



# PREVOST PIPING SYSTEM



- |         |    |    |    |    |    |    |    |    |     |
|---------|----|----|----|----|----|----|----|----|-----|
| ∅<br>mm | 16 | 20 | 25 | 32 | 40 | 50 | 63 | 80 | 100 |
|---------|----|----|----|----|----|----|----|----|-----|

CONNECTED TO INNOVATION

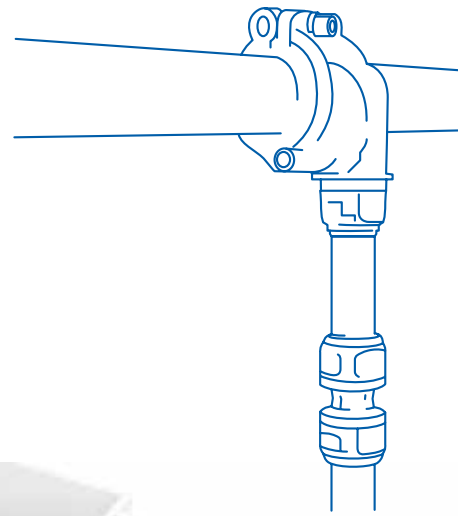


# What is a **compressed air system**?

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

Mount the ringmain of a Prevest 100% aluminium pipe system a minimum height of 2.5 m from the floor.

Install smaller diameter «downpipes» or «drops» off the main line to terminate at distribution points throughout the network approximately 1.2 m from the floor. From these points various accessories can be attached (manifolds, safety couplings, filtration, hoses, etc.).

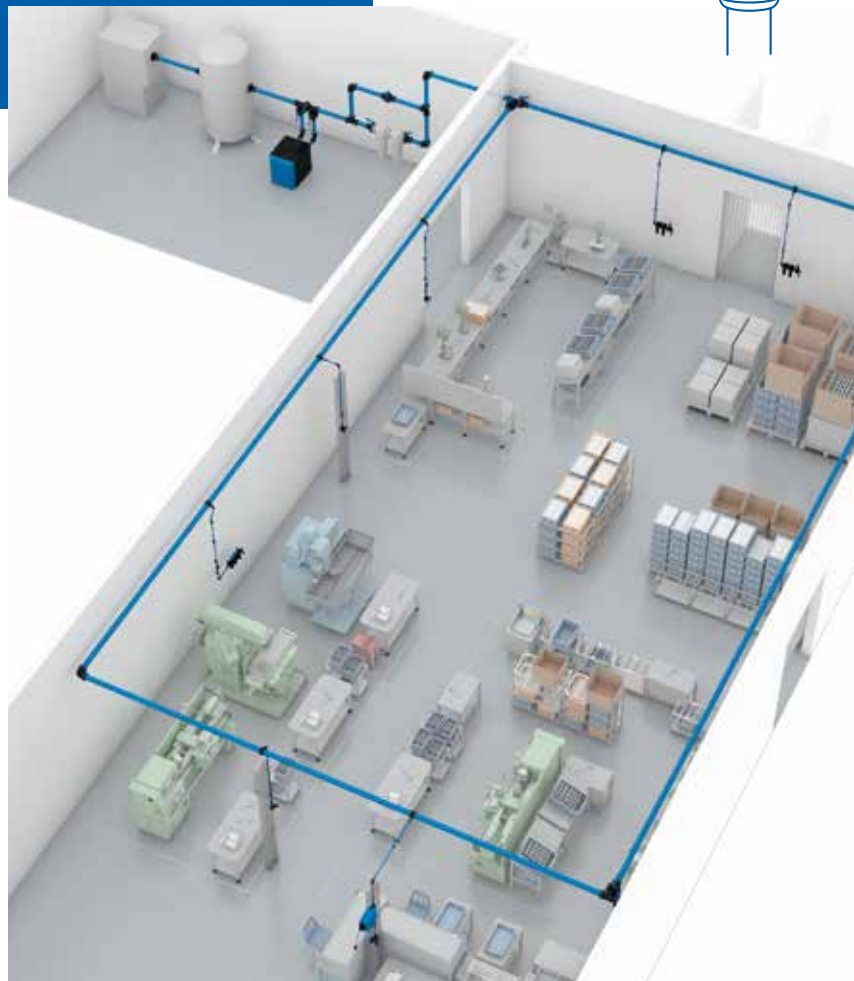


## **SIZING** A COMPRESSED AIR SYSTEM

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 **8 bar** and a maximum pressure drop is 5%.



## SIZE AN OPEN SYSTEM



Pressure: **8 bar** | Max. pressure drop **5% (0.4 bar)** | Max. speed: **10 m/s**

Compressor*					Length of the main line									
Power		Flow rate			50 m	100 m	150 m	300 m	500 m	750 m	1000 m	1300 m	1600 m	
kW	HP	Nm <sup>3</sup> /h	NI/min	Scfm	164 ft	328 ft	492 ft	984 ft	1640 ft	2460 ft	3280 ft	4265 ft	5249 ft	
2.2	3	22	367	13	16	16	20	20	25	25	25	25	32	
3	4	30	500	18	16	20	20	25	25	25	32	32	32	
4	5.5	40	667	24	20	20	25	25	32	32	32	32	32	
5.5	7.5	50	834	29	20	25	25	25	32	32	32	40	40	
7.5	10	70	1167	41	20	25	25	32	32	40	40	40	40	
11	15	100	1667	59	25	32	32	32	40	40	40	50	50	
15	20	150	2500	88	32	32	32	40	50	50	50	50	63	
18	25	180	3000	106	32	32	40	40	50	50	50	63	63	
22	30	220	3667	129	40	40	40	50	50	50	63	63	63	
26	35	260	4334	153	40	40	40	50	50	63	63	63	63	
30	40	300	5000	176	40	40	50	50	63	63	63	63	80	
37	50	370	6167	218	50	50	50	50	63	63	63	80	80	
45	60	450	7500	265	50	50	50	63	63	80	80	80	80	
55	75	550	9167	324	63	63	63	63	80	80	80	80	100	
75	100	750	12500	441	63	63	63	80	80	80	100	100	100	
90	120	900	15000	529	80	80	80	80	80	100	100	100	100	
110	150	1100	18334	647	80	80	80	80	100	100	100	100		
130	175	1300	21667	765	80	80	80	80	100	100	100			
160	215	1600	26667	941	100	100	100	100	100					
200	270	2000	33334	1176	100	100	100	100						

\* These values may vary slightly from compressor data

## THERMAL EXPANSION



As temperatures fluctuate up or down, aluminium 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 50 meters or more. Use this flexible hose to easily change direction of the air flow (angles) or avoid obstacles in the facility (pillars, beams, etc.).

## SIZE A CLOSED SYSTEM



Pressure: **8 bar** | Max. pressure drop **5% (0.4 bar)** | Max. speed: **10 m/s**

Compressor*					Length of the main line									
Power		Flow rate			50 m	100 m	150 m	300 m	500 m	750 m	1000 m	1300 m	1600 m	
kW	HP	Nm <sup>3</sup> /h	NI/min	Scfm	164 ft	328 ft	492 ft	984 ft	1640 ft	2460 ft	3280 ft	4265 ft	5249 ft	
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200	270	2000	33334	1176	80	80	80	80	80	100	100	100	100	
250	340	2500	41667	1471	80	80	80	80	100	100	100			
300	405	3000	50000	1765	100	100	100	100	100	100				
350	475	3500	58334	2059	100	100	100	100	100					
400	540	4000	66667	2353	100	100	100	100						

\* These values may vary slightly from compressor data

**EXPANSION COEFFICIENT:** 0.024 mm per METRE and per DEGREE °C.



**EXPANSION IS CALCULATED AS FOLLOWS:**

**C** = COEFFICIENT OF EXPANSION (0.024 mm)

**L** = STRAIGHT LINE LENGTH (m)

**ΔT°** = DIFFERENCE BETWEEN MAXIMUM AND MINIMUM ROOM TEMPERATURE IN °C.

**DL** = OVERALL EXPANSION (mm)

IN OTHER WORDS: **DL = C x L x ΔT°**

### EXAMPLE:

A 20 meter line laid with ø40 mm piping, at an ambient temperature of 15°C, can be subjected to a maximum temperature of 40°C

→, i.e. a difference of 25°C.

**DL:** 0.024 (mm) x 20 (m) x 25 (40°C – 15°C) = 12 mm

# PREVOST PIPING SYSTEM

## The 100% aluminium concept



The **PREVOST PIPING SYSTEM**'s pipes and fittings are **100% aluminium, compact, lightweight and professional strength.**

They can be installed easily and quickly for immediate pressurisation.

The **PREVOST PIPING SYSTEM** range ensures:

- clean, high quality air at all times
- a sealed system
- an optimised flow rate
- an operating pressure range: **from - 0.98 bar to + 16 bar**
- a temperature range: **from - 20°C to + 80°C**

Workstations are well supplied, accessible and ergonomically designed. The facility is durable and can be easily upgraded.

### BENEFITS OF A PREVOST PIPING SYSTEM



#### + 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

Aluminium and viton seals are compatible with compressor lubricants.

#### + TOUGH MATERIAL

Aluminium guarantees long term performance:

- **mechanical strength**
- **pressure resistance**
- **shocks absorbent**

#### + COMPACT AND LIGHTWEIGHT

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

#### + HIGH TECH, MODERN MATERIAL

Aluminium 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.

# THE **BENEFITS** OF ALUMINIUM COMPARED TO **OTHER MATERIALS**



	Aluminium - PPS	Steel	Galvanised steel	Stainless steel
<b>LIGHTWEIGHT</b>	★ ★ ★	★	★	★
<b>QUICK ASSEMBLY</b>	★ ★ ★	★	★	★ ★
<b>PIPE CAN BE PAINTED</b>	★ ★ ★	★	★	★
<b>COMPRESSED AIR DEDICATED MATERIAL</b>	★ ★ ★	★	★	★
<b>CORROSION PROTECTION</b>	★ ★ ★	★	★	★ ★ ★
<b>MINIMAL PRESSURE LOSS &amp; SMOOTH SURFACE</b>	★ ★ ★	★	★	★ ★
<b>LEAK PROTECTION</b>	★ ★ ★	★	★	★ ★
<b>CLEAN AIR CERTIFICATION</b>	★ ★ ★	★	★	★ ★
<b>HIGH FLOW RATE</b>	★ ★ ★	★	★	★ ★

# The **PREVOST PIPING SYSTEM** range

## CERTIFICATIONS BY INDUSTRY APPLICATION

### Industry standards



### Pressurised equipment



### Safety and protection



### Fluid properties



### Environmental



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## PREVOST PIPING SYSTEM 100% ALUMINIUM PIPES



- **STAINLESS STEEL**
- **MINIMAL PRESSURE LOSS**  
laminar flow from smooth internal surface
- **UV AND HEAT RESISTANT**  
low coefficient of expansion
- **ISO MARKING AND COLOUR**  
all diameters are available for **RAL 5012 (blue)** and **RAL 7001 (grey)** pipes. 20 and 25 mm 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 aluminium.  
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

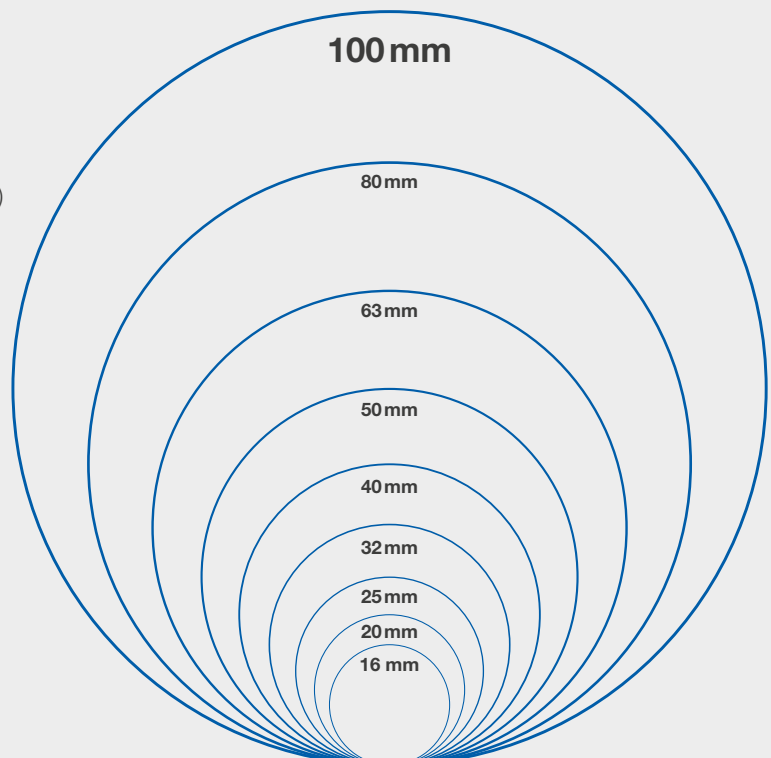
**Pipe lengths:**

4 or 5.5 metres

**Density:** 2.7 kg/dm<sup>3</sup>

**Pipe outside diameter:**

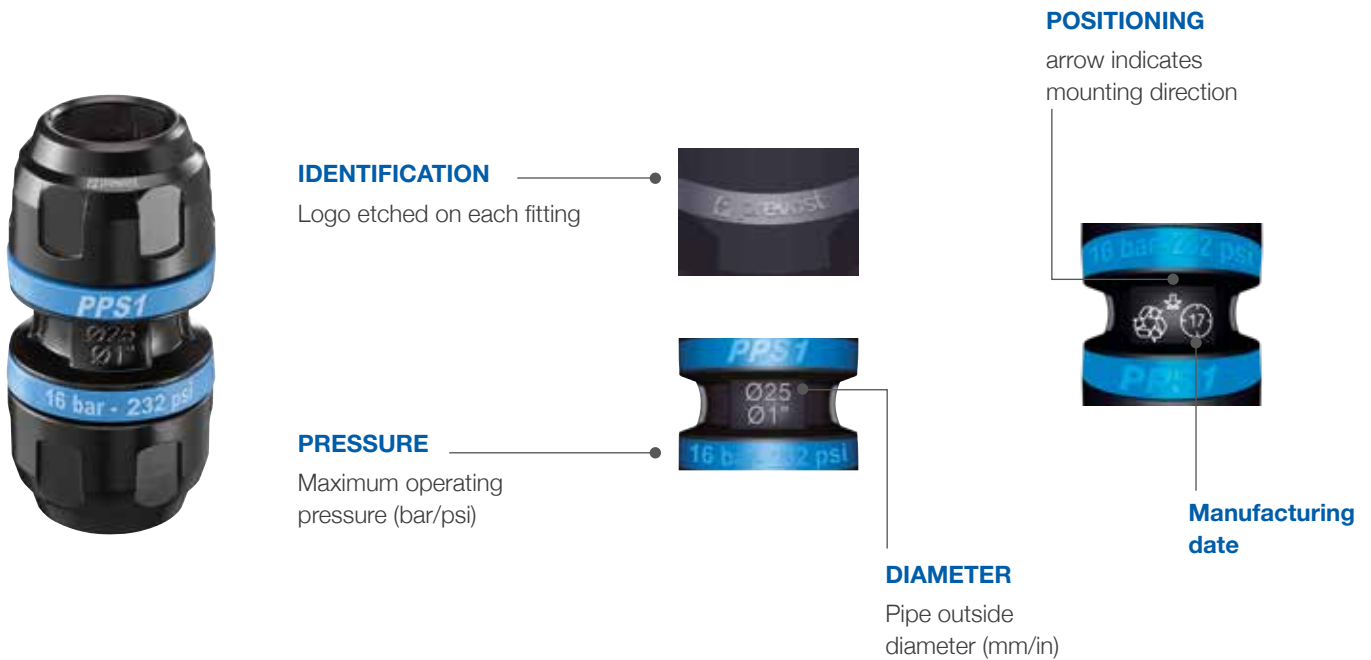
Ø 16, 20, 25, 32, 40, 50, 63, 80, 100 mm.



# PREVOST PIPING SYSTEM

## 100% aluminium fittings

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 aluminium.

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

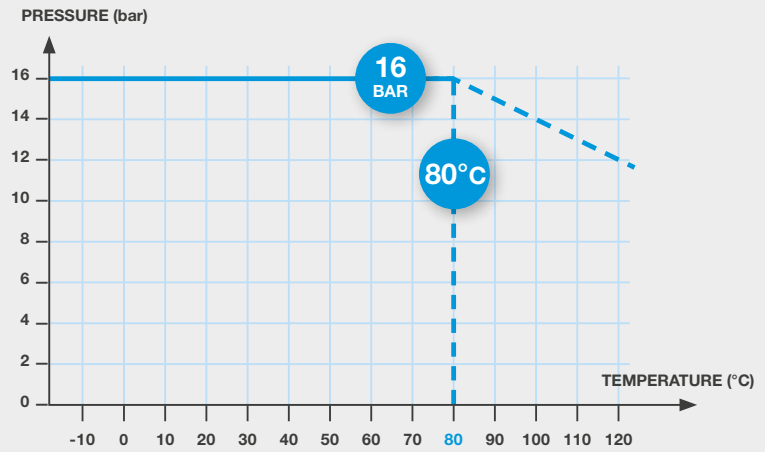
# TECHNICAL SPECIFICATIONS OF FITTINGS

**Body and nut:**  
100% aluminium EN AB 46100

**PPS Grip Concept:**  
stainless ring

**Tapping flange**  
to remove condensates

## PRESSURE/TEMPERATURE GRAPH



### Available diameters



# AVAILABLE FITTING OPTIONS

## STRAIGHT FITTINGS

Ø 16 to 80 mm



Simple union



Reducer



Pipe cap



Straight male threaded fitting



Straight female threaded fitting



Expansion kit



Sliding union

Ø 100 mm



Simple union



Reducer



Pipe cap



Straight female threaded fitting



Sliding union

## BENT FITTINGS

Ø 16 to 80 mm



90° elbow



90° elbow threaded male



45° elbow

Ø 100 mm



90° elbow

## T-PIECE FITTINGS

Ø 16 to 80 mm



Equal T-piece



Reduced T-piece



Female threaded T-piece

Ø 100 mm



Equal T-piece



Female threaded T-piece

## CROSS FITTINGS

Ø 16 to 32 mm



Cross connector

Ø 40 to 100 mm



Cross connector

## 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 25 to 80 mm

Ø 100 mm



### TAPPING FLANGES FEMALE THREADED BENT

Ø 25 to 80 mm

### STRAIGHT

Ø 25 to 100 mm



### TAPPING FLANGES FOR DRILLING UNDER PRESSURE

Ø 25 to 100 mm



## VALVES

Ø 16 to 50 mm



Pipe/pipe

Female threaded/pipe



Threaded male/pipe

Ø 63 mm



Pipe/pipe  
Aluminium body

Ø 63 to 100 mm



Pipe/pipe

Female threaded/pipe

# Compact Connection Concept - *CC concept*

The **CC Concept** is the solution for

- Directly connect two fittings
- Optimise space
- Specifically designed for «compressor rooms»

## STRAIGHTFORWARD, FAST CONNECTION METHODS

## CHARACTERISTICS AND BENEFITS

### 1 CONNECTION WITH A FLANGE



- ANSI/ASME general-purpose flange
- Ideal for connecting a system to a compressor, a dryer or to an existing system through the standard ANSI flange

### 2 CONNECTION WITH A CLAMP

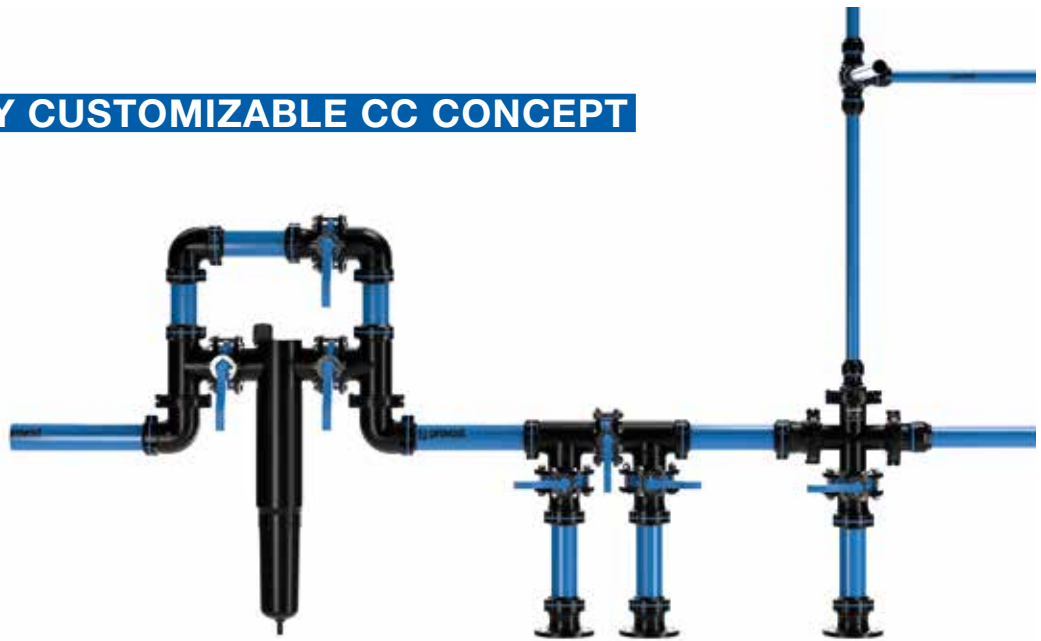


- Quickly connect two fittings with a clamp instead of cutting the pipe or installing a flange
- Design allows for easy installation and elimination of assembly errors

### 3 CONNECTION VALVE



# 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

### ALUMINIUM VALVES

Ø 63 mm



1-connector valve



2-connector valve

### ACCESSORIES



Female threaded body



Plug



O-ring seal



Male threaded body



Valve



Bolts/nuts

# Safety and energy savings

## REMOTE CONTROLLED PNEUMATIC SAFETY VALVE



- Compact and lightweight
- Easy to operate - even at ceiling height
- Quick to install
- 100% aluminium
- Fully pneumatic
- Available in Ø 40-50-63-80-100 mm.



VALVES  
ø40 to 80 mm



CC CONCEPT  
ø100 mm

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

This shut off valve can quickly depressurise 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.



Push button



Key switch

## 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
- **PROGRAMMABLE CONTROL MODULE**



Programmable control module

A programmable control module turns the system on and off at designated days or times. Automatically shutting off a system during down time will reduce energy waste and drops in pressure when the system is not in use.



# 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 **2.50 m** 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).

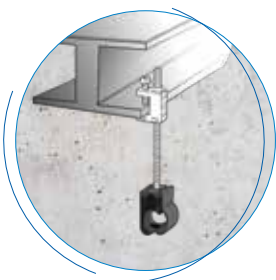
**Remove residual condensates** from the main line **with down pipes** (drops) that terminate in an automatic drain system.



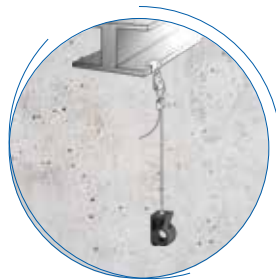
OFFSET FROM THE WALL



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.

Chose 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 3 meters**.

# PPS SYSTEM INSTALLATION EQUIPMENT



TIGHTENING WRENCHES



SINGLE-TOOTH ADJUSTABLE WRENCH



TORQUE WRENCH



HEXAGON SOCKET



PRESSURE DRILLING TOOL



HOLE SAW FOR PIPE DRILLING



HAND TOOLS FOR CHAMFERING AND DEBURRING



CHAMFERING TOOLS FOR DRILLS



INSERTION GUIDE FOR PPS FITTINGS



ASSEMBLY GEL



PIPE CUTTER



Ø 16-32    Ø 40-100

MOUNTING CLAMPS



SHIMS FOR MOUNTING CLAMPS



MOUNTING BRACKETS FOR VALVES



PIPE INSTALLATION TOOL KIT



TIGHTENING WRENCH KITS



CHAMFERING TOOL KITS



DRILLING TOOL KITS

# INSTALLING A COMPRESSED AIR SYSTEM



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## 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:** G 1/2 or G 3/4

**Multiple connection profiles available**

**Material:** aluminium alloy

**Robust 4-point wall attachment**

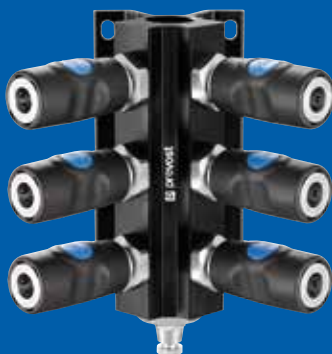
**Fitted with a manual drain**

**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"

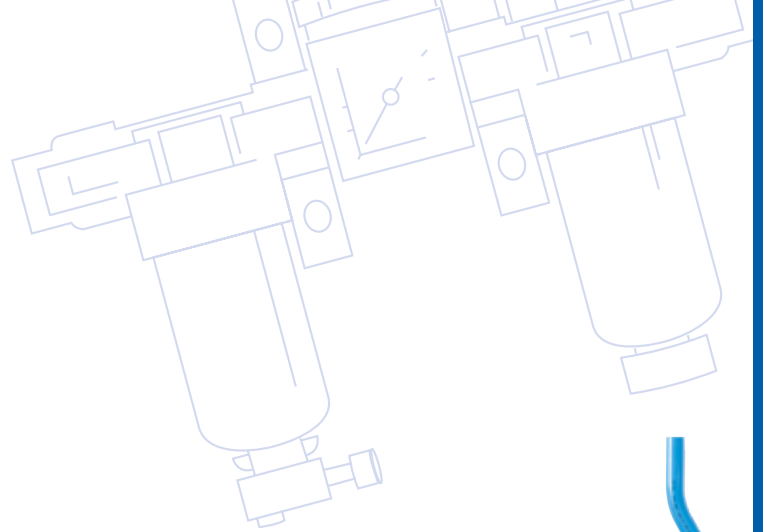


#### ■ AIR TREATMENT UNITS

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**
- **Conforms with the current industry requirements.**

# Previst services



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 on 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.

For straightforward installations, we offer an **on line 3D design platform** to conceptualize and view your project.

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

Scan the QR code below to view our **PREVOST PIPING SYSTEM** videos:







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