

nordair

IKEUCHI

Air Nozzles Catalog



いけうち

“The Fog Engineers”

IKEUCHI EUROPE B.V.



JAPAN



2022

The Sound of Silence

Air, wind, sound, noise...

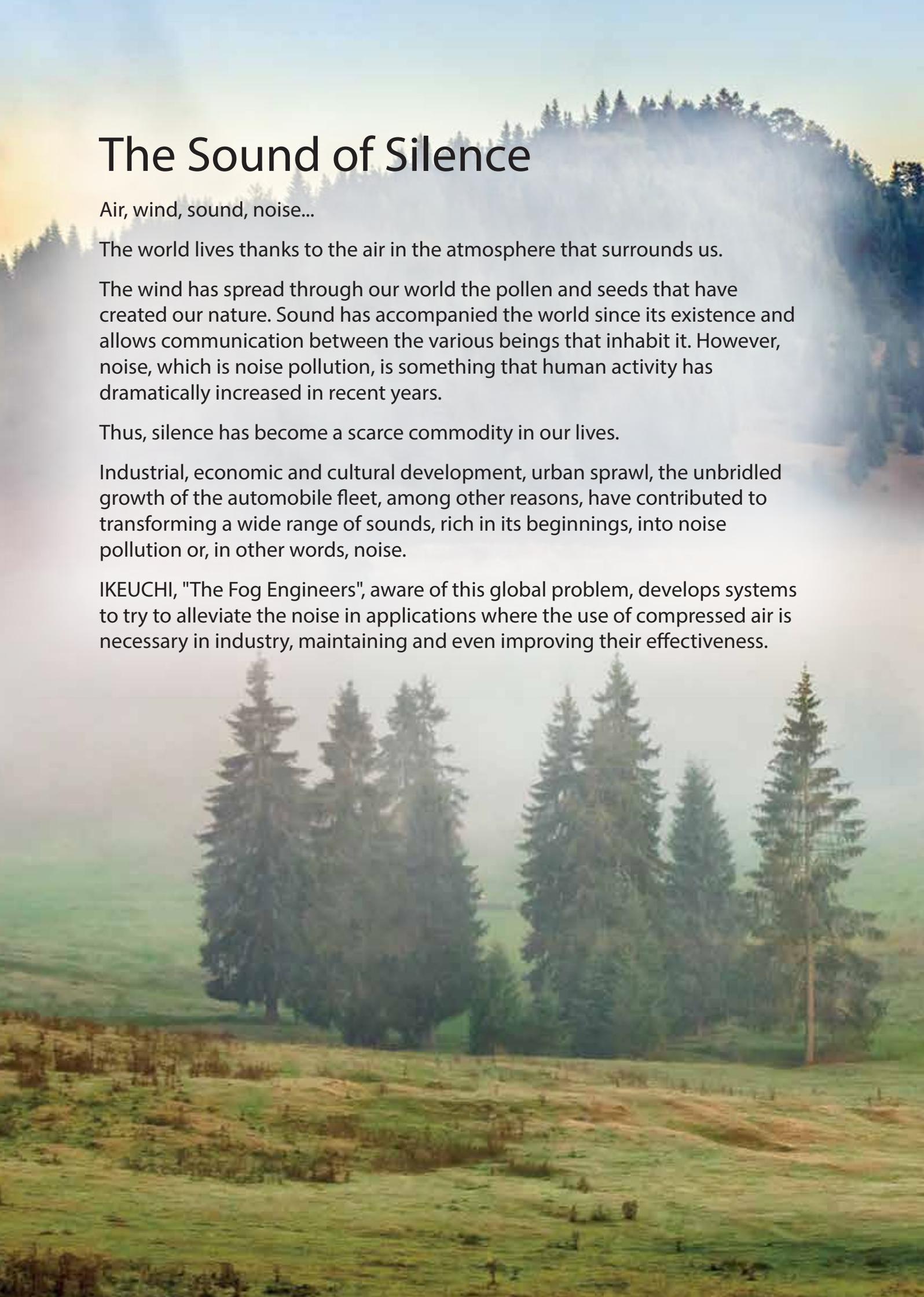
The world lives thanks to the air in the atmosphere that surrounds us.

The wind has spread through our world the pollen and seeds that have created our nature. Sound has accompanied the world since its existence and allows communication between the various beings that inhabit it. However, noise, which is noise pollution, is something that human activity has dramatically increased in recent years.

Thus, silence has become a scarce commodity in our lives.

Industrial, economic and cultural development, urban sprawl, the unbridled growth of the automobile fleet, among other reasons, have contributed to transforming a wide range of sounds, rich in its beginnings, into noise pollution or, in other words, noise.

IKEUCHI, "The Fog Engineers", aware of this global problem, develops systems to try to alleviate the noise in applications where the use of compressed air is necessary in industry, maintaining and even improving their effectiveness.



INDEX

| | P. | |
|---|-----------------------------------|-------|
| IKEUCHI innovation | 2 | |
| Organization distribution..... | 3 | |
| Application industries | 4-5 | |
| Savings in compressed air installations in industry | 6-7 | |
| Why use IKEUCHI air nozzles | 8-9 | |
| Noise Regulations | 10-11 | |
| Research and development..... | 12 | |
| Quality | 13 | |
| Selection of the correct nozzle | 14-15 | |
| Round air booster 1/8"..... | TF-R-8008 | 16 |
| Round air booster 1/8" - 1/4" | TF-R-8010 | 17 |
| | TF-R-8012 | 18 |
| | TF-R-8014 | 19 |
| Round air booster 1/4"..... | TF-R-8016 | 20 |
| Round air booster 1/2" | TF-R-36012 | 21 |
| Round air booster 3/8" | TF-M5R | 22 |
| Round air booster 1/4" | TF-R-8010-PP | 23 |
| Flat air booster 1/8" | TF-F24 | 25 |
| Flat air booster 1/4" | TF-FS42 | 26 |
| | TF-F42-PPS | 27 |
| Flat air booster 3/8" | TF-F121 | 28 |
| Flat air booster 1/4" | TF-FS42-16008-S316L | 29 |
| | TF-FS4-216010S-316L | 30 |
| | TF-FS42-16012S-316L | 31 |
| Flat air booster 1/4" | TF-F42-008S316L | 32 |
| | TF-F42-010S-316L | 33 |
| | TF-F42-012S-316L | 34 |
| Flat air booster 1/4" | TF-F50 | 35 |
| Flat air booster 1/4" - 3/8" | HF-7012 | 36-37 |
| Flat air booster 1/4" - 3/8" | HF-14010 | 38-39 |
| Flat air booster 1/4" - 3/8" | HF-19010 | 40-41 |
| Wide angle flat spray air nozzle 1/4" - 3/8" | VZ | 42-43 |
| Solid stream jet air nozzle 1/8" - 1/4" | CCP-A | 44-45 |
| Long flat air boosters | TF-PF | 46-47 |
| Flow amplifier | Air Booster EJA | 48 |
| Low pressure 1/8" - 1/4" | SAP | 49 |
| Low pressure round air blower 1/2" | TF-BR ABS / Aluminium A5052 | 50 |
| Low pressure flat air blower 1/2" | TF-BF ABS / Aluminium A5052 | 51 |
| Low pressure long flat air blower | TF-BPF | 52 |
| | SLNB | 53 |
| Universal metal / plastic adapter | Serie UT | 54-55 |
| Universal joint 360° rotatable..... | WUT | 56 |
| Blowing Width (mm) | | 57 |
| Reference data | | 58 |
| Materials, chemical resistance and temperature | | 59 |
| Notes | | 60-61 |

IKEUCHI, Innovation

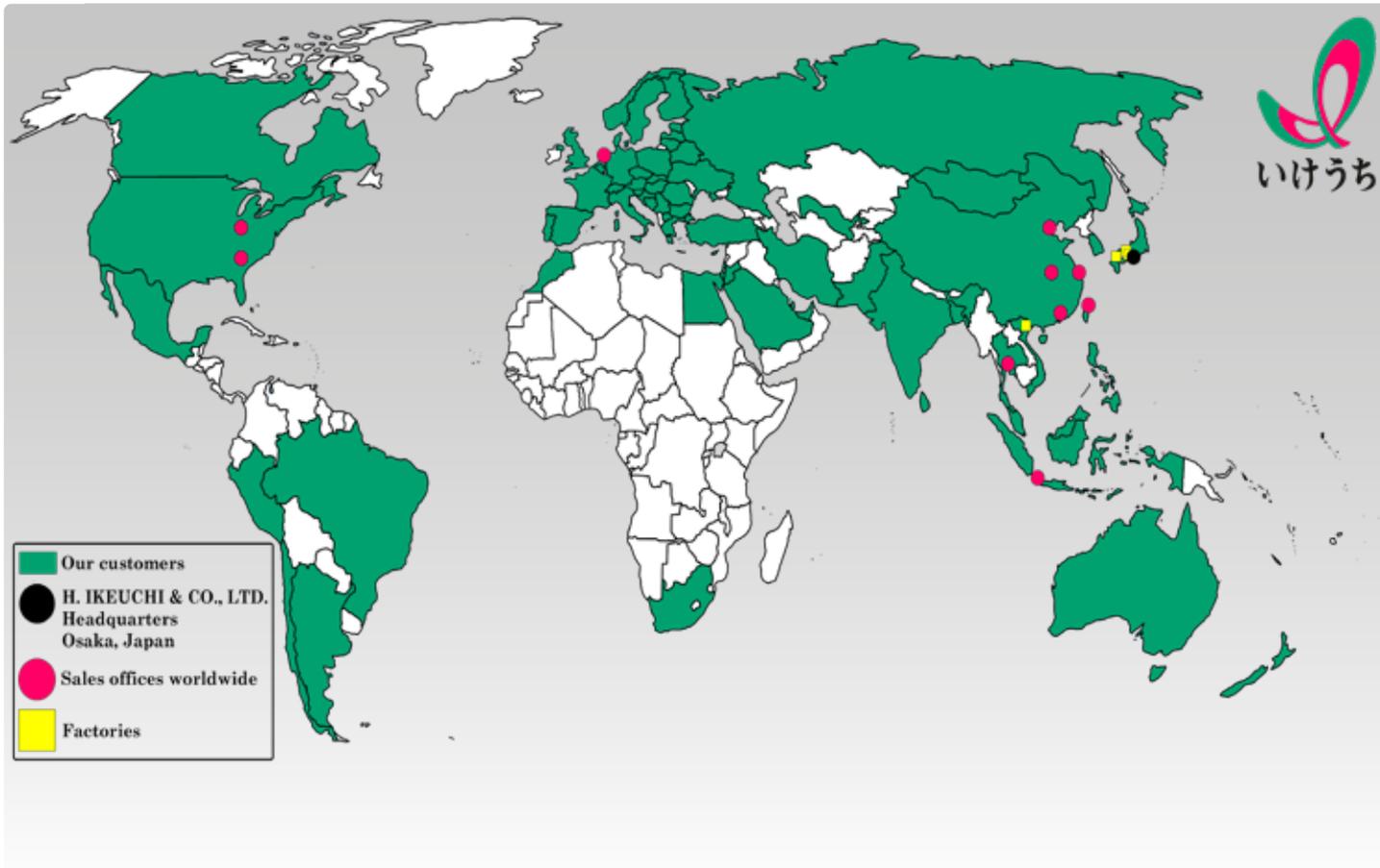


IKEUCHI knows first-hand that product research and development guarantee a prosperous future for customers and the brand. We are the first company to be able to manufacture nozzles with ceramic tips to improve performance in processes that spray chemical products.

There are currently several open research projects of new products in collaboration with universities and different entities. In the different researches, engineers focus on improving existing processes by creating new spraying techniques or finding new applications not known to date.

The creation of knowledge and constant innovation lead to the development of new products, defining the market and making customers grow.

Organization distribution



In 2008, **IKEUCHI EUROPE B.V.** has established its headquarters in Amsterdam (the Netherlands) to cover the European as a subsidiary of IKEUCHI Japan, **H. IKEUCHI & CO., LTD.**

After a solid and constant growth for 10 years, in 2018 IKEUCHI EUROPE B.V. moves its central offices to Breukelen in the Netherlands where better access and wider facilities improve opportunities to the company's future growth expectations.

Pursuing these growth aspirations, we have been collaborating with distributors in several countries, such as **NORDAIR**, in Europe to promote our high quality products and serve customers with a local service.



Application industries



Steel

The IKEUCHI nozzles for compressed air and low pressure air nozzles improve the efficiency and noise level in the different iron and steel processes, thus saving air and energy.

- **Cooling**
- **Dry**
- **Cleaning**
- **Scanning sensors**



Metal

In many machine processes it is necessary to use compressed air manually. With the use of IKEUCHI nozzles, it is possible to improve efficiency and reduce the noise level.

- **Cleaning**
- **Rejection of low quality products**
- **Particle removal**
- **Cooling**



Pharmaceutical

In an extremely protected working environment, it is required to control and reduce the noise level, like during the selection and packaging processes in hygienic environments. Therefore, it is recommended to use IKEUCHI nozzles as they are manufactured with high quality standards and in various materials.

- **Packaging**
- **Alignment**
- **Cleaning**
- **Humidification**

Application industries

Food

IKEUCHI nozzles, with their low noise level, increase the quality of the work environment in continuous processes with the need for compressed air for different applications.

- **Cleaning**
- **Expulsion of defects**
- **Alignment**
- **Packaging**



Automotive

The use of compressed air is important in different applications in sensitive manufacturing processes. With IKEUCHI air nozzles, high efficiency and reduced air consumption are achieved.

- **Cleaning**
- **Welding cooling**
- **Defect expulsion**



Packaging/Paper/Bottling

Installing IKEUCHI nozzles increases process quality in the manufacture of intermediate materials and in high-speed processes.

- **Roller cleaning**
- **Drying roller cleaning**
- **Defect expulsion**



Savings in compressed air installations in industry



What is compressed air?

Compressed air is a form of energy storage due to its ability to perform work when decompressed. The production of compressed air is carried out, for the most part, with electric power by means of a compressor.

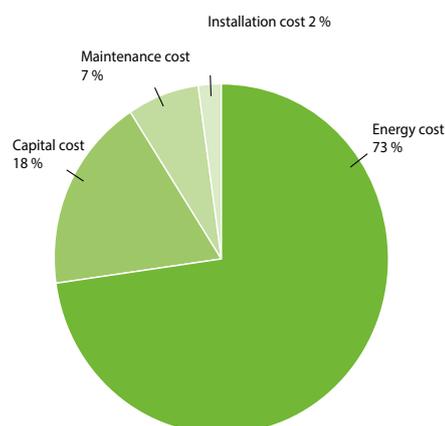
Where is compressed air used?

The vast majority of industrial companies use compressed air in some way or within some equipment, i.e. for surface drying or cleaning.

“In the industry, more than 10% of the electricity used goes to the production of compressed air, varying according to the sector, which in some cases can reach up to 30% of the electrical energy used.”

After assimilating the total cost of a compressed air system during its first 10 years of operation, it is understood that 73% comes from the electrical energy necessary for its operation. The rest of the costs includes the initial investment, maintenance and installation costs.

The energy efficiency of a compressed air installation is very low, since of the total energy provided only, between 8% and 10% becomes useful energy capable



of performing a job. The rest is lost in compression, regulation, cooling, dehumidification and leakage in equipments and pipes.

In addition to the compressed air generated by the compression units, it is estimated that 50% is used in nonproductive demand components such as leaks, inappropriate uses of compressed air and artificial demand (excess of the level of air pressure at which our compressed air installation is adjusted above the actual values necessary for it to function properly).

“It is important to study how to improve and reduce its energy consumption, since a large amount of electricity is required to run the installation.”

How to reduce a system’s operating costs?

When it comes to saving on operating costs, there are several measures that can be taken. An installation can be divided into two fundamental parts: one is production, which includes compressors and air treatment; the other is demand, which includes distribution, storage systems and end-use equipment. The correct combination between production and demand leads to a decrease in costs.

There are several ways to make an installation more efficient and reduce its operating costs, such as energy recovery for other functions, pressure reduction, decrease in the number of leaks and optimisation of operations through a correct control and regulation system.

Savings opportunities in a compressed air installation:

Leak control

Installations can have different types of leaks, which can be prevented by performing frequent maintenance. An installation is considered to be in good condition when leaks constitute 10% of production.

Compressor air intake control

For greater compressor performance, it is important that the sucked air is clean and cold. Since the specific volume of air depends on temperature, the colder it is, the more air fits in the compressor, thus improving its performance.

Thermal energy recovery

Because the compression process produces heat, it can be extracted by a cooling circuit and used, for example, to heat the ship or for some other specific process.

Inefficient applications

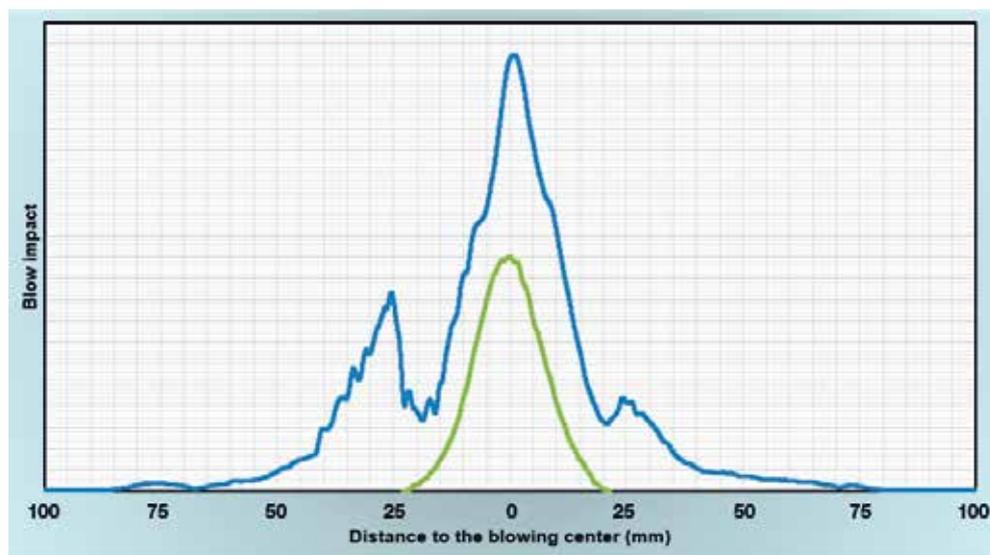
There are parts of the installation that are obsolete or whose operating cost could be reduced with a small investment. This is the case of air nozzles: using nozzles designed for each application instead of a tube increases system efficiency and cuts costs.



Why use IKEUCHI air nozzles

IKEUCHI technical air nozzles have been developed to maximise blowing efficiency. The wide range of models within each series offers the possibility of choosing the most suitable nozzle for each application, optimizing the blowing force and air flow required. This complete design contributes to decreased compressed air costs and a better control of the blowing accuracy of each application.

When the blowing is carried out with a free exhaust pipe, the distribution of the blowing force is irregular and the flow is turbulent, resulting in inefficient blowing. This inefficient spraying involves irregular blowing, reducing the quality of each application. In addition, the problem is increased in multiple nozzle configurations as it is not possible to determine a homogeneous flow along the blowing length.



The graph shows the difference in the distribution of the blowing force between an open tube (blue graph) and a TF-R series nozzle (green graph).

In addition, another great advantage of the use of IKEUCHI technical air nozzles is that they have a lower consumption of compressed air flow compared to free exhaust pipes, thus reducing the installation's operating costs. Compared to a 1/4" free exhaust pipe (free passage diameter of 9.7 mm).

The IKEUCHI model TF-R technical nozzles are able to reduce the flow of compressed air by 79-91%.

As our air nozzles offer a uniform flow distribution, therefore improving the installation's efficiency. Its return on investment time is very short.

BLOWING OUT OF EXHAUST (0.5 MPa - ca. 5 bar)

| Tube size | Air consumption (NL/min) | Noise level (dB(A)) |
|-----------|--------------------------|---------------------|
| 1/8" | 1.550 | 102 |
| 1/4" | 4.170 | 109 |
| 3/8" | 4.890 | 109 |
| 1/2" | 5.600 | 116 |

NOISE REDUCTION WITH IKEUCHI NOZZLES

| Model | Equivalent tube size | Reduction by (dB(A)) | Perceived noise reduction * | Flow reduction by (NL / min) | Flow reduction by (%) |
|----------------------|----------------------|----------------------|-----------------------------|------------------------------|-----------------------|
| 1/8MTFR8008S316IN | 1/8" | 25 | - 83 % | 1.330 | 86 % |
| 1/8MTFR8010S316IN | 1/8" | 19 | - 73 % | 1.190 | 77 % |
| 1/4MTFR8010PPIN | 1/4" | 26 | - 84 % | 3.810 | 91 % |
| 1/4MTFR8010S316IN | 1/4" | 26 | - 84 % | 3.810 | 91 % |
| 1/8MTFR8012S316IN | 1/8" | 14 | - 61 % | 1.010 | 65 % |
| 1/4MTFR8012S316IN | 1/4" | 21 | - 77 % | 3.630 | 87 % |
| 1/8MTFR8014S316IN | 1/8" | 11 | - 53 % | 830 | 54 % |
| 1/4MTFR8014S316IN | 1/4" | 18 | - 71 % | 3.450 | 83 % |
| 1/4MTFR8016S316IN | 1/4" | 16 | - 67 % | 680 | 44 % |
| 1/8MTFF248010PPSIN | 1/8" | 20 | - 75 % | 1.210 | 78 % |
| 1/4MTFFS4216010PPS | 1/4" | 24 | - 82 % | 3.510 | 84 % |
| 1/4MTFF4216010PPS | 1/4" | 25 | - 83 % | 3.515 | 84 % |
| 1/4MTFF4216008S316IN | 1/4" | 31 | - 88 % | 3.745 | 90 % |
| 1/4MTFF4216010S316IN | 1/4" | 25 | - 83 % | 3.515 | 84 % |
| 1/4MTFF4216012S316IN | 1/4" | 23 | - 80 % | 3.245 | 78 % |
| 3/8MTFF12146010PPS | 3/8" | 23 | - 80 % | 3.060 | 63 % |
| 1/4MTFF5016012S304 | 1/4" | 22 | - 79 % | 3.135 | 75 % |
| 1/2MTFR36012 | 1/2" | 20 | - 75 % | 3.380 | 60 % |
| 1/4MHF7012S303 | 1/4" | 26 | - 84 % | 3.745 | 90 % |
| 1/4MHF14010S303 | 1/4" | 21 | - 77 % | 3.550 | 85 % |
| 1/4MHF19010S303 | 1/4" | 19 | - 73 % | 3.320 | 80 % |
| 1/4MVZ150S303 | 1/4" | 35 | - 89 % | 3.940 | 94 % |
| 1/4MVZ200S303 | 1/4" | 33 | - 89 % | 3.868 | 93 % |
| 1/4MVZ250S303 | 1/4" | 31 | - 88 % | 3.796 | 91 % |
| 1/4MVZ300S303 | 1/4" | 29 | - 87 % | 3.724 | 89 % |
| 1/4MVZ350S303 | 1/4" | 27 | - 85 % | 3.652 | 88 % |
| 1/4MVZ400S303 | 1/4" | 25 | - 83 % | 3.580 | 86 % |
| 1/4MVZ450S303 | 1/4" | 23 | - 80 % | 3.508 | 84 % |
| 1/4MVZ500S303 | 1/4" | 21 | - 77 % | 3.436 | 82 % |
| 3/8MVZ550S303 | 3/8" | 19 | - 73 % | 4.067 | 83 % |
| 3/8MVZ600S303 | 3/8" | 17 | - 69 % | 3.985 | 81 % |
| 3/8MVZ650S303 | 3/8" | 16 | - 67 % | 3.918 | 80 % |
| 3/8MVZ700S303 | 3/8" | 14 | - 61 % | 3.843 | 79 % |
| 3/8MVZ750S303 | 3/8" | 13 | - 59 % | 3.764 | 77 % |
| 3/8MVZ900S303 | 3/8" | 11 | - 53 % | 3.543 | 72 % |
| 3/8MVZ1130S303 | 3/8" | 9 | - 47 % | 3.212 | 66 % |
| 1/8MCCP10AS303 | 1/8" | 31 | - 88 % | 1.500 | 97 % |
| 1/4MCCP10AS303 | 1/4" | 38 | - 88 % | 4.120 | 99 % |
| 1/8MCCP15AS303 | 1/8" | 25 | - 83 % | 1.430 | 92 % |
| 1/4MCCP15AS303 | 1/4" | 32 | - 88 % | 4.050 | 97 % |
| 1/8MCCP20AS303 | 1/8" | 19 | - 73 % | 1.344 | 87 % |
| 1/4MCCP20AS303 | 1/4" | 26 | - 84 % | 3.964 | 95 % |
| 1/8MCCP25AS303 | 1/8" | 13 | - 59 % | 1.250 | 81 % |
| 1/4MCCP25AS303 | 1/4" | 20 | - 75 % | 3.870 | 93 % |

Noise Regulations



NORMATIVE NOISE LEVEL AND HAZARDOUS USAGE OF FREE EXHAUST

What is sound?

Sound is an oscillation in air pressure or other means, which can be perceived by the human ear. The number of air pressure oscillations per period of time defines its frequency, while the magnitude of the average pressure defines sound power and intensity.

The frequency of audible sounds is between 20 Hz, bass sounds, and 20,000 Hz, high-pitched sounds, and their intensity ranges between 0 and 140 dB. The frequency of normal conversation ranges between 250 Hz and 4,000 Hz, while words are emitted at an intensity ranging between 30 and 70 dB(A).

Can it become a problem in the working environment?

According to data collected in different surveys on working conditions carried out by the National Occupational Health and Safety Institute, exposure to continued noise can cause irreparable health problems.

It is estimated that 37% of workers are exposed to noise considered annoying, high or very high.

What problems can extended exposure to loud noises cause?

It can cause permanent hearing loss known as induced hearing or hearing loss due to noise exposure and implies that hearing gradually deteriorates as a result of exposure to loud noises.

In noise-induced hearing loss, inner ear cells are damaged by exposure to loud noises. Consequently, the ability of cells to collect and transmit sounds to the brain is reduced. Other manifestations of hearing damage are: hearing fatigue, deafness, conversational deafness and acute acoustic trauma.

How to prevent noise-induced hearing loss?

Many people wonder if it is possible to recover from noi-

se-induced hearing loss. The answer unfortunately is no. Once the inner ear cells are damaged by exposure to noise, they cannot recover.

There are national, European and international regulations that regulate the noise levels to which a person can be exposed for a period of time.

Prevention is the only solution to prevent hearing loss. It can be prevented by reducing the level of noise to which the person is being exposed or by reducing the exposure time to them.

How is sound measured?

Since the human ear does not have the same sensitivity for all frequencies, this specific aspect has to be taken into account when making a noise measurement. For this reason, measurement parameters, that follow approximately the same law as the ear in terms of sensitivity as a function of frequency, have been established.

The decibel (dB) is the unit used to measure the intensity of sound. The human ear does not perceive the sound at different frequencies in the same way. To take into account the fact that the human ear perceives especially severe or high-pitched sounds as less intense, noise is usually measured in decibels with weighting A [dB (A)].

The decibel is a deceptive unit, as small differences in the number of decibels represent a very important variation in the amount of transmitted energy, and therefore in how aggressively it is perceived by humans. For example, the total dB that is perceived when two 30 dB sounds are heard is not 60 dB, because the combination of individual sound levels is not their sum. In fact, their sound equivalence increases only by 3 dB, so the two sounds together correspond to 33 dB.

The level of continuous equivalent sound pressure weighted LAeq,T is used in order to measure the noise level to which the ear is exposed for a certain period of time. This measurement is based on finding a continuous noise level dB(A) which would produce the same sound energy as the different measurement sounds during the same period of time, i.e. as an average value of sound energy during that period of time.

APPLICABLE LEGISLATIVE AND REGULATORY FRAMEWORK

As an example, in Spain, the applicable regulations on the protection of workers' health and safety against risks related to noise exposure are included in RD 286/2006. RD 286/2006 establishes a maximum daily weighted equivalent continuous exposure level of 87 dB(A) (LAeq,d = 87 dB(A)) with peak levels of 140 dB(A). This means that a worker can be exposed for a maximum of 8 hours at a weighted equivalent continuous exposure level of 87 dB(A). RD 286/2006 establishes some parameters to be complied with to reduce the risk of problems due to noise exposure: training for workers, an annual evaluation of noise exposure, use of individual hearing protectors and signalling in the relevant areas, etc.

The regulatory section of the European Union for the protection of workers against risks related to noise exposure is included in Directive 2003/10/EC, which determines a maximum level of equivalent continuous exposure weighted in an 8-hour working day of 87 dB(A). (LAeq, 8 = 87 dB(A)).

The American Occupational Safety and Health Administration (OSHA) establishes the limits considering a weighted average time of a worker during a workday of 8 hours of 90 dB(A) (LAeq, 8 = 90 dB(A)).

The American OSHA standard also sets the halving levels at 10 dB(A). This means that an increase of 10 dB(A) would mean a reduction in exposure time to noise by half. For instance, with a weighted average of 92 dB(A), workers can only be exposed to this noise level for 4 hours.

The American National Institute for Occupational Safety and Health (NIOSH) recommends that all worker noise exposure should be kept below the threshold of 85 dB(A) for eight hours to minimise the risk of hearing loss. NIOSH also recommends a 10 dB(A) halving level, which means that each 10 dB(A) increase doubles the amount of noise and halves the exposure time to it.

Research and development



IKEUCHI knows first-hand that research and product development guarantee a prosperous future for customers and the brand. Following the achievements in the line of products for liquid spraying, such as the manufacturing of the first nozzle with a ceramic tip, air nozzles have been designed with the purpose of improving industrial processes.

An exhaustive study of fluid dynamics has resulted in the launch of an exclusive range of technical air nozzles that reduce air consumption, noise levels and improve their efficiency, resulting in greater savings in installations and optimisation of working conditions.

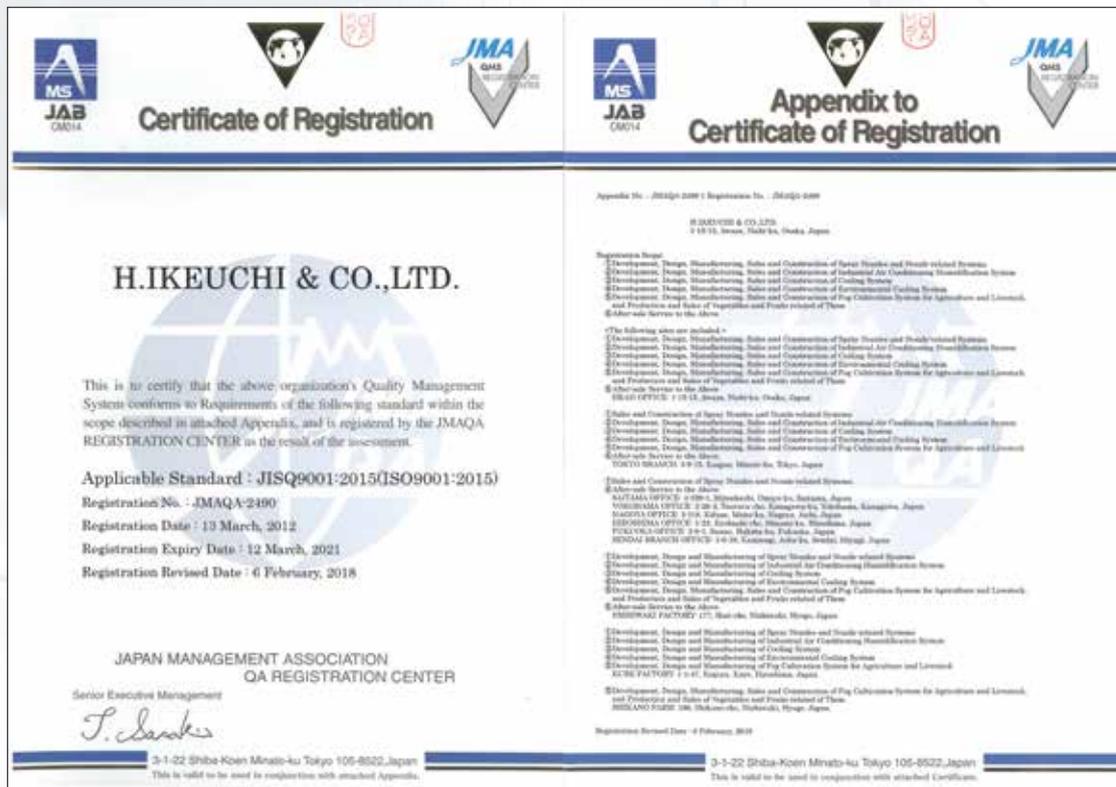
At present, IKEUCHI has several open research lines for new products in collaboration with universities and different entities. In the different investigations, engineers focus on improving existing processes by creating new spraying techniques or finding new applications unknown to date.

The creation of knowledge and constant innovation leads to the development of new products, defining the market and boosting the number of customers.



Quality

IKEUCHI Japan complies with ISO 9001 in its factories in Japan in Nishiwaki and Kure.



NORDAIR, S. A. in Zamudio (Bizkaia), with more than 30 years in the pneumatic sector and official distributor of IKEUCHI nozzles for the whole Iberian Peninsula, complies with ISO 9001 standards.

Selection of the correct nozzle



For an application to be efficient and silent, it is necessary to select the correct nozzle, to reduce air consumption as much as possible.

1. TYPES OF BLOWING ACCORDING TO THE APPLICATION



In general, a flat blow is applied to uniform objects that do not contain sharp angles, bends or concave / convex surfaces. For example, in a multitude of processes of blowing and drying of bands and flat surfaces in motion.

Conical blowing is applied in cases where pieces have irregular shapes or recesses. This type of blowing is widespread in the metal industry, in machining processes, expulsion, etc. In these processes it is important to try to blow with a slight degree of inclination of up to 15° in the opposite direction, in order to provide an elliptical distribution of the stream jet, thus increasing its contact time with the piece and improving the blowing efficiency.

2. BLOWING FORCE



Depending on the type of application, it is important to determine the necessary force for it, as an insufficient force will not produce the necessary results, and an excessive blowing force will waste energy and generate control problems.

3. DIMENSIONING



We must determine the appropriate dimensions in each application, avoiding dead spaces (with the consequent loss of air), as well as overlaps in the areas of blowing that generate turbulence and high noise levels.

In addition, the blowing distance to the object must be correctly calculated, since a greater force and higher speed of compressed air are produced at a smaller distance.

The main characteristics and dimensions are indicated in the product data sheet

4. MATERIAL



The choice of the appropriate material must be carried out mainly following the parameters below:

- Application temperature.
- Possibility of mechanical or chemical aggressions.
- Environments with hygienic requirements.
- Need for absence of metallic elements.

5. CONSUMPTION AND CONNECTION



It is important to provide the nozzle with the suitable power and connection elements: as it is useless to select the correct nozzle and connect it with accessories and reductions that generate a significant pressure drop, limit the flow, or do not have a sufficient air supply tube section.

On the other hand, it is necessary that the quality of the air is sufficient to avoid any risk of obstruction and premature deterioration.

6. AIR PRESSURE



Once the installation is completed, it is advisable to adjust the air pressure until the minimum is reached, in order for the application to perform correctly. This adjustment will provide significant energy savings and decrease noise levels.

A reduction of noise levels of 10 dB is perceived by the ear as a decrease in half of the noise level. (Information from the NIOSH Institute).

JAPANESE IKEUCHI TECHNOLOGY



IKEUCHI designs and manufactures a wide range of nozzles and mounting accessories to provide innovative solutions in the numerous uses of compressed air (air boosters) and low pressure (air blowers) in today's industry.

All IKEUCHI nozzle designs are made based on high efficiency and a reduced noise level.

Investing in IKEUCHI nozzles means investing in safety and efficiency.

IKEUCHI, with its 66-year experience, manufactures nozzles of exclusive design with high quality technological materials, such as S303, S304, S316L, aluminium A5052, ABS, PAPPs.

This diversity of materials adapts to most of the needs of the industry. In addition, IKEUCHI engineers can provide custom-made solutions to meet customer's specific needs. (See features on p.59)



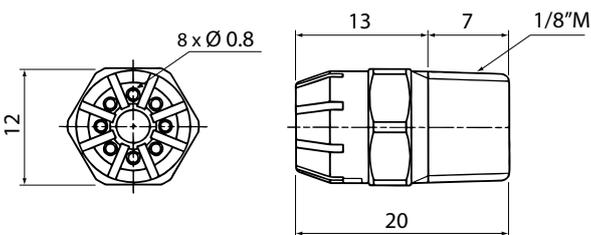


- Air booster nozzle suitable for the vast majority of applications. It incorporates a high blowing capacity through its 8 orifices with a free passage diameter of 0.8 mm which generate an effective blow cone.
- Lightweight and compact design.
- Suitable for use with unfiltered air supply where impurities or particles could be observed.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of S316L stainless steel, they are highly resistant to both mechanical and chemical aggressions, as well as high temperature.
- Suitable for environments where hygiene is crucial.

Blowing pattern

Round blown 

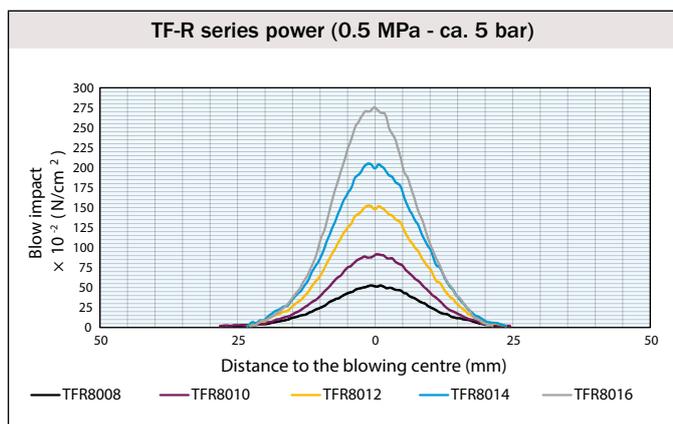
Dimensions (mm)



| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 70 | 145 | 220 |

-  **Material**
S316L
-  **Pressure**
1 MPa
ca. 10 bar
-  **Maximum temperature**
400 °C
-  **Thread connection**
1/8" male
-  **Weight**
7 g
-  **Strength of blowing***
2.3 N
-  **Air consumption***
235 l/min,
Normal
-  **Level of noise***
77 dB(A)
-  **Product code**
1/8MTR8008S316LIN

* at 0.5 MPa (ca. 5 bar)



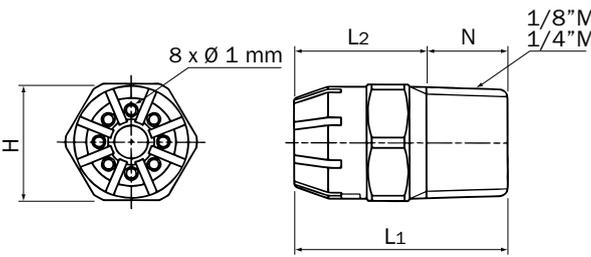
- Air booster nozzle suitable for the vast majority of applications. It incorporates a high blowing capacity through its 8 orifices with a free passage diameter of 1 mm which generate an effective blow cone.
- Lightweight and compact design.
- Suitable for use with unfiltered air supply where impurities or particles could be observed.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
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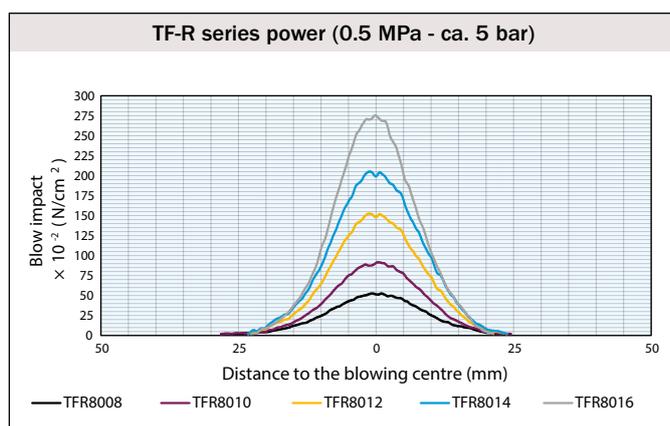


| | | |
|---|--|--|
|  Material S316L |  Pressure 1 MPa (ca. 10 bar) |  Maximum temperature 400 °C |
|  Thread connection 1/8" - 1/4" male |  Weight 7 g (1/8") 12 g (1/4") |  Strength of blowing* 3.7 N |
|  Air consumption* 366 l/min, Normal |  Level of noise* 83 dB(A) | |
|  Product code 1/8MTFR8010S316LIN 1/4MTFR8010S316LIN | | |

* at 0.5 MPa (ca. 5 bar)

| Blowing pattern | |
|-----------------|---|
| Round blown |  |

| Dimensions (mm) | |
|--|--|
|  | |



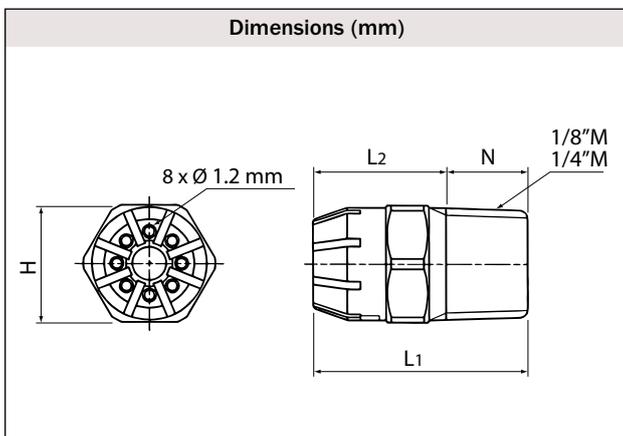
| Connection | Dimensions (mm) | | | | Weight (g) |
|------------|-----------------|------|----|-----|------------|
| | L1 | L2 | H | N | |
| 1/8M | 20 | 13 | 12 | 7 | 7 |
| 1/4M | 25 | 15.5 | 14 | 9.5 | 12 |



- Air booster nozzle suitable for the vast majority of applications. It incorporates a high blowing capacity through its 8 orifices with a free passage diameter of 1.2 mm which generate an effective blow cone.
- Lightweight and compact design.
- Suitable for use with unfiltered air supply where impurities or particles could be observed.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of S316L stainless steel, they are highly resistant to both mechanical and chemical aggressions, as well as high temperature.
- Suitable for environments where hygiene is crucial.

Blowing pattern

Round blown 

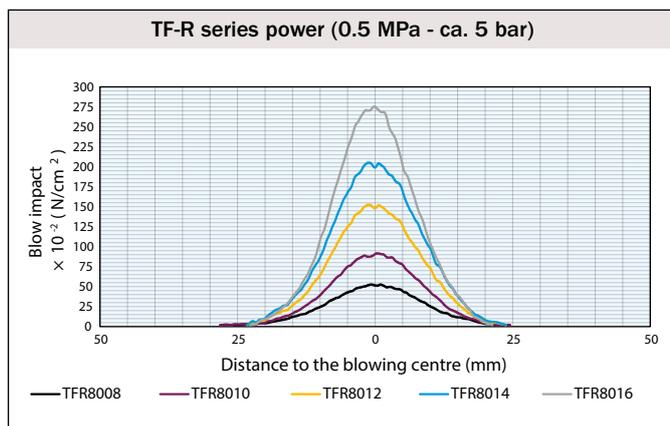


| Connection | Dimensions (mm) | | | | Weight (g) |
|------------|-----------------|------|----|-----|------------|
| | L1 | L2 | H | N | |
| 1/8M | 20 | 13 | 12 | 7 | 7 |
| 1/4M | 25 | 15.5 | 14 | 9.5 | 12 |

| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 180 | 360 | 540 |

-  Material **S316L**
-  Pressure **1 MPa (ca. 10 bar)**
-  Maximum temperature **400 °C**
-  Thread connection **1/8" - 1/4" male**
-  Weight **7 g (1/8") 12 g (1/4")**
-  Strength of blowing* **5.1 N**
-  Air consumption* **539 l/min, Normal**
-  Level of noise* **88 dB(A)**
-  Product code **1/8MTFR8012S316LIN 1/4MTFR8012S316LIN**

* at 0.5 MPa (ca. 5 bar)



- Air booster nozzle suitable for the vast majority of applications. It incorporates a high blowing capacity through its 8 orifices with a free passage diameter of 1.4 mm which generate an effective blow cone.
- Lightweight and compact design.
- Suitable for use with unfiltered air supply where impurities or particles could be observed.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of S316L stainless steel, they are highly resistant to both mechanical and chemical aggressions, as well as high temperature.
- Suitable for environments where hygiene is crucial.

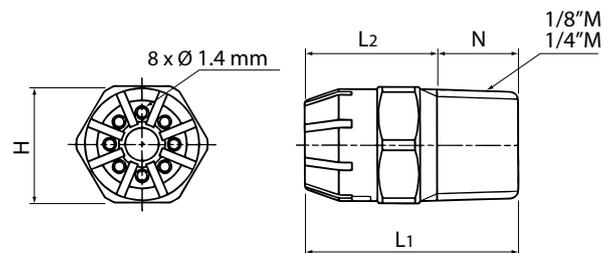


Blowing pattern

Round blown



Dimensions (mm)

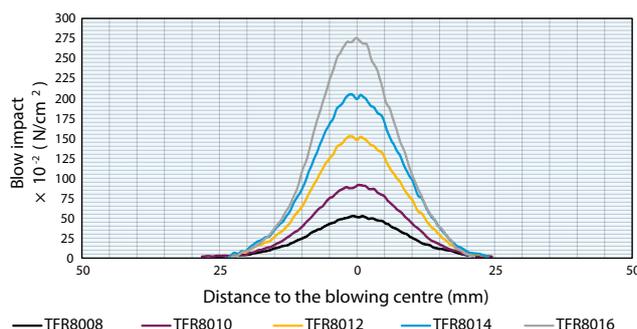


| Connection | Dimensions (mm) | | | | Weight (g) |
|------------|-----------------|------|----|-----|------------|
| | L1 | L2 | H | N | |
| 1/8M | 20 | 13 | 12 | 7 | 7 |
| 1/4M | 25 | 15.5 | 14 | 9.5 | 12 |

Consumption (L/min, Normal)

| 0.1 MPa | 0.3 MPa | 0.5 MPa |
|---------|---------|---------|
| 240 | 480 | 720 |

TF-R series power (0.5 MPa - ca. 5 bar)



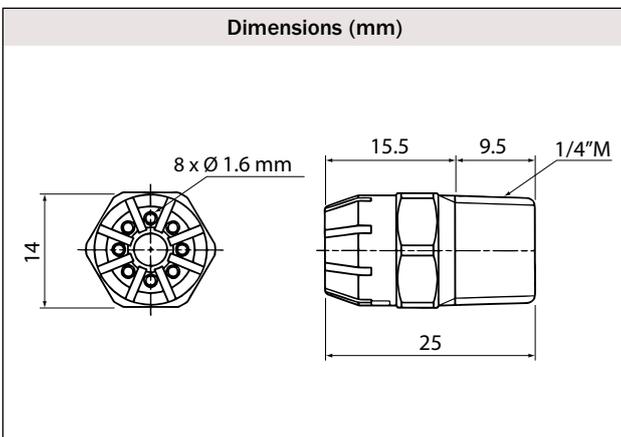
- Material: S316L
- Pressure: 1 MPa (ca. 10 bar)
- Maximum temperature: 400 °C
- Thread connection: 1/8" - 1/4" male
- Weight: 7 g (1/8") 12 g (1/4")
- Strength of blowing*: 6.7 N
- Air consumption*: 718 l/min, Normal
- Level of noise*: 91 dB(A)
- Product code: 1/8MTFR8014S316LIN 1/4MTFR8014S316LIN
* at 0.5 MPa (ca. 5 bar)



- Air booster nozzle suitable for the vast majority of applications. It incorporates a high blowing capacity through its 8 orifices with a free passage diameter of 1.6 mm which generate an effective blow cone.
- Lightweight and compact design.
- Suitable for use with unfiltered air supply where impurities or particles could be observed.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of S316L stainless steel, they are highly resistant to both mechanical and chemical aggressions, as well as high temperature.
- Suitable for environments where hygiene is crucial.

Blowing pattern

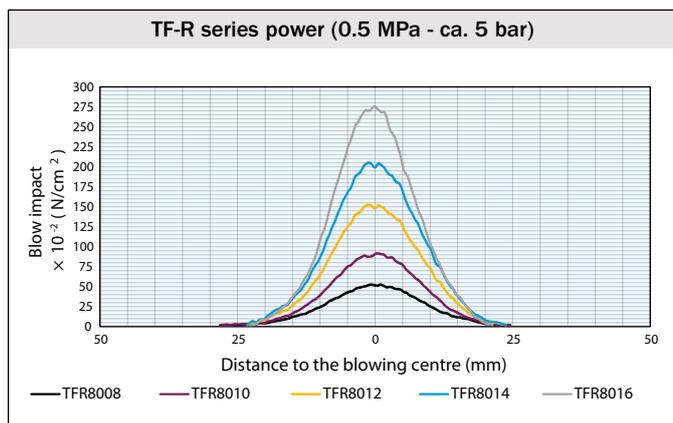
Round blown 



| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0,1 MPa | 0,3 MPa | 0,5 MPa |
| 290 | 565 | 870 |

-  **Material**
S316L
-  **Pressure**
1 MPa
(ca. 10 bar)
-  **Maximum temperature**
400 °C
-  **Thread connection**
1/4" male
-  **Weight**
12 g
-  **Strength of blowing***
10 N
-  **Air consumption***
938 l/min,
Normal
-  **Level of noise***
93 dB(A)
-  **Product code**
1/4MTFR8016S316LIN

* at 0.5 MPa (ca. 5 bar)



- Air booster nozzle suitable for the vast majority of applications. It incorporates a great blowing power through its 36 orifices with a free passage diameter of 1.2 mm which generate an effective blow cone.
- Robust and compact design for use in applications that require high power in tight spaces.
- Suitable for use with unfiltered air supply where impurities or particles could be observed thanks to an optimised interior design.
- Its multi-orifice design prevents clogging.
- Made of S303 stainless steel, they are highly resistant to both mechanical and chemical aggressions, as well as high temperature.
- Suitable for environments where hygiene is crucial.

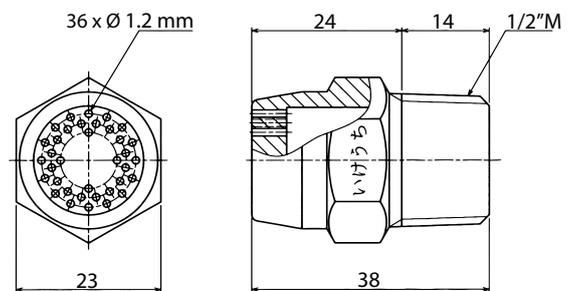


Blowing pattern

Round blown



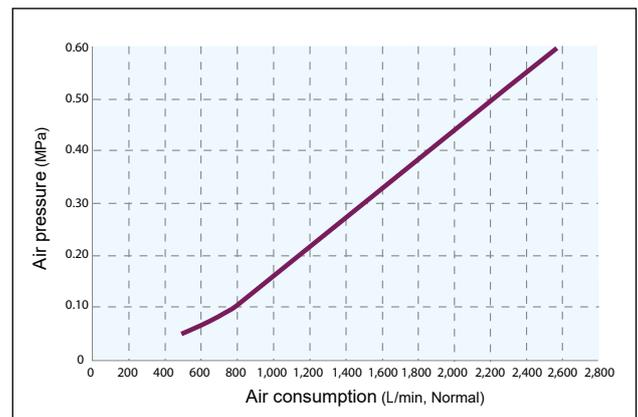
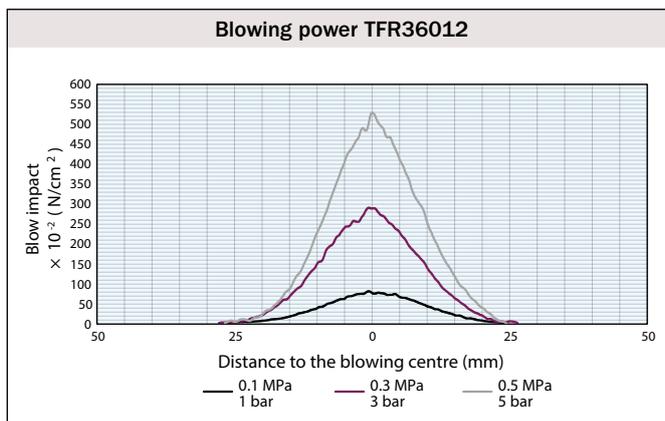
Dimensions (mm)



| | | |
|---|--|--|
|  Material S303 |  Pressure 1 MPa (ca. 10 bar) |  Maximum temperature 400 °C |
|  Thread connection 1/2" male |  Weight 50 g |  Strength of blowing* 21 N |
|  Air consumption* 2.220 l/min, Normal |  Level of noise* 98 dB(A) | |
|  Product code 1/2MTFR36012S303 | | |

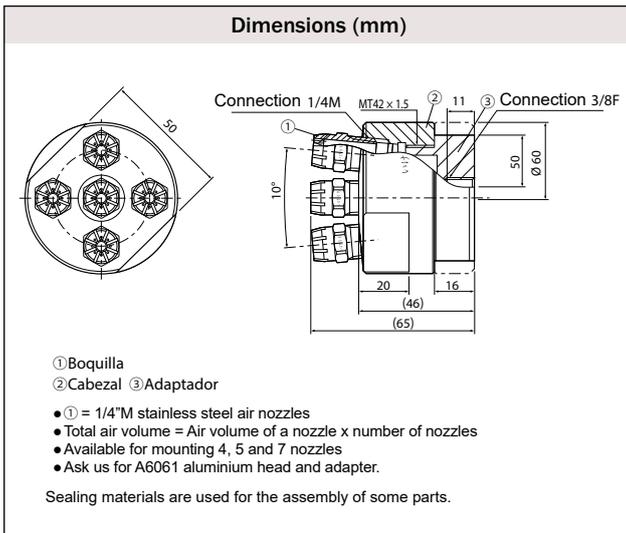
* at 0.5 MPa (ca. 5 bar)

Blowing power TFR36012





- Compact adapter head for multi-nozzle assemblies of 4, 5 or 7 nozzles model TF-R 8-010 / TF-R 8-012 / TF-R 8-014 / TFR 8-016. By taking full advantage of the space, its ergonomic design allows an effective blow.
- Exclusive design capable of supplying a great blowing power of uniform impact, assuming a great improvement in existing applications.
- Suitable for use with unfiltered air supply where impurities or particles could be observed due to its improved interior design.
- Made of S303 stainless steel, they are highly resistant to both mechanical and chemical aggressions, as well as high temperature.
- Suitable for environments where hygiene is crucial.



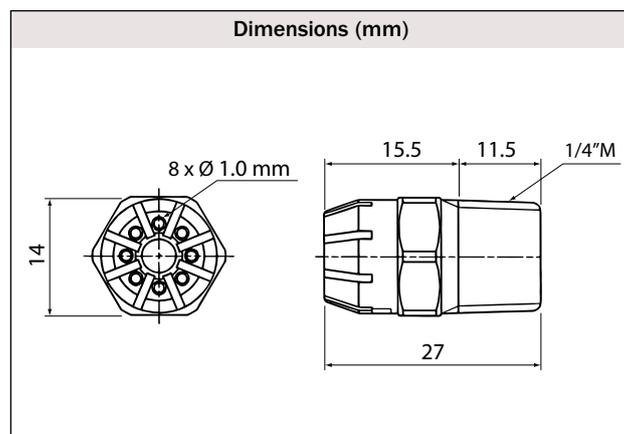
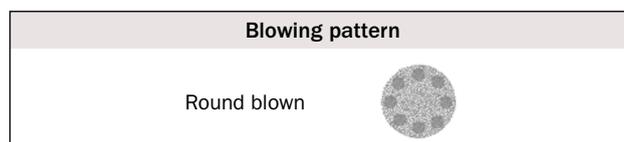
| | | |
|---|--|--------------------------------------|
| Material S303 | Pressure 1 MPa (ca. 10 bar) | Maximum temperature 400 °C |
| Thread connection 3/8" female | Air consumption Number of nozzles x individual nozzle consumption L /min | |
| Product code 3/8FTFM5R8010S303 3/8FTFM5R8012S303 3/8FTFM5R8014S303 3/8FTFM5R8016S303 | | |

* Possibility of manufacturing in A6061 aluminium and with 4 or 7 nozzles, for more information contact our sales offices.

Related products

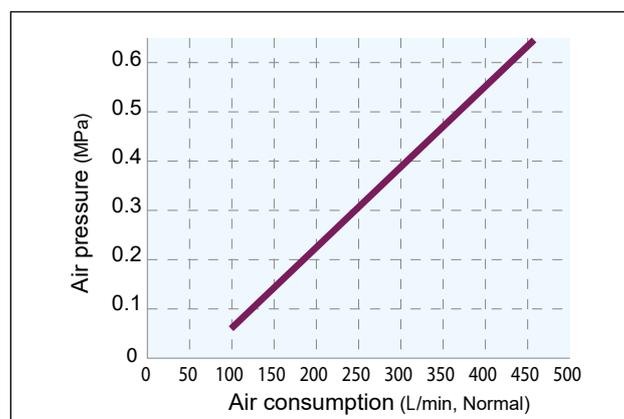
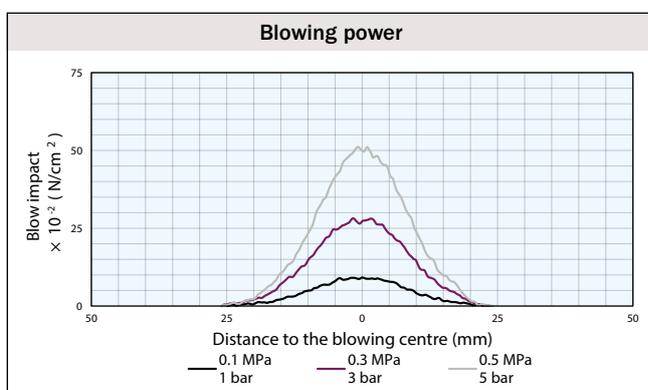


- Air booster nozzle suitable for the vast majority of applications. It incorporates a high blowing capacity through its 8 orifices which generate an effective blowing cone.
- Lightweight and compact design. Ideal for use in confined or difficult to reach spaces.
- Suitable for use with unfiltered air supply where impurities or particles could be observed.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Affordable nozzle made of PP that provides great resistance to chemical aggressions and good resistance to high temperature.
- Suitable for environments where hygiene is crucial.



- Material: PP
- Pressure: 0.7 MPa (ca. 7 bar)
- Maximum temperature: 60 °C
- Thread connection: 1/4" male
- Weight: 2 g
- Strength of blowing*: 3.7 N
- Air consumption*: 366 l/min, Normal
- Level of noise*: 83 dB(A)
- Product code: 1/4MTFR8010PPIN

* at 0.5 MPa (ca. 5 bar)



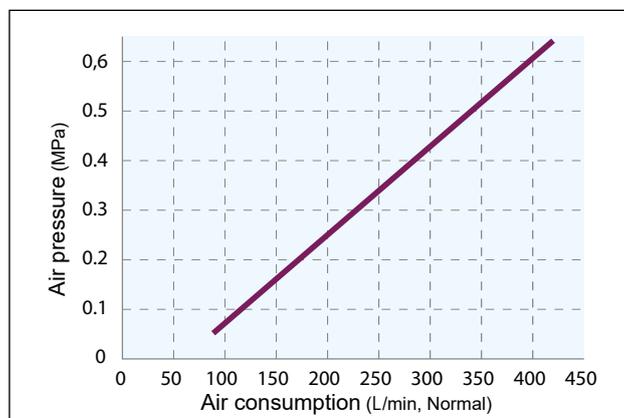
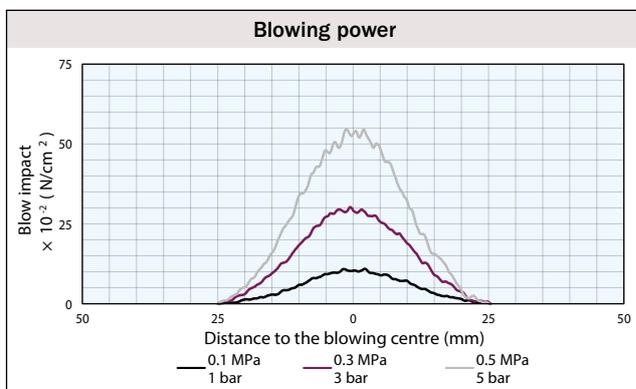
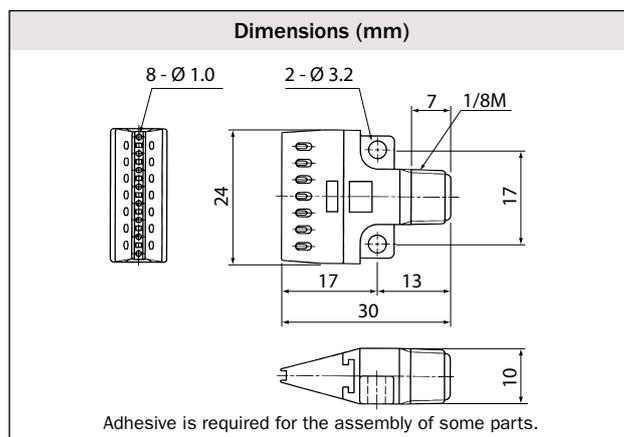
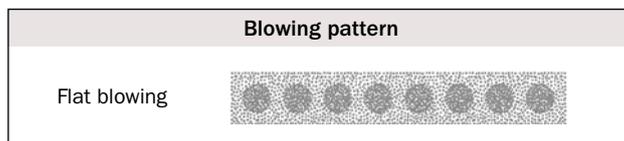
| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 125 | 245 | 360 |

- Air booster nozzle appropriate for applications where flat blowing is required in hard to reach areas or tight spaces. High blowing power through its 8 orifices which generate an effective flat blow.
- Lightweight and ultra-compact design.
- Uniform distribution of the blow in multi-nozzle assemblies thanks to its interior design.
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Manufactured in PPS by injection, they provide high resistance to chemical aggressions and good resistance to high temperature.
- Suitable for environments where hygiene is crucial.



| | | |
|---|---|---------------------------------------|
| Material PPS | Pressure 0.7 MPa (ca. 7 bar) | Maximum temperature 120 °C |
| Thread connection 1/8" male | Weight 4 g | Strength of blowing* 3.21 N |
| Air consumption* 337 l/min, Normal | Level of noise* 82 dB(A) | |
| Product code 1/8MTFF24801OPPSIN | | |

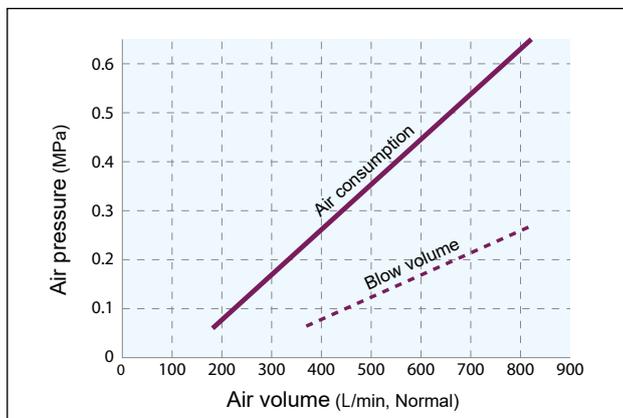
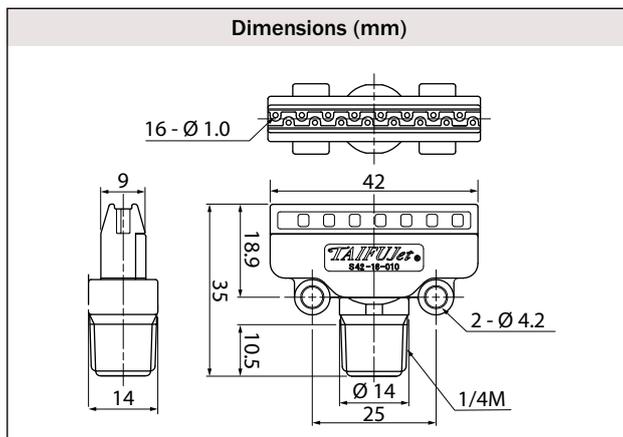
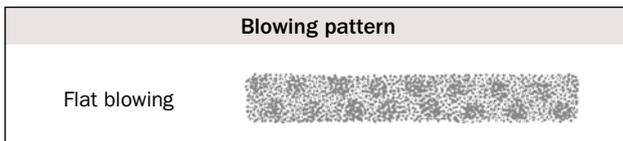
* at 0.5 MPa (ca. 5 bar)



| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 115 | 225 | 340 |



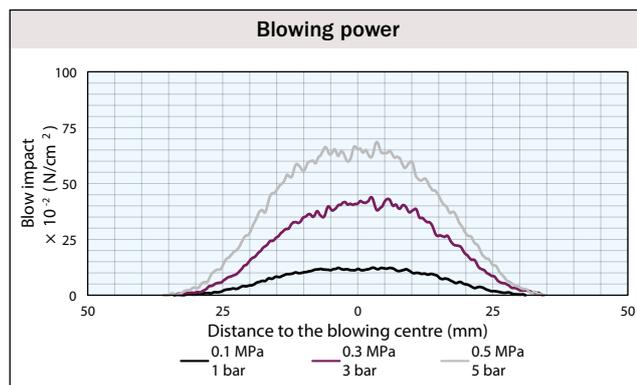
- Air booster nozzle appropriate for applications where flat blowing is required in hard to reach areas or tight spaces. High blowing power through its 16 orifices which generate an effective flat blow.
- Thanks to its innovative design, it guarantees a considerable reduction in energy consumption by doubling its blowing power.
- Uniform distribution of the blow in multi-nozzle assemblies thanks to its interior design.
- Lightweight design with a more compact body that makes it ideal for installations with small spaces.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Manufactured in PPS, they have a high resistance to mechanical, chemical and high temperature aggressions.
- Suitable for environments where hygiene is crucial.



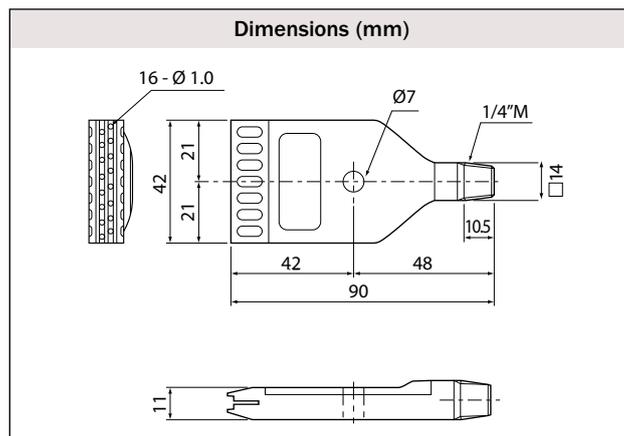
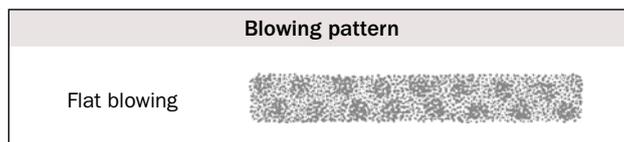
| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 215 | 440 | 660 |

- Material: PPS
- Pressure: 0.7 MPa (ca. 7 bar)
- Maximum temperature: 80 °C
- Thread connection: 1/4" male
- Weight: 9 g
- Strength of blowing*: 6.5 N
- Air consumption*: 658 l/min, Normal
- Level of noise*: 85 dB(A)
- Product code: 1/4MTFFS421601PPS

* at 0.5 MPa (ca. 5 bar)

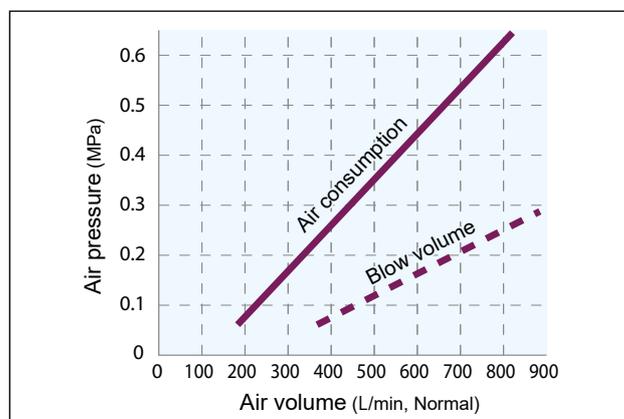
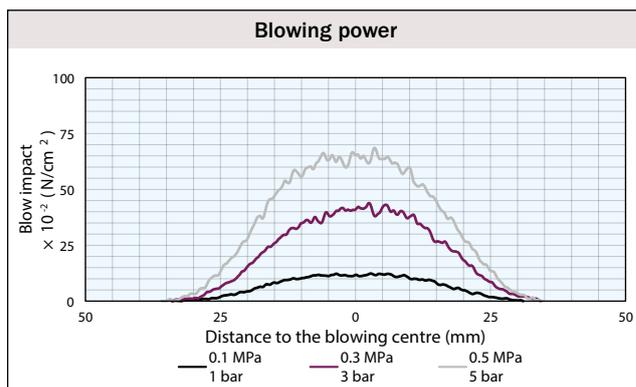


- Air booster nozzle suitable for applications where a flat laminar blow is required. High blowing power through its 16 orifices which generate an effective flat blow.
- It presents a considerable reduction in energy expenditure by doubling its blowing power due to its innovative design.
- Uniform distribution of the blow in multi-nozzle assemblies thanks to its interior design.
- Lightweight design compared to the stainless-steel model.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Manufactured in PPS that provides great resistance to mechanical, chemical and high temperature aggressions.
- Suitable for environments where hygiene is crucial.



| | | |
|---|---|--|
|  Material PPS |  Pressure 0.7 MPa (ca. 7 bar) |  Maximum temperature 80 °C |
|  Thread connection 1/4" male |  Weight 30 g |  Strength of blowing* 5.9 N |
|  Air consumption* 658 l/min, Normal |  Level of noise* 84 dB(A) | |
|  Product code 1/4MTFF4216010PPS | | |

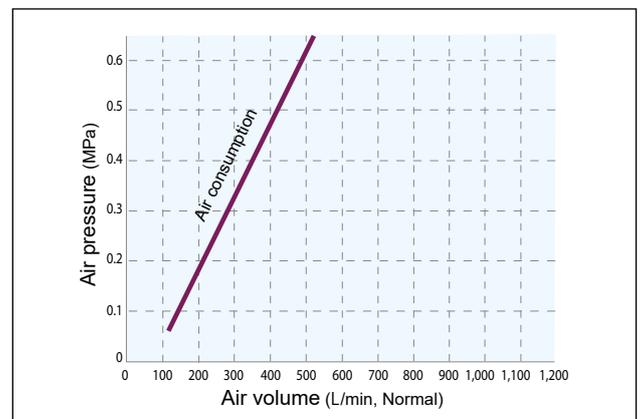
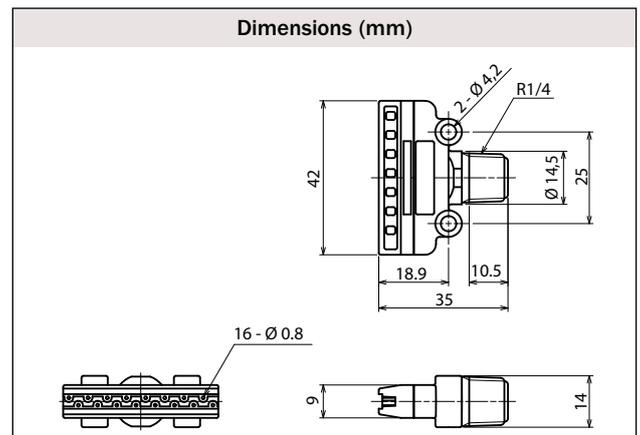
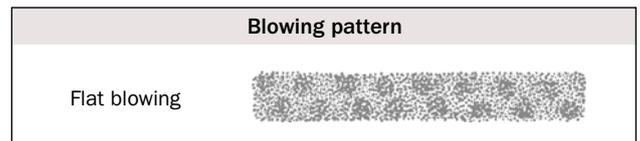
* at 0.5 MPa (ca. 5 bar)



Consumption (L/min, Normal)

| 0.1 MPa | 0.3 MPa | 0.5 MPa |
|---------|---------|---------|
| 215 | 440 | 660 |

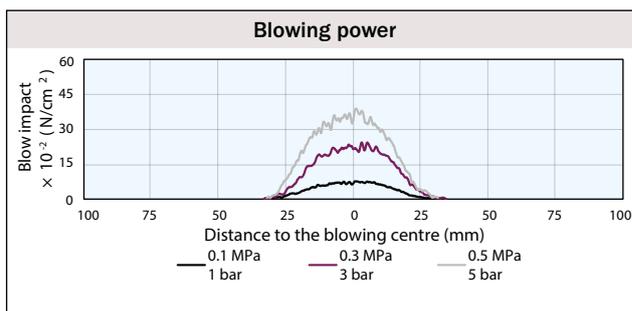
- Air booster nozzle suitable for applications where flat blowing is required in hard-to-reach areas or confined spaces. High blowing power through its 16 holes that generate an efficient blowing cone.
- It presents a considerable reduction in energy consumption by multiplying its blowing power by two due to its innovative design.
- Uniform distribution of the blow in multi-nozzle assemblies thanks to its interior design.
- Lightweight design with a more compact body that makes it ideal for installations with limited spaces.
- In addition to its high effectiveness, it shows a very low noise level. (By reducing noise by 10 dB (A), the human ear interprets this reduction as 50% less noise.)
- Its multi-hole design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of S316L, they are highly resistant to mechanical and chemical attacks and high temperatures.
- Suitable for environments where hygiene is a condition.



| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 141 | 280 | 419 |

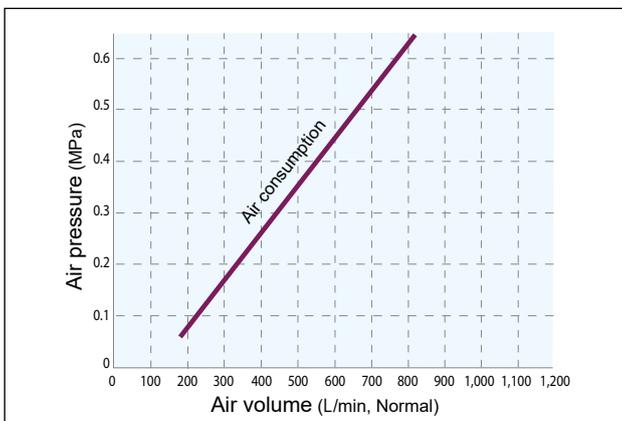
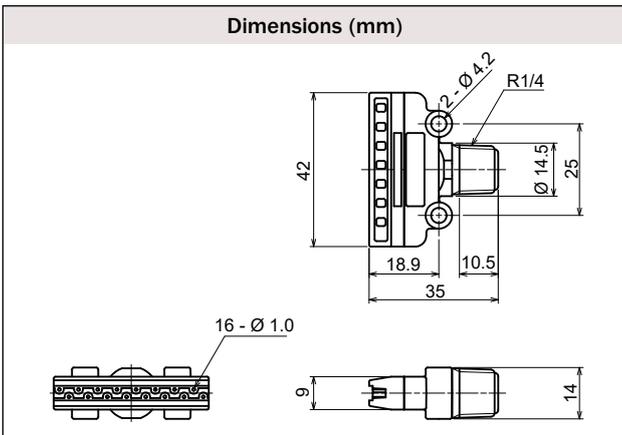
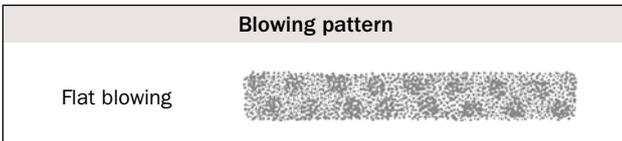
-  **Material**
S316L
-  **Pressure**
1 MPa
(ca. 10 bar)
-  **Maximum temperature**
400 °C
-  **Thread connection**
1/4" male
-  **Weight**
38 g
-  **Strength of blowing***
4 N
-  **Air consumption***
419 l/min,
Normal
-  **Level of noise***
79 dB(A)
-  **Product code**
1/4MTFFS4216008S316LIN

* at 0.5 MPa (ca. 5 bar)





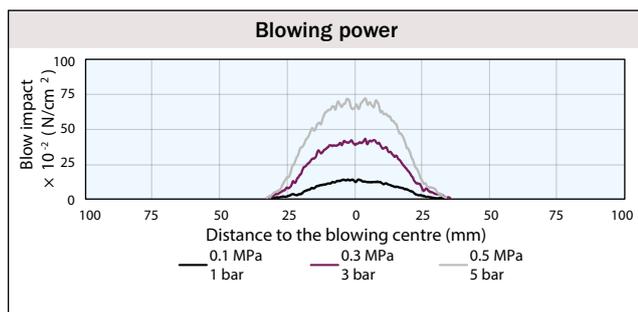
- Air booster nozzle suitable for applications where flat blowing is required in hard-to-reach areas or confined spaces. High blowing power through its 16 holes that generate an efficient blowing cone.
- It presents a considerable reduction in energy consumption by multiplying its blowing power by two due to its innovative design.
- Uniform distribution of the blow in multi-nozzle assemblies thanks to its interior design.
- Lightweight design with a more compact body that makes it ideal for installations with limited spaces.
- In addition to its high effectiveness, it shows a very low noise level. (By reducing noise by 10 dB (A), the human ear interprets this reduction as 50% less noise.)
- Its multi-hole design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of S316L, they are highly resistant to mechanical and chemical attacks and high temperatures.
- Suitable for environments where hygiene is a condition.



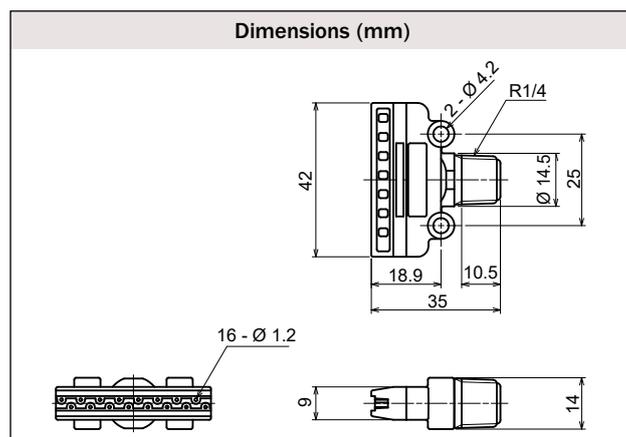
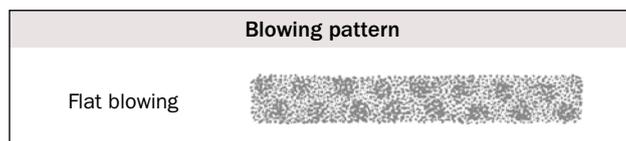
| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 222 | 440 | 658 |

- Material: S316L
- Pressure: 1 MPa (ca. 10 bar)
- Maximum temperature: 400 °C
- Thread connection: 1/4" male
- Weight: 38 g
- Strength of blowing*: 6.5 N
- Air consumption*: 658 l/min, Normal
- Level of noise*: 84 dB(A)
- Product code: 1/4MTFFS4216010S316LIN

* at 0.5 MPa (ca. 5 bar)

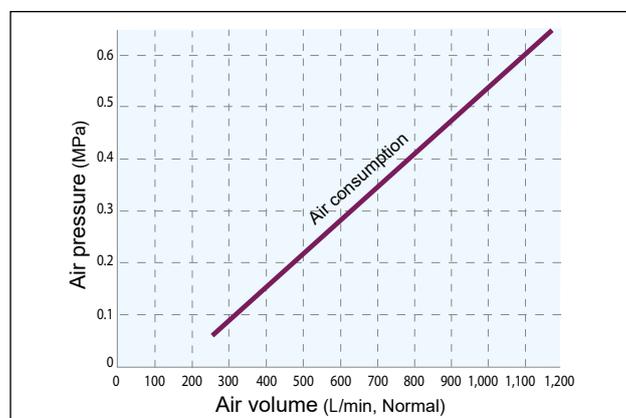
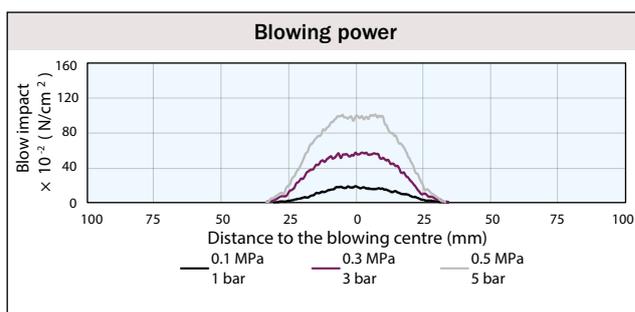


- Air booster nozzle suitable for applications where flat blowing is required in hard-to-reach areas or confined spaces. High blowing power through its 16 holes that generate an efficient blowing cone.
- It presents a considerable reduction in energy consumption by multiplying its blowing power by two due to its innovative design.
- Uniform distribution of the blow in multi-nozzle assemblies thanks to its interior design.
- Lightweight design with a more compact body that makes it ideal for installations with limited spaces.
- In addition to its high effectiveness, it shows a very low noise level. (By reducing noise by 10 dB (A), the human ear interprets this reduction as 50% less noise.)
- Its multi-hole design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of S316L, they are highly resistant to mechanical and chemical attacks and high temperatures.
- Suitable for environments where hygiene is a condition.



-  **Material**
S316L
-  **Pressure**
1 MPa
(ca. 10 bar)
-  **Maximum temperature**
400 °C
-  **Thread connection**
1/4" male
-  **Weight**
38 g
-  **Strength of blowing***
10 N
-  **Air consumption***
942 l/min,
Normal
-  **Level of noise***
88 dB(A)
-  **Product code**
1/4MTFFS4216012S316LIN

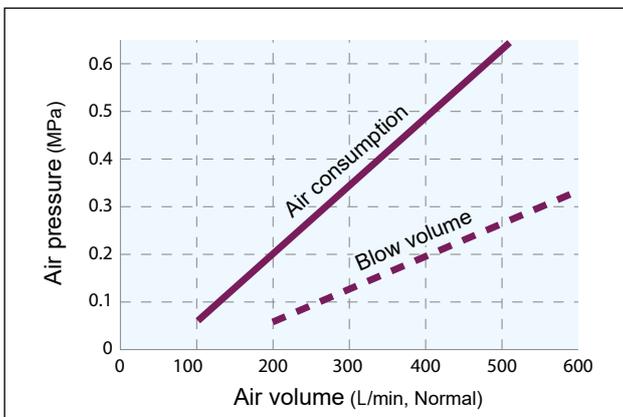
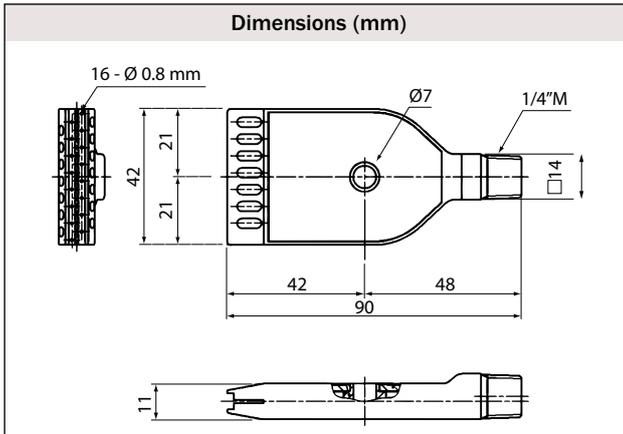
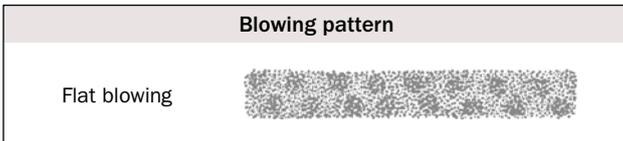
* at 0.5 MPa (ca. 5 bar)



| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 318 | 630 | 942 |



- Air booster nozzle suitable for applications where a flat laminar blow is required. High blowing power through its 16 orifices with a free passage diameter of 0.8 mm, which generate an effective flat blow.
- It presents a considerable reduction in energy expenditure by doubling its blowing power due to its innovative design.
- Uniform distribution of the blow in multi-nozzle assemblies thanks to its interior design.
- Robust and innovative design.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of injected S316L stainless steel that provides high resistance to mechanical, chemical and high temperature aggressions.
- Suitable for environments where hygiene is crucial.

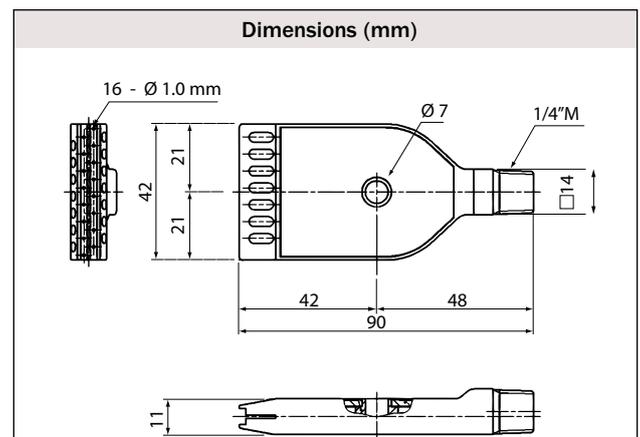
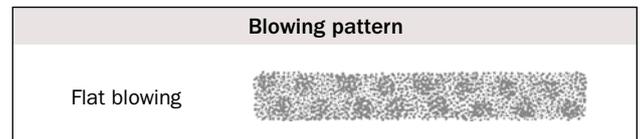


| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 140 | 280 | 425 |

- Material**
S316L
- Pressure**
1 MPa
(ca. 10 bar)
- Maximum temperature**
400 °C
- Thread connection**
1/4" male
- Weight**
144 g
- Strength of blowing***
3.68 N
- Air consumption***
419 l/min,
Normal
- Level of noise***
78 dB(A)
- Product code**
1/4MTFF4216008S316LIN

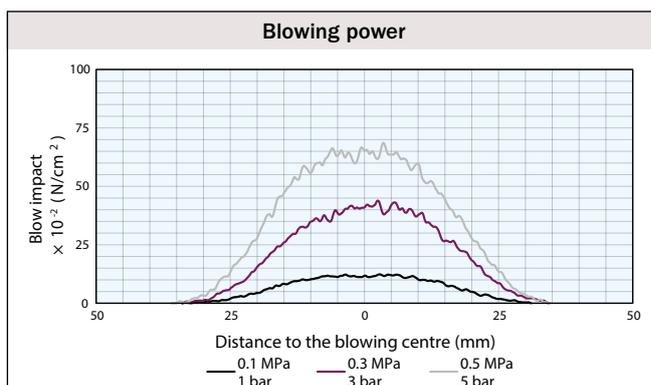
* at 0.5 MPa (ca. 5 bar)

- Air booster nozzle suitable for applications where a flat laminar blow is required. High blowing power through its 16 orifices with a free passage diameter of 1 mm, which generate an effective flat blow.
- It presents a considerable reduction in energy expenditure by doubling its blowing power due to its innovative design.
- Uniform distribution of the blow in multi-nozzle assemblies thanks to its interior design.
- Robust and innovative design.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of injected S316L stainless steel that provides great resistance to mechanical, chemical and high temperature aggressions.
- Suitable for environments where hygiene is crucial.

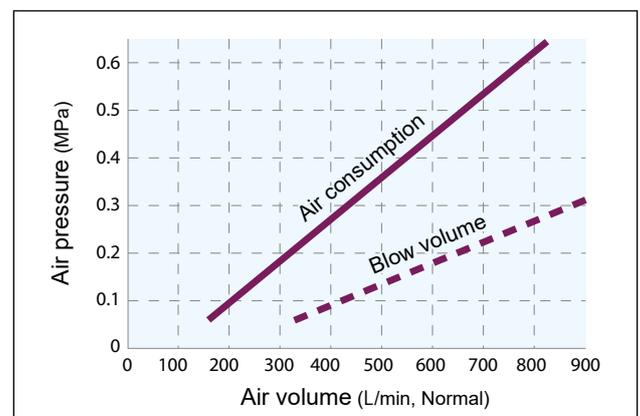


- Material**
S316L
- Pressure**
1 MPa (ca. 10 bar)
- Maximum temperature**
400 °C
- Thread connection**
1/4" male
- Weight**
144 g
- Strength of blowing***
5.9 N
- Air consumption***
658 l/min, Normal
- Level of noise***
84 dB(A)
- Product code**
1/4MTFF4216010S316LIN

* at 0.5 MPa (ca. 5 bar)



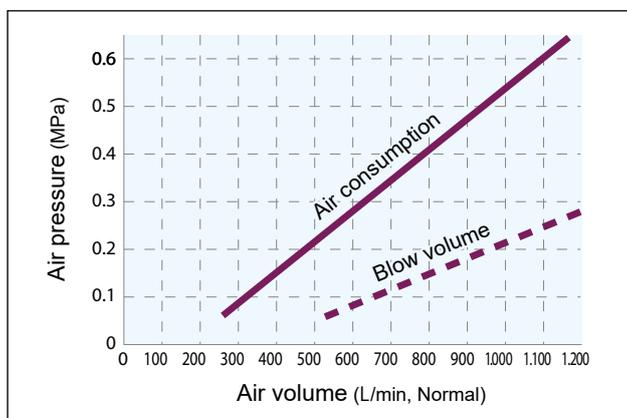
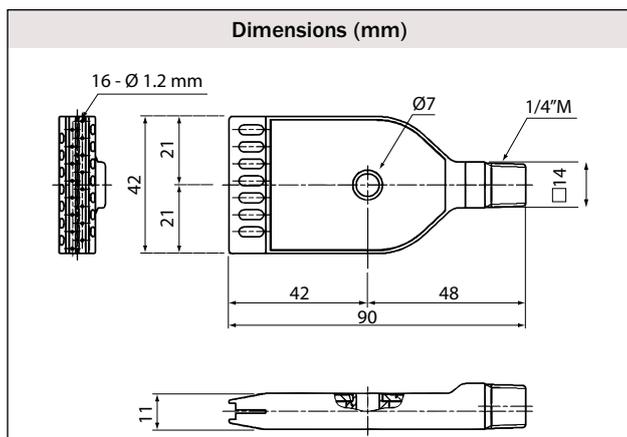
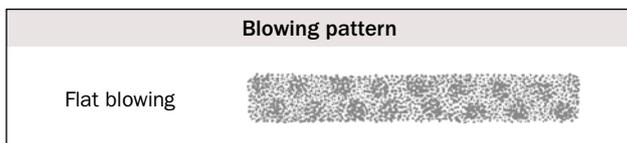
Para más información sobre otros modelos de la serie TFF42 consúltenos.



| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 215 | 435 | 655 |



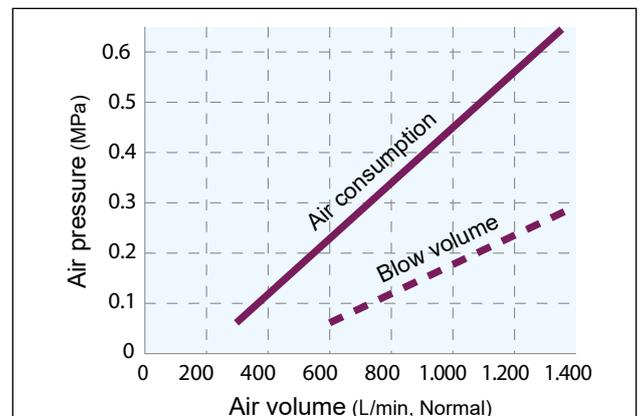
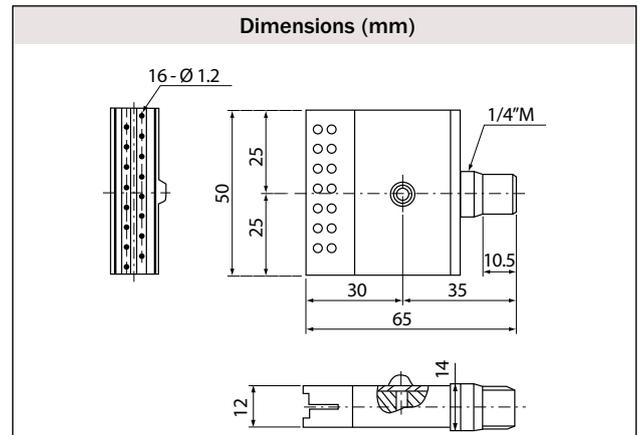
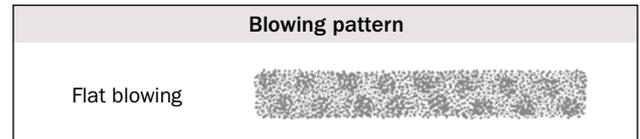
- Air booster nozzle suitable for applications where a flat laminar blow is required. High blowing power through its 16 orifices with a free passage diameter of 1.2, which generate an effective flat blow.
- It presents a considerable reduction in energy expenditure by doubling its blowing power due to its innovative design.
- Uniform distribution of the blow in multi-nozzle assemblies thanks to its interior design.
- Robust and innovative design.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of injected S316L stainless steel that provides high resistance to mechanical, chemical and high temperature aggressions.
- Suitable for environments where hygiene is crucial.



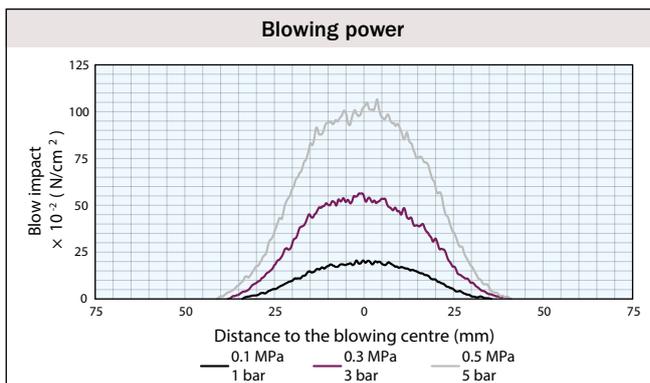
| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 300 | 605 | 925 |

| | | |
|---|--|--------------------------------------|
| Material S316L | Pressure 1 MPa (ca. 10 bar) | Maximum temperature 400 °C |
| Thread connection 1/4" male | Weight 144 g | Strength of blowing* 8.4 N |
| Air consumption* 942 l/min, Normal | Level of noise* 86 dB(A) | |
| Product code 1/4MTFF4216012S316LIN | * at 0.5 MPa (ca. 5 bar) | |

- Air booster nozzle suitable for applications where a powerful flat and laminar blow is required. High blowing power through its 16 orifices which generate an effective flat blow for most applications in the industry.
- Thanks to its innovative design, it guarantees a considerable reduction in energy consumption by doubling its blowing power.
- Uniform distribution of the blow in multi-nozzle assemblies thanks to its interior design.
- Blowing width greater than the one of the nozzles TF-F 42 and TF-FS 42.
- In addition to its high effectiveness, it presents a very low noise level. (The human ear interprets a reduction of noise by 10 dB(A) as 50% less noise.)
- Its multi-orifice design prevents clogging, not exceeding 2.1 bar of static pressure, according to safety regulations.
- Made of stainless steel S304 that provides great resistance to mechanical, chemical and high temperature aggressions.
- Suitable for environments where hygiene is crucial.



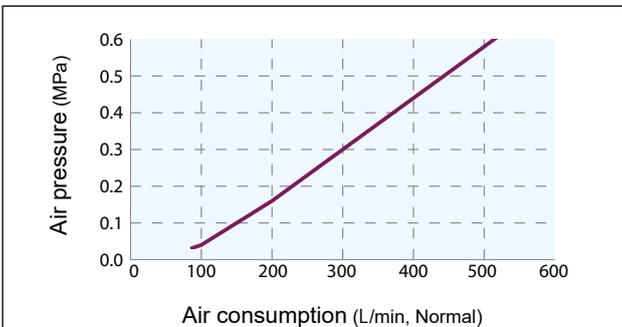
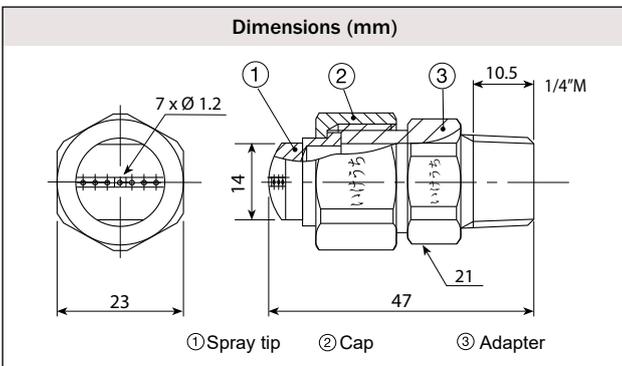
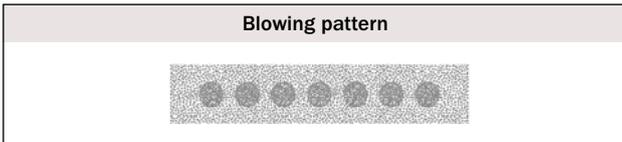
| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 345 | 685 | 1.035 |



- Material**
S304
 - Pressure**
1 MPa
(ca. 10 bar)
 - Maximum temperature**
400 °C
 - Thread connection**
1/4" male
 - Weight**
140 g
 - Strength of blowing***
11.5 N
 - Air consumption***
1.092 l/min,
Normal
 - Level of noise***
87 dB(A)
 - Product code**
1/4MTFF5016012S304
- * at 0.5 MPa (ca. 5 bar)



- Compact air nozzle model HF 7-012 made of stainless steel S303 that shows high resistance to high temperature, abrasion and corrosion.
- The blow outlet design achieves a uniform flat blow.
- Detachable nozzle for better cleaning.
- Noise level reduction by more than 10 dB compared to a single hole nozzle.

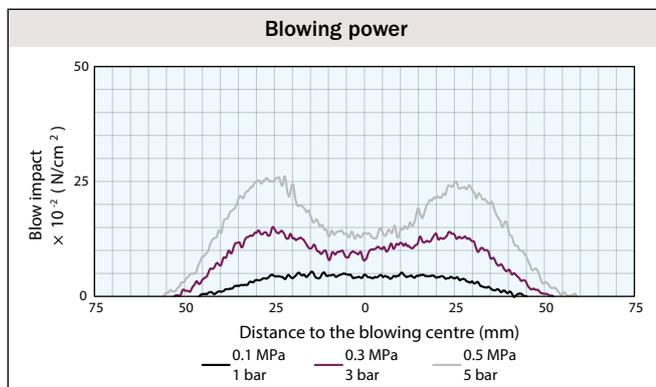


| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 140 | 280 | 425 |

| | | |
|---|---|--------------------------------------|
| Material S303 | Pressure 0.7 MPa (ca. 7 bar) | Maximum temperature 400 °C |
| Thread connection 1/4" male | Weight 70 g | Strength of blowing* 4.2 N |
| Air consumption* 443 l/min, Normal | Level of noise* 83 dB(A) | |
| Product code 1/4MHF7012S303 | | |

* at 0.5 MPa (ca. 5 bar)

| Pressure | Spray width and thickness (mm) | | | | | |
|----------|--------------------------------|-----------|---------|-----------|---------|-----------|
| | 0.1 MPa | | 0.3 MPa | | 0.4 MPa | |
| Distance | Width | Thickness | Width | Thickness | Width | Thickness |
| 50 mm | 60 | 40 | 60 | 60 | 60 | 60 |
| 150 mm | 110 | 80 | 120 | 120 | 120 | 120 |
| 300 mm | 150 | 120 | 190 | 150 | 200 | 160 |



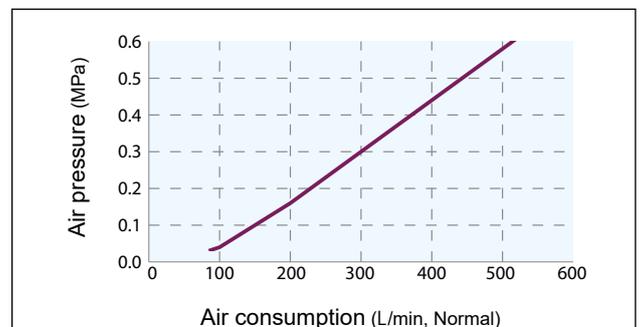
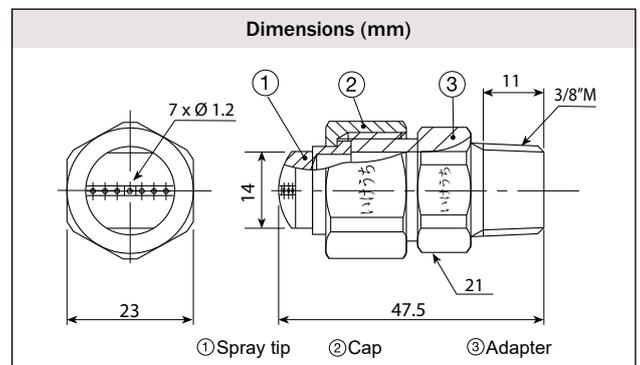
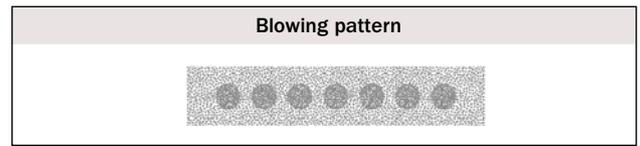
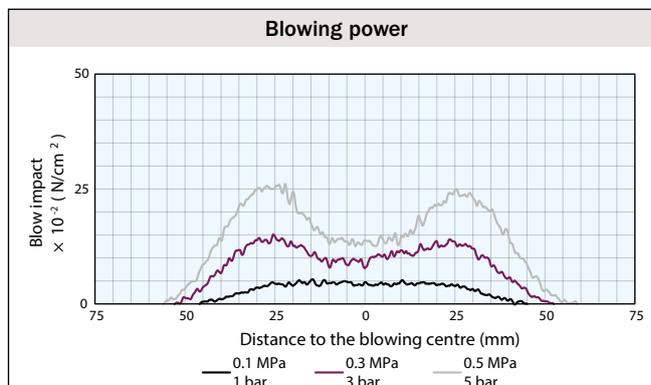
- Compact air nozzle model HF 7-012 made of stainless steel S303 that shows high resistance to high temperature, abrasion and corrosion.
- The blow outlet design achieves a uniform flat blow.
- Detachable nozzle for better cleaning.
- Noise level reduction by more than 10 dB compared to a single hole nozzle.



| | | |
|--|---|--|
|  Material S303 |  Pressure 0.7 MPa (ca. 7 bar) |  Maximum temperature 400 °C |
|  Thread connection 3/8" male |  Weight 75 g |  Strength of blowing* 4.2 N |
|  Air consumption* 443 l/min, Normal |  Level of noise* 83 dB(A) | |
|  Product codeCódigo 3/8MHF7012S303 152426 | | |

* at 0.5 MPa (ca. 5 bar)

| Spray width and thickness (mm) | | | | | | |
|--------------------------------|---------|-----------|---------|-----------|---------|-----------|
| Pressure | 0.1 MPa | | 0.3 MPa | | 0.4 MPa | |
| Distance | Width | Thickness | Width | Thickness | Width | Thickness |
| 50 mm | 60 | 40 | 60 | 60 | 60 | 60 |
| 150 mm | 110 | 80 | 120 | 120 | 120 | 120 |
| 300 mm | 150 | 120 | 190 | 150 | 200 | 160 |



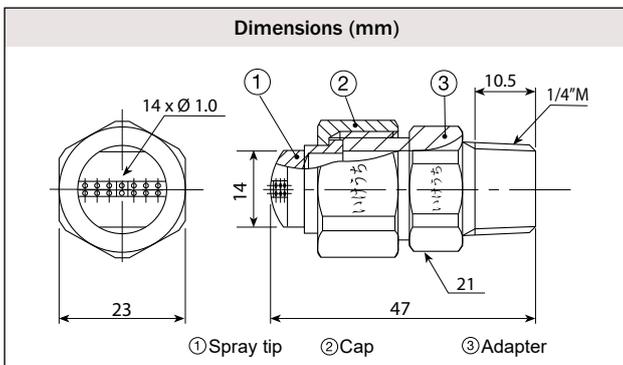
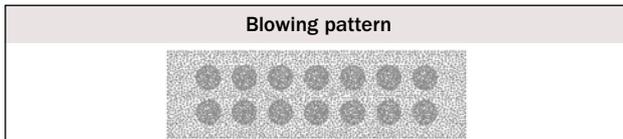
| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 140 | 280 | 425 |



- Compact air nozzle model HF 14-010 manufactured in stainless steel S303 that shows high resistance to high temperature, abrasion and corrosion.
- The blow outlet design achieves a uniform flat blow.
- Detachable nozzle for better cleaning.
- Noise level reduction by more than 10 dB compared to a single hole nozzle.

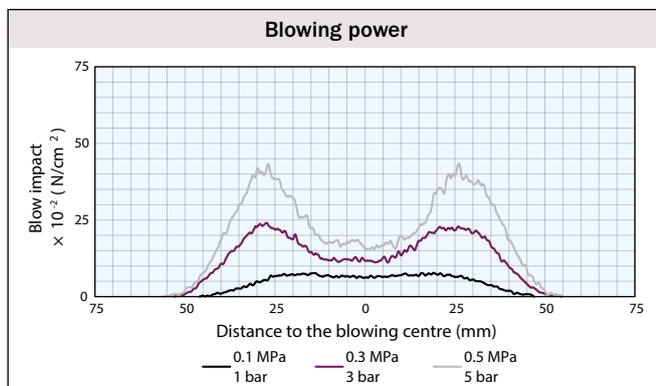
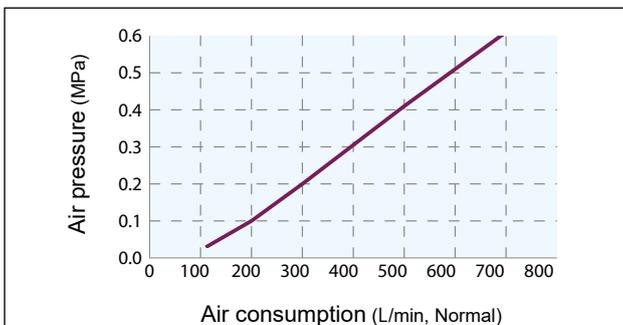
- Material: S303
- Pressure: 0.7 MPa (ca. 7 bar)
- Maximum temperature: 400 °C
- Thread connection: 1/4" male
- Weight: 70 g
- Strength of blowing*: 5.7 N
- Air consumption*: 558 l/min, Normal
- Level of noise*: 88 dB(A)
- Product code: 1/4MHF14010S303

* at 0.5 MPa (ca. 5 bar)



Spray width and thickness (mm)

| Pressure | 0.1 MPa | | 0.3 MPa | | 0.4 MPa | |
|----------|---------|-----------|---------|-----------|---------|-----------|
| Distance | Width | Thickness | Width | Thickness | Width | Thickness |
| 50 mm | 60 | 40 | 70 | 60 | 80 | 60 |
| 150 mm | 120 | 80 | 140 | 120 | 150 | 120 |
| 300 mm | 170 | 120 | 200 | 150 | 220 | 160 |



Consumption (L/min, Normal)

| 0.1 MPa | 0.3 MPa | 0.5 MPa |
|---------|---------|---------|
| 210 | 420 | 620 |

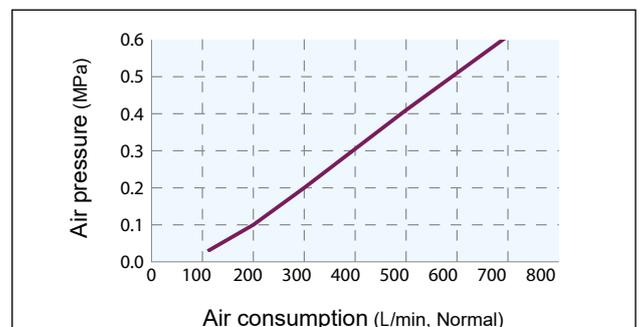
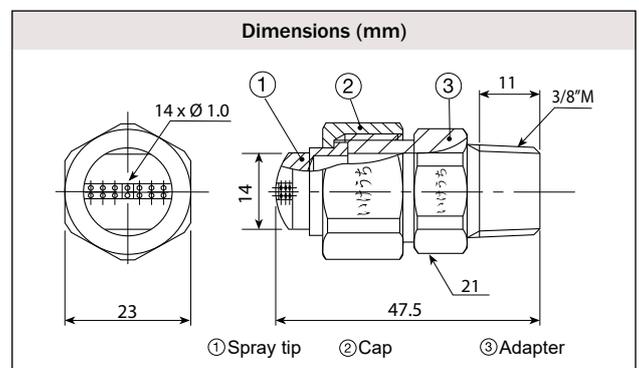
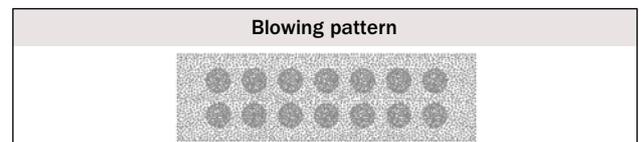
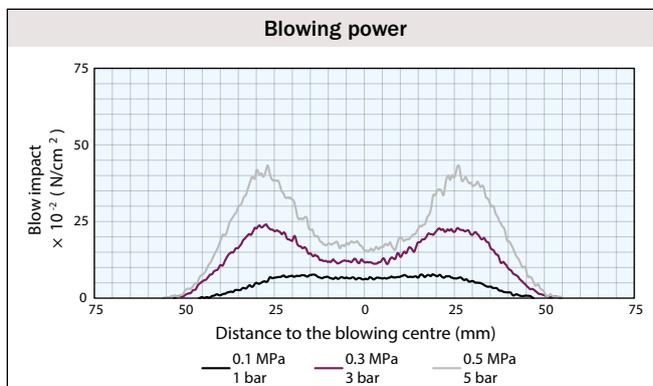
- Compact air nozzle model HF 14-010 manufactured in stainless steel S303 that shows high resistance to high temperature, abrasion and corrosion.
- The blow outlet design achieves a uniform flat blow.
- Detachable nozzle for better cleaning.
- Noise level reduction by more than 10 dB compared to a single hole nozzle.



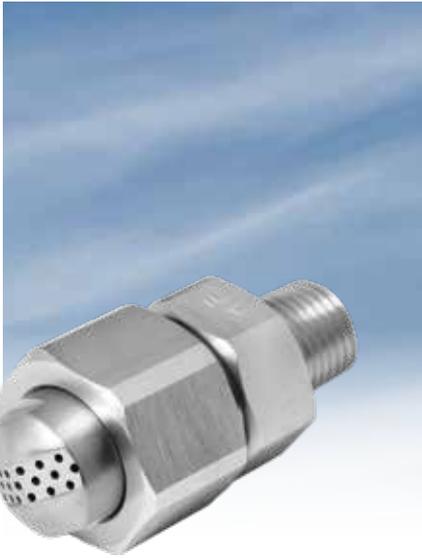
-  **Material**
S303
-  **Pressure**
0.7 MPa
(ca. 7 bar)
-  **Maximum temperature**
400 °C
-  **Thread connection**
3/8" male
-  **Weight**
75 g
-  **Strength of blowing***
5.7 N
-  **Air consumption***
558 l/min,
Normal
-  **Level of noise***
88 dB(A)
-  **Product code**
3/8MHF14010S303

* at 0.5 MPa (ca. 5 bar)

| Spray width and thickness (mm) | | | | | | |
|--------------------------------|---------|-----------|---------|-----------|---------|-----------|
| Pressure | 0.1 MPa | | 0.3 MPa | | 0.4 MPa | |
| Distance | Width | Thickness | Width | Thickness | Width | Thickness |
| 50 mm | 60 | 40 | 70 | 60 | 80 | 60 |
| 150 mm | 120 | 80 | 140 | 120 | 150 | 120 |
| 300 mm | 170 | 120 | 200 | 150 | 220 | 160 |



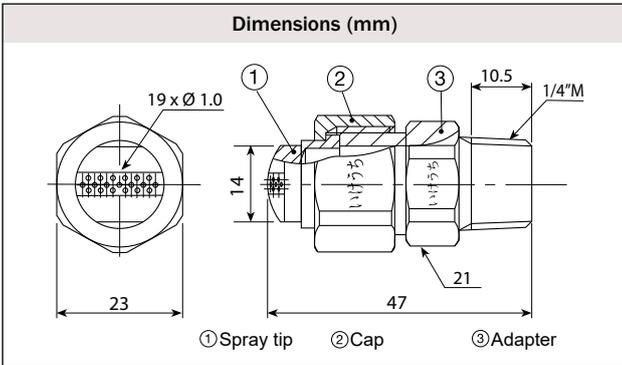
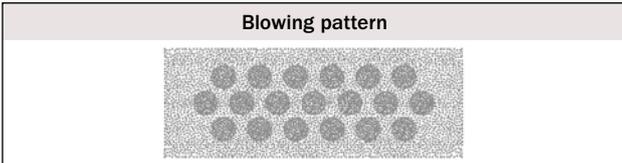
| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 210 | 420 | 620 |



- Compact air nozzle model HF 19-010 manufactured in stainless steel S303 that shows high resistance to high temperature, abrasion and corrosion.
- The blow outlet design achieves a uniform flat blow.
- Detachable nozzle for better cleaning.
- Noise level reduction by more than 10 dB compared to a single hole nozzle.

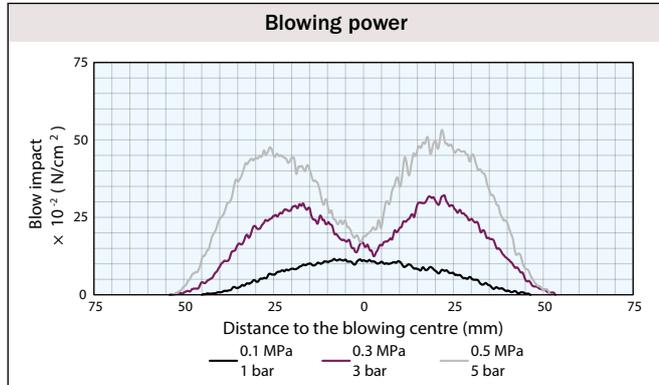
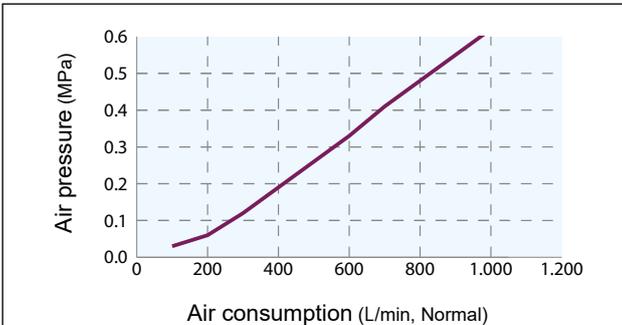
| | | |
|--|------------------------------------|-------------------------------|
| Material S303 | Pressure 0.7 MPa (ca. 7 bar) | Maximum temperature 400 °C |
| Thread connection 1/4" male | Weight 70 g | Strength of blowing* 8.6 N |
| Air consumption* 830 l/min, Normal | Level of noise* 90 dB(A) | |
| Product code 1/4MHF19010S303 | | |

* at 0.5 MPa (ca. 5 bar)



Spray width and thickness (mm)

| Pressure | 0.1 MPa | | 0.3 MPa | | 0.4 MPa | | |
|----------|----------|-------|-----------|-------|-----------|-------|-----------|
| | Distance | Width | Thickness | Width | Thickness | Width | Thickness |
| 50 mm | | 60 | 40 | 80 | 60 | 80 | 60 |
| 150 mm | | 120 | 80 | 140 | 120 | 150 | 120 |
| 300 mm | | 180 | 120 | 210 | 150 | 230 | 160 |



Consumption (L/min, Normal)

| 0.1 MPa | 0.3 MPa | 0.5 MPa |
|---------|---------|---------|
| 275 | 560 | 850 |

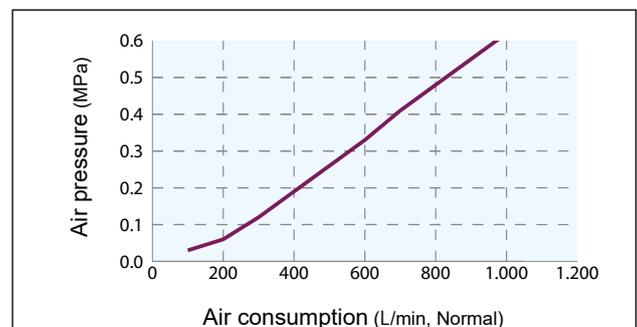
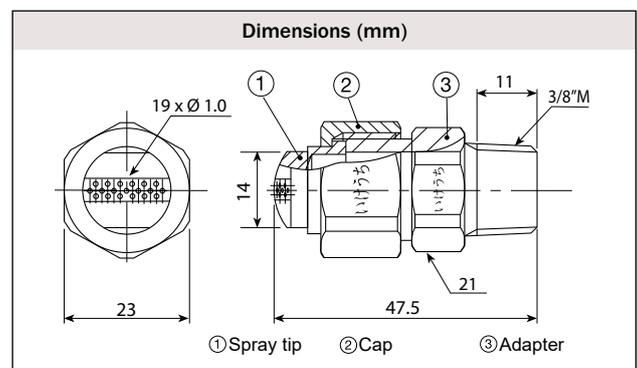
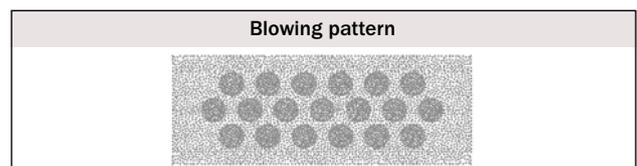
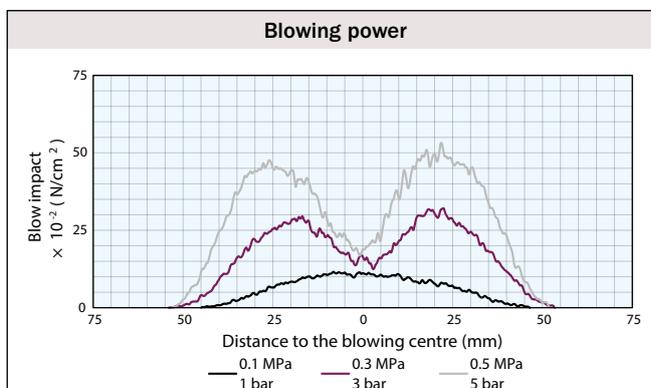
- Compact air nozzle model HF 19-010 manufactured in stainless steel S303 that shows high resistance to high temperature, abrasion and corrosion.
- The blow outlet design achieves a uniform flat blow.
- Detachable nozzle for better cleaning.
- Noise level reduction by more than 10 dB compared to a single hole nozzle.



-  **Material**
S303
-  **Pressure**
0.7 MPa
(ca. 7 bar)
-  **Maximum temperature**
400 °C
-  **Thread connection**
3/8" male
-  **Weight**
75 g
-  **Strength of blowing***
8.6 N
-  **Air consumption***
830 l/min,
Normal
-  **Level of noise***
90 dB(A)
-  **Product code**
3/8MHF19010S303

* at 0.5 MPa (ca. 5 bar)

| Spray width and thickness (mm) | | | | | | |
|--------------------------------|---------|-----------|---------|-----------|---------|-----------|
| Pressure | 0.1 MPa | | 0.3 MPa | | 0.4 MPa | |
| Distance | Width | Thickness | Width | Thickness | Width | Thickness |
| 50 mm | 60 | 40 | 80 | 60 | 80 | 60 |
| 150 mm | 120 | 80 | 140 | 120 | 150 | 120 |
| 300 mm | 180 | 120 | 210 | 150 | 230 | 160 |



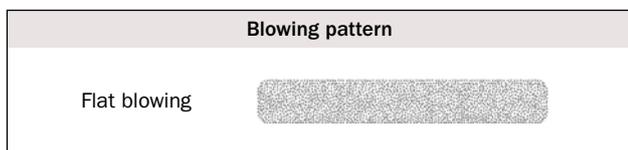
| Consumption (L/min, Normal) | | |
|-----------------------------|---------|---------|
| 0.1 MPa | 0.3 MPa | 0.5 MPa |
| 275 | 560 | 850 |



- Compact air nozzle model VZ made of stainless steel S303 with high resistance to high temperature, abrasion and corrosion.
- Compact nozzle with a large coverage area thanks to the head design, which achieves a 90° angle spray.
- Detachable nozzle for better cleaning.

| | | |
|--|---|--|
|  Material S303 |  Pressure 0.65 MPa (ca. 6.5 bar) |  Maximum temperature N/A |
|  Thread connection 1/4" male |  Weight 44 g | |
|  Product code | Spray tip code | |

- | | |
|---------------|--------------|
| 1/4MVZ150S303 | 1/4VZ150S303 |
| 1/4MVZ200S303 | 1/4VZ200S303 |
| 1/4MVZ250S303 | 1/4VZ250S303 |
| 1/4MVZ300S303 | 1/4VZ300S303 |
| 1/4MVZ350S303 | 1/4VZ350S303 |
| 1/4MVZ400S303 | 1/4VZ400S303 |
| 1/4MVZ450S303 | 1/4VZ450S303 |
| 1/4MVZ500S303 | 1/4VZ500S303 |



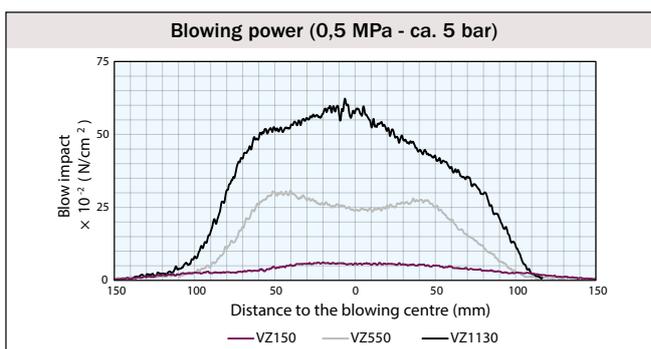
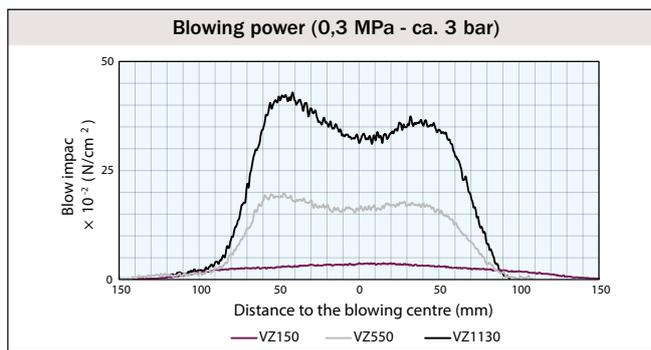
Dimensions (mm)

① Spray tip
② Cap
③ Adapter

Building:

- It is made up of three parts: spray tip, cap and adapter.
- Worn-out spray tip can be replaced separately.
- The cap and the adapter are interchangeable with those of standard flat spray nozzles of three-piece structure (for liquids).

*The appearance and dimensions may vary slightly depending on the materials and codes of the nozzles.



| Spray angle | Air Capacity (Code) | Force (N) (0.5 MPa - ca. 5 bar) | Air capacity (L/min. Normal) | | | | | | | Steam capacity (kg/h) | | | | | Free passage diameter (Ø mm) | dB(A) |
|-------------|---------------------|---------------------------------|------------------------------|---------|---------|---------|---------|---------|----------|-----------------------|---------|---------|---------|---------|------------------------------|-------|
| | | | 0.05 MPa | 0.1 MPa | 0.2 MPa | 0.3 MPa | 0.5 MPa | 0.7 MPa | 0.05 MPa | 0.1 MPa | 0.2 MPa | 0.3 MPa | 0.5 MPa | 0.7 MPa | | |
| 90 | 150 | 1.2 | 55.7 | 77.6 | 116 | 154 | 230 | 307 | 2.62 | 3.56 | 5.27 | 6.97 | 10.3 | 13.7 | 0.2 | 70 |
| | 200 | 2.2 | 73.1 | 102 | 152 | 202 | 302 | 402 | 3.44 | 4.67 | 6.92 | 9.14 | 13.6 | 17.9 | 0.3 | 72 |
| | 250 | 3.1 | 90.5 | 126 | 188 | 250 | 374 | 498 | 4.26 | 5.78 | 8.57 | 11.3 | 16.8 | 22.2 | 0.4 | 74 |
| | 300 | 4.1 | 108 | 150 | 224 | 298 | 446 | 594 | 5.08 | 6.90 | 10.2 | 13.5 | 20.0 | 26.5 | 0.5 | 75 |
| | 350 | 5.0 | 125 | 175 | 261 | 346 | 518 | 690 | 5.90 | 8.00 | 11.9 | 15.7 | 23.2 | 30.7 | 0.6 | 77 |
| | 400 | 6.0 | 143 | 199 | 297 | 394 | 590 | 786 | 6.72 | 9.12 | 13.5 | 17.9 | 26.5 | 35.0 | 0.7 | 79 |
| | 450 | 7.0 | 160 | 223 | 333 | 443 | 662 | 882 | 7.54 | 10.2 | 15.2 | 20.0 | 29.7 | 39.3 | 0.8 | 81 |
| | 500 | 7.9 | 177 | 247 | 369 | 491 | 734 | 977 | 8.36 | 11.3 | 16.8 | 22.2 | 32.9 | 43.5 | 0.9 | 82 |

*Standard data at 0.3 MPa (ca. 3 bar).

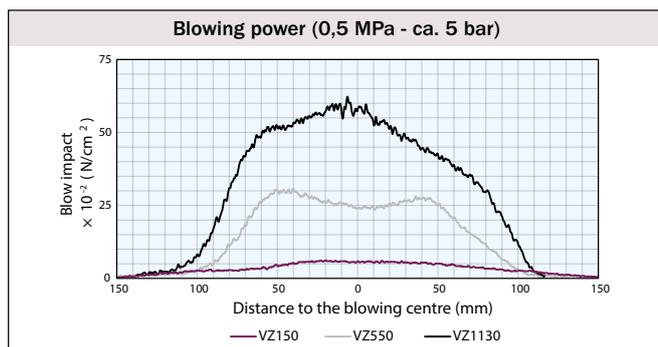
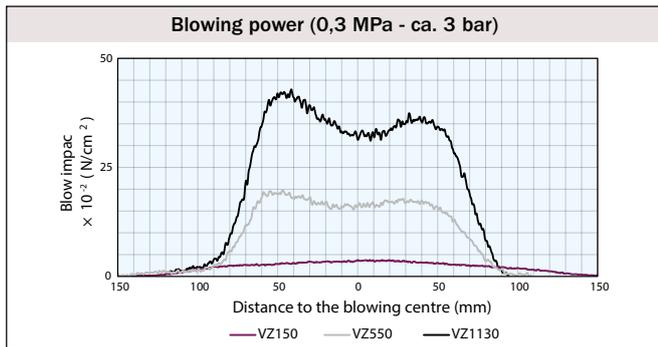
- Compact air nozzle model VZ made of stainless steel S303 with high resistance to high temperature, abrasion and corrosion.
- Compact nozzle with a large coverage area thanks to the head design, which achieves a 90° angle spray.
- Detachable nozzle for better cleaning.



| | | |
|---|--|---|
|  Material S303 |  Pressure 0.65 MPa (ca. 6.5 bar) |  Maximum temperature N/A |
|  Thread connection 3/8" male |  Weight 73 g | |
|  Product code | Spray tip code | |
| 3/8MVZ550S303 | 3/8VZ550S303 | |
| 3/8MVZ600S303 | 3/8VZ600S303 | |
| 3/8MVZ650S303 | 3/8VZ650S303 | |
| 3/8MVZ700S303 | 3/8VZ700S303 | |
| 3/8MVZ750S303 | 3/8VZ750S303 | |
| 3/8MVZ900S303 | 3/8VZ900S303 | |
| 3/8MVZ1130S303 | 3/8VZ1130S303 | |

Blowing pattern

Flat blowing 



Dimensions (mm)

① Spray tip
② Cap
③ Adapter

Building:

- It is made up of three parts: spray tip, cap and adapter.
- Worn-out spray tip can be replaced separately.
- The cap and the adapter are interchangeable with those of standard flat spray nozzles of three-piece structure (for liquids).

*The appearance and dimensions may vary slightly depending on the materials

| Spray angle | Air Capacity (Code) | Force (N) (0.5 MPa - ca. 5 bar) | Air capacity (L/min. Normal) | | | | | | | Steam capacity (kg/h) | | | | | Free passage diameter (Ø mm) | dB(A) |
|-------------|---------------------|---------------------------------|------------------------------|---------|---------|---------|---------|---------|----------|-----------------------|---------|---------|---------|---------|------------------------------|-------|
| | | | 0.05 MPa | 0.1 MPa | 0.2 MPa | 0.3 MPa | 0.5 MPa | 0.7 MPa | 0.05 MPa | 0.1 MPa | 0.2 MPa | 0.3 MPa | 0.5 MPa | 0.7 MPa | | |
| 90 | 550 | 8.9 | 199 | 278 | 414 | 551 | 823 | 1,096 | 9.38 | 12.7 | 18.8 | 24.9 | 36.9 | 48.8 | 0.6 | 84 |
| | 600 | 9.8 | 219 | 305 | 455 | 605 | 905 | 1,205 | 10.3 | 14.0 | 20.7 | 27.4 | 40.6 | 53.7 | 0.7 | 86 |
| | 650 | 10.8 | 235 | 328 | 489 | 650 | 972 | 1,295 | 11.1 | 15.0 | 22.3 | 29.4 | 43.6 | 57.7 | 0.8 | 87 |
| | 700 | 11.8 | 253 | 353 | 526 | 700 | 1,047 | 1,394 | 11.9 | 16.2 | 24.0 | 31.7 | 46.9 | 62.1 | 0.8 | 89 |
| | 750 | 12.7 | 272 | 380 | 566 | 753 | 1,126 | 1,500 | 12.8 | 17.4 | 25.8 | 34.1 | 50.5 | 66.8 | 0.9 | 90 |
| | 900 | 13.7 | 326 | 454 | 677 | 901 | 1,347 | 1,794 | 15.3 | 20.8 | 30.8 | 40.7 | 60.4 | 79.9 | 1.1 | 92 |
| | 1,130 | 14.6 | 406 | 566 | 844 | 1,122 | 1,678 | 2,235 | 19.1 | 25.9 | 38.4 | 50.8 | 75.2 | 99.5 | 1.4 | 94 |

*Standard data at 0.3 MPa (ca. 3 bar).



- Air nozzle made of stainless steel S303 with high resistance to temperature, abrasion and corrosion.
- 4 models available with different blowing powers.
- Designed for precision blowing, it achieves a solid stream jet blow by concentrating all the power at one point.
- Designed for accuracy in hard to reach areas.



Material
S303



Pressure
1 MPa
(ca. 10 bar)



Maximum temperature
400 °C



Thread connection
1/8" male



Weight
7.2 g



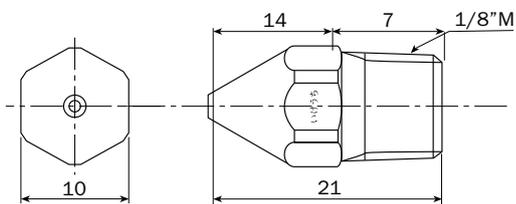
Product code
1/8MCCP10AS303
1/8MCCP15AS303
1/8MCCP20AS303
1/8MCCP25AS303

Blowing pattern

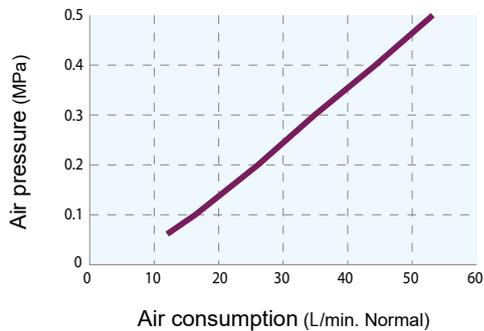
Round blown



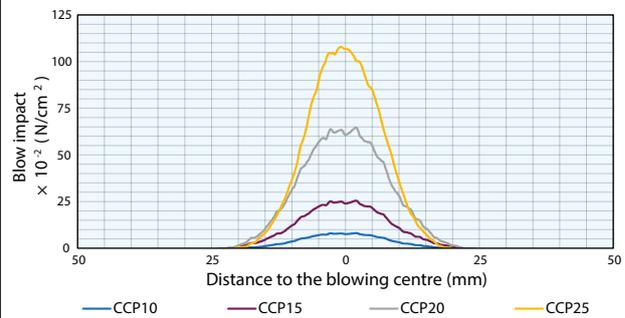
Dimensions (mm)



Orifice Ø 1.0 mm



Blowing power (0,5 MPa - ca. 5 bar)



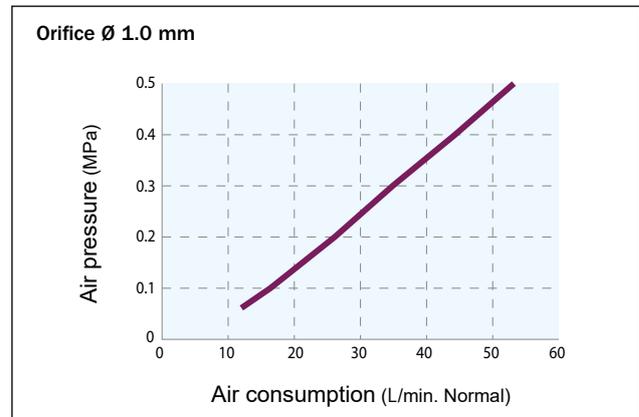
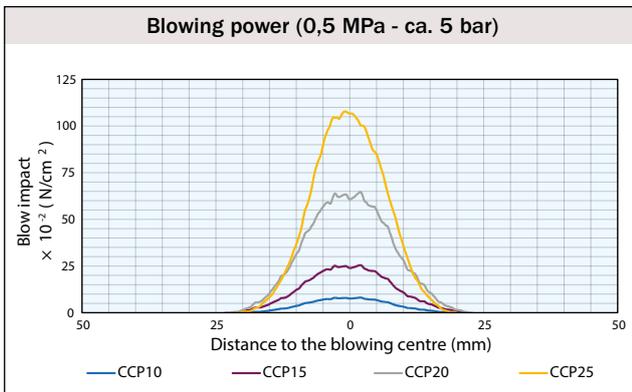
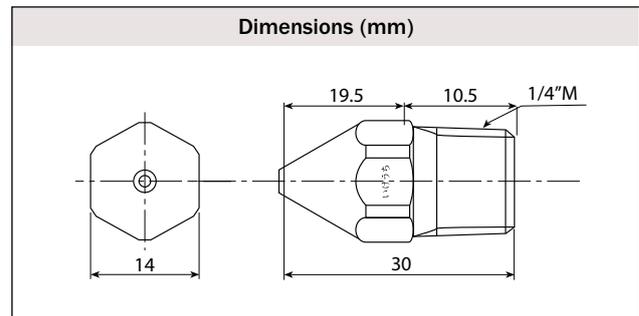
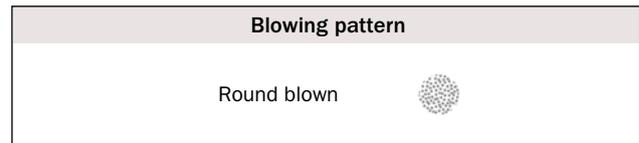
| Ø Orifice diameter (Code) | Force (N) (0.5 MPa - ca. 5 bar) | Air consumption (L/min. Normal) | | | | | Orifice diameter (mm) | dB (A) |
|---------------------------|---------------------------------|---------------------------------|---------|---------|---------|---------|-----------------------|--------|
| | | 0.1 MPa | 0.2 MPa | 0.3 MPa | 0.4 MPa | 0.5 MPa | | |
| Ø1.0A | 0.5 | 17 | 26 | 35 | 44 | 53 | 1.0 | 71 |
| Ø1.5A | 1.1 | 40 | 60 | 80 | 100 | 120 | 1.5 | 77 |
| Ø2.0A | 2.0 | 70 | 104 | 138 | 172 | 206 | 2.0 | 83 |
| Ø2.5A | 3.1 | 109 | 162 | 215 | 268 | 321 | 2.5 | 89 |

*Standard data at 0.5 MPa (ca. 5 bar).

- Air nozzle made of stainless steel S303 with high resistance to temperature, abrasion and corrosion.
- 4 models available with different blowing powers.
- Designed for precision blowing, it achieves a solid stream jet blow by concentrating all the power at one point.
- Designed for accuracy in areas of difficult access.

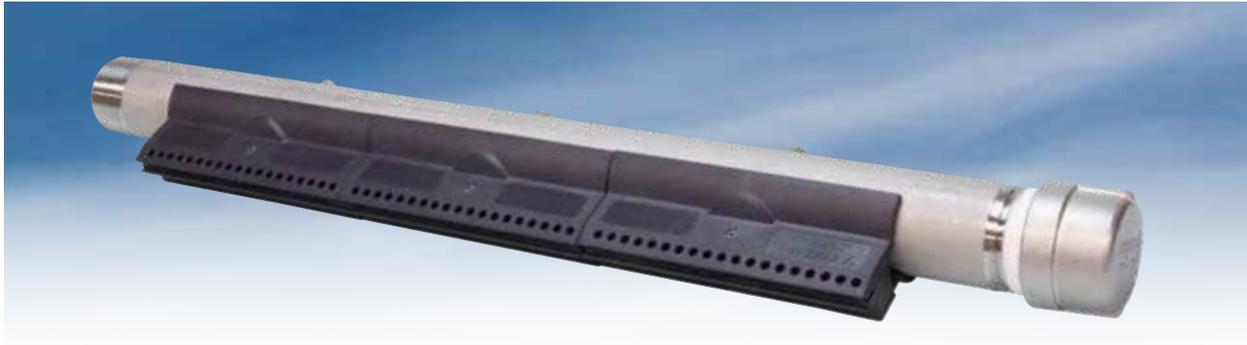


- Material: S303
- Pressure: 1 MPa (aprox 10 bar)
- Maximum temperature: 400 °C
- Thread connection: 1/4" male
- Weight: 19 g
- Product code:
 - 1/4MCCP10AS303
 - 1/4MCCP15AS303
 - 1/4MCCP20AS303
 - 1/4MCCP25AS303



| Ø Orifice diameter (Code) | Force (N) (0.5 MPa - ca. 5 bar) | Air consumption (L/min. Normal) | | | | | Orifice diameter (mm) | dB (A) |
|---------------------------|---------------------------------|---------------------------------|---------|---------|---------|---------|-----------------------|--------|
| | | 0.1 MPa | 0.2 MPa | 0.3 MPa | 0.4 MPa | 0.5 MPa | | |
| Ø1.0A | 0.5 | 17 | 26 | 35 | 44 | 53 | 1.0 | 71 |
| Ø1.5A | 1.1 | 40 | 60 | 80 | 100 | 120 | 1.5 | 77 |
| Ø2.0A | 2.0 | 70 | 104 | 138 | 172 | 206 | 2.0 | 83 |
| Ø2.5A | 3.1 | 109 | 162 | 215 | 268 | 321 | 2.5 | 89 |

*Standard data at 0.5 MPa (ca. 5 bar).



- Blow manifold made of S304 stainless steel, with an innovative internal design for a homogeneous distribution of the blowing force along the entire blowing length.
- Suitable for use in applications where space is reduced due to absence of threaded nozzles. Can incorporate a single inlet or two inlets, one at each end, in lengths over 500 mm.
- Available in 13 different sizes covering a blow range from 100 to 1,400 mm in length. You can incorporate a single entry or two entries, one at each end, in lengths greater than 500 mm.
- Unique blow design that achieves total coverage of the area to be blown, increasing the efficiency of the operation.
- Manufactured in materials with high resistance to mechanical, chemical and high temperature aggressions.



Material
S304-PPS



Pressure
0.4 - 0.7 MPa
(ca. 4 - 7 bar)



Maximum temperature
40 °C - 80 °C



Product code
1MTFPF20080010PPSS304
1MTFPF300120010PPSS304
1MTFPF400160010PPSS304
1MTFPF500200010PPSS304
1MTFPF600240010PPSS304
21MTFPF700280010PPSS304
21MTFPF800320010PPSS304
21MTFPF900360010PPSS304
21MTFPF1000400010PPSS304
21MTFPF1100440010PPSS304
21MTFPF1200480010PPSS304



Air consumption*



Level of noise

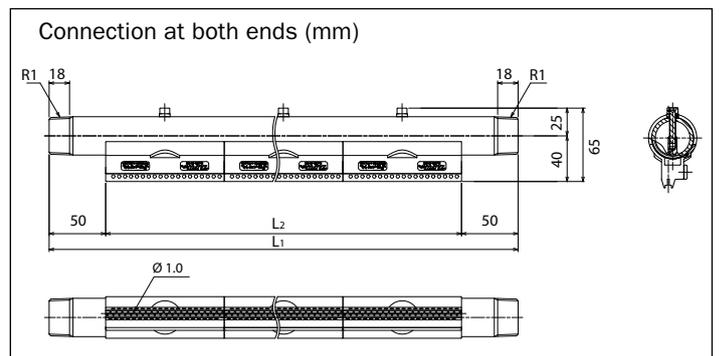
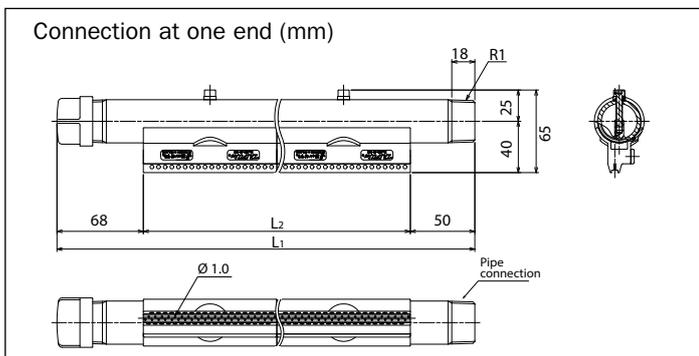
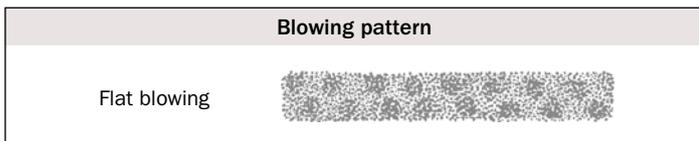


Thread connection
R1 male

| | | |
|-----------|--------|-----------------------|
| TPPF200: | 3.300 | 1MTFP300120010PPSS304 |
| TPPF600: | 9.700 | 1 bar 79,1 dB(A) |
| TPPF700: | 11.400 | 3 bar 85,7 dB(A) |
| TPPF1200: | 19.500 | 5 bar 91,8 dB(A) |

(l/min, Normal)

* at 0.5 MPa (ca. 5 bar)



| Product code | Blowing width (mm) | Con-nection | No. of orifices | No. of nozzles | Dimen. (mm) | | Weight (g) | Air consumption (L/min, Normal) | | |
|--------------|--------------------|-------------|-----------------|----------------|-------------|-----|------------|---------------------------------|---------|---------|
| | | | | | L1 | L2 | | 0.1 Mpa | 0.3 Mpa | 0.5 Mpa |
| 20080010 | 200 | R1 | 80 | 2 | 327 | 209 | 950 | 1,100 | 2,200 | 3,300 |
| 300120010 | 300 | | 120 | 3 | 431 | 313 | 1,300 | 1,600 | 3,300 | 4,900 |
| 400160010 | 400 | | 160 | 4 | 536 | 418 | 1,600 | 2,200 | 4,300 | 6,500 |
| 500200010 | 500 | | 200 | 5 | 640 | 522 | 1,900 | 2,700 | 5,400 | 8,100 |
| 600240010 | 600 | | 240 | 6 | 745 | 627 | 2,200 | 3,300 | 6,500 | 9,700 |

| Product code | Blowing width (mm) | Con-nection | No. of orifices | No. of nozzles | Dimen. (mm) | | Weight (g) | Air consumption (L/min, Normal) | | |
|--------------|--------------------|-------------|-----------------|----------------|-------------|-------|------------|---------------------------------|---------|---------|
| | | | | | L1 | L2 | | 0.1 Mpa | 0.3 Mpa | 0.5 Mpa |
| 700280010 | 700 | R1 | 280 | 7 | 831 | 731 | 2,400 | 3,800 | 7,600 | 11,400 |
| 800320010 | 800 | | 320 | 8 | 936 | 836 | 2,700 | 4,400 | 8,700 | 13,000 |
| 900360010 | 900 | | 360 | 9 | 1,040 | 940 | 3,000 | 4,900 | 9,800 | 14,600 |
| 100040010 | 1,000 | | 400 | 10 | 1,145 | 1,045 | 3,300 | 5,500 | 10,900 | 16,200 |
| 1100440010 | 1,100 | | 440 | 11 | 1,249 | 1,149 | 3,500 | 6,000 | 11,900 | 17,900 |
| 1200480010 | 1,200 | | 480 | 12 | 1,354 | 1,254 | 3,800 | 6,600 | 13,000 | 19,500 |



- Long flat air booster made of S304 stainless steel, with an innovative interior design for a homogeneous distribution of the blowing force along its entire blowing length.
- Suitable for use in applications where space is reduced due to absence of threaded nozzles.
- Available in 13 different sizes covering a blow range from 100 to 1,400 mm in length. You can incorporate a single entry or two entries, one at each end, in lengths greater than 500 mm.
- Unique blow design that achieves total coverage of the area to be blown, increasing the efficiency of the operation.



Material
S304



Pressure
1 MPa
(ca. 10 bar)



Maximum temperature
400 °C



Product code
Connection Model **TF-PF** connector
S304



Air consumption*
TF-PF 150: 2543
(l/min, Normal)

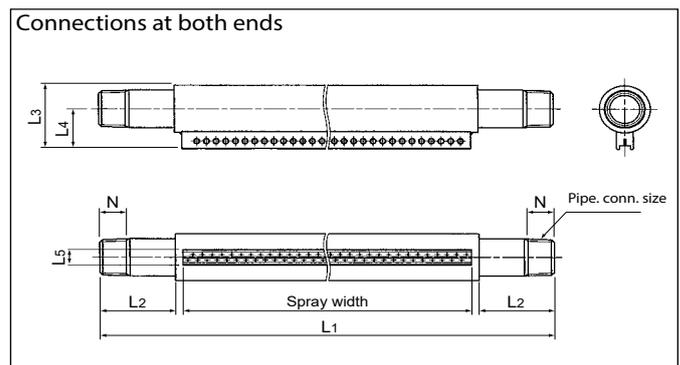
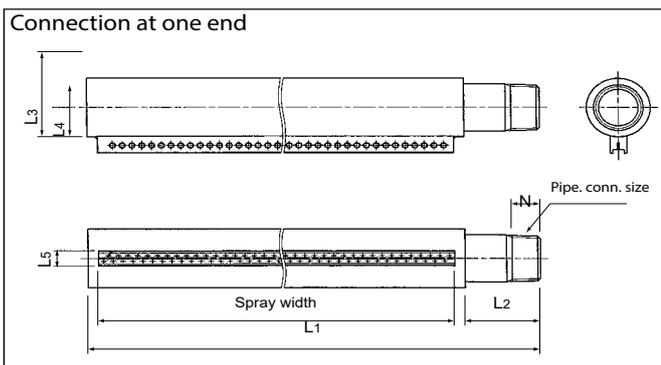
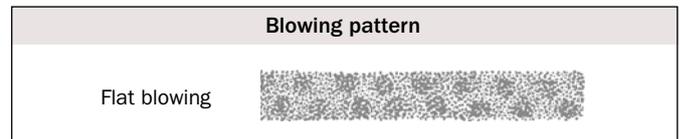


Level of noise
TF-PF 150:
90 dB(A) 1 bar 79,1 dB(A)



Thread connection
1/2" - 1 1/2"
male

* at 0.5 MPa (ca. 5 bar)



| Product code | Pipe conn. size | Dimensions (mm) | | | | | | Mass (g) |
|--------------|-----------------|-----------------|----|----|----|----|----|----------|
| | | L1 | L2 | L3 | L4 | L5 | N | |
| 100-40-010 | | 156 | 40 | 37 | 23 | 9 | 14 | 360 |
| 150-58-010 | | 203 | 40 | 37 | 23 | 9 | 14 | 500 |
| 200-78-010 | 1/2M | 254 | 40 | 37 | 23 | 9 | 14 | 640 |
| 300-118-010 | | 357 | 40 | 37 | 23 | 9 | 14 | 850 |
| 400-156-010 | | 455 | 40 | 37 | 23 | 9 | 14 | 1100 |
| 500-196-010 | | 557 | 40 | 44 | 27 | 9 | 15 | 2000 |
| 600-234-010 | 3/4M | 655 | 40 | 44 | 27 | 9 | 15 | 2400 |
| 700-274-010 | | 758 | 40 | 44 | 27 | 9 | 15 | 2800 |
| 800-312-010 | | 856 | 40 | 52 | 31 | 9 | 18 | 3200 |
| 900-352-010 | | 959 | 40 | 52 | 31 | 9 | 18 | 5100 |
| 1000-390-010 | 1M | 1056 | 40 | 52 | 31 | 9 | 18 | 5600 |
| 1200-468-010 | | 1257 | 40 | 52 | 31 | 9 | 18 | 6700 |
| 1400-546-010 | 1 1/2M | 1457 | 40 | 70 | 40 | 9 | 20 | 13800 |

| Cód. producto | Pipe conn. size | Dimensions (mm) | | | | | | Mass (g) |
|---------------|-----------------|-----------------|----|----|----|----|----|----------|
| | | L1 | L2 | L3 | L4 | L5 | N | |
| 500-196-010 | | 597 | 40 | 37 | 23 | 9 | 14 | 1750 |
| 600-234-010 | 2-1/2M | 695 | 40 | 37 | 23 | 9 | 14 | 2050 |
| 700-274-010 | | 798 | 40 | 37 | 23 | 9 | 14 | 2400 |
| 800-312-010 | | 896 | 40 | 44 | 27 | 9 | 15 | 3250 |
| 900-352-010 | | 999 | 40 | 44 | 27 | 9 | 15 | 3650 |
| 1000-390-010 | 2-3/4M | 1096 | 40 | 44 | 27 | 9 | 15 | 4000 |
| 1200-468-010 | | 1297 | 40 | 44 | 27 | 9 | 15 | 4750 |
| 1400-546-010 | 2-1M | 1497 | 40 | 52 | 31 | 9 | 18 | 8800 |

*For both-end connection type, pipe connection size is indicated as "the number of inlets" - "thread size".

- The air booster nozzle, thanks to their unique design, amplify the air outlet flow by 10 times, resulting in a very low compressed air consumption.
- Built-in flow adjustment valve for precise adjustment of air output flow and input consumption.
- Large flow through the orifice.



Material
S303



Pressure
0.6 MPa
(ca. 6 bar)



Maximum temperature
N/A



Thread connection
1/8"-1/4"-3/8"
female



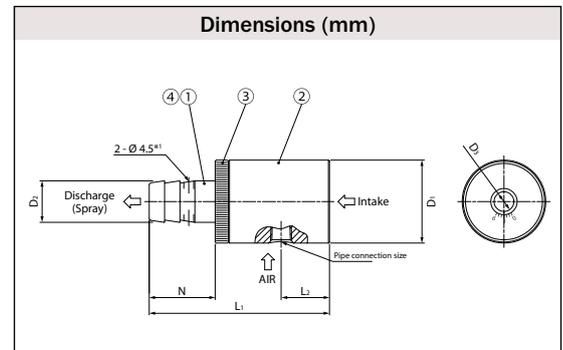
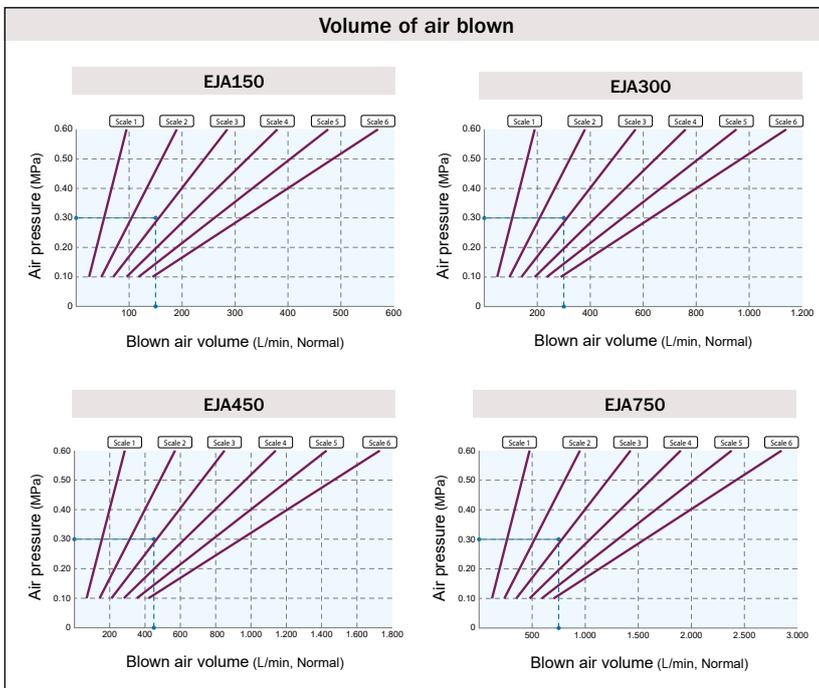
Weight
405 - 2.370 g



Air consumption
1.720 - 22.500 l/min,
Normal



Product code
1/8FEJA150S303
1/4FEJA300S303
3/8FEJA450S303
3/8FEJA750S303



| Pipe connection size | External dimensions (mm) | | | | | Mass (g) |
|----------------------|--------------------------|----------------|-----------------|-----------------|-----------------|----------|
| | L ₁ | L ₂ | ØD ₁ | ØD ₂ | ØD ₃ | |
| 1/8F | 82 | 22 | 38 | 19 | 9 | 405 |
| 1/4F | 91 | 24 | 50.8 | 32 | 20 | 700 |
| 3/8F (450) | 101 | 27 | 76.3 | 50.8 | 40 | 1.520 |
| 3/8F (750) | 104 | 29 | 101.6 | 76.3 | 62 | 2.370 |

Figures with () indicate the air capacity codes.

| Component | Material |
|------------|----------|
| ① Body | S303 |
| ② Adapter | S303 |
| ③ Lock nut | S303 |
| ④ Board | NBR |

*1) Unlocking hole with adjustment rod.

| Code | Pipe connection size | Air consumption (L/min, Normal)*2 | | | | |
|------|----------------------|-----------------------------------|---------|---------|---------|---------|
| | | 0.1 MPa | 0.2 MPa | 0.3 MPa | 0.4 MPa | 0.5 MPa |
| 150 | 1/8F | 71 | 109 | 150 | 193 | 238 |
| 300 | 1/4F | 142 | 219 | 300 | 386 | 476 |
| 450 | 3/8F | 212 | 328 | 450 | 579 | 714 |
| 750 | 3/8F | 354 | 546 | 750 | 965 | 1190 |

*2) Measured with the air flow adjustment scale set to "3".



- Very compact air nozzle, model made of stainless steel S304 with great resistance to temperature, abrasion and corrosion.
- Designed for a minimum pressure loss that improves impact and reduces consumption.
- Large blow coverage area compared to standard nozzle thanks to the head design.
- Suitable for tight spaces.



Material
S304



Pressure
0.1 MPa
(ca. 1 bar)



Maximum temperature
400 °C



Thread connection
1/8" - 1/4"
male



Weight
10 - 16 g



Strength of blowing
1.9 - 2.3 N
(0.05 MPa - ca. 0.5 bar)



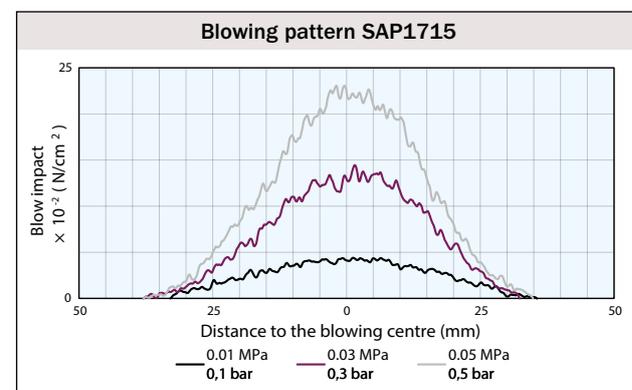
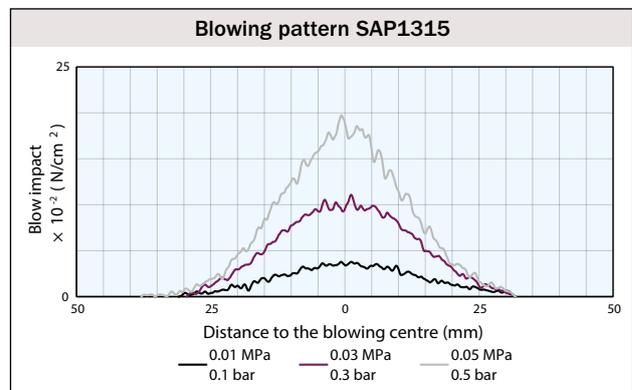
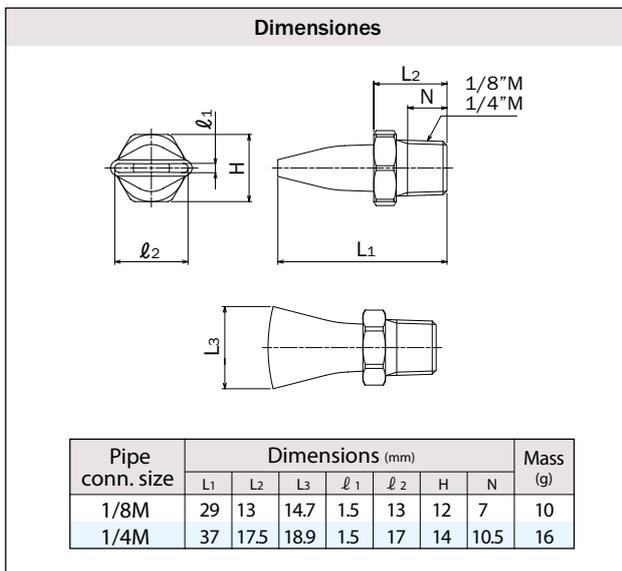
Air consumption
266-368 l/min,
Normal
(0.05 MPa - ca. 0.5 bar)



Level of noise
78-79 dB(A)
(0.05 MPa - ca. 0.5 bar)



Product code
1/8MSAP1315S304
1/4MSAP1715S304



| Pipe conn. size | Air consumption (l/min, Normal) | | | | |
|-----------------|---------------------------------|----------|----------|----------|----------|
| | 0.01 MPa | 0.02 MPa | 0.03 MPa | 0.04 MPa | 0.05 MPa |
| 1/8M | 120 | 170 | 208 | 239 | 266 |
| 1/4M | 167 | 235 | 287 | 330 | 368 |

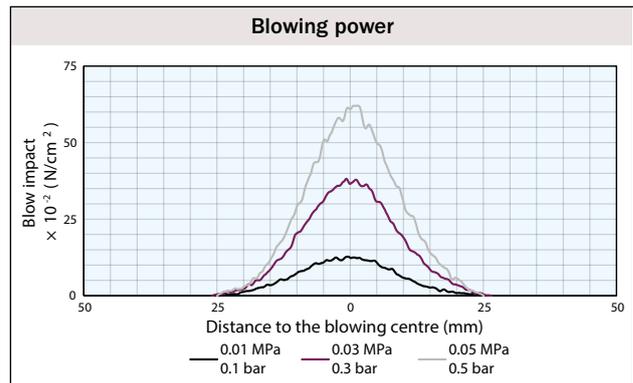
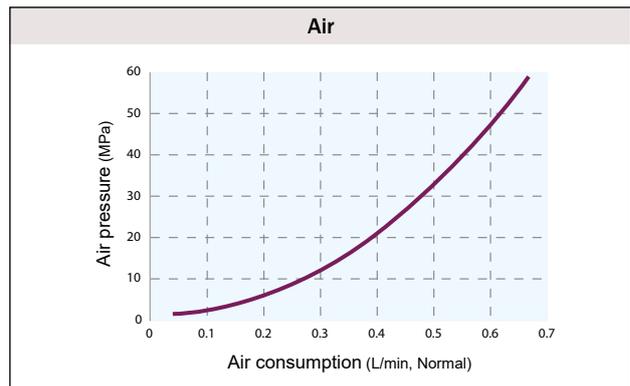
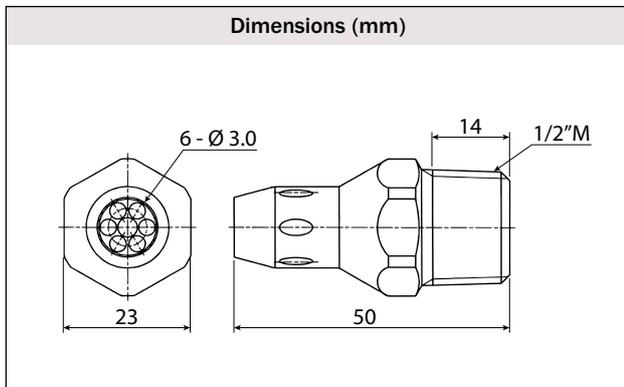
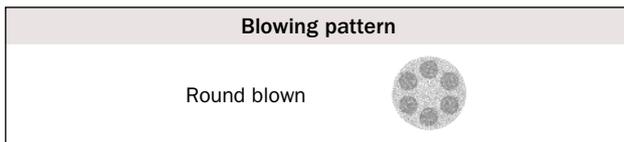
Air compressor can be used.
(The table above shows the air consumption)

- Nozzle for low pressure round blow pattern.
- Made of ABS and aluminium A5052 to achieve a light weight and high strength.
- Able to reduce the energy cost to one-third compared to the consumption of compressed air nozzles.
- Unique design that provides a higher flow rate compared to the flow rate supplied.
- The TF-BR model achieves very low noise levels.



| | | |
|---|---|--|
| Material ABS | Pressure 0.1 MPa (ca. 1 bar) | Maximum temperature 80 °C |
| Thread connection 1/2" male | Weight 8 g | Strength of blowing* 0.5 N |
| Air consumption* 613 l/min, Normal | Level of noise* 88 dB(A) | *Calculated at standard pressure 0.05 MPa (ca. 0.5 bar). |
| Product code 1/2MTFBR6030ABS | | |

| | | |
|---|---|--|
| Material A5052 | Pressure 0.1 MPa (ca. 1 bar) | Maximum temperature 150 °C |
| Thread connection 1/2" male | Weight 20 g | Strength of blowing* 0.5 N |
| Air consumption* 613 l/min, Normal | Level of noise* 88 dB(A) | *Calculated at standard pressure 0.05 MPa (ca. 0.5 bar). |
| Product code 1/2MTFBR6030A5052 | | |

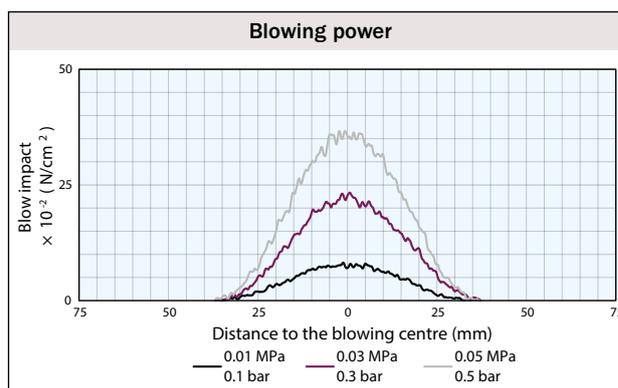
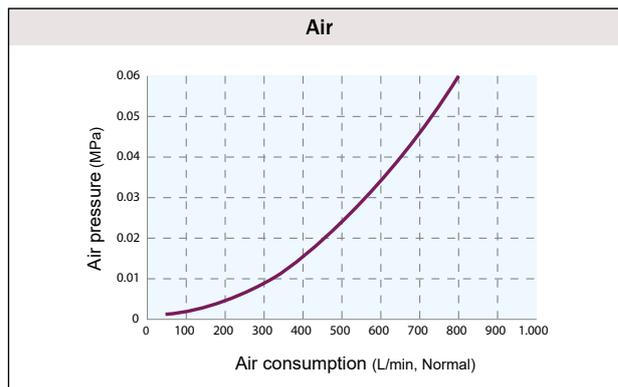
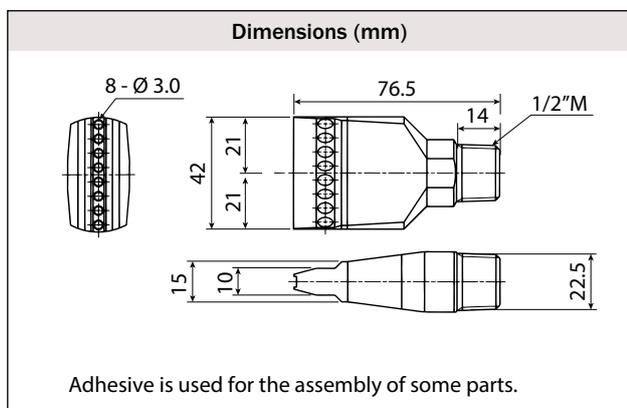
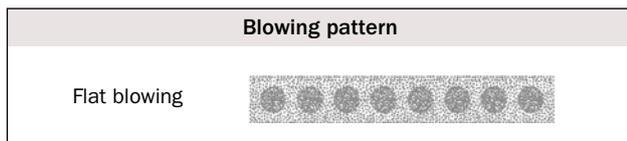


- Nozzle for low pressure flat blow pattern.
- Made of ABS and aluminium A5052 to achieve a light weight and high strength.
- Able to reduce the energy cost to one-third compared to the consumption of compressed air nozzles.
- Unique design that provides a higher flow rate compared to the flow rate supplied.
- The TF-BF model achieves very low noise levels.



| | | |
|---|---|--|
| Material ABS | Pressure 0.1 MPa (ca. 1 bar) | Maximum temperature 80 °C |
| Thread connection 1/2" male | Weight 26 g | Strength of blowing* 0.6 N |
| Air consumption* 724 l/min, Normal | Level of noise* 86 dB(A) | *Calculated at standard pressure 0.05 MPa (ca. 0.5 bar). |
| Product code 1/2MTFBF428030ABS | | |

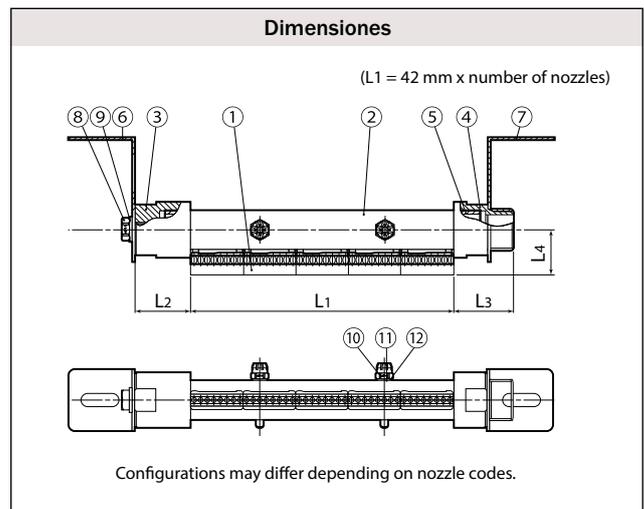
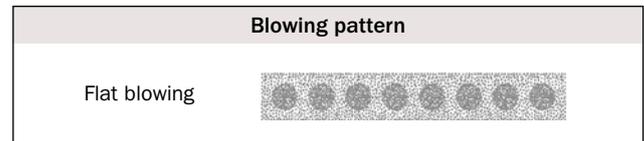
| | | |
|---|---|--|
| Material A5052 | Pressure 0.1 MPa (ca. 1 bar) | Maximum temperature 150 °C |
| Thread connection 1/2" male | Weight 65 g | Strength of blowing* 0.6 N |
| Air consumption* 724 l/min, Normal | Level of noise* 86 dB(A) | *Calculated at standard pressure 0.05 MPa (ca. 0.5 bar). |
| Product code 1/2MTFBF428030A5052 | | |



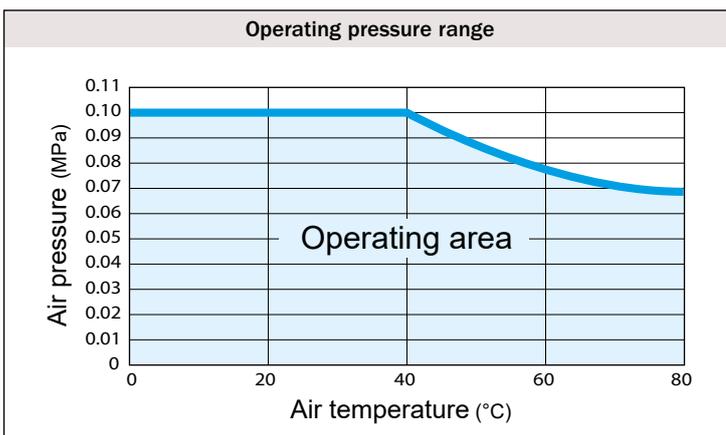


- Blowing manifold for low pressure blowing, made of HTPVC high strength material with PPS nozzle tip, which provides a light weight and a compact design.
- Suitable for use in applications where space is reduced.
- Customisable blow coverage measures in multiples of 42 mm to a length of 1,596 mm which saves operating costs.
- Unique design of the blow head to achieve a large coverage area increasing efficiency.

| | | |
|---|--|---|
|  Material PPS (blowing head) HTPVC (collector head) |  Pressure 0.1 MPa (ca. 1bar) |  Maximum temperature 80 °C |
|  Weight 220 - 4.360 g |  Thread connection 1" - 2½" male | |
|  Air consumption 3.770 - 19.900 l/min (0.05 MPa - ca. 0.5 bar) |  Blow hole size 3.0 mm | |
|  Product code 1MTFBPF21040030PPSHTPVC (210 mm) 11/2MTFBPF42080030PPSHTPVC (420 mm) 2MTFBPF630120030PPSHTPVC (630 mm) 21/2MTFBPF1008192030PPSHTPVC (1.008 mm) | | |



| Pipe conn. size | No. of nozzle tips | Dimensions (mm) | | | | Mass (g) | |
|-----------------|--------------------|-----------------|----|----|----|-------------|-------|
| | | L1 | L2 | L3 | L4 | TAIFUJet | Plate |
| 1M | 2 - 5 | 84 - 210 | 45 | 48 | 36 | 180 - 270 | 200 |
| 1½M | 6 - 13 | 252 - 546 | 56 | 66 | 44 | 530 - 840 | 500 |
| 2M | 14 - 22 | 588 - 924 | 66 | 73 | 50 | 1350 - 1830 | 500 |
| 2½M | 23 - 38 | 966 - 1596 | 74 | 84 | 58 | 2940 - 3900 | 500 |



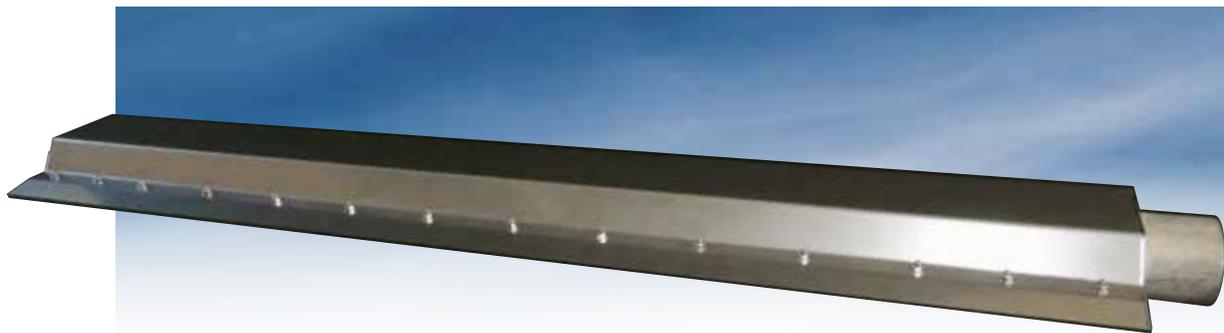
| No. | Component | Material | Note |
|-----|---------------|----------|-------------|
| ① | Nozzle tip | PPS | |
| ② | Pipe | HTPVC | |
| ③ | Cap | HTPVC | PPS for 2½" |
| ④ | Adapter | HTPVC | PPS for 2½" |
| ⑤ | Sleeve | HTPVC | |
| ⑥ | Plate (Fixed) | S304 | Optional |
| ⑦ | Plate (Loose) | S304 | Optional |
| ⑧ | Bolt (M10) | S304 | Optional |
| ⑨ | Washer (10) | S304 | Optional |
| ⑩ | Bolt (M6) | S304 | |
| ⑪ | Packaging | PTFE | |
| ⑫ | Washer(6) | S304 | |

Sealing materials are used for the assembly of some parts.

AVAILABLE IN ALUMINIUM

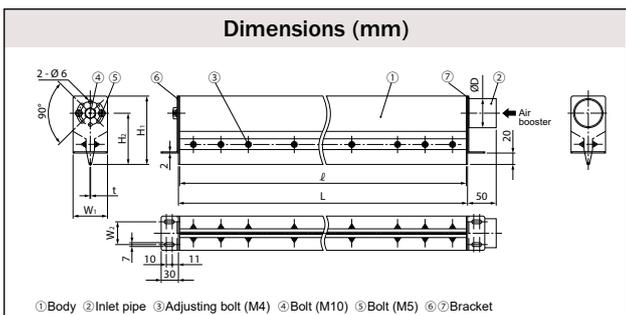
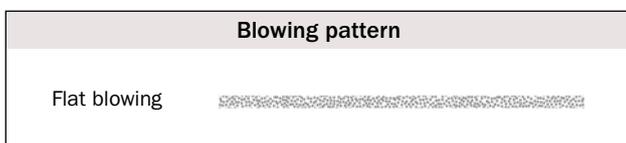


For more information contact one of our sales offices.



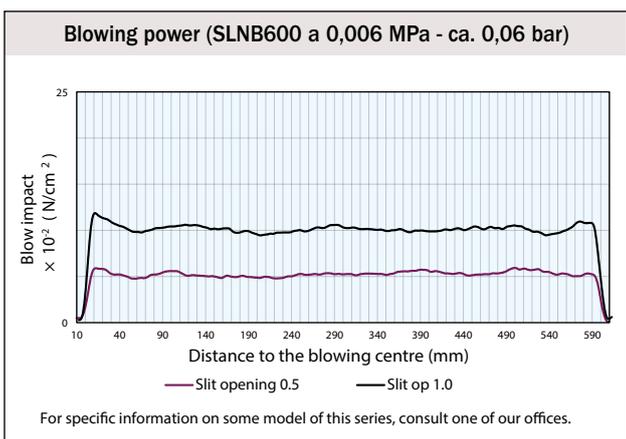
- Blow manifold suitable for low pressure blow.
- Made of stainless steel S304 for high resistance.
- Interior design optimised for minimum pressure loss and maximum blowing power.
- Compact design with a fine blowing profile ideal for installation between rollers or tight spaces.
- Customisable blow coverage measures from 400 mm to 1,200 mm and slit openings of 0.5 mm or 1 mm.
- Higher energy savings compared to usual blow manifolds.

- Material: S304
- Pressure: 0.1 MPa (ca. 1 bar)
- Maximum temperature: 400 °C
- Weight: 1.900 - 7.400 g
- Connection: D38, D50 y D65
- Air consumption: 3.400 - 10.200 l/min (0,03 MPa - ca. 0,3 bar)
- Product code:
 - D38SLNB400X05S304SA
 - D38SLNB600X05S304SA
 - D38SLNB800X05S304SA
 - D38SLNB1000X05S304SA
 - D50SLNB1200X05S304SA
 - D38SLNB400X10S304SA
 - D38SLNB600X10S304SA
 - D50SLNB800X10S304SA
 - D65SLNB1000X10S304SA
 - D65SLNB1200X10S304SA



| Air inlet type | Slit length l (mm) | Slit opening t (mm) | Dimensions (mm) | | | | | | Mass (kg) |
|----------------|----------------------|-----------------------|-----------------|----------------|----------------|----------------|----------------|------|-----------|
| | | | L | H ₁ | H ₂ | W ₁ | W ₂ | ØD | |
| D38 | 400 | 0.5 | 404 | 105 | 80 | 50 | 30 | 38.0 | 1.9 |
| | 600 | | 2.7 | | | | | | |
| | 800 | | 3.5 | | | | | | |
| | 1,000 | | 4.3 | | | | | | |
| D50 | 1,200 | | 1,204 | 120 | 90 | 60 | 40 | 50.8 | 5.9 |
| D38 | 400 | 1.0 | 404 | 105 | 80 | 50 | 30 | 38.0 | 1.9 |
| | 600 | | 3.2 | | | | | | |
| | 800 | | 4.1 | | | | | | |
| | 1,000 | | 6.2 | | | | | | |
| D65 | 1,000 | | 1,004 | 140 | 102.5 | 75 | 50 | 63.5 | 6.2 |
| | 1,200 | 7.4 | | | | | | | |

The appearance and dimensions may vary slightly depending on the materials and codes of the nozzles.



| Slit length (mm) | Slit opening (mm) | Air consumption (L/min, Normal)* | | | | | |
|------------------|-------------------|----------------------------------|-----------|-----------|-----------|-----------|-----------|
| | | 0.005 MPa | 0.010 MPa | 0.015 MPa | 0.020 MPa | 0.025 MPa | 0.030 MPa |
| 400 | 0.5 | 970 | 1600 | 2010 | 2580 | 3010 | 3400 |
| | | 1450 | 2390 | 3180 | 3870 | 4510 | 5100 |
| | | 1940 | 3190 | 4240 | 5170 | 6010 | 6800 |
| | | 2420 | 3990 | 5300 | 6460 | 7520 | 8500 |
| 600 | 1.0 | 2910 | 4790 | 6360 | 7750 | 9020 | 10200 |
| | | 1910 | 2810 | 3520 | 4130 | 4670 | 5160 |
| | | 2870 | 4220 | 5280 | 6190 | 7000 | 7740 |
| | | 3820 | 5620 | 7040 | 8230 | 9340 | 10330 |
| 1000 | | 4780 | 7030 | 8800 | 10320 | 11670 | 12910 |
| | | 5730 | 8430 | 10560 | 12390 | 14010 | 15490 |

*The above air consumption is for reference only and subject to design changes.

- It allows adjustment of the spray direction in a range of 50 degrees, as well as precise alignment of the nozzle after connecting it to a pipe.
- Thread sizes available from 1/8" to 3/4" for pipe connection.
- The UT stainless steel series is designed to withstand high pressures up to 15 MPa (ca. 150 bar).
- Designed for accuracy in hard to reach areas.
- Made of S303 steel. Optional in S316 steel or others.



Product code

- UT1/8MX1/8FS303
- UT1/4MX1/8FS303
- UT1/4MX1/4FS303
- UT3/8MX1/4FS303
- UT3/8MX3/8FS303
- UT1/2MX1/2FS303
- UT3/4MX3/4FS303

- UT1/8FX1/8FS303
- UT1/4FX1/8FS303
- UT1/4FX1/4FS303
- UT3/8FX1/4FS303
- UT3/8FX3/8FS303
- UT1/2FX1/2FS303
- UT3/4FX3/4FS303

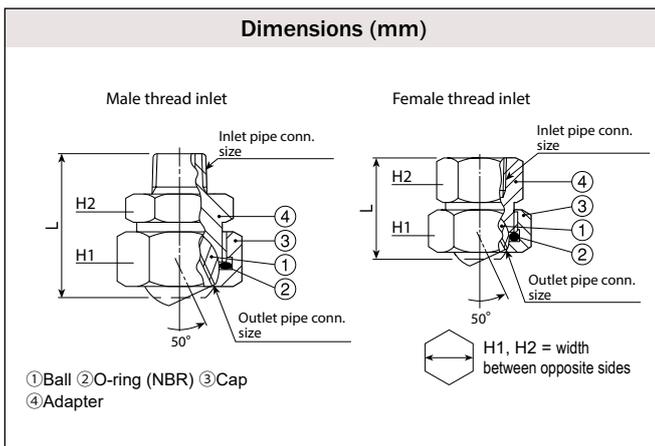


Material

- S303
- O-ring NBR

**"M" indicates male thread ("R" is the ISO standard) and "F" indicates female thread ("Rc" ISO standard) example: 1/8M = R1/8", 1/8F = Rc1/8".

*Use UT-S303 at a pressure below 15 MPa (ca. 150 bar).



| Ball joint code (Inlet x Outlet) | Inlet pipe conn. size | Outlet pipe conn. size | Dimensions (mm) | | | Mass (g) | |
|----------------------------------|-----------------------|------------------------|-----------------|----|----|----------|-----|
| | | | L | H1 | H2 | S303 | B |
| UT1/8MX1/8FS303 | R1/8 | Rc1/8 | 32,5 | 22 | 21 | 56 | 60 |
| UT1/4MX1/8FS303 | R1/4 | Rc1/8 | 36,0 | 22 | 21 | 60 | 65 |
| UT1/4MX1/4FS303 | R1/4 | Rc1/4 | 39,5 | 29 | 24 | 100 | 110 |
| UT3/8MX1/4FS303 | R3/8 | Rc1/4 | 40,0 | 29 | 24 | 110 | 115 |
| UT3/8MX3/8FS303 | R3/8 | Rc3/8 | 47,5 | 35 | 30 | 190 | 205 |
| UT1/2MX1/2FS303 | R1/2 | Rc1/2 | 54,5 | 41 | 41 | 325 | 350 |
| UT3/4MX3/4FS303 | R3/4 | Rc3/4 | 61,5 | 50 | 46 | 490 | 525 |
| UT1/8FX1/8FS303 | Rc1/8 | Rc1/8 | 28,5 | 22 | 21 | 63 | 69 |
| UT1/4FX1/8FS303 | Rc1/4 | Rc1/8 | 28,5 | 22 | 21 | 58 | 63 |
| UT1/4FX1/4FS303 | Rc1/4 | Rc1/4 | 33,5 | 29 | 24 | 110 | 120 |
| UT3/8FX1/4FS303 | Rc3/8 | Rc1/4 | 33,5 | 29 | 24 | 100 | 110 |
| UT3/8FX3/8FS303 | Rc3/8 | Rc3/8 | 44,5 | 35 | 30 | 220 | 235 |
| UT1/2FX1/2FS303 | Rc1/2 | Rc1/2 | 48,5 | 41 | 41 | 375 | 405 |
| UT3/4FX3/4FS303 | Rc3/4 | Rc3/4 | 55,5 | 50 | 46 | 560 | 600 |

NOTE: Do not use UT ball joint adapter under conditions where sudden change of water pressure occurs.



- It allows adjustment of the spray direction in a range of 50 degrees, as well as precise alignment of the nozzle after connecting it to a pipe.
- The spray direction can be adjusted while spraying with pressures up to 0.3 MPa (ca. 3 bar).
- Without O-ring. Easy manual installation, without tools.
- Half the weight of those made of metal.
- Economical nozzle due to injection moulding.



Material

Adapter and cap: FRPP
Ball: FRPP + PP + EPDM

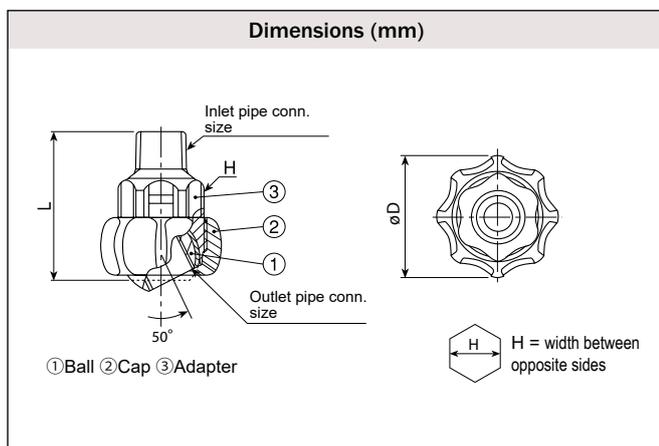


Product code

UT1/8MX1/8FFRPPIN
UT1/4MX1/8FFRPPIN
UT1/4MX1/4FFRPPIN
UT3/8MX1/8FFRPPIN
UT3/8MX1/4FFRPPIN

***"M" indicates male thread ("R" is the ISO standard) and "F" indicates female thread ("Rc" ISO standard) example: 1/8M = R1/8", 1/8F = Rc1/8".

***Use UT-FRPP at a pressure below 1 MPa (ca. 10 bar ; at room temperature).**



| Ball joint code (Inlet x Outlet) | Inlet pipe conn. size | Outlet pipe conn. size | Dimensions (mm) | | | Mass (g) |
|----------------------------------|-----------------------|------------------------|-----------------|----|----|----------|
| | | | L | H | ØD | |
| UT1/8MX1/8FFRPPIN | R1/8 | Rc1/8 | 38.0 | 21 | 32 | 12 |
| UT1/4MX1/8FFRPPIN | R1/4 | Rc1/8 | 40.0 | 21 | 32 | 13 |
| UT1/4MX1/4FFRPPIN | R1/4 | Rc1/4 | 40.0 | 21 | 32 | 12 |
| UT3/8MX1/8FFRPPIN | R3/8 | Rc1/8 | 41.0 | 21 | 32 | 13 |
| UT3/8MX1/4FFRPPIN | R3/8 | Rc1/4 | 41.0 | 21 | 32 | 12 |

NOTE: Do not use UT ball joint adapter under conditions where sudden change of water pressure occurs.

- Possible to rotate 360° for a better adjustment of the spray direction.
- Includes lock to keep the nozzle direction fixed.
- The stabilising function suppresses the internal turbulent flow.
- Resists pressures up to 3 MPa (ca. 30 bar).
- The secure design prevents parts from falling when the lock is released.



(Photos: WUT universal joint with a spray nozzle)



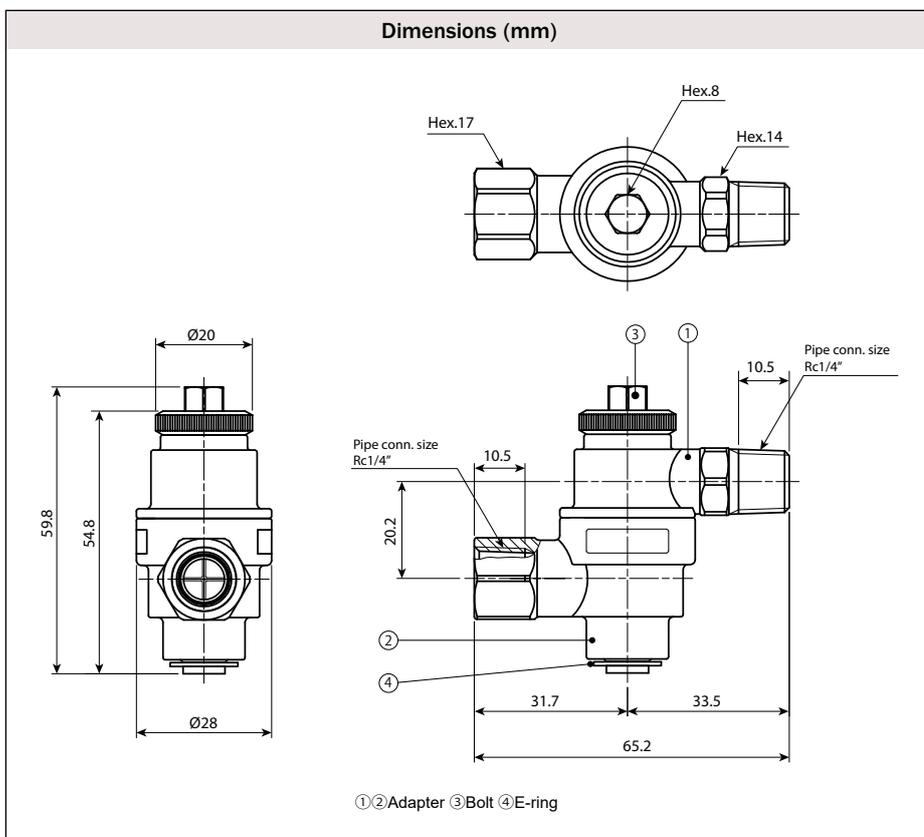
Material
 Adapter: SCS13
 Bolt: S303
 E-ring: S304
 O-ring: NBR



Weight
 146 g



Product code
 WUT1/4MX1/4FSCS13



PRECAUTIONS FOR USE:

- The bolt may become loose due to vibration if screwed by hand. Tighten with a torque wrench to 6 Nm.
- The maximum working pressure is 3 MPa (ca. 30 bar).
- When used with a solid stream jet nozzle, a slightly turbulent flow occurs.

| Model | Distance (mm) | 100 | 200 | 300 |
|---|------------------|------------------------------|-----|-----|
| | Reference | Pressure 0.5 MPa / ca. 5 bar | | |
|  | TFR8008S316 | 50 | 91 | 132 |
|  | TFR8010S316 | 50 | 91 | 132 |
|  | TFR8012S316 | 50 | 91 | 132 |
|  | TFR8014S316 | 50 | 91 | 132 |
|  | TFR8016S316 | 50 | 91 | 132 |
|  | TFR36012 | 50 | 91 | 132 |
|  | TFM5R8010 | 100 | 150 | 200 |
| | TFM5R8012 | 100 | 150 | 200 |
| | TFM5R8014 | 100 | 150 | 200 |
| | TFM5R8016 | 100 | 150 | 200 |
|  | TFR8010PPIN | 50 | 91 | 132 |
|  | TFF248010PPSIN | 50 | 91 | 132 |
|  | TFFS4216010PPS | 70 | 103 | 144 |
|  | TFF4216010 PPS | 70 | 103 | 144 |
|  | TFF12146010PPS | 150 | 143 | 184 |
|  | TFFS4216008S316L | 70 | 103 | 144 |
|  | TFFS4216010S316L | 70 | 103 | 144 |
|  | TFFS4216012S316L | 70 | 103 | 144 |
|  | TFF5016012S304 | 80 | 107 | 148 |
|  | TFF4216008S316 | 70 | 103 | 144 |
|  | TFF4216010S316 | 70 | 103 | 144 |
|  | TFF4216012S316 | 70 | 103 | 144 |

| Model | Distance (mm) | 100 | 200 | 300 |
|---|-------------------------------|------------------------------|-----|-----|
| | Reference | Pressure 0.5 MPa / ca. 5 bar | | |
|  | HF7012 | 100 | 141 | 182 |
|  | HF14010 | 100 | 141 | 182 |
|  | HF19010 | 100 | 141 | 182 |
|  | VZ150 | 200 | 400 | 600 |
| | VZ200 | 200 | 400 | 600 |
| | VZ250 | 200 | 400 | 600 |
| | VZ300 | 200 | 400 | 600 |
| | VZ350 | 200 | 400 | 600 |
| | VZ400 | 200 | 400 | 600 |
| | VZ450 | 200 | 400 | 600 |
| | VZ500 | 200 | 400 | 600 |
| | VZ550 | 200 | 400 | 600 |
| | VZ600 | 200 | 400 | 600 |
| | VZ650 | 200 | 400 | 600 |
| | VZ700 | 200 | 400 | 600 |
| | VZ750 | 200 | 400 | 600 |
| VZ900 | 200 | 400 | 600 | |
| VZ1130 | 200 | 400 | 600 | |
|  | CCP10 | 50 | 91 | 132 |
|  | CCP15 | 50 | 91 | 132 |
|  | CCP20 | 50 | 91 | 132 |
|  | CCP25 | 50 | 91 | 132 |
|  | TFBRABS | 50 | 91 | 132 |
|  | TFBRA5052 | 50 | 91 | 132 |
|  | TFBFABS | 70 | 103 | 144 |
|  | TFBFA5052 | 70 | 103 | 144 |
|  | SAP13 (0,05 MPa - 0,5 bar) | 70 | | |
| | SAP17 (0,05 MPa - 5 bar) | 70 | | |

Unit Conversion

| Length | μm | mm | cm | m | in | ft |
|--------|----------------------|----------------------|--------------------|-----------------------|-----------------------|-----------------------|
| | 1 | 1×10 ³ | 1×10 ⁻⁴ | 1×10 ⁻⁶ | 3.94×10 ⁻⁵ | 3.28×10 ⁻⁶ |
| | 1×10 ³ | 1 | 0.1 | 1×10 ⁻³ | 3.94×10 ⁻² | 3.28×10 ⁻³ |
| | 1×10 ⁴ | 10 | 1 | 1×10 ⁻² | 3.94×10 ⁻¹ | 3.28×10 ⁻² |
| | 1×10 ⁶ | 1×10 ³ | 100 | 1 | 3.94×10 | 3.28 |
| | 2.54×10 ⁴ | 25.4 | 2.54 | 2.54×10 ⁻² | 1 | 8.33×10 ⁻² |
| | 3.05×10 ⁵ | 3.05×10 ² | 3.05×10 | 3.05×10 ⁻¹ | 12 | 1 |

| Área | cm ² | m ² | in ² | ft ² |
|------|----------------------|-----------------------|----------------------|-----------------------|
| | 1 | 1×10 ⁻⁴ | 0,155 | 1.08×10 ⁻³ |
| | 1×10 ⁴ | 1 | 1.55×10 ³ | 10.8 |
| | 6.45 | 6.45×10 ⁻⁴ | 1 | 6.94×10 ⁻³ |
| | 9.30×10 ² | 9.30×10 ⁻² | 1.44×10 ² | 1 |

Others

| Volume | cm ³ | L | m ³ (k L) | ft ³ | imperial gal. | U.S. gal. |
|--------|----------------------|--------------------|-----------------------|-----------------------|----------------------|-----------------------|
| | 1 | 1×10 ⁻³ | 1×10 ⁻⁶ | 3.53×10 ⁻⁵ | 2.2×10 ⁻⁴ | 2.64×10 ⁻⁴ |
| | 1×10 ³ | 1 | 1×10 ⁻³ | 3.53×10 ⁻² | 0.220 | 0.264 |
| | 1×10 ⁶ | 1×10 ³ | 1 | 353 | 220 | 264 |
| | 2.83×10 ⁴ | 28.3 | 2.83×10 ⁻² | 1 | 6.23 | 7.48 |
| | 4.55×10 ³ | 4.55 | 4.55×10 ⁻³ | 0.16 | 1 | 1.2 |
| | 3.79×10 ³ | 3.79 | 3.79×10 ⁻³ | 0.134 | 0.833 | 1 |

| | |
|-------------|--|
| Viscosity | 1P = 100 cP 1St = 100 cSt |
| Mass | 1kg ≈ 2.21 lb 1lb ≈ 0.454 kg |
| Temperature | [°F] ≈ ([°C] × 9/5) + 32 [°C] ≈ 5/9 ([°F] - 32) |

| Pressure | MPa | bar | kg/cm ² | lb/in ² (psi) | atm | mmHg | mmH ₂ O (mmAq) |
|----------|-----------------------|-----------------------|-----------------------|--------------------------|-----------------------|---------------------|---------------------------|
| | 1 | 10 | 10.2 | 145 | 9.87 | 7.5×10 ³ | 1.02×10 ⁵ |
| | 0.1 | 1 | 1.02 | 14.5 | 0.987 | 750 | 1.02×10 ⁴ |
| | 0.098 | 0.981 | 1 | 14.2 | 0.968 | 736 | 1×10 ⁴ |
| | 6.89×10 ⁻³ | 0.069 | 0.070 | 1 | 0.068 | 51.7 | 703 |
| | 0.101 | 1.01 | 1.03 | 14.7 | 1 | 760 | 1.03×10 ⁴ |
| | 1.33×10 ⁻⁴ | 1.33×10 ⁻³ | 1.36×10 ⁻³ | 0.019 | 1.32×10 ⁻³ | 1 | 13.6 |
| | 9.81×10 ⁻⁶ | 9.81×10 ⁻⁵ | 1×10 ⁻⁴ | 1.42×10 ⁻³ | 9.68×10 ⁻⁵ | 0.074 | 1 |

| Flow | L/min | m ³ /min | m ³ /h | in ³ /h | ft ³ /h | Imperial gal./min | U.S. gal./min |
|------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
| | 1 | 1×10 ⁻³ | 0.06 | 3.66×10 ³ | 2.12 | 0.22 | 0.264 |
| | 1×10 ³ | 1 | 60 | 3.66×10 ⁶ | 2.12×10 ³ | 220 | 264 |
| | 16.7 | 0.017 | 1 | 6.10×10 ⁴ | 35.3 | 3.67 | 4.40 |
| | 2.73×10 ⁻⁴ | 2.7×10 ⁻⁷ | 1.64×10 ⁻⁵ | 1 | 5.79×10 ⁻⁴ | 6.01×10 ⁻⁵ | 7.22×10 ⁻⁵ |
| | 0.472 | 4.72×10 ⁻⁴ | 0.028 | 1.73×10 ³ | 1 | 0.104 | 0.125 |
| | 4.55 | 4.55×10 ⁻³ | 0.273 | 1.66×10 ⁴ | 9.63 | 1 | 1.20 |
| | 3.79 | 3.79×10 ⁻³ | 0.227 | 1.39×10 ⁴ | 8.02 | 0.833 | 1 |

The standard and optional materials available for the nozzles are shown in the material section of each series of nozzles, using the material codes listed below.

The nozzle materials and parts are detailed as well as the characteristics of resistance for each material in its exposure to the most common chemical agents in the tables. For special applications, contact us.

| Metals | |
|---------------|---|
| Material code | Material |
| S303..... | Stainless steel 303 |
| S304..... | Stainless steel 304 |
| S316..... | Stainless steel 316 |
| S316L..... | Stainless steel 316L |
| S321..... | Stainless steel 321 |
| SCS13..... | Die-cast stainless steel equivalent to S304 |
| SCS14..... | Die-cast stainless steel equivalent to S316 |

| Plastics | |
|---------------|---------------------------------|
| Material code | Material |
| PP..... | Polypropylene |
| PPS..... | Polyphenylene sulfide |
| HTPVC..... | Heat-treated polyvinyl chloride |
| PTFE..... | Polytetrafluoroethylene |
| PE..... | Polyethylene |
| ABS..... | Acrylonitrile butadiene styrene |

| Rubbers | |
|---------------|----------------|
| Material code | Material |
| FKM..... | Fluoro rubber |
| NBR..... | Nitrile rubber |

| Materials | | Metals | | | | | Plastics | | | | | | Rubbers | |
|---------------------|--------------------------------|--------|------|------|-------|------|----------|-----|-------|------|----|-----|---------|-----|
| | | S303 | S304 | S316 | S316L | S321 | PP | PPS | HTPVC | PTFE | PE | ABS | NBR | FKM |
| Chemical resistance | Hydrochloric acid | × | × | × | × | × | ○ | ○ | ○ | ○ | ○ | △ | × | ○ |
| | Concentrated hydrochloric acid | × | × | × | × | × | △ | ○ | ○ | ○ | ○ | △ | × | ○ |
| | Sulphuric Acid (35%) | × | × | × | × | × | ○ | ○ | ○ | ○ | ○ | △ | × | ○ |
| | Concentrated sulphuric acid | × | × | ○ | ○ | ○ | × | △ | ○ | ○ | △ | × | × | ○ |
| | Nitric acid (35%) | ○ | ○ | ○ | ○ | ○ | × | △ | ○ | ○ | ○ | × | × | ○ |
| | Concentrated nitric acid | △ | ○ | △ | △ | △ | × | × | × | ○ | × | × | × | ○ |
| | Acetic acid | △ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | △ | × | ○ | ○ |
| | Caustic soda | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | △ | ○ | △ |
| | Aqueous ammonia | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × |
| | Acetone | ○ | ○ | ○ | ○ | ○ | ○ | ○ | × | ○ | × | × | × | × |
| | Trichlorethylene | ○ | ○ | ○ | ○ | ○ | △ | ○ | × | ○ | △ | × | △ | ○ |
| Ethyl alcohol | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | △ | △ | ○ | ○ | |
| Heat resistance | Adequate (°C) | 400 | 400 | 400 | 400 | 400 | 80 | 170 | 50 | 100 | 60 | 80 | 90 | 150 |
| | Short-term use only (°C) | 800 | 800 | 800 | 800 | 800 | 90 | 180 | 70 | 150 | 80 | 90 | 120 | 200 |

○: Compatible △: Compatible for short term ×: Not compatible

Note: The heat resistance (operating temperature limit) of the spray nozzles varies considerably depending on the operating conditions, environment, liquid spray, etc.



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