

RADIAL FANS SINGLE INLET



comefri



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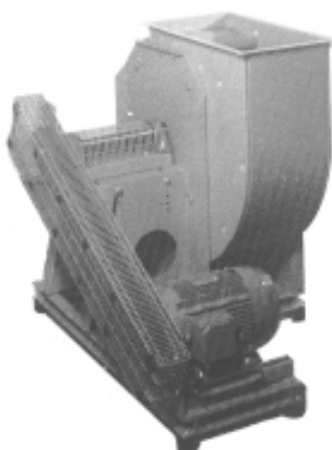
1. GENERAL DESCRIPTION



Scroll and side plates, assembled with Pittsburgh seam.

All single inlet radial fans have this common construction characteristics:

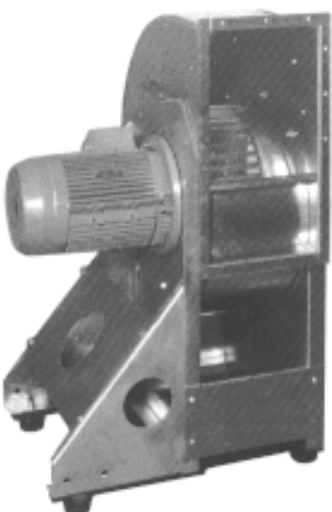
- Compact design
- High efficiency
- Economic exercise
- High quality execution
- Interchangeability between TLE and THLE series
- Sizes according to DIN 323-R20 norm
- Application flexibility
- Low noise and quiet running
- Wide temperature operation range from -30°C to +80°C (For special execution up to 400°C)



THLE-LK execution

Fan housing, motor support and baseframe are in galvanized steel execution

The executions MK, LK, MF, RMF and RMFV are standard equipped with outlet flange according to DIN 24 159 pages 2 and 3



TLE-MF execution

Basically all housing are built with galvanized steel sheets; scroll and sideplated are joined together with a Pittsburgh seam system. (On client's request the housing can be made, in addition, continuously welded on the internal side.)

These four layers of steel act as a reinforcement ring on housing borders.

Feet and frames can be easily fixed on fan sides with screws via annealed threaded bolts execution.



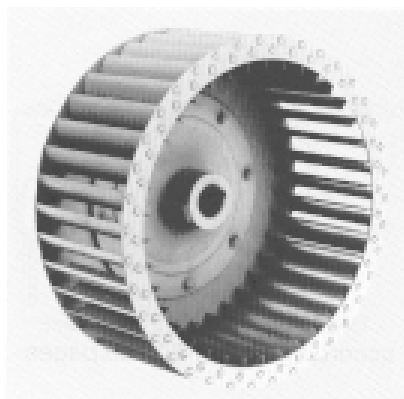
THLE with test

Inlet cones have a correct airstreamed profile and allow a optimized wheel feeding.

In THLE and TLE series the inlet cones are built as separate pieces, in galvanized steel, and fixed to the sideplates with screws.

Shafts, built with h7 tolerances, have keys and keyseats according to DIN 6885 - page 1;

All shafts are shipped with a protective paint against rust.



FC impeller

The wheel size serie is according to DIN 323 - R20 (normalized series number). All wheel are statically and dynamically balanced on special balancing machines according to grade Q = 6,3 - ISO 1940 - (on Client's request the balancing certificates are given and / or the balancing can be executed according to different balance grades). TLE impellers are built in galvanized steel sheet, those of THLE series in welded and coated steel.

(on request, galvanized and up to 450 diameter in PLV reinforced plastic material).



BC impeller

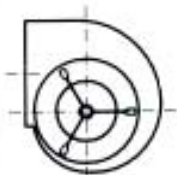
Hubs of both series are in aluminium up to 710 size, and in welded steel for 800 up to 1000 sizes.

Ball bearing are maintenance free and with rubber lip sealing are locked to the shaft with an eccentric collar; between the ball bearing and the supporting bracket a shock absorbing rubber ring is inserted for vibration and noise reduction.

Theoretical life L10 of the bearings is at least equal to 20.000 hours at maximum performance.

From sizes 710 up, cast iron support bearings are supplied as standard.

2. SERIES DESCRIPTION



Comefri single inlet radial fans can be divided into the following series and executions:

2.1. TLE 200 - 710 TLE 200 - 710 F TLE 200 - 710 R

Single inlet forward curved blades for belt drive applications.

Ball bearings on both sides of the housing (Setting 0)

THLE 200 - 710 THLE 200 - 710 R THLE 200 - 710 R

As above, but with backward curved blades



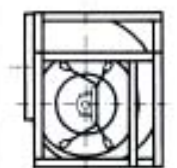
2.2. TLE 200 - 1000 T

Single inlet forward curved blades for belt drive applications.

Ball bearings on both sides on separate frame (Setting 0)

THLE 200 - 1000 T

As above, but with backward curved blades



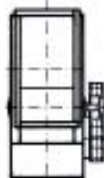
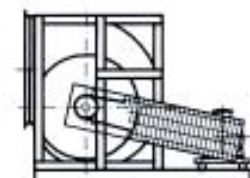
2.3. TLE 200 - 1000 TG

Single inlet forward curved blades for belt drive applications

Ball bearings on both sides on separate special frame for direct connection to inlet duct (Setting 0)

THLE 200 - 1000 TG

As above, but with backward curved blades



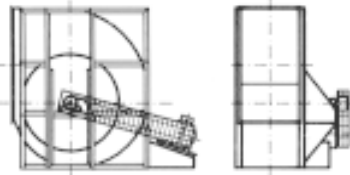
2.4. TLE 200 - 1000 T-GR TLE 200 - 1000 TG-GR

Single inlet forward curved blades with belt drive.

Ball bearings on both sides on separate frame - fan and motor on a common baseframe (Setting 11)

THLE 200 - 1000 TGR TLE 200 - 1000 TG-GR

As above, but with backward curved blades



2.5. TLE 315 ÷ 1000 LK

Single inlet forward curved blades - impeller overhung on fan shaft - Ball bearings on one side for belt drive - up to 630 size fan and motor on common baseframe from 710 size with separate baseframe (Setting 12-12b and 1)

TLE 315 ÷ 1000 LK

As above, but with backward curved blades



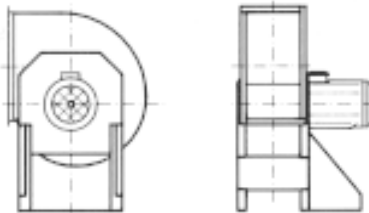
2.6. TLE 315 ÷ 630 MK

Single inlet forward curved blades - impeller on motor shaft - motor on a support (Setting 4)

(Setting 4)

THLE 315 ÷ 1000 MK

As above, but with backward curved blades



2.7. TLE 315 ÷ 630 MF

Single inlet forward curved blades - impeller on motor shaft - motor flanged on fan sideplate - fan and motor support - motor fixing flange with 45° degree stepped position (Setting 5)

THLE 315 ÷ 630 MF

As above, but with backward curved blades

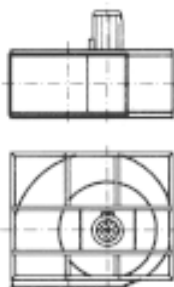


2.8. TLE 200 ÷ 630 RMF

Single inlet forward curved blades - impeller on motor shaft - motor flanged on fan sideplate - additional side frame that can be rotated 90° (Setting 5)

THLE 200 ÷ 1000 RMF

As above, but with backward curved blades



2.9. TLE 200 ÷ 630 RMFV

Single inlet forward curved blades - impeller on motor shaft - motor flanged on fan sideplate - additional side frame - adequate for vertical motor shaft installation (Setting 5 V)

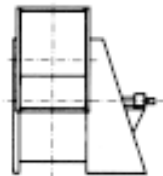
THLE 200 ÷ 1000 RMFV

As above, but with backward curved blades

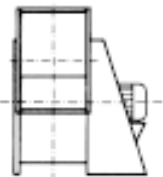
3. DESIGN EXECUTION AND SETTINGS



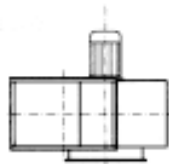
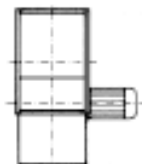
Setting 0 (corresponding to F - R - T - TG)
Single inlet - belt or through flexible coupling drive - one bearing on each side of the impeller and supported by fan housing



Setting 1 (corresponding to LK)
Single inlet - belt or coupling drive - impeller overhung on fan shaft - bearing supports with single bearing or mono-block bearing



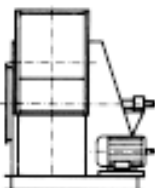
Setting 4 (corresponding to MK)
Single inlet - direct drive - impeller on motor shaft - motor on bearing support



Setting 5 and 5V (corresponding to MF - RMF and RMFV)
Single inlet - direct drive - impeller on motor shaft - flanged motor on the fan housing

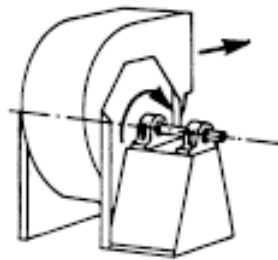


Setting 11 (corresponding to T - TG with baseframe)
Single inlet - belt drive - one bearing on each side of the impeller and supported by fan housing - fan and motor on common baseframe. Drive layout W or Z

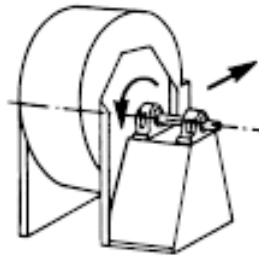


Setting 12 and 12B (corresponding to LK with baseframe)
Single inlet - belt drive - impeller overhung on motor shaft - fan and motor on a common base frame. Drive layout W or Z

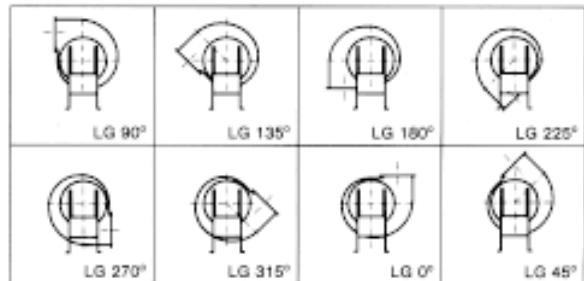
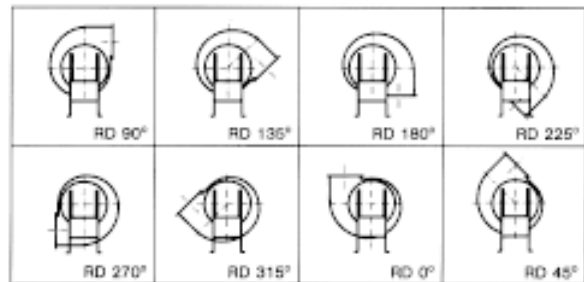
4. ROTATION, DISCHARGE POSITION AND ACCESSORIES POSITION



a) Clockwise



b) Counter clockwise



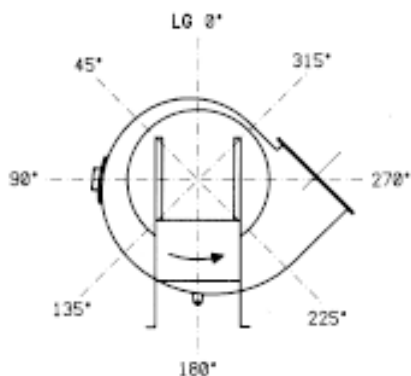
Rotation and Discharge Position

The rotation of the fan from the drive side is a) clockwise if indicated with the symbol RD or b) counter-clockwise if indicated with the symbol LG.

The radial fan's discharge position is determined by the outlet position. This is indicated firstly, by the rotation symbol (RD or LG) and secondly, by the angle with respect to the line of reference perpendicular to the mounting surface (eg. RD 90°).

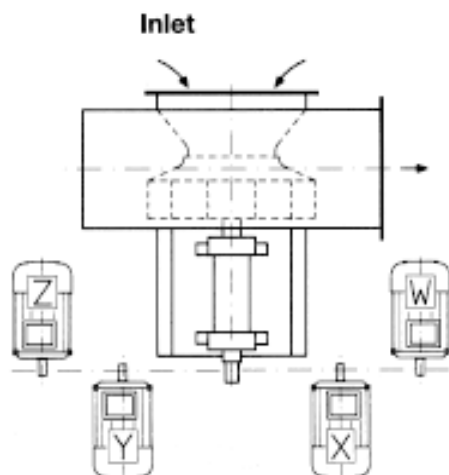
Accessories Position

The position, for example, of an inlet box, an inspection door, or other accessories are indicated by the rotation symbol RD or LG and by the angle measured in degrees, with respect to the line of reference perpendicular to the mounting surface and the position of each respective accessory.



Example: Fan LG 315°
 Drain plug 180°
 Inspection door 90°

5. DRIVE LAYOUT



The layout of the motor, indicated by the symbols W, X, Y, Z is seen perpendicular to the mounting surface of the fan. In standard execution the motor can be mounted in layout W or Z.

6. MAXIMUM ALLOWABLE MOTOR SIZES FOR SETTINGS 4 - MOTOR SELECTION

Maximum allowable motor size

Fan size	Setting 4 - max. motor size
315	112
355-400-450	132
500-560-630	160
710-800-900	200

With the selection of the motor, it must be verified whether the time required to accelerate the mass from a stationary position remains within the allowable tolerances specified by the motor manufacturer.

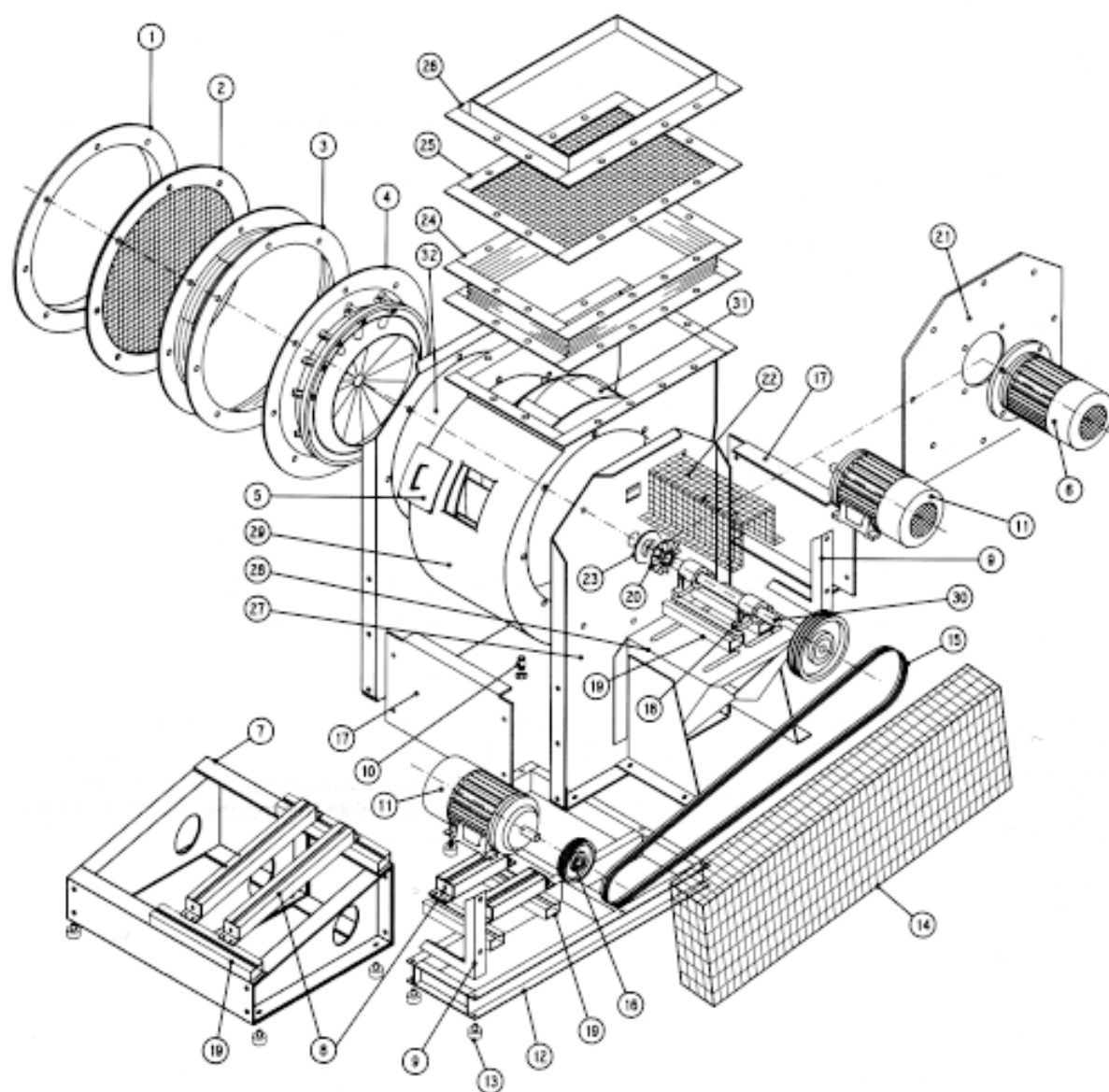
The acceleration time "ta" can be approximated using the following formula:

$$t_a = 0.8 \frac{J \cdot n^2}{P_M} \cdot 10^{-5} \text{ [s]}$$

J [kgm²] - moment of inertia
 n [min⁻¹] - nominal fan speed
 PM [kW] - motor power

In the event that "ta" exceeds the maximum allowable start-up indicated by the motor manufacturer, i.e. the maximum start-up exceeds the release time for the motor protection switch, a more powerful motor must be used. The protection switch should be calculated for heavy-duty start-ups.

7. LABELLING OF FAN COMPONENTS



- | | |
|---|-------------------------------|
| 1 Inlet flange | 17 Sideplate |
| 2 Inlet guard | 18 Bearing |
| 3 Inlet flexible connection | 19 Bearing support rail |
| 4 Inlet vane control | 20 Cooling wheel |
| 5 Inspection door | 21 Flange for B5 motor |
| 6 Motor - B5 execution | 22 Shaft guard |
| 7 Motor support | 23 Shaft seal |
| 8 Motor rails | 24 Outlet flexible connection |
| 9 Support | 25 Outlet guard |
| 10 Drain plug | 26 Outlet flange |
| 11 Motor - B3 execution | 27 Frame |
| 12 Common base frame | 28 Motor or Bearing support |
| 13 Anti-vibration mounts (spring or rubber) | 29 Fan housing |
| 14 Belt guard | 30 Shaft |
| 15 Belt | 31 Impeller |
| 16 Pulley | 32 Inlet cone |

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