

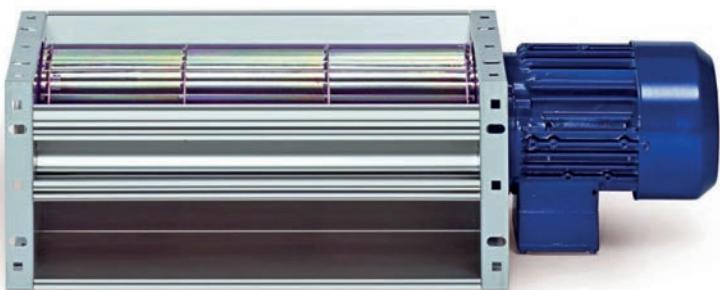
Technical brochure

# LTG Fans

Tangential fans

## Type TM / TMt

Impeller diameter 125 and 150 mm



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## COMMENT

Dimensions in this technical documentation are given in mm.

General tolerances according to DIN ISO 2768-cl apply.

## GENERAL

### An advantage for best heating, cooling, drying, blasting

Many production processes require an extended linear and absolutely even distribution of air or other gases over a certain area.

The special design of, High Performance Tangential Fans provides the optimum solution for these requirements.

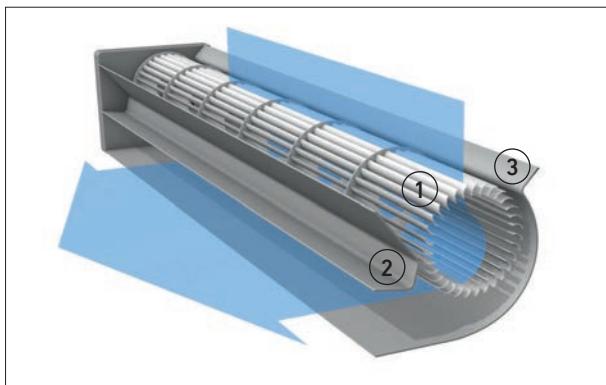
The robust design and the use of high quality materials assure a long life expectancy.

The way these fans work, allowing even air distribution without additional baffles and vanes, and the space-saving design, make the use of tangential fans very economic.

## FLOW PRINCIPLE

In a tangential fan, the air is drawn in over the entire length of the fan impeller. Inside the impeller, the airflow is diverted and accelerated by the vortex created by the rotation of the impeller.

The airstream then exists over the entire length of the impeller ① on the discharge side. The vortex ② separates the intake and discharge side of the fan at the narrowest point between the impeller and the vortex builder. Together with the fan scroll ③, the vortex directs the airflow. This results in an almost uniform laminar airflow over the entire outlet width of the fan.



① Impeller  
② Vortex inducer  
③ Fan scroll

## ADVANTAGES

- Uniform, extended airflow over large areas.
- Space-saving installation due to 90° airflow pattern.
- Fan length can be matched exactly to machine width.
- Airflow conditions remain the same even for wider machines (simplified design and drafting in case of modular systems).
- Fans perform well in any mounting position. Drive can be mounted on right or left hand side.
- Quiet operation due to optimised impeller and housing design.
- Long live expectancy due to robust design and location of bearings outside the hot air zone.
- Many bolt-on options
- Explosion-proofmodels according to ATEX available
- Customized special solutions available on request

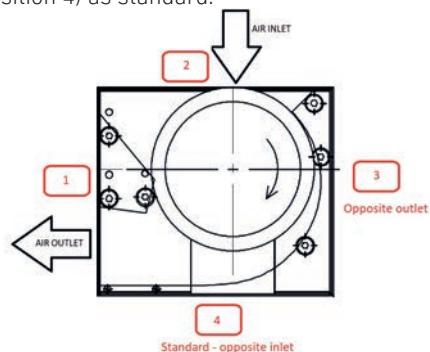
## APPLICATION OF LTG HIGH PERFORMANCE

### TANGENTIAL FANS

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>- Agricultural technology</li> <li>- air conditioning technology</li> <li>- apparatus engineering</li> <li>- automotive industry</li> <li>- bakery technology</li> <li>- biomedical industry</li> <li>- buildingmaterial industry</li> <li>- chemical industry</li> <li>- cleaning technology</li> <li>- control panel technology</li> <li>- dedusting technology</li> <li>- drying technology</li> <li>- electronic industry</li> <li>- environmental simulations</li> <li>- food industry</li> <li>- furnace technology</li> <li>- heat treatment technology</li> </ul> | <ul style="list-style-type: none"> <li>- medical technology</li> <li>- mechanical and plant engineering</li> <li>- packaging industry</li> <li>- paper industry</li> <li>- pharmaceutical industry</li> <li>- power plant engineering</li> <li>- process engineering</li> <li>- railway technology</li> <li>- refrigeration technology</li> <li>- store design</li> <li>- surface technology</li> <li>- tobacco industry</li> <li>- textilemachinery design</li> <li>- swimming pool technology</li> <li>- transportation cooling</li> <li>- wood industry</li> </ul> |
|--|---|

## POSITION TERMINAL BOX

With regard to the installation situation for fans, depending on the space available, the orientation of the motor terminal box must also be observed and communicated. If not specified, the terminal box is mounted opposite the air inlet (position 4) as standard.



Technical brochure Tangential fans type TM / TMt

## TYPE TM 125, IMPELLER DIAMETER 125 MM

### OPERATING CONDITIONS

The tangential fan Type TM is a fan with close coupled motor and enhanced corrosion protection.

**Gas temperatures:**

-25 °C up to +70 °C

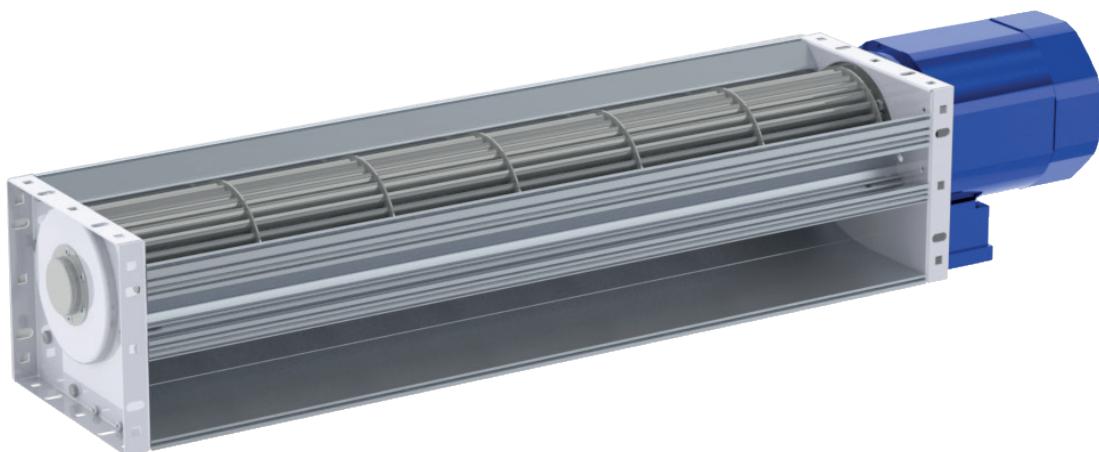
**Ambient temperatures:**

Drive side with motor:

-25 °C up to +40 °C

Counter side:

-25 °C up to +70 °C



*Tangential fan Type TMR 125 (right hand motor)*

note: TMR = right hand motor, TML = left hand motor

### RANGE

Type	Impeller length	Casing	Impeller	Motor	
TMR 125/400/N TML 125/400/N	400				
TMR 125/600/N TML 125/600/N	600	stainless steel, marine grade aluminum	galvanized steel	230/400 V 50/60 Hz	IP 55 2, 4 or 6 poles
TMR 125/800/N TML 125/800/N	800				
TMR 125/1000/N TML 125/1000/N	1000				

## TYPE TM 125, IMPELLER DIAMETER 125 MM

### SPECIFICATION AND DESIGN FEATURES

Tangential fan with close coupled, spray water protected drive motor with terminal box.

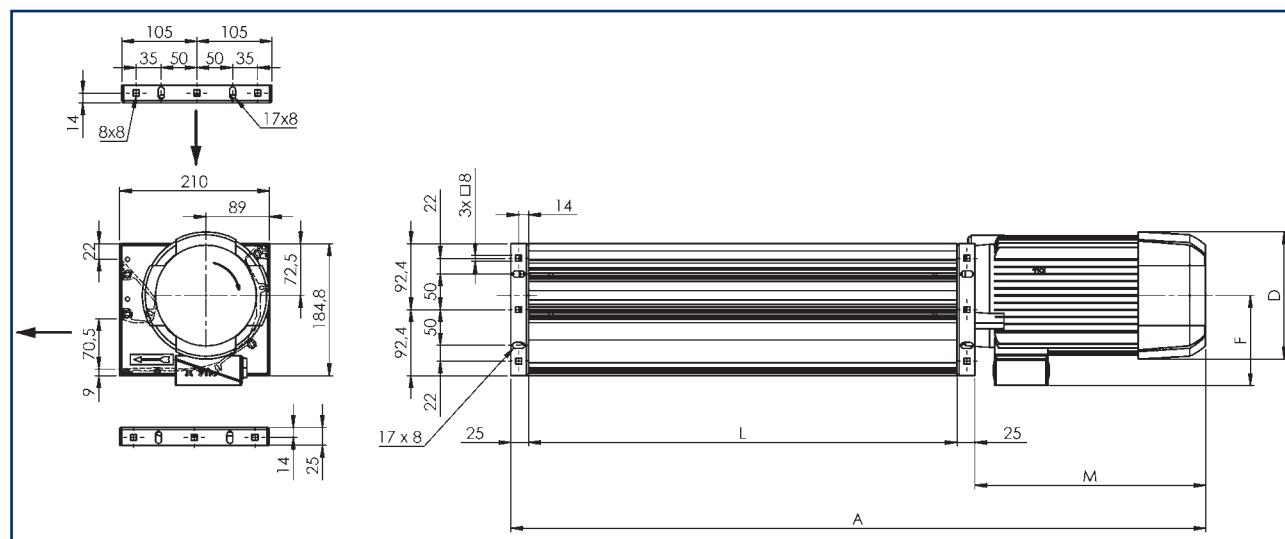
Rigid bolted, corrosion proof casing of marine grade aluminum. Side elements of stainless steel (1.4541). Impeller of galvanized steel.

On the drive side, the impeller shaft is connected via an elastic coupling directly to the motorshaft. On the counterside, it is supported in a vibration damped ball bearing. Bearing design life is 25,000 hours.

Intake and discharge openings have sealing profiles to allow direct connection of ducts and appliances.

The complete fan is balanced according to DIN ISO 21940-11, grade G 6.3.

### DIMENSIONS AND PERFORMANCE DATA



Type	Dimensions *					Air volume V [m <sup>3</sup> /h]	Rated speed n [min <sup>-1</sup> ]		Sound power L <sub>WA</sub> [dB]	Motor [kW]	Mass* [kg]
	A	L	M	D	F		Motor	n max. Fan			
TMR 125/400/N TML 125/400/N	647	400	197	145	111	1850	1390	3515	88	0,37	13
TMR 125/600/N TML 125/600/N	847	600	197	145	111	2800	1390	2920	90	0,37	16
TMR 125/800/N TML 125/800/N	1047	800	197	145	111	3750	1440	1680	92	0,6	19
TMR 125/1000/N TML 125/1000/N	1247	1000	197	145	111	4600	1440	1390	93	0,6	24
TMR 125/400/2p TML 125/400/2p	774	400	324	178	126	3750	2920	3515	106	2,2	26
TMR 125/600/2p TML 125/600/2p	974	600	324	178	126	5600	2920	2940	107	3	29

N = Standard version with motor 4-pole

\* Depending on the technical design and motor make, the dimensions listed above may differ.

## TYPE TM 125, IMPELLER DIAMETER 125 MM

### POSITION OF THE FAN

Standard arrangement is horizontal. For vertical mounting the motor needs to be at the bottom.

### INSTALLATION AND START UP

Mount the fans without any distortion to the plane of the base frame. Use only the bolt holes provided in the side elements for mounting.

To connect to ducts and appliances, plug in slots and sealing planes are provided over the entire fan width at the intake and discharge openings.

Make sure to observe the applicable safety codes before starting the fans.

The fans are designed for continuous operation with constant load. For frequent start/stop operation please check with LTG.

To keep the ambient temperature below max. at the bearings, it is necessary to insulate the side elements on site.

### MOTOR ARRANGEMENT

With the suction opening on top, viewed against the discharge opening, the drivemotor is either on the right (TMR) or left (TML) hand side.

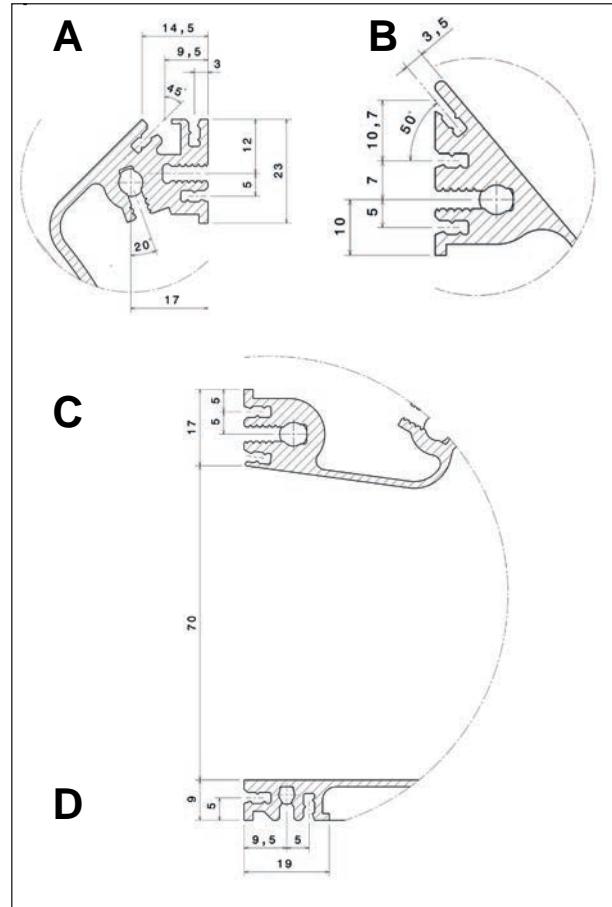
### ELECTRICAL EQUIPMENT

The fan is driven by a 2, 4 resp. 6 pole 3-phase motor, 230/400 V / 50/60 Hz.

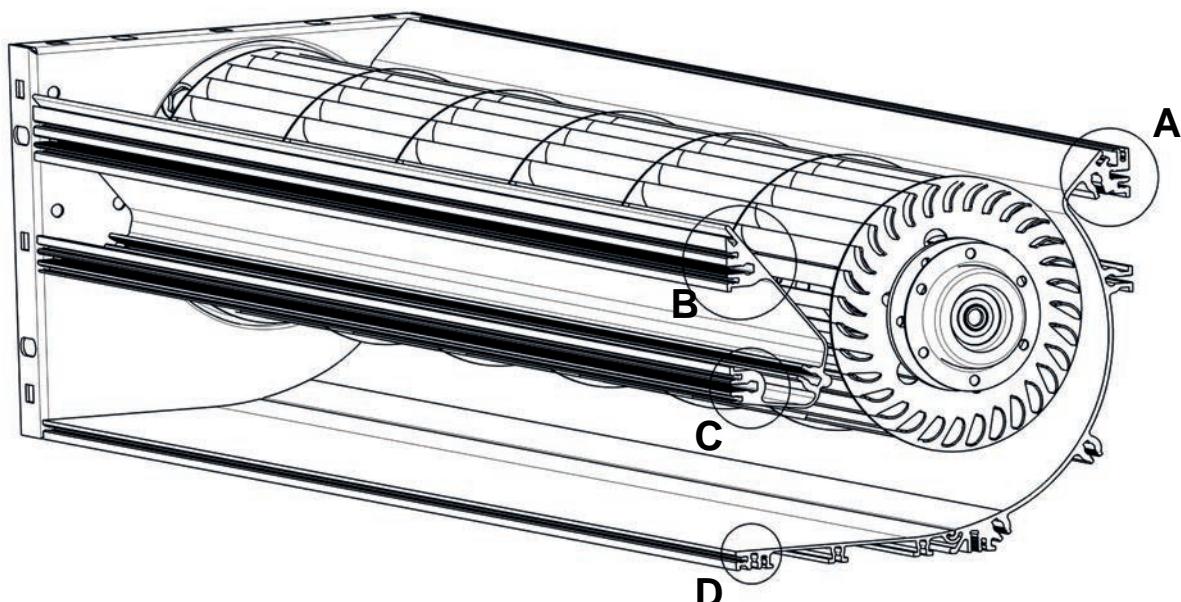
Enclosure is IP 55 according DIN 40050. This gives protection against dust deposits and low-pressure water jets from any direction.

The motor winding corresponds to insulation class F, according to VDE 0530.

All motors are equipped with PTC thermistors for frequency converter operation.



Plug in slots over the full fan width



Technical brochure Tangential fans type TM / TMt

## TYPE TM 150, IMPELLER DIAMETER 150 MM

### OPERATING CONDITIONS

The tangential fan Type TM 150 is a fan with close coupled motor and enhanced corrosion protection.

**Gas temperatures:**

-25 °C bis +70 °C

**Ambient temperatures:**

Drive side with motor:

-25 °C bis +40 °C

Counter side:

-25 °C bis +70 °C



Tangential fan Type TMR 150 (right hand motor)

note: TMR = right hand motor, TML = left hand motor

### RANGE

Type	Impeller length	Casing	Impeller	Motor	
TMR 150/401/N TML 150/401/N	401			IP 55 2, 4 or 6 poles	
TMR 150/601/N TML 150/601/N	601				
TMR 150/864/N TML 150/864/N	864	stainless steel, marine grade aluminium	galvanized steel	230/400 V 50/60 Hz	IP 55 2 or 6 poles
TMR 150/1064/N TML 150/1064/N	1064				
TMR 150/1264/N TML 150/1264/N	1264				
TMR 150/1464/N TML 150/1464/N	1464				

## TYPE TM 150, IMPELLER DIAMETER 150 MM

### SPECIFICATION AND DESIGN FEATURES

Tangential fan with close coupled, spray water protected drive motor with terminal box.

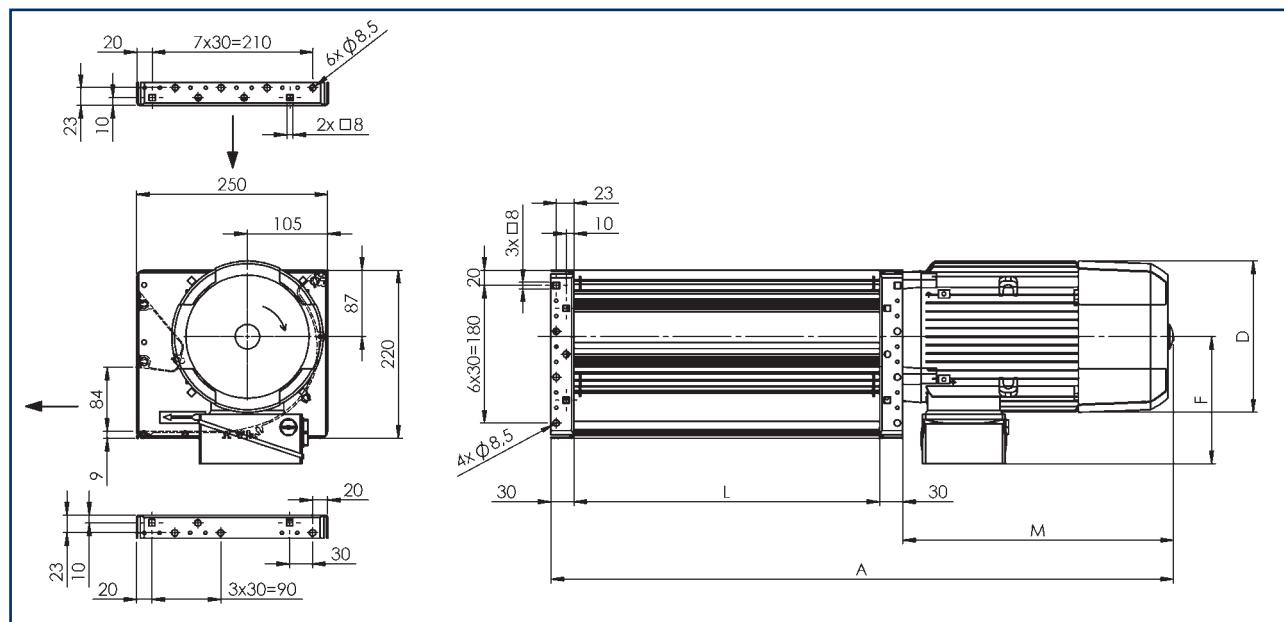
Rigid bolted, corrosion proof casing of marine grade aluminum. Side elements of stainless steel (1.4541). Impeller of galvanized steel.

On the drive side, the impeller shaft is connected via an elastic coupling directly to the motor shaft. On the counterside, it is supported in a vibration damped ball bearing. Bearing design life is 25,000 hours.

Intake and discharge openings have sealing profiles to allow direct connection of ducts and appliances.

The complete fan is balanced according to DIN ISO 21940-11, grade G 6.3.

### DIMENSIONS AND PERFORMANCE DATA



Type	Dimensions *					Air volume V [m <sup>3</sup> /h]	Rated speed n [min <sup>-1</sup> ] Motor	n max. Fan	Sound power L <sub>WA</sub> [dB]	Motor [kW]	Mass * [kg]
	A	L	M	D	F						
TMR 150/401/N TML 150/401/N	732	401	271	161	127	2460	1450	2800	86	0,75	23
TMR 150/601/N TML 150/601/N	942	601	281	178	132	3900	1440	2800	88	1,1	27
TMR 150/864/N TML 150/864/N	1278	864	354	200	166	5800	1465	2600	90	2,2	43
TMR 150/1064/N TML 150/1064/N	1478	1064	354	200	166	7400	1465	2400	91	2,2	46
TMR 150/1264/N TML 150/1264/N	1678	1264	354	200	166	8900	1465	1800	92	2,2	49
TMR 150/1464/N TML 150/1464/N	1878	1464	354	200	166	10000	1465	1480	92	2,2	52

N = Standard version with motor 4-pole

\* Depending on the technical design and motor make, the dimensions listed above may differ.

## TYPE TMt 150, IMPELLER DIAMETER 150 MM

### OPERATING CONDITIONS

The tangential fan Type TMt 150 is a fan for extended temperature range with close coupled motor and enhanced corrosion protection.

**Gas temperatures:**

-25 °C bis +120 °C

**Ambient temperatures:**

Drive side with motor:

-25 °C bis +40 °C

Counter side:

-25 °C bis +120 °C



Tangential fan Type TMt 150 (right hand motor)

note: TMt = right hand motor, TMLt = left hand motor

### RANGE

Type	Impeller length	Casing	Impeller	Motor	
TMt 150/401/N	401				
TMLt 150/401/N					
TMt 150/601/N	601				
TMLt 150/601/N					
TMt 150/864/N	864	stainless steel, marine grade aluminium	galvanized steel	230/400 V 50/60 Hz	IP 55 4 or 6 poles
TMLt 150/864/N					
TMt 150/1064/N	1064				
TMLt 150/1064/N					

## TYPE TMt 150, IMPELLER DIAMETER 150 MM

### SPECIFICATION AND DESIGN FEATURES

Tangential fan with close coupled, spray water protected drive motor with terminal box.

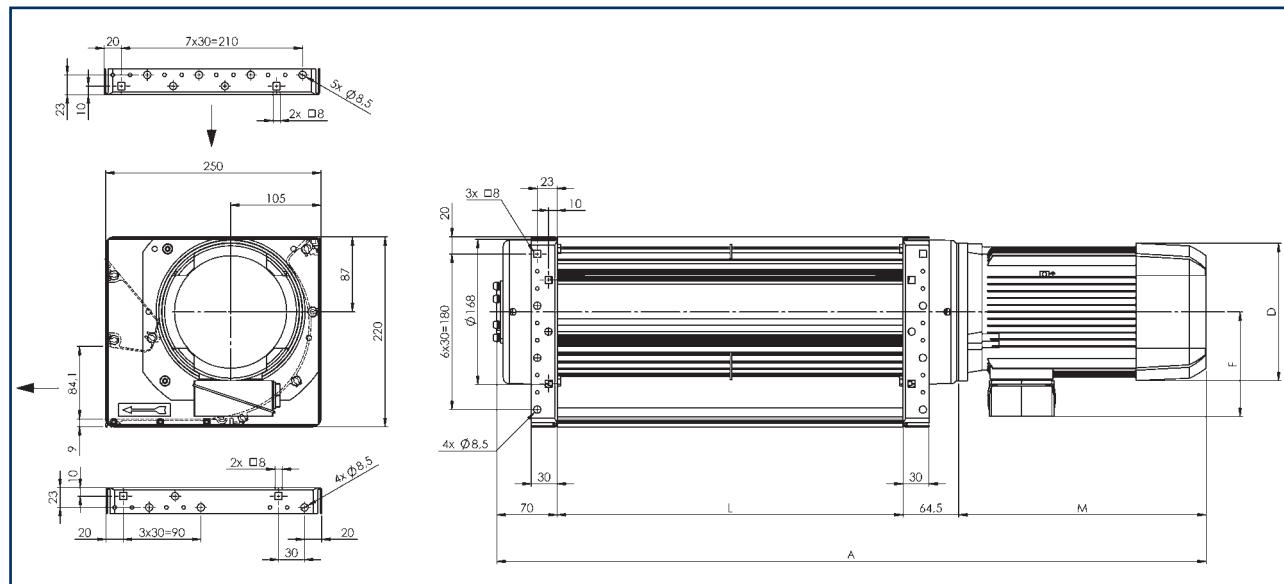
Rigid bolted, corrosion proof casing of marine grade aluminum. Side elements of stainless steel (1.4541). Impeller of galvanized steel.

On the drive side, the impeller shaft is connected via an elastic coupling directly to the motor shaft. On the counterside, it is supported in a vibration damped ball bearing. Bearing design life is 25,000 hours.

Intake and discharge openings have sealing profiles to allow direct connection of ducts and appliances.

The complete fan is balanced according to DIN ISO 21940-11, grade G 6.3.

### DIMENSIONS AND PERFORMANCE DATA



Type	Dimensions *					Air volume V [m³/h]	Rated speed n [min⁻¹]		Sound power L <sub>WA</sub> [dB]	Motor [kW]	Mass * [kg]
	A	L	M	D	F		Motor	n max. Fan			
TMRt 150/401/N TMLt 150/401/N	823	401	287	161	127	2460	1450	2800	86	0,75	26
TMRt 150/601/N TMLt 150/601/N	1033	601	297	178	132	3900	1460	2800	88	1,1	30
TMRt 150/864/N TMLt 150/864/N	1370	864	381	200	166	5800	1475	2600	90	2,2	45
TMRt 150/1064/N TMLt 150/1064/N	1570	1064	371	200	166	7400	1475	2400	91	2,2	48

N = Standard version with motor 4-pole

\* Depending on the technical design and motor make, the dimensions listed above may differ.

## TYPE TM 150 / TMt 150, IMPELLER DIAMETER 150 MM

### POSITION OF THE FAN

Standard arrangement is horizontal. For vertical mounting the motor needs to be at the bottom.

### INSTALLATION AND START UP

Mount the fans without any distortion to the plane of the base frame. Use only the bolt holes provided in the side elements for mounting.

To connect to ducts and appliances, plug in slots and sealing planes are provided over the entire fan width at the intake and discharge openings.

Make sure to observe the applicable safety codes before starting the fans.

The fans are designed for continuous operation with constant load. For frequent start/stop operation please check with LTG.

To keep the ambient temperature below max. at the bearings, it is necessary to insulate the side elements on site.

### MOTOR ARRANGEMENT

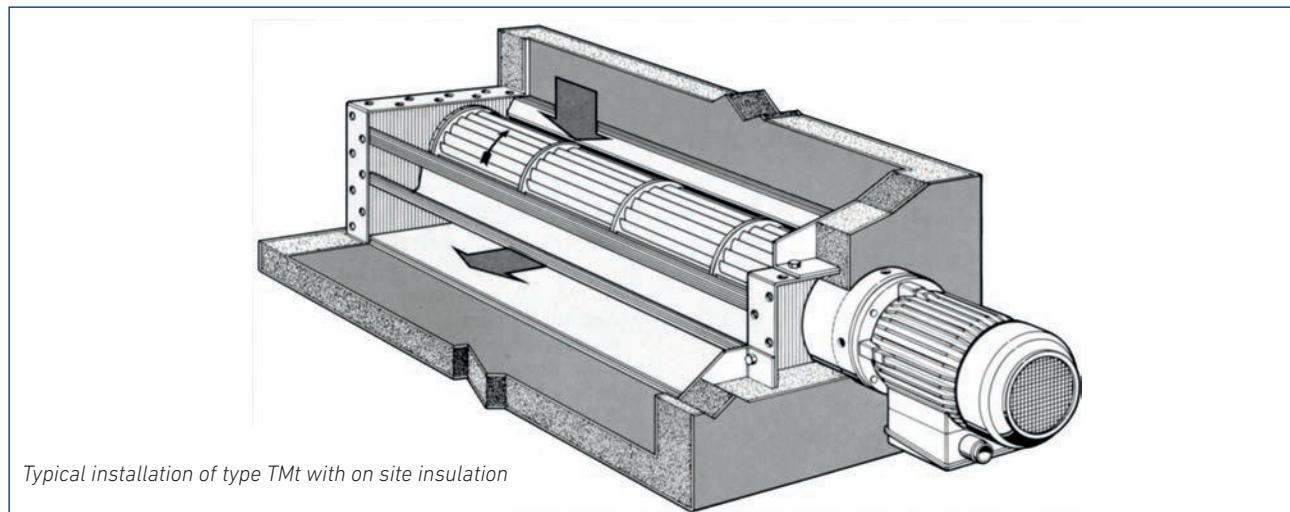
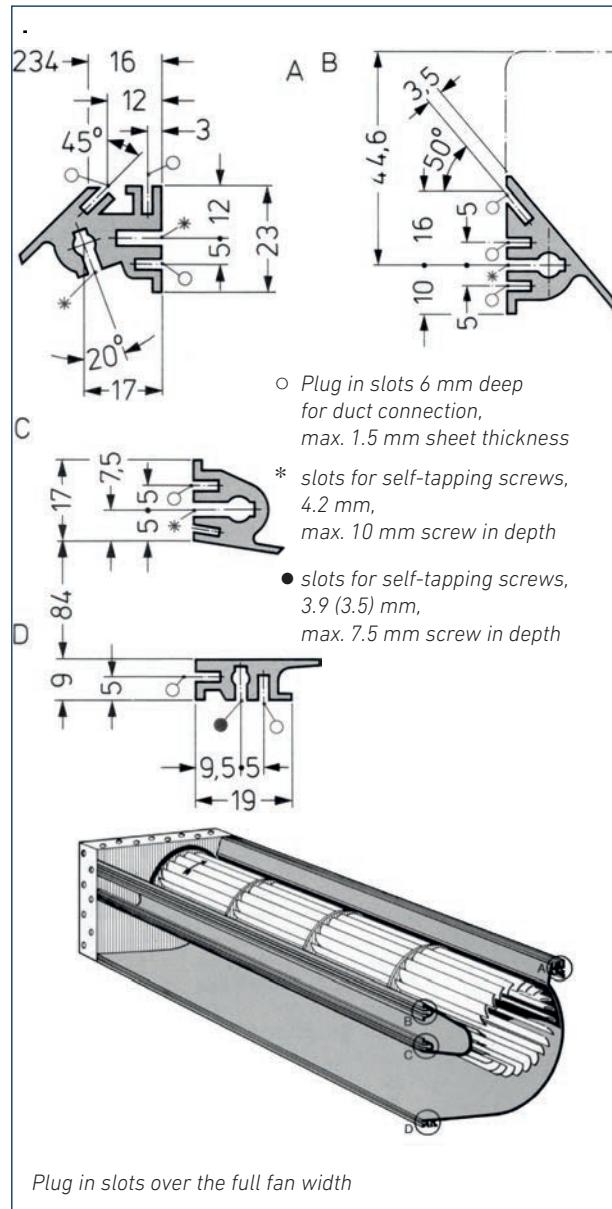
With the suction opening on top, viewed against the discharge opening, the drivemotor is either on the right (TMR) or left (TML) hand side.

### ELECTRICAL EQUIPMENT

The fan is driven by a 4- or 6 pole 3-phase motor, 230/400 V / 50/60 Hz.

Enclosure is IP 55 according DIN 40050. This gives protection against dust deposits and low-pressure water jets from any direction.

The motor winding corresponds to insulation class F, according to VDE 0530.



## TYPE TM 125, FAN CURVES

### Test conditions for the fan curves

The indicated curves are valid for an air density of  $\rho = 1,2 \text{ kg/m}^3$ , a supply voltage of  $U = 400 \text{ V}$  with  $f = 50 \text{ Hz}$ , if operated with a 4 pole motor.

The rating tests were done as laboratory test according to EN ISO 5801:2018 with unrestricted inlet and discharge.

### ACOUSTICAL DATA

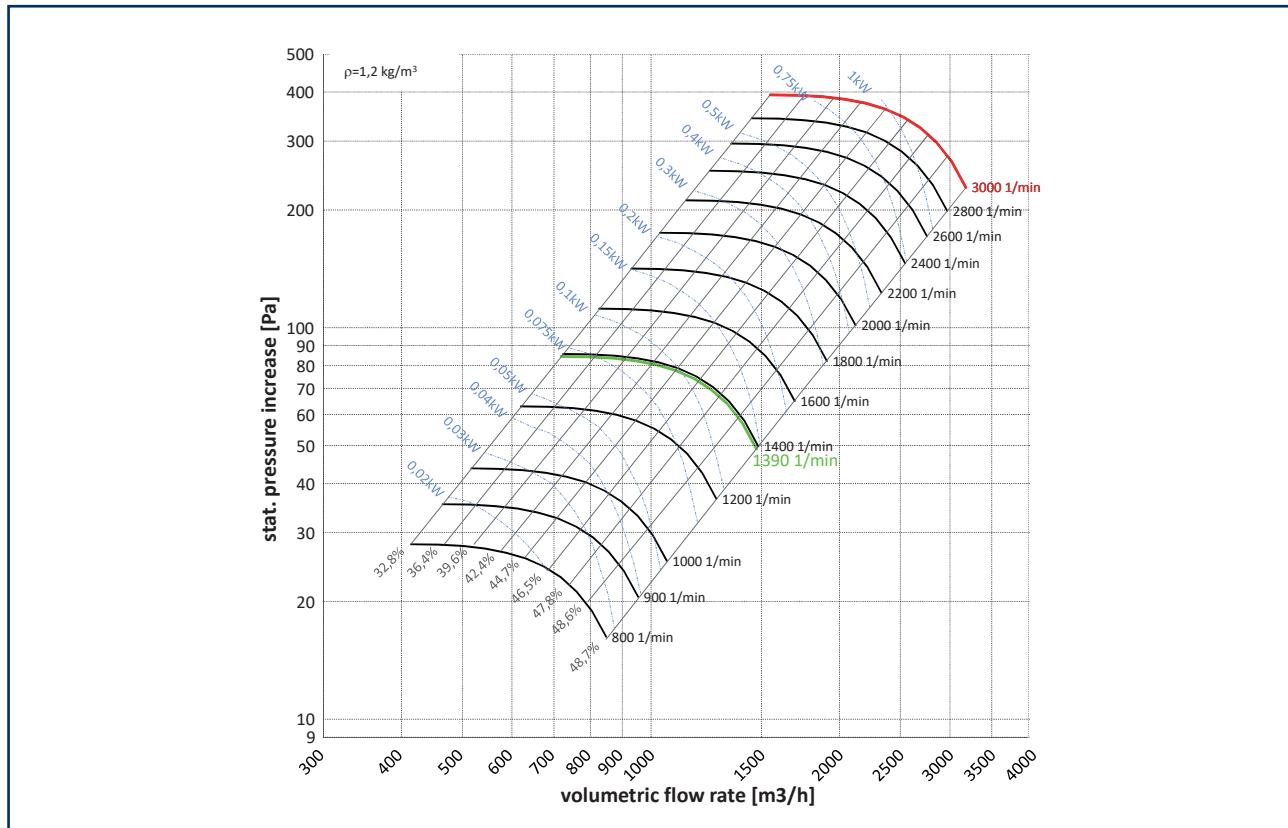
The acoustical data are for discharge side, tested in a reverberant field.

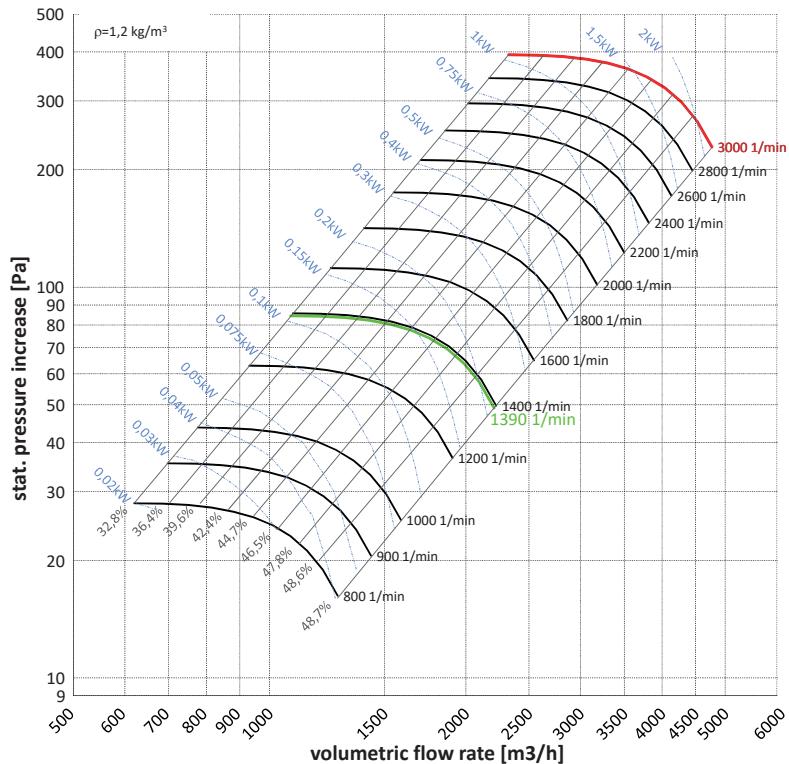
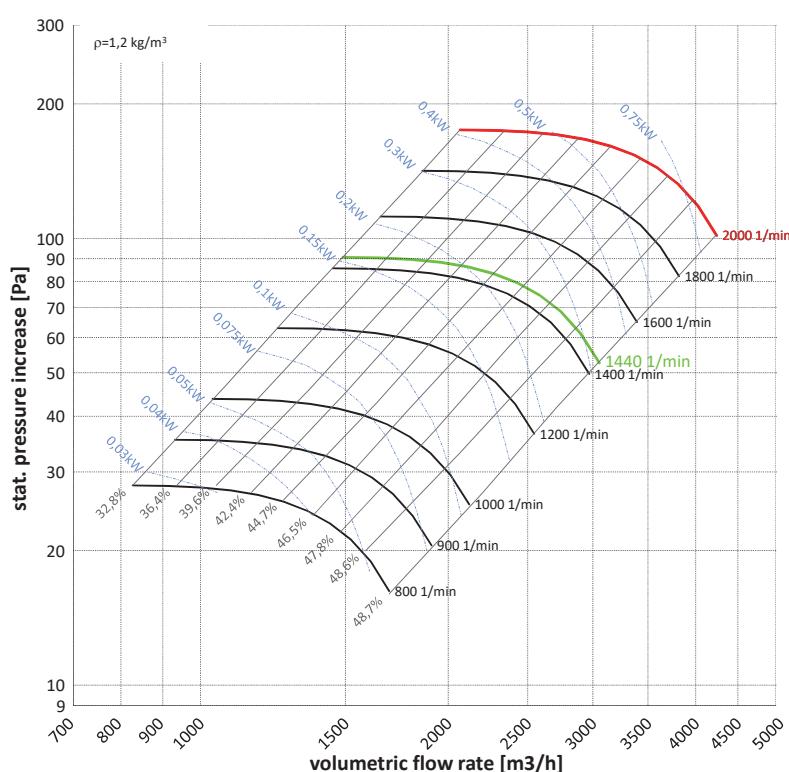
The A-weighted sound power level  $L_{WA}$  can be transformed into a A-weighted sound power level by the equation  $L_{pA} = L_{WA} - 10 \log S/1 \text{ m}^2$ .

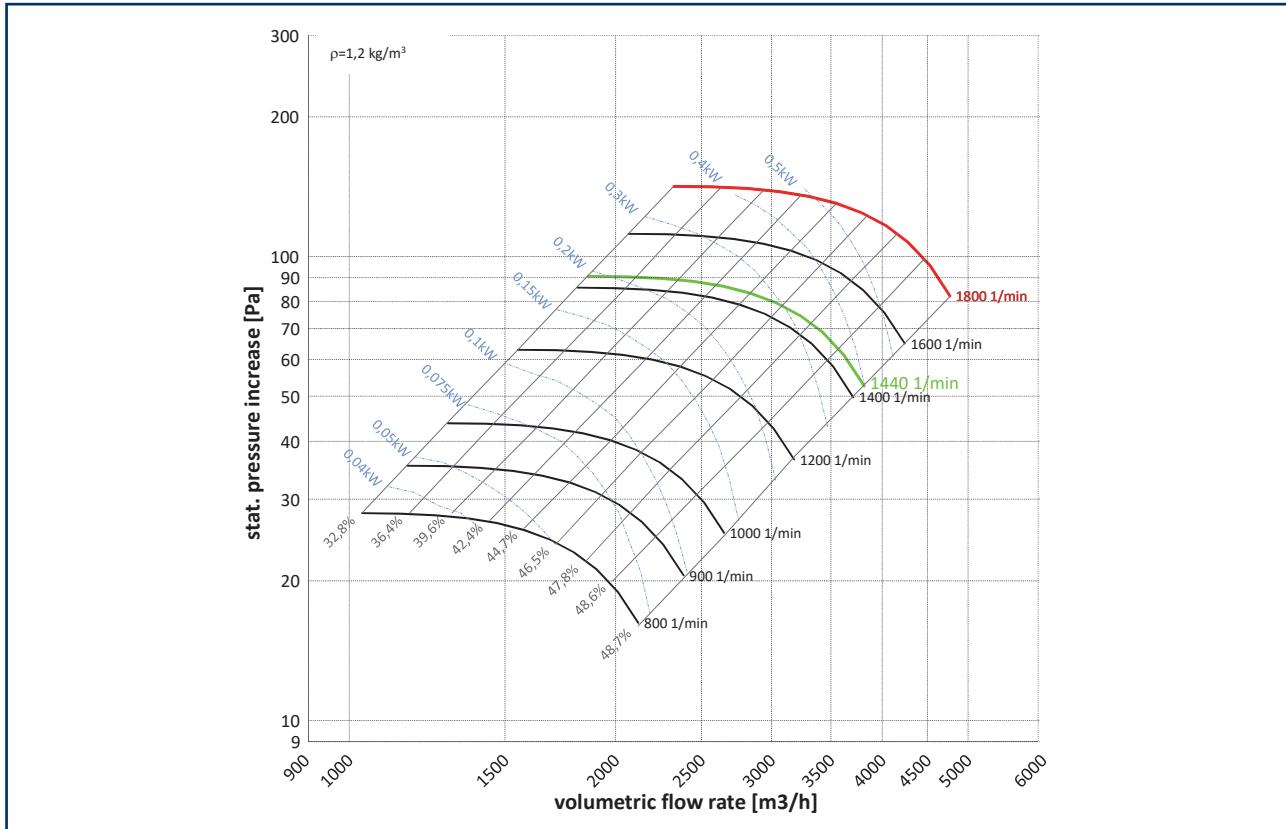
For this the exact total applicable panel area  $S$  can be used.

The sound pressure level in the free field in 1 m distance (full spheric sound radiation) is abt. 11 dB less than the sound power level.

### FAN CURVES FOR 400 MM NOMINAL LENGTH



**FAN CURVES FOR 600 MM NOMINAL LENGTH**

**FAN CURVES FOR 800 MM NOMINAL LENGTH**


**FAN CURVES FOR 1000 MM NOMINAL LENGTH**


## TYPE TM 150 / TMt 150, FAN CURVES

### Test conditions for the fan curves

The indicated curves are valid for an air density of  $\rho = 1,2 \text{ kg/m}^3$ , a supply voltage of  $U = 400 \text{ V}$  with  $f = 50 \text{ Hz}$ , if operated with a 4 pole motor.

The rating tests were done as laboratory test according to EN ISO 5801:2018 with unrestricted inlet and discharge.

### ACOUSTICAL DATA

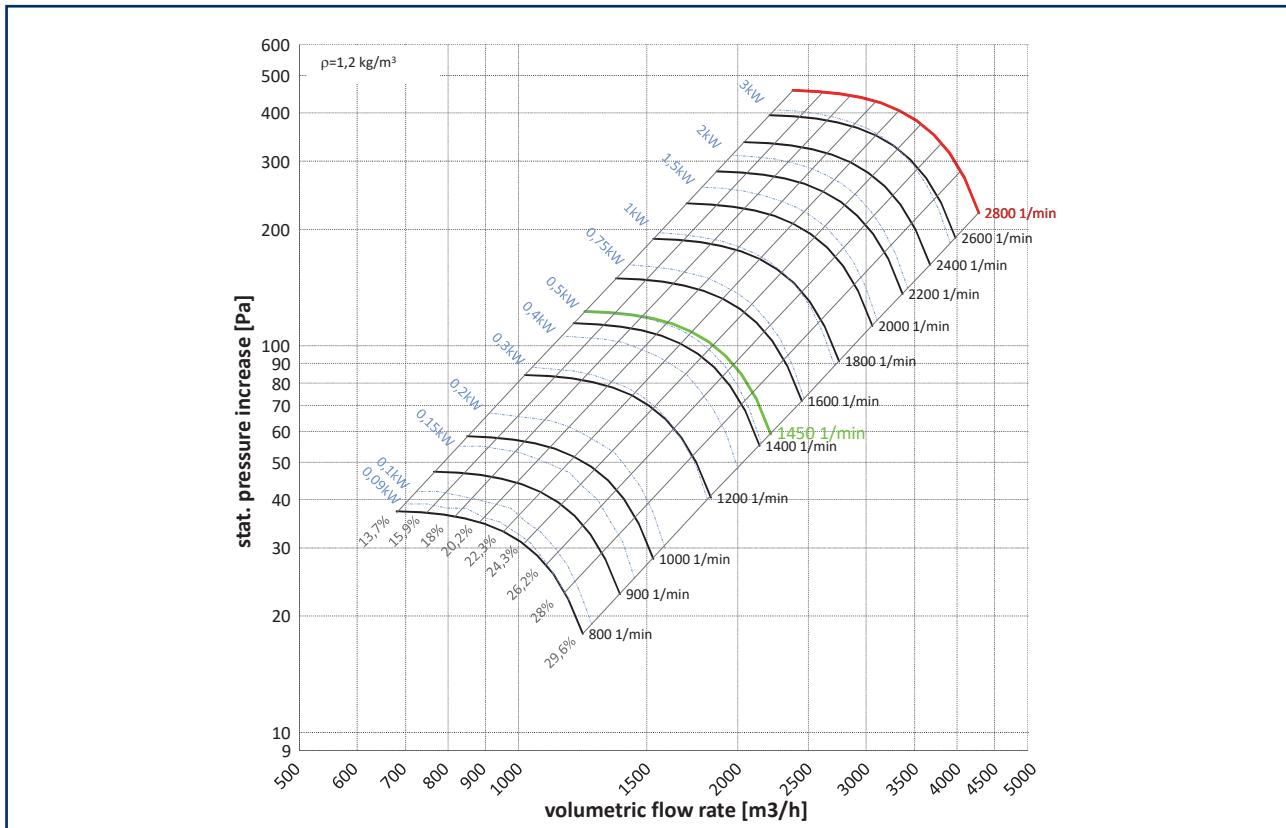
The acoustical data are for discharge side, tested in a reverberant field.

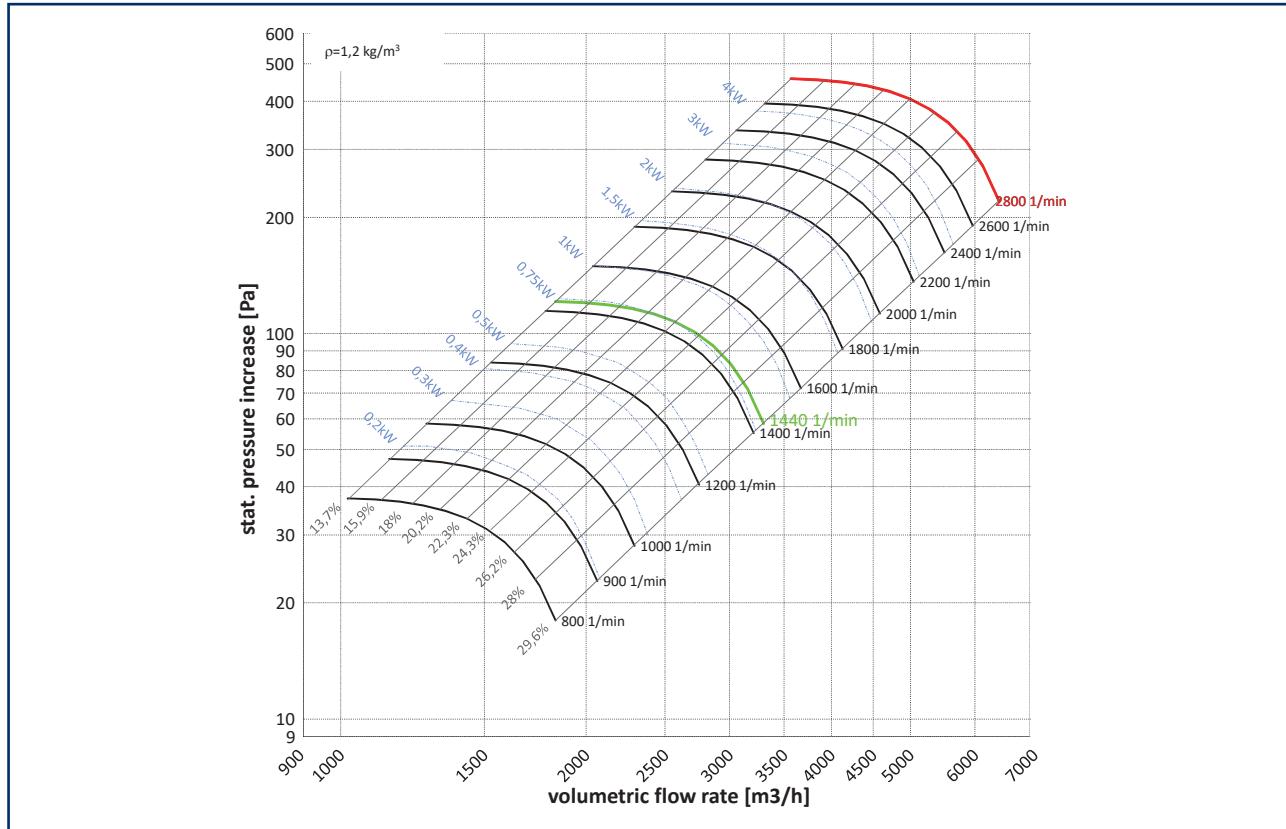
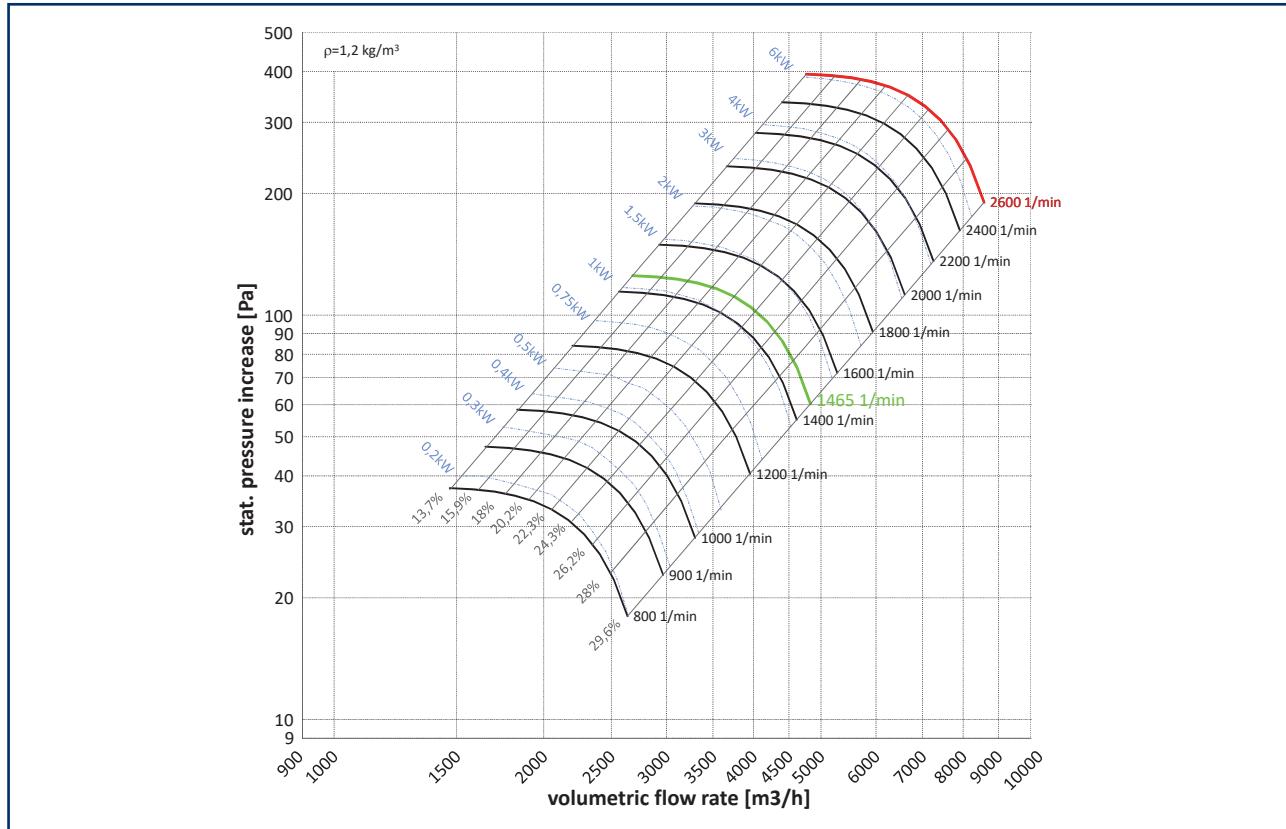
The A-weighted sound power level  $L_{WA}$  can be transformed into a A-weighted sound power level by the equation  $L_{pA} = L_{WA} - 10 \log S/1 \text{ m}^2$ .

For this the exact total applicable panel area  $S$  can be used.

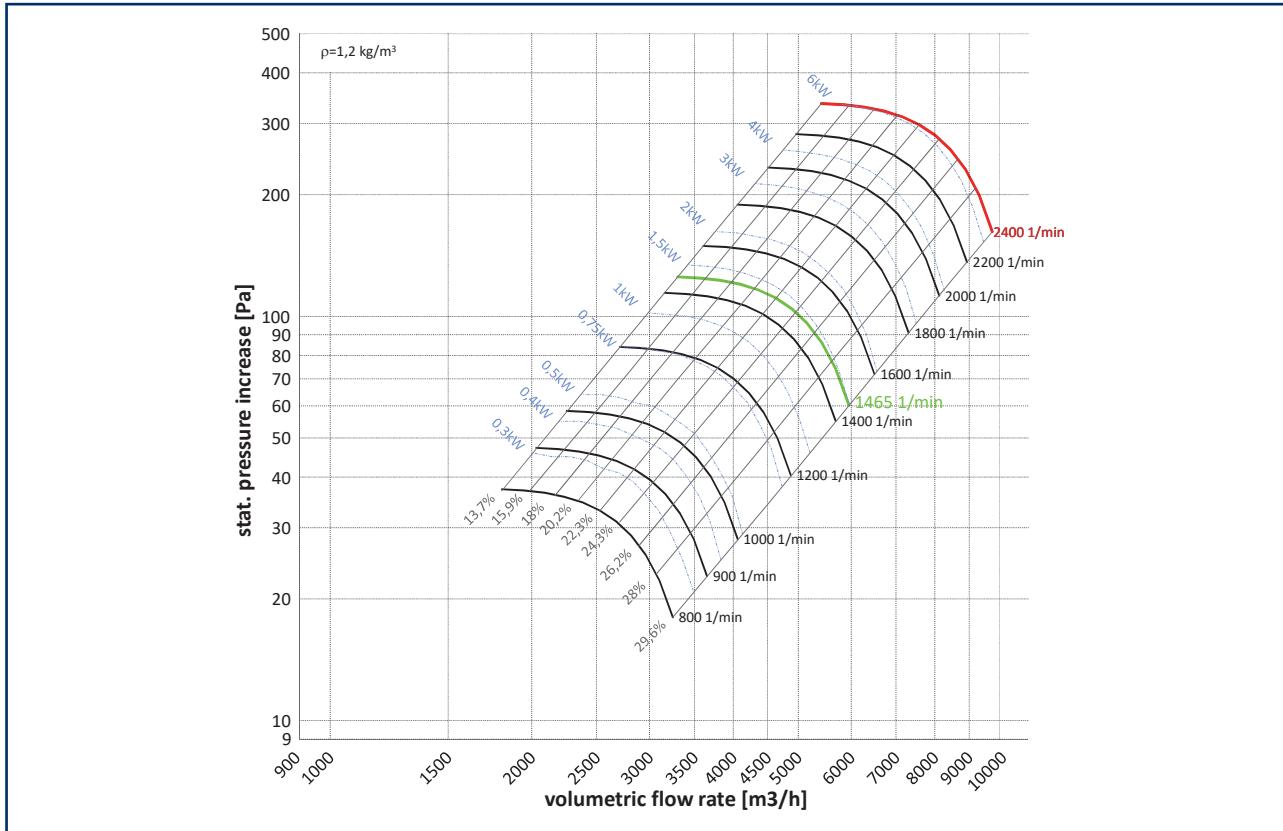
The sound pressure level in the free field in 1 m distance (full spheric sound radiation) is abt. 11 dB less than the sound power level.

### FAN CURVES FOR 401 MM NOMINAL LENGTH

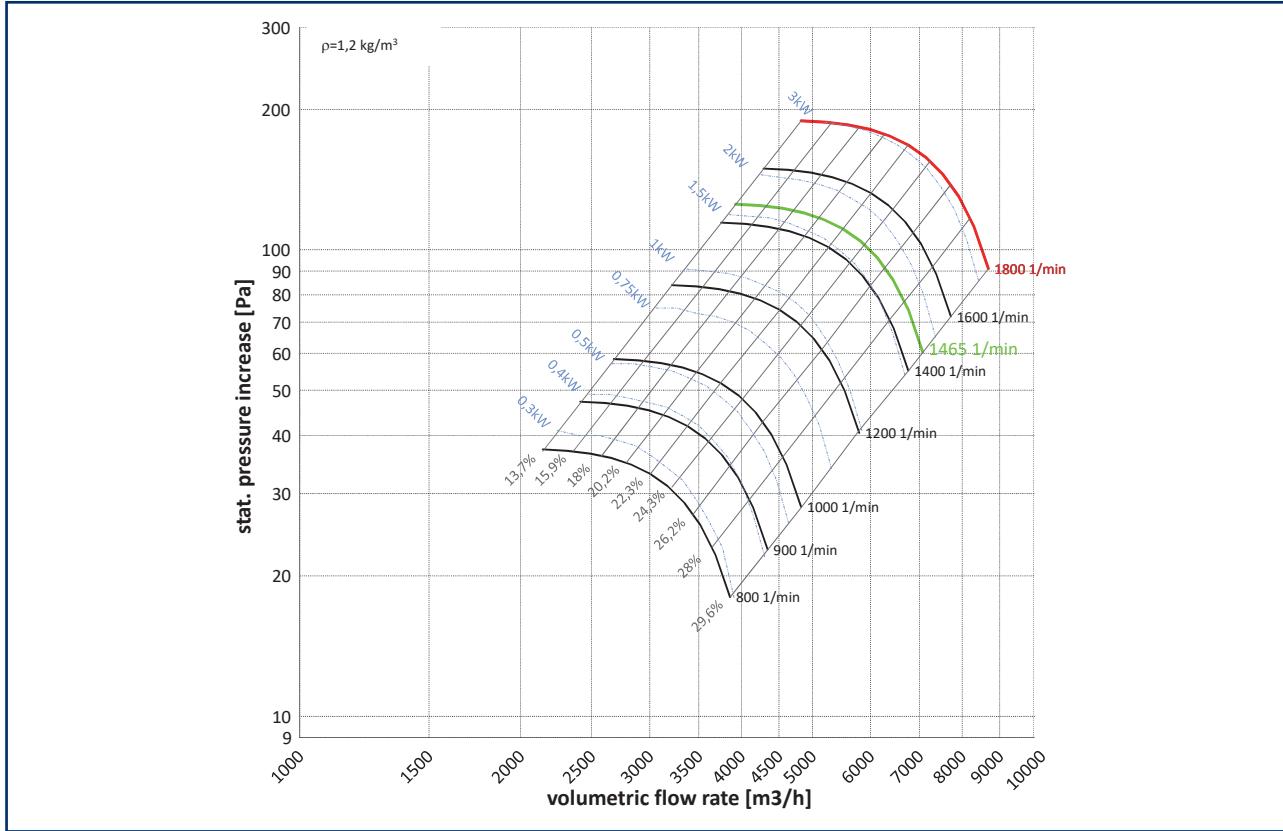


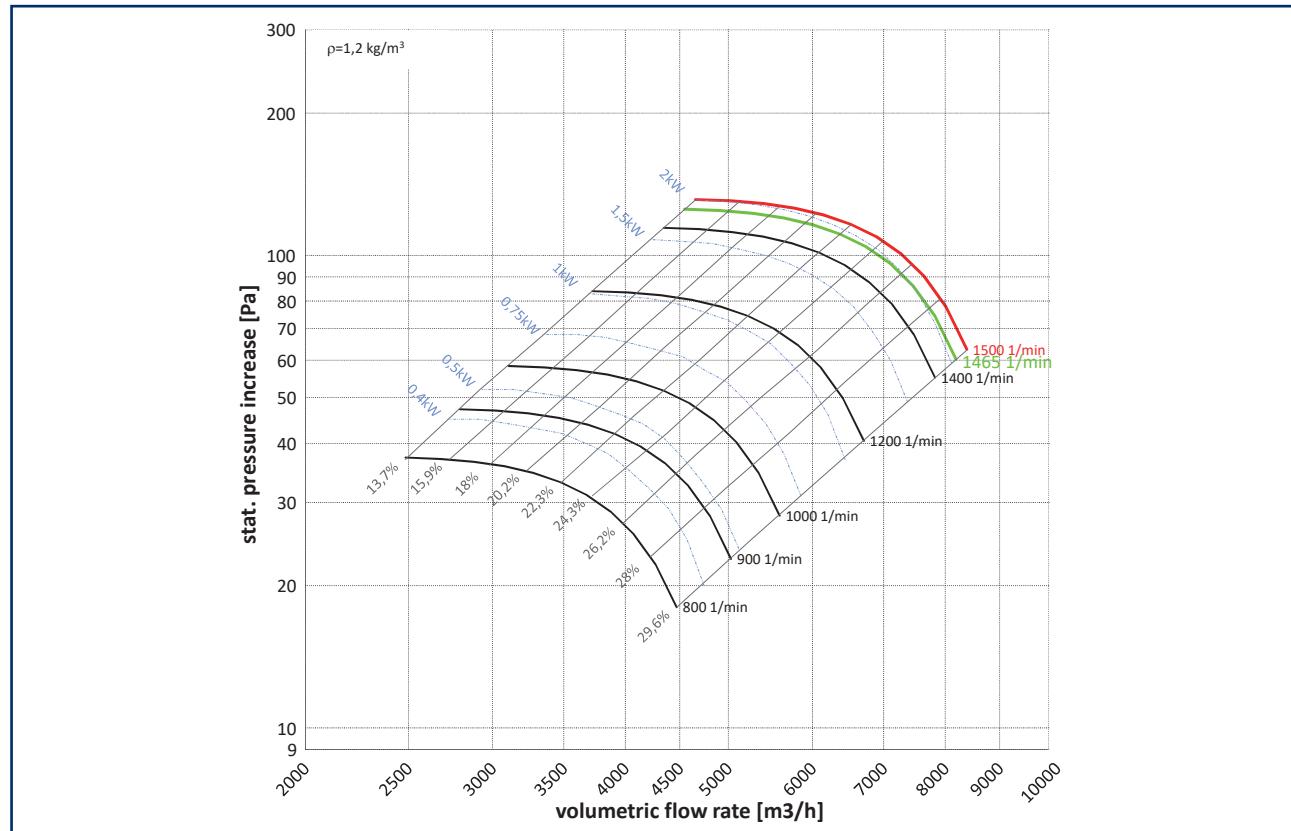
**FAN CURVES FOR 601 MM NOMINAL LENGTH**

**FAN CURVES FOR 864 MM NOMINAL LENGTH**


## FAN CURVES FOR 1064 MM NOMINAL LENGTH



## FAN CURVES FOR 1264 MM NOMINAL LENGTH (ONLY SERIES TM 150)



**FAN CURVES FOR 1464 MM NOMINAL LENGTH (ONLY SERIES TM 150)**


## TYPE TM 125 / TM 150 / TMt 150

### SELECTION

Application	Example	Your Data	Designations	
Gas	Cold air		V [m³/h]	air volume
Gas temperature	t [°C]	-10	Δp <sub>stat</sub> [Pa]	static pressure
ambient temperature drive side	t [°C]	-5	Δp <sub>dyn</sub> [Pa]	dynamic pressure
counter side	t [°C]	-5	c [m/s]	velocity at the discharge area
condensation	yes		ρ [kg/m³]	specific gravity
located at	ventilation for refrigerated rooms		Δp <sub>dyn</sub> = ρ/2 • c²	dynamic pressure
drive side	right hand		I <sub>A</sub> = P <sub>A</sub> / U	full load amps
arrangement	vertical		n [min⁻¹]	speed
<b>Drive motor</b>			U [V]	voltage
power supply	3-phase		f [Hz]	frequency
Voltage	U [V]	230/400	I <sub>A</sub> [A]	full load amps
Frequency	f [Hz]	50/60	P <sub>A</sub> [W]	power consumption
<b>Specified performance</b>			L <sub>WA</sub> [dBA]	A-weighted sound power
air volume*	V [m³/h]	5000	L <sub>PA</sub> [dBA]	A-weighted sound power level
static pressure*	Δp <sub>stat</sub> [Pa]	100	S [m²]	panel area
*at specific gravity	ρ [kg/m³]	1,2		
active impeller length	min. L	800		
	max. L	1100		
total length		1500		
<b>Procedure</b>				
1. conditions of application fan type		cold air -10 °C TM		
2. air volume achievable with length	V [m³/h]	5000 864, 1064, 1264		
3. static pressure achievable with length	Δp <sub>stat</sub> [Pa]	100 1064, 1264		
4. drive side		right hand		
<b>Selected</b>				
LTG Tangential fan type		TMR 150/1064/N		
<b>Performance data</b>				
air volume	V [m³/h]	5000		
static pressure	Δp <sub>stat</sub> [Pa]	102		
dynamic pressure	p <sub>dyn</sub> [Pa]	167		
exhaust velocity	c [m/s]	15,6		
speed	n [min⁻¹]	1473		
<b>Electrical data</b>				
power input	P <sub>A</sub> [W]	1410		
full load amps	I <sub>A</sub> [A]	3,54		
<b>Acoustical data</b>				
sound power level A-weighted	L <sub>WA</sub> [dB <sub>A</sub> ]	88,8		
sound pressure level in the free field in 1 m distance (full spheric sound radiation)		77,8		

### **COMFORT AIR TECHNOLOGY**

Air Conditioning Systems  
Air Diffusers  
Air Distribution

### **PROCESS AIR TECHNOLOGY**

Fans  
Filtration Technology  
Humidification Technology

### **ENGINEERING SERVICES**

Laboratory Test & Experiment  
Field Measurement & Optimization  
Simulation / Expertise  
R&D & Start-up

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