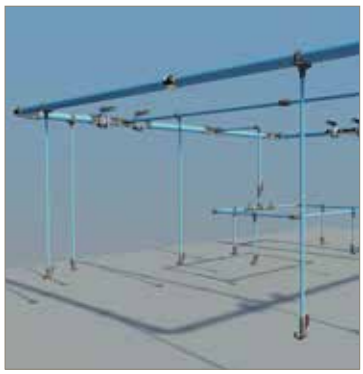


Transair® Specification Document

Aluminium and Stainless Steel Pipeworks for Compressed Air, Vacuum, Inert Gas, Industrial Water and Oil

In compliance with PED 2014/68/EU

Parker

ENGINEERING YOUR SUCCESS.

Transair® System diameter 168mm (6")

Piping System Specifications
Transair® Aluminium Range

Piping System Specifications
Transair® Stainless Steel Range

Piping System Specifications
Transair® Aluminium Range

This section lists all the essential requirements for ensuring safety, reliability, energy efficiency and durability on an **aluminium** industrial fluid network in accordance with the **Pressure Equipment Directive 2014/68/EU.**

Scope of Work: Modular aluminium piping system for compressed air, industrial breathing air, industrial vacuum and inert gas (up to 99,995 % of purity nitrogen, argon, dry CO2 and their mixtures) networks.

Working Pressures and Temperatures: The network should withstand a 16bar working pressure (13 bar for 168.3mm diameter) up to 45°C, 13 bar at 60°C and 7 bar at 85°C.

The network should withstand a negative temperature of -20°C.

The vacuum performance shall be **1 mbar in absolute pressure.**

Specification Summary

Pipework shall be installed with Transair® aluminium pipes and associated fittings. Pipework shall be painted blue (RAL 5012), grey (RAL 7001) or green (RAL 6029) for visual identification of the networks.

Markings on the pipe shall specify the brand, the maximum pressure according to the temperature range, the internal and external dimensions as well as the batch number. For traceability reasons, batch numbers and country of origin (ex: Made in France) shall appear on the pipe.

To facilitate the installation of drops and indicate the drilling positions of quick-assembly brackets, two marker lines at an angle of 0° and 90° shall be included throughout the total length of the pipe with a maximum deviation of 3mm.

To protect against long-term exposure to the harshest environments, the pipes shall comply with the Qualicoat and Qualimarine labels which guarantee the quality of the painting process as well as the conformity for exterior installations and salty environments.

The pipes could be bent, considering the bending dimensions recommended by the manufacturer.

For optimum safety coefficient, all assembly shall be realized by respecting the manufacturer's guidelines. Additional greasing of joints will not be permitted due to potential contamination of the fluid (cf. Quality of the Fluid section).

For safety reasons and to avoid any disconnection, all the fittings might be designed by the manufacturer to avoid any cause of galvanic corrosion between the environment humidity and the mechanical connection.

Connection Technologies

1. On Ø 16.5mm (1/2”), 25mm (1”) and 40mm (1” 1/2) fittings (external dimensions):

The pipes shall be assembled with a gripping ring instant connection fitting made of High Resistance Polymer (PA 6.6).
A 30% fibre glass reinforcement shall be part of the fitting to increase its mechanical resistance without increasing its weight.

To ensure a safe mechanical connection, the gripping ring of the fitting shall be made of stainless-steel grade Z10 CN 18 with optimal resistance to pressure. A connection indicator shall appear on each extremity of the pipe for visual safety.

To ensure perfect sealing, the fittings shall be equipped with NBR double-lip seals - located after the gripping ring to prevent any leakage - and shall have been individually tested by the manufacturer.

To facilitate network modifications, all fittings shall be removable and laterally dismountable.

2. On Ø 50mm (2”) and 63mm (2” 1/2) fittings (external dimensions):

The pre-drilled pipes shall be assembled with a quick-fit connection fitting made of treated Aluminium.

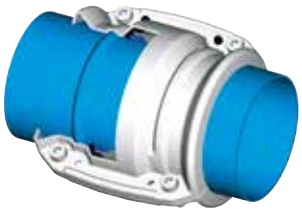
To ensure a safe mechanical connection, the fittings shall be secured by a one-piece «SnapRing» stirrup preventing any disconnection of the pipe even under excessive pressure.

To ensure perfect sealing, the fittings shall be equipped with nitrile seals NBR HD50 or NBR HD70.

To facilitate network modifications, all fittings shall be removable and laterally dismountable.

3. On Ø76mm (3”), 101,8mm (4”) and 168,3mm (6”) fittings (external dimensions):

The pre-lugged pipes shall be assembled with a quick connection clamp made of treated steel or cast aluminium.



To ensure a safe mechanical connection, the unions shall be made with a metallic clamp locking an engineering grade seal cartridge positioned between the two lugs at the extremity of the pipes.

To ensure perfect sealing, the sealing cartridges should be equipped with NBR HD50 or NBR HD70 nitrile seals.

Network / General

The piping system shall comply with the **Pressure Equipment Directive 2014/68/EU** for Europe.

The piping system shall be resistant to prolonged attack flames and manufacturer might be able to provide test reports certifying classification level “B-s2-d0” according to the European reaction to fire Classification system **EN 13501-1 (Euro-Classes).**

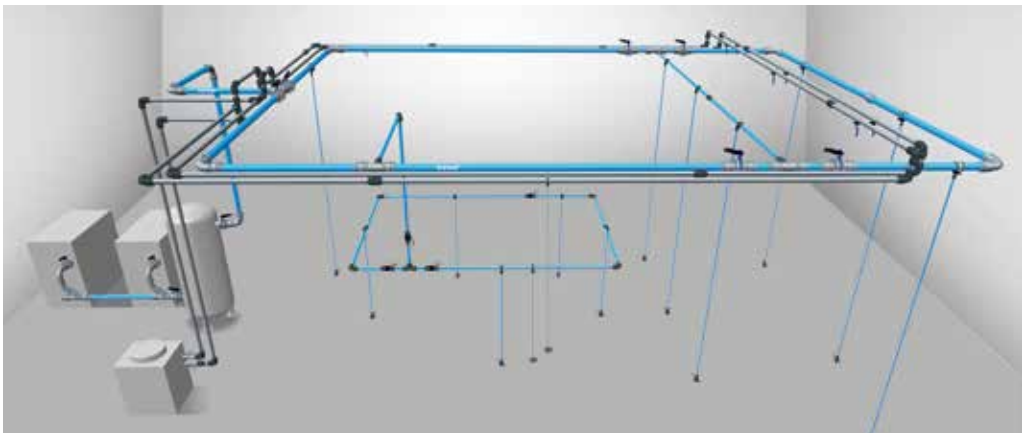
If necessary, a specific firestop barrier solution installed in walls and floors shall be used to insulate fire. This system shall be classed “E120” according to the **EN 13501-2 standard.**

The products shall be covered by a ten-year guarantee against any material defect from the date of installation.

The network shall be designed to have low points to allow any possible condensate to be drained from the network.
The use of a sheath or a flexible hose shall be recommended in the case of pipes going through a partition wall or through a deck.

According to the manufacturer’s recommendations, the network shall include expansion loops allowing for movement due to expansion and contraction.

Expansion loops positions shall be calculated according to temperature at which the network is used.



Supporting a Network

To ensure good network stability, it will be recommended to use at least 2 clips per pipe, making sure that even a cut-off tube has 2 supports if it is at least 2.5 metres long.

The fixing clip used should be that recommended by the manufacturer to the exclusion of any other material. It shall allow an axial movement of the pipe to consider expansion and contraction.

According to the recommendation, the network could be fixed under the prefabricated electrical distribution system (Canalis) with the fixtures provided for this purpose by the manufacturer.

Energy Savings

To limit pressure drops in the system, all fittings under Ø168mm shall be «full flow» meaning that their internal diameter shall be at least equal to that of the pipes.

To avoid any leakage when the system is gradually pressurised and in accordance with procedures, the system shall be fully guaranteed over a pressure range from atmospheric pressure (1 bar) to operating pressure.

Drops, Machines and Workstation Supply

The connection on the primary or secondary network shall be carried out via a Transair® «quick assembly bracket» including an integrated swan neck to prevent moisture carry over into downstream equipment.

To connect or disconnect devices and tools safely, Transair® quick couplers with integrated whiplash protection, according to **ISO 4414**, shall be used. These couplings shall have an ISO B, ISO C, EURO or ARO fitting profile and will be mounted:

1. On quick-assembly bracket for take-offs from aerial network since main or secondary network.

2. On quick-assembly bracket equipped with a flexible pipe or recoil tubing towards machines and equipment.

3. On wall bracket, for use in servitude or machine supply in rigid drop. For safety reasons and to ensure their robustness, these wall brackets should have a brass body and be equipped with a fixing bracket.

Filters, Pressure regulators and Lubricators (FRL), positioned 1,20m high from the ground, should be planned when required on the workstations.

Quality of the Fluid

To guarantee the quality of the fluid up to the point of use, the piping shall comply with **ISO 8573-2010 Class 1.1.1.** standard.

Compliance with such standard will guarantee the constant quality of the fluid from production to the point of use in terms of solid particulates, humidity and oil.

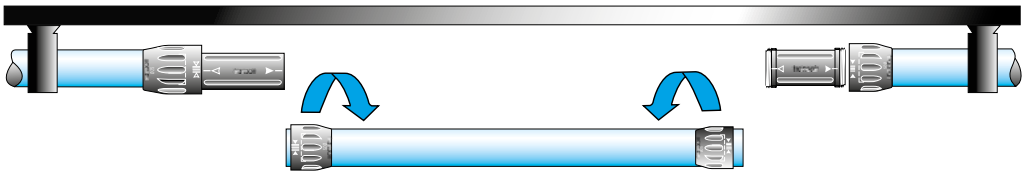
The piping system shall be corrosion-resistant so as not contaminate the fluid with rust.

The pipes and fittings shall be **silicone-free** and **oil-free** certified, so they do not transmit grease or oily particles to the fluid conveyed.

Maintenance and Technical Operations

To facilitate technical interventions, lockable block valves from the same manufacturer shall be used to isolate several distinct parts of the network.

To facilitate network modifications, all secondary network pipes and fittings shall be removable and laterally dismountable.



To facilitate the addition of a drop or of an extra thread, the system used shall have a range of products allowing to drill under pressure.

Technical Assistance

The manufacturer shall be able to provide its expertise regarding the sizing of the networks to limit pressure drops as much as possible and thus reduce energy consumption as much as possible.

The manufacturer shall be able to offer its **CAD product library** in 2D and 3D but also **BIM (Building Information Modeling)** in LOD (Level of Detail) 200 and 400.

The manufacturer shall be able to provide a bill of material based on the drawings or network layout provided by the contracting company.

Contractors & Staff Training

The manufacturer shall provide the contractor, as well as the End User's maintenance staff, a trained technician to give installers the **best practices** for assembling new installations.

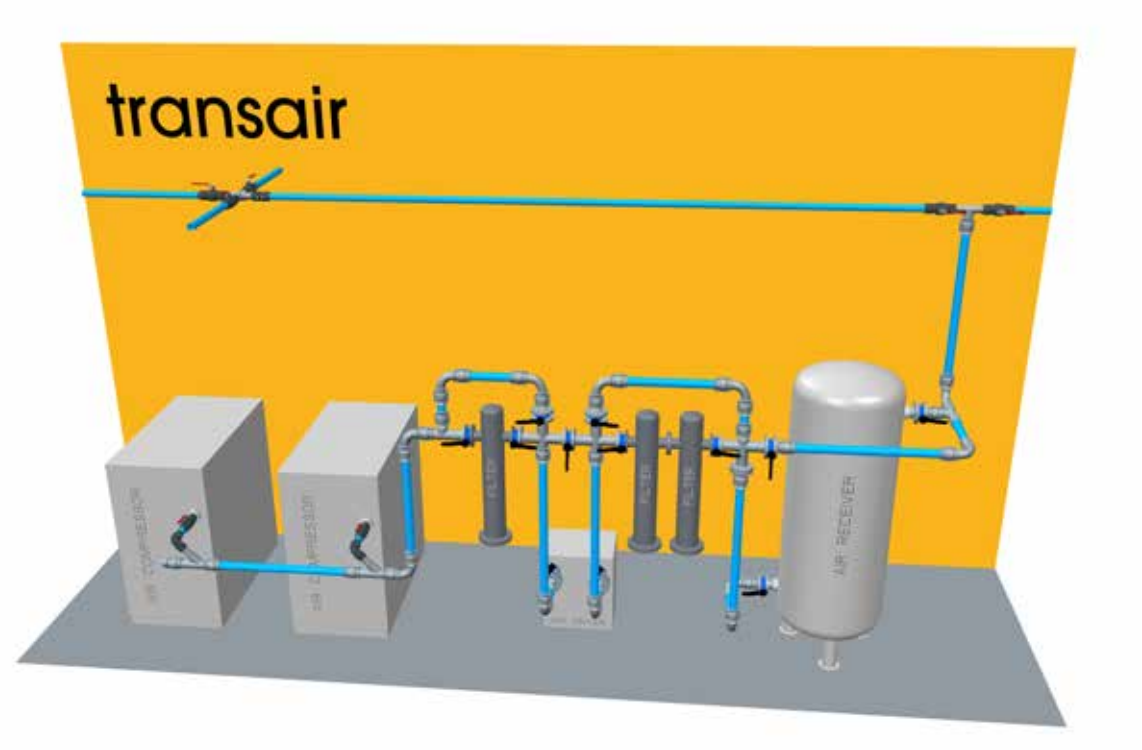
The manufacturer shall provide all necessary technical instructions and documentations for mounting and modifying the system to the contractor and to the End User's maintenance staff.

The manufacturer shall be able to provide **an installation kit** including a pocket guide, a data sheet of the main dimensions, commissioning recommendations and a poster with the core products and their associated references to facilitate on-site restocking.

Installation and Connection of the Technical Room

The connection of the elements in the technical room (compressors, filters, dryers, etc.) should be made of aluminium pipe from the same manufacturer and should be sized according to the overall flow rate.

It should be planned to install the necessary by-passes to keep the installation operational during equipment maintenance periods, including the supply and installation of network isolation valves.



Piping System Specifications
Transair® Stainless Steel Range

This document lists the essential requirements for ensuring safety, reliability, energy efficiency and durability on an industrial fluid network in accordance with the **Pressure Equipment Directive 2014/68/EU.**

Scope of Work: Stainless steel networks for compressed air, vacuum and inert gas (up to 99,995 % of purity nitrogen, argon, dry CO_2 and their mixtures), industrial water and oil.

Working Pressures and Temperatures: The network should withstand a 10-bar operating pressure up to 60°C and 7 bar at 90°C.

The network should withstand a negative temperature of -20°C.

The **vacuum** performance shall be **1 mbar** in absolute pressure.

Specification Summary

Pipework shall be installed with Transair® 304 or 316L calibrated stainless steel pipes and associated quick-connect fittings.

The markings on the pipe shall indicate the casting number, the date of manufacture and the diameter in accordance with **EN 10088-2 directive.**

For optimum safety coefficient, all assembly shall be realized by respecting the manufacturer's guidelines (cf. Connection Technologies section) and greasing of joints will not be permitted due to potential contamination of the fluid.

Connection Technologies

1. On Ø 22mm and 28mm (external dimensions):

The pipes shall be delivered deburred and chamfered.
They shall be assembled using quick-connect bronze couplings with a high-resistance polymer retaining cap.

The gripping ring material shall be stainless steel.

All these fittings shall have an FKM or EPDM type seal.

2. On Ø 42mm and 60mm (external dimensions):

The pipes shall be delivered with a shoulder at each end, deburred and chamfered.

They shall be assembled using high-resistance polymer quick-connect couplings.
For safety reason, the connection shall be reinforced by a double bracket making it impossible to disconnect the pipe, even in the event of excessive pressure connecting the nut and the pipe together.
All these fittings shall have an FKM or EPDM type seal.

3. On Ø76mm and 101mm (external dimensions):

The pipes shall be delivered with a shoulder at each end, deburred and chamfered.

They shall be assembled with steel treated fittings with a sealing cartridge.

For safety reason, the connections of the fittings shall be made by contacting the clamp on the pipe lug.

All these fittings shall have an FKM or EPDM type seal.

Network / General

The system shall comply with the **Pressure Equipment Directive 2014/68/EU** for Europe.

For safety reasons and to ensure a good connection with the fittings, the pipe shall be calibrated to precisely match the associated diameters.

The products shall be covered by a ten-year guarantee against any material defect from the date of installation.

Technical Assistance

The manufacturer shall be able to provide its expertise regarding the sizing of the networks to limit pressure drops as much as possible and thus reduce energy consumption as much as possible.

The manufacturer shall be able to provide a bill of material based on the drawings or network layout provided by the contracting company.

Training of the Staff

The manufacturer shall provide the contractor, as well as the End User's maintenance staff, **a trained technician** to give mounters the best practices for assembling new installations.

The manufacturer shall provide **all necessary technical instructions and documentations** for mounting and modifying the system to the contractor and to the End User's maintenance staff.

Harsh Environments and FDA Compatibility

In case of application in harsh environments or clean industry (food industry, pharmaceutical, or laboratories), the manufacturer should be able to offer modular drops with instant connection in 316L stainless steel.

These should be easy to clean, resistant to aggressive chemical agents and comply with the requirements of the **FDA - CFR21** regulations to be installed in "food" or "splash" areas.

Condition Monitoring

The manufacturer should be able to provide condition monitoring solutions with wireless sensors capable of measuring and alerting the end user, regardless of his location and at any time, according to the following data:

- Pressure at a given point of the network
- Temperature at a given point of the network
- Dewpoint at a given point of the network
- Flow at a given point of the network
- Power at the compressor outlet

Transair®
Advanced Pipe Systems for Industrial Fluids

Aluminium Range

- **Calibrated Aluminium Pipe**
  Qualicoat Painting
- **Diameters (in mm)**
  16.5 - 25 - 40 - 50 - 63 - 76 - 100 - 168
- **Colours**
  Available in blue - grey - green
  Other colours upon request
- **Maximum Working Pressure***
  - 16 bar (-20°C to 45°C) up to 100 mm
  - 13 bar (-20°C to 60°C) for all diameters
  - 7 bar (-20°C to 85°C) for all diameters
- **Vacuum Level:** 99.9% (1 mbar absolute pressure)
- **Working Temperature** -20°C to 85°C
- **NBR Seals**
- **Compatibility**
  Lubricated or oil-free compressed air, industrial vacuum, nitrogen (99.99% purity), inert gas.

*TÜV Certification

Stainless Steel Range

- **Stainless Steel Pipe**
  AISI 304 or 316L
- **Diameters (in mm)**
  22 - 28 - 42 - 60 - 76 - 100
- **Maximum Working Pressure***
  - 10 bar (-20°C to 60°C) for all diameters
  - 7 bar (-20°C to 90°C) for all diameters
- **Vacuum Level:** 99.9% (1 mbar absolute pressure)
- **Working Temperature**
  -20°C to 90°C
- **EPDM or FKM Seals**
- **Compatibility**
  Cooling water, industrial water with additives, lubricating oil, compressed air, vacuum, inert gas.

*TÜV Certification

Certification

afaq ISO 9001 Qualité AFNOR CERTIFICATION

TÜVRheinland®

10 YEARS GUARANTEE 10 YEARS

ISO8573

Transair®: Tools and Services

Transair® General Catalogue

Gathers all information, regarding Transair® aluminium and stainless steel product ranges.

Available for download on www.parkertransair.com

Transair® Available for BIM

BIM - Building Information Modeling - is a collaborative e-platform of a construction project, gathering all the actors of this project, according to a common language. All Transair® families are now available, in REVIT format, in **LOD (Level Of Detail) 200 and 400**.

Transair® Flow Calculator

Defines the recommended diameter for your project, estimates your pressure drops and gives the maximum flow rate by diameter.

Transair® Vacuum Calculator

Helps you to size and compare vacuum systems quickly and easily.

Transair® Energy Efficiency Calculator

Evaluates the energy cost of your system and return on investment of a Transair® solution.

Transair® CAD Drawings

View or download Transair® CAD drawings in real time in 2D or 3D.

Transair® Website: www.parkertransair.com

Gives you access to extensive information about the Transair® system, technical data, examples of existing networks and a download centre for catalogues, manuals, software and brochures.

Transair® Quotation Service: transair.quotation@parker.com

Gives you a budgeted or detailed quotation for your project and its implementation.

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