What is a **compressed air system**?

A compressed air system moves energy throughout a network to power workstations and machinery.

Mount the ringmain of a Prevost 100% aluminum pipe system a minimum height of 8.2 ft. from the floor.

Install smaller diameter “downpipes” or “drops” off the main line to terminate at distribution points throughout the network approximately 4 ft. from the floor. From these points various accessories can be attached (manifolds, safety couplings, filtration, hoses, etc.).

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**SIZING A COMPRESSED AIR SYSTEM**

When designing a system, consider the following:

- desired flow rate
- the length of the main line.

Use the table to determine the appropriate pipe diameter with an operating pressure of 116 psi and a maximum pressure drop of 5%.
### THERMAL EXPANSION

As temperatures fluctuate up or down, aluminum naturally expands and contracts. To compensate, we recommend installing equipment along the line to absorb the movement.

- **Use a flexible hose** for small diameters
- **Install expansion kits** to accommodate large diameters.

An expansion hose is necessary when a straight line exceeds 164 ft. or more. Use this flexible hose to easily change direction of the air flow (angles) or avoid obstacles in the facility (pillars, beams, etc.).

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### Compressor* Length of the main line

<table>
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<tr>
<th>Power</th>
<th>Flow rate</th>
<th>50 m</th>
<th>100 m</th>
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* These values may vary slightly from compressor data.

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**Expansion Coefficient:** $13.7 \times 10^{-6}$ in per FEET and per DEGREE F°

**Expansion** is calculated as follows:

\[
DL = C \times L \times \Delta T°
\]

**Example:**

A 65 ft. line laid with ø 1 1/2" piping, at an ambient temperature of 59°F, can be subjected to a maximum temperature of 104°F, i.e. a difference of 77°F.

\[
DL = 13.7 \times 10^{-6} \text{ (in)} \times 65 \text{ (ft.)} \times 25 = 0.47 \text{ in}
\]

---

**Pressure:** 116 psi

**Max. pressure drop:** 5% (5.8 psi)

**Max. speed:** 32 ft/s

---

**Expansion Coefficient:**

- Coefficient of expansion: 13.7x10^{-6} in/in per degree F°
- Straight line length: ft.
- Difference between max. and min. room temperature: °F
- Overall expansion: in

**Example:**

A 65 ft. line laid with φ 1 1/2" piping, at an ambient temperature of 59°F, can be subjected to a maximum temperature of 104°F, i.e. a difference of 77°F.

\[
DL = 13.7 \times 10^{-6} \text{ (in)} \times 65 \text{ (ft.)} \times 25 = 0.47 \text{ in}
\]
The PREVOST PIPING SYSTEM range ensures:

- clean, high quality air at all times
- a sealed system
- an optimized flow rate
- an operating pressure range: from -14.21 psi to +232 psi
- a temperature range: from -4°F to +176°F

Workstations are well supplied, accessible and ergonomically designed. The equipment is sturdy and can be easily expanded upon.

The PREVOST PIPING SYSTEM’s pipes and fittings are 100% aluminum, compact, lightweight and professional strength.

They can be installed easily and quickly for immediate pressurization.

The wide range of sizes and fittings allow the system for modular and scalable construction.

COMPACT AND LIGHTWEIGHT

The 100% aluminum composition of the PPS range creates a system that is compact, lightweight and durable.

HIGH TECH CONSTRUCTION

Aluminum alloy, combined with external electrostatic paint and internal treatments all protect the pipe against the oxidation and corrosion.

100% CUSTOMIZABLE

The wide range of sizes and fittings allow the system for modular and scalable construction.

EASY AND QUICK TO ASSEMBLE

Simply insert the pipe into the PPS fitting then tighten the nut.

LEAK FREE WITH MINIMAL PRESSURE LOSS

The “PPS Grip Concept”, creates a secure, leak free connection. The smooth internal surface generates a laminar flow, a low friction coefficient and a maximum flow diameter which are all factors to reduce pressure loss.

COMPATIBLE WITH COMPRESSOR OILS

Aluminum and viton seals are compatible with compressor lubricants.

TOUGH MATERIAL

Aluminum guarantees long term performance:
- mechanical strength
- pressure resistance
- shock absorbent
# The Benefits of Aluminum Compared to Other Materials

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<th>Benefit</th>
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<th>Galvanized Steel</th>
<th>Stainless Steel</th>
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<td>★</td>
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<tr>
<td>Leak Protection</td>
<td>★★★</td>
<td>★</td>
<td>★</td>
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<tr>
<td>Clean Air Certification</td>
<td>★★★</td>
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<td>★</td>
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<tr>
<td>High Flow Rate</td>
<td>★★★</td>
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</tbody>
</table>
The PREVOST PIPING SYSTEM range

CERTIFICATIONS BY INDUSTRY APPLICATION

Industry standards
Pressurized equipment
Safety and protection
Fluid properties
Environmental

VIEW OUR DOCUMENT COLLECTION
PREVOST PIPING SYSTEM
100% ALUMINUM PIPES

- ANTI-CORROSIVE MATERIAL
- MINIMAL PRESSURE LOSS
  laminar flow from smooth internal surface
- UV AND HEAT RESISTANT
  low coefficient of expansion
- ISO MARKING AND COLOR
  all diameters are available for RAL 5012 (blue)
  and RAL 7001 (grey) pipes.
  3/4", 1" and 2" diameters are also available for RAL 6029 (green).
- NO FIRE HAZARD
  system does not require a fire permit
- SIMPLE TOOLS easy to cut and chamfer for simplified installation and maintenance
- LIGHTWEIGHT
- COST-EFFECTIVE

TECHNICAL CHARACTERISTICS
OF PPS PIPE

Material:
Extruded aluminum.
Alloy EN AW 6060 T6 UNI-EN 573-3

Treatment:
Internal/external treatment (RoHS compliant)

Coating:
Electrostatic paint

Extrusion quality:
Calibrated without welding

Compatible fluids:
Compressed air, vacuum, neutral gases

Pipe lengths:
13.12’ or 19.70’

Density: 170 lb/ft³

Pipe outside diameter:
Ø 1/2, 3/4, 1, 1 1/4, 1 1/2, 2, 2 1/2, 3, 4
Prevost designs and manufactures compact, high-performance fittings.

**THE PPS GRIP CONCEPT**

The PPS Grip Concept is based on two factors.

The pipe is locked into the fitting with a stainless steel ring of teeth which penetrates the aluminum.

The double-lobed, lubricated seal guarantees a secure connection and provides optimum results even in the harshest working conditions.

**LEAK-TIGHT CONNECTION**

**THE INTERNAL PARTS REMAIN ATTACHED TO THE BODY AFTER ASSEMBLY**

**PREVOST PIPING SYSTEM**

**100% aluminum fittings**
TECHNICAL SPECIFICATIONS
OF FITTINGS

Available diameters

Body and nut:
100% aluminum EN AB 46100

PPS Grip Concept:
stainless ring

Tapping flange
to remove condensates
AVAILABLE FITTING OPTIONS

STRAIGHT FITTINGS
Ø 1/2 to 3"
- Simple union
- Reducer
- Pipe cap
- Straight male threaded fitting
- Straight female threaded fitting
- Expansion kit
- Sliding union

Ø 4"
- Simple union
- Reducer
- Pipe cap
- Straight female threaded fitting
- Sliding union

BENT FITTINGS
Ø 1/2 to 3"
- 90° elbow
- 90° elbow threaded male
- 45° elbow

Ø 4"
- 90° elbow

T-PIECE FITTINGS
Ø 1/2 to 3"
- Equal T-piece
- Reduced T-piece
- Female threaded T-piece

Ø 4"
- Equal T-piece
- Female threaded T-piece

CROSS FITTINGS
Ø 1/2 to 1 1/4"
- Cross connector

Ø 1 1/2 to 4"
- Cross connector

prevost
TAPPING FLANGE

A tapping flange connects a down pipe (drop) to workstations. Its purpose is to replace a traditional “gooseneck” configuration and reduce condensates in the line.

Flanges transport clean air from the side of the pipe to workstations. Any remaining condensates which remain at the bottom of the pipe are then evacuated via drains located throughout the system.

Tapping flanges can quickly integrate into existing systems, no disassembly required.

The flange is compact and equipped with an anti-rotation system which securely locks the fitting in place.

**TAPPING FLANGES**

**BENT**

Ø 3/4 to 3”  Ø 4”

**FEMALE THREADED**

Ø 3/4 to 3”  Ø 3/4 to 4”

**STRAIGHT**

Ø 2 1/2”  Ø 2 1/2 to 4”

**TAPPING FLANGES FOR DRILLING UNDER PRESSURE**

Ø 3/4 to 4”

**VALVES**

Ø 1/2 to 2”

Pipe/pipe  Female threaded/pipe

Threaded male/pipe  Pipe/pipe aluminum body  Pipe/pipe  Female threaded/pipe
**Compact Connection Concept - ** **CC concept**

The **CC Concept** is the solution for

- Directly connect two fittings
- Optimize space
- Specifically designed for “compressor rooms”

### Straightforward, Fast Connection Methods

<table>
<thead>
<tr>
<th>CHARACTERISTICS AND BENEFITS</th>
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<tbody>
<tr>
<td>ANSI/ASME general-purpose flange</td>
</tr>
<tr>
<td>Ideal for connecting a system to a compressor, a dryer or to an existing system through the standard ANSI flange</td>
</tr>
</tbody>
</table>

#### CONNECTION WITH A FLANGE

![Diagram of flange connection]

1. CONNECTION WITH A FLANGE

#### CONNECTION WITH A CLAMP

![Diagram of clamp connection]

2. CONNECTION WITH A CLAMP

- Quickly connect two fittings with a clamp instead of cutting the pipe or installing a flange
- Design allows for easy installation and elimination of assembly errors

#### CONNECTION VALVE

![Diagram of valve connection]
THE FULLY CUSTOMIZABLE CC CONCEPT

COMPACT CONNECTION FITTINGS - CC CONCEPT

UNIONS
- Connector union with 2 different diameters
- Connector union

ELBOWS
- Equal 90° elbow connector
- 45° elbow

T-PIECES
- 1-connector T-piece with 2 different diameters
- 2-connector T-piece
- 3-connector T-piece

CROSS FITTING
- 4-connector cross-piece

CONNECTING PARTS
- Clamp
- Flange

ALUMINUM VALVES
- 1-connector valve
- 2-connector valve

ACCESSORIES
- Female threaded body
- Plug
- O-ring seal
- Male threaded body
- Valve
- Bolts/nuts
Remote controlled pneumatic safety valve

- Compact and lightweight
- Easy to operate - even at ceiling height
- Quick to install
- 100% aluminum
- Fully pneumatic
- Available in Ø 1 1/2 - 2” - 3” - 4”

Every compressed air installation, replacement, repair or retrofit should include at least one shut off valve.

This shut off valve can quickly depressurize certain areas of the system in the event of emergency or if maintenance is necessary. By isolating only targeted areas of the system, productivity will not be lost.

Valve remote control

Several options to control the valve are available:

- **PUSH BUTTON**
  Immediately stops air flow with a push of a button

- **KEY SWITCH**
  Provides limited access to the valve control
Guidelines for installing a compressed air system

Ideally, the compressor room should be:
- spacious
- ventilated & insulated
- separate from the rest of the workshop

Connect the air compressor to the PPS system with a hose to eliminate vibrations and allow for maintenance (ref. LEF and LEM).

Install bypasses:
- between each machine
- between tanks
- between filters

Preferably, the main line should form a loop. For safety reasons, install the primary air lines at a height of 8.2 ft. from the ground.

The diameter of the main line should be large enough to avoid drops in pressure and to accommodate future expansion.

The main line:
- should be installed with a 1% slope to gravity feed condensates to low points that terminate in drains.
- should be securely mounted with a sufficient number of sliding clamps that will allow the pipe to expand and contract as the temperature fluctuates (ref. PPS CI).

Remove residual condensates from the main line with down pipes (drops) that terminate in an automatic drain system.

OFFSET FROM THE WALL
DIRECTLY TO THE WALL
SUSPENDED
SUSPENDED BY A CABLE
FASTENED TO IPN/HEA BEAM WITH PLATES

MOUNTING THE SYSTEM

The mounting style is dictated by the layout of the facility.

Choose the method that is most structurally sound and aligned with the environment.

Always abide by the recommended pipe support distances between each clamp: the maximum spacing is 9.8 feet.
**PPS System Installation Equipment**

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<th>TIGHTENING WRENCHES</th>
<th>SINGLE-TOOTH ADJUSTABLE WRENCH</th>
<th>TORQUE WRENCH</th>
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<tr>
<td>HEXAGON SOCKET</td>
<td>PRESSURE DRILLING TOOL</td>
<td>HOLE SAW FOR PIPE DRILLING</td>
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<tr>
<td>HAND TOOLS FOR CHAMFERING AND DEBURRING</td>
<td>CHAMFERING TOOLS FOR DRILLS</td>
<td>INSERTION GUIDE FOR PPS FITTINGS</td>
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<tr>
<td>ASSEMBLY GEL</td>
<td>PIPE CUTTER</td>
<td>MOUNTING CLAMPS</td>
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<tr>
<td>SHIMS FOR MOUNTING CLAMPS</td>
<td>MOUNTING BRACKETS FOR VALVES</td>
<td>PIPE INSTALLATION TOOL KIT</td>
</tr>
<tr>
<td>TIGHTENING WRENCH KITS</td>
<td>CHAMFERING TOOL KITS</td>
<td>DRILLING TOOL KITS</td>
</tr>
</tbody>
</table>
1. **CUT**
The pipe should be cut perpendicular to the pipe axis.
[ref. PPS CTU]

2. **CHAMFER**
Chamfer the pipe on the outside to facilitate insertion and avoid damaging the seal. Internal deburring will remove any cutting residue.
[ref. PPS CH]

3. **MARK**
Make a mark on the pipe to check its position in the fitting before tightening (use the mark on the fitting or on the tightening wrench).

4. **LUBRICATE**
Assembly gel is recommended to facilitate inserting the pipe into the fitting.
[ref. PPS AL]

5. **ASSEMBLE**
Slightly unscrew the nut, then push the pipe rotating it slightly to achieve the recommended insertion length.

6. **TIGHTEN**
Tighten the nut by hand and then tighten it as recommended.
[ref. PPS CLE]
Supplemental equipment

A COMPLETE, UNIFIED SYSTEM

Prevost offers a full line of pneumatic tools and accessories to accommodate every compressed air system.

SAFETY WALL MANIFOLDS

Installed at the bottom of a downpipe (drop) to quickly connect your equipment.

- **Air inlet:** 1/2” or 3/4” FNPT
- **Multiple connection profiles available**
- **Material:** aluminum alloy
- **Robust 4-point wall attachment**
- **Fitted with a manual drain**
- **Air outlet:** 1/2/4/6/8/10 single push safety couplings
- **Outlets equipped with anti-hose whip safety couplings** which comply with ISO 4414 standard for user protection
- **Coupling body swivels** to ergonomically position the button
- **Quick, reliable connection and disconnection**

HOSE REELS

The automatic hose reel is an essential piece of equipment for an organized workshop.

The retractable hoses will save time, increase efficiency and enhance safety.

All automatic hose reels comply with the Machine Directive 2006/42/EC.

The following standards also apply:

- **EN ISO 12100:** 2010-11-01 "Safety of machinery - General principles for design - Risk assessment and risk reduction"  
- **EN 13857:** 2008 "Safety of machinery: safety distance to prevent upper and lower limbs from reaching hazardous areas"
**AIR TREATMENT UNITS**

Protect pneumatic tools and equipment by purifying the compressed air. Three treatment levels are recommended:

- **Cyclonic separator:** removes the largest solid and water particulates from the system [ref. SPC]
- **25 µm standard filtration:** eliminates contaminants present (particulates, water, etc.) in an air system. Units are equipped with a drain to remove pollutants [ref. ALTO]
- **Submicron filtration (optimum quality):** removes the smallest residual contaminants (solid, liquid and oil aerosols) from compressed air with 99.99% efficiency rates. Provides the highest level of air quality [ref. MICRO AIR]

**BENT LIMBS**

Use a bent pipe to compensate for equipment that does not properly align or to overcome obstacles.

**MOUNT ACCESSORIES ON IPN/HEA BEAMS WITH PLATES**

Create ergonomic, secure workstations.

The metal plates are designed to attach equipment on IPN/HEA beams:

- **In complete safety**
- **Without drilling**
- **Seamless integration**
- **Conforms with current industry standards**
Determining your compressed air needs can be complicated, that is why we are here to help.

If you are planning a complex installation or expanding an existing system, our in house Technical Design team is here to support you from start to finish.

Our team will provide a complete bill of material, quote, design and consulting services throughout the process.

Prevost provides customized training classes based on your business needs that cover a variety of compressed air energy topics.

Scan the QR code below to learn about our training program: