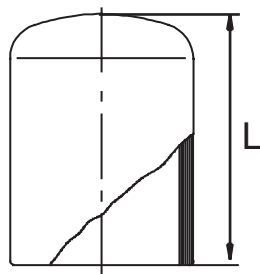
Size (mm)	Size (inch)	L (inch)	H (inch)	I1 (inch)	I2 (inch)	Part#
160/63	6x2	13.386	6.753	3.819	2.638	5825530
160/90	6x3	13.504	6.968	3.976	3.149	5825531
160/110	6x4	11.417	7.618	3.858	3.268	5825532
200/110	8x4	21.653	9.449	5.276	4.055	5825585
200/160	8x6	21.653	10.433	5.276	4.488	5825627
315/110	12x4	21.496	11.417	6.693	3.937	5825628
315/200	12x8	22.638	12.205	6.693	4.724	5825660
315/250	12x10	26.378	13.110	6.693	5.905	5825673

Elongated Conc. Reducer



Size (mm)	Size (inch)	L (inch)	L1 (inch)	L2 (inch)	Part#
160/110	6x4	8.740	3.858	3.465	5831532
200/160	8x6	9.921	4.409	4.016	5831585
250/160	10x6	12.362	6.102	4.449	5831627
250/200	10x8	12.362	6.102	4.921	5831628
315/200	12x8	14.764	7.047	5.236	5831660
315/250	12x10	14.764	6.693	6.102	5831673

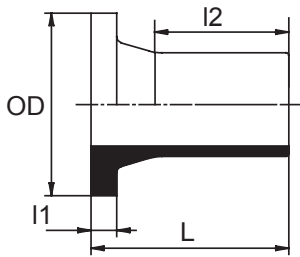
Elongated Cap



Size (mm)	Size (inch)	L (inch)	Part#
160	6	6.594	5813060
200	8	7.146	5813080
250	10	9.055	5813100
315	12	10.315	5813120

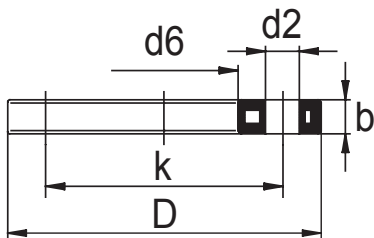
Dimensional Guidelines

Elongated Stub End



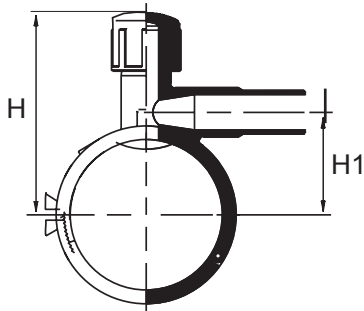
Size (mm)	Size (inch)	OD (inch)	L (inch)	I1 (inch)	I2 (inch)	Part#
160	6	8.346	7.146	0.984	4.980	5832060
200	8	10.551	7.146	1.260	4.626	5832080
250	10	12.598	10.827	1.378	7.953	5832100
315	12	14.567	15.039	1.378	11.890	5832120

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	12	19.173	17.000	0.984	13.307	1.260	12	5048120

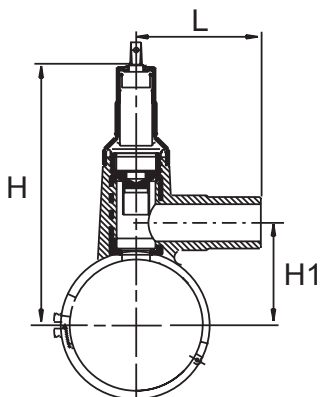
Reducing Electrofusion Tapping Saddle



Size (mm)	Size (inch)	H (inch)	H1 (inch)	Part#
63/32	2x1	5.039	2.165	5839249
90/32	3x1	5.433	2.559	5839336
90/50	3x1-1/2	6.142	2.559	5839337
90/63	3x2	6.142	2.559	5839338
110/32	4x1	6.024	3.150	5839401
110/50	4x1-1/2	6.732	3.150	5838415
110/63	4x2	6.732	3.150	5839420
160/25	6x3/4	7.717	4.134	5839514
160/32	6x1	7.717	4.134	5839516
160/50	6x1-1/2	7.717	4.134	5839523
160/63	6x2	7.717	4.134	5839530

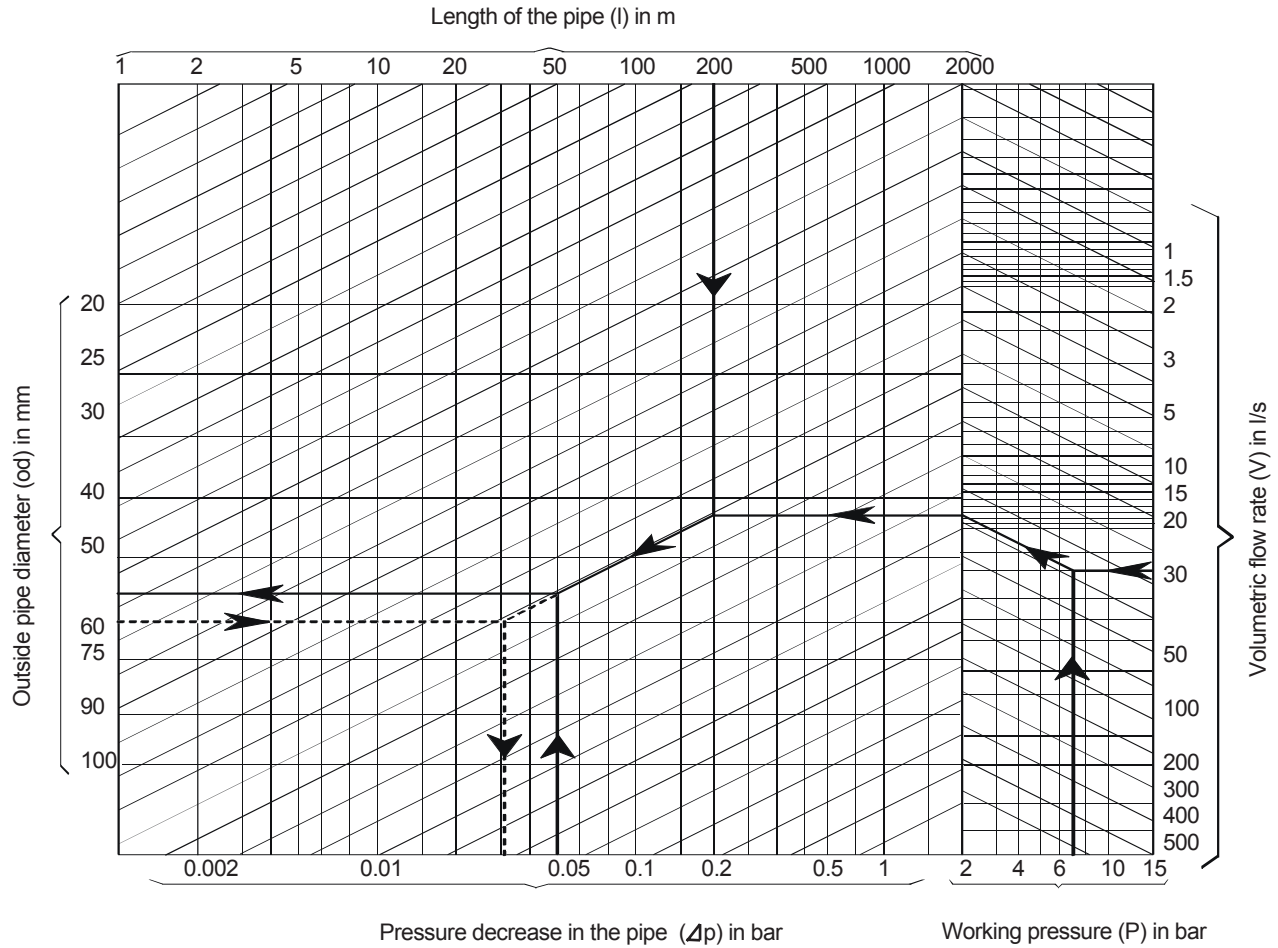
Air-Pro™ Pipe Electrofusion Saddles are rated at 150psi.

Reducing Electrofusion Tapping Saddle w/Valve



Size (mm)	Size (inch)	L (inch)	H (inch)	H1 (inch)	Part#
63/32	2x1	4.528	8.150	2.165	5838249
90/32	3x1	4.528	8.543	2.559	5838336
110/63	4x2	5.905	11.811	3.937	5838420
160/63	6x2	5.905	12.795	4.921	5838530
200/63	8x2	5.905	13.583	5.709	5838581

Air-Pro™ Pipe Electrofusion Saddles are rated at 150psi.



Warranty

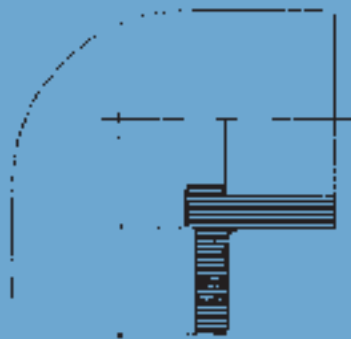
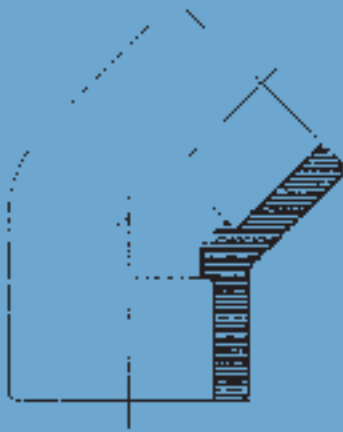
Warranty; Limitation on Liability. Asahi/America, Inc., (“Seller”) warrants, to the original Buyer only, that all products delivered hereunder shall be free from defects in design and manufacture for a period of one year from the date of delivery, provided that such products are installed, used, operated, adjusted and serviced only in a proper and appropriate manner and in strict accordance with any instructions relating thereto furnished to Buyer by Seller. In no event shall the foregoing warranty extend to any products in any way caused or allowed to be, or installed, operated or used in such a manner as to be, subject or exposed to conditions of misuse, abuse or accident.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. NO WARRANTY OF MERCHANTABILITY, NO IMPLIED WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, AND NO IMPLIED WARRANTY ARISING BY USAGE OF TRADE, COURSE OF DEALING OR COURSE OF PERFORMANCE IS GIVEN BY SELLER OR SHALL ARISE BY OR IN CONNECTION WITH THIS SALE AND/OR THE SELLER’S AND/OR BUYER’S CONDUCT IN RELATION THERETO OR TO EACH OTHER, AND IN NO EVENT SHALL SELLER BE LIABLE ON ANY SUCH WARRANTY WITH RESPECT TO ANY PRODUCT.

Liability of the Seller under or in connection with this sale and/or the foregoing warranty shall be limited, at the sole option of the Seller, to one repair of, replacement of, or a refund of the purchase price of any products or part thereof (a), with respect to which Seller receives, promptly after Buyer’s discovery of any alleged defect and prior to the expiration of the one-year warranty period as provided above, notice from Buyer or Buyer’s claim defect and (b) which shall be returned to Seller by Buyer, as provided herein, promptly after Buyer’s discovery of such alleged defect and which shall be determined by the Seller to have proven defective within the one-year warranty period provided above; failure by Buyer to notify Seller and return such products to Seller after Buyer’s discovery of such alleged defect shall constitute a waiver by Buyer of any and all claims of any kind with respect thereto. Any products returned by Buyer to Seller under the foregoing terms shall be returned to Seller’s place of business freight prepaid, accompanied or preceded by Buyer’s particularized statement of the claimed defect. The risk of loss and freight charges to and from Seller in connection with any returned products shall be borne by Buyer; but Seller shall bear such additional freight charges arising in connection with any such returned products ultimately determined by Seller to be defective under the terms of the foregoing warranty, the cost of repair or replacement (if any) of such products, and the risk of loss or damage which such products are in Seller’s possession at its place of business. The foregoing remedy shall constitute the sole and exclusive remedy of the Buyer under or in connection with this sale and/or warranty of the Seller. Except as specifically provided herein, Seller shall not be responsible or liable for any costs, expenses or damages of Buyer in connection with any removal, repair or replacement (including any attempts or actions relating thereto) of any allegedly defective products, and no charge of setoff of any kind of Buyer relating thereto shall be made against the Seller without prior and specific written approval of Seller.

IN NO EVENT SHALL SELLER BE RESPONSIBLE OR LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING IN ANY WAY IN CONNECTION WITH ANY PRODUCTS OR THIS SALE.

The agreement of Seller to sell its products is expressly conditioned upon the Buyer’s assent to, and Seller agrees to sell its products only upon, all terms and conditions set forth above and on the face hereof. Buyer’s acceptance of any products provided under this sale shall constitute such assent.



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