aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding

# Transair: Advanced Air Pipe Systems

Compressed Air, Vacuum, Inert Gas

1/2” - 6”

An Energy Efficient Solution

Parker

# Parker Hannifin – the global leader and your partner

With annual sales exceeding $12 billion, Parker Hannifin is the world's leading diversified manufacturer of motion and control technologies and systems, providing precision-engineered solutions for a wide variety of mobile, industrial and aerospace markets. Our products are vital to virtually everything that moves or requires control, including the manufacture and processing of raw materials, durable goods, infrastructure development and all forms of transport.

Within Parker's eight operating groups, the company's engineering expertise spans the core motion technologies – electromechanical, hydraulic and pneumatic – with a full complement of fluid handling, filtration, sealing and shielding, climate control, process control and aerospace technologies.

The leader in "dry technology" for the fluid power industry, Parker's Fluid Connectors Group is your single source for high-quality tube fittings, hose and hose fittings, thermoplastic tubing, brass fittings and valves, quick-disconnect couplings and assembly tools. The Fluid Connectors Group serves customers in a broad range of markets, including Aerial Lift, Agriculture, Bulk Chemical Handling, Construction Machinery, Food & Beverage, Fuel & Gas Delivery, Industrial Machinery, Medical, Mining, Mobile, Oil & Gas and Transportation. Products are available for shipment 24 hours a day, supported by 49 manufacturing facilities throughout the world, a global distribution network and 25 company-owned stocking service centers. Our commitment to you is impeccable customer service. To meet your specific requirements, we offer a broad range of programs designed to reduce your overall operating costs, streamline manufacturing, improve productivity, manage inventory, enhance delivery and address safety and environmental issues. For value-added services that generate value-added solutions, team up with Parker!

Aluminum pipes

Connectors

Hose reels and accessories

Quick assembly brackets

Wall brackets

Ball valves and butterfly valves

Couplers

Flexible hoses

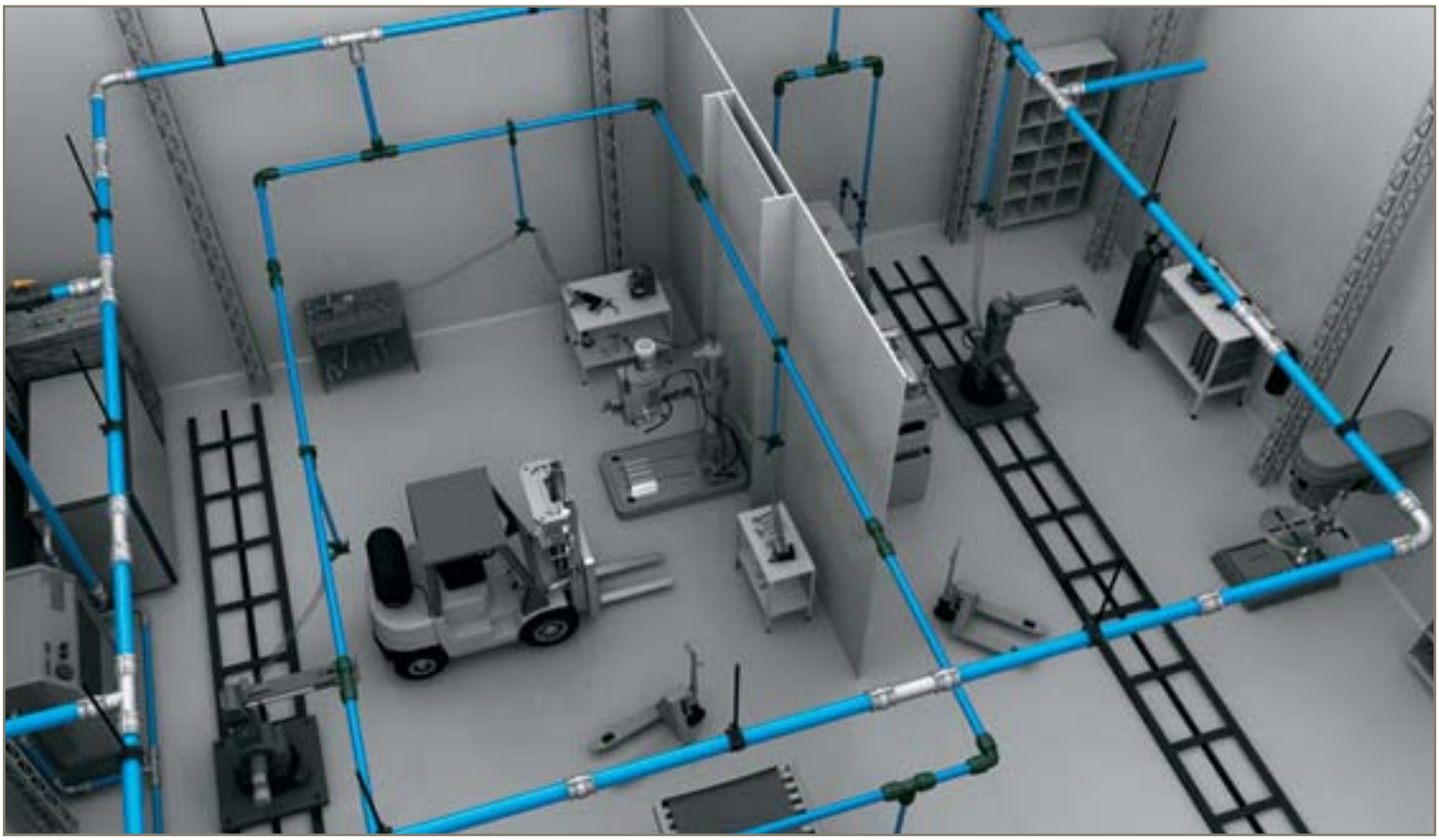
## Parker Hannifin manufactures a robust piping system with superior operational efficiency perfectly suited for all industrial applications.

Transair is a fast, flexible and easy to modify aluminum pipe system for compressed air, vacuum and inert gas applications. Transair components are reusable and interchangeable, which enables immediate and easy layout modifications. Unlike the performance of steel or copper, which degrades over time due to corrosion, Transair provides clean air quality with optimum flow rate performance.

Transair also offers significant savings on installation, maintenance and operating costs when compared to traditional pipe. The quick connections eliminate the need to thread, solder or glue pipe. With Transair, labor accounts for only 20 percent of installation costs, but with steel or copper, labor accounts for 50 - 80 percent of the installation cost. Transair's aluminum pipe system significantly reduces plant energy costs by increasing efficiency, reducing pressure drops, and eliminating leaks.

Available in 1/2" to 6" pipe sizes, Transair features quick connect technology that secures connections with a simple push and provides a leak-free guarantee. The aluminum pipe is corrosion resistant, ensuring the longevity of equipment and avoiding frequent changes of filtration elements. Transair can also be integrated into existing copper and steel piping systems without compromising performance, making it perfect for upgrades or expansion projects.

transair



### 2012 Transair Catalog

Extra care is taken in the preparation of this literature, but Parker is not responsible for any inadvertent typographical errors or omissions. Information in this catalog is only accurate as of the date of publication. For more current information, please visit:

**www.parkertransair.com**

### Questions about Transair

If you have questions about the products contained in this catalog, or their applications, please contact:

**Fluid System Connectors Division**
**Phone: 480-830-7764**
**Fax: 480-325-3571**
**www.parkertransair.com**

### Offer of Sale

The items described in this document and other documents and descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors are hereby offered for sale at prices to be established by the seller. This offer and its acceptance are governed by the provision in the "Offer of Sale" detailed on page 90 of this catalog.

## ⚠ WARNING

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors. To the extent that Parker or its subsidiaries or

# > Contents

# >Competitive advantage

## A proven technology with impeccable benefits

Transair offers the advantages of being lightweight, strong and resistant to corrosion. And, Transair is an environmentally sustainable and responsible product that reduces the carbon footprint by 80 percent over steel piping installations. The materials used to produce Transair pipe and fittings are 100 percent recyclable and guaranteed silicone free.

Transair‘s quick connection technology also reduce s energy consumption, improves operational efficiencies and minimizes installation and maintenance costs.

## Clean air with optimal flow rate

The clean air quality and “full bore” design of Transair provides optimal machine and tool efficiency. Transair’s aluminum pipe ensures a total absence of corrosion. The inner pipe surface consistently delivers clean compressed air. Transair prevents problems caused by rust, which affects steel systems.

Transair aluminum pipe ensures higher longevity of equipment and avoids frequent changes of filtration elements due to its consistent clean quality air from compressor outlets to machines.

The “full bore” design of Transair’s components, the low friction coefficient of aluminum pipe, and the sealing characteristics of the system ensure optimal and constant flow throughout. Its innovative technology provides better performance in terms of improved flow and reduced pressure drop.

## Significant energy savings

Compressed air represents one of the largest opportunities for immediate energy savings. Plant management is often surprised to hear that compressed air can represent 20 - 50 percent of a plant’s electric bill. Using a specifically designed and efficient compressed air piping system can reduce your plant’s energy bill by 30 - 60 percent within 24 months.

For instance, a large industrial plant recently redesigned its compressed air system with Transair, accounting for 35 percent savings in the plant’s monthly energy bill, which paid for the system in 15 months. The plant continues to save by:

- Increased air system reliability
- Reduced maintenance cost and extended equipment life
- Reduced system downtime and increased production rates

## Quick connect technology

Easy to install and modify, Transair is the most versatile compressed air piping system available. With Transair, labor accounts for only 20 percent of installation costs, but with steel or copper, labor accounts for 50 - 80 percent of the installation cost.

Transair’s components are also reusable and interchangeable and enable manufacturing plant personnel to implement many layout changes within minutes, instead of hours. This ease of use minimizes downtime and increases plant productivity and efficiency.

The connection is simply pushed or bolted together, which enables disassembly when required unlike other connection technologies that are permanently crimped or welded.

| Suitable fluids | Max. working pressure | Temperature range |
|---|---|---|
| • compressed air (dry, wet, lubricated)<br>• vacuum<br>• inert gases<br>(Please consult us for other fluids) | 188 psi from -4°F to +140°F<br>232 psi from -4°F to +115°F<br>(*Max. working pressure for 6" is 188 psi) | Working: -4°F to +140°F<br>Storage: -40°F to +176°F |

| Resistance to | | Vacuum level |
|---|---|---|
| • corrosion<br>• aggressive environments<br>• mechanical shocks<br>• thermal variations | • mineral compressor oils<br>• synthetic compressor oils<br>• compressor oil carry over<br>• ultraviolet (UV) | 98.7 % (29.6" Hg) |

## Eco-friendly product design

Recent trends reveal that the interest in and demand for green building designs, materials, and products has greatly increased - and will only continue to do so in the coming years. Parker understands this growing focus on sustainable buildings, and as a result the material used to manufacture Transair pipe and fittings are 100 percent recyclable and meet the requirements set by the U.S. Green Building Council for Leadership in Energy and Environmental Design (LEED) certification credits.

Transair piping systems have been specifically designed to ensure a lower impact on the environment with a low carbon footprint when compared to traditional piping systems. In a life cycle analysis, from production of raw materials to end of product life, the use of a six inch Transair pipe system is five times less harmful to the environment than a traditional steel pipe system.

**Transair's benefits include:**

- Quick connection technology
- Modular and reusable
- No corrosion
- Full-bore design
- Lower installation costs
- Optimum flow rate
- Leak-free guarantee
- Immediate pressurization
- Lightweight

## Ideal for aggressive environments

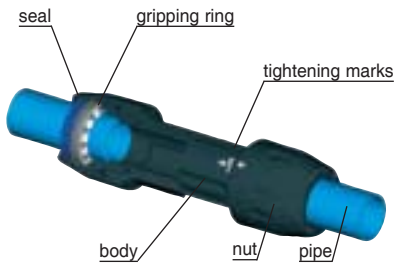
Dust and outdoor installations widely accelerate the deterioration of compressed air systems. To combat these elements, Transair has specifically powder coated the outside of the pipe to enhance mechanical, physical and chemical properties. Furthermore, aluminum is naturally resistant to corrosion, which ensures extended longevity of equipment and can help to avoid frequent changes of filter elements.

# >Materials

| | Ø 16.5 (1/2") - Ø 25 (7/8") - Ø 40 (1 1/2") | Ø 63 (2 1/2") | | Ø 76 (3") - Ø 100 (4") - Ø 168 (6") |
|---|---|---|---|---|
| 1013A | powder coated alumium | powder coated alumium | TA16 | powder coated alumium |
| 1016A | powder coated alumium | powder coated alumium | ER01 | zinc steel & rubber |
| 1001E Air | hose & coating: black SBR<br>reinforcement: synthetic braiding | hose & coating: black SBR<br>reinforcement: synthetic braiding | EX01 | stainless steel |
| 1001E vacuum | hose & coating: black SBR/NBR reinforcement:<br>spiral steel wire | hose & coating: black SBR/NBR<br>reinforcement: spiral steel wire | EW05 | seal: EPDM |
| 4002 - 4012 | polyamide with fiberglass | body: polyamide with fiberglass<br>nut: treated aluminum | FP01 | hose & connector: black SBR/NBR<br>reinforcement: spiral steel wire |
| 4088 - 4099 | body: treated brass<br>nut: engineering grade plastic | - | RA02 - RA04 - RA12 | treated aluminum |
| Anti whip-lash strap | steel | | | |
| 6602 - 6604 | polyamide with fiberglass | treated aluminum | RA25 - RA31 - RA66 | treated aluminum |
| 6605 | body: treated brass<br>nut: polymer HR / NBR | body: treated brass<br>nut: polymer HR / NBR | RP01 | body & pushing ring: polyamide with<br>fiberglass - seal: NBR |
| 6606 | polyamide with fiberglass | treated aluminum | RR01 | clamp: treated steel (6" treated aluminum)<br>cartridge: polyamide with fiberglass<br>seal: NBR |
| 6609 | body: treated brass<br>nut: polymer HR / NBR | body: treated brass<br>nut: treated aluminum / NBR | RR21 | treated brass |
| 6611 | treated brass | - | RR63 | body: treated iron - seal: NBR |
| 6612 | polyamide with fiberglass | treated aluminum | RX02 | stainless steel 304 |
| 6621 | treated aluminum | - | RX04 | stainless steel 304 |
| 6625 | polyamide with fiberglass | treated aluminum | RX12 | stainless steel 304 |
| 6636 - 6638 - 6640 | body: treated brass<br>nut: polymer HR / NBR | - | RX20 | stainless steel 304 |
| 6642 | treated brass | - | RX24 | stainless steel 304 |
| 6651 | body: treated brass<br>nut: polyamide with fiberglass | - | RX25 | stainless steel 304 |
| 6653 | body: treated brass<br>nut: polymer HR | - | RX30 | stainless steel 304 |
| 6663 | body: polyamide with fiberglass insert: brass | body: polyamide with fiberglass<br>insert: brass | RX63 | stainless steel 304 |
| 6662 | polyamide with fiberglass | polymere HR | RX64 | stainless steel 304 |
| 6666 | body: treated brass<br>nut: polyamide with fiberglass | treated aluminum | RX66 | stainless steel 304 |
| 6675 - 6679 - 6689 | body: treated brass<br>nut: polymer HR / NBR | - | VR02 | body: iron<br>disc & shaft: stainless steel |
| 6676 | polyamide with fiberglass | body: treated aluminum<br>nut: polymer HR | Bracket | zinc steel - rubber EPDM |
| 6684 | body: treated brass - nut: polyamide with fiberglass | | | |
| 6688 - 6691 | treated brass | | | |
| 6694 - 6696 | body: treated brass - nut: polymer HR - seal: NBR | | | |
| EA98 | body: treated iron - ball valve: plated brass | | | |
| RA68 - RA69 | polyamide with fiberglass | | | |
| Clip - Spacer | polyamide with fiberglass | | | |
| 0169 Adaptor | brass | | | |
| Composite coupler | body: polymer HR / Zamac - sleeve: polymer HR - spring and ball bearings: stainless steel - seal: nitrile - probe: treated steel | | | |

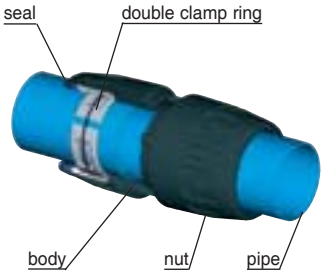
# >Connection technology

Transair's innovative technology enables rapid and easy assembly with quick connection of components to the aluminum pipe. This technology takes into account the specific requirements of each diameter and provides the user with an optimum safety coefficient and easy connection.



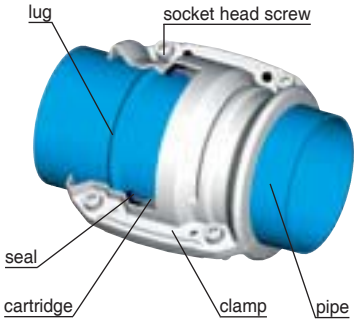

### Ø 16.5 (1/2") - Ø 25 (7/8") - Ø 40 (1 1/2")

Pipe-to-pipe and male connectors in Ø 16.5, Ø 25 and Ø 40 can be immediately connected to Transair pipe - simply push the pipe into the connector up to the connection mark. The gripping ring of each fitting is then automatically secured and the connection is safe.




### Ø 63 (2 1/2")

Pipe-to-pipe and male connectors in Ø 63 can be quickly connected to Transair aluminum pipe by means of a double clamp ring. This secures the connection between the nut and the pipe - tightening of the nuts secures the final assembly.




### Ø 76 (3") - Ø 100 (4") - Ø 168 (6")

Pipe-to-pipe and male connectors in Ø 76, Ø 100 and Ø 168 can be quickly connected to Transair aluminum pipe. Position the pipes to be connected within a Transair cartridge and close/tighten a Transair clamp.

# >Certifications and guarantees

## ISO 9001 version 2000

Parker Hannifin is certified ISO 9001 version 2000 and operates a Quality Management System in order to ensure the level of quality and service that is expected by its customers.

## TÜV certification

A product certified TÜV is a pledge of safety and quality. The Group TÜV thus certifies independent test results – in particular, the properties of the products and the standards whereby they were examined.

## ASME B31.1/B31.3 certification

Transair meets the requirement of ASME B31.1 and B31.3 - which stipulates "the minimum requirements for the design, materials, fabrication, erection, test and inspection of power and auxiliary piping systems for industrial institutional plants" as "non boiler external piping".

## Qualicoat certification

Qualicoat certification is a guarantee of the quality of the lacquer finish applied to Transair aluminum pipe.

## ISO 8573 certification

ISO 8573 is the international standard related to the quality of compressed air. Conformance to the ISO 8573 standard illustrates our commitment to providing clean dry air and the highest quality engineered piping systems.

## 10 Year guarantee

Parker Hannifin Corporation warrants its Transair products to be free of defects in material and workmanship for a period of ten (10) years from the date of purchase of the products.

## Safety certifications

All Transair components are non-flammable with no propagation of flame. Connectors and valves conform to UL94HB standard. Fixing clips conform to UL94V-2 standard. Flexible hoses conform to ISO 8030 / EN 12115 norm. The pipe powder coat finish is classified MO.

## CE conformity

Transair connectors manufactured by Parker Hannifin should be considered as piping components, which are designed according to sound working practice and therefore conforms to European standard 97/23 CEE - §3.3 (equipment under pressure).

Electrical conductivity: In areas of potential risk, grounding of metallic components are obligatory. A Transair system can be used in such

# >Services and tools

## Services

Transair's technical team is at your disposal to study and help design your air system. In particular, we can assist you with:

- Information on Transair products and services
- Quotation and drawing services
- Guidance and training on how to assemble the system
- Advice on "best practices" in order to reduce your consumption of energy
- Ongoing assistance and follow-up
- On-site advisory presence at construction and installation locations

Our customer service representatives will coordinate a quick response for the following:

- Product availability
- Order processing and follow-up
- Delivery time-phasing and modification
- Technical information / specification sheets


## Online tools

### Transair Flow Calculator

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

### Transair Energy Savings Calculator

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

### Transair Value Calculator

Illustrates the typical savings achieved by installing Transair in place of traditional steel or copper pipe systems

### CAD Drawings

View or download Transair CAD drawings in 2D or 3D online

# >Technical

Sizing: Select the Transair diameter for your application based on required flow against pressure drop. Estimated values for: a closed loop system, a pressure of 115 psi with 5% pressure drop.

| Flow Rate | | | Length (ft) | | | | | | | | | | Compressor (hp) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Nm3/h | Nl/min | cfm | 165 | 330 | 430 | 990 | 1700 | 2500 | 3300 | 4300 | 4300 | 6600 | |
| 10 | 167 | 6 | 16.5 | 16.5 | 16.5 | 16.5 | 25 | 25 | 25 | 25 | 25 | 25 | 1 |
| 30 | 500 | 18 | 16.5 | 25 | 25 | 25 | 25 | 40 | 40 | 40 | 40 | 40 | |
| 50 | 833 | 29 | 25 | 25 | 25 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 10 - 40 |
| 70 | 1167 | 41 | 25 | 25 | 25 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | |
| 100 | 1667 | 59 | 25 | 40 | 40 | 40 | 40 | 40 | 40 | 63 | 63 | 63 | |
| 150 | 2500 | 88 | 40 | 40 | 40 | 40 | 40 | 63 | 63 | 63 | 63 | 63 | |
| 250 | 4167 | 147 | 40 | 40 | 40 | 63 | 63 | 63 | 63 | 63 | 63 | 76 | |
| 350 | 5833 | 206 | 40 | 40 | 63 | 63 | 63 | 63 | 63 | 76 | 76 | 76 | |
| 500 | 8300 | 294 | 40 | 63 | 63 | 63 | 63 | 76 | 76 | 76 | 100 | 100 | 40 - 100 |
| 750 | 12500 | 441 | 63 | 63 | 63 | 76 | 76 | 100 | 100 | 100 | 100 | 100 | |
| 1000 | 16667 | 589 | 63 | 63 | 76 | 76 | 100 | 100 | 100 | 100 | 100 | 168 | |
| 1250 | 20833 | 736 | 63 | 76 | 76 | 100 | 100 | 100 | 100 | 168 | 168 | 168 | 100 - 425 |
| 1500 | 25000 | 883 | 63 | 76 | 76 | 100 | 100 | 100 | 168 | 168 | 168 | 168 | |
| 1750 | 29167 | 1030 | 76 | 76 | 100 | 100 | 100 | 168 | 168 | 168 | 168 | 168 | |
| 2000 | 33333 | 1177 | 76 | 76 | 100 | 100 | 168 | 168 | 168 | 168 | 168 | 168 | |
| 2500 | 41667 | 1471 | 76 | 100 | 100 | 100 | 168 | 168 | 168 | 168 | 168 | 168 | |
| 3000 | 50000 | 1766 | 100 | 100 | 100 | 168 | 168 | 168 | 168 | 168 | 168 | 168 | |
| 3500 | 58333 | 2060 | 100 | 100 | 100 | 168 | 168 | 168 | 168 | 168 | 168 | 168 | |
| 4000 | 66667 | 2354 | 100 | 100 | 168 | 168 | 168 | 168 | 168 | 168 | 168* | 168* | |
| 4500 | 75000 | 2649 | 100 | 100 | 168 | 168 | 168 | 168 | 168 | 168* | 168* | 168* | >425 |
| 5000 | 83333 | 2943 | 100 | 168 | 168 | 168 | 168 | 168 | 168 | 168* | 168* | 168* | |
| 5500 | 91667 | 3237 | 100 | 168 | 168 | 168 | 168 | 168 | 168* | 168* | 168* | 168* | |
| 6000 | 100000 | 3531 | 100 | 168 | 168 | 168 | 168 | 168* | 168* | 168* | 168* | 168* | |
| 6500 | 108333 | 3826 | 168 | 168 | 168 | 168 | 168 | 168* | 168* | 168* | 168* | 168* | |
| 7000 | 116667 | 4120 | 168 | 168 | 168 | 168 | 168 | 168* | 168* | 168* | 168* | 168* | |

*Pressure drop >5%

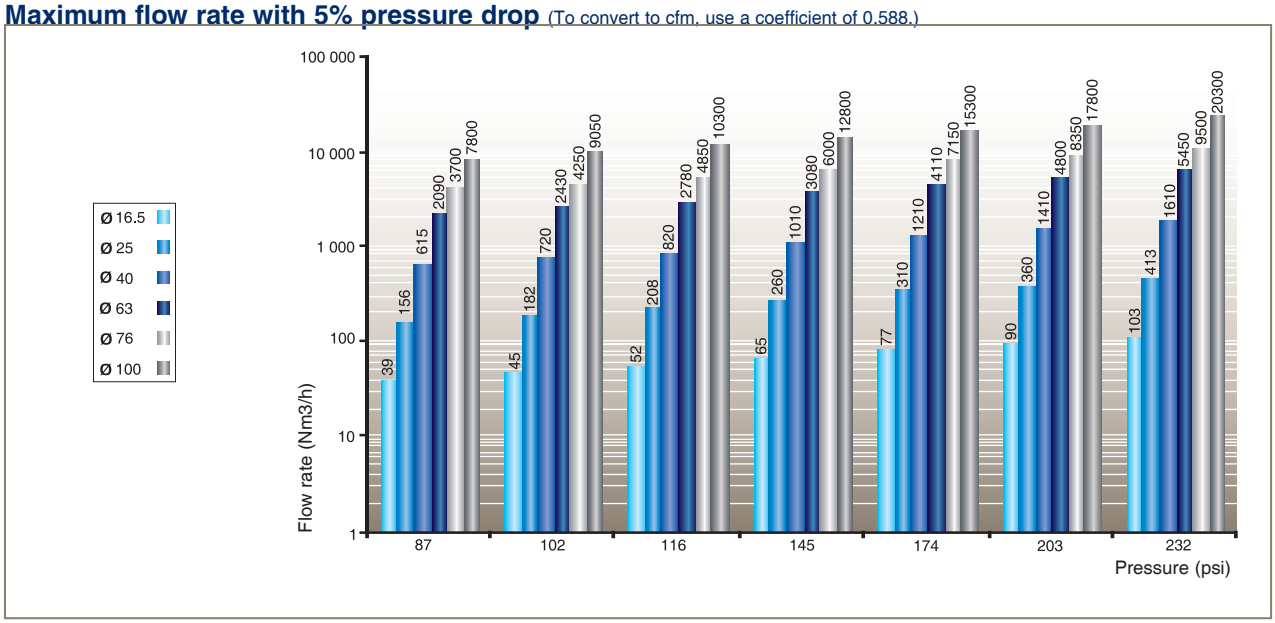
## Example

- Main system length (ring main): 990 ft
- Compressor power: 40 hp
- Required flow rate: 147 cfm
- Working pressure: 115 psi

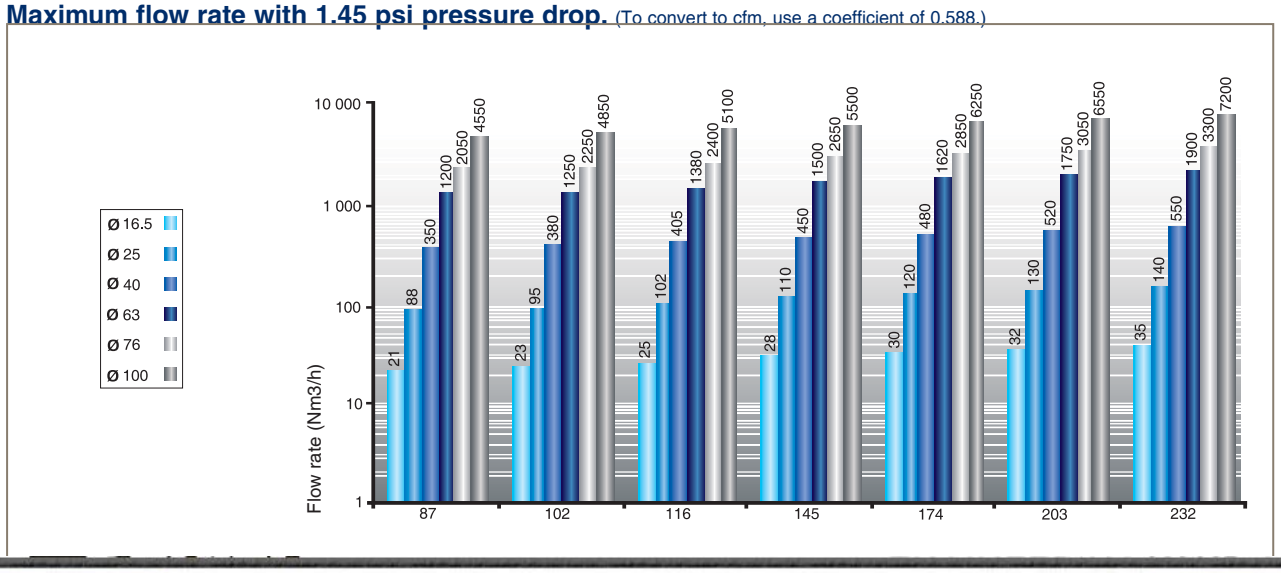
Result: The most suitable Transair diameter is: Ø 63

Flow rates and pressure drop: Measurements provided by the official French testing body CETIM - Centre Technique des Industries Mecaniques. Charts are based on a 100' straight Transair line.

**Maximum flow rate with 5% pressure drop** (To convert to cfm, use a coefficient of 0.588.)




**Maximum flow rate with 1.45 psi pressure drop.** (To convert to cfm, use a coefficient of 0.588.)



# > Notes

# > Products catalog

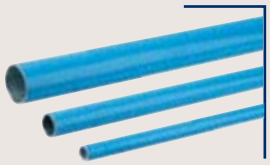
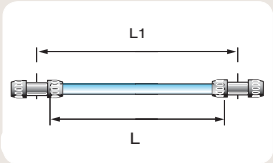
# > Rigid aluminum pipe

> Clean air
> Optimum flow rate performance
> Lightweight
> QUALICOAT certified surface finish
> Three colors: blue (RAL 5012/BS1710), grey (RAL 7001), and green (RAL 6029) (other colors: please consult us)
> Suitable fluids: compressed air, vacuum, nitrogen, argon (other fluids: please consult us)

> Max. working pressure:
- 188 psi from -4°F to +140°F
- 232 psi from -4°F to +115°F

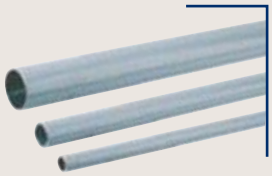
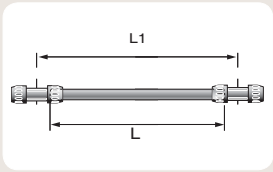
(please consult us for higher temperature requirements)
> Vacuum: 98.7% (29.6" Hg)
> Working temperature: -4°F to +140°F
> Extruded pipe (conforms to EN 755.2, EN 755.8 and EN 573.3 standards)

**Ø 16.5 25 40**

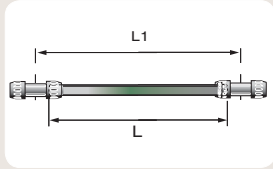

### Blue pipe

| Transair | ØOD (mm) | ØOD (in) | L1 (ft) | L (ft) |
|---|---|---|---|---|
| 1013A17 04 00 | 16.5 | 1/2 | 10 | 9' 9 1/4" |
| 1004A17 04 | 16.5 | 1/2 | 15 | 14' 9 1/2" |
| 1013A25 04 00 | 25 | 7/8 | 10 | 9' 9 1/4" |
| 1016A25 04 00 | 25 | 7/8 | 20 | 19' 9 3/4" |
| 1013A40 04 00 | 40 | 1 1/2 | 10 | 9' 7 1/2" |
| 1016A40 04 00 | 40 | 1 1/2 | 20 | 19' 7 1/2" |


### Grey pipe

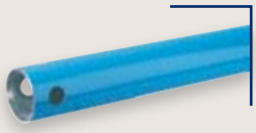
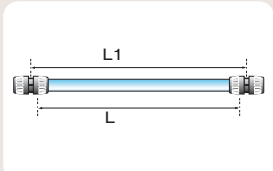
| Transair | ØOD (mm) | ØOD (in) | L1 (ft) | L (ft) |
|---|---|---|---|---|
| 1013A17 06 00 | 16.5 | 1/2 | 10 | 9' 9 1/4" |
| 1016A25 06 00 | 25 | 7/8 | 20 | 19' 9 3/4" |
| 1016A40 06 00 | 40 | 1 1/2 | 20 | 19' 7 1/2" |


### Green pipe

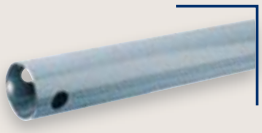
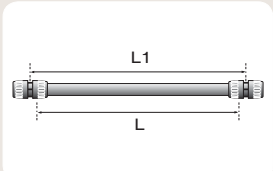
| Transair | ØOD (mm) | ØOD (in) | L1 (ft) | L (ft) |
|---|---|---|---|---|
| 1004A17 02 | 16.5 | 1/2 | 15 | 14' 9 1/2" |
| 1016A25 02 00 | 25 | 7/8 | 20 | 19' 9 3/4" |
| 1016A40 02 00 | 40 | 1 1/2 | 20 | 19' 7 1/2" |

**Ø 63**

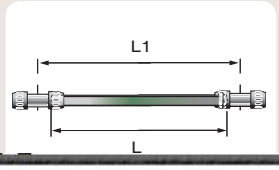

### Blue pipe

| Transair | ØOD (mm) | ØOD (in) | L1 (ft) | L (ft) |
|---|---|---|---|---|
| 1013A63 04 | 63 | 2 1/2 | 10 | 9' 7 1/2" |
| 1016A63 04 | 63 | 2 1/2 | 20 | 19' 7 1/8" |


### Grey pipe

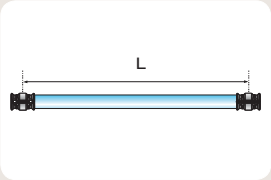
| Transair | ØOD (mm) | ØOD (in) | L1 (ft) | L (ft) |
|---|---|---|---|---|
| 1016A63 06 | 63 | 2 1/2 | 20 | 19' 7 1/8" |


### Green pipe

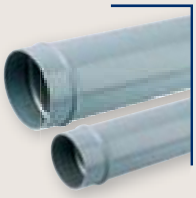
| Transair | ØOD (mm) | ØOD (in) | L1 (ft) | L (ft) |
|---|---|---|---|---|
| 1016A63 02 | 63 | 2 1/2 | 20 | 19' 7 1/8" |

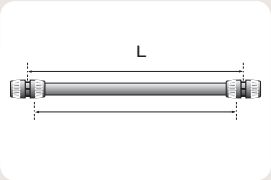
Ø 76 100




### Blue pipe

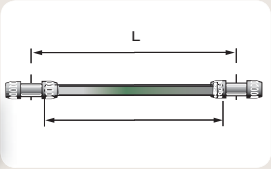
| Transair | ØOD (mm) | ØOD (in) | L (ft) |
|---|---|---|---|
| TA16 L1 04 | 76.3 | 3 | 20 |
| TA16 L3 04 | 101.8 | 4 | 20 |






### Grey pipe

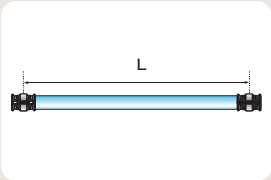
| Transair | ØOD (mm) | ØOD (in) | L (ft) |
|---|---|---|---|
| TA16 L1 06 | 76.3 | 3 | 20 |
| TA16 L3 06 | 101.8 | 4 | 20 |




### Green pipe

| Transair | ØOD (mm) | ØOD (in) | L (ft) |
|---|---|---|---|
| TA16 L1 02 | 76.3 | 3 | 20 |
| TA16 L3 02 | 101.8 | 4 | 20 |

Ø 168




### Blue pipe

| Transair | ØOD (mm) | ØOD (in) | L (ft) |
|---|---|---|---|
| TA16 L8 04 | 168.3 | 6 | 20 |

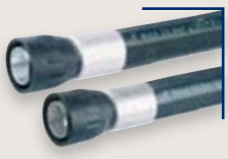
Pipe sizes:
16.5 mm (1/2”)
25 mm (7/8”)
40 mm (1 1/2”)
63 mm (2 1/2”)
76.3 mm (3”)
101.8 mm (4”)
168.3 mm (6”)

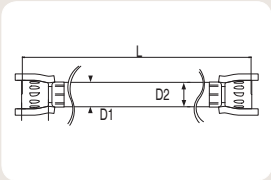
# > Flexible hose

> Compressor outlets (absorption of vibration)
> To bypass obstacles and join different levels
> Expansion loops
> Max. working pressure for flexible hose used for compressed air:
- 188 psi from -4°F to +140°F
- 232 psi from -4°F to +115°F (please consult us for higher temperature requirements)

> Max. working pressure for flexible hose used for vacuum: 145 psi
> Vacuum: 98.7% (29.6'' Hg)
> Working temperature: -4°F to +140°F
> Resistant to mineral and synthetic compressor oils
> Fire resistant (conforms to ISO 8030 standard for compressed air flexible hose and to EN 12.115 standard for vacuum flexible hose)

**Ø 25 40**





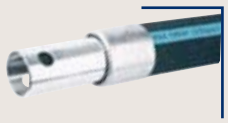

### Flexible hose for compressed air systems

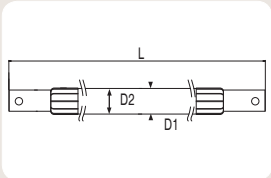
| Transair | OD (mm) | OD (in) | L (ft) | Min. bend radius (in) | For use with Transair pipe diameter |
|---|---|---|---|---|---|
| 1001E25 00 01 | 38 | 7/8 | 1' 4'' | 4 | 25 |
| 1001E25 00 03 | 38 | 7/8 | 5' | 4 | 25 |
| 1001E25 00 04 | 38 | 7/8 | 6' 7'' | 4 | 25 |
| 1001E40 00 02 | 54 | 1 1/2 | 3' 3'' | 16 | 40 |
| 1001E40 00 04 | 54 | 1 1/2 | 6' 7'' | 16 | 40 |
| 1001E40 00 05 | 54 | 1 1/2 | 9' 10'' | 16 | 40 |

### Flexible hose for vacuum systems

| Transair | OD (mm) | OD (in) | L (ft) | Min. bend radius (in) | For use with Transair pipe diameter |
|---|---|---|---|---|---|
| 1001E25V00 01 | 36 | 7/8 | 1'4'' | 3 | 25 |
| 1001E25V00 03 | 36 | 7/8 | 5' | 3 | 25 |
| 1001E25V00 04 | 36 | 7/8 | 6'7'' | 3 | 25 |
| 1001E40V00 07 | 52 | 1 1/2 | 3'3'' | 6 1/2 | 40 |
| 1001E40V00 04 | 52 | 1 1/2 | 6'7'' | 6 1/2 | 40 |
| 1001E40V00 05 | 52 | 1 1/2 | 9'10'' | 6 1/2 | 40 |

**Ø 63**





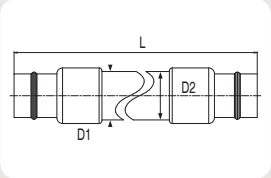

### Flexible hose for compressed air systems

| Transair | OD (mm) | OD (in) | L (ft) | Min. bend radius (in) | For use with Transair pipe diameter |
|---|---|---|---|---|---|
| 1001E63 00 08 | 79 | 2 1/2 | 4'7'' | 12 | 63 |
| 1001E63 00 05 | 79 | 2 1/2 | 9'10'' | 25 | 63 |
| 1001E63 00 06 | 79 | 2 1/2 | 13'1'' | 25 | 63 |

### Flexible hose for vacuum systems

| Transair | OD (mm) | OD (in) | L (ft) | Min. bend radius (in) | For use with Transair pipe diameter |
|---|---|---|---|---|---|
| 1001E63V00 05 | 76 | 2 1/2 | 9'10'' | 10 | 63 |
| 1001E63V00 06 | 76 | 2 1/2 | 13'1'' | 10 | 63 |

**Ø 76 100**




### Flexible hose for compressed air and vacuum systems

| Transair | OD (mm) | OD (in) | L (ft) | Min. bend radius (in) | For use with Transair pipe diameter |
|---|---|---|---|---|---|
| FP01 L1 01 | 91 | 3 | 4'11'' | 14 | 76 |
| FP01 L1 02 | 91 | 3 | 6'6'' | 14 | 76 |
| FP01 L3 02 | 116 | 4 | 6'6'' | 20 | 101 |
| FP01 L3 03 | 116 | 4 | 9'10'' | 20 | 101 |

Use two connectors RR01 to connect flexible hoses FP01 to Transair pipe.

Anti whip-lash strap

Prevents whip-lash should Transair flexible hose be disconnected while under pressure. Conforms to ISO 4414 safety standard.

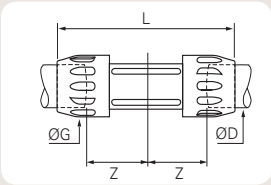
# > Pipe-to-pipe and threaded connectors

The range of Transair pipe-to-pipe and stud connectors provides versatility of design and helps to overcome constraints often encountered with the structure of industrial buildings.

> Quick connection
> Full bore design*
> Interchangeable and reusable
> Non-flammable materials (UL94-HB standard)

*Consistent inner diameter for both pipe and connectors.

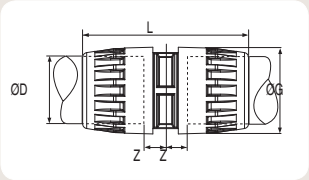
Ø 16.5 25 40




## Pipe-to-pipe connector

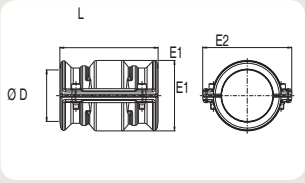
| Transair | ØD | ØG | L | Z |
|---|---|---|---|---|
| 6606 17 00 | 16.5 | 34.0 | 120.5 | 33.0 |
| 6606 25 00 | 25 | 44.5 | 151.5 | 48.0 |
| 6606 40 00 | 40 | 67.0 | 205.0 | 57.0 |

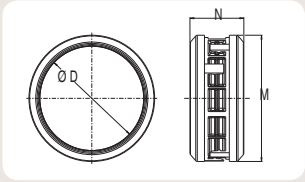
Ø 63




| Transair | ØD | ØG | L | Z |
|---|---|---|---|---|
| 6606 63 00 | 63 | 91.0 | 171.5 | 25.0 |

Ø 76 100 168



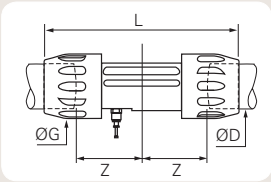

## Pipe-to-pipe connector (clamp and cartridge)

| Transair | ØD | L | E1 | E2 |
|---|---|---|---|---|
| RR01 L1 00 | 76 | 146 | 104 | 132 |
| RR01 L3 00 | 100 | 146 | 128 | 157 |
| RR01 L8 00 | 168 | 139 | 212 | 230 |

## Cartridge (spare part)

| Transair | ØD | M | N |
|---|---|---|---|
| RP00 L1 00 | 76 | 88.7 | 51.4 |
| RP00 L3 00 | 100 | 123 | 52.7 |

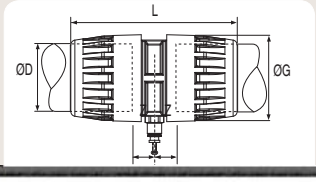
Ø 25 40




## Pipe-to-pipe connector with vent

| Transair | ØD | ØG | L | Z |
|---|---|---|---|---|
| 6676 25 00 | 25 | 44.5 | 151.5 | 48.0 |
| 6676 40 00 | 40 | 67.0 | 205.0 | 57.0 |

Ø 63

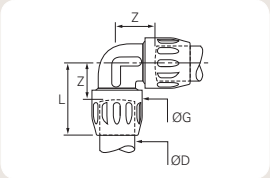



| Transair | ØD | ØG | L | Z |
|---|---|---|---|---|
| 6676 63 00 | 63 | 91.0 | 171.5 | 25.0 |

Model supplied with 1/4” threaded fitting and Ø 8 mm push-in connection, complete with blanking plug.

# > Pipe-to-pipe and threaded connectors

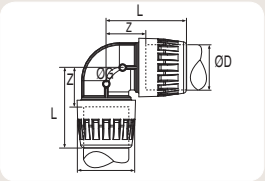
Ø 16.5 25 40




## 90° elbow

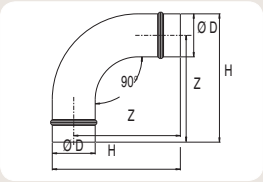
| Transair | ØD | ØG | L | Z |
|---|---|---|---|---|
| 6602 17 00 | 16.5 | 34.0 | 58.0 | 31.0 |
| 6602 25 00 | 25 | 44.5 | 68.0 | 40.0 |
| 6602 40 00 | 40 | 67.0 | 107.0 | 62.0 |

Ø 63




| Transair | ØD | ØG | L | Z |
|---|---|---|---|---|
| 6602 63 00 | 63 | 91.0 | 122.0 | 61.0 |

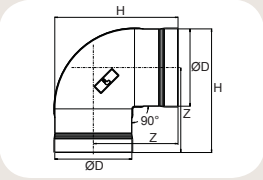
Ø 76 100




| Transair | ØD | H | Z |
|---|---|---|---|
| RX02 L1 00 | 76 | 227 | 189 |
| RX02 L3 00 | 100 | 278 | 221 |

Use two connectors (RR01) to connect 90° elbow (RX02) to Transair pipe.

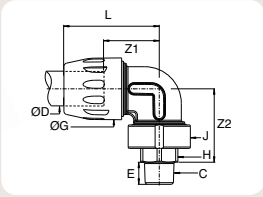
Ø 168




| Transair | ØD | H | Z |
|---|---|---|---|
| RA02 L8 00 | 168 | 269.2 | 185 |

Use two connectors (RR01) to connect 90° elbow (RA02) to Transair pipe.

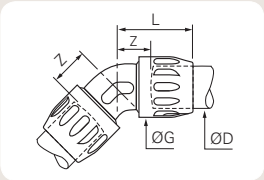
Ø 16.5 to 63




## Male threaded 90° elbow, NPT

| Transair | ØOD (mm) | C | E | H | ØG | ØJ | L | Z1 | Z2 |
|---|---|---|---|---|---|---|---|---|---|
| 6609 17 14 | 16.5 | 1/4" | 9.5 | 17 | 34 | 34 | 58 | 31 | 41.2 |
| 6609 17 22 | 16.5 | 1/2" | 15 | 23 | 34 | 34 | 58 | 31 | 46.5 |
| 6609 25 22 | 25 | 1/2" | 15 | 27 | 44.5 | 45.5 | 69.5 | 40.5 | 53 |
| 6609 25 28 | 25 | 3/4" | 15 | 27 | 44.5 | 45.5 | 69.5 | 40.5 | 53 |
| 6609 25 35 | 25 | 1" | 16 | 36 | 44.5 | 45.5 | 69.5 | 40.5 | 55 |
| 6609 40 35 | 40 | 1" | 16 | 41 | 67 | 68.5 | 107 | 62 | 75 |
| 6609 40 43 | 40 | 1 1/4" | 21.5 | 50 | 67 | 68.5 | 107 | 62 | 81 |
| 6609 40 50 | 40 | 1 1/2" | 24.5 | 50 | 67 | 68.5 | 107 | 62 | 81 |
| 6609 40 44 | 40 | 2" | 23 | 60 | 67 | 68.5 | 107 | 62 | 81 |
| 6609 63 41 | 63 | 2 1/2" | 27 | 80 | 91 | 91 | 124 | 61 | 106 |
| 6609 63 46 | 63 | 3" | 30 | 95 | 91 | 91 | 124 | 61 | 83 |

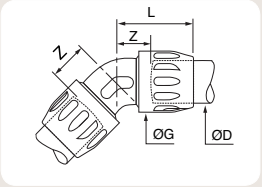
Ø 25 40




## 45° elbow

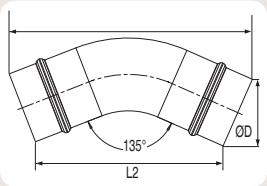
| Transair | ØD | ØG | L | Z |
|---|---|---|---|---|
| 6612 25 00 | 25 | 44.5 | 57.0 | 29.0 |
| 6612 40 00 | 40 | 67.0 | 90.0 | 45.0 |

Ø 63




| Transair | ØD | ØG | L | Z |
|---|---|---|---|---|
| 6612 63 00 | 63 | 91.0 | 100.0 | 61.0 |

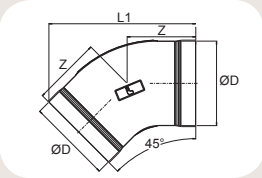
Ø 76 100




| Transair | ØD | L1 | L2 |
|---|---|---|---|
| RX12 L1 00 | 76 | 235.5 | 151.4 |
| RX12 L3 00 | 100 | 271.4 | 184.3 |

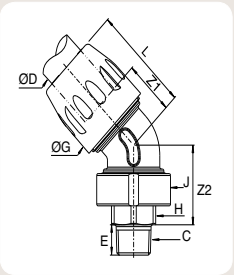
Use two connectors (RR01) to connect 45° elbow (RX12) to Transair pipe.

Ø 168




| Transair | ØD | L1 | Z |
|---|---|---|---|
| RA12 L8 00 | 168 | 310.5 | 1 |

Ø 25 40 63

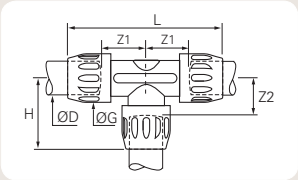



## Male threaded 45° elbow, NPT

| Transair | ØOD (mm) | C | E | H | ØG | ØJ | L | Z1 | Z2 |
|---|---|---|---|---|---|---|---|---|---|
| 6619 25 22 | 25 | 1/2” | 15 | 27 | 44.5 | 45.5 | 61.5 | 32.5 | 42 |
| 6619 25 28 | 25 | 3/4” | 15 | 27 | 44.5 | 45.5 | 61.5 | 32.5 | 42 |
| 6619 25 35 | 25 | 1” | 16 | 36 | 44.5 | 45.5 | 61.5 | 32.5 | 44 |
| 6619 40 35 | 40 | 1” | 16 | 41 | 67 | 68.5 | 94 | 45 | 58.5 |
| 6619 40 43 | 40 | 1 1/4” | 21.5 | 50 | 67 | 68.5 | 94 | 45 | 64 |
| 6619 40 50 | 40 | 1 1/2” | 24.5 | 50 | 67 | 68.5 | 94 | 45 | 64 |
| 6619 40 44 | 40 | 2” | 23 | 60 | 67 | 68.5 | 94 | 45 | 61 |
| 6619 63 40 | 63 | 2” | 20 | 70 | 91 | 91.0 | 107 | 51 | 78 |

# > Pipe-to-pipe and threaded connectors

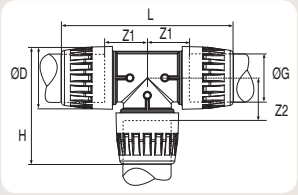
Ø 16.5 25 40




## Equal tee

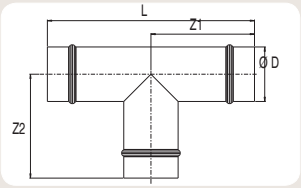
| Transair | ØD | G | H | L | Z1 | Z2 |
|---|---|---|---|---|---|---|
| 6604 17 00 | 16.5 | 34.0 | 58.0 | 120.5 | 34.0 | 31.0 |
| 6604 25 00 | 25 | 44.5 | 67.5 | 151.5 | 48.0 | 40.0 |
| 6604 40 00 | 40 | 67.0 | 102.5 | 205.0 | 57.0 | 57.0 |

Ø 63




| Transair | ØD | G | H | L | Z1 | Z2 |
|---|---|---|---|---|---|---|
| 6604 63 00 | 63 | 91.0 | 122.0 | 245.0 | 61.0 | 61.0 |

Ø 76 100 168

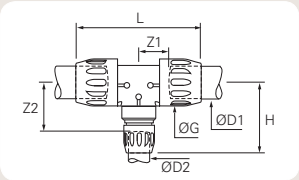



| Transair | ØD | L | Z1 | Z2 |
|---|---|---|---|---|
| RX04 L1 00 | 76 | 290 | 145 | 145 |
| RX04 L3 00 | 100 | 310 | 155 | 135 |
| RA04 L8 00 | 168 | 360 | 180 | 185 |

Use three connectors (RR01) to connect equal tees (RX04 and RA04) to Transair pipe.

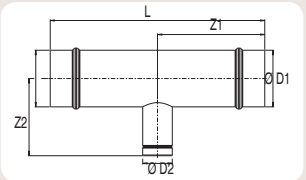
## Reducing tee

Ø 63




| Transair | ØD1 | ØD2 | ØG | H | L | Z1 | Z2 |
|---|---|---|---|---|---|---|---|
| 6604 63 40 | 63 | 40 | 91.0 | 161.0 | 245.0 | 61.0 | 116.0 |

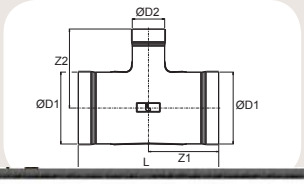
Ø 76 100




| Transair | ØD1 | ØD2 | L | Z1 | Z2 |
|---|---|---|---|---|---|
| RX24 L1 40 | 76 | 40 | 290 | 145 | 104 |
| RX24 L1 63 | 76 | 63 | 290 | 145 | 163 |
| RX24 L3 40 | 100 | 40 | 310 | 155 | 116.5 |
| RX24 L3 63 | 100 | 63 | 310 | 155 | 175.8 |
| RX04 L3 L1 | 100 | 76 | 310 | 155 | 135 |

Use two connectors (RR01) to connect reducing tees (RX24) to Transair pipes Ø 76 and Ø 100 and to connect pipe-to-pipe connectors (6606) to Transair pipes Ø 40 and Ø 63.

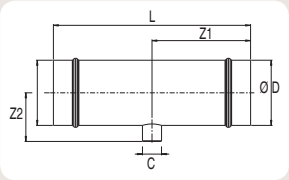
Ø 168




| Transair | ØD1 | ØD2 | L | Z1 | Z2 |
|---|---|---|---|---|---|
| RA04 L8 L3 | 168 | 100 | 330 | 165 | 185 |
| RA04 L8 L1 | 168 | 76 | 330 | 165 | 185 |
| RA04 L8 63 | 168 | 63 | 330 | 165 | 220 |

Use two connectors (RR01) to connect reducing tees (RA04) to Transair pipes Ø 168, Ø 100 and Ø 76 and to connect pipe-to-pipe connectors (6606) to Transair pipe Ø 63.

Ø
76
100

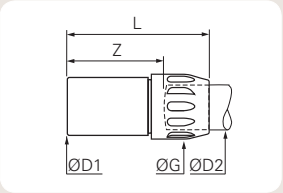



## Threaded tee

| Transair | ØD | C (in) | L | Z1 | Z2 |
|---|---|---|---|---|---|
| RX20 L1N04 | 76 | 1/2 | 290 | 145 | 63 |
| RX20 L3N04 | 100 | 1/2 | 310 | 155 | 75.8 |

Use two connectors (RR01) to connect threaded tees (RX20) to Transair pipe.

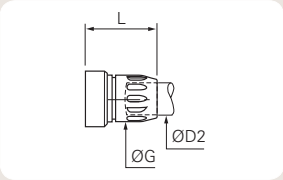
Ø
16.5
25
40



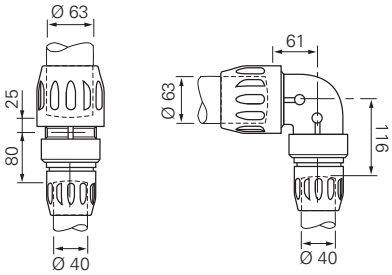

## Plug-in reducer

| Transair | ØD1 | ØD2 | ØG | Z | L |
|---|---|---|---|---|---|
| 6666 17 25 | 25 | 16.5 | 34.0 | 50.0 | 77.0 |
| 6666 25 40 | 40 | 25 | 44.5 | 71.0 | 99.0 |

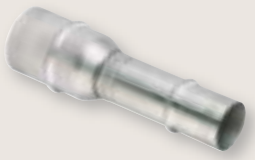
Ø
63

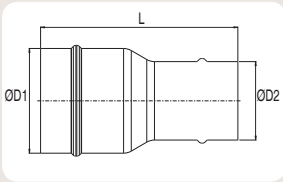



| Transair | ØD1 | ØD2 | ØG | L |
|---|---|---|---|---|
| 6666 40 63 | 63 | 40 | 67.0 | 112.5 |




Ø
76
100

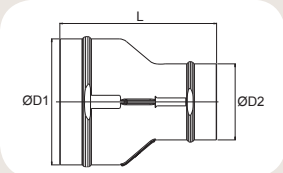





| Transair | ØD1 | ØD2 | L |
|---|---|---|---|
| RX64 L1 63 | 76 | 63 | 230 |
| RX64 L3 63 | 100 | 63 | 250 |
| RX66 L3 L1 | 100 | 76 | 192.5 |

Use one connector (RR01) to connect plug-in reducers (RX64) to Transair pipes Ø 76 or Ø 100 and one connector (6606) to connect to Transair pipe Ø 63.

Ø
168

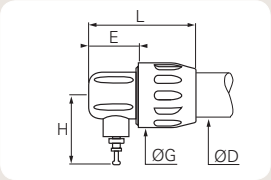



| Transair | ØD1 | ØD2 | L |
|---|---|---|---|
| RA66 L8 L3 | 168 | 100 | 210 |
| RA66 L8 L1 | 168 | 76 | 210 |

Use one connector (RR01) to connect plug-in reducers (RA66) to Transair pipe.

# > Pipe-to-pipe and threaded connectors

Ø 16.5 25 40

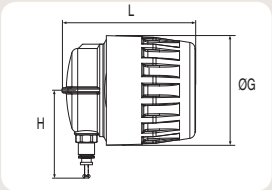



## Vented end cap

| Transair | ØD | E | ØG | H | L |
|---|---|---|---|---|---|
| 6625 17 00 | 16.5 | 25.5 | 34.0 | 45.5 | 62.5 |
| 6625 25 00 | 25 | 33.0 | 44.5 | 47.0 | 75.0 |
| 6625 40 00 | 40 | 34.5 | 67.0 | 55.0 | 98.5 |

16.5mm: supplied with LF3000 6mm plus. Model Ø 25, Ø 40 and Ø 63: supplied with LF3000 5/16'' (8mm) plug.

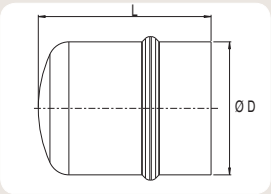
Ø 63




| Transair | ØD | E | ØG | H | L |
|---|---|---|---|---|---|
| 6625 63 00 | 63 | 31.0 | 91.0 | 74.0 | 111 |

16.5mm: supplied with LF3000 6mm plug. Model Ø 25, Ø 40 and Ø 63: supplied with LF3000 5/16'' (8mm) plug.

Ø 76 100

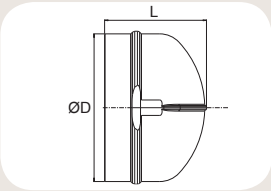



## End cap

| Transair | ØD | L |
|---|---|---|
| RX25 L1 00 | 76 | 99.6 |
| RX25 L3 00 | 100 | 107.4 |

Use one connector (RR01) to connect end caps (RX25) to Transair pipe.

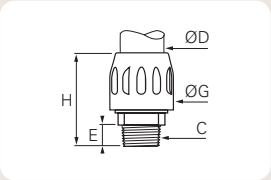
Ø 168




| Transair | ØD | L |
|---|---|---|
| RA25 L8 00 | 168 | 117 |

Use one connector (RR01) to connect end caps (RA25) to Transair pipe.

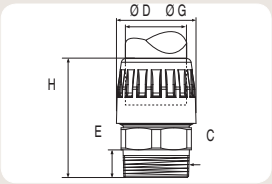
Ø
16.5
25
40




## Male threaded connector, NPT thread

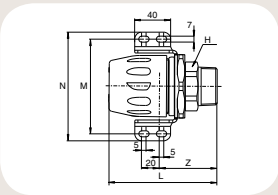
| Transair | ØD | C | E | ØG | H |
|---|---|---|---|---|---|
| 6605 17 14 | 16.5 | 1/4" | 9.5 | 34.0 | 62.5 |
| 6605 17 22 | 16.5 | 1/2" | 15.0 | 34.0 | 68.0 |
| 6605 25 22 | 25 | 1/2" | 15.0 | 44.5 | 70,5 |
| 6605 25 28 | 25 | 3/4" | 15.0 | 44.5 | 71.5 |
| 6605 25 35 | 25 | 1" | 16.0 | 44.5 | 71.5 |
| 6605 40 35 | 40 | 1" | 16.0 | 67.0 | 111.5 |
| 6605 40 43 | 40 | 1 1/4" | 21.5 | 67.0 | 111.5 |
| 6605 40 50 | 40 | 1 1/2" | 24.5 | 67.0 | 114.5 |
| 6605 40 44 | 40 | 2" | 23.0 | 67.0 | 111.5 |

Ø
63




| Transair | ØD | C | E | ØG | H |
|---|---|---|---|---|---|
| 6605 63 44 | 63 | 2" | 20.0 | 91.0 | 118.5 |
| 6605 63 41 | 63 | 2 1/2" | 25.0 | 91.0 | 130.5 |
| 6605 63 46 | 63 | 3" | 27 | 91.0 | 140.0 |

Ø
25
40

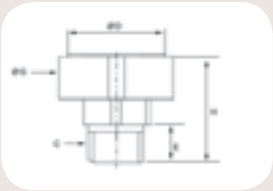



## Male threaded connector with fixing plate

| Transair | ØD | C | H | L | M | N | Z |
|---|---|---|---|---|---|---|---|
| 6615 25 22 | 25 | 1/2" | 27 | 76 | 66.5 | 82 | 44 |
| 6615 25 28 | 25 | 3/4" | 27 | 77 | 66.5 | 82 | 44 |
| 6615 25 35 | 25 | 1" | 36 | 77 | 66.5 | 82 | 53 |
| 6615 40 43 | 40 | 1 1/4" | 50 | 121 | 84 | 105 | 75 |
| 6615 40 50 | 40 | 1 1/2" | 50 | 121 | 84 | 105 | 75 |

# > Pipe-to-pipe and threaded connectors

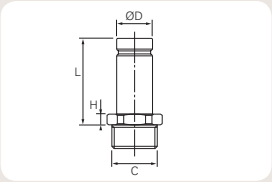
Ø 16.5 to 63



## Male stud nut

| Transair | ØD | C | E | ØG | H |
|---|---|---|---|---|---|
| 6611 17 22 | 16.5 | 1/2" | 9.5 | 34.0 | 62.5 |
| 6611 25 22 | 25 | 1/2" | 15.0 | 34.0 | 68.0 |
| 6611 25 28 | 25 | 3/4" | 15.0 | 44.5 | 70.5 |
| 6611 25 35 | 25 | 1" | 15.0 | 44.5 | 70.5 |
| 6611 40 35 | 40 | 1" | 15.0 | 44.5 | 71.5 |
| 6611 40 43 | 40 | 1 1/4" | 16.0 | 44.5 | 71.5 |
| 6611 40 50 | 40 | 1 1/2" | 16.0 | 67.0 | 111.5 |
| 6611 40 44 | 40 | 2" | 21.5 | 67.0 | 111.5 |
| 6611 63 44 | 63 | 2" | 23.0 | 67.0 | 111.5 |
| 6611 63 41 | 63 | 2 1/2" | 24.5 | 67.0 | 114.5 |

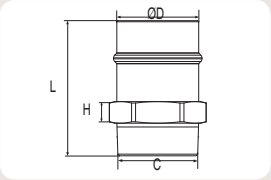
Ø 16.5 25 40




## Male adaptor, NPT thread

| Transair | ØD (mm) | C (in) | L | H |
|---|---|---|---|---|
| 6621 17 22 | 16.5 | 1/2" | 42.2 | 5.0 |
| 6621 25 22 | 25 | 1/2" | 49.0 | 7.0 |
| 6621 25 28 | 25 | 3/4" | 49.0 | 7.0 |
| 6621 25 35 | 25 | 1" | 49.0 | 7.0 |
| 6621 40 43 | 40 | 1 1/4" | 73.7 | 8.0 |
| 6621 40 50 | 40 | 1 1/2" | 75.7 | 10.0 |

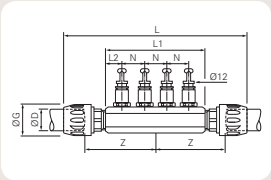
Ø 76




| Transair | ØD (mm) | C (in) | L | H |
|---|---|---|---|---|
| RR21 L1N20 | 76 | 2 1/2" | 125 | 20 |
| RR21 L1N24 | 76 | 3" | 125 | 20 |

Use one connector (RR01) to connect male adaptors (RR21) to Transair pipe.

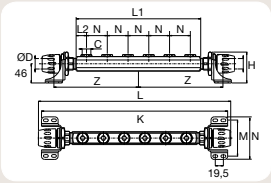
Ø
25
40




## 4 port manifold

| Transair | ØD | G | L | L1 | L2 | N | Z |
|---|---|---|---|---|---|---|---|
| 6651 25 12 04 | 25 | 44.5 | 271.0 | 151.0 | 23.0 | 35.0 | 107.0 |
| 6651 40 12 04 | 40 | 67.0 | 400.0 | 204.0 | 27.0 | 50.0 | 150.0 |

Supplied with four Ø12 mm plugs.

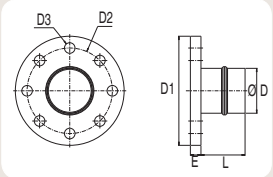



## 6 port manifold

| Transair | ØD | C | L | L1 | L2 | K | N | Z | H | M |
|---|---|---|---|---|---|---|---|---|---|---|
| 6653 25 22 06 | 25 | 1/2" | 463 | 300 | 25 | 448 | 50 | 204 | 74 | 86.5 |
| 6653 40 22 06 | 40 | 1/2" | 526 | 310 | 25 | 469 | 50 | 217 | 83 | 104.5 |

Supplied with 1/2" NPT ports.

Ø
76
100
168




## Flange

| Transair | ØD | DN | D1 | D2 | D3 | E | L |
|---|---|---|---|---|---|---|---|
| RX30 L1 00 | 76 | 65 | 185 | 145 | 18 | 10 | 75 |
| RX31 L1 00 | 76 | 80 | 200 | 160 | 18 | 10 | 75 |
| RX30 L3 00 | 100 | 100 | 220 | 180 | 18 | 10 | 75 |
| RX31 L3 00 | 100 | 100 | 228.5 | 190.5 | 19 | 12.7 | 75 |
| RX31 L8 00 | 168 | 150 | 279 | 240 | 22 | 25 | 100 |

RX30 dimensions conform to EN 1092-1 standard and the RX31 dimensions conform to ANSI B16.5 standard.

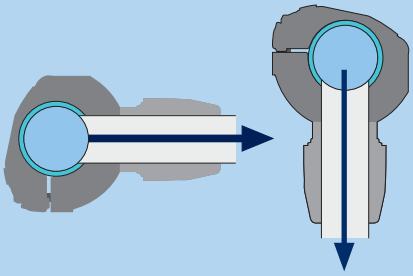
## Flange gasket

| Transair | ØD | For use with flange reference |
|---|---|---|
| EW05 L1 00 | 76 | RX30/RX31 L1 00 |
| EW05 L3 00 | 100 | RX30/RX31 L3 00 |
| EW05 L8 00 | 168 | RA31 L8 00 |

## Flange bolt kit

| Transair | C | L |
|---|---|---|
| EW06 00 01 | 5/8" | 60 |

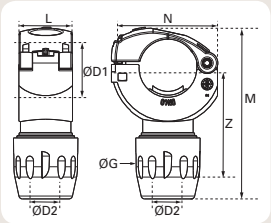
# > Simple reducing brackets



For rigid drops with horizontal take off or for all types of air supply with rigid pipe or flexible hose on an installation which incorporates an efficient air dryer.

> Optimum flow
> Compact
> Well adapted for most original equipment manufacturer (OEM) applications and for use with neutral gases
> Quick installation without any cutting of pipe

Ø 25 40

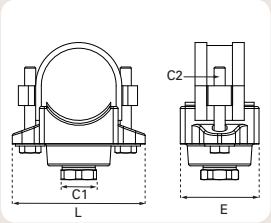



## Simple reducing bracket

| Transair | ØD1 | ØD2 | M | G | L | N | Z |
|---|---|---|---|---|---|---|---|
| RA69 25 17 | 25 | 16.5 | 92 | 34 | 37 | 52 | 47.5 |
| RA69 40 25 | 40 | 25 | 117 | 44.5 | 37 | 74 | 61 |

To drill Transair pipe, use drilling tools 6698 02 01 and 6698 02 02.

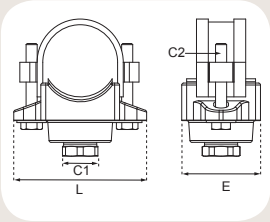
Ø 76 100




| Transair | ØD | C1 | C2 | E | L |
|---|---|---|---|---|---|
| RR63 L1N08 | 76 | 1” | M12 | 50 | 137 |
| RR63 L3N08 | 100 | 1” | M12 | 80 | 137 |

Nitrile Seals. Supplied with Ø 25 - 1” adaptor (6621 25 35). To drill Transair pipe, use drilling tool EW09.

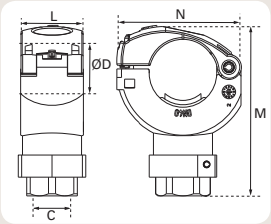
Ø 168




| Transair | ØD | C1 | C2 | E | L |
|---|---|---|---|---|---|
| RR63 L8N12 | 168 | 1 1/2” | 16 | 90 | 235 |
| RR63 L8N16 | 168 | 2” | 16 | 103 | 235 |

For RR63 L8N12 use EW09 0051 drill bit. For RR63 L8N16 use EW09 0064 drill bit.

Ø 25 40

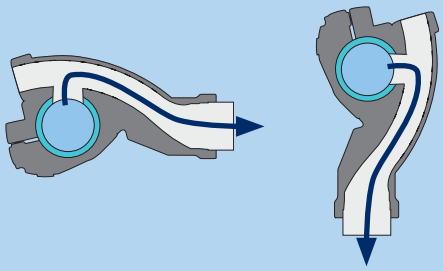



## Simple bracket with thread (NPT)

| Transair | ØD | C | L | N | M |
|---|---|---|---|---|---|
| RA68 25N04 | 25 | 1/2” | 37 | 52 | 86 |
| RA68 40N04 | 40 | 1/2” | 37 | 74 | 100 |

Supplied with brass plug. To drill Transair pipe, use drilling tools 6698 02 01 and 6698 02 02.

# > Quick assembly brackets



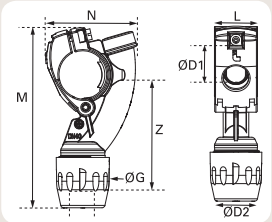
New generation quick assembly brackets are recommended for vertical or horizontal take-offs, using either rigid pipe or flexible hose.

> Integral water retention device

> Very high flow

> Quick installation without any cutting of pipe

Ø 25 40

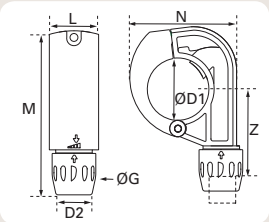



## Quick assembly bracket

| Transair | ØD1 | ØD2 | M | ØG | L | N | Z |
|---|---|---|---|---|---|---|---|
| 6662 25 17 | 25 | 16.5 | 139.5 | 34 | 36 | 63.5 | 82 |
| 6662 25 00 | 25 | 25 | 134 | 44.5 | 36 | 63.5 | 74 |
| 6662 40 17 | 40 | 16.5 | 154 | 34 | 37.5 | 76.5 | 89 |
| 6662 40 25 | 40 | 25 | 149.5 | 44.5 | 37.5 | 76.5 | 82 |

To drill Transair pipe, use drilling tools 6698 02 01 and 6698 02 02.

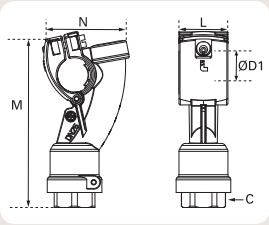
Ø 63




| Transair | ØD1 | ØD2 | M | G | L | N | Z |
|---|---|---|---|---|---|---|---|
| 6662 63 25 | 63 | 25 | 166.5 | 44.5 | 50 | 108.5 | 75 |

To drill Transair pipe, use drilling tool 6698 02 02.

Ø 25 40

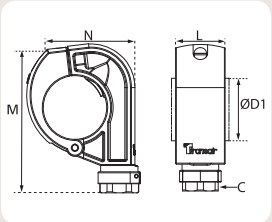



## Quick assembly mini-bracket with female thread, NPT

| Transair | ØD1 | C | M | L | N |
|---|---|---|---|---|---|
| 6663 25 22 | 25 | 1/2" | 117.5 | 36 | 63.5 |
| 6663 40 22 | 40 | 1/2" | 132 | 37.5 | 76.5 |

Supplied with brass plug. To drill Transair pipe, use drilling tools 6698 02 01 and 6698 02 02.

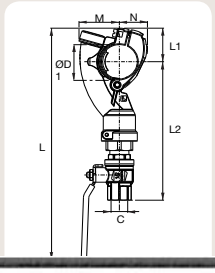
Ø 63




| Transair | ØD1 | C | M | L | N |
|---|---|---|---|---|---|
| 6663 63 22 | 63 | 1/2" | 138.9 | 50 | 98.5 |
| 6663 63 28 | 63 | 3/4" | 138.9 | 50 | 98.5 |

Supplied with brass plug. To drill Transair pipe, use drilling tool 6698 02 01.

Ø 25 40 63




## Quick assembly bracket with pre-assembled ball valve, NPT

| Transair | ØD1 | C | L | L1 | L2 | M | N |
|---|---|---|---|---|---|---|---|
| 6668 25 22 | 25 | 1/2" | 256 | 32 | 155 | 40 | 23 |
| 6668 40 22 | 40 | 1/2" | 270 | 39 | 162 | 45 | 31 |
| 6668 63 22 | 63 | 1/2" | 275 | 63 | 142 | 60 | 48 |
| 6668 63 28 | 63 | 3/4" | 297 | 63 | 146 | 60 | 48 |

# > Pressurized system outlets

> Ideal for fast assembly of new pressurized outlets, without venting the compressed air system.

> The drilling tool can be used with most standard drills.

We recommend, however, that the pipe system is vented prior to the addition of an outlet. Thanks to the lateral dismantling capability of Transair pipe and the use of quick assembly brackets, this operation can be completed very quickly (less than seven min. for a new outlet) and guarantees the interior cleanliness of the system.

Ø 25 40

## Pressurized system bracket

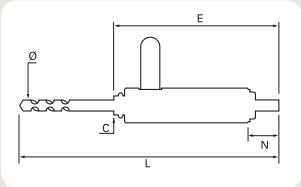
| Transair | ØD |
|---|---|
| EA98 06 01 | 25 |
| EA98 06 02 | 40 |

Bracket with ball valve (1/2" NPT thread)

Ø 63

| Transair | ØD |
|---|---|
| EA98 06 03 | 63 |

Bracket with ball valve (1/2" NPT thread)




## Pressurized system drilling tool

| Transair | C | ØD | L | E | N |
|---|---|---|---|---|---|
| EA98 06 00 | 1/2" | 13 | 330.0 | 154.0 | 30.5 |

# > Wall brackets

> 1, 2 or 3 ports

> For wall or machine mounting

> Supplied with brass plugs

> Drain outlet 1/4”

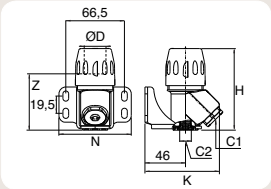
> Working pressure:
- 188 psi from -4°F to +140°F
- 232 psi from -4°F to +115°F (please consult us for higher temperature requirements)

> Non-flammable (conforms to UL94-HB standard)

> Vacuum: 98.7% (29.6” Hg)

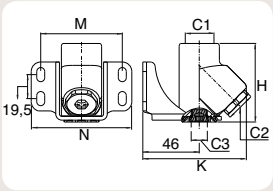
> Working temperature: -4°F to +140°F

Ø 16.5 25



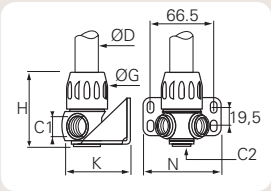

## 1 port 45° wall bracket, NPT

| Transair | ØD | C1 | C2 | H | Z | K | N |
|---|---|---|---|---|---|---|---|
| 6640 17 22 | 16.5 | 1/2” | 1/4” | 89.5 | 63.5 | 84.5 | 82 |
| 6640 25 22 | 25 | 1/2” | 1/4” | 92.5 | 63.5 | 84.5 | 82 |



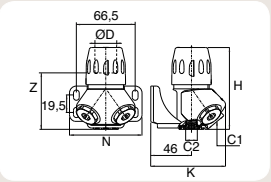

## 1 port 45° threaded wall bracket, NPT

| Transair | C1 | C2 | C3 | H | K | M | N |
|---|---|---|---|---|---|---|---|
| 6642 22 22 | 1/2” | 1/2” | 1/4” | 64 | 84.5 | 66.5 | 82 |



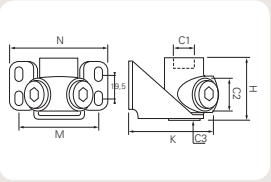

## 2 port wall bracket

| Transair | ØD | C1 | C2 | G | H | K | N |
|---|---|---|---|---|---|---|---|
| 6684 17 22 | 16.5 | 1/2” | 1/4” | 34 | 65 | 74.5 | 82 |
| 6684 25 22 | 25 | 1/2” | 1/4” | 44.5 | 81 | 74.5 | 82 |



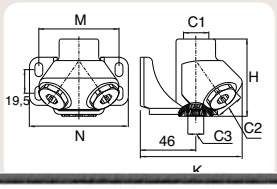

## 2 port 45° wall bracket, NPT

| Transair | ØD | C1 | C2 | H | Z | K | N |
|---|---|---|---|---|---|---|---|
| 6689 17 22 | 16.5 | 1/2” | 1/4” | 89.5 | 63.5 | 84.5 | 82 |
| 6689 25 22 | 25 | 1/2” | 1/4” | 92.5 | 63.5 | 84.5 | 82 |




## 2 port threaded wall bracket

| Transair | C1 | C2 | C3 | H | K | M | N |
|---|---|---|---|---|---|---|---|
| 6688 22 22 | 1/2” | 1/2” | 1/4” | 48 | 72.5 | 66.5 | 82 |

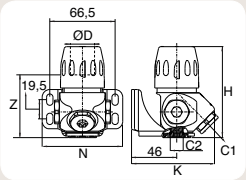



## 2 port 45° threaded wall bracket, NPT

| Transair | C1 | C2 | C3 | H | K | M | N |
|---|---|---|---|---|---|---|---|
| 6691 22 22 | 1/2” | 1/2” | 1/4” | 64 | 84.5 | 66.5 | 82 |

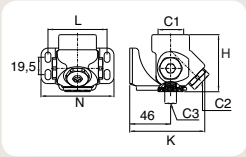
# > Wall brackets

Ø 25




### 3 port wall bracket, NPT

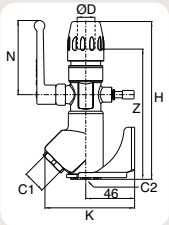
| Transair | ØD | C1 | C2 | H | Z | K | N |
|---|---|---|---|---|---|---|---|
| 6696 25 22 | 25 | 1/2" | 1/4" | 92.5 | 63.5 | 84.5 | 82 |




### 3 port threaded wall bracket, NPT

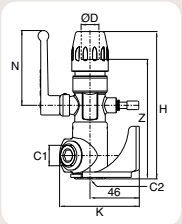
| Transair | C1 | C2 | C3 | H | K | M | N |
|---|---|---|---|---|---|---|---|
| 6636 28 22 | 3/4" | 1/2" | 1/4" | 64 | 84.5 | 66.5 | 82 |

Ø 16.5 25



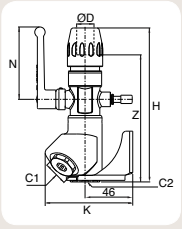

### 1 port 45° wall bracket with ball valve, NPT

| Transair | ØD | C1 | C2 | H | Z | K | N |
|---|---|---|---|---|---|---|---|
| 6679 17 22 | 16.5 | 1/2" | 1/4" | 148.5 | 123 | 84.5 | 69.5 |
| 6679 25 22 | 25 | 1/2" | 1/4" | 173 | 142 | 84.5 | 108.5 |



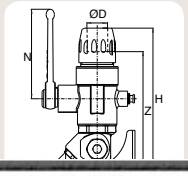

### 2 port 90° wall bracket with ball valve, NPT

| Transair | ØD | C1 | C2 | H | Z | K | N |
|---|---|---|---|---|---|---|---|
| 6675 17 22 | 16.5 | 1/2" | 1/4" | 137 | 111.5 | 74.5 | 69.5 |
| 6675 25 22 | 25 | 1/2" | 1/4" | 163 | 132 | 74.5 | 108.5 |




### 2 port 45° wall bracket with ball valve, NPT

| Transair | ØD | C1 | C2 | H | Z | K | N |
|---|---|---|---|---|---|---|---|
| 6694 17 22 | 16.5 | 1/2" | 1/4" | 148.5 | 123 | 84.5 | 69.5 |
| 6694 25 22 | 25 | 1/2" | 1/4" | 173 | 142 | 84.5 | 108.5 |




### 3 port wall bracket with ball valve, NPT

| Transair | ØD | C1 | C2 | H | Z | K | N |
|---|---|---|---|---|---|---|---|
| 6638 25 22 | 25 | 1/2" | 1/4" | 173 | 142 | 84.5 | 108.5 |

# > Ball valves

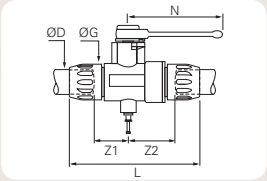
Transair ball valves and butterfly valves placed regularly throughout the system at key locations, such as compressor outlets and upstream of pneumatic tools, allow ease of system isolation and pipe reconfiguration / maintenance.

> Quick connection

> Available in lockable version (only in 16.5mm and 25mm)

> Manual or piloted operation (only in 25mm and 40mm)

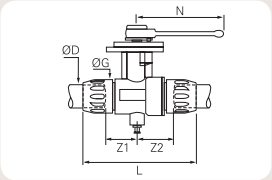
**Ø 16.5 25**




## Double female, vented

| Transair | ØD | G | L | N | Z1 | Z2 |
|---|---|---|---|---|---|---|
| 4089 17 00 | 16.5 | 34.0 | 120.0 | 69.5 | 29.0 | 42.0 |
| 4088 25 14 | 25 | 44.5 | 152.0 | 108.5 | 40.0 | 55.0 |

Model 4089 17 00: supplied with Ø6 mm plug.
Model 4088 25 14: supplied with Ø8 mm plug.

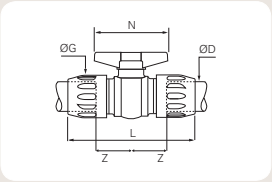



## Lockable valve, vented

| Transair | ØD | G | L | N | Z1 | Z2 |
|---|---|---|---|---|---|---|
| 4099 17 00 | 16.5 | 34.0 | 121.0 | 69.0 | 29.0 | 42.0 |
| 4099 25 00 | 25 | 44.5 | 151.7 | 108.3 | 40.0 | 55.0 |

Model 4099 17 00: supplied with Ø 6 mm plug.
Model 4099 25 00: supplied with Ø 8 mm plug.

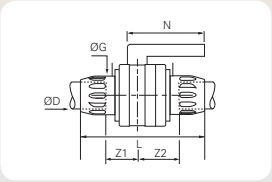
**Ø 40**




## Double female valve

| Transair | ØD | G | L | N | Z |
|---|---|---|---|---|---|
| 4002 40 00 | 40 | 67.0 | 205.0 | 122.0 | 57.0 |

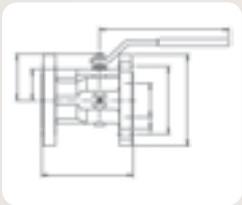
**Ø 63**




| Transair | ØD | G | L | N | Z1 | Z2 |
|---|---|---|---|---|---|---|
| 4002 63 00 | 63 | 91.0 | 278.0 | 185.0 | 84.0 | 98.0 |
| 4012 63 00* | 63 | 91.0 | 278.0 | 185.0 | 84.0 | 98.0 |

*lockable

**Ø 76 100**



## Ball Valve

| Transair | ØD | A | B | D | L | K | R |
|---|---|---|---|---|---|---|---|
| VR01 L1 00 | 76 | 102 | 75 | 185 | 170 | 145 | 320 |
| VR01 L3 00 | 100 | 136 | 104 | 220 | 190 | 180 | 380 |

Nitrile seal. Supplied with fixing bolts.

# > Valves

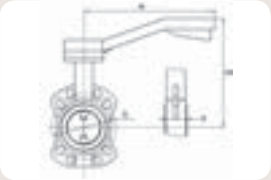
> Max. working pressure:
- 188 psi from -4°F to +140°F
- 232 psi from -4°F to +115°F

(please consult us for higher temperature requirements)

> Vacuum: 98.7% (29.6" Hg)

> Working temperature: -4°F to +140°F

Ø 76 100

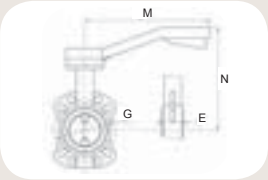


## Butterfly valve

| Transair | ØD (in) | DN | G | M | N | E |
|---|---|---|---|---|---|---|
| VR02 L1 00 | 3 | 80 | 145 | 300 | 250 | 50 |
| VR02 L3 00 | 4 | 100 | 180 | 270 | 210 | 56 |

Seal cast in one piece (do not use any flange gasket for mounting with a flange). Model has CE marking. Supplied with fixing bolts. Lockable version. Nitrile seal.

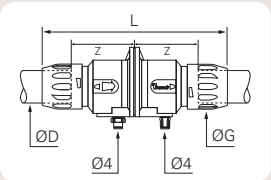
Ø 168




| Transair | ØD (in) | DN | G | M | N | E |
|---|---|---|---|---|---|---|
| VR02 L8 00 | 6 | 150 | 240 | 300 | 290 | 56 |

Model has CE marking. Supplied with eight M20 bolts kit (bolt length: 140mm) Nitrile seal.

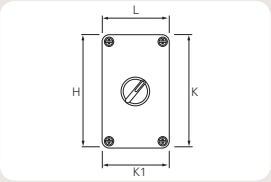
Ø 40




## Remote control shut-off valve

| Transair | ØD | G | L | Z |
|---|---|---|---|---|
| 4230 00 40 | 40 | 67 | 261 | 85.0 |

Min. working pressure: 58 psi • Max. working pressure: 235 psi
The Transair remote control shut-off valve is supplied with a plugged vent hole. This allows venting of the downstream network, after closing the valve.




## Pilot kit

| Transair | H | K | K1 | L |
|---|---|---|---|---|
| 4299 03 01 | 145 | 106 | 70 | 82 |

This pilot kit includes: pneumatic ON/OFF switch (maximum 235 psi operating pressure), twin 4 mm OD polyurethane tube (length 10 m) and plastic box.

# > Tools

> Practical tools for the installation and extension of Transair air pipe systems.

> Presented in a carrying case or available as separate parts.

Ø 16.5 to 63

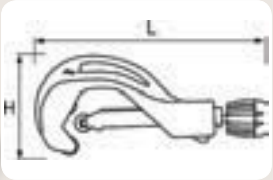
## Tool case

| Transair | H | L | I |
|---|---|---|---|
| 6698 00 03 | 315 | 290 | 105 |

This tool case simplifies the use and transportation of tools. It contains all the tools necessary for completing an installation:

- Drilling jigs 6698 01 01 and 6698 01 02
- Drilling tools 6698 02 01 and 6698 02 02
- Cutter for rigid pipe 6698 03 01
- Chamfer tool 6698 04 01
- Deburring tool 6698 04 02
- Set of tightening spanners 6698 05 03
- Marking tool 6698 04 03

Ø 16.5 to 168




## Pipe cutter

| Transair | L | H | Used for Transair pipe |
|---|---|---|---|
| 6698 03 01 | 230 | 98 | Ø 16.5 - 25 - 40 - 63 |
| EW08 00 01 | 360 | 155 | Ø 63 - 76 - 100 |
| EW08 00 03 | 600 | 300 | Ø 100 - 168 |

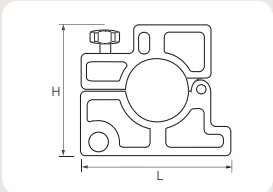
Ø 25 to 40

## Drilling jig for rigid aluminum pipe

| Transair | H | L |
|---|---|---|
| 6698 01 01 | 120 | 80 |

After drilling, deburr and clean the pipe.

Ø 63

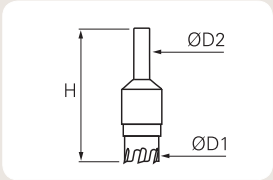



## Drilling jig for rigid aluminum pipe

| Transair | H | L |
|---|---|---|
| 6698 01 02 | 134 | 155 |

After drilling, deburr and clean the pipe.

Ø 25

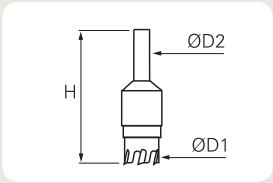



## Drilling tool for aluminum pipe

| Transair | ØD1 | ØD2 | H | For Transair pipe |
|---|---|---|---|---|
| 6698 02 02 | 16 | 12 | 71 | Ø 25mm |

Drilling tool 6698 02 02 is required to install Ø 25 Transair brackets. Can be used with all types of drills.

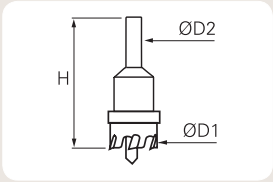
Ø 40 63




| Transair | ØD1 | ØD2 | H | For Transair pipe |
|---|---|---|---|---|
| 6698 02 01 | 22 | 12 | 71 | Ø 40 - 63mm |

Drilling tool 6698 02 01 is required to install Ø 40 and Ø 63 Transair brackets. It is also used to create the two holes needed for double-clamp ring connectors when cutting to length Ø 63 Transair pipe.

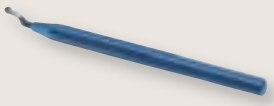
Ø 40 to 168

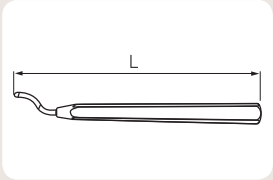



| Transair | ØD1 | ØD2 | H | For Transair pipe |
|---|---|---|---|---|
| EW09 00 22 | 22 | 12 | 71 | Ø 40 - 63mm |
| EW09 00 30 | 30 | 12 | 71 | Ø 76 - 100mm |
| EW09 00 51 | 51 | 12 | 110 | Ø 168mm |
| EW09 00 64 | 64 | 12 | 110 | Ø 168mm |

Drilling tool EW09 is required to install Transair simple reducing brackets. After drilling, it is important to deburr and clean the pipe.

Ø 16.5 to 168

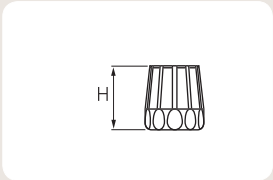





## Deburring tool for aluminum pipe

| Transair | L |
|---|---|
| 6698 04 02 | 140 |

Ø 16.5 25 40

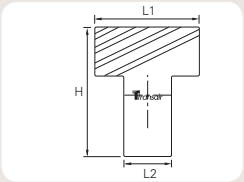



## Chamfer tool for aluminum pipe

| Transair | H |
|---|---|
| 6698 04 01 | 64 |

For 16.5, 25 and 40mm.

Ø
16.5
25
40




## Marking tool for aluminum pipe

| Transair | H | L1 | L2 |
|---|---|---|---|
| 6698 04 03 | 88 | 73 | 33 |

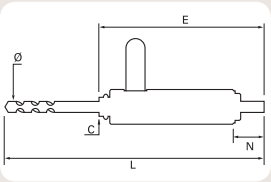
The marking tool is used as a guide for marking cut lengths on Transair pipe. These marks indicate the insertion limits of the pipe into each fitting in order to ensure a good airtight connection and secure grip.

Ø
63

## Spanner wrenches for Ø 63mm fittings

| Transair |
|---|
| 6698 05 03 |

Includes two tightening spanners.




## Pressurised system drilling tool

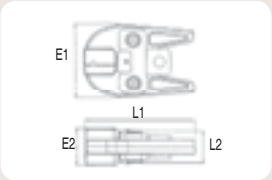
| Transair | C | ØD | L | E | N |
|---|---|---|---|---|---|
| EA98 06 00 | 1/2” | 13 | 330.0 | 154.0 | 30.5 |

## Portable tool kit

| Transair | V |
|---|---|
| EW01 00 02 | 14 |

This case contains: one portable tool, one 14V battery and battery charger.

Ø
76
100
168




## Jaws for portable tool

| Transair | ØD | E1 | E2 | L1 | L2 |
|---|---|---|---|---|---|
| EW02 L1 00 | 76 | 103 | 52 | 154 | 46 |
| EW02 L3 00 | 100 | 103 | 71 | 154 | 46 |
| EW02 L8 00 | 168 | 103 | 71 | 154 | 46 |

## 14V battery for portable tool

| Transair | V |
|---|---|
| EW03 00 01 | 14 |

# > Fixture accessories

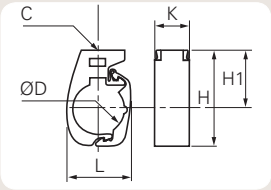
> Easy adaptation for all pipework configurations

> For suspension of pipes, from walls, partitions, beams, cable trays, Canalis electrical installations, etc, vertically or horizontally

> Perfectly suited for use with Transair systems

> Non-flammable (conforms to UL94V-2 standard)

Ø 16.5 25 40



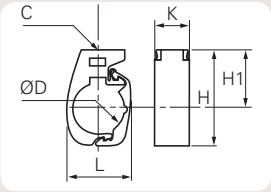

## Fixing clip for rigid pipe

| Transair | ØD | C | H1 | H | K | L |
|---|---|---|---|---|---|---|
| 6697 17 01 | 16.5 | 1/4" | 46 | 61 | 30 | 32.5 |
| 6697 25 01 | 25 | 1/4" | 46 | 65.5 | 30 | 38.5 |
| 6697 40 01 | 40 | 1/4" | 46 | 74.5 | 30 | 50 |

Transair fixing clips are designed to bear a maximum weight of 44lbs. However, to ensure good stability of the system, we recommend the use of at least two clips per pipe i.e.:
- maximum 5 ft space between clips for 10 ft lenghts of pipe
- maximum 10 ft space between clips for 20 ft lenghts of pipe

Use only this clip for fixing Transair rigid pipe, all other type of pipe clips are to be avoided. Fix the clip to a rigid support (U-channel, cable tray) to allow for expansion while retaining the pipe.

Ø 63

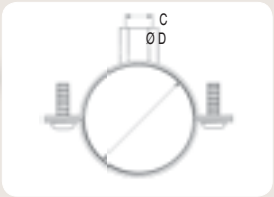



| Transair | ØD | C | H1 | H | K | L |
|---|---|---|---|---|---|---|
| 6697 63 01 | 63 | 3/8" | 90 | 127.5 | 30 | 73.5 |

Transair fixing clips are designed to bear a maximum weight of 44lbs. However, to ensure good stability of the system, we recommend the use of at least two clips per pipe i.e.:
- maximum 5 ft space between clips for 10 ft lenghts of pipe
- maximum 10 ft space between clips for 20 ft lenghts of pipe

Use only this clip for fixing Transair rigid pipe, all other type of pipe clips are to be avoided. Fix the clip to a rigid support (U-channel, cable tray) to allow for expansion while retaining the pipe.

Ø 76 100 168




| Transair | ØD | C |
|---|---|---|
| ER01 L1 00 | 76 | 3/8" |
| ER01 L3 00 | 100 | 3/8" |
| ER01 L8 00 | 168 | 3/8" |

Transair fixing clips are designed to bear a maximum weight of 44lbs. However, to ensure good stability of the system, we recommend the use of at least two clips per pipe i.e.:
- maximum 5 ft space between clips for 10 ft lenghts of pipe
- maximum 10 ft space between clips for 20 ft lenghts of pipe

Use only this clip for fixing Transair rigid pipe, all other type of pipe clips are to be avoided. Fix the clip to a rigid support (U-channel, cable tray) to allow for expansion while retaining the pipe.

Ø 76 100

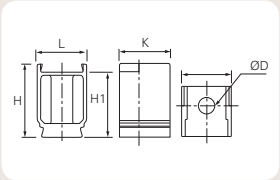
| Transair | ØD | C |
|---|---|---|
| EX01 L1 00 | 76 | 3/8" |
| EX01 L3 00 | 100 | 3/8" |

Transair fixing clips are designed to bear a maximum weight of 44lbs. However, to ensure good stability of the system, we recommend the use of at least two clips per pipe i.e.:
- maximum 5 ft space between clips for 10 ft lenghts of pipe
- maximum 10 ft space between clips for 20 ft lenghts of pipe

Use only this clip for fixing Transair rigid pipe, all other type of pipe clips are to be avoided. Fix the clip to a rigid support (U-channel, cable tray) to allow

# > Fixture accessories

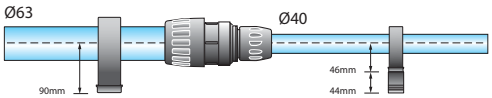
Ø 16.5 to 63

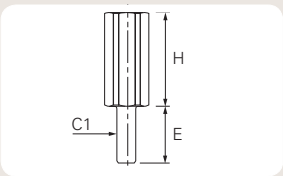



## Spacer

| Transair | ØD | H | H1 | K | L |
|---|---|---|---|---|---|
| 6697 00 03 | 11 | 49.5 | 44 | 34 | 33 |

This spacer, in association with a Transair pipe clip, allows consistent alignment of pipes when different diameters of pipe are run concurrently in the same line.

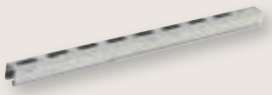


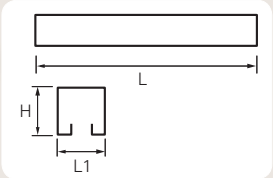




## Threaded rod adaptor

| Transair | C1 | E | H |
|---|---|---|---|
| 0169 00 05 00 | 1/4'' | 16 | 30 |

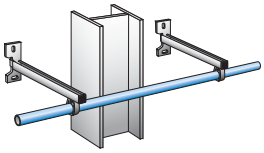
The use of this adaptor facilitates the suspension of Transair 16.5, 25 or 40mm with 3/8'' threaded rod.

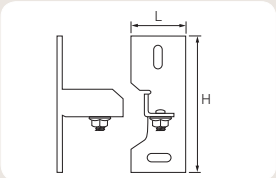





## U-channel

| Transair | H | L(ft) | L1 |
|---|---|---|---|
| 6699 01 01 | 25 | 6'6'' | 25 |






## U-channel fixing bracket

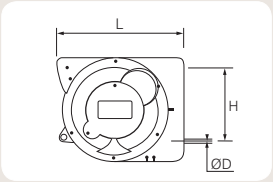
| Transair | H | L |
|---|---|---|
| 6699 01 02 | 106 | 40 |

This set includes:
- 1 bracket
- 1 fixing bolt & nut
- 1 nut
- 1 rail profile end cap

# > Hose reels

Hose reels
- > Optimize productivity and the safety of your work area
- > Prevent hose damage occurring on the workshop floor
- > Maximum working pressure, dependant on the model:
  - 6698 11 11: 250 psi
  - 6698 11 12: 250 psi
- > Working temperature: -4°F to +14°F

**25 ft**

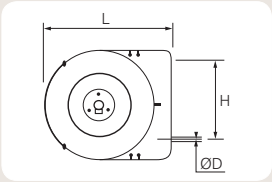



### Light series hose reel

| Transair | Hose i.d. (in) | Max. Pressure (psi) | H | L |
|---|---|---|---|---|
| 6698 11 11 | 3/8 | 250 | 251 | 300 |

Hose clutch with free return
Outlet connection 1/4 male - 3/8" inlet

**50 ft**




### Light series hose reel

| Transair | Hose i.d. (in) | Max. Pressure (psi) | H | L |
|---|---|---|---|---|
| 6698 11 12 | 3/8 | 250 | 251 | 390 |

Hose clutch with free return
Outlet connection 1/4 male - 3/8" inlet

# > Composite automatic safety couplers

> For quick and repetitive connection and disconnection
> 100% safety – ISO 4414 and European EN 983 compliant
> Very high flow, extremely low pressure loss
> Lightweight and robust
> Improved hand grip
> Fast vent time
> Male thread with integral seal
> Suitable fluids: compressed air, argon, nitrogen (please consult us for other fluids)
> Max. working pressure: 232 psi
> Working temperature: from -4°F to +140°F

## ISO B 1/4"
Safety

### Male NPT

| Transair | C |
|---|---|
| CP05 U1N02 | 1/4" |
| CP05 U1N03 | 3/8" |
| CP05 U1N04 | 1/2" |

### Female NPT

| Transair | C |
|---|---|
| CP15 U1N02 | 1/4" |
| CP15 U1N03 | 3/8" |
| CP15 U1N04 | 1/2" |

### Coupler with hosetail

| Transair | ØD (mm) |
|---|---|
| CP21 U1 06 | 6 |
| CP21 U1 08 | 8 |
| CP21 U1 10 | 10 |

## ISO B 3/8"
Safety

### Male NPT

| Transair | C |
|---|---|
| CP05 U2N02 | 1/4" |
| CP05 U2N03 | 3/8" |
| CP05 U2N04 | 1/2" |

### Female NPT

| Transair | C |
|---|---|
| CP15 U2N02 | 1/4" |
| CP15 U2N03 | 3/8" |
| CP15 U2N04 | 1/2" |

### Coupler with hosetail

| Transair | ØD (mm) |
|---|---|
| CP21 U2 08 | 8 |
| CP21 U2 10 | 10 |
| CP21 U2 13 | 13 |

## ARO 1/4"
Safety

### Male NPT

| Transair | C |
|---|---|
| CP05 A1N02 | 1/4" |
| CP05 A1N03 | 3/8" |
| CP05 A1N04 | 1/2" |

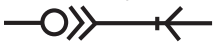
### Female NPT

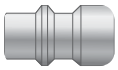
| Transair | C |
|---|---|
| CP15 A1N02 | 1/4" |
| CP15 A1N03 | 3/8" |
| CP15 A1N04 | 1/2" |

### Coupler with hosetail

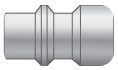
| Transair | ØD (mm) |
|---|---|
| CP21 A1 06 | 6 |
| CP21 A1 08 | 8 |
| CP21 A1 10 | 10 |

Safety

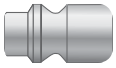




ISO B 1/4"
ISO 6150 B
AFNOR NF 49-053
US.MIL.C4109
CEJN 310
RECTUS 23-24

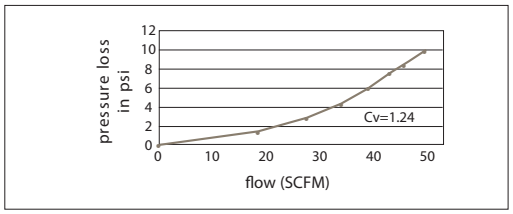


ISO B 3/8"
ISO 6150 B
AFNOR NF 49-053
US.MIL.C4109
CEJN 430
RECTUS 30



ARO 1/4"
ARO 210
CEJN 300
ORION 44510
PARKER 50
RECTUS 14-22

**Flow curve – pressure loss**



Transair composite automatic couplers comply with worldwide ISO 4414 and European EN 983 safety standards. Disconnection is by a double twist of the sleeve.

1st rotation in direction of the arrow: pressure rapidly vented out, plug side.

2nd rotation in direction of the arrow: safe disconnection of body and plug.

## ISO B 1/4"

### Male plug NPT

| Transair | C |
|---|---|
| 9084 23 14 | 1/4" |
| 9084 23 18 | 3/8" |

### Female plug NPT

| Transair | C |
|---|---|
| 9083 23 14 | 1/4" |
| 9083 23 18 | 3/8" |

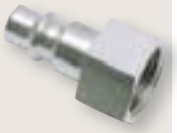
### Plug with hosetail

| Transair | ØD (mm) |
|---|---|
| 9085 23 56 | 6 |
| 9085 23 08 | 8 |
| 9085 23 60 | 10 |

## ISO B 3/8"

### Male plug NPT

| Transair | C |
|---|---|
| 9084 30 14 | 1/4" |
| 9084 30 18 | 3/8" |



### Female plug NPT

| Transair | C |
|---|---|
| 9083 30 14 | 1/4" |
| 9083 30 18 | 3/8" |

### Plug with hosetail

| Transair | ØD (mm) |
|---|---|
| 9085 30 08 | 8 |
| 9085 30 60 | 10 |
| 9085 30 62 | 13 |

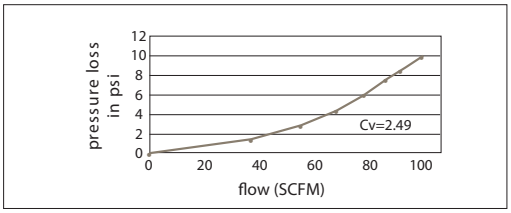
## ARO 1/4"

### Male plug NPT

| Transair | C |
|---|---|
| 9084 22 14 | 1/4" |
| 9084 22 18 | 3/8" |

### Female plug NPT

| Transair | C |
|---|---|
| 9083 22 14 | 1/4" |
| 9083 22 18 | 3/8" |



# > Notes

# > Installation guide

## > Installation instructions

### > General

Prior to the installation of a Transair compressed air distribution system, the installer should ensure that the installation area complies with any regulations applicable to areas exposed to explosive hazards (in particular the effect of static electricity in a silo area). Transair should be installed downstream of the compressed air receiver, or after the dryer. Flexible Transair hose can be installed at the start of the system in order to eliminate any sources of vibration and to facilitate maintenance operations. When maintaining or modifying a Transair system, the relevant section should be vented prior to the commencement of any work. Installers should use only Transair components and accessories, in particular Transair pipe clips and fixture clamps. The technical properties of the Transair components, as described in the Transair catalog, must be respected.

### > Pressurizing the system

Once the Transair installation has been installed and prior to pressurizing, the installer should complete all tests, inspections and compliance checks as stated in any contract and according to sound engineering practice and current local regulations.

### > Transair pipe and hoses

Transair pipe should be protected from mechanical impact, particularly if exposed to collision with fork-lift trucks or when sited in an environment with moving overhead loads. Similarly, rotation of the pipe and pipe supports should be avoided. Transair pipe must not be welded. Flexible Transair hoses should be used in accordance with the recommendations of the installation guidelines.

Note: In certain situations, Transair aluminum pipe may be formed with a bend - please contact us for further information.

### > Expansion / contraction

Expansion and contraction of the system should be calculated prior to installation. The system designer and installer should calculate the elongation or retraction of each Transair line according to the recommendations in this installation guide.

### > Component assembly

Transair components are provided with assembly instructions for their correct use - simply follow the methods and recommendations stated in this document.

### > Transair installations - situations to avoid

> installation within a solid mass (concrete, foam, etc.)

> the hanging of any external equipment to Transair pipe

> the use of Transair for grounding, or as a support for electrical equipment

> exposure to chemicals that are incompatible with Transair components (please contact us for further details)

## > Sound engineering practice for the optimization of an air pipe system

> When installing a Transair system, the work should be performed in accordance with good engineering practice.

> Bends and bypasses represent sources of pressure drop. To avoid excessive pressure loss, use modular consoles to offset the network and to bypass obstacles. Keep in-line pipe diameter reductions to a minimum.

> Maintain a consistent level of good quality air by use of adequate filtration at the compressor outlet.

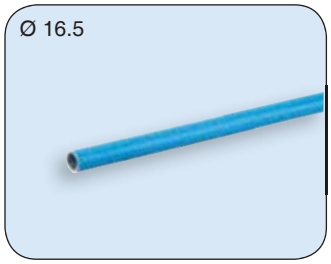
> The diameter of the pipe will influence pressure drop and the operation of point-of-use equipment. Select the diameter according to the required flow rate and acceptable pressure drop at the point of use.

> Position drops should be as close as possible to the point of use.

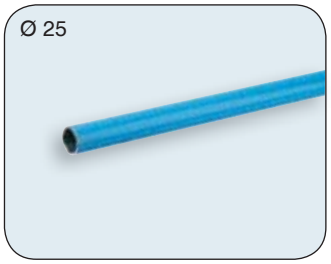
# > Transair aluminum pipe

## > General

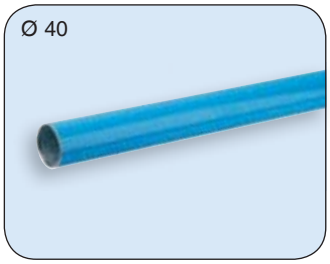
### > Presentation



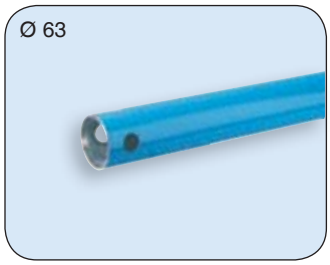

Deburred and chamfered pipe




Deburred and chamfered pipe

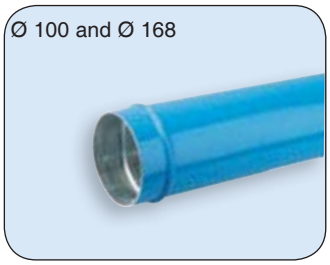



Deburred and chamfered pipe




Pipe pre-drilled at each end with two 22mm diameter holes, deburred and chamfered


Pipe lugged at each end, deburred and chamfered




Pipe lugged at each end, deburred and chamfered

Transair aluminum pipe is supplied ready for use. No particular preparation (cutting, deburring, chamfering, etc.) is required.

Thanks to the rigidity of Transair aluminum pipe, temperature-related expansion / contraction is reduced to a minimum. The Transair system retains its straightness, and hence its performance, over time (reduction of pressure drop caused by surface friction).

Transair aluminum pipe is calibrated and fits perfectly with all Transair components. Each connection is automatically secured and the seal is optimized, which minimizes corrosion to the internal surface.

Transair aluminum pipe has a protective powder coating (Qualicoat certified) and is thus protected from external corrosion. Its color allows the system to be immediately identified and gives a clean and aesthetic overall appearance.

Standard colors available:
- blue (RAL 5012/BS1710)
- grey (RAL 7001)
- green (RAL 6029)

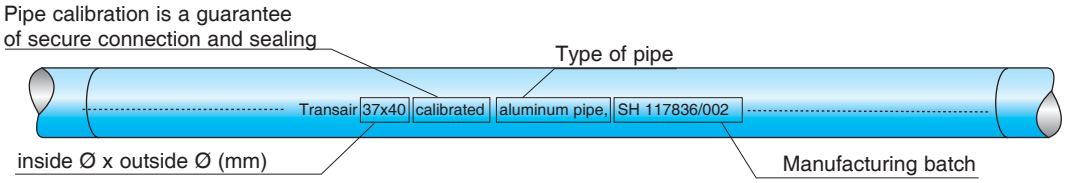
(please contact us for other colors)

Transair aluminum pipe is available in seven diameters in 1/2'' thru 6''.

### > Applications

Transair Ø 16.5 - Ø 25 - Ø 40 - Ø 63 - Ø 76 - Ø 100 - Ø 168 aluminum pipe has been specially designed for compressed air, vacuum and inert gases (argon, nitrogen) - please contact us for other fluids.

## > Marking

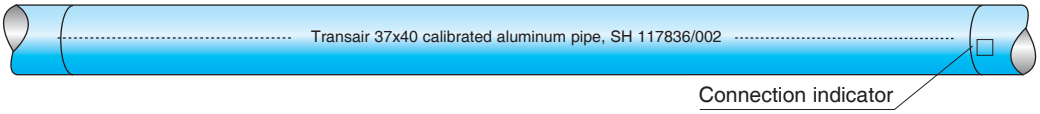



The transported fluid can be instantly identified by the color of the pipe

ex: Blue pipe → compressed air system
ex: Grey pipe → vacuum system
ex: Green pipe → inert gas system

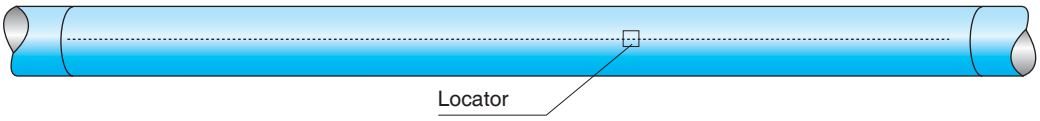
## > Connection indicator

Only on Ø 16.5 - Ø 25 - Ø 40 aluminum pipe




## > Drilling locator: mark lines for correct drilling

Only on Ø 16.5 - Ø 25 - Ø 40 - Ø 63 aluminum pipe



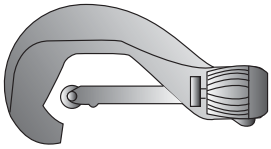

Drilling locators are used to correctly position Transair brackets onto the pipe. There are two locators on each pipe. The second locator is used to position a second bracket perpendicular to a first bracket.

# > Transair aluminum pipe

## > Aluminum pipe section

### > Ø 16.5 - Ø 40

### > Tools



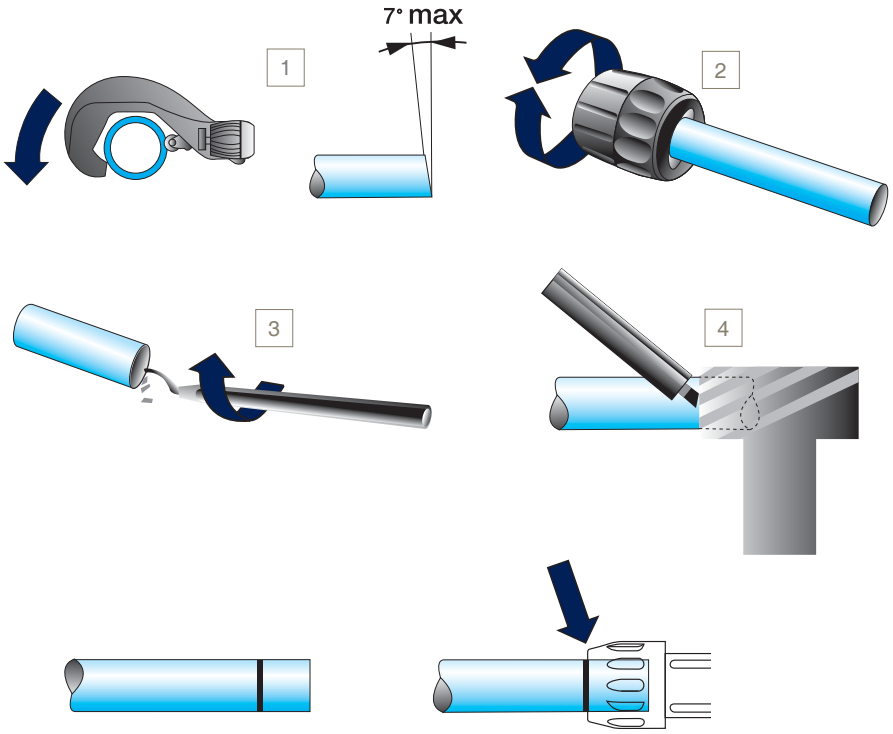
Pipe cutter for aluminum pipe ref. 6698 03 01

Chamfer tool for aluminum pipe ref. 6698 04 01

Deburring tool for aluminum pipe ref. 6698 04 02

Marking tool for aluminum pipe ref. 6698 04 03

### > Procedure




1 - Cutting the pipe:
- place the pipe in the pipe cutter
- position the blade onto the pipe
- rotate the pipe cutter around the pipe while gently tightening the wheel

2 - Carefully chamfer the outer edges

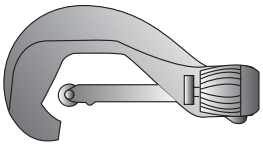
3 - Deburr the inner end of the pipe

4 - Trace the connection indicator using the marking tool

The insertion lengths for Ø 16.5 - Ø 25 - Ø 40 connectors are 25 mm, 27 mm and 45 mm respectively, with the exception of the end cap (6625), for which the insertion lengths are of 39 mm, 42 mm and 64 mm respectively.

## > Ø 63

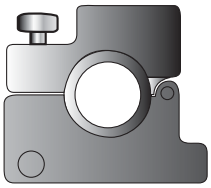
### > Tools



Pipe cutter for aluminum pipe ref. 6698 03 01

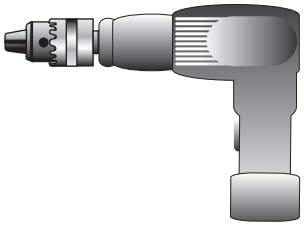
Chamfer ref. 6698 04 01

Deburring tool for aluminum pipe ref. 6698 04 02



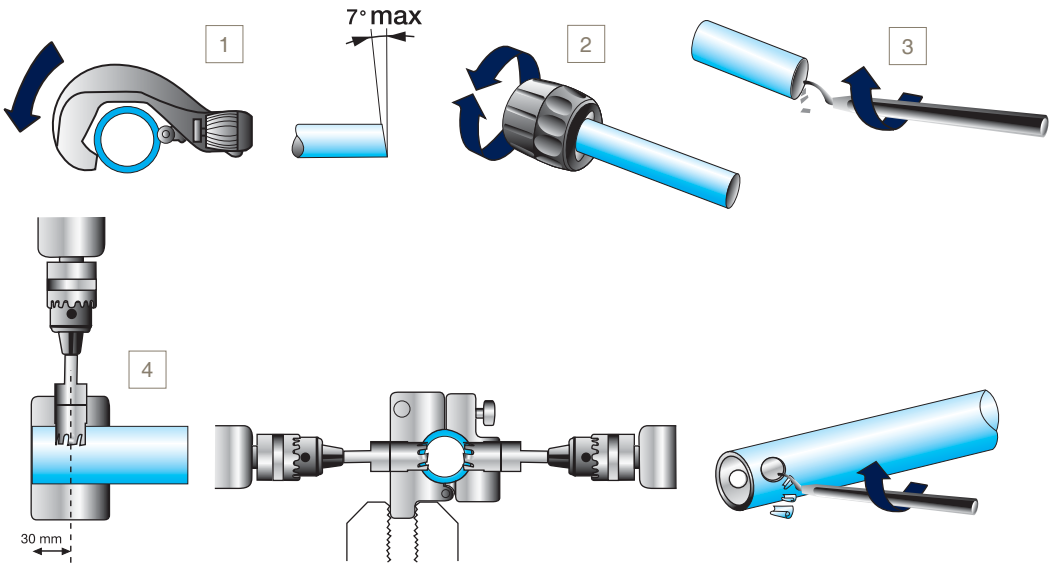
Drilling jig for aluminum pipe ref. 6698 01 02

Drilling tool for aluminum pipe ref. 6698 02 01



Drill

### > Procedure




1 - Cutting the pipe:
- place the pipe in the pipe cutter
- position the blade on the pipe
- rotate the pipe cutter around the pipe while gently tightening the wheel

2 - Carefully chamfer the outer edges

3 - Deburr the inner end of the pipe

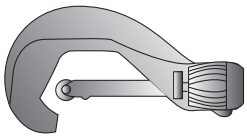
4 - Drill the two clamp holes using the drilling jig (6698 01 02) and the Ø 22 mm drilling tool (6698 02 01). Loosen the jig, release the pipe, then deburr both holes. Ensure that all outer and inner surfaces are smooth and clear of burrs and potential sharp edges.

# > Transair aluminum pipe

## > Aluminum pipe section

### > Ø 76 - Ø 168

### > Tools



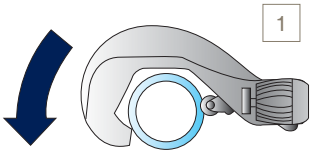
Pipe cutter for aluminum pipe ref. EW08 00 01 (Ø 76 - Ø 100) or EW08 00 03 (Ø 168)

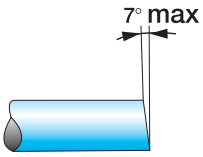
Deburring tool ref. 6698 04 02

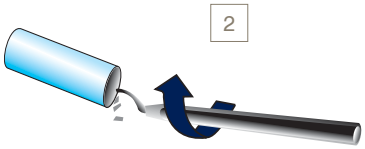
Portable tool kit ref. EW01 00 02

Pipe forming jaw set ref. EW02 L1 00 (Ø 76) or EW02 L3 00 (Ø 100) or EW02 L8 00 (Ø 168)

### > Procedure



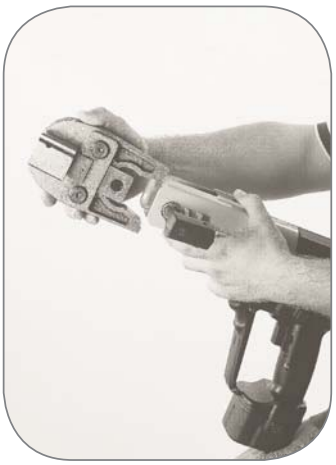

1 - Cutting the pipe:
- place the pipe in the pipe cutter
- position the blade on the pipe
- rotate the pipe cutter around the pipe while gently tightening the wheel

2 – Carefully deburr the outer and inner edges of the pipe

3

Open the retaining pin at the front of the machine by pressing the jaw release button

>



Place the jaws in the housing

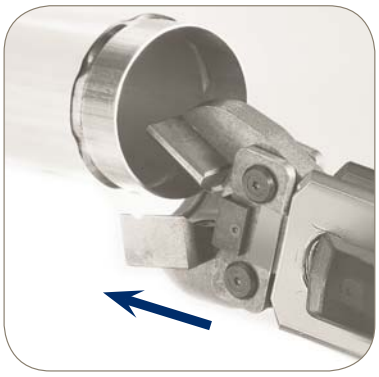
>

Lock in position by closing the retaining pin

3 - Creating the lugs for Ø 76, Ø 100 or Ø 168 cut pipe

## > Procedure

4



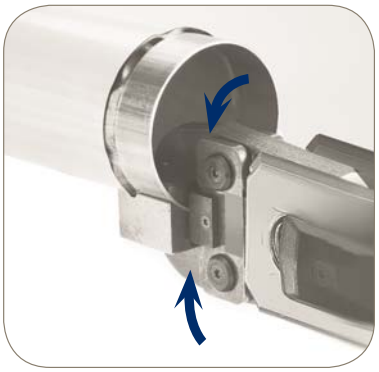
Manually open the jaws of the clamp and insert the aluminum pipe into the clamp as far as it will go

>

Release the jaws. Press the trigger and crimp the tube until a 'snap' sound is heard

Re-open the two jaws to remove the pipe and rotate the pipe slightly

>



Renew the operation until the required minimum number of lugs for each diameter is achieved

| | Ø 76 | Ø 100 | Ø 168 |
|---|---|---|---|
| Min. number of lugs | 5 | 6 | 10 |

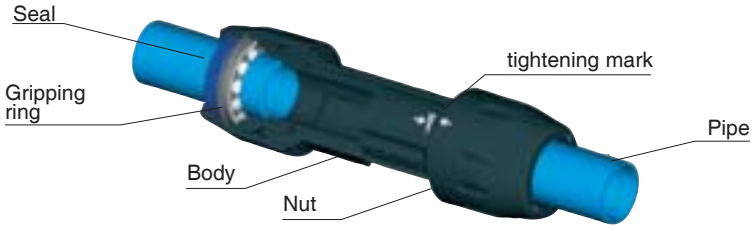
Important: Do not overlap the lugs!

# > Transair connectors

## > General

**> Ø 16.5**
**Ø 25**
**Ø 40**

### Instant connection by means of a gripping ring




The Ø 16.5 - Ø 25 - Ø 40 connectors instantly connect to Transair aluminum pipe. Simply insert the pipe into the connector up to the connector insertion mark. The internal gripping ring is then automatically secured and the connection is complete.

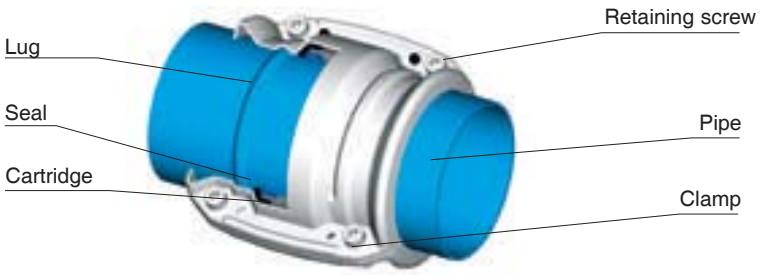
**> Ø 63**

### Double clamp quick-fit connection


The Ø 63 connectors are quickly secured to Transair aluminum pipe by means of a double clamp, which makes the connector fully integrated with the pipe. Connection is achieved by simply tightening the nut.

**> Ø 76**
**Ø 100**
**Ø 168**

### Clamp quick-fit connection

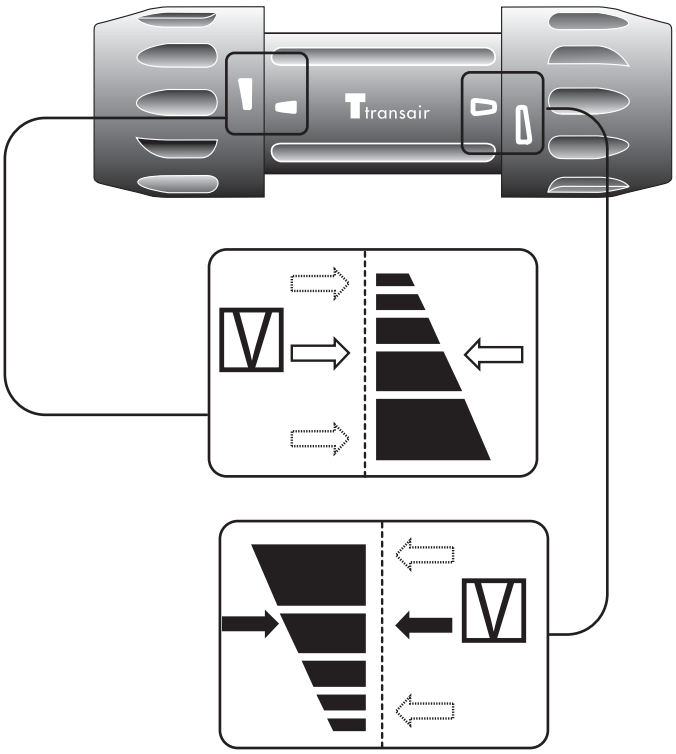



The Ø 76 - Ø 100 - Ø 168 clamps secure instantly to Transair aluminum pipe. Simply position the formed pipe within the Transair cartridge, which acts as a seal. Close the Transair clamp to secure the connection and finally tigten the four retaining screws.

> **Pre-assembled tightening indicators for Ø 16.5, Ø 25 and Ø 40 connectors**

There are important visual markings on the bodies and nuts of Transair Ø 16.5, Ø 25 and Ø 40 connectors. These are represented by solid and empty arrows and indicate the optimum torque. When assembling Transair connectors, the nuts are tightened to a pre-defined torque on the body of the connector. This torque guarantees the seal and safety of each connection.

There is no need to loosen the nuts prior to joining Ø 16.5, Ø 25 and Ø 40 connectors to Transair aluminum pipe.

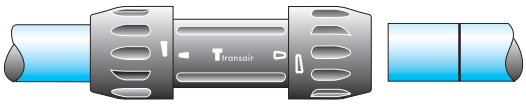


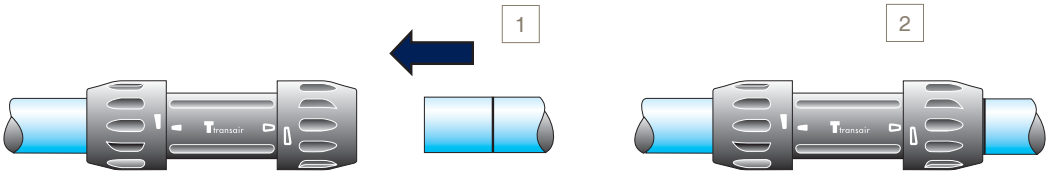

Before using Ø 16.5, Ø 25 or Ø 40 connectors, ensure that the arrow marks are correctly aligned with each other.

## > Connection / disconnection

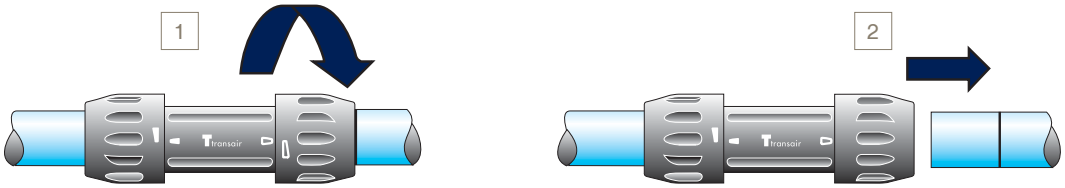
> Ø 16.5
Ø 25
Ø 40

### Connection






### Disconnection




Simply insert the pipe into the connector up to the connection mark. To disconnect, unscrew the nut by one half turn and remove the pipe.

Lateral dismantling: see page 60 of this catalog.

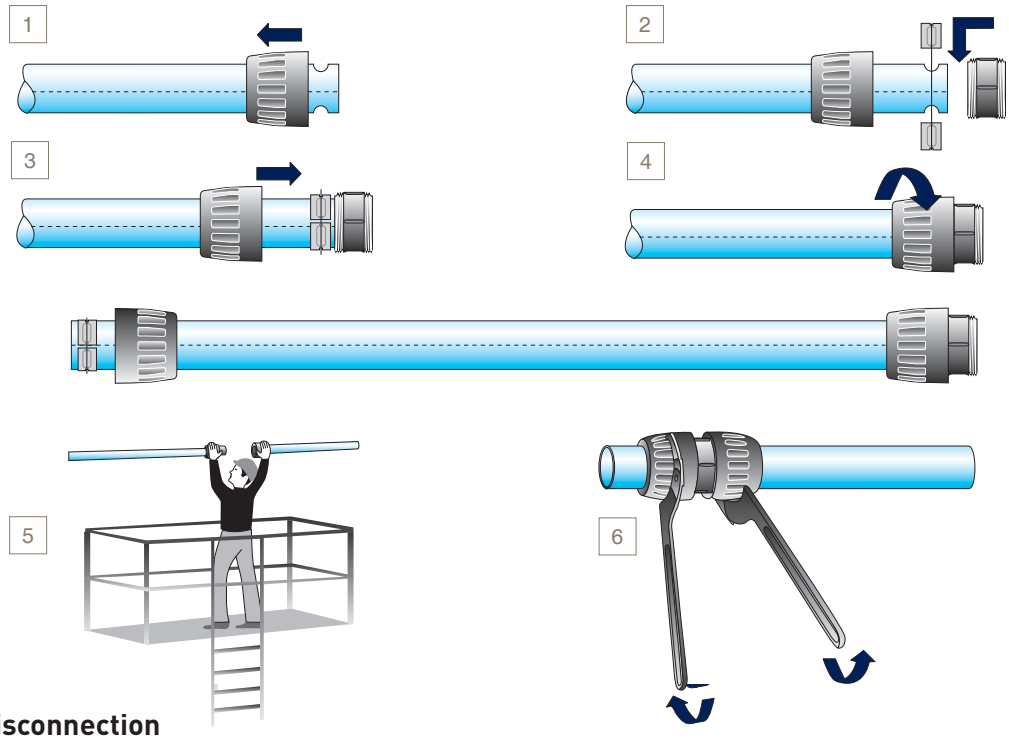
> Note – when using end caps (ref. 6625)

The insertion length is greater for end caps than for other Transair connectors. The connection mark should be applied to the pipe by means of a marker and tape measure, using the following values:

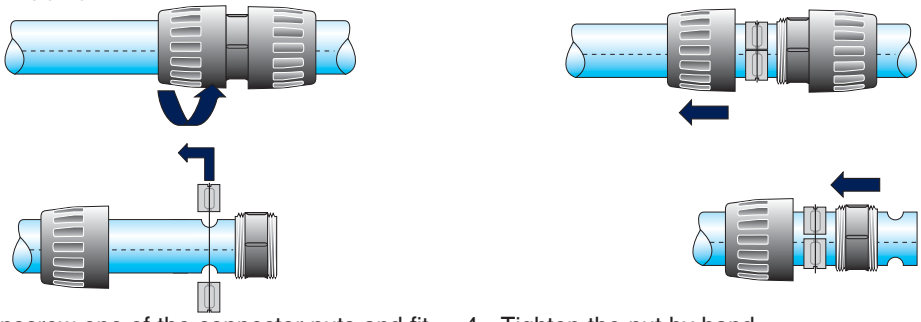
- Ø 16.5: 1.5 in.
- Ø 25: 1.7 in.
- Ø 40: 2.5 in.

> Ø 63

## Connection




## Disconnection




1 - Unscrew one of the connector nuts and fit over the pipe

2 - Position the double clamp ring in the appropriate housings (two holes at the end of the pipe)

3 - Bring the nut towards the body, which were previously positioned at the end of the pipe, until it stops against the double clamp

4 - Tighten the nut by hand

5 - Bring the two pipes together

6 - Complete the assembly by 1/2 rotation with Transair tightening spanners ref. 6698 05 03

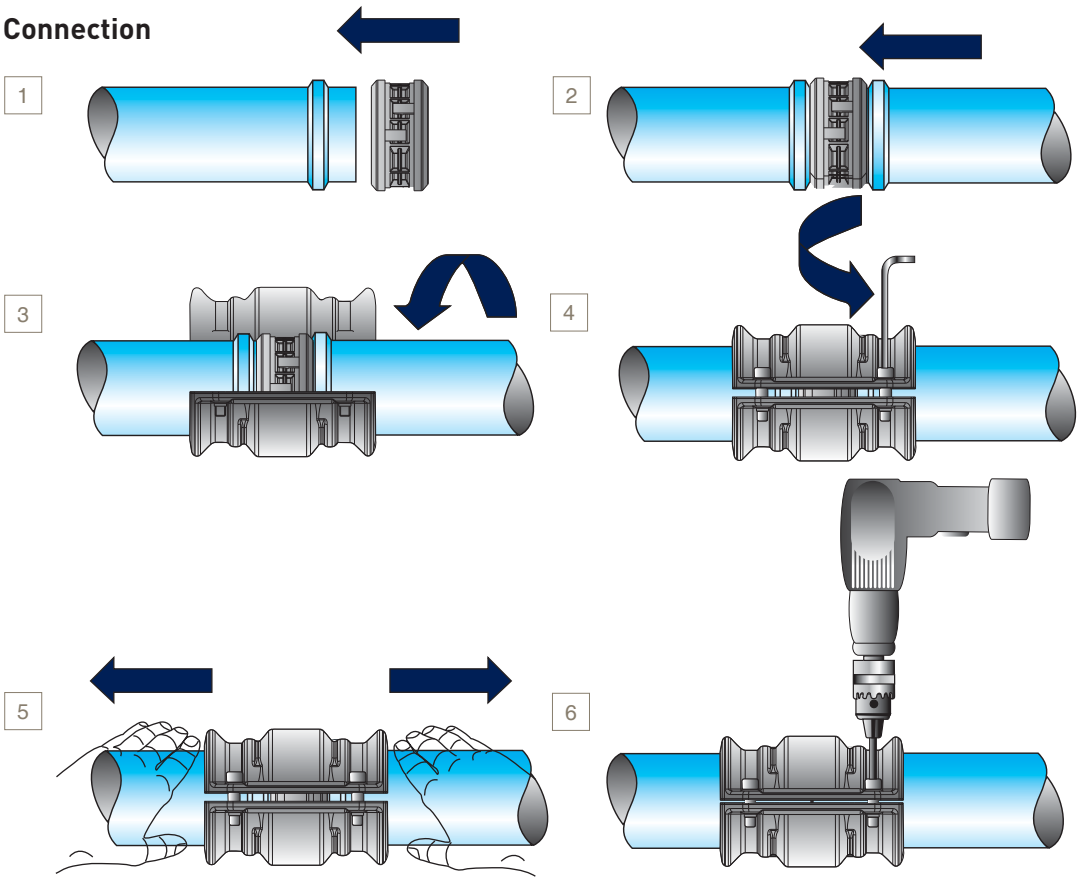
7 - To disconnect, perform the same operations in reverse order

Lateral dismantling: see page 60 of this catalog.

## > Connection / disconnection

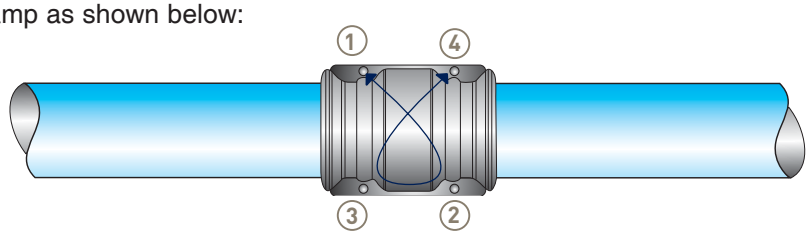
> Ø 76
Ø 100
Ø 168

### Connection




1 - Slip the cartridge over the end of the first pipe fully up to the shoulder
2 - Bring the second pipe to the cartridge and slide fully up to the shoulder
3 - Position the clamp over the cartridge / pipe assembly
4 - Hand tighten the pre-fitted screws with an Allen key
5 - Pull the pipes fully back towards the outside of the clamp
6 - Fully tighten the clamp screws (maximum tightening torque: final closure of clamps)

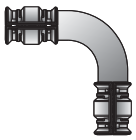
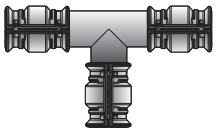
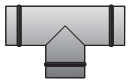
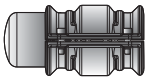
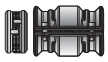
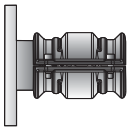
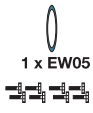
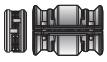
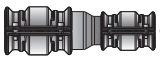
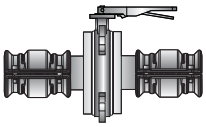
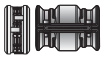
For effective clamp sealing, screw tightening should be performed on alternate sides of the clamp as shown below:




To disconnect, perform the same operations in reverse order.

> Practical examples

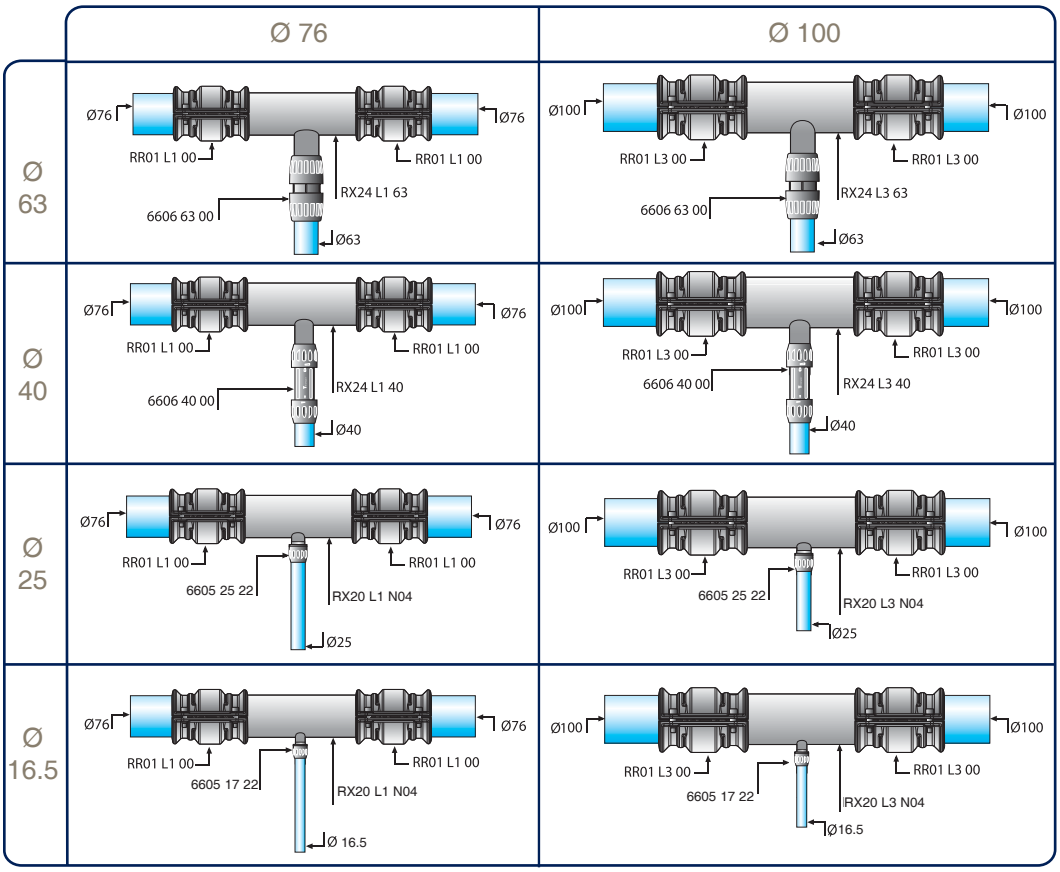
> Various Ø 76 and Ø 100 configurations

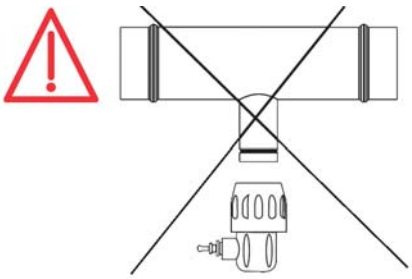
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| > Changing direction with a 90° elbow |  | = |  1 x RX02 | + |  2 x RR01 | | | |
| > Changing direction with a tee |  | = |  1 x RX04 | + |  3 x RR01 | | | |
| > Connecting an end cap |  | = |  1 x RX25 | + |  1 x RR01 | | | |
| > Connecting a circular flange and a connector |  | = |  1 x EW05 1 x EW06 | + |  1 x RX30 | + |  1 x RR01 | |
| > Reduction from Ø 100 to Ø 76 | Ø 100  Ø 76 | = |  1 x RR01 L3 00 | + |  1 x RX66 L3 L1 | + |  1 x RR01 L1 00 | |
| > Connecting a butterfly valve |  | = |  1 x RR01 | + |  1 x RX30 | + |  1 x VR02 | +  1 x RX30 +  1 x RR01 |
| > Connecting a flexible hose and a circular flange |  | = |  1 x EW05 | + |  1 x RX30 1 x EW06 | + |  1 x RR01 | +  1 x FP01 |

# > Transair connectors

## > Practical examples

**> Connecting a Transair Ø 76 to Ø 100 system to a Transair Ø63, Ø 40, Ø 25 or Ø 16.5 system**



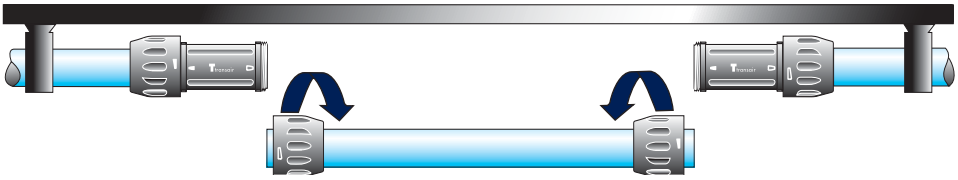



Reducing Tee
RX24 L1 40
RX24 L3 40

6625 40 00

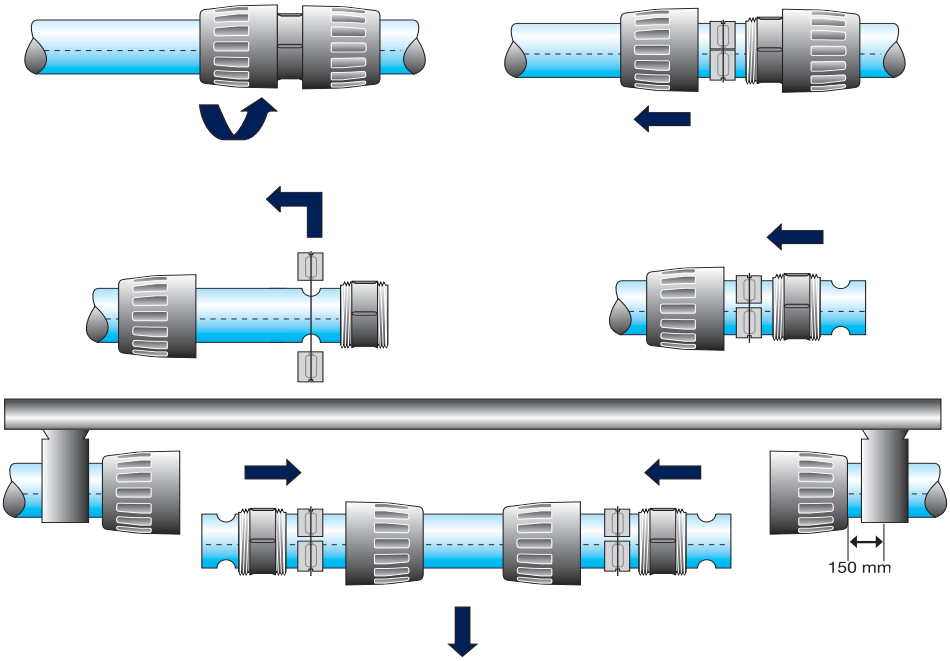
## > Lateral dismantling

### > Ø 16.5
### Ø 25
### Ø 40



Loosen the nuts located on the side of the pipe to be removed and slide them along the pipe. Then remove the pipe.

### > Ø 63

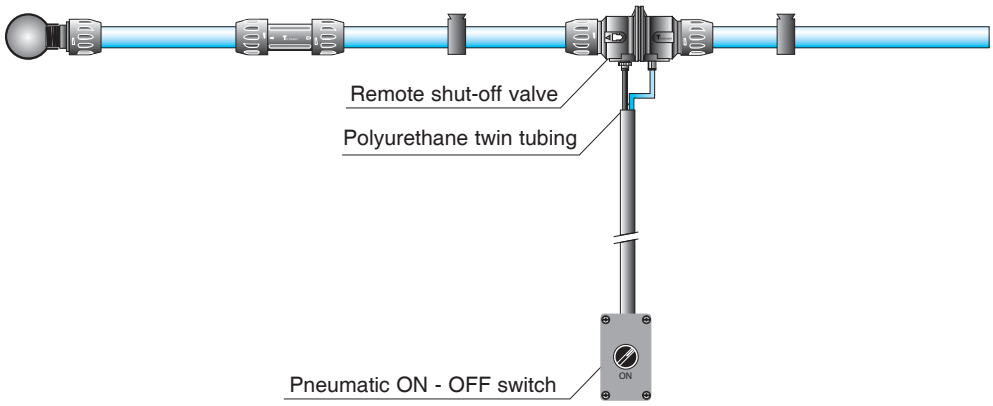



1 - Loosen the connector nuts on the ends of the pipe to be removed
2 - Slide them along the pipe
3 - Remove the clamp rings from their housings
4 - Slide the clamps and the connector body along the pipe which is to be removed
5 - Repeat the operation at the other end of the pipe and laterally remove the pipe, complete with the assembly components

# > Transair connectors

## > Practical examples

### > Transair Ø 40 remote shut-off valve




### > Application

The Transair Ø 40 remote shut-off valve allows network supply to be rapidly and safely opened and closed either at ground level or by remote control.
The Transair remote shut-off valve guarantees:

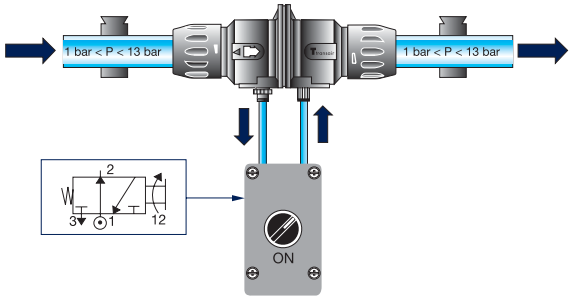
- Personal safety, by eliminating all hazards related to working at heights
- Servicing speed, by removing the need for special access equipment (ladder, platform etc)

### > Operating principle

Single acting valve - normally closed.

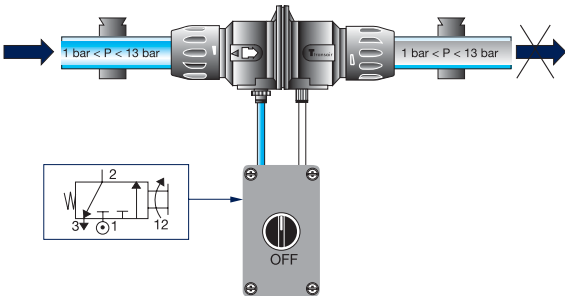
For compressed air systems:

The valve control pressure can be taken upstream of the isolating valve, with no external power supply. Control is performed through the control unit connected to the valve by means of a push-in connector.

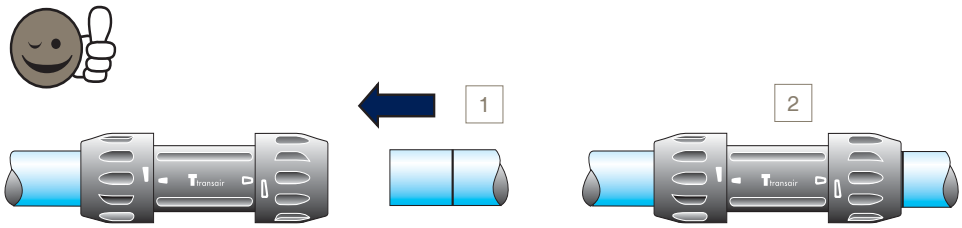
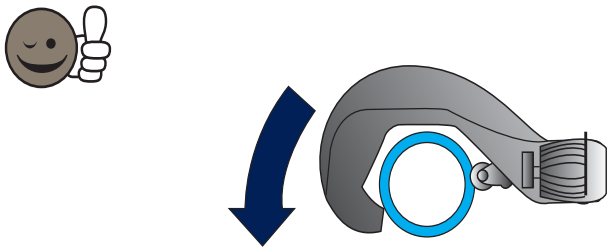
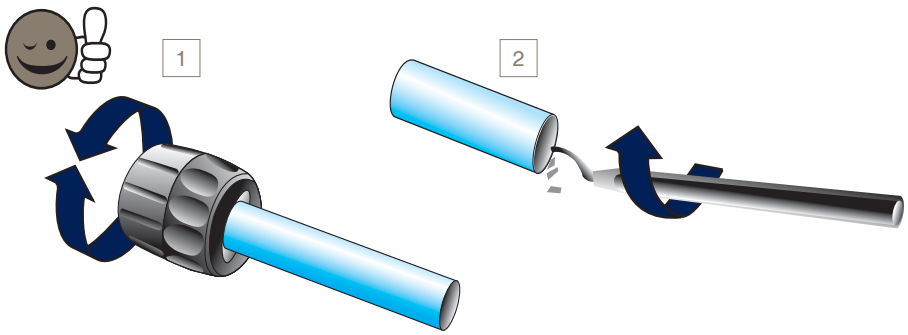
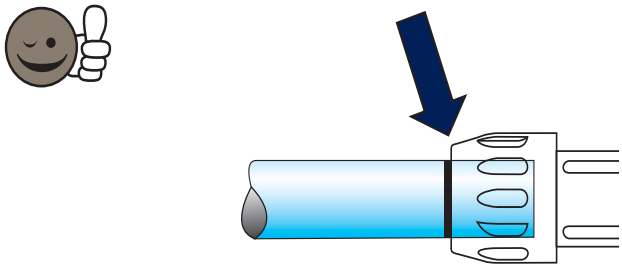



For vacuum systems:

A compressed air supply external to the control unit is required, and the corresponding valve port must be closed in order to prevent loss.

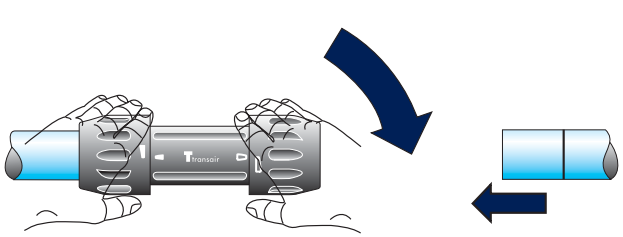
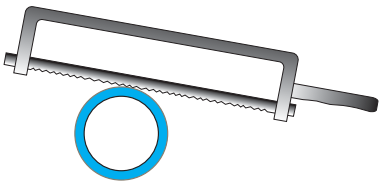
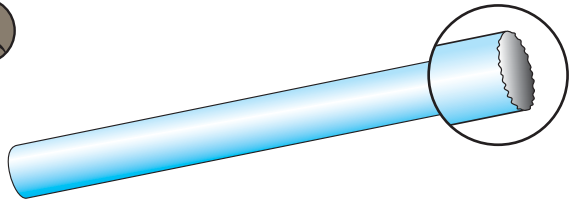
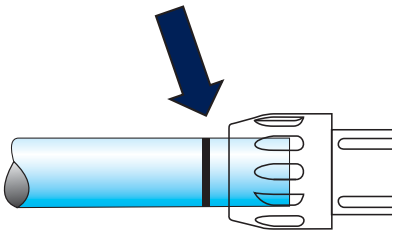
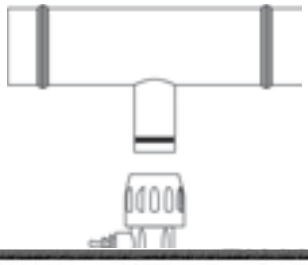


## > Do's

| | |
|---|---|
| > Connection |  |
| > Use a pipe cutter |  |
| > Carefully Chamfer and deburr the pipe after cutting or drilling |  |
| > Check that the pipe is correctly positioned in the connector |  |

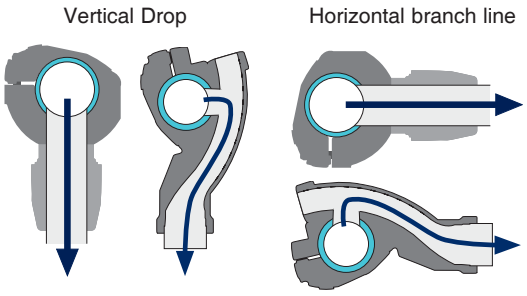
# > Transair connectors

## > Don’ts

| | |
|---|---|
| > Loosen the nuts during assembly |  |
| > Cut the pipe with a saw |  |
| > Use non-deburred pipe |  |
| > Fail to make the pipe secure |  |
| > Connect 40mm end cap to reducing tee |  |

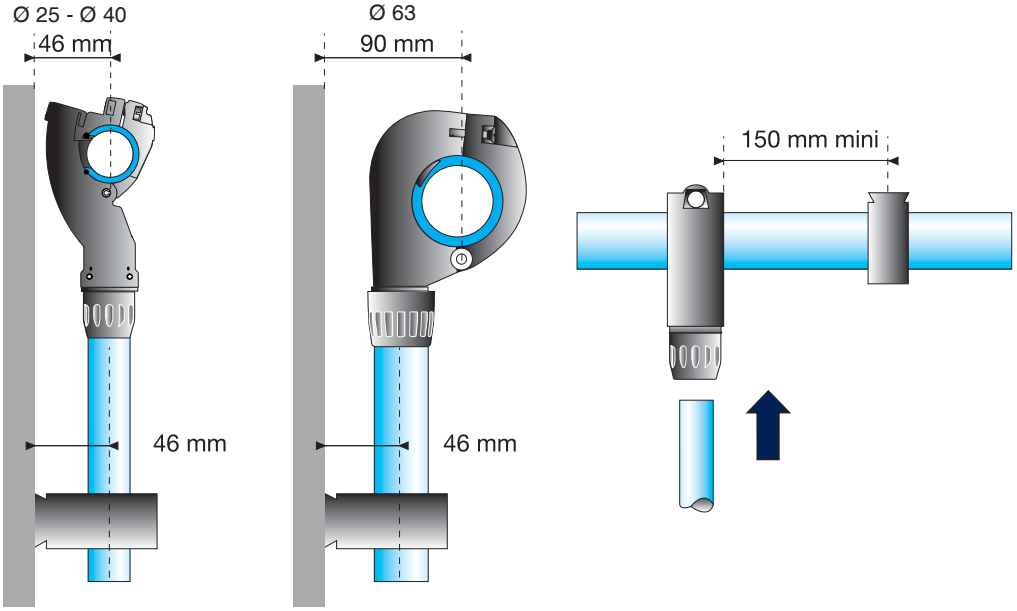
# > Transair quick assembly brackets

## > General




The easy addition of a new drop or bypass onto an existing length of pipe is an important consideration of any air pipe system. Transair quick assembly brackets are designed for this very purpose, without the need to cut the pipe. A “swan neck” built into the brackets retains condensate water in the main line. Thanks to its small size, the Transair quick assembly bracket facilitates new additions in the tightest places and can be used for connecting horizontal branch lines and vertical drops.

### > Specific instructions for installing a bracket




For the Ø 25 and Ø 40 Transair quick assembly brackets, the pipe center to wall distrance is equal to the bracket center to wall distance, i.e. 46mm. For the Ø 63 Transair quick assembly brackets, the pipe center to wall distance is 90mm and the Ø 25 and Ø 40 bracket center distance is 46mm. Furthermore, Transair clips should be fitted at a distance of at least 150mm from a quick assembly bracket in order to allow for the expansion / contraction of aluminum pipe.

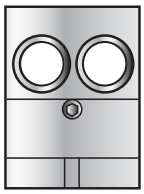
# > Transair quick assembly brackets

## > Installing a quick assembly bracket

**> To Ø 25 or Ø 40 pipe**

**> Tools required**

Drilling tool for aluminum pipe ref. 6698 02 02 or 6698 02 01



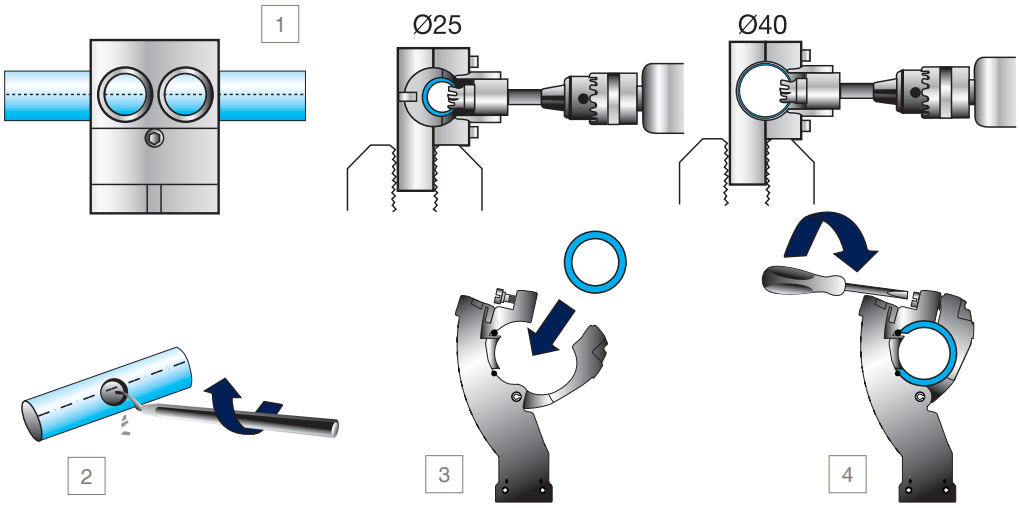
Drilling jig for aluminum pipe ref. 6698 01 01

Deburring tool for aluminum pipe ref. 6698 04 02

Permanent marker pen

Allen key / Flat end screwdriver

**> Procedure**




1 - Mark the pipe at the desired position for the bracket, using the same locator mark when several take-off points need to be aligned uniformly. Place the drilling jig ref. 6698 01 01 in a vice or on the floor. To drill a Ø 40 hole, remove the retaining bolt in the jig using an Allen key and place the pipe in the jig. The locator mark on the pipe should be aligned with the appropriate guide marks on the side of the jig. Two guide lines on either side of the jig provide a rapid indication of whether the pipe is correctly positioned (the guide lines match the locator marks on the pipe). Close the jig and drill a hole using the appropriate drilling tool:

- Ø 25: Ø 16 hole > ref. 6698 02 02 drilling tool
- Ø 40: Ø 22 hole > ref. 6698 02 01 drilling tool

Recommended rotation speed: 650 rpm
Note: drill without lubrication.

2 - Release the pipe, remove any chips and deburr the circular hole. Repeat the operation for the number of brackets that you wish to fit.

3 - Position the quick assembly bracket using its location pin

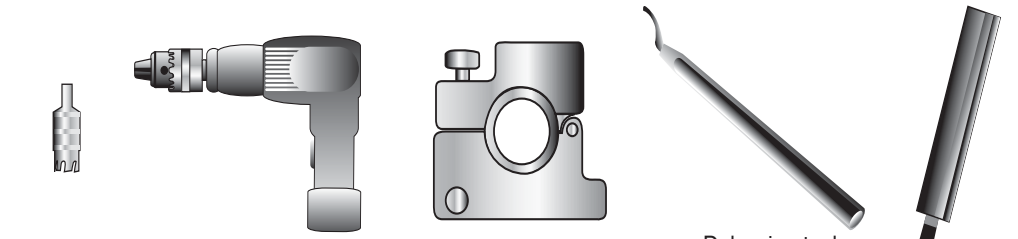
4 - Tighten the screw

Note: The jig's second drilling guide corresponds to the minimum distance for fitting two adjacent brackets.

# > Installing a bracket

## > On Ø 63 pipe

## > Tools required



Drilling tool for aluminum pipe ref. 6698 02 01

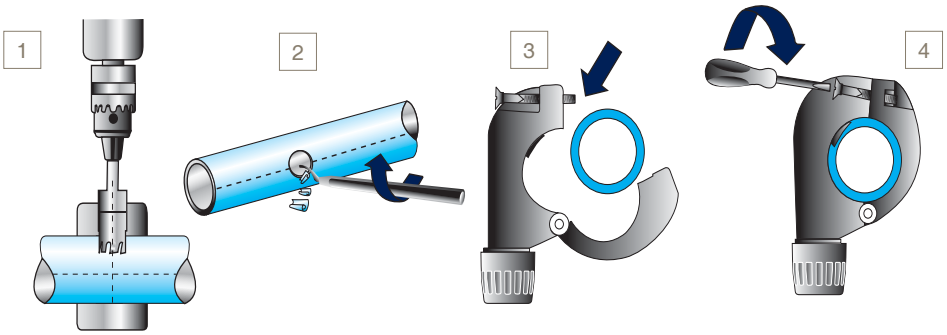
Drill

Drilling jig for aluminum pipe ref. 6698 01 02

Deburring tool for aluminum pipe ref. 6698 04 02

Permanent marker pen

## > Procedure




1 - Mark the pipe at the desired position for the bracket. The mark should be placed on one of the locator marks so that multiple brackets are correctly aligned, when several take-off points are required. Place the Ø 63 drilling jig in a vice or on the floor and place the pipe in the jig. Ensure that the line marked on the pipe is centred within the drilling guide: two marks on either side of the jig's upper side provide a rapid indication of the pipe's positioning. Tighten the locking clamp to secure the pipe and drill using the Ø 22 drilling tool. [Recommended rotation speed: 650 rpm] Note: Drill without lubrication.

2 - Loosen the locking clamp and release the pipe, remove any chips and deburr the hole. Repeat the operation for the number of brackets that you wish to fit.

3 - Position the quick assembly bracket using its location hole

4 - Tighten the screw

# > Transair quick assembly brackets

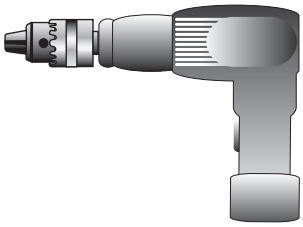
## > Installing a bracket

### > On Ø 76, Ø 100 or Ø 168 pipe

### > Tools required

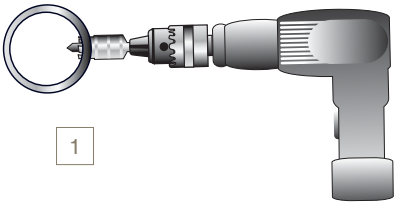
Drilling tool for aluminum pipe, ref. EW09 00 30 (Ø 76 - Ø 100 ) or EW09 00 64 / EW09 00 51 (Ø 168)

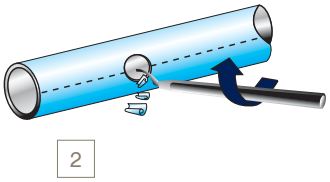
Deburring tool for aluminum pipe ref. 6698 04 02

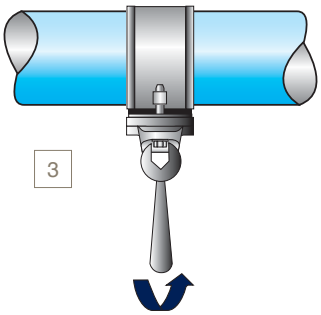


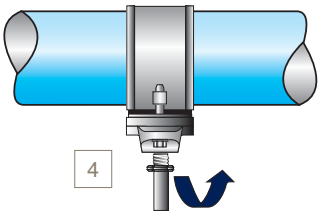
Drill

### > Procedure




1 - Drill the aluminum pipe at the desired position using drilling tool ref.

2 - Carefully deburr the pipe

3 - Position bracket ref. RR61 and fully tightenthe two screws

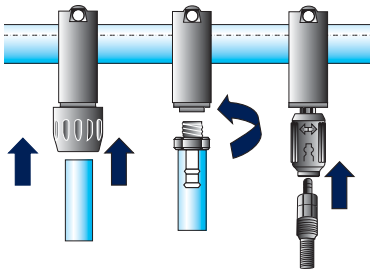
4 - Screw on male adapter

Note: Use adapter ref. 6621 25 35 in combination with bracket ref. RR63 to create a Ø 25 take-off point from Ø 76 or Ø 100 pipe.

## > Practical examples

**> Creating vertical and horizontal take-off points**

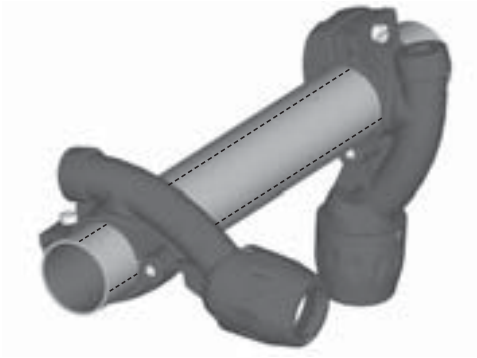
Using the same locator mark

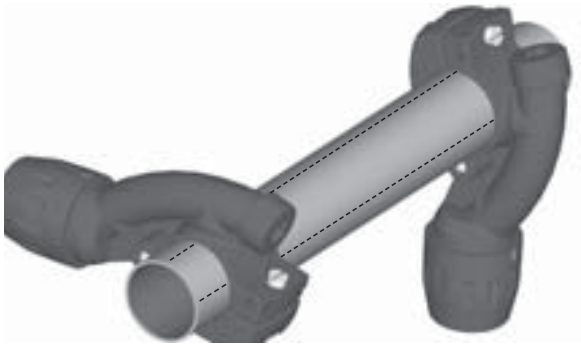


**> Adding a vertical bracket**

**> Adding an off-set bracket**

Using two locator marks

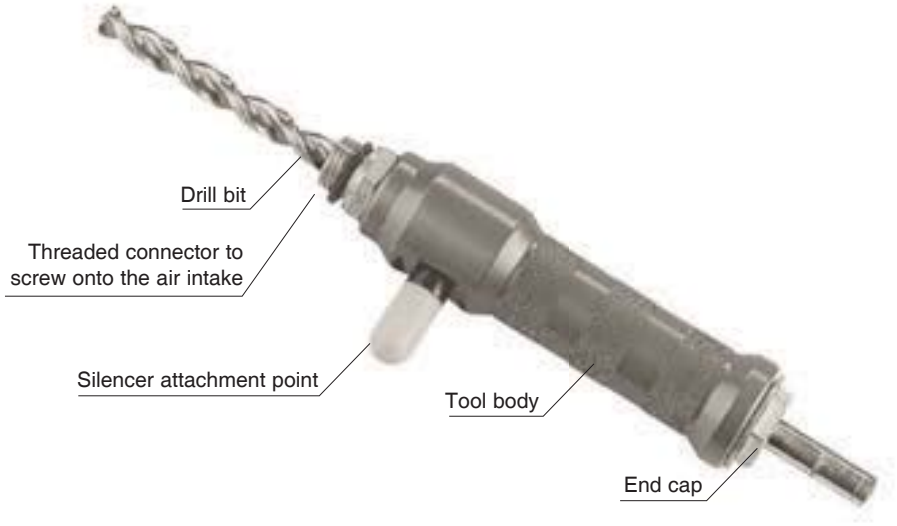




# > Transair quick assembly brackets

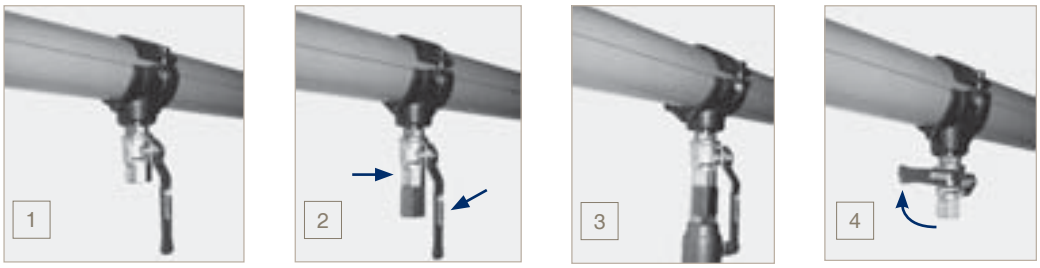
## > Installing a bracket to a pressurised system

## > Tools required




Use the under pressure drilling tool to fit a bracket to an existing pressurized system. This can be simply done with use of a standard drill.

## > Procedure




1 - Position the pressurized system bracket and fully tighten the two screws
2 - Screw the assembly onto the ball valve and ensure that the valve is open
3 - Screw the drilling tool onto the ball valve until complete
4 - Remove the drill and close the ball valve immediately and dismantle the drilling tool

# > Transair flexible hose

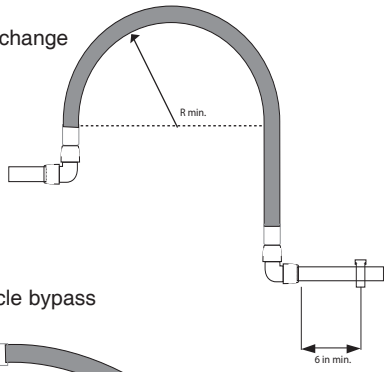
## > General

### > Applications

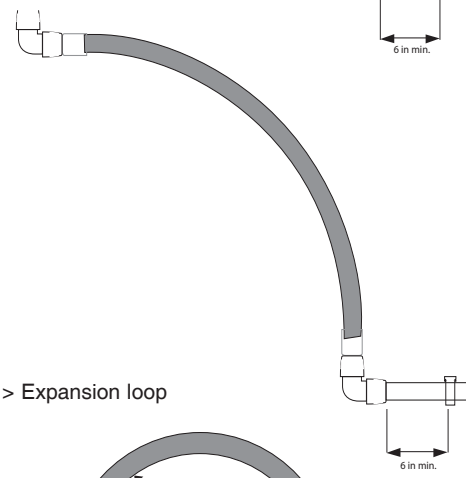
Transair flexible hose can be easily connected to other Transair components and can be rapidly installed without prior preparation or cutting. Thanks to its small bend radius, it requires minimum space and avoids mechanical stress within the system. Transair flexible hose is resistant to both compressor oils and fire.

| Ø (mm) | Length (in) | Transair | R min (in) |
|---|---|---|---|
| 25 | 22 | 1001E25 00 01 | 4 |
| 25 | 59 | 1001E25 00 03 | 4 |
| 25 | 79 | 1001E25 00 04 | 4 |
| 25 | 22 | 1001E25V00 01 | 3 |
| 25 | 59 | 1001E25V00 03 | 3 |
| 25 | 79 | 1001E25V00 04 | 3 |
| 40 | 45 | 1001E40 00 02 | 16 |
| 40 | 79 | 1001E40 00 04 | 16 |
| 40 | 118 | 1001E40 00 05 | 16 |
| 40 | 37 | 1001E40V00 07 | 6 |
| 40 | 79 | 1001E40V00 04 | 6 |
| 40 | 118 | 1001E40V00 05 | 6 |
| 63 | 55 | 1001E63 00 08 | 12 |
| 63 | 118 | 1001E63 00 05 | 26 |
| 63 | 157 | 1001E63 00 06 | 26 |
| 63 | 118 | 1001E63V00 05 | 10 |
| 63 | 157 | 1001E63V00 06 | 10 |
| 76 | 59 | FP01 L1 01 | 14 |
| 76 | 79 | FP01 L1 02 | 14 |
| 100 | 79 | FP01 L3 01 | 18 |
| 100 | 118 | FP01 L3 03 | 18 |

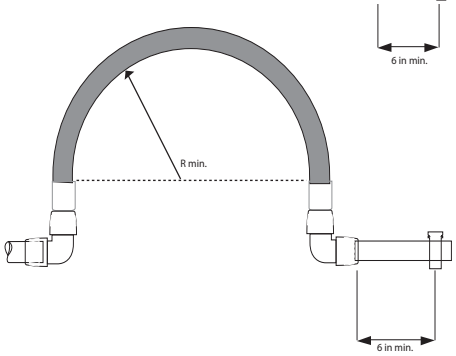
> Level change




> Obstacle bypass




> Expansion loop




### > Safety

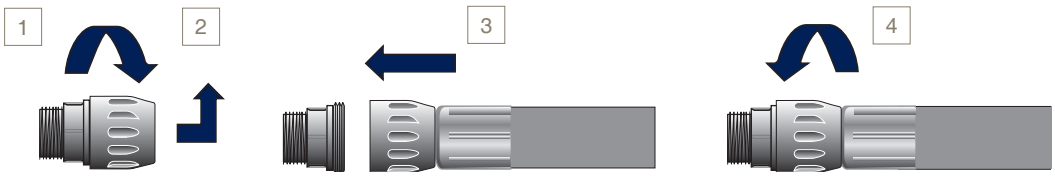
> Anti-whiplash straps

In order to avoid the risk of whiplash accidents, Transair recommends the use of anti-whiplash straps, which are placed on either side of the connection. If Transair flexible tube is exposed to tear, the anti-whiplash assembly prevents it from snaking (safety device in accordance with ISO 4414 standard).

## > System connection

### > Ø 16.5
### Ø 25
### Ø 40

### > Using a male threaded fitting



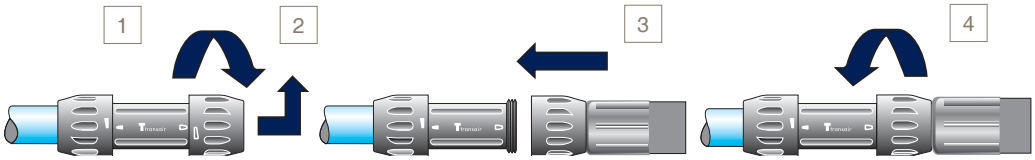

1 - Loosen the nut on the stud fitting

2 - Remove it

3 - Move the swaged end of the hose onto the exposed stud thread

4 - Tighten the nut

### > Using a pipe to pipe connector



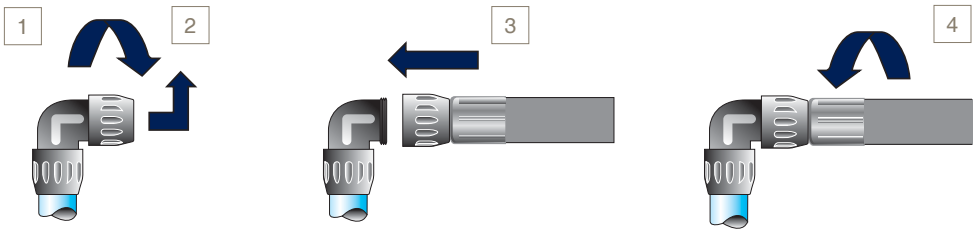

1 - Loosen the nut on the connector

2 - Remove it

3 - Move the swaged end of the hose onto the connector thread

4 - Tighten the nut

### > Using a 90° elbow




1 - Loosen the nut on the elbow

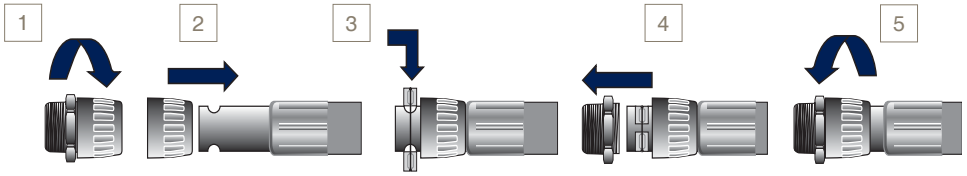
2 - Remove it

3 - Move the swaged end of the hose onto the elbow thread

4 - Tighten the nut

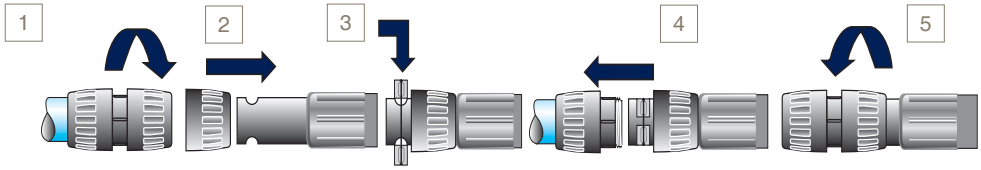
## > Ø 63

### > Using a male threaded fitting



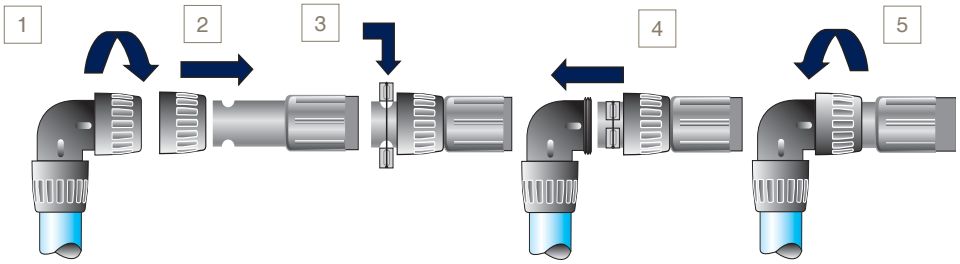

1 - Loosen the nut on the stud fitting and remove it
2 - Place the nut over the swaged end of the flexible hose
3 - Place the pipe connector clamps in the housings on the hose
4 - Slide the nut forward to the end of the flexible hose and assemble onto the male thread
5 - Tighten the nut using the Ø 63 spanner set

### > Using a pipe to pipe connector




1 - Loosen the nut on the connector and remove it
2 - Fit it over the swaged end of the flexible hose
3 - Place the pipe connector clamps in the housings on the hose
4 - Slide the nut forward to the end of the flexible hose, until it touches the clamps
5 - Tighten the nut using the Ø 63 spanner set

### > Using a 90° elbow

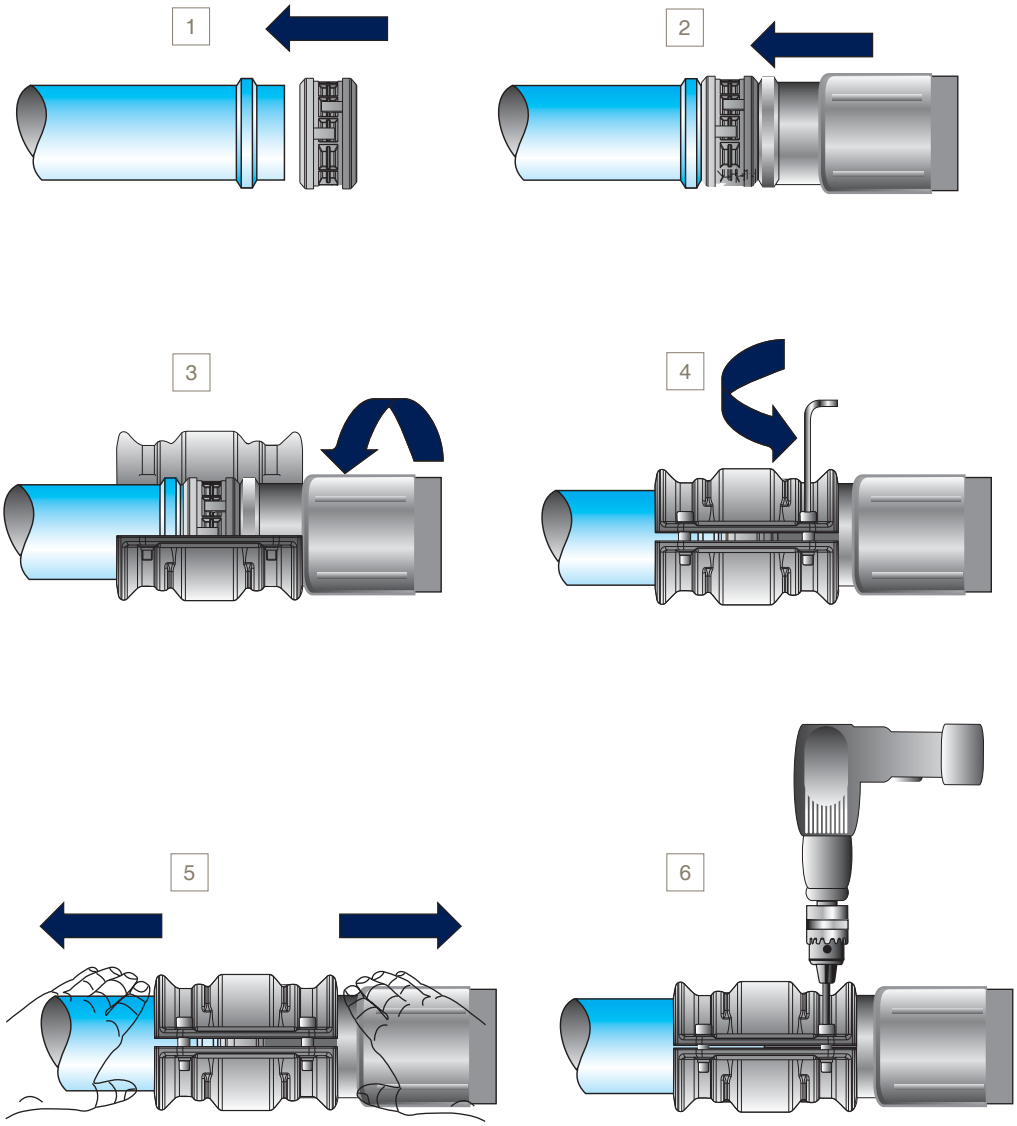



1 - Loosen the nut on the elbow and remove it
2 - Fit it over the swaged end of the flexible hose
3 - Place the elbow clamps in the housings on the hose
4 - Slide the nut forward to the end of the flexible hose, until it touches the clamps
5 - Tighten the nut using the Ø 63 spanner set

## > System connection

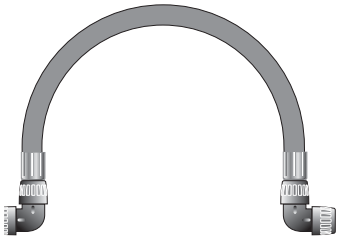
**> Ø 76**
**Ø 100**
**Ø 168**

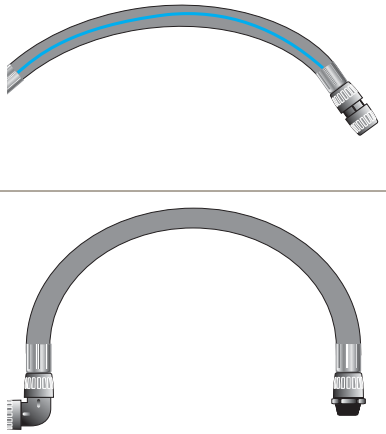
**> Using a steel clamp**

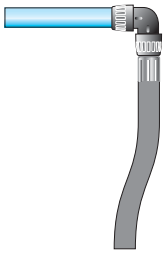


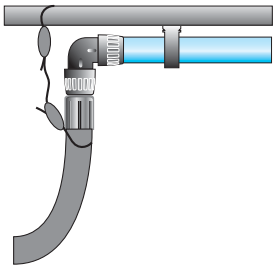
## > Do’s / don’ts

**> Do’s**

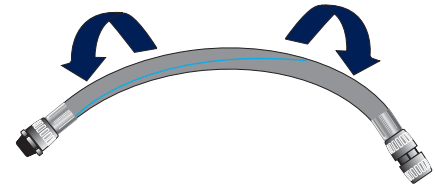


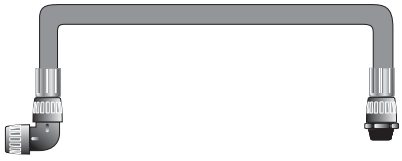


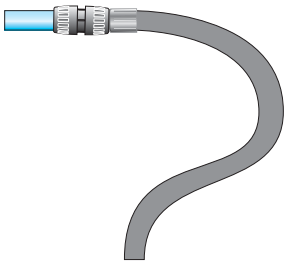


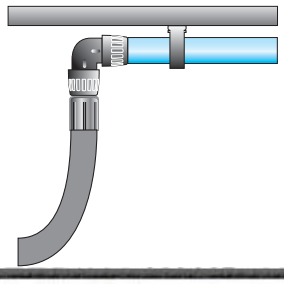


**> Don’ts**





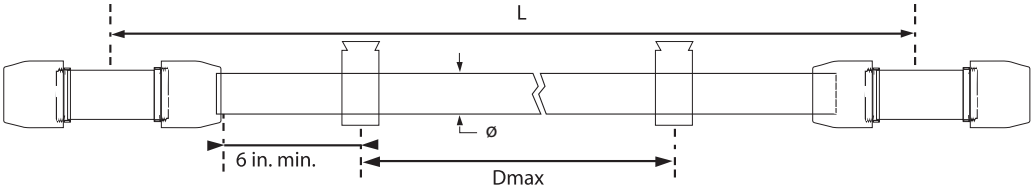




# > Fixture accessories

## > Transair attachments

### > Transair clip for Ø 16.5, Ø 25, Ø 40 and Ø 63 rigid pipe




The Transair fixing clip is the basic component for mounting pipe when installing a Ø 16.5 – Ø 25 – Ø 40 – Ø 63 Transair aluminum system. This clip allows expansion and contraction of the pipe to occur freely.

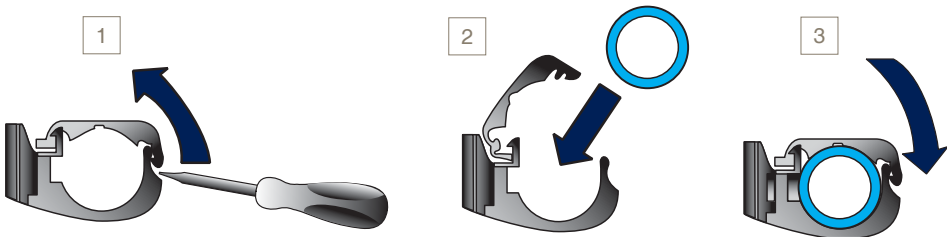
To ensure good system stability, we recommend the use of at least two clips per pipe. Transair aluminum pipe should only be mounted using Transair and should not be substituted by any other type of components.

| Ø | L (ft) | Dmax (ft) |
|---|---|---|
| 16.5 | 10 | 8 |
| 25 | 10 | 8 |
| 25 | 20 | 10 |
| 40 | 10 | 8 |
| 40 | 20 | 10 |
| 63 | 20 | 10 |

### > Properties

- Transair fixing clips for Ø 16.5 - Ø 25 - Ø 40: 1/4'' nuts
- Transair fixing clips for Ø 63 systems: 3/8'' nuts

### > Procedure

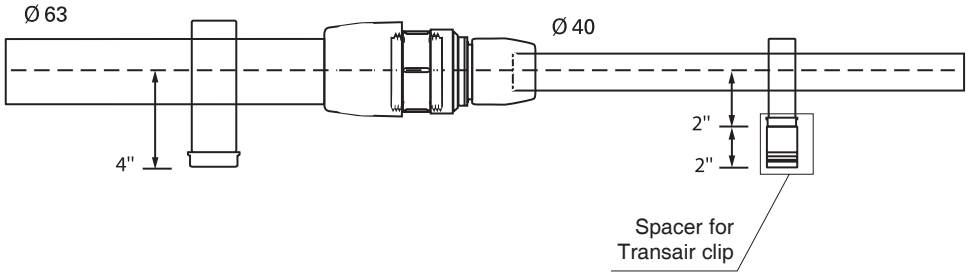



1 - Place the clip as required and open it using a screwdriver
2 - Insert the pipe into the clip
3 - Close the clip

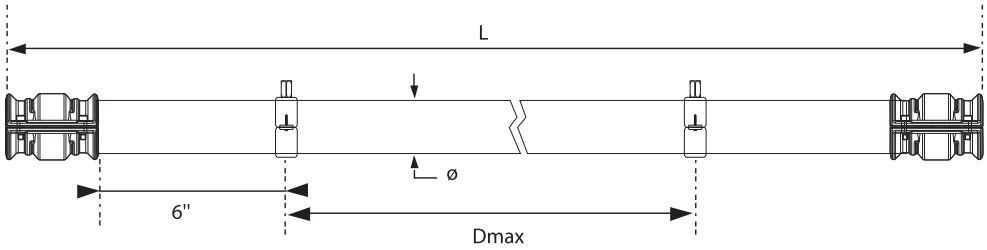
## > Spacer

The Transair 6697 00 03 spacer is used for adjusting a run of Transair pipe using different diameters.

Example:




## > Transair fixing clips for Ø 76 - Ø 168 systems




| Ø | L (ft) | Dmax (ft) |
|---|---|---|
| 76 | 20 | 16 |
| 100 | 20 | 16 |
| 168 | 20 | 16 |

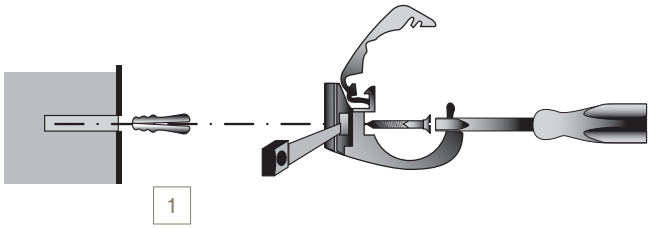
To ensure good system stability, we recommend the use of at least two fixing clips per length of pipe. Transair fixing clips for Ø 76 - Ø 168 systems: 3/8'' thread.

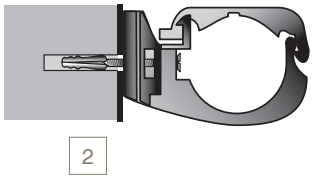
# > Fixture accessories

## > Supporting a Transair system

### > Directly onto a wall

### > Offset from a wall

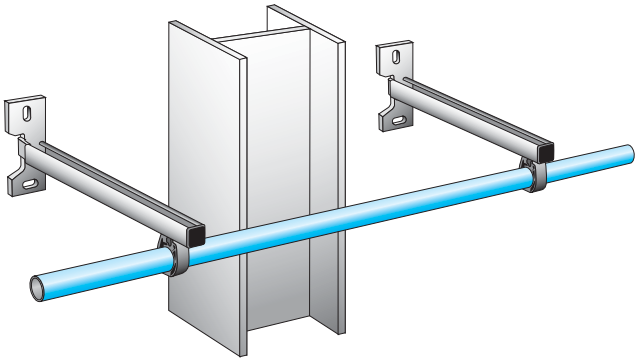


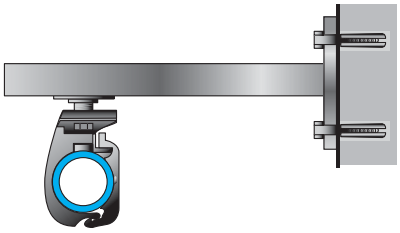




1 - Remove the nut at the base of the pipe clip using a screwdriver and insert the screw by passing it through the clip

2 - Tighten the screw

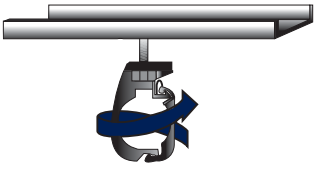
### > U-channel type mounting bracket



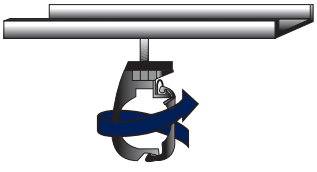


U-channel assemblies are used to offset systems and to bypass obstacles.

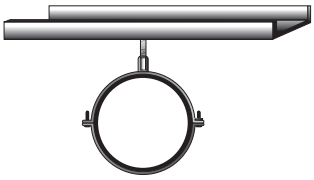
### > Threaded rod adapter



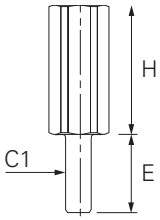
Ø 16.5 - Ø 40



Ø 63

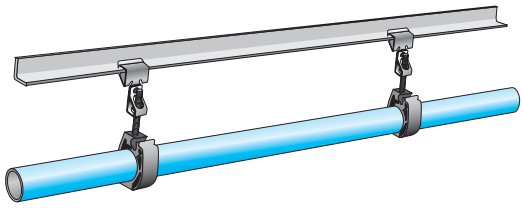


Ø 76 - Ø 168



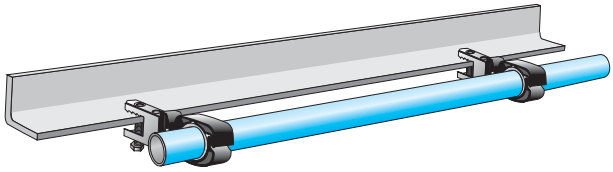

The Transair threaded rod adaptor allows Ø 16.5, Ø 25 and Ø 40 Transair pipe clips to be easily suspended under 3/8” threaded rod.

> On a metal beam



Push-on type beam clamps

> Using beam clamps

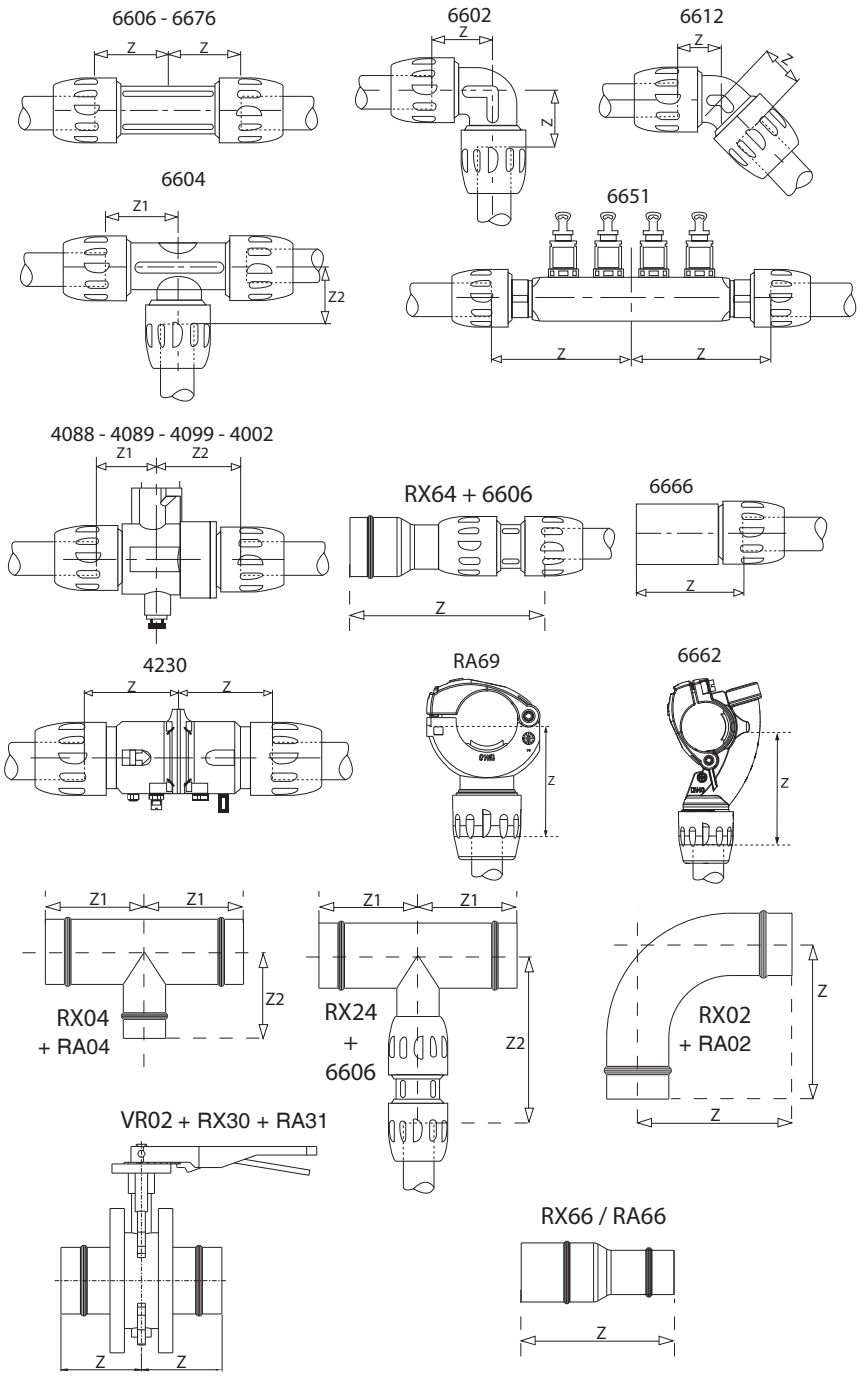


Screw type beam clamps

# > Practical information

## > Z dimensions

| Transair | Z (mm) | Z1 (mm) | Z2 (mm) |
|---|---|---|---|
| 4002 40 00 | - | 57 | 57 |
| 4002 63 00 | - | 84 | 98 |
| 4089 17 00 | - | 29 | 42 |
| 4088 25 14 | - | 40 | 55 |
| 4099 17 00 | - | 29 | 42 |
| 4099 25 00 | - | 40 | 55 |
| 4230 00 40 | 85 | - | - |
| 6612 25 00 | 29 | - | - |
| 6612 40 00 | 45 | - | - |
| 6602 17 00 | 31 | - | - |
| 6602 25 00 | 40 | - | - |
| 6602 40 00 | 62 | - | - |
| 6602 63 00 | 61 | - | - |
| 6604 17 00 | - | 34 | 31 |
| 6604 25 00 | - | 48 | 40 |
| 6604 40 00 | - | 57 | 57 |
| 6604 63 00 | - | 61 | 61 |
| 6604 63 40 | - | 61 | 116 |
| 6606 17 00 | 33 | - | - |
| 6606 25 00 | 48 | - | - |
| 6606 40 00 | 57 | - | - |
| 6606 63 00 | 25 | - | - |
| 6651 25 12 04 | 107 | - | - |
| 6651 40 12 04 | 150 | - | - |
| 6662 25 00 | 52 | - | - |
| 6662 25 17 | 59 | - | - |
| 6662 40 17 | 75 | - | - |
| 6662 40 25 | 68 | - | - |
| 6662 63 25 | 75 | - | - |
| 6666 17 25 | 50 | - | - |
| 6666 25 40 | 71 | - | - |
| 6676 17 00 | 33 | - | - |
| 6676 25 00 | 48 | - | - |
| 6676 40 00 | 57 | - | - |
| 6676 63 00 | 25 | - | - |
| RA02 L8 00 | 185 | - | - |
| RA04 L8 00 | - | 180 | 185 |
| RA04 L8 L3 | - | 165 | 185 |
| RA04 L8 L1 | - | 165 | 185 |
| RA04 L8 63 | - | 165 | 220 |
| RA66 L8 L1 | 210 | - | - |
| RA66 L8 L3 | 210 | - | - |
| RA69 25 17 | 47.5 | - | - |
| RA69 40 25 | 61 | - | - |
| RX02 L1 00 | 189 | - | - |
| RX02 L3 00 | 221 | - | - |
| RX04 L1 00 | - | 145 | 145 |
| RX04 L3 00 | - | 155 | 135 |
| RX04 L3 L1 | - | 155 | 135 |
| RX23 L1 04 | 145 | - | - |
| RX23 L3 04 | 155 | - | - |
| RX24 L1 40 | - | 145 | 228 |
| RX24 L1 63 | - | 145 | 285 |
| RX24 L3 40 | - | 155 | 241 |
| RX24 L3 63 | - | 155 | 298 |
| RX64 L1 63 | 352 | - | - |
| RX64 L3 63 | 372 | - | - |
| RX66 L3 L1 | 193 | - | - |
| VR02 L1 00 | 116 | - | - |



## > Expansion / contraction

In order to compensate for the effects of expansion and contraction due to variations in temperature, any fluctuations in the length of the Transair aluminum pipe system should be calculated.

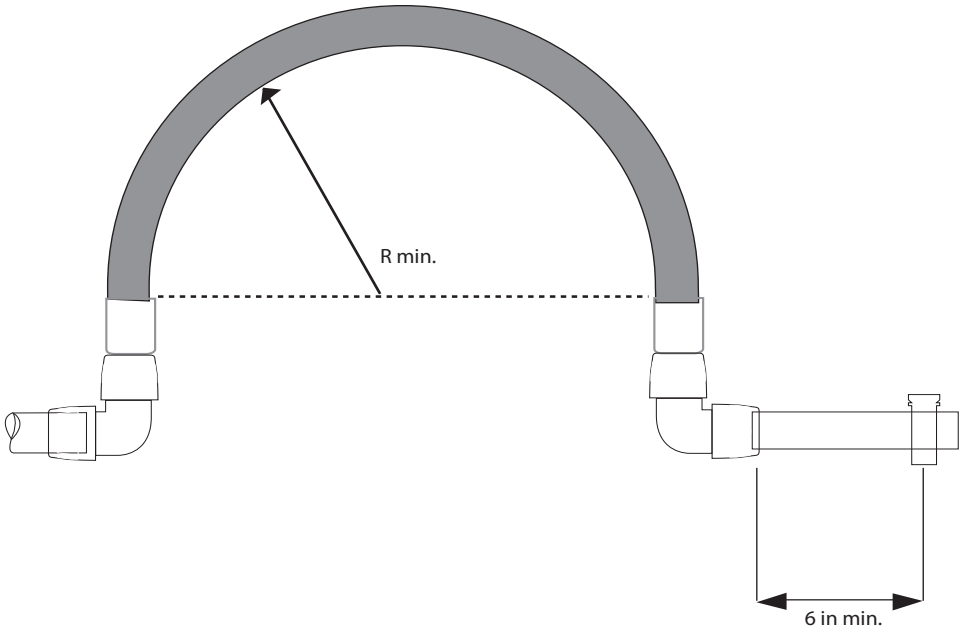
L: length of Transair straight line to be installed (in m)
△T : difference between temperature when installing and maximum operating temperature (in °C)
△L: line length variation (in mm)

For Transair Ø 16.5 - Ø 25 - Ø 40 - Ø 63 - Ø 76 - Ø 100 aluminum pipe systems:

$$\triangle L = \underbrace{(a \times L)}_{1} + \underbrace{(0.024 \times L \times \triangle T)}_{2}$$

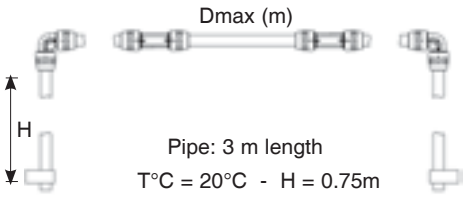
1 - Expansion related to pipe retraction in the connector
2 - Expansion related to temperature variations

| | Ø 16.5 | Ø 25 | Ø 40 | Ø 63 | Ø 76 | Ø 100 |
|---|---|---|---|---|---|---|
| 10 ft pipe | a=0.06 | a=0.20 | a=0.40 | a=0.73 | a=1.0 | a=1.0 |
| 20 ft pipe | - | a=0.10 | a=0.20 | a=0.38 | a=0.50 | a=0.50 |



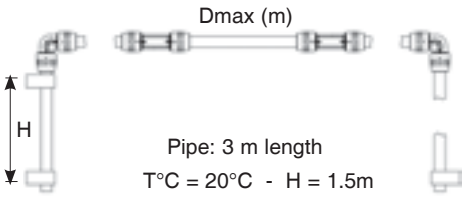
## > Expansion / contraction

### > Example



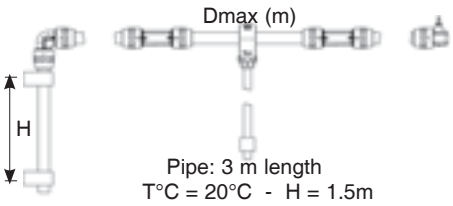

Case no. 1:
Maximum distance, without expansion loop, from a fixed point dependant on Transair diameter (2 elbows)

| Ø Transair | 16.5 | 25 | 40 | 63 | 76 | 100 |
|---|---|---|---|---|---|---|
| Dmax. (m) | 50 | 40 | 30 | 24 | 15 | 15 |



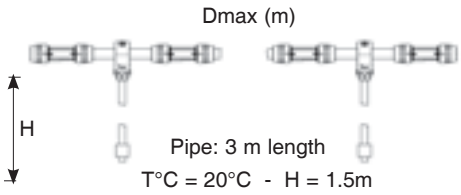

Case no. 2:
Maximum distance, without expansion loop, dependant on Transair diameter (2 elbows - 1 fixed point)

| Ø Transair | 16.5 | 25 | 40 | 63 | 76 | 100 |
|---|---|---|---|---|---|---|
| Dmax. (m) | 50 | 40 | 30 | 25 | 15 | 15 |




Case no. 3:
Maximum distance for installing a bracket, without expansion loop, dependant on Transair diameter (1 elbow - 1 bracket)

| Ø Transair | 16.5 | 25 | 40 | 63 | 76 | 100 |
|---|---|---|---|---|---|---|
| Dmax. (m) | 48 | 38 | 30 | 25 | 7.5 | 7.5 |




Case no. 4:
Maximum distance for installing a bracket, without expansion loop, dependant on Transair diameter (2 brackets)

| Ø Transair | 16.5 | 25 | 40 | 63 | 76 | 100 |
|---|---|---|---|---|---|---|
| Dmax. (m) | 80 | 70 | 55 | 40 | 15 | 15 |

## > Direction change

### > Using an elbow

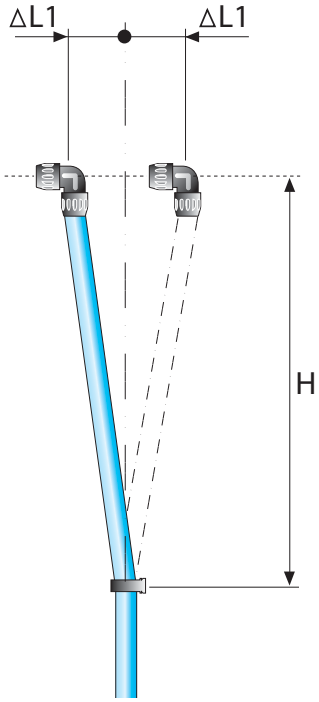
In addition to expansion loops, changes of direction are another method of compensating for expansion and contraction.

> For Transair
Ø 16.5 - Ø 25 - Ø 40 - Ø 63
aluminum pipe systems

| | |
|---|---|
| H= 29.5” | △L1= 0.6” |
| H= 59.1” | △L1= 1.2” |

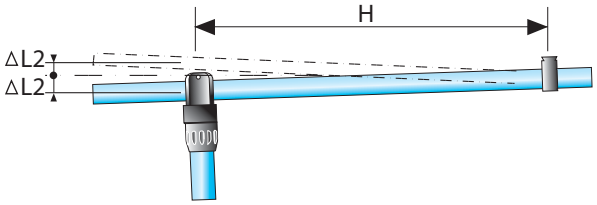
> For Transair
Ø 76 - Ø 168
aluminum pipe systems

| | |
|---|---|
| H= 29.5” | △L1= 3/8” |
| H= 59.1” | △L1= 6/8” |

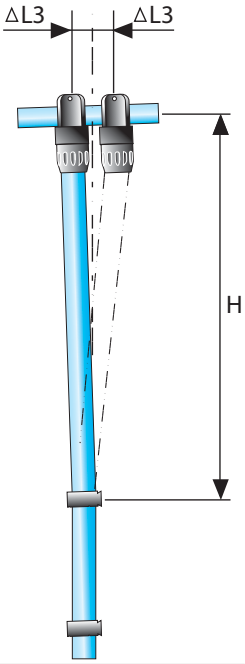



### > Using a quick assembly bracket

> For Transair Ø 16.5 - Ø 25 - Ø 40 - Ø 63
aluminum pipe systems



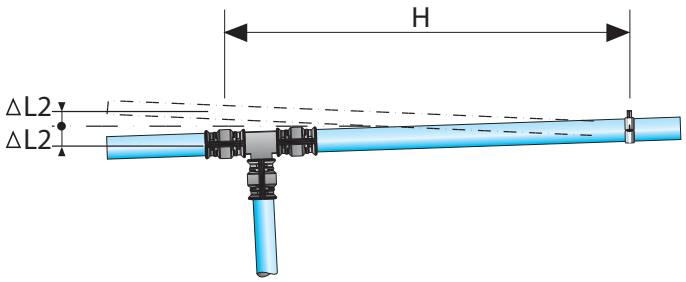

| Ø1 | Ø2 | H (ft) | △L2 (in) | △L3 (in) |
|---|---|---|---|---|
| 25 | 16.5 | 5 | 1/2 | 1 |
| 25 | 25 | 5 | 1/2 | 1 |
| 40 | 16.5 | 5 | 1/2 | 1 |
| 40 | 25 | 5 | 1/2 | 1 |
| 63 | 25 | 5 | 1/2 | 1 |

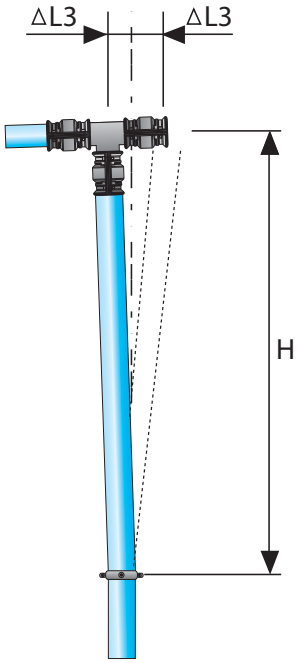



The length variation △L, calculated for the Transair line, must always be equal to or less than △L2 and △L3.
If this is not the case, then an expansion loop, using Transair flexible hose, must be added.

## > Changing direction with a tee

> For Transair Ø 76 - Ø 168 aluminum pipe systems




| Ø | H (ft) | ΔL2 maxi (in) | ΔL3 maxi (in) |
|---|---|---|---|
| 76 | 2 1/2 | 3/8 | 3/8 |
| 100 | 2 1/2 | 3/8 | 3/8 |
| 168 | 2 1/2 | 3/8 | 3/8 |

# > Conversion charts

## > Length

| millimeter (mm) | meter (m) | inch (in) | foot (ft) | yard (yd) |
|---|---|---|---|---|
| 10 | 0.01 | 0.39 | 0.03 | 0.01 |
| 20 | 0.02 | 0.79 | 0.07 | 0.02 |
| 30 | 0.03 | 1.18 | 0.10 | 0.03 |
| 40 | 0.04 | 1.57 | 0.13 | 0.04 |
| 50 | 0.05 | 1.97 | 0.16 | 0.05 |
| 60 | 0.06 | 2.36 | 0.20 | 0.07 |
| 70 | 0.07 | 2.76 | 0.23 | 0.08 |
| 80 | 0.08 | 3.15 | 0.26 | 0.09 |
| 90 | 0.09 | 3.54 | 0.30 | 0.10 |
| 100 | 0.10 | 3.94 | 0.33 | 0.11 |
| 150 | 0.15 | 5.91 | 0.49 | 0.16 |
| 200 | 0.20 | 7.87 | 0.66 | 0.22 |
| 250 | 0.25 | 9.84 | 0.82 | 0.27 |
| 300 | 0.30 | 11.81 | 0.98 | 0.33 |
| 350 | 0.35 | 13.78 | 1.15 | 0.38 |
| 400 | 0.40 | 15.75 | 1.31 | 0.44 |
| 450 | 0.45 | 17.72 | 1.48 | 0.49 |
| 500 | 0.50 | 19.69 | 1.64 | 0.55 |
| 550 | 0.55 | 21.65 | 1.80 | 0.60 |
| 600 | 0.60 | 23.62 | 1.97 | 0.65 |
| 700 | 0.70 | 27.56 | 2.30 | 0.76 |
| 800 | 0.80 | 31.50 | 2.62 | 0.87 |
| 900 | 0.90 | 35.43 | 2.95 | 0.98 |
| 1 000 | 1.00 | 39.37 | 3.28 | 1.09 |

## > Pressure

| Bar | Kilo Pascal (KPa) | Atmosphere (atm) | PSI | Torr (mm Hg) |
|---|---|---|---|---|
| 1 | 100 | 0.99 | 14.50 | 750 |
| 2 | 200 | 1.97 | 29.00 | 1 500 |
| 3 | 300 | 2.96 | 43.50 | 2 250 |
| 4 | 400 | 3.95 | 58.00 | 3 000 |
| 5 | 500 | 4.93 | 72.50 | 3 750 |
| 6 | 600 | 5.92 | 87.00 | 4 500 |
| 7 | 700 | 6.91 | 101.50 | 5 250 |
| 8 | 800 | 7.90 | 116.00 | 6 000 |
| 9 | 900 | 8.88 | 130.50 | 6 750 |
| 10 | 1000 | 9.87 | 145.00 | 7 500 |
| 11 | 1100 | 10.86 | 159.50 | 8 250 |
| 12 | 1200 | 11.84 | 174.00 | 9 000 |
| 13 | 1300 | 12.83 | 188.50 | 9 750 |
| 14 | 1400 | 13.82 | 203.00 | 10 500 |
| 15 | 1500 | 14.80 | 217.50 | 11 250 |
| 16 | 1600 | 15.79 | 232.00 | 12 000 |
| 20 | 2000 | 19.74 | 290.00 | 15 000 |

# > Practical information

## > Flow rate

| liters per second (l/s) | liters per minute (l/min) | cubic meters per minute ($m^3$/min) | cubic meters per hour ($m^3$/h) | cubic feet per minute (cfm) |
|---|---|---|---|---|
| 10 | 600 | 0.60 | 36 | 21 |
| 20 | 1 200 | 1.20 | 72 | 42 |
| 30 | 1 800 | 1.80 | 108 | 64 |
| 40 | 2 400 | 2.40 | 144 | 85 |
| 50 | 3 000 | 3.00 | 180 | 106 |
| 60 | 3 600 | 3.60 | 216 | 127 |
| 70 | 4 200 | 4.20 | 252 | 148 |
| 80 | 4 800 | 4.80 | 288 | 169 |
| 90 | 5 400 | 5.40 | 324 | 191 |
| 100 | 6 000 | 6.00 | 360 | 212 |
| 150 | 9 000 | 9.00 | 540 | 318 |
| 200 | 12 000 | 12.00 | 720 | 424 |
| 250 | 15 000 | 15.00 | 900 | 530 |
| 300 | 18 000 | 18.00 | 1 080 | 635 |
| 350 | 21 000 | 21.00 | 1 260 | 741 |
| 400 | 24 000 | 24.00 | 1 440 | 847 |
| 450 | 27 000 | 27.00 | 1 620 | 953 |
| 500 | 30 000 | 30.00 | 1 800 | 1 059 |
| 550 | 33 000 | 33.00 | 1 980 | 1 165 |
| 600 | 36 000 | 36.00 | 2 160 | 1 271 |
| 700 | 42 000 | 42.00 | 2 520 | 1 483 |
| 800 | 48 000 | 48.00 | 2 880 | 1 694 |
| 900 | 54 000 | 54.00 | 3 240 | 1 906 |
| 1 000 | 60 000 | 60.00 | 3 600 | 2 118 |

## > Air consumption values

| Tools | Typical CFM consumption at an operating pressure of 87 psi |
|---|---|
| Small process controls, instrumentation, pneumatic logic units | 4 |
| Paint spray gun, small impact wrench, light/medium drill, blowgun | From 5 to 18 |
| Polisher, screwdriver | 25 |
| Sheet metal cutter, large impact wrench, automatic plane | 28 |
| Small automatic machines, miscellaneous tooling | 32 |
| Large tools, power machines and associated equipment | 36 |
| Air hoist, grinder | 74 |

# > Transair systems in use

Packaging
Transair Ø 40 and Ø 25

Assembly workshop
Transair Ø 63 and Ø 25

Automotive
Transair Ø 40

Food and beverage
Transair Ø 25

Production workshop
Transair Ø 40

Alternative energy
Transair Ø 76 and Ø 63

# > Transair systems in use

Waste management
Transair Ø 40

Pharmaceutical
Transair Ø 63

Industrial
Transair Ø 100

Outdoor installation
Transair Ø 168

Railways
Transair Ø 63

Inert gas
Transair Ø 25

# > Part numbers index

# Parker's Motion & Control Product Groups

***At Parker, we're guided by a relentless drive to help our customers become more productive and achieve higher levels of profitability by engineering the best systems for their requirements. It means looking at customer applications from many angles to find new ways to create value. Whatever the motion and control technology need, Parker has the experience, breadth of product and global reach to consistently deliver. No company knows more about motion and control technology than Parker. For further info call 1 800 C-Parker (1 800 272 7537).***

## Aerospace

### Key Markets
Aftermarket services
Commercial transports
Engines
General & business aviation
Helicopters
Launch vehicles
Military aircraft
Missiles
Power generation
Regional transports
Unmanned aerial vehicles

### Key Products
Control systems & actuation products
Engine systems & components
Fluid conveyance systems & components
Fluid metering, delivery & atomization devices
Fuel systems & components
Fuel tank inerting systems
Hydraulic systems & components
Thermal management
Wheels & brakes

## Automation

### Key Markets
Alternative energy
Conveyor & material handling
Factory automation
Food & beverage
Life sciences & medical
Machine tools
Packaging machinery
Paper machinery
Plastics machinery
Primary metals
Safety & security
Semiconductor & electronics
Transportation & automotive

### Key Products
AC/DC drives & systems
Air preparation
Electric actuators, gantry robots & slides
Human machine interfaces
Inverters
Manifolds
Miniature fluidics
Pneumatic actuators & grippers
Pneumatic valves & controls
Rotary actuators
Stepper motors, servo motors, drives & controls
Structural extrusions
Vacuum generators, cups & sensors

## Climate & Industrial Controls

### Key Markets
Agriculture
Air conditioning
Construction Machinery
Food & beverage
Industrial machinery
Life sciences
Oil & gas
Precision cooling
Process
Refrigeration
Transportation

### Key Products
Accumulators
Advanced actuators
$CO_2$ controls
Electronic controllers
Filter driers
Hand shut-off valves
Heat exchangers
Hose & fittings
Pressure regulating valves
Refrigerant distributors
Safety relief valves
Smart pumps
Solenoid valves
Thermostatic expansion valves

## Filtration

### Key Markets
Aerospace
Food & beverage
Industrial plant & equipment
Life sciences
Marine
Mobile equipment
Oil & gas
Power generation & renewable energy
Process
Transportation
Water Purification

### Key Products
Analytical gas generators
Compressed air filters & dryers
Engine air, coolant, fuel & oil filtration systems
Fluid condition monitoring systems
Hydraulic & lubrication filters
Hydrogen, nitrogen & zero air generators
Instrumentation filters
Membrane & fiber filters
Microfiltration
Sterile air filtration
Water desalination & purification filters & systems

## Fluid Connectors

### Key Markets
Aerial lift
Agriculture
Bulk chemical handling
Construction machinery
Food & beverage
Fuel & gas delivery
Industrial machinery
Life sciences
Marine
Mining
Mobile
Oil & gas
Renewable energy
Transportation

### Key Products
Check valves
Connectors for low pressure fluid conveyance
Deep sea umbilicals
Diagnostic equipment
Hose couplings
Industrial hose
Mooring systems & power cables
PTFE hose & tubing
Quick couplings
Rubber & thermoplastic hose
Tube fittings & adapters
Tubing & plastic fittings

## Hydraulics

### Key Markets
Aerial lift
Agriculture
Alternative energy
Construction machinery
Forestry
Industrial machinery
Machine tools
Marine
Material handling
Mining
Oil & gas
Power generation
Refuse vehicles
Renewable energy
Truck hydraulics
Turf equipment

### Key Products
Accumulators
Cartridge valves
Electrohydraulic actuators
Human machine interfaces
Hybrid drives
Hydraulic cylinders
Hydraulic motors & pumps
Hydraulic systems
Hydraulic valves & controls
Hydrostatic steering
Integrated hydraulic circuits
Power take-offs
Power units
Rotary actuators
Sensors

## Instrumentation

### Key Markets
Alternative fuels
Biopharmaceuticals
Chemical & refining
Food & beverage
Marine & shipbuilding
Medical & dental
Microelectronics
Nuclear Power
Offshore oil exploration
Oil & gas
Pharmaceuticals
Power generation
Pulp & paper
Steel
Water/wastewater

### Key Products
Analytical Instruments
Analytical sample conditioning products & systems
Chemical injection fittings & valves
Fluoropolymer chemical delivery fittings, valves & pumps
High purity gas delivery fittings, valves, regulators & digital flow controllers
Industrial mass flow meters/ controllers
Permanent no-weld tube fittings
Precision industrial regulators & flow controllers
Process control double block & bleeds
Process control fittings, valves, regulators & manifold valves

## Seal

### Key Markets
Aerospace
Chemical processing
Consumer
Fluid power
General industrial
Information technology
Life sciences
Microelectronics
Military
Oil & gas
Power generation
Renewable energy
Telecommunications
Transportation

### Key Products
Dynamic seals
Elastomeric o-rings
Electro-medical instrument design & assembly
EMI shielding
Extruded & precision-cut, fabricated elastomeric seals
High temperature metal seals
Homogeneous & inserted elastomeric shapes
Medical device fabrication & assembly
Metal & plastic retained composite seals
Shielded optical windows
Silicone tubing & extrusions
Thermal management
Vibration dampening

# > Offer of Sale

The items described in this document and other documents and descriptions provided by Parker Hannifin Corporation, its subsidiaries and its authorized distributors ("Seller") are hereby offered for sale at prices to be established by Seller. This offer and its acceptance by any customer ("Buyer") shall be governed by all of the following Terms and Conditions. Buyer's order for any item described in its document, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer. All goods or work described are the Parker Transair products provided solely by the Fluid Systems Division of Seller and will be referred to as "Products".

1. Terms and Conditions. Seller's willingness to offer Products, or accept an order for Products, to or from Buyer is expressly conditioned on Buyer's assent to these Terms and Conditions and to the terms and conditions found on-line at www.parker.com/saleterms/. Seller objects to any contrary or additional term or condition of Buyer's order or any other document issued by Buyer.

2. Price Adjustments; Payments. Prices stated on the reverse side or preceding pages of this document are valid for 30 days. After 30 days, Seller may change prices to reflect any increase in its costs resulting from state, federal or local legislation, price increases from its suppliers, or any change in the rate, charge, or classification of any carrier. The prices stated on the reverse or preceding pages of this document do not include any sales, use, or other taxes unless so stated specifically. Unless otherwise specified by Seller, all prices are F.O.B. Seller's facility, and payment is due 30 days from the date of invoice. After 30 days, Buyer shall pay interest on any unpaid invoices at the rate of 1.5% per month or the maximum allowable rate under applicable law.

3. Delivery Dates; Title and Risk; Shipment. All delivery dates are approximate and Seller shall not be responsible for any damages resulting from any delay. Regardless of the manner of shipment, title to any products and risk of loss or damage shall pass to Buyer upon tender to the carrier at Seller's facility (i.e., when it's on the truck, it's yours). Unless otherwise stated, Seller may exercise its judgment in choosing the carrier and means of delivery. No deferment of shipment at Buyers' request beyond the respective dates indicated will be made except on terms that will indemnify, defend and hold Seller harmless against all loss and additional expense. Buyer shall be responsible for any additional shipping charges incurred by Seller due to Buyer's changes in shipping, product specifications or in accordance with Section 13, herein.

4. Warranty. Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of ten years from the date of shipment to Buyer. This warranty is made only to Buyer and does not extend to anyone to whom Products are sold after purchased from Seller. The prices charged for Seller's products are based upon the exclusive limited warranty stated above, and upon the following disclaimer: DISCLAIMER OF WARRANTY: THIS WARRANTY COMPRISES THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED HEREUNDER. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

5. Claims; Commencement of Actions. Buyer shall promptly inspect all Products upon delivery. No claims for shortages will be allowed unless reported to the Seller within 10 days of delivery. No other claims against Seller will be allowed unless asserted in writing within 60 days after delivery or, in the case of an alleged breach of warranty, within 30 days after the date within the warranty period on which the defect is or should have been discovered by Buyer. Any action based upon breach of this agreement or upon any other claim arising out of this sale (other than an action by Seller for any amount due to Seller from Buyer) must be commenced within thirteen months from the date of tender of delivery by Seller or, for a cause of action based upon an alleged breach of warranty, within thirteen onths from the date within the warranty period on which the defect is or should have been discovered by Buyer.

6. LIMITATION OF LIABILITY. UPON NOTIFICATION, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE. IN NO EVENT SHALL SELLER BE LIABLE TO BUYER FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, EVEN IF SELLER HAS BEEN NEGLIGENT, WHETHER IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.

7. Contingencies. Seller shall not be liable for any default or delay in performance if caused by circumstances beyond the reasonable control of Seller.

8. User Responsibility. The user, through its own analysis and testing, is solely responsible for making the final selection of the system and Product and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application and follow applicable industry standards and Product information. If Seller provides Product or system options, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the Products or systems.

9. Loss to Buyer's Property. Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

10. Special Tooling. A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

11. Buyer's Obligation; Rights of Seller. To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest. Seller shall have a security interest in, and lien upon, any property of Buyer in Seller's possession as security for the payment of any amounts owed to Seller by Buyer.

12. Improper use and Indemnity. Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

13. Cancellations and Changes. Orders shall not be subject to cancellation or change by Buyer for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change product features, specifications, designs and availability with notice to Buyer.

14. Limitation on Assignment. Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

15. Entire Agreement. This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of the agreement. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

16. Waiver and Severability. Failure to enforce any provision of this agreement will not waive that provision nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

17. Termination. This agreement may be terminated by Seller for any reason and at any time by giving Buyer thirty (30) days written notice of termination. In addition, Seller may by written notice immediately terminate this agreement for the following: (a) Buyer commits a breach of any provision of this agreement (b) the appointment of a trustee, receiver or custodian for all or any part of Buyer's property (c) the filing of a petition for relief in bankruptcy of the other Party on its own behalf, or by a third party (d) an assignment for the benefit of creditors, or (e) the dissolution or liquidation of the Buyer.

18. Governing Law. This agreement and the sale and delivery of all Products hereunder shall be deemed to have taken place in and shall be governed and construed in accordance with the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement. Disputes between the parties shall not be settled by arbitration unless, after a dispute has arisen, both parties expressly agree in writing to arbitrate the dispute.

19. Indemnity for Infringement of Intellectual Property Rights. Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this Agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

20. Taxes. Unless otherwise indicated, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of Products.

21. Equal Opportunity Clause. For the performance of government contracts and where dollar value of the Products exceed $10,000, the equal employment opportunity clauses in Executive Order 11246, VEVRAA, and 41 C.F.R. §§ 60-1.4(a), 60-741.5(a), and 60-250.4, are hereby incorporated.