

# PREVOST PIPING SYSTEM

























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

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

We recommend to install the Prevost 100% aluminium pipe system at a minimum height of 2.5 m from the floor.

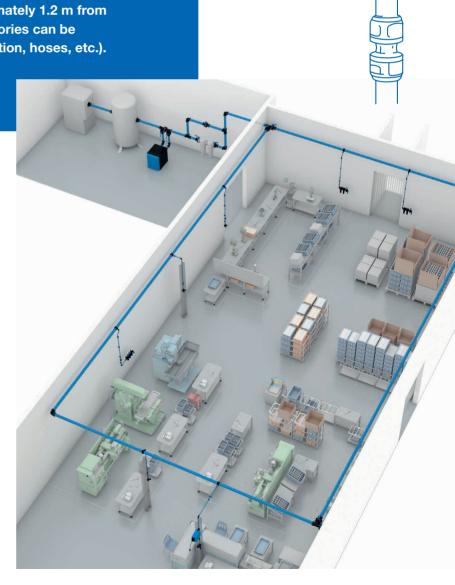
Install smaller diameter «downpipes» or «drops» off the main line to terminate at distribution points throughout the network. We recommend these points to be approximately 1.2 m from the floor. From these points various accessories can be attached (manifolds, safety couplings, filtration, hoses, etc.).

## **SIZING** A COMPRESSED AIR SYSTEM

When designing a system, consider the following:

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

Use our tables to determine the appropriate pipe diameter with an operating pressure of **8 bar** and the 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	1 000 m	1 300 m	1 600 m	
kW	CV	Nm³/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	1 167	41	20	25	25	32	32	40	40	40	40
11	15	100	1 667	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	3 000	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	5 000	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	7 500	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	15 000	529	80	80	80	80	80	100	100	100	100
110	150	1 100	18334	647	80	80	80	80	100	100	100	100	160
130	175	1 300	21 667	765	80	80	80	80	100	100	100	160	160
160	215	1 600	26 667	941	100	100	100	100	100	160	160	160	160
200	270	2000	33 334	1 176	100	100	100	100	160	160	160	160	160
250	340	2500	41667	1471	160	160	160	160	160	160	160	160	160
300	405	3000	50000	1765	160	160	160	160	160	160	160	160	160
350	475	3500	58334	2059	160	160	160	160	160	160	160	160	160
400	540	4000	66667	2353	160	160	160	160	160	160	160	160	
450	600	4500	75000	2647	160	160	160	160	160	160	160		
500	700	5000	83334	2941	160	160	160	160	160	160			
600	810	6000	100000	3529									
700	950	7000	116667	4118									
800	1080	8000	133334	4706									

<sup>\*</sup> These values may vary slightly from compressor data

Diameter PPS tube (mm)

## 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 or joints is necessary when a straight line exceeds 50 meters or more. You can also Use flexible hoses to easily change direction of the air flow (angles) or avoid obstacles in the facility (pillars, beams, etc.).

#### **SIZE** A CLOSED SYSTEM



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800	1080	8000	133334	4706	160	160	160	160	160	160			

<sup>\*</sup> These values may vary slightly from compressor data

Diameter PPS tube (mm)

#### 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)

 $\Delta \textbf{T}^{\circ} = \text{DIFFERENCE}$  between maximum and minimum room temperature in °C.

 $\mathbf{DL} = \text{OVERALL EXPANSION (mm)}$ 

IN OTHER WORDS:  $\mathbf{DL} = \mathbf{C} \times \mathbf{L} \times \Delta \mathbf{T}^{\circ}$ 

#### **EXAMPLE:**

A 20 meter line laid with ø 40 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





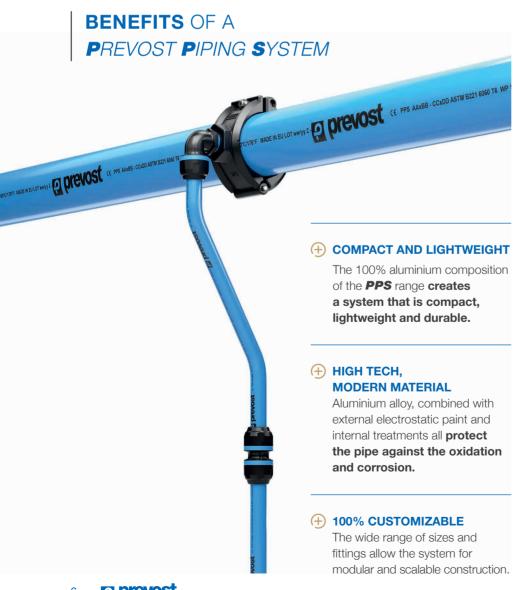
The PREVOST PIPING SYSTEM's pipes and fittings are 100% aluminium, compact, lightweight and have a high degree of mechanical strength.

The system can be installed easily and quickly for immediate pressurisation.

The **PREVOST PIPING SYSTEM** range ensures:

- clean, high quality air at all times
- a leak free 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 product is durable and can be easily modified.



#### (+) EASY AND QUICK **TO ASSEMBLE**

Simply insert the chamfered pipe into the **PPS** fitting then **tighten** the nut or M8 bolts to the recommended torque setting.

#### (+) LEAK FREE WITH MINMAL **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

# THE BENEFITS OF ALUMINIUM COMPARED TO OTHER MATERIALS





# The **PREVOST PIPING SYSTEM** range

#### **CERTIFICATIONS** BY INDUSTRY **APPLICATION**





ASME QPS CERTIFICATE HOLDER

**Pressurised** equipment







**ASME** 

B31.1













Fluid properties











**Environmental** 















# **P**REVOST **P**IPING **S**YSTEM **100% ALUMINIUM PIPES**



#### **■ STAINLESS**

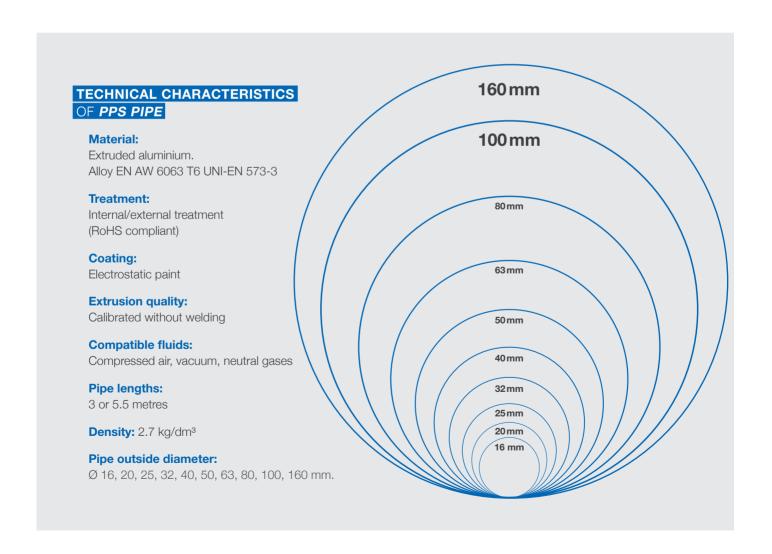
#### MINIMAL PRESSURE LOSS laminar flow from smooth internal surface

### ■ 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, 25 and 50 mm diameters are also available for RAL 6029 (green).

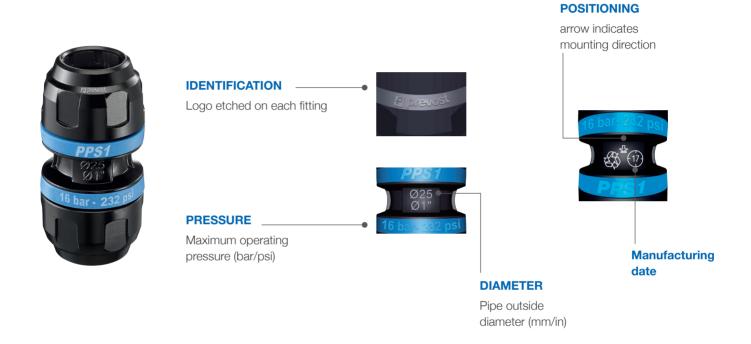
#### NO FIRE HAZARD system does not require a fire permit

- **SIMPLE TOOLS** easy to cut and chamfer for simplified installation and maintenance
- **LIGHTWEIGHT**
- **COST-EFFECTIVE**



# PREVOST PIPING SYSTEM 100% aluminium fittings

Prevost designs and manufactures compact, high-performance fittings.



#### THE PPS GRIP CONCEPT

The tube's retention in the fitting is ensured by a stainless steel ring whose teeth penetrate the aluminum.

This is what we call the *PPS* Grip Concept unique in the market.

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

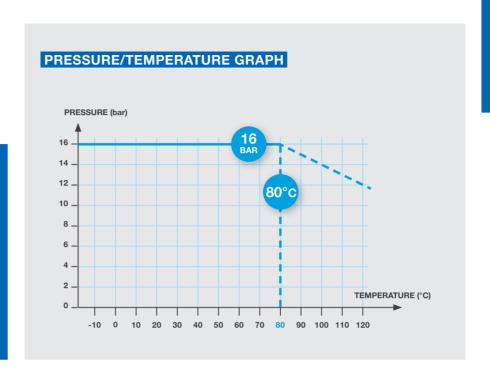


**LEAK-TIGHT CONNECTION** 

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





**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 100-160 mm



Simple union



Reducer



Pipe cap



Straight female threaded fitting



Sliding union 160

#### **ELBOW FITTINGS**

#### Ø 16 to 80 mm



90° elbow



90° elbow threaded male



45° elbow

#### Ø 100-160 mm





90° elbow

#### **T-PIECE FITTINGS**

#### Ø 16 to 80 mm



Equal T-piece



Reduced T-piece



Female threaded T-piece

#### Ø 100-160 mm







Equal T-piece

Female threaded T-piece

#### **CROSS FITTINGS**

Ø 16 to 40 mm



Cross connector

#### Ø 50 to 160 mm



Cross connector

#### **TAPPING FLANGE**

A tapping flange connects a down pipe (drop) to workstations. It's 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 STRAIGHT

Ø 25 to 80 mm

Ø 25 to 100 mm





## TAPPING FLANGES FOR DRILLING UNDER PRESSURE

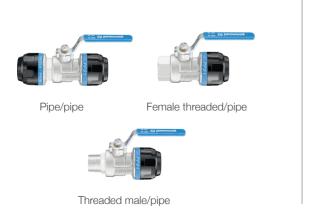
Ø 25 to 100 mm





#### **VALVES**

Ø 16 to 50 mm



Ø 63-80 mm



Pipe/pipe Aluminium body

# Compact Connection Concept - CC concept

#### The CC Concept is the solution for

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

## STRAIGHTFORWARD, FAST CONNECTION METHODS

## CHARACTERISTICS AND BENEFITS

**1** CONNECTION WITH A FLANGE







- General-purpose flange, drilled to suit ANSI and AMSI standards
- Ideal for connecting a system to a compressor, a dryer or to an existing system through the standard flange

**2** CONNECTION WITH A CLAMP







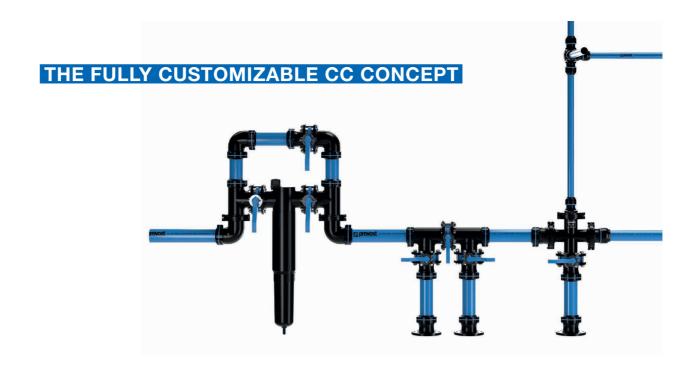


- Quickly connect two fittings with a clamp instead of cutting the pipe or installing a flange
- Design allows for easy installation and elimination of assembly errors

CONNECTION VALVE







#### 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





4-connector cross-piece

#### **CONNECTING PARTS**



Clamp



Flange

#### **ALUMINIUM VALVES**

Ø 63-80-100 mm



1-connector valve



2-connector valve

#### **ACCESSORIES**



Female threaded body



Plug



O-ring seal



Male threaded body



Valve Ø 160



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 (Ø 40 100 mm)
- **Fully pneumatic**
- Available in Ø 40-50-63-80-100 mm.



1/2"-3/4"-1"



VALVES
Ø 40 to 80 mm



CC CONCEPT Ø 100 mm

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

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







Push button



# 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**

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.



Programmable control module

# 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 or ring**. For safety reasons, we recommend to install the primary air lines at a minimum 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**.

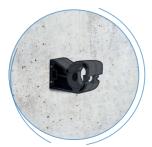
#### The main line:

- 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.

# Supplemental for point of use

## A COMPLETE, UNIFIED SYSTEM

**Prevost** offers a full range 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 quick coupling profiles available

Material: aluminium alloy

**Robust 4-point wall attachment** 

Fitted with a manual drain

**Air outlet:** manifolds available with 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"



# BENT PIPES Use a bent pipe (available in pipe sizes 16mm, 20mm & 25mm) to compensate for equipment that does not properly align or to overcome obstacles.

#### **AIR TREATMENT UNITS**

Protect pneumatic tools and equipment by purifying the compressed air.

#### Three treatment levels are recommended:

#### Cyclonic separator: removes the largest solid an

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]



#### ■ 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.

## **PPS SQ**



#### **RECTANGULAR PROFILED AND**

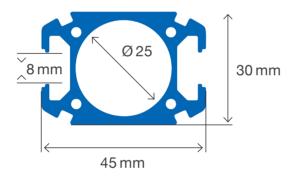
#### ADAPTED FOR YOUR WORKSTATION

Colour: blue or grey Lengts: 1 m or 2 m

Rectangular section size: 30 x 45 mm

Internal diameter: Ø 25 mm





The design of the **PPS SQ** profile section includes a groove that allows the use of accessories (nuts, etc.) **compatible** with the most common workstation profiles on the market.

It is the essential complement to the *PREVOST PIPING SYSTEM* air systems that installs at the bottom of your existing drops to ensure the delivery of compressed air to the point of end use:

- Individual workstations
- Automatic machine lines

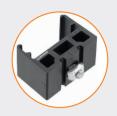








#### THE ACCESSORIES



Fixing clamp Part Numbers PPS SQCI25HN8



Fixing clamp Part Numbers PPS SQCI25



#### A COMPLETE RANGE OF ACCESSORIES

#### TO CREATE YOUR IDEAL ENVIRONMENT

# THE CONNECTING PIECES FOR CONNECTING **PPS SQ**PROFILE BARS

- Union fittings
- Connection plates
- Connection fittings

#### ① THE BENEFITS

- 100% aluminium
- Ergonomics of workstations
- Space saving
- Modularity
- Quality & Safety
- Leak free guaranteed
- User comfort

#### THE CHARACTERISTICS

■ Pressure : -0.98 bar to +16 bar

■ Temperature : -20 °C to +80 °C



■ Cross connection fitting
Part Numbers PPS1 CR27



■ Connection fitting

Part Numbers JN2527





#### **THE ACCESSORIES**

Sliding carabiner Part Numbers PPS SQSH8



■ Tapping flange with valve Part Numbers PPS SQBFV



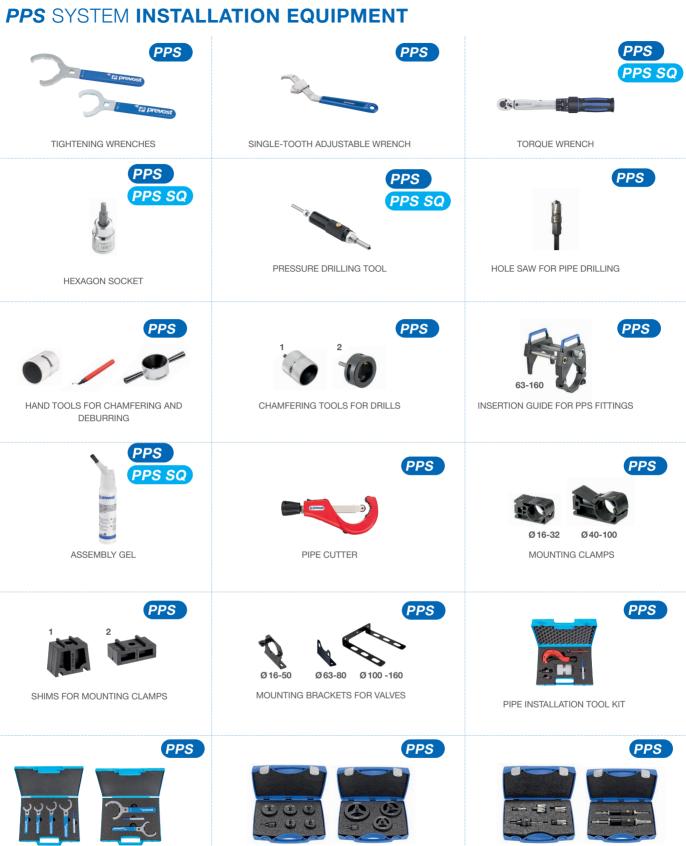
■ Threaded tapping flange Part Numbers PPS SQ09C2512



**■ Connection fitting** Part Numbers PPS SQFRL2512



Union fitting Part Numbers PPS SQUN25



#### CHAMFERING TOOL KITS PPS SQ



TIGHTENING WRENCH KITS







DRILLING TOOL KITS



# INSTALLING A COMPRESSED AIR SYSTEM





#### 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]

# Prevost 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. **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 view our **PREVOST PIPING SYSTEM** videos:





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