

# ATZAF FF

**DOUBLE INLET CENTRIFUGAL FANS WITH  
AIRFOIL BACKWARD CURVED BLADES**



**comefri**



CO.ME.FRI. S.p.A. certifies that the Double Inlet Centrifugal Fans with Airfoil Backward Curved Blades - ATZAF FF shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and comply with the requirements of the AMCA Certified Ratings Program.

The CO.ME.FRI. S.p.A. Test Laboratory is AMCA Accredited Laboratory of the Air Movement and Control Association.

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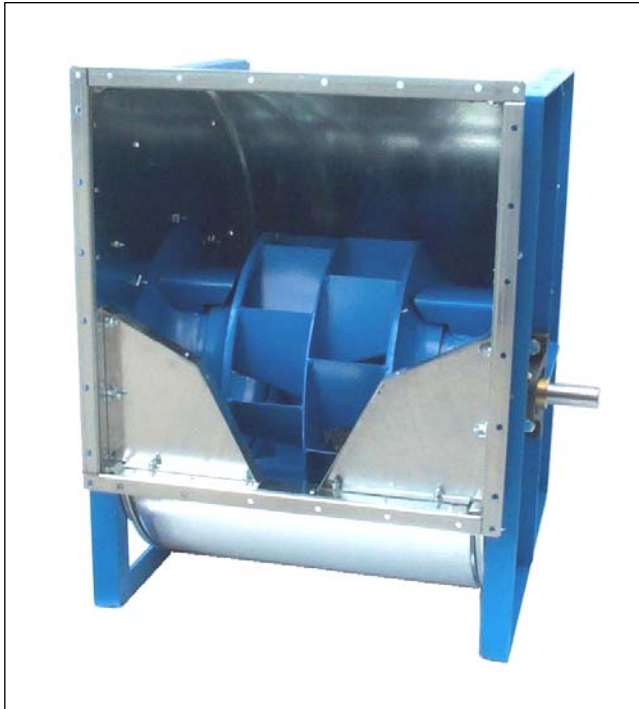


Fig.1



Fig.2



Fig.3

## 1. Standard ATZAF production range

Comefri's ATZAF FF double inlet centrifugal fans with Airfoil blades series cover a size range from 12 to 49. All fans within this range have the following characteristics:

- optimally engineered for HVAC applications;
- high quality, compact design;
- class I and class II versions available (as per AMCA operating limits specification 99-2408-69);
- high efficiency;
- low power consumption;
- quiet operation;
- all fans are fully performance tested and certified in Comefri's own state-of-the-art laboratory in accordance with DIN, ISO, BS and AMCA standards.

## 2. Technical details

### 2.1. Forefinger®

Forefinger® is an innovative device that has been engineered and fully developed by Comefri Engineers in the company's Aerodynamic and Acoustic Test Laboratory<sup>(\*)</sup>. The principle of Forefinger® is to exploit the air swirl that are always present inside of the fan housing. It is accepted that recirculation of air within the fan housing is a major source of losses that result in a reduction in operating efficiency and an increase in fan noise. The Forefinger® device actively re-addresses the recirculation of the air at the fan outlet and this reduction in re-circulation results in a significant increase in fan performance, both from an aerodynamic and acoustic viewpoint.

(\*) Patented by Comefri

### 2.2. Housing

All fan housings from size 12 to 40 are manufactured in galvanized sheet steel (Fig.2). From size 12 to 18, the fan sideplates are spot welded to the scroll housing. From size 20 to 40 the fan sideplates are locked to the scroll housing through a Pittsburgh seam (Fig.3) which ensures a high quality air tight seal as well as a structurally reinforced housing. The design of the inlet cones is of vital importance for the fan performance and sound levels. They have been engineered to guarantee an optimal airflow path through the wheel and thus very high performance levels are achieved. The inlet cones are manufactured in sheet steel, painted and bolted on the housing sideplates. A series of standard holes are located on the sideplates to allow the fitting of frames or mounting base. These holes are positioned in such a way that several standard accessories can directly be applied with the necessary fixing screws. Housings for sizes 44 and 49 are manufactured in black steel sheet, reinforced with steel stiffeners, completely welded and painted with an anticorrosive synthetic paint. The inlet cones are also manufactured in black steel sheet and painted.



Fig.4

**2.3. Airfoil impeller**

This high performance impeller is manufactured in corrosion resistant steel, with backward curved, true airfoil shaped blades, welded into position (Fig.4). All wheels are painted and are balanced, both statically and dynamically, to an accuracy grade of G = 2.5 in accordance to DIN ISO 1940-1 and ANSI S2.19 –1989. The impellers from size 28-28 T1 to 49-49 T1 and from size 12-12 T2 to 49-49 T2 are secured to the shaft via a steel hub. Aluminium hubs are used from size 12-12 R to 28-28 R and from size 12-12 T1 to 25-25 T1. The hub bore is precision machined and incorporates a keyway and locking screw.

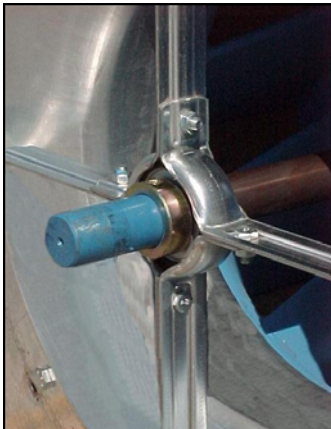


Fig.5

**2.4. Shafts**

All shafts are designed with a high safety factor and with the first critical speed well in excess of the maximum fan speed.

Made in hardened steel, they are precision ground and polished, and incorporates keyways for the wheel hub and sheaves.

All shafts are coated with protective paint for added corrosion protection prior to shipping.

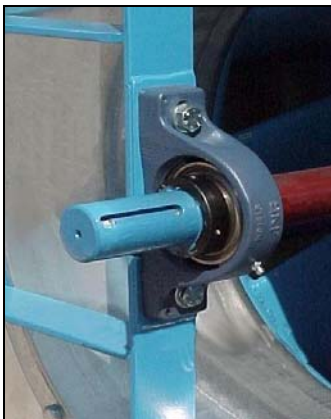


Fig.6

**2.5. Bearings**

From size 12-12 R to 28-28 R, bearings are self-aligning, single row, deep groove ball type, (Fig.5).

From size 12-12 T1 to 36-36 T1, size 44-44 T1 and from size 12-12 T2 to 18-18 T2, bearings are self-aligning, single row, deep groove ball type, (only 44-44 T1 have a sleeve with two locking setscrews) in pillow block cast iron housings (Fig.6).

Size 40-40 T1, size 49-49 T1 and from size 20-20 T2 to 49-49 T2 bearings are double row roller bearings in pillow housing split cast iron housings (Fig.7).

All bearings have been selected to guarantee a minimum L<sub>50</sub> life time of 200,000 hours (as per AFBMA standards).

R-framed fans have the bearings mounted in a rubber interliner, which in turn fit in a sturdy, three-arm or four-arm spider bracket (Fig.5). These bearings are permanently lubricated and sealed for life.

T1 and T2 fans have the pillow block bearings mounted on a flat iron bar, welded to the T frame (Fig.6,7).

These bearings are complete with pre-installed re-lubrication fitting.

Operating temperatures range from -4 °F to +176 °F (-20 °C to +80 °C) for all blowers.

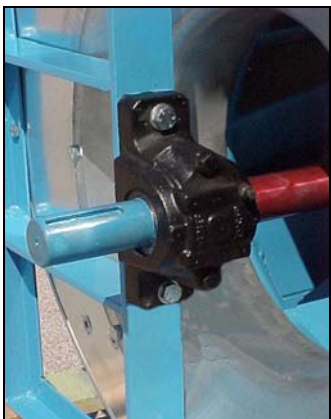
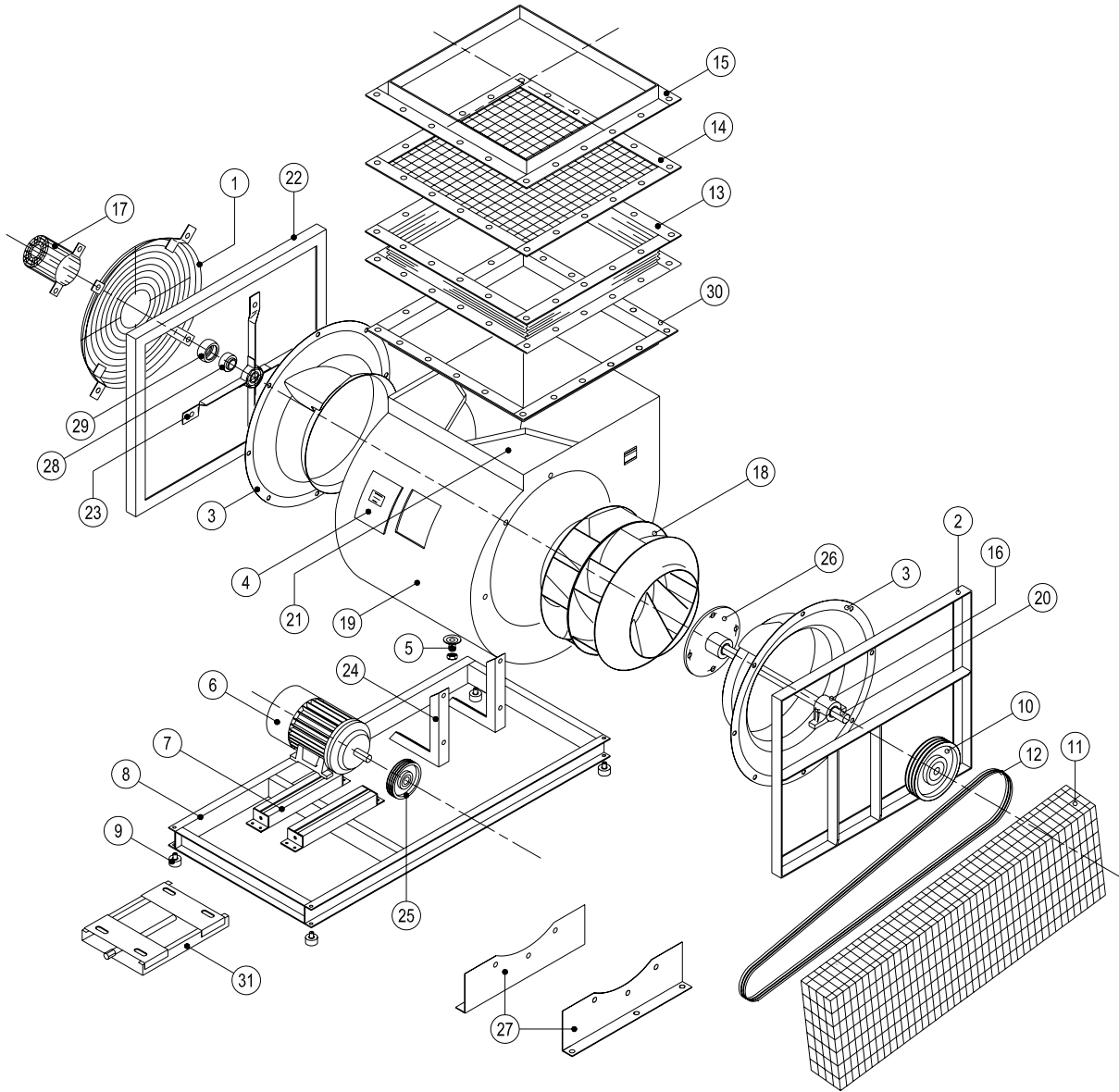


Fig.7





**3. Labelling of fan components**



1 - INLET GUARD	17 - SHAFT GUARD
2 - T FRAME	18 - WHEEL
3 - INLET CONE WITH FOREFINGER	19 - HOUSING
4 - INSPECTION DOOR	20 - SHAFT
5 - DRAIN PLUG	21 - CUT OFF
6 - MOTOR	22 - R FRAME
7 - MOTOR RAILS	23 - BEARING BRACKET
8 - BASE FRAME	24 - GUARD MOUNT
9 - ANTIVIBRATION MOUNTING	25 - MOTOR PULLEY
10 - FAN PULLEY	26 - HUB
11 - BELT GUARD	27 - FEET
12 - BELTS	28 - BEARING
13 - OUTLET FLEXIBLE CONNECTION	29 - RUBBER INTERLINER
14 - OUTLET GUARD	30 - OUTLET FLANGE
15 - OUTLET COUNTERFLANGE	31 - MOTOR BASE PLATE
16 - BEARING	32

COMEFRI reserves the right to make any dimensional design changes which are part of their improvement programme. Necessary corrections are updated on our AEOLUS PLUS selection program.

COMEFRI behält sich sämtliche Änderungen vor, die dem technischen Fortschritt dienen. Notwendige Korrekturen der Katalogdaten werden in unserem Auswahlprogramm AEOLUS PLUS berücksichtigt.

Comefri se réserve la possibilité d'apporter des modifications de dimensions sans aucun préavis ceci parce que ces informations font parties d'un programme interne de développement du produit. Les éventuelles variations et/ou corrections seront ajournés dans notre programme de sélection AEOLUS PLUS.

La COMEFRI si riserva la possibilità di apportare modifiche dimensionali senza alcun preavviso ciò in quanto parte di un programma interno di sviluppo del prodotto. Le eventuali variazioni e/o correzioni saranno aggiornate nel nostro programma di selezione AEOLUS PLUS.

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