# Radial Fans

## Double Inlet

FORWARD AND BACKWARD CURVED

comefri®

# comefri Radial Fans

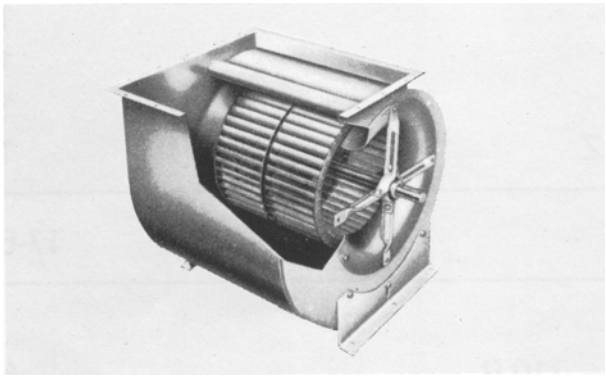


Note:
This catalogue has to be used only for pre-selections. A detailed selection is available from our AEOLUS PLUS selection program

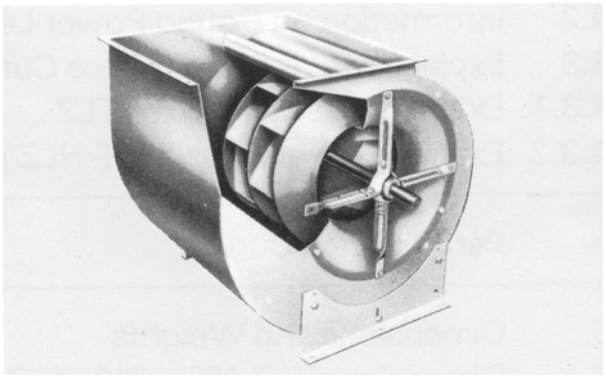
have been designed specially for ventilation and air conditioning units. They offer the following advantages to the unit manufacturer:

- compact design for space saving installations
- high efficiency operation for economic running costs
- low operational noise levels and vibratation free running
- wide volume range and high pressure development
- designed for flexible applications and temperature range of -30°C to +80°C
- fans TLZ  THLZ all dimensionally interchangeable
- standardized components sized in accordance with R20 DIN 323
- superb quality
- short delivery from stock warehouses
- prices to meet your budget

**COMEFRI** double inlet fans are available in the following range with dimensionally identical casings



Pic 1
Type TLZ
High capacity and efficiency
Fan with forward curved impeller



Pic 2
Type THLZ
High capacity and efficiency
Fan with backward curved impeller

Forward and backward curved fans are engineered to identical dimensions for interchangeability.
Fan inlet diameters are the same, as impeller diameter.
Although the fans have the same external dimensions size to size, their performance curves vary significantly due to the different impeller design.

## 1. Fan Construction

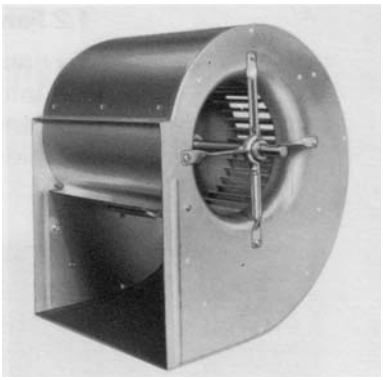
### 1.1 Casings

All fan casings to size 1000 are manufactured from high quality galvanized steel.

Pic 3
System of locking side plates to scroll by «Pittsburgh» seam

**Series TLZ size 160 up to 400 and THLZ 180 to 400**

The casings are manufactured with Pittsburgh seams as described above. This system gives great strength as well as ensuring leak proof joins. Predrilled holes are located in the side plates to take either feet or frames as accessories. These are supplied extra.



Pic 4
Fan casing of Fan types
TLZ 450 to 710 and THLZ 450

**Series TLZ 450 to 710 and THLZ size 450**

All casings are manufactured with Pittsburgh seams as described above and on the inside of the side plates nuts are applied enabling easy fixing of feet or frames by standard metric bolts, supplied as extra.

Pic 5
Fan casing of Fan Type TLZ.
The series T bearing arrangement is shown necessitating the frame to be supplied at an integral part of the unit.

**Serie TLZ size 710 to 1000**

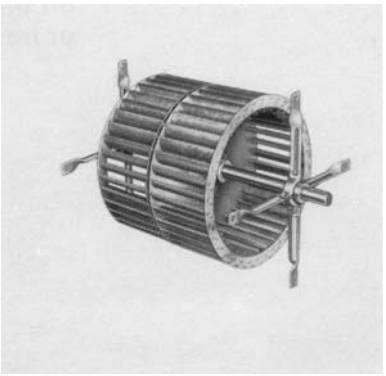
Fans are supplied with integral bearing frames and cast iron plummer block bearings housings.

### 1.2 Fan Inlets

To ensure high efficiency, fans are supplied with aerodynamically shaped fan inlets. These nozzles form part of the side casing on the TLZ fans.
On fan series THLZ, the inlet cones are separate pieces, bolted to the sideplate.

### 1.3 Impellers

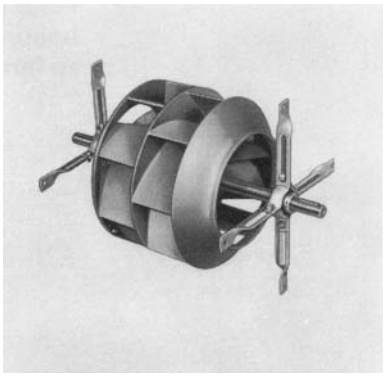
**COMEFRI** high efficiency impellers are specially designed to give high volume and pressures whilst maintaining smooth vibration free running. Even at high peripheral speeds the fans are stable. Fan impellers are statically and dynamically balanced, in accordance with VDI 2060 and ISO 1940/1, grade G 6,3. Impeller diameters are in series R20 according to DIN 323.



Pic 6
High efficiency impeller with forward curved impellers type TLZ.

**COMEFRI Fan series TLZ**

These fans are supplied with forward curved impellers manufactured in galvanized sheet steel. The impellers are designed for maximum efficiency to latest technology. Impeller blades are mounted on to a common backplate and locked onto a holding shroud. A substantial aluminium hub is rigidly connected to the backplate and precision machined to receive the fan shaft.



Pic 7
High efficiency impeller with backward curved blades type THLZ.

**COMEFRI Fan series THLZ**

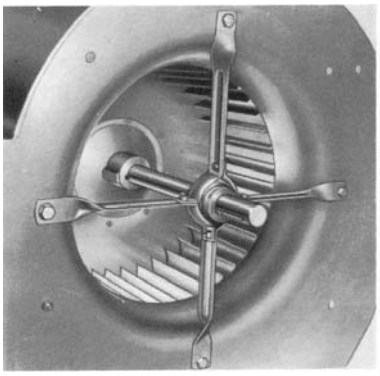
These fans are supplied with high efficiency non-overloading impellers having backward curved blades. The blade shape results from research at our test laboratory and is specially designed to give high volume and pressure characteristics at high efficiency. Impellers sizes 180 to 450 are manufactured in glass reinforced polyamid whereas fans above this size are made from high quality mild steel. These impellers are of welded construction and painted.

### 1.4 Shafts

Shafts are manufactured from high quality steel, keywayed at both ends and at the impeller location point.

### 1.5 Bearings

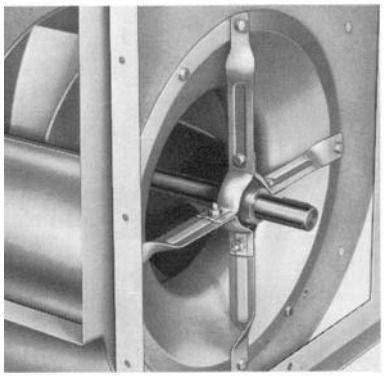
All fans are supplied as standard with pre-greased sealed-for-life ball bearings. These are always inspected prior to assembly to ensure quiet running. Bearings have an $L_{10}$ life of 20,000 HRS at peak performance. Limiting values for speed and power are indicated on the characteristic curves and should not be exceeded. Pulleys should be mounted close to the fan bearing. The various bearing types are described as follows.



Pic 8
Bearings of Radial Fans series TLZ size 160 up to 710.

### Series TLZ size 160 to 710

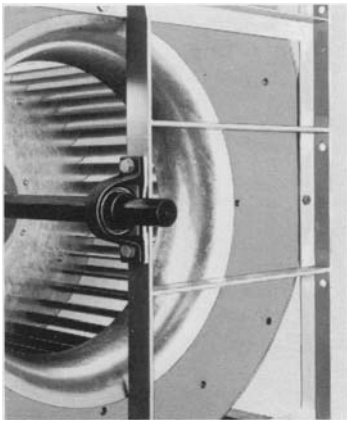
Sealed-for-life bearings are located in formed support arms made from galvanised steel. The bearing race is mounted in a unique rubber anti-vibration housing which provides for sound insulation and smooth running (Pic 8).



Pic 9
Bearings of Radial Fans series THLZ size 180 to 450.

### Series THLZ size 180 to 450

Bearings are similar to TLZ and are located with clamp collars (Pic 9).



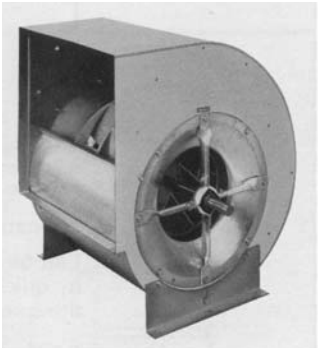
Pic 10
Bearing of Fan series TLZ 710 T to 1000 T.

### Series TLZ 710 T to 1000 T

Plummer blacks containing self aligning ball journals are used in this range. The bearing being mounted onto the substantial fan frame (Pic 10).

## 2. Accessories

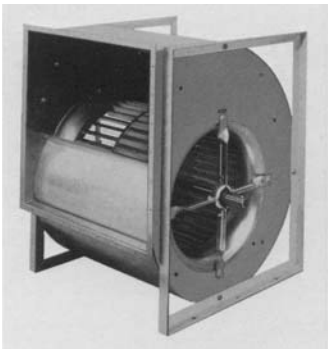
All fan can be supplied with the following accessories:



Pic 11
Radial Fan Type THLZ 450 with feet.

### 2.1 Feet ...F

Manufactured from galvanized sheet steel. The predrilled fan feet are supplied separately with necessary fixing screws. Feet are available from fan size 160 to 710.



Pic 12
Radial Fan Type TLZ 500 with outlet flange and frame.

### 2.2 Outlet Flanges ...A

On TLZ fans to size 710 the outlet flanges can be supplied separately or fitted to customer requirement. They are manufactured from galvanized steel and drilled as the dimension sheets.

### 2.3 Fan Mounting Frames ...R

From size 200 to 710, separate fan frames are available as an alternative method of mounting.

Pic 13
Radial Fan Type THLZ 225 complete with outlet flange, inspection door and condensation drain.

### 2.4 Inspection door

Can be fitted to the fan casing and consist in a galvanized steel plate fixed by quick release screws. Gaskets prevent leakage. For inspection door positions see section 7 and 8.

### 2.5 Drain Plugs

Can be fitted at lowest point of the fan casing to drain condensation. Plugs are 3/8" gas thread and can be located in positions described in section 7 and 8.

Accessory ordering should always indicate the position required as detailed in 7.2.

## 2.6 Anti-spark features

When selecting and installing fans for hazardous applications the relevant standards must be considered as sparking can occur from the following conditions:
- Contact sparking
- Heat build-up
- Build-up of electro-static

Consideration should also be given to the following:

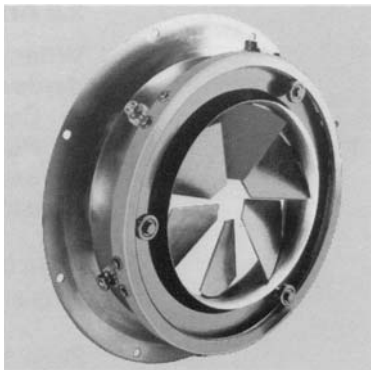
Zone o:
fans are not suitable for this application.

Zone 1 :
(Sub group G1-G3). Selection of fans in this category should take into consideration the following:
- the max fan speed should be reduced by 20%
- the max shaft power should be reduced by 30%
- fans should only be selected for applications where the shaft is horizontal
- guards should have a mesh size of no more than 12 mm.
- design life of bearings at duty point should be 40000 hours minimum
- driving ropes of the anti-static type should only be used

Zone 2:
standard fans described in this catalogue are suitable.

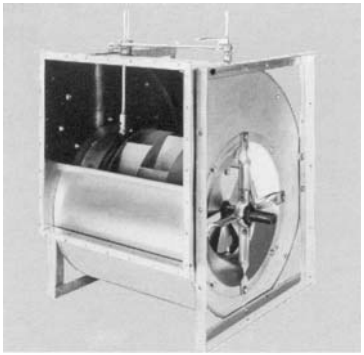
To avoid sparking the following combinations of materials can be used:
- steel with copper or brass
- stainless steel with stainless steel

## 2.7 Inlet vane control



Pic 14
Inlet vane control.

Volume regulation can be achieved by using the **COMEFRI** inlet vane control, see fig.14 and 15. This energy saving device can be supplied as an integral part of THLZ fans from size 315. A special selection chart is available which is for use with standard performance charts.
The vane controller comprises a set of adjustable radial vanes mounted inside the inlet nozzle. The vanes when set to the required angle regulate the volume whilst directing the air into the impeller blade. The result is a considerable saving in motor power. All moving components are located inside the fan with linkage to the outside to facilitate the adjustment of the control by either electric or pneumatic actuator.



Pic 15
Inlet vane control fitted to fan THLZ 450 R.

## 3. Motor Selection

The following safety margins should be added to the power requirements at the fan shaft as shown by the performance curves.

| Rating | TLZ | THLZ |
|---|---|---|
| up to 10 kW | 20% | 15% |
| over 10 kW | 12% | 12% |

This safety margin compensate for transmission losses of the V-belt drive and for possible minor inaccuracies in the calculation of the system resistance. When selecting the suitable motor special attention should be paid to the fact that if the acceleration time of the fan is longer than the maximum acceleration time of the motor the trip time of the motor starter overload must be increased or a larger motor or starter for heavy duty starting must be used.
The acceleration time can be calculated from:
a) in case of direct starting:

$$t_a \approx 1{,}5 \cdot 10^{-5} \ \frac{J \cdot n^2}{P_M}$$

Where :

$t_a$ [s] - acceleration time

J [$kgm^2$] - mass moment of inertia, $J = m \cdot r^2 \ (\approx \ \frac{G \cdot D^2}{4})$

n [$min^{-1}$] - nomimal speed of the fan

$P_M$ [kW] - motor rating

b) in case of λ / Δ starting, the acceleration time compared with direct starting is 5.5 times longer .

## 4. Technical Explanations

### 4.1 General

The formulae, signs and SI-units used in this catalogue correspond to the standards DIN 1301, DIN 1345, DIN 45635 and to the Eurovent-Recommendations 0/1 and1/1.
Standard operating conditions for the fan performance curves:

$\rho_{air}$ = 1.2 kg/m$^3$ (at 1013 mbar and 293 K ( = 20°C))

### 4.2 Sound Levels

The measurement of noise levels are taken according to DIN 45635. For this purpose a harmonic analyzer type 2107 and Herz-Octave Band Filter type 1615 of Messrs. Brüel + Kjaer are used. These precision measuring instruments comply with DIN 45633. The sound power level $L_W$, referred to $W_O = 10^{-12}$ watt, required for calculation and design of sound absorbing units is marked in the performance curves.

| | | | |
|---|---|---|---|
| $L_W$ | - | Total Sound Power Level | [dB] |
| $L_W$* | - | Sound Power Level at a specific Octave Band Mid-Frequency | [dB] |
| $L_P$ | - | Sound Pressure Level (non-weighted) | [dB] |
| $L_P$* | - | Sound Pressure Level at a specific Octave Band Mid-Frequency | [dB] |
| $L_{PA}$ | - | Sound Pressure Level (weighted) | [dB(A)] |
| $f_m$ | - | Octave Band Mid-Frequency | [Hz] |
| $\Delta_L$ | - | Difference between the Total Sound Power Level $L_W$ and the non-weighted Sound Pressure Level $L_P$ | [dB] |
| $\Delta L_W$ | - | Difference between the Total Sound Power Level $L_W$ and the measured value at the corresponding Octave Band Mid-Frequency | [dB] |
| $\Delta L_A$ | - | Difference between the Total Sound Power Level $L_W$ and the weighted Sound Pressure Level $L_{PA}$ | [dB] |

The Sound Data of the fans is determined as follows:

1. The Total Sound Power Level can be ascertained from the Performance Curves.
2. The Sound Power Level $L_W$* at the different Octave Band Mid-Frequencies is determined from following equation:

   $L_W^* = L_W - \Delta L_W$

The values for $\Delta L_W$ are given in Table 1.

**Table 1:**

| Octave Band Mid-Frequency $f_m$ Hz | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
|---|---|---|---|---|---|---|---|---|
| $\Delta L_W$ [dB] for TLZ | 6 | 7 | 10 | 12 | 13 | 15 | 19 | 23 |
| $\Delta L_W$ [dB] for THLZ | 4 | 6 | 7 | 9 | 11 | 15 | 19 | 23 |

3. The non weighted Sound Pressure Level $L_P$ of for all fan sizes at various measuring distances is obtained from the following equation:

$L_P = L_W - \Delta L$

The values for $\Delta L$ are given in Table 2.

**Table 2:**

| **Distance form the fan** | 1 m | 2 m | 3 m | 4 m | 5 m |
|---|---|---|---|---|---|
| $\Delta L$ [dB] | 6 | 12 | 15 | 18 | 20 |

4. The Sound Pressure level Lp* at the different Octave Band Mid-Frequencies is obtained from the following equation:

$L_P^* = L_P - \Delta L_W$

The values for $\Delta L_W - \Delta L_A$ are given in Table 1.

5. The weighted Sound Pressure Level $L_{PA}$ dB(A) is determined by the following equation:

$L_{PA} = L_W - \Delta L_A$

The values far $\Delta L_A$ are given in Table 3.

**Table 3:**

| **Fan size** | | **160** | **180** | **200** | **225** | **250** | **280** | **315** | **355** | **400** | **450** | **500** | **560** | **630** | **710** | **800** | **900** | **1000** |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $\Delta L_A$ at a distance of | 1 m | 10 | 10 | 10 | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 13 | 13 | 13 | 13 | 14 | 14 |
| | 2 m | 16 | 16 | 16 | 17 | 17 | 17 | 17 | 18 | 18 | 18 | 18 | 19 | 19 | 19 | 19 | 20 | 20 |
| | 3 m | 19 | 19 | 19 | 20 | 20 | 20 | 20 | 21 | 21 | 21 | 21 | 22 | 22 | 22 | 22 | 23 | 23 |
| | 4 m | 22 | 22 | 22 | 23 | 23 | 23 | 23 | 24 | 24 | 24 | 24 | 25 | 25 | 25 | 25 | 26 | 26 |
| | 5 m | 24 | 24 | 24 | 25 | 25 | 25 | 25 | 26 | 26 | 26 | 26 | 27 | 27 | 27 | 27 | 28 | 28 |

Please note that exact data regarding sound volume and frequency can only be determined after assembly and operation at the place of installation as the acoustic properties of the room, inherent frequencies as well as other oscillations and the effect of adiacent structures may considerably affect the sound level.

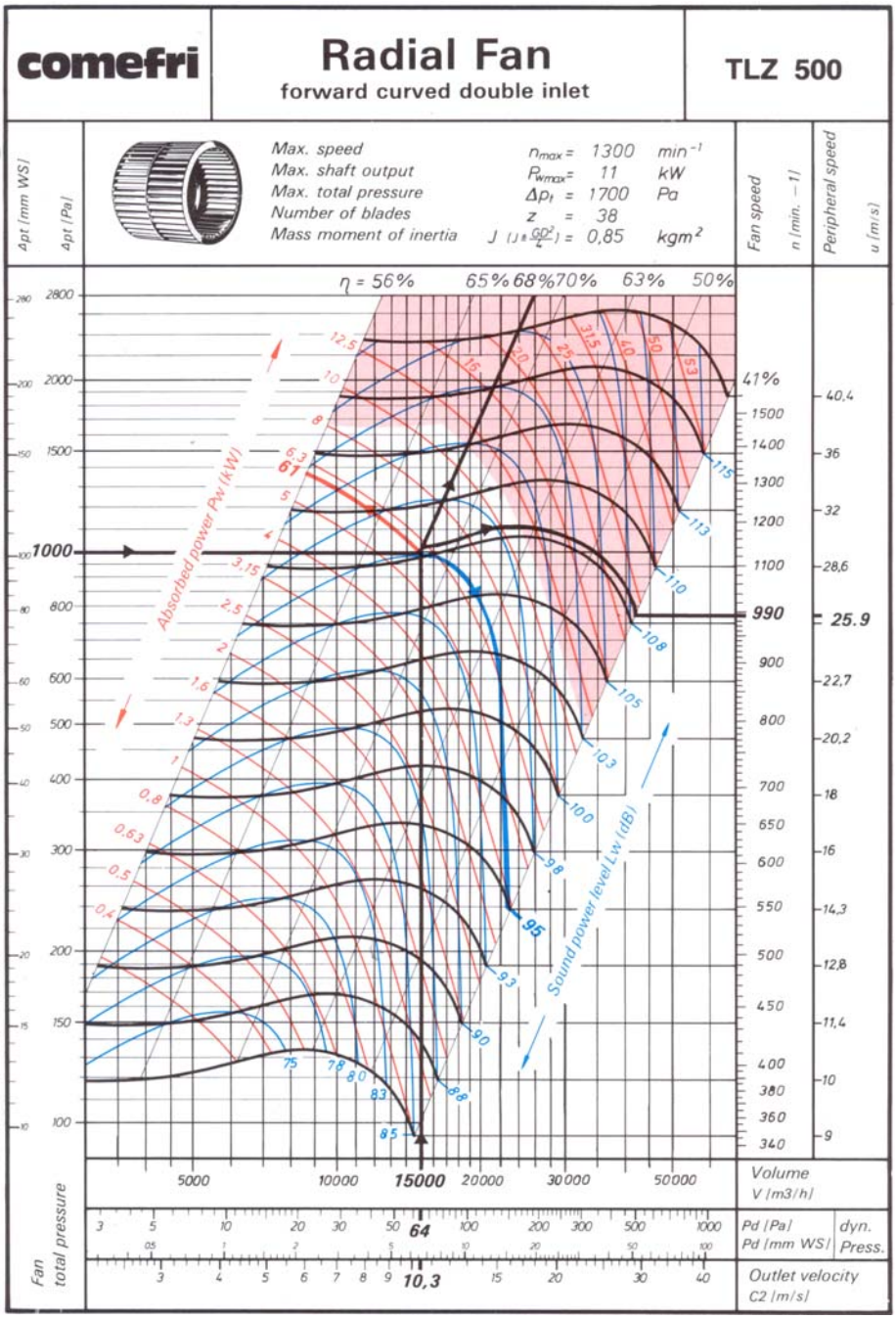
### 4.3 Performance Curves of the COMEFRI Fans

The fan data, which have been determined by tests in our laboratory, according to the latest recommendations and with high-precision measuring instruments, are contained in the following performance curves. They show the total pressure against the volume flow.
The curves indicate speed, circumferential velocity, power consumption at the shaft and Total Sound Power Level $L_W$.
Please note that the values indicated at the absciss, the dynamic pressure and the outlet velocity relate to the total cross section of the fan outlet.

# 4.3.1 Selection Example of double inlet Fans with high efficiency impeller with forward curved blades, type TLZ

**Required:**
Volume flow V = 15000 $m^3/h$
Total pressure $\Delta p_t$ = 1000 Pa
Air density $\rho$ = 1,2 $kg/m^3$
Air temperature t = 293 K (20°C)

**To determinate:**
Fan size
Speed
Power consumption
Motor output
Efficiency
Sound pressure level
in dB(A) at a distance of 3 m.




**Selected from the Curve:**

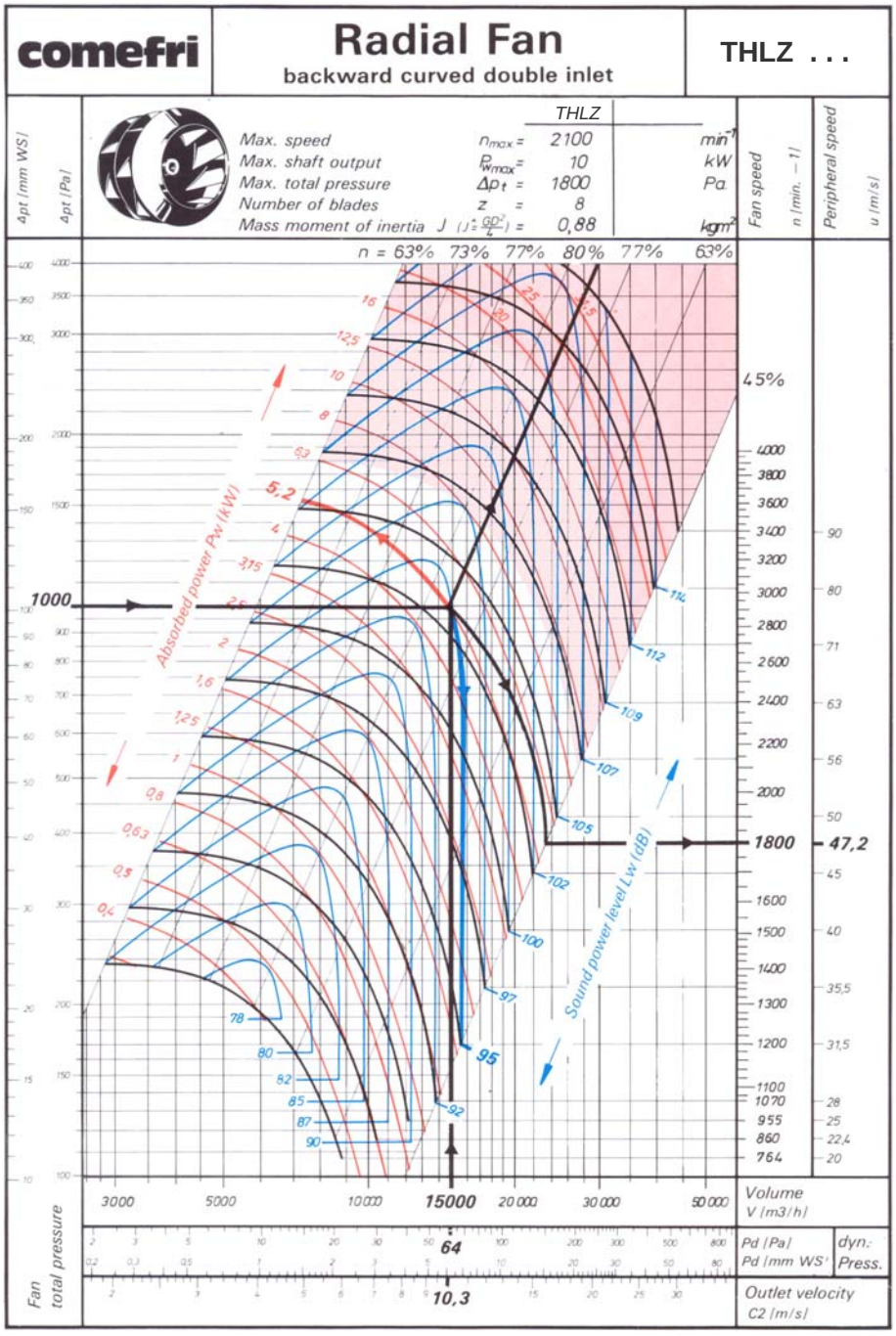
Radial Fan TLZ 500

| | | | | |
|---|---|---|---|---|
| Fan speed | n | = | 990 | $min^{-1}$ |
| Circumferential speed | u | = | 25.9 | m/sec. |
| Dynamic pressure | $p_d$ | = | 64 | Pa |
| Static pressure | $p_{st}$ | = | 936 | Pa (Total – dynamic pressure) |
| Outlet velocity | $c_2$ | = | 10.3 | m/sec. |
| Volume flow | V | = | 15000 | $m^3/h$ |
| Efficiency | $\eta$ | = | 0.68 | |
| Absorbed power | $P_W$ | = | 6.1 | kW |
| Motor rating | $P_M$ | = | $P_W$ + 20% | |
| Suond power level | $L_W$ | = | 95 | dB |
| Sound pressure level | $L_{PA}$ | = | 95 – 21 = | 74 dB(A) |

# 4.3.2 Selection Example of double inlet Fans with high efficiency impeller with backw. curved blades, type THLZ

**Required:**
Volume flow V = 15000 $m^3/h$
Total pressure $\Delta p_t$ = 1000 Pa
Air density $\rho$ = 1,2 $kg/m^3$
Air temperature t = 293 K (20°C)

**To determinate:**
Fan size
Speed
Power consumption
Motor output
Efficiency
Sound pressure level
in dB(A) at a distance of 3 m.




**Selected from the Curve:**

Radial Fan THLZ . . .

| | | | |
|---|---|---|---|
| Fan speed | n | = 1800 | $min^{-1}$ |
| Circumferential speed | u | = 47.2 | m/sec. |
| Dynamic pressure | $p_d$ | = 64 | Pa |
| Static pressure | $p_{st}$ | = 936 | Pa (Total – dynamic pressure) |
| Outlet velocity | $c_2$ | = 10.3 | m/sec. |
| Volume flow | V | = 15000 | $m^3/h$ |
| Efficiency | $\eta$ | = 0.80 | |
| Absorbed power | $P_W$ | = 5.2 | kW |
| Motor rating | $P_M$ | = $P_W$ + 15% | |
| Suond power level | $L_W$ | = 95 | dB |
| Sound pressure level | $L_{PA}$ | = 95 – 21 = | 74 dB(A) |

| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 160** |
|---|---|---|

| | | | |
|---|---|---|---|
| Max. speed | $n_{max}$ = | 4250 | $min^{-1}$ |
| Max. shaft power | $P_{wmax}$ = | 3,5 | kW |
| Max. total pressure | $\Delta p_t$ = | 1800 | Pa |
| Number of blades | $z$ = | 36 | |
| Mass moment of inertia | $J$ ($J \triangleq \frac{GD^2}{4}$) = | 0,01 | $kgm^2$ |

| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 180** |
|---|---|---|

| | | |
|---|---|---|
| Max. speed | $n_{max}$ = 4000 | $min^{-1}$ |
| Max. shaft power | $P_{wmax}$ = 3,5 | kW |
| Max. total pressure | $\Delta p_t$ = 2000 | Pa |
| Number of blades | z = 40 | |
| Mass moment of inertia | $J\ (J \triangleq \frac{GD^2}{4})$ = 0,013 | $kgm^2$ |

$\Delta p_t$ [mm WS] | $\Delta p_t$ [Pa] | Fan speed n [$min^{-1}$] | Peripheral speed u [m/s]

$\eta$ = 45% 54% 59% 52% 39%

30%

Absorbed power Pw [kW]

Sound power level Lw [dB]

Fan total pressure

Volume V [$m^3/h$]

$p_d$ [Pa] | $p_d$ [mm WS] | dyn. Press.

Outlet velocity $c_2$ [m/s]

| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 200** |
|---|---|---|

| | | |
|---|---|---|
| Max. speed | $n_{max}$ = | 3800 min$^{-1}$ |
| Max. shaft power | $P_{wmax}$ = | 4,0 kW |
| Max. total pressure | $\Delta p_t$ = | 2100 Pa |
| Number of blades | $z$ = | 38 |
| Mass moment of inertia | $J$ ($J \triangleq \frac{GD^2}{4}$) = | 0,018 kgm$^2$ |

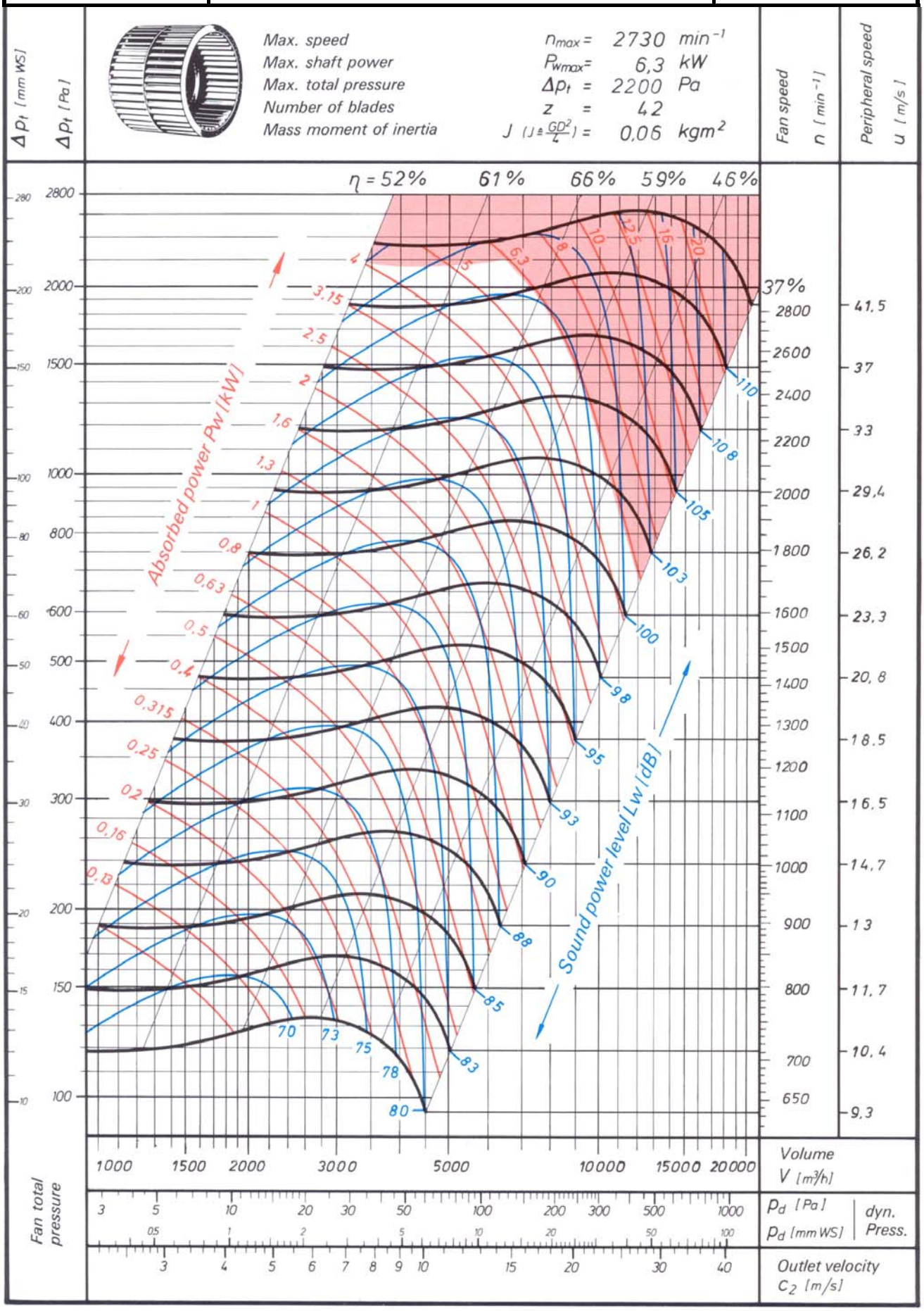
| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 225** |
|---|---|---|

| | | |
|---|---|---|
| Max. speed | $n_{max}$ = 3400 | $min^{-1}$ |
| Max. shaft power | $P_{wmax}$ = 5,0 | kW |
| Max. total pressure | $\Delta p_t$ = 2200 | Pa |
| Number of blades | $z$ = 42 | |
| Mass moment of inertia | $J$ ($J \triangleq \frac{GD^2}{4}$) = 0,028 | $kgm^2$ |

| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 250** |
|---|---|---|

| | | |
|---|---|---|
| Max. speed | $n_{max}$ = 3000 | $min^{-1}$ |
| Max. shaft power | $P_{wmax}$ = 5,0 | kW |
| Max. total pressure | $\Delta p_t$ = 2100 | Pa |
| Number of blades | z = 38 | |
| Mass moment of inertia | $J\ (J \triangleq \frac{GD^2}{4})$ = 0,044 | $kgm^2$ |

| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 280** |
|---|---|---|



| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 315** |
|---|---|---|

| | | |
|---|---|---|
| Max. speed | $n_{max}$ = 2400 | $min^{-1}$ |
| Max. shaft power | $P_{wmax}$ = 7,0 | kW |
| Max. total pressure | $\Delta p_t$ = 2200 | Pa |
| Number of blades | $z$ = 38 | |
| Mass moment of inertia | $J$ ($J \triangleq \frac{GD^2}{4}$) = 0,104 | $kgm^2$ |

$\Delta p_t$ [mm WS] | $\Delta p_t$ [Pa] | Fan speed $n$ [$min^{-1}$] | Peripheral speed $u$ [m/s]

$\eta$ = 53% 62% 67% 60% 47%

Absorbed power $P_W$ [kW]

Sound power level $L_W$ [dB]

38%

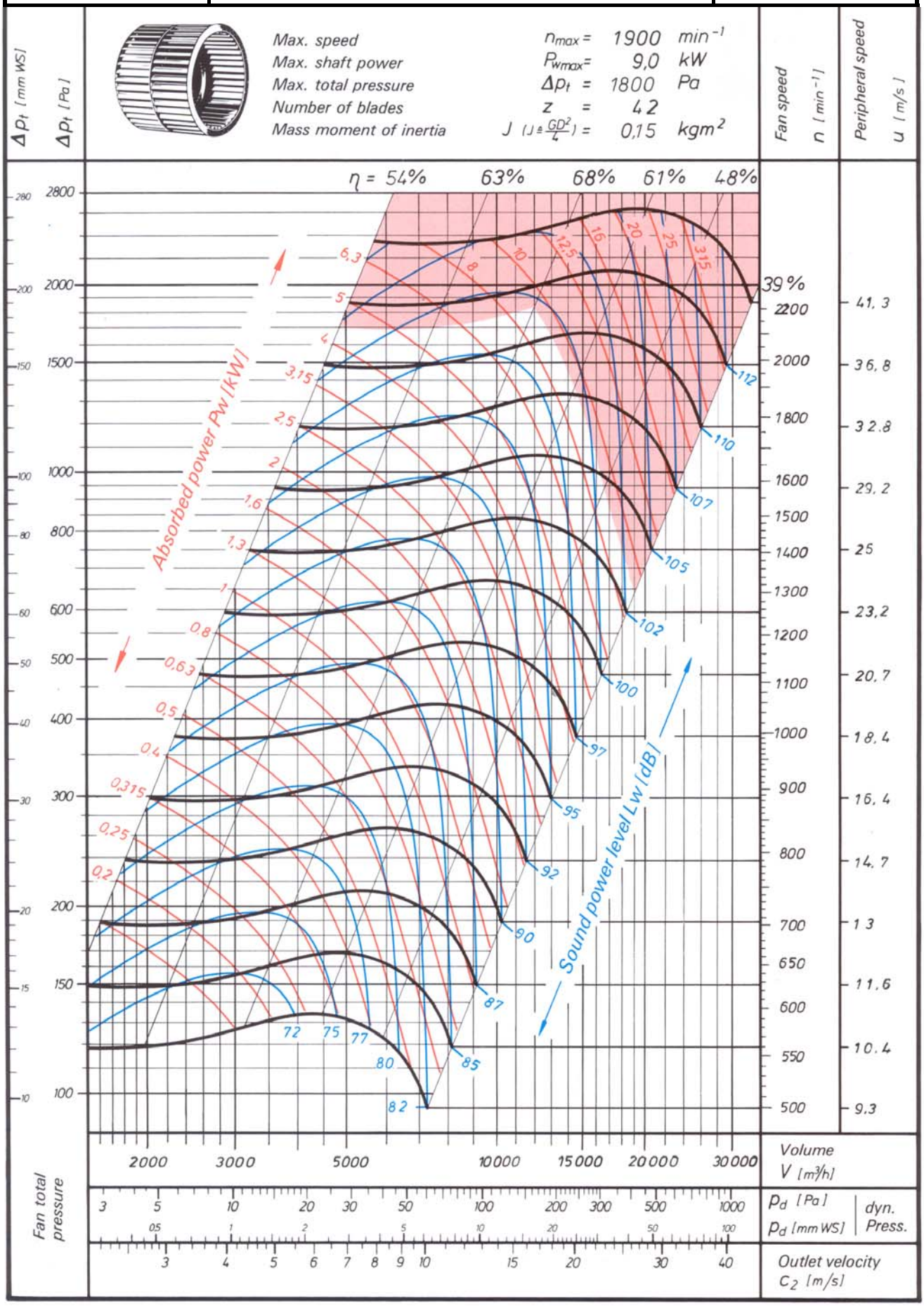
Fan total pressure

Volume $V$ [$m^3/h$]

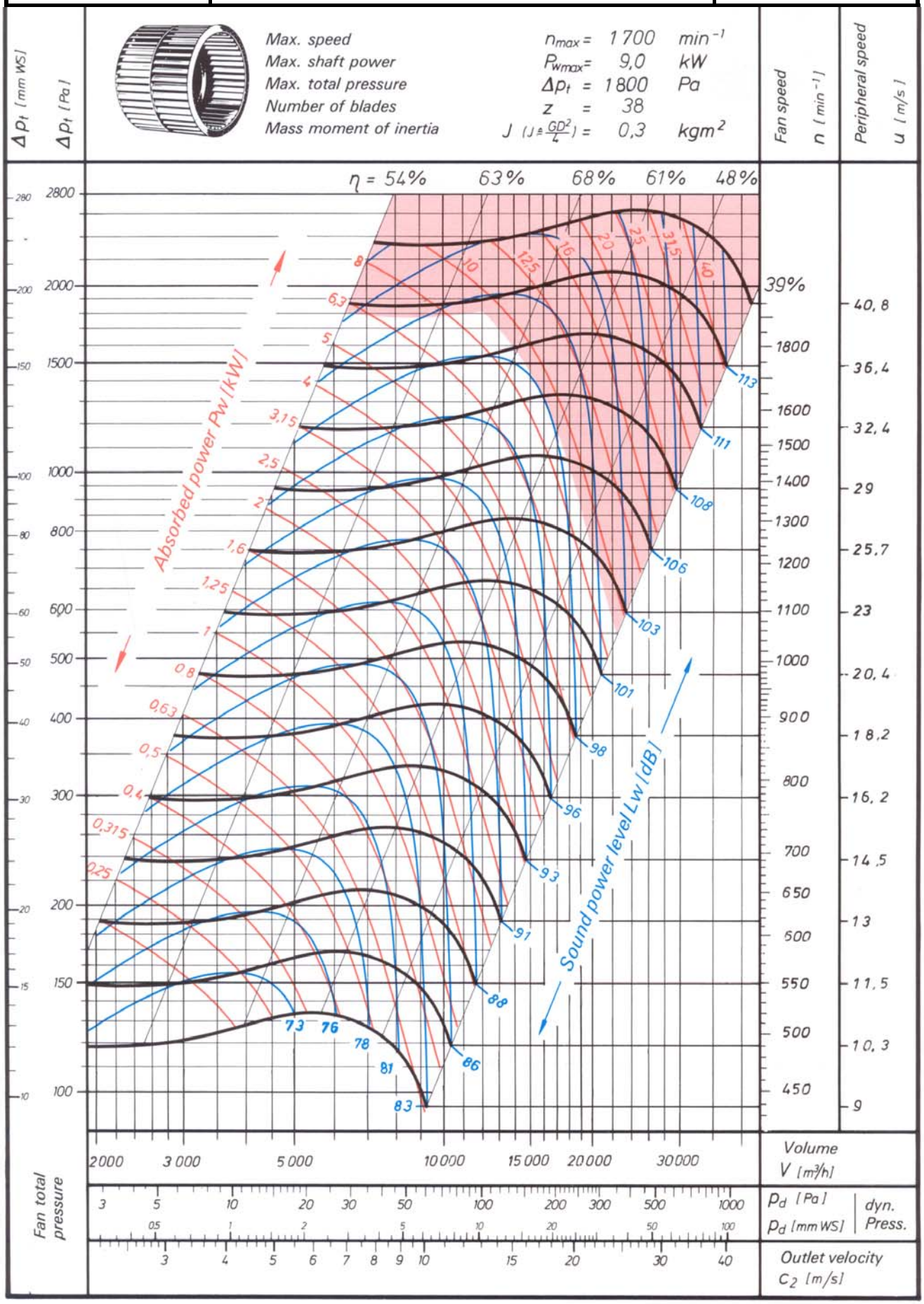
$p_d$ [Pa] | $p_d$ [mm WS] | dyn. Press.

Outlet velocity $c_2$ [m/s]

| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 355** |
|---|---|---|



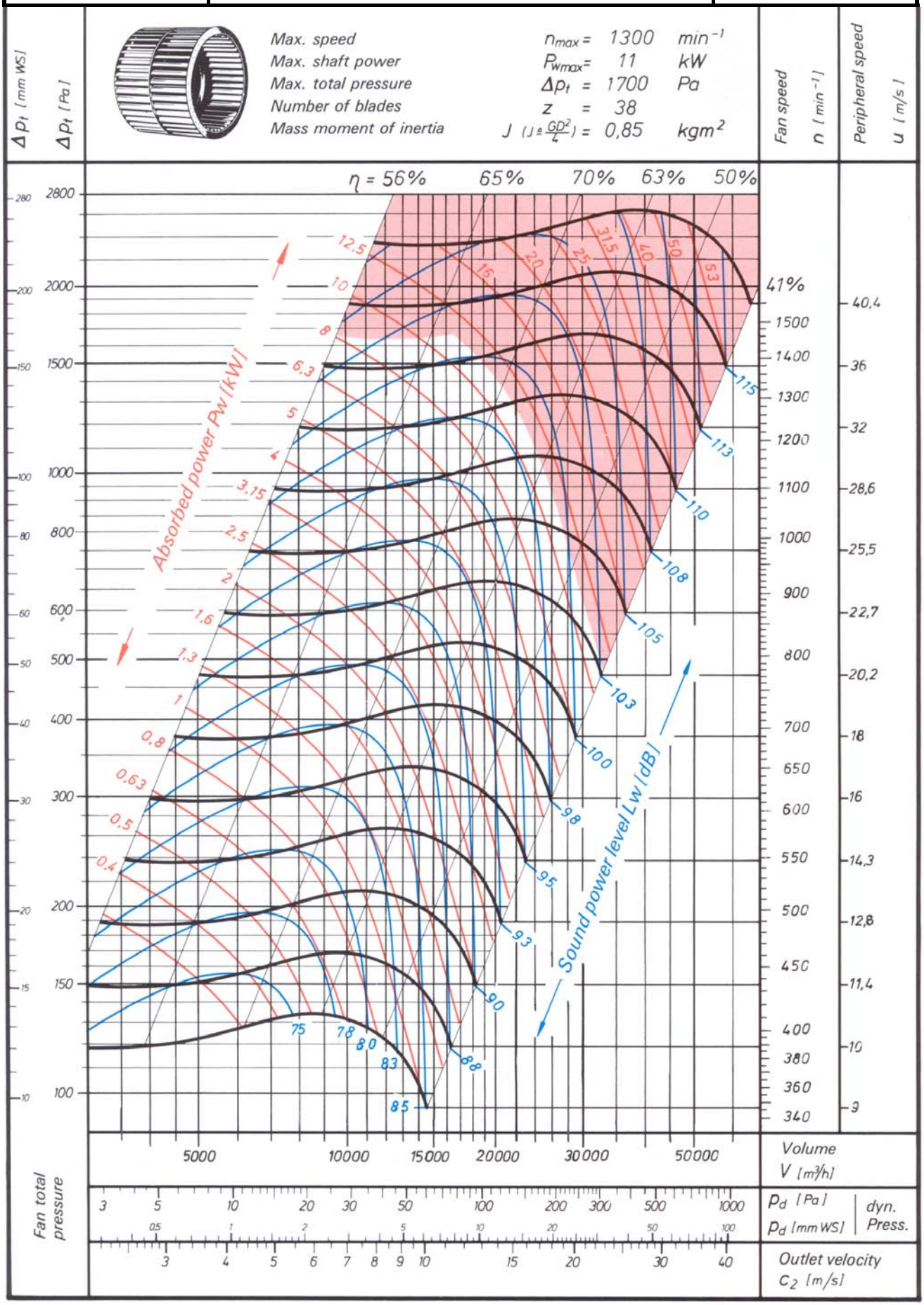
| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 400** |
|---|---|---|



| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 450** |
|---|---|---|

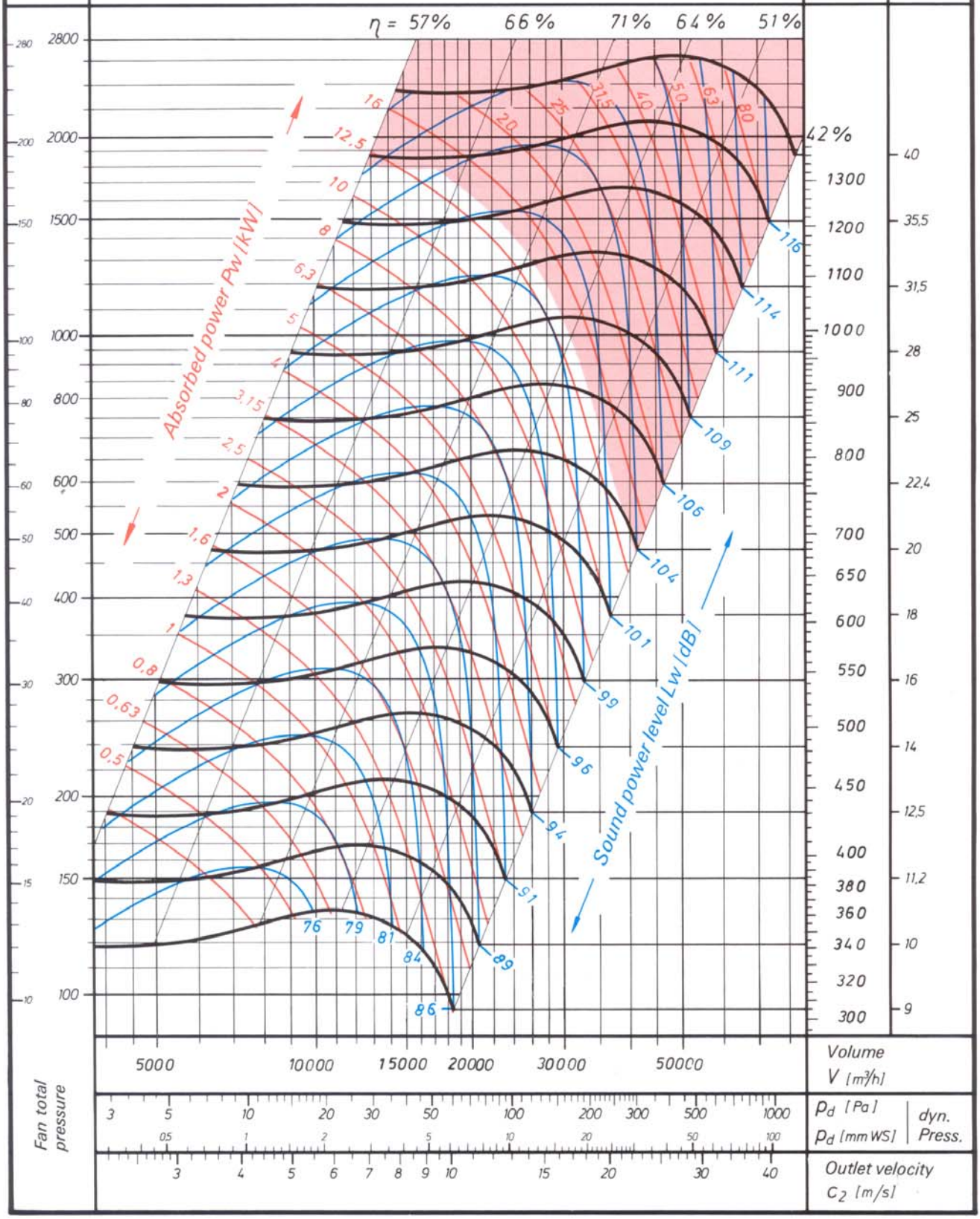
| | | |
|---|---|---|
| Max. speed | $n_{max}$ = 1500 | $min^{-1}$ |
| Max. shaft power | $P_{wmax}$ = 11 | kW |
| Max. total pressure | $\Delta p_t$ = 1800 | Pa |
| Number of blades | $z$ = 42 | |
| Mass moment of inertia | $J$ ($J \triangleq \frac{GD^2}{4}$) = 0,44 | $kgm^2$ |

| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 500** |
|---|---|---|



| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 560** |
|---|---|---|

| | | |
|---|---|---|
| Max. speed | $n_{max}$ = 1200 | $min^{-1}$ |
| Max. shaft power | $P_{wmax}$ = 13,5 | kW |
| Max. total pressure | $\Delta p_t$ = 1800 | Pa |
| Number of blades | $z$ = 42 | |
| Mass moment of inertia | $J$ ($J \triangleq \frac{GD^2}{4}$) = 1,34 | $kgm^2$ |



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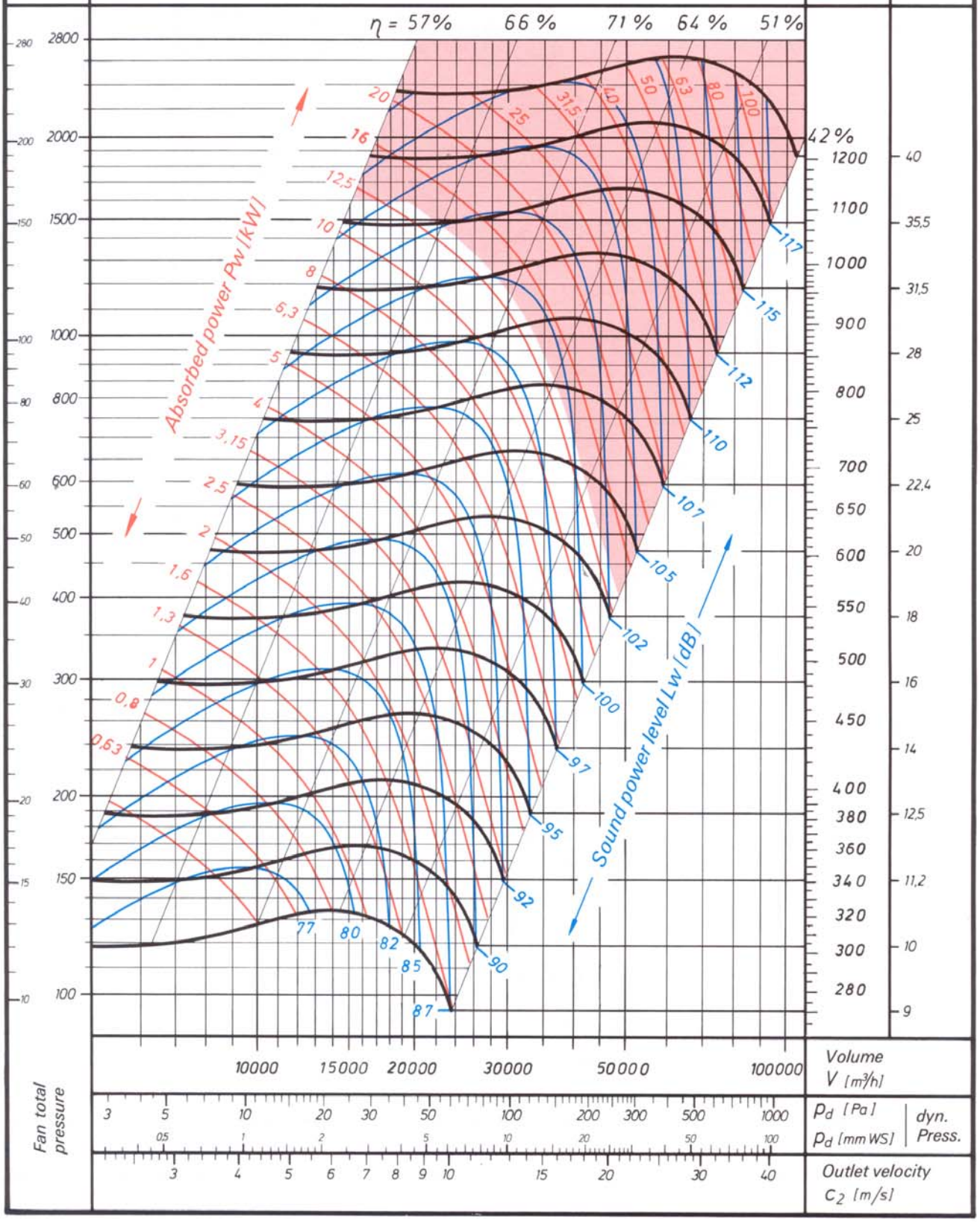
# Radial Fan

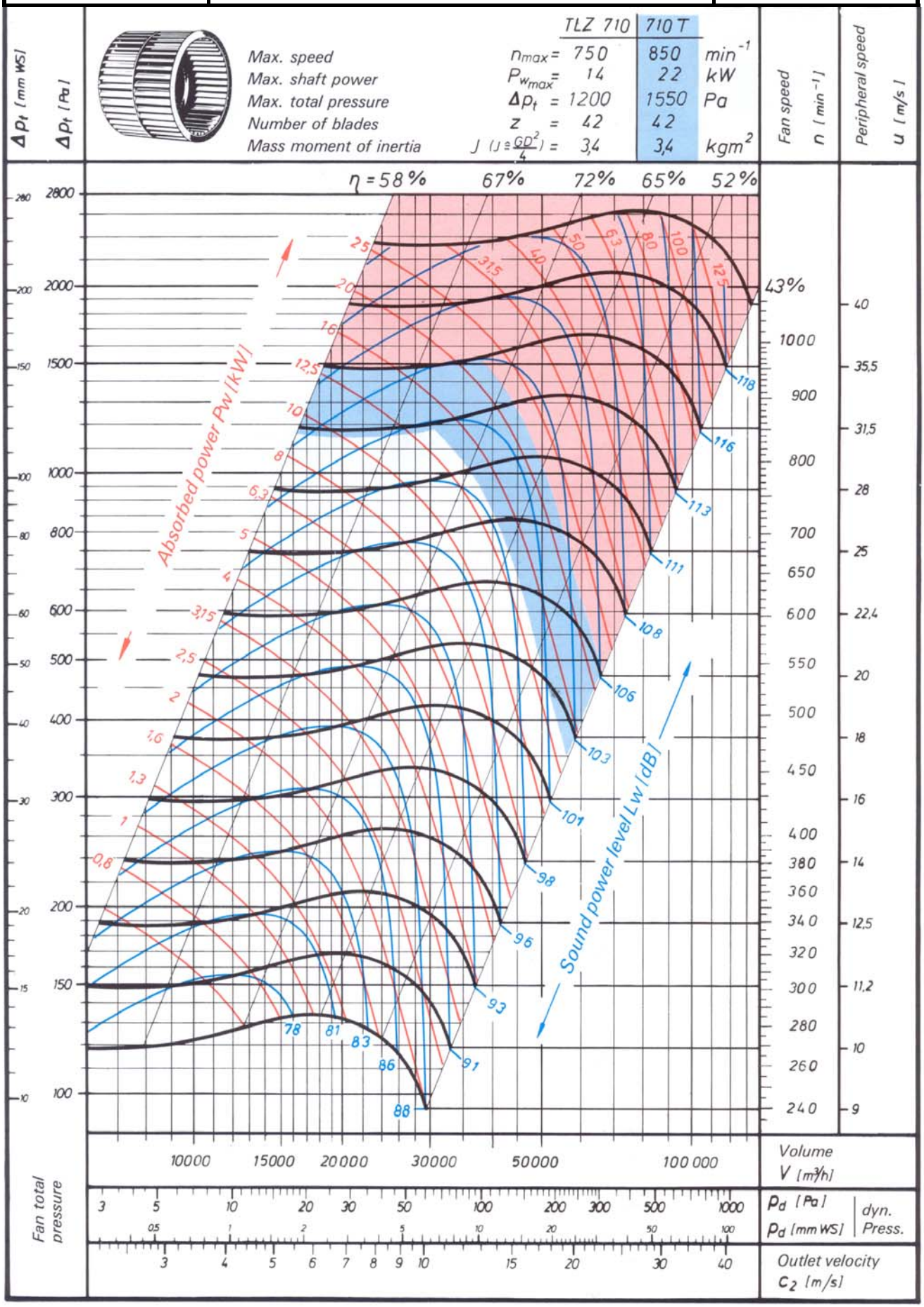
**forward curved double inlet**

**TLZ 630**

| | | | |
|---|---|---|---|
| Max. speed | $n_{max}$ = | 1000 | $min^{-1}$ |
| Max. shaft power | $P_{wmax}$ = | 13,5 | kW |
| Max. total pressure | $\Delta p_t$ = | 1600 | Pa |
| Number of blades | $z$ = | 38 | |
| Mass moment of inertia | $J$ ($J \triangleq \frac{GD^2}{4}$) = | 2,2 | $kgm^2$ |



| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 710**<br>**TLZ 710 T** |
|---|---|---|



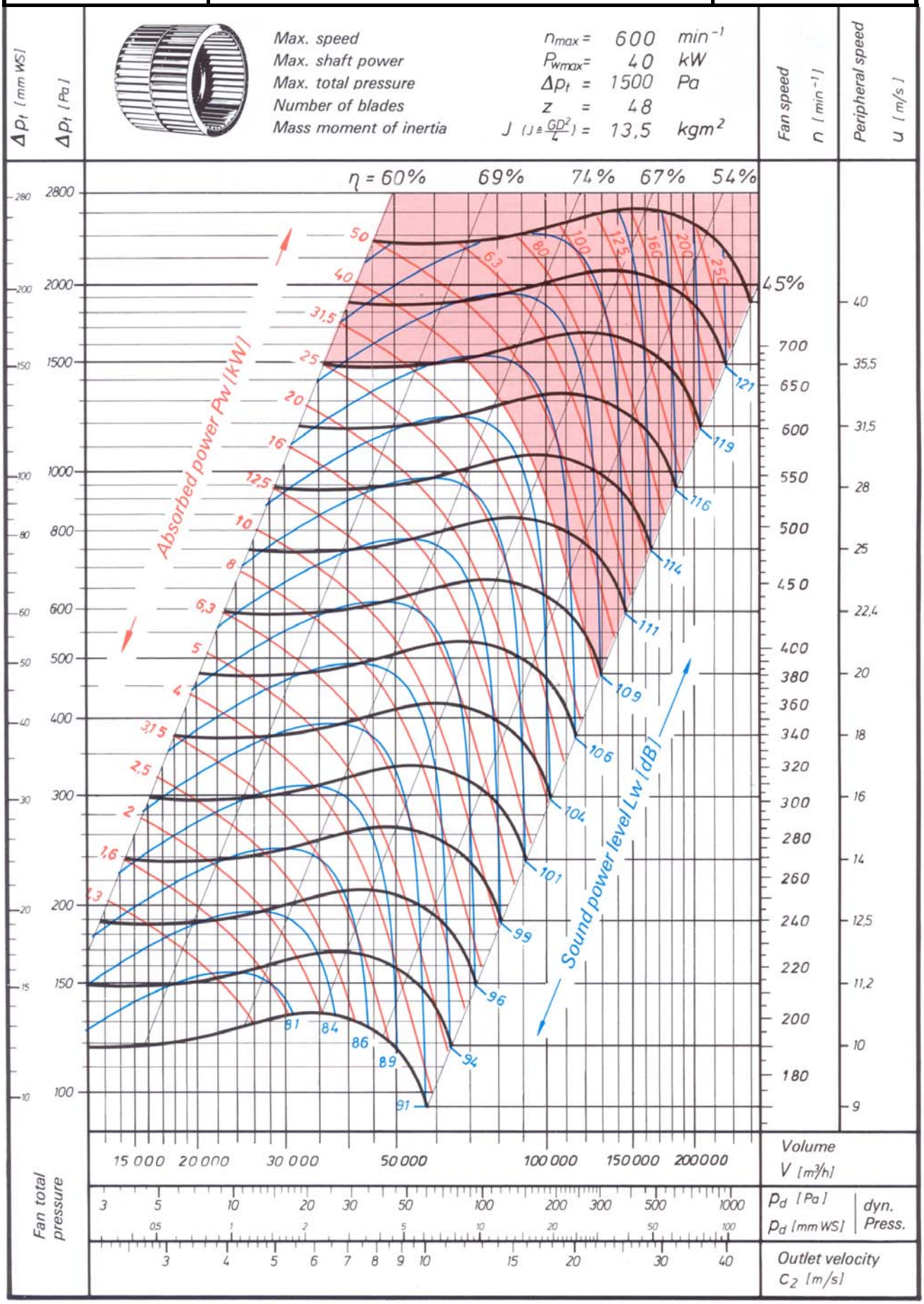
| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 800 T** |
|---|---|---|

| | | | |
|---|---|---|---|
| Max. speed | $n_{max}$ = | 750 | $min^{-1}$ |
| Max. shaft power | $P_{wmax}$ = | 25 | kW |
| Max. total pressure | $\Delta p_t$ = | 1600 | Pa |
| Number of blades | $z$ = | 38 | |
| Mass moment of inertia | $(J \triangleq \frac{GD^2}{4})$ = | 5,8 | $kgm^2$ |

| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 900 T** |
|---|---|---|

| | | | |
|---|---|---|---|
| Max. speed | $n_{max}$ = | 650 | $min^{-1}$ |
| Max. shaft power | $P_{wmax}$ = | 32 | kW |
| Max. total pressure | $\Delta p_t$ = | 1450 | Pa |
| Number of blades | $z$ = | 42 | |
| Mass moment of inertia | $J$ ($J \triangleq \frac{GD^2}{4}$) = | 8,9 | $kgm^2$ |

| comefri | **Radial Fan**<br>**forward curved double inlet** | **TLZ 1000 T** |
|---|---|---|



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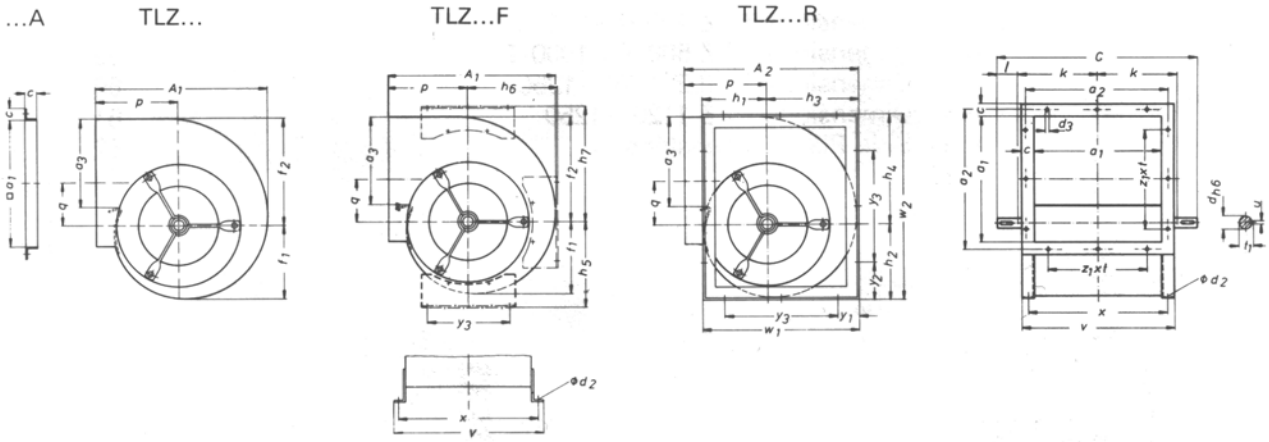
# Radial Fan

**TLZ 160 ÷ 710**

**TLZ 200 R ÷ 710 R**

Dimensions and technical details

**Drawing 6.1**




| TLZ | $A_1$ | $A_2$ | $a_1$ | $a_2$ | $a_3$ | C | c | $d^{h6}$ | $d_2$ | $d_3$ | $f_1$ | $f_2$ | $h_1$ | $h_2$ | $h_3$ | $h_4$ | $h_5$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **160** | 282,5 | 285 | 205 | 230 | 131 | 345 | 25 | 20 | 7 | 7,5 | 120 | 153 | 109 | 121 | 145 | 177 | 150 |
| **180** | 316,5 | 319 | 229 | 259 | 149 | 375 | 25 | 20 | 7 | 7,5 | 136 | 195 | 119 | 138 | 167 | 200 | 164 |
| **200** | 342 | 344 | 256 | 286 | 163 | 405 | 25 | 20 | 7 | 7,5 | 149 | 216 | 133 | 152 | 180 | 220 | 181 |
| **225** | 380 | 382 | 288 | 318 | 180 | 435 | 25 | 20 | 7 | 7,5 | 167 | 243 | 146 | 169 | 202 | 246 | 197 |
| **250** | 422 | 420 | 322 | 352 | 199 | 470 | 25 | 20 | 7 | 7,5 | 186 | 269 | 159 | 188 | 225 | 273 | 210 |
| **280** | 464 | 467 | 361 | 391 | 228 | 540 | 25 | 25 | 10,5 | 7,5 | 208 | 302 | 180 | 211 | 252 | 307 | 233 |
| **315** | 519 | 519 | 404 | 434 | 240 | 585 | 25 | 25 | 10,5 | 7,5 | 232 | 341 | 197 | 235 | 283 | 343 | 258 |
| **355** | 582 | 580 | 453 | 483 | 311 | 655 | 25 | 30 | 10,5 | 7,5 | 265 | 383 | 222 | 266 | 319 | 389 | 274 |
| **400** | 645 | 651 | 507 | 537 | 336 | 709 | 25 | 30 | 10,5 | 7,5 | 295 | 432 | 245 | 300 | 361 | 436 | 302 |
| **450** | 722 | 722 | 569 | 599 | 382 | 810 | 25 | 35 | 12 | 7,5 | 330 | 485 | 270 | 336 | 404 | 492 | 336 |
| **500** | 795 | 801 | 638 | 668 | 450 | 875 | 25 | 35 | 12 | 7,5 | 366 | 538 | 295 | 374 | 449 | 544 | 375 |
| **560** | 886 | 893 | 715 | 745 | 502 | 1000 | 25 | 40 | 15 | 7,5 | 411 | 601 | 335 | 419 | 503 | 611 | 416 |
| **630** | 992 | 1000 | 801 | 831 | 559 | 1090 | 25 | 40 | 15 | 7,5 | 463 | 679 | 370 | 471 | 566 | 687 | 468 |
| **710** | 1114 | 1120 | 898 | 928 | 624 | 1220 | 25 | 50 | 17 | 7,5 | 521 | 765 | 412 | 531 | 636 | 773 | 531 |

| TLZ | $h_6$ | $h_7$ | k | l | p | q | $t_1$ | u | v | $w_1$ | $w_2$ | x | $y_1$ | $y_2$ | $y_3$ | $z_1$ x t |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **160** | 149 | 204 | 134 | 38,5 | 139,5 | 71 | 22,5 | 6 | 256 | 254 | 298 | 231 | 47 | 69 | 160 | 2 x 90 |
| **180** | 164 | 224 | 146 | 41,5 | 152,5 | 81 | 22,5 | 6 | 280 | 286 | 338 | 255 | 53 | 79 | 180 | 2 x 90 |
| **200** | 184 | 245 | 162 | 40,5 | 164 | 89 | 22,5 | 6 | 307 | 314 | 372 | 282 | 45 | 74 | 224 | 2 x 90 |
| **225** | 204 | 274 | 178 | 39,5 | 180 | 100 | 22,5 | 6 | 339 | 348 | 416 | 314 | 62 | 96 | 224 | 3 x 90 |
| **250** | 227 | 299 | 195 | 40 | 195 | 109 | 22,5 | 6 | 373 | 384 | 462 | 348 | 80 | 119 | 224 | 3 x 90 |
| **280** | 252 | 328 | 217 | 53 | 215 | 123 | 28 | 8 | 422 | 432 | 518 | 392 | 76 | 119 | 280 | 3 x 90 |
| **315** | 280 | 367 | 239 | 53 | 236 | 139 | 28 | 8 | 466 | 480 | 578 | 436 | 100 | 149 | 280 | 4 x 90 |
| **355** | 320 | 411 | 267 | 60 | 261 | 158 | 33 | 8 | 534 | 542 | 655 | 494 | 94 | 150 | 355 | 4 x 90 |
| **400** | 359 | 462 | 293 | 61,5 | 290 | 179 | 33 | 8 | 588 | 606 | 736 | 549 | 126 | 191 | 355 | 5 x 90 |
| **450** | 407 | 518 | 330 | 75 | 322 | 202 | 38 | 10 | 651 | 674 | 828 | 611 | 112 | 189 | 450 | 6 x 90 |
| **500** | 448 | 568 | 364 | 73 | 352 | 221 | 38 | 10 | 720 | 744 | 918 | 681 | 147 | 234 | 450 | 6 x 90 |
| **560** | 502 | 634 | 406 | 94 | 390 | 248 | 43 | 12 | 818 | 838 | 1030 | 768 | 169 | 265 | 500 | 7 x 90 |
| **630** | 571 | 707 | 450 | 95 | 434 | 280 | 43 | 12 | 904 | 936 | 1158 | 854 | 188 | 299 | 560 | 8 x 90 |
| **710** | 636 | 797 | 497 | 119 | 485 | 318 | 53,5 | 14 | 1001 | 1048 | 1304 | 961 | 209 | 337 | 630 | 9 x 90 |

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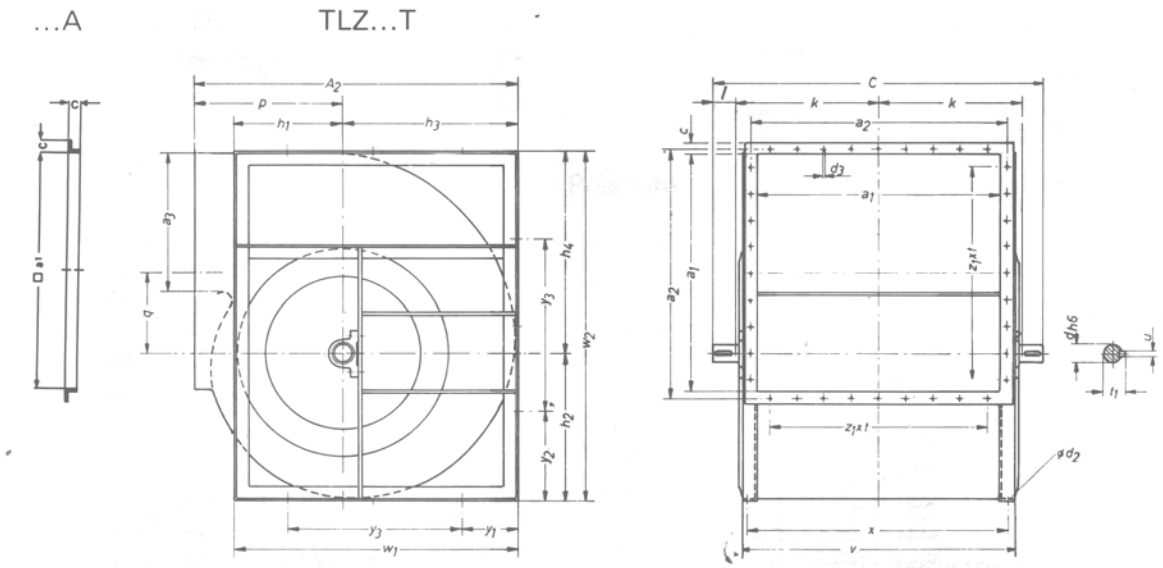
# Radial Fan

**TLZ 710 T ÷ 1000 T**

Dimensions and technical details

**Drawing 6.2**




| TLZ | $A_2$ | $a_1$ | $a_2$ | $a_3$ | C | c | $d^{h6}$ | $d_2$ | $d_3$ | $h_1$ | $h_2$ | $h_3$ | $h_4$ | k |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **710** | 1120 | 898 | 928 | 624 | 1260 | 25 | 50 | 18 | 7,5 | 413 | 531 | 635 | 773 | 516 |
| **800** | 1256 | 1007 | 1037 | 714 | 1367 | 25 | 50 | 18 | 7,5 | 458 | 597 | 716 | 871 | 570 |
| **900** | 1409 | 1130 | 1164 | 806 | 1529 | 30 | 60 | 18 | 10 | 507 | 670 | 805 | 978 | 639 |
| **1000** | 1541 | 1267 | 1301 | 909 | 1666 | 30 | 60 | 18 | 10 | 560 | 735 | 884 | 1075 | 708 |

| TLZ | l | p | q | $t_1$ | u | v | $w_1$ | $w_2$ | x | $y_1$ | $y_2$ | $y_3$ | $z_1$ x t |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **710** | 114 | 485 | 318 | 53,5 | 14 | 1001 | 1048 | 1304 | 961 | 209 | 327 | 630 | 9 x 90 |
| **800** | 13 | 540 | 359 | 53,5 | 14 | 1111 | 1174 | 1468 | 1071 | 232 | 379 | 710 | 11 x 90 |
| **900** | 125,5 | 604 | 406 | 64 | 18 | 1234 | 1312 | 1648 | 1194 | 256 | 424 | 800 | 11 x 100 |
| **1000** | 125 | 657 | 433 | 64 | 18 | 1371 | 1444 | 1810 | 1331 | 272 | 455 | 900 | 12 x 100 |

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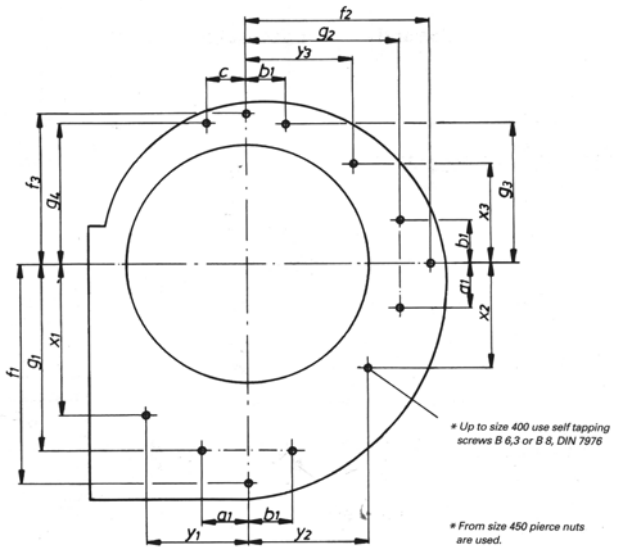
# Radial Fan

**TLZ 160 to 710 and THLZ 180 to 450**

Side plate

**Table 6.4**




| Fan size | | $a_1$ | $b_1$ | c | $f_1$ | $f_2$ | $f_3$ | $g_1$ | $g_2$ | $g_3$ | $g_4$ | $x_1$ | $x_2$ | $x_3$ | $y_1$ | $y_2$ | $y_3$ | * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TLZ | THLZ | | | | | | | | | | | | | | | | | |
| **160** | **-** | 30 | 30 | 30 | - | - | - | 155 | 101 | 101 | 101 | 121 | 92 | 67 | 92 | 67 | 92 | B 6,3 |
| **180** | **180** | 30 | 30 | 30 | - | - | - | 175 | 115 | 115 | 115 | 141 | 92 | 81 | 92 | 81 | 92 | B 6,3 |
| **200** | **200** | 40 | 40 | 40 | 202 | 163 | 134 | 190 | 129 | 126 | 126 | 155 | 110 | 91 | 110 | 94 | 110 | B 6,3 |
| **225** | **225** | 40 | 40 | 40 | 229 | 185 | 152 | 219 | 149 | 142 | 142 | 184 | 110 | 107 | 110 | 114 | 110 | B 6,3 |
| **250** | **250** | 40 | 40 | 40 | 256 | 208 | 171 | 244 | 172 | 155 | 155 | 209 | 110 | 120 | 110 | 137 | 110 | B 6,3 |
| **280** | **280** | 113 | 113 | 71 | 287 | 233 | 191 | 245 | 169 | 150 | 170 | - | - | - | - | - | - | B 8 |
| **315** | **315** | 113 | 113 | 71 | 323 | 263 | 215 | 284 | 197 | 175 | 195 | - | - | - | - | - | - | B 8 |
| **355** | **355** | 156 | 156 | 156 | 364 | 295 | 241 | 295 | 204 | 158 | 158 | 197,5 | - | - | 197,5 | - | - | B 8 |
| **400** | **400** | 156 | 156 | 156 | 411 | 336 | 275 | 346 | 243 | 186 | 186 | 220 | - | - | 220 | - | - | B 8 |
| **450** | **450** | 213 | 213 | 213 | 466 | 379 | 311 | 350 | 271 | 168 | 168 | 245 | - | - | 245 | - | - | M 10 |
| **500** | **-** | 213 | 213 | 213 | 519 | 423 | 349 | 400 | 280 | 207 | 207 | 270 | - | - | 270 | - | - | M 10 |
| **560** | **-** | 235 | 235 | 235 | 581 | 472 | 389 | 494 | 362 | 276 | 276 | 305 | - | - | 305 | - | - | M 12 |
| **630** | **-** | 235 | 235 | 235 | 656 | 535 | 441 | 567 | 431 | 328 | 328 | 340 | - | - | 340 | - | - | M 12 |
| **710** | **-** | 265 | 265 | 265 | 717 | 601 | 496 | 637 | 476 | 371 | 371 | 377,5 | - | - | 377,5 | - | - | M 12 |

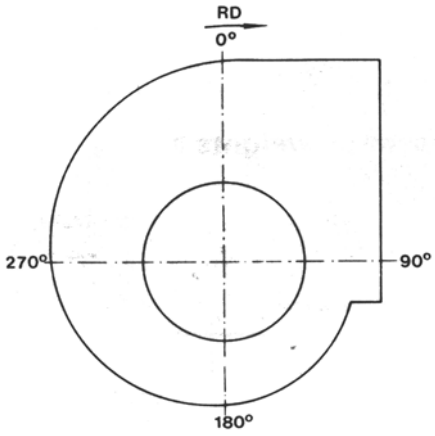
## TLZ and THLZ Fan and accessories weights (in Kg)

**Table 6.5**

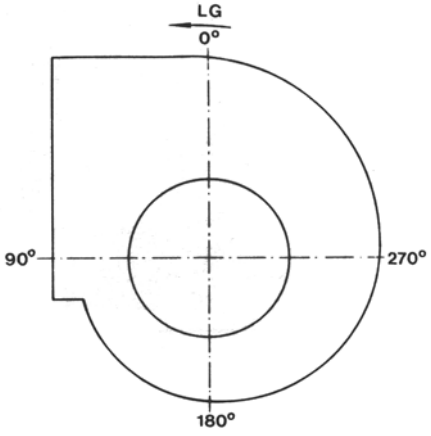
| Fan size | TLZ | TLZ...T | THLZ | THLZ...T | Inlet vane control | Feet | Frame | Outlet flange |
|---|---|---|---|---|---|---|---|---|
| **160** | 5.1 | - | - | - | - | 0.5 | 0.5 | 0.66 |
| **180** | 6.0 | - | 6.3 | - | - | 0.5 | 0.5 | 0.72 |
| **200** | 7.2 | - | 7.2 | - | - | 0.8 | 0.8 | 0.80 |
| **225** | 8.5 | - | 8.2 | - | - | 0.8 | 0.8 | 0.88 |
| **250** | 10.8 | - | 10.2 | - | - | 0.8 | 0.8 | 0.97 |
| **280** | 14.5 | - | 14.2 | - | - | 1.0 | 1.0 | 1.07 |
| **315** | 20.0 | - | 19.4 | - | 12 | 1.0 | 1.0 | 1.20 |
| **355** | 26.5 | - | 26.3 | - | 14 | 2.0 | 2.0 | 1.35 |
| **400** | 32.0 | - | 31.5 | - | 18 | 2.0 | 2.0 | 1.50 |
| **450** | 42.0 | - | 41.2 | - | 21 | 3.7 | 3.7 | 1.70 |
| **500** | 56.0 | - | - | - | - | 3.7 | 3.7 | 1.90 |
| **560** | 76.0 | - | - | - | - | 7.5 | 7.5 | 2.00 |
| **630** | 96.0 | - | - | - | - | 7.5 | 7.5 | 2.30 |
| **710** | 125 | 190 | - | 208 | - | 11.0 | 11.0 | 2.60 |
| **800** | - | 230 | - | 249 | - | - | - | 2.90 |
| **900** | - | 288 | - | 321 | - | - | - | 3.90 |
| **1000** | - | 333 | - | 380 | - | - | - | 4.40 |

## 7. Fan Discharge and Accessory Position

**The following positions are in accordance with Eurovent 1/1.**




Pic 16



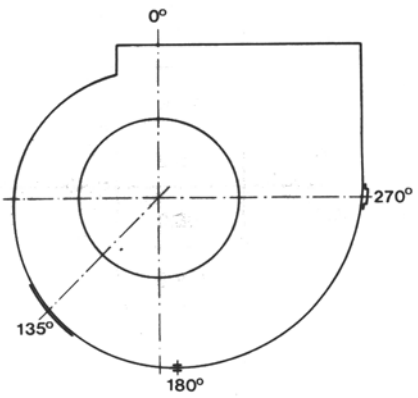

Pic 17

7.1 Pic16 and 17 show right hand (RD) and left hand (LG) fans. Fan rotation is always decided when looking from the drive side, i.e. that coupled with the motor. Fan discharges are therefore always described by either RD ...or LG ... followed by the required outlet position (i.e. 90°).

7.2 Positions of accessories are described similarly, viewed from the drive side. (see 7.4 and pic 16/17).

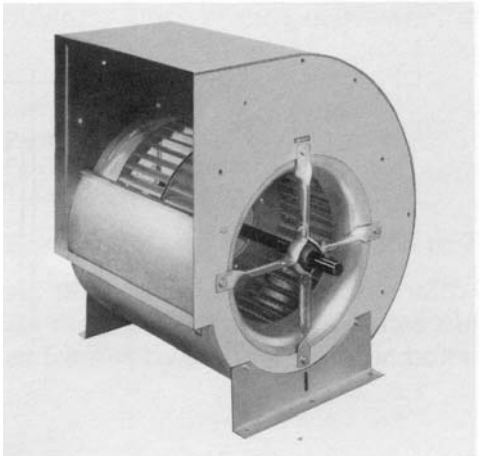
7.3 When inlet vane controls are specified it is essential to state the position of the actuating arm, see 7.4.

7.4 Example of fan discharge and accessory position:
Fan discharge LG 0°
Inspection door 135°
Drain 180°
IVC control 270°

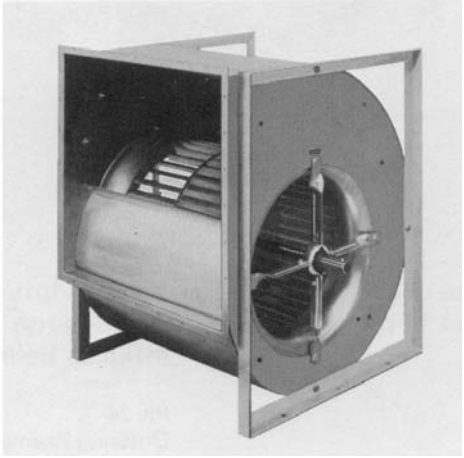



Pic 18

## 8. Instructions for Ordering and Specifying



Pic 19
Radial Fan TLZ 400 F



Pic 20
Radial Fan TLZ 500 R

8.1 All standard fans are detailed on drawings 6.1, 6.2 and 6.3.
To order or specify fans they must be described as follows:
Fan range either TLZ, THLZ
Fan size which represents the diameter of impellers in mm (i.e. TLZ 450 or THLZ 450).

8.2 Accessories are represented by the following symbols:

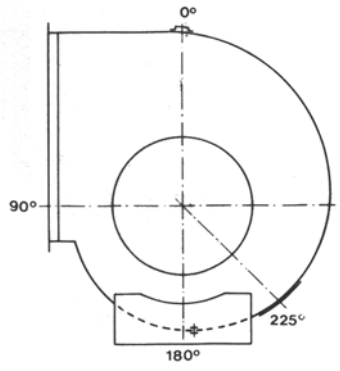
F = Feet
A = Outlet flange
R = Fan frame
Dr = Inlet vane control
I = Inspection door
K = Condensation drain
Ex = Anti-Spark Feature

Fan accessories should be specified when ordering fans.

Example 1 (see Pic 19):
Fan TLZ 400 with feet TLZ 400 F

Example 2 (see Pic 20):
Fan TLZ 500 with outlet flange and fan frame TLZ 500 RA

8.3 Fan sizes TLZ 710 and THLZ 450 can be supplied as standard with or without frames. see (6.1 and 6.3)




Pic 21
Ordering Example.

### 8.4 Ordering Example

To order a THLZ 355 with discharge position LG 90° plus feet, outlet flange, inspection door, drain and inlet vane control.
Order as follows:
THLZ 355 A - LG 90° I 225° Dr 0° K 180° F-355

The fans described in this catalogue are suitable for many and varied applications; but should you require special versions a complete technical team exists to assist and advise.
Due to improvements which are introduced from time to time the company reserves the right to alter the products specified in this catalogue.