

AIR TECH  
SYSTEMS



Technical Documentation

# LTG Tangential Fans

Series TM and TM t  
Impeller diameter 5" and 6"  
(125 and 150 mm)

## LTG Tangential Fans Type TM/TMt

Content	Page
<b>LTG High Performance Tangential Fans- an advantage for best heating, cooling, drying, blasting</b>	
Air flow principle .....	3
Advantages .....	3
Fields of application .....	3
<b>Type TM, impeller diameter 5" (125 mm)</b>	
Operating conditions .....	4
Range .....	4
Specification and design features .....	5
Dimensions and performance data .....	5
Position of the fan .....	6
Installation and start up .....	6
Motor arrangement .....	6
Electrical equipment .....	6
Plug in slots .....	6
<b>Type TM, impeller diameter 6" (150 mm)</b>	
Operating conditions .....	7
Range .....	7
Specification and design features .....	8
Dimensions and performance data .....	8
Fan curves for nominal length 15.75" (400 mm) 4-pole .....	12
Fan curves for nominal length 23.5" (600 mm) 4-pole .....	13
Fan curves for nominal length 31.5" (800 mm) 4-pole .....	13
Fan curves for nominal length 39.5" (1000 mm) 4-pole .....	11
Fan curves for nominal length 15.75" (401 mm) 2-pole .....	16
Fan curves for nominal length 23.5" (601 mm) 2-pole .....	16
<b>Type TMt, impeller diameter 6" (150 mm)</b>	
Operating conditions .....	9
Range .....	9
Specification and design features .....	10
Dimensions and performance data .....	10
<b>Type TM/TMt, impeller diameter 5 and 6" / 6" (125 and 150 mm)</b>	
Position of the fan .....	11
Installation and start up .....	11
Motor arrangement .....	11
Electrical equipment .....	11
Plug in slots .....	11
Acoustical data .....	16
Fan curves for nominal length 16" (401 mm) 60 Hz .....	16
Fan curves for nominal length 23.5" (601 mm) 60 Hz .....	17
Fan curves for nominal length 34" (864 mm) 60 Hz .....	17
Fan curves for nominal length 42" (1064 mm) 60 Hz .....	18
Fan curves for nominal length 50" (1264 mm) 60 Hz .....	18
Fan curves for nominal length 57.64" (1464 mm) .....	19
<b>Type TM 125 / TM 150 / TMt 150</b>	
Selection .....	20

## LTG Tangential Fans - an advantage for optimum heating, cooling, drying, blasting

Many production processes require a linear extended and absolutely even distribution of air or other gases to the working area.

Because of their special design, tangential fans meet these requirements especially well. The rigid design and the use of high quality materials secure a long service life.

The working principle that does away with the need for additional baffles and vanes and the space saving design makes the use of tangential fans very economical.

### Air flow principle

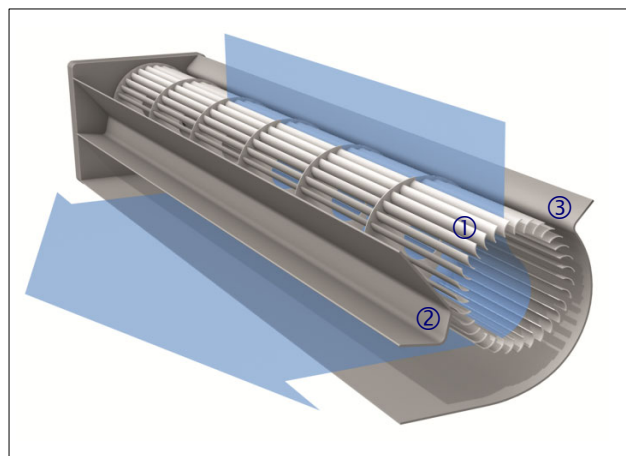
The air intake of tangential fans takes place over the whole length of the outer impeller periphery.

The air then flows into the impeller interior where it is reversed and accelerated by the vortex caused by the impeller rotation.

Finally the air is distributed at the discharge side over the whole impeller length. In this way the air flows through the impeller first from outside to inside and then from inside to outside.

The impeller is a cylindrical cage of forward curved impeller blades with two or more supporting discs.

The vortex separates suction side and discharge side at the narrowest line between impeller ① and vortex inducer ② and causes the flow pattern together with the scroll ③.



- ① impeller
- ② vortex inducer
- ③ fan scroll

### Advantages

- Uniform air flow over the entire fan width. Additional baffles, plenums and guide vanes are not required.
- Space saving due to a 90 ° airflow deflection.
- The fan width can be exactly matched to the machine width.
- The air flow pattern does not change with wider machines (simplifies design and drawings of modular systems).
- Works equally well in any arrangement (right hand drive or left hand drive available).
- Low noise operation due to aerodynamic design based on 40 years experience.
- Long life expectancy due to the robust design and location of impeller bearings outside the hot air zone.
- Many bolt-on options.

### Fields of application

- Agricultural technology
- air-conditioning technology
- apparatus engineering
- automotive industry
- bakery technology
- biomedical industry
- building material industry
- chemical industry
- cleaning technology
- control panel technology
- dedusting technology
- drying technology
- electronic industry
- Environmental simulations
- food industry
- furnace technology
- heat treatment technology
- mechanical and plant engineering
- medical technology
- packaging industry
- paper industry
- pharmaceutical industry
- power plant engineering
- process engineering
- railway technology
- refrigeration technology
- store design
- surface technology
- swimming pool technology
- textile machinery design
- tobacco industry
- transportation cooling
- wood industry
- ...

## LTG Tangential Fans Type TM

### Impeller Diameter 5" (125 mm)

#### Gas temperature

**-15 °F up to +160 °F (- 25 °C up to +70 °C)**

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

#### Operating conditions

##### Gas temperatures:

-15 °F up to max. +160 °F (-25 °C up to max. +70 °C)

##### Ambient temperatures:

-15 °F up to max. +105 °F (-25 °C up to max. +40 °C)  
for the drive side with motor and

-15 °F up to max. +160 °F (-25 °C up to max. +70 °C)  
for the counter side.

#### Range

Type	max. medium temperatures	Impeller length	Casing	Impeller	Motor
TMR 125/400/N TML 125/400/N	-15 °F to +160 °F (-25 °C to +70 °C)	15.75 inch (400 mm)	stainless steel, marine grade aluminum	galvanized steel	IP 55 2pole or 4pole
TMR 125/600/N TML 125/600/N	-15 °F to +160 °F (-25 °C to +70 °C)	23.50 inch (600 mm)			IP 55 2pole or 4pole
TMR 125/800/N TML 125/800/N	-15 °F to +160 °F (-25 °C to +70 °C)	31.50 inch (800 mm)			IP 55 4pole
TMR 125/1000/N TML 125/1000/N	-15 °F to +160 °F (-25 °C to +70 °C)	39.50 inch (1000 mm)			IP 55 4pole



Tangential fan Type TMR 125 (right hand motor)

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

## LTG Tangential Fans Type TM

### Impeller Diameter 5" (125 mm)

#### Specification and design features

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

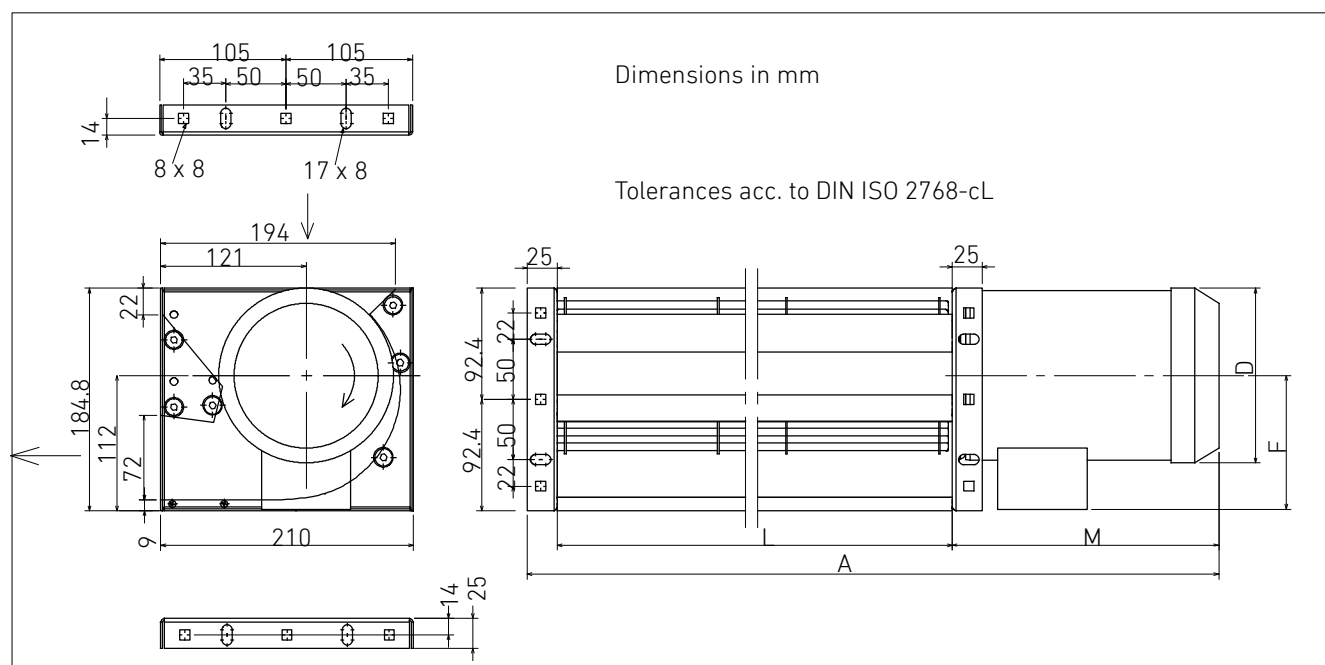
Rigid bolted, corrosion proof casing of marine grade aluminum. Side elements of stainless steel (1.4541). Impeller of galvanized steel.

On the drive side, the impeller shaft is connected via an elastic coupling directly to the motorshaft. On the counter-side, it is supported in a vibration dampened 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 $V_{\max}$ [cfm] (m <sup>3</sup> /h)	Rated Speed $n$ [rpm]	Motor $P_{N 60}$ $P_{N 50}$ [hp] (kW)	Masses [lb] (kg)
	A *	L	M *	D *	F *				
	[inch] (mm)								
TMR 125/400/N	26.0	15.7	9.3	5.6	4.7	1089	1720	0.5	28.0
TML 125/400/N	(660)	(400)	(235)	(141)	(120)	(1850)		(0.37)	(12.7)
TMR 125/600/N	33.9	23.6	9.3	5.6	4.7	1648	1720	0.5	34.2
TML 125/600/N	(860)	(600)	(235)	(141)	(120)	(2800)		(0.37)	(15.5)
TMR 125/800/N	41.7	31.5	9.3	5.6	4.7	2207	1720	0.7	41.9
TML 125/800/N	(1060)	(800)	(235)	(141)	(120)	(3750)		(0.55)	(19.0)
TMR 125/1000/N	52.5	39.4	12.2	7.0	6.1	2708	1390	1.5	63.9
TML 125/1000/N	(1334)	(1000)	(309)	(178)	(155)	(4600)		(1.10)	(29.0)
TMR 125/400/2p	30.5	15.7	13.7	7.0	6.1	2207	3530	3.0	54.5
TML 125/400/2p	(774)	(400)	(349)	(178)	(155)	(3750)		(2.20)	(24.7)

\* Due to different technical designs and motor brands the above dimensions may vary.

## LTG Tangential Fans Type TM

### Impeller Diameter 5" (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.

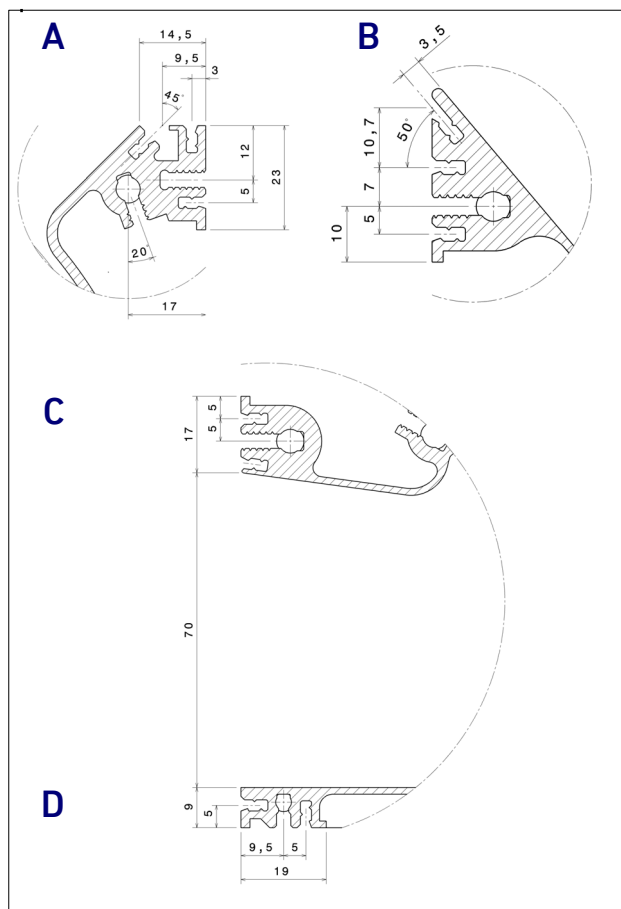
#### Motor arrangement

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

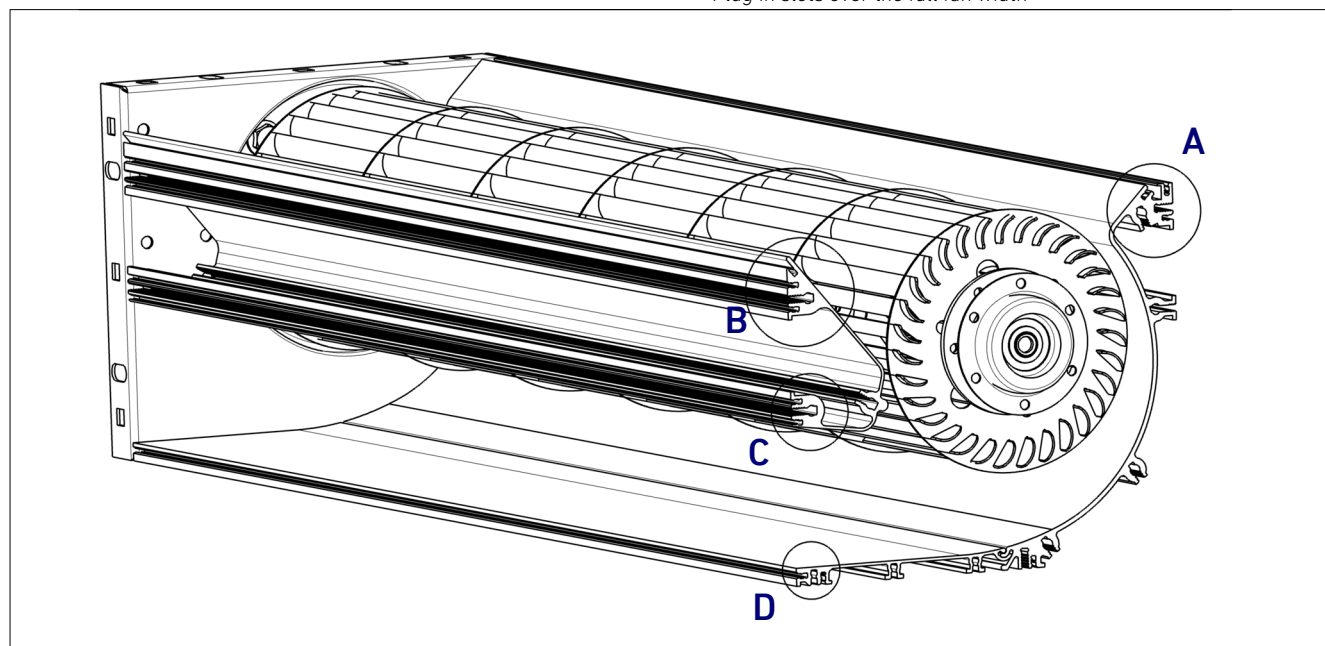
#### Electrical equipment

The fan is driven by a 4-pole 3-phase motor, 460 V / 60 Hz.

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



Plug in slots over the full fan width



## LTG Tangential Fans Type TM

### Impeller Diameter 6" (150 mm)

#### Gas temperature

**-15 °F up to +160 °F (- 25 °C up to +70 °C)**

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

#### Operating conditions

##### Gas temperatures:

-15 °F up to max. + 160 °F (-25 °C up to max. +70 °C)

##### Ambient temperatures:

-15 °F up to max. + 105 °F (-25 °C up to max. +40 °C)  
for the drive side with motor and

-15 °F up to max. + 160 °F (-25 °C up to max. +70 °C)  
for the counter side.

#### Range

Type	Max. medium temperatures	Impeller length	Casing	Impeller	Motor
TMR 150/401/N TML 150/401/N	-15 °F to + 160 °F (-25 °C to + 70 °C)	16 inch (401 mm)	stainless steel, marine grade aluminum	galvanized steel	400 / 460 V 50 / 60 Hz  IP 55 4pole
TMR 150/601/N TML 150/601/N	-15 °F to + 160 °F (-25 °C to + 70 °C)	23.5 inch (601 mm)			
TMR 150/864/N TML 150/864/N	-15 °F to + 160 °F (-25 °C to + 70 °C)	34 inch (864 mm)			
TMR 150/1064/N TML 150/1064/N	-15 °F to + 160 °F (-25 °C to + 70 °C)	42 inch (1064 mm)			
TMR 150/1264/N TML 150/1264/N	-15 °F to + 160 °F (-25 °C to + 70 °C)	50 inch (1264 mm)			
TMR 150/1464/N TML 150/1464/N	-13 °F to +158 °F (-25 °C to +70 °C)	57.75 inch (1464 mm)			



Tangential fan Type TMR 150 (right hand motor)

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

## LTG Tangential Fan Type TM Impeller Diameter 6" (150 mm)

### Specification and design features

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

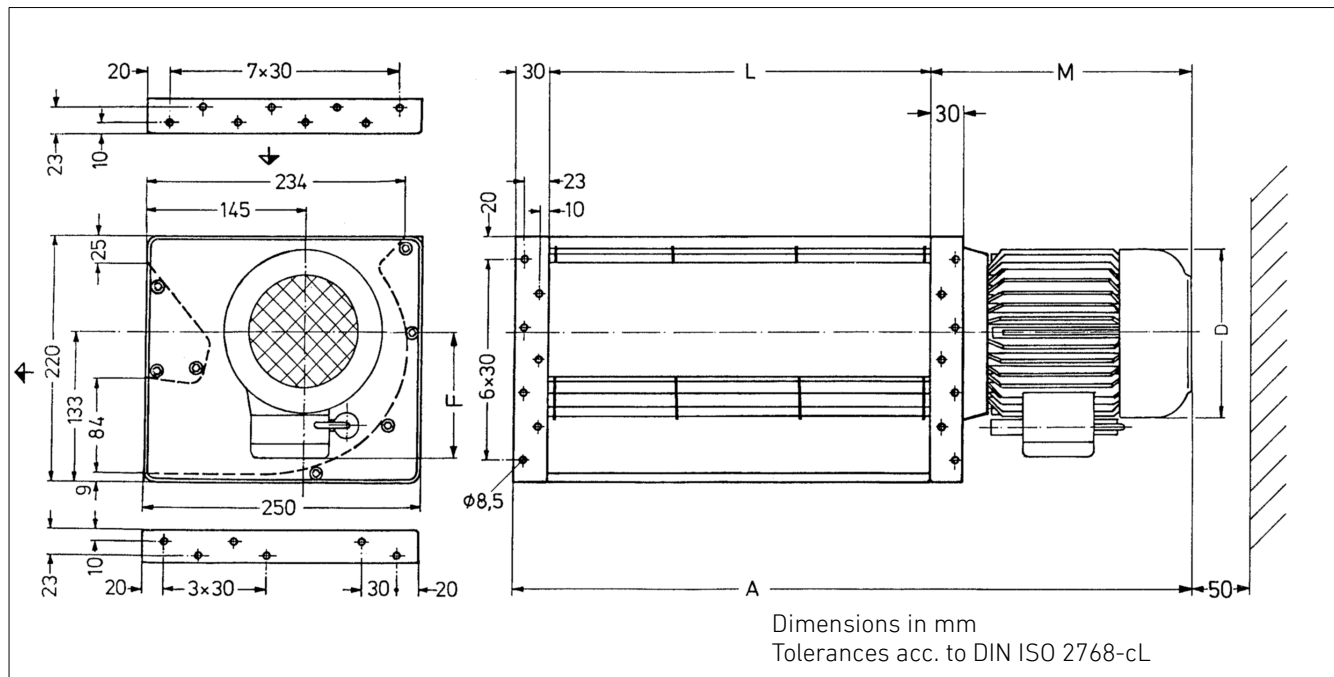
Rigid bolted, corrosion proof casing of marine grade aluminum. Side elements of stainless steel (1.4541). Impeller of galvanized steel.

On the drive side, the impeller shaft is connected via an elastic coupling directly to the motorshaft. On the counter-side, it is supported in a vibration dampened 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 $V_{max}$ [cfm] (m <sup>3</sup> /h)	Speed $n_{max}$ [rpm]	Motor $P_{N 60}$ $P_{N 50}$ [hp] (kW)	Masses  [lb] (kg)
	A *	L	M *	D *	F *				
	[inch] (mm)								
TMR 150/401/N	28.8	15.8	11.8	6.3	5.9	1450	1760	1	44
TML 150/401/N	(732)	(401)	(301)	(159)	(150)	(2460)		(0.75)	(20)
TMR 150/601/N	37.1	23.7	12.2	7.0	6.1	2300	1750	1.5	55
TML 150/601/N	(942)	(601)	(311)	(178)	(155)	(3900)		(1.1)	(25)
TMR 150/864/N	50.3	34.0	15.1	7.8	6.5	3400	1750	3	92
TML 150/864/N	(1279)	(864)	(385)	(198)	(166)	(5800)		(2.2)	(42)
TMR 150/1064/N	58.2	41.9	15.1	7.8	6.5	4360	1750	3	99
TML 150/1064/N	(1479)	(1064)	(385)	(198)	(166)	(7400)		(2.2)	(45)
TMR 150/1264/N	66.1	49.8	15.1	7.8	6.5	5250	1750	3	106
TML 150/1264/N	(1679)	(1264)	(385)	(198)	(166)	(8900)		(2.2)	(48)
TMR 150/1464/N	74.0	57.6	15.1	7.8	6.5	5900	1440	3	112
TML 150/1464/N	(1879)	(1464)	(385)	(198)	(166)	(10,000)		(2.2)	(51)

\* Due to different technical designs and motor brands the above dimensions may vary.

## LTG Tangential Fans Type TMt Impeller Diameter 6" (150 mm)

### Gas temperature

**-15 °F to +250 °F (-25 °C to +120 °C)**

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

### Range

Type	Max. medium temperatures	Impeller length	Casing	Impeller	Motor	
TMrt 150/401/N TMLt 150/401/N	-15 °F to +250 °F (-25 °C to +120 °C)	16 inch (401 mm)	stainless steel, marine grade aluminum	galvanized steel	400 / 460 V 50 / 60 HZ	IP 55 4pole
TMrt 150/601/N TMLt 150/601/N	-15 °F to +250 °F (-25 °C to +120 °C)	23.5 inch (601 mm)				
TMrt 150/864/N TMLt 150/864/N	-15 °F to +250 °F (-25 °C to +120 °C)	34 inch (864 mm)				
TMrt 150/1064/N TMLt 150/1064/N	-25 °C to +120 °C (-13 °F to +248 °F)	42 inch (1064 mm)				

### Operating conditions

#### Gas temperatures:

-15 °F up to max. +250 °F (-25 °C up to max. +120 °C)

#### Ambient temperatures:

-15 °F up to max. +105 °F (-25 °C up to max. +40 °C)  
for the drive side with motor and

-15 °F up to max. +250 °F (-25 °C up to max. +120 °C)  
for the counter side.



*Tangential fan Type TMrt 150 (right hand motor)*

*note: TMrt = right hand motor, TMLt = left hand motor*

## LTG Tangential Fans Type TMT Impeller Diameter 6" (150 mm)

### Specification and design features

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

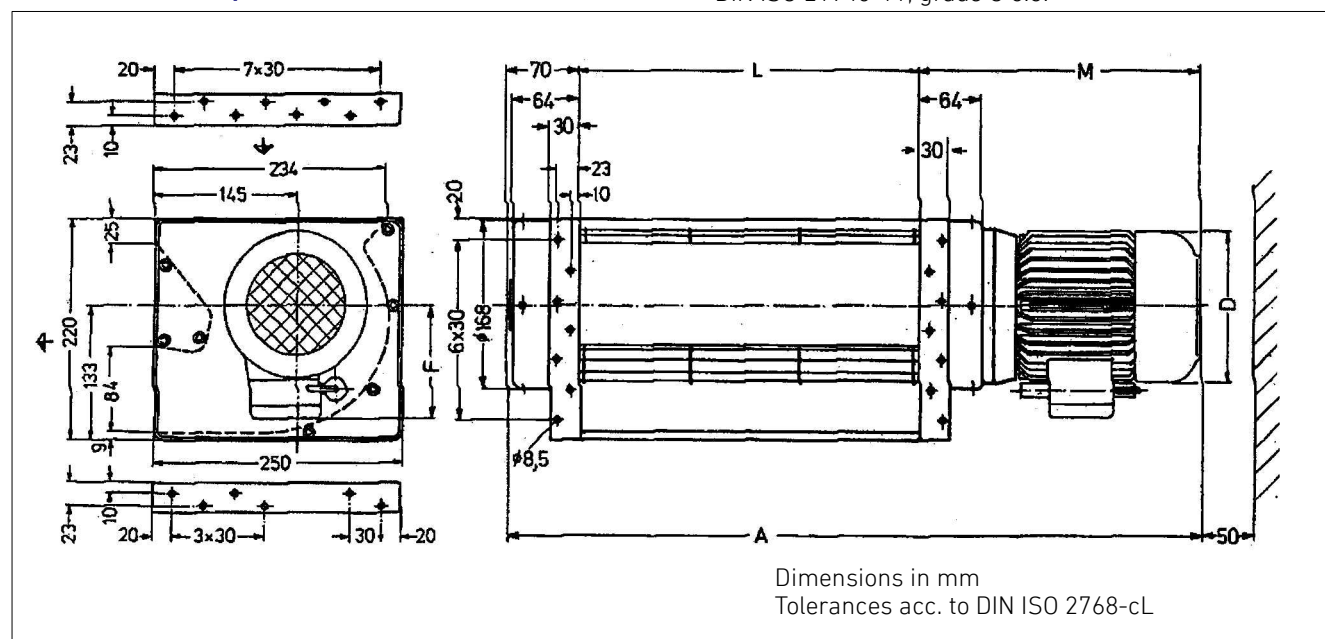
Rigid bolted, corrosion proof casing of marine grade aluminum. Side elements of stainless steel (1.4541). Impeller of galvanized steel.

On the drive side, the impeller shaft is connected via an elastic coupling directly to the motorshaft. On the counter-side, it is supported in a vibration dampened 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 $V_{max}$ [cfm] (m <sup>3</sup> /h)	Speed $n$ [rpm]	Motor $P_{N 60}$ $P_{N 50}$ [hp] [kW]	Masses [lb] [kg]
	A *	L	M *	D *	F *				
	[inch] (mm)								
TMRt 150/401/N TMLt 150/401/N	32.4 (822)	15.8 (401)	13.8 (351)	6.3 (159)	5.9 (150)	1450 (2460)	1760	1 (0.75)	47 (21.5)
TMRt 150/601/N TMLt 150/601/N	40.6 (1032)	23.7 (601)	14.2 (361)	7.0 (178)	6.1 (155)	2300 (3900)	1750	1.5 (1.1)	58 (26.5)
TMRt 150/864/N TMLt 150/864/N	53.9 (1369)	34.0 (864)	17.1 (435)	7.8 (198)	6.5 (166)	3400 (5800)	1750	3 (2.2)	96 (43.5)
TMRt 150/1064/N TMLt 150/1064/N	61.8 (1569)	41.9 (1064)	17.1 (435)	7.8 (198)	6.5 (166)	4360 (7400)	1750	3 (2.2)	102 (46.5)

\* Due to different technical designs and motor brands the above dimensions may vary.

## LTG Tangential Fans Type TM / TMt Impeller Diameter 5 and 6" / 6" (125 and 150 mm / 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.

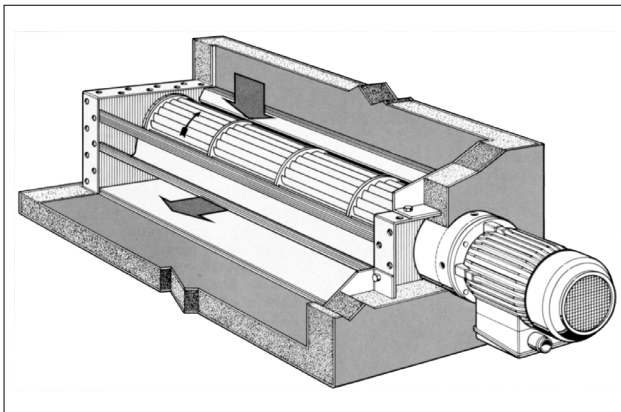
### Motor arrangement

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

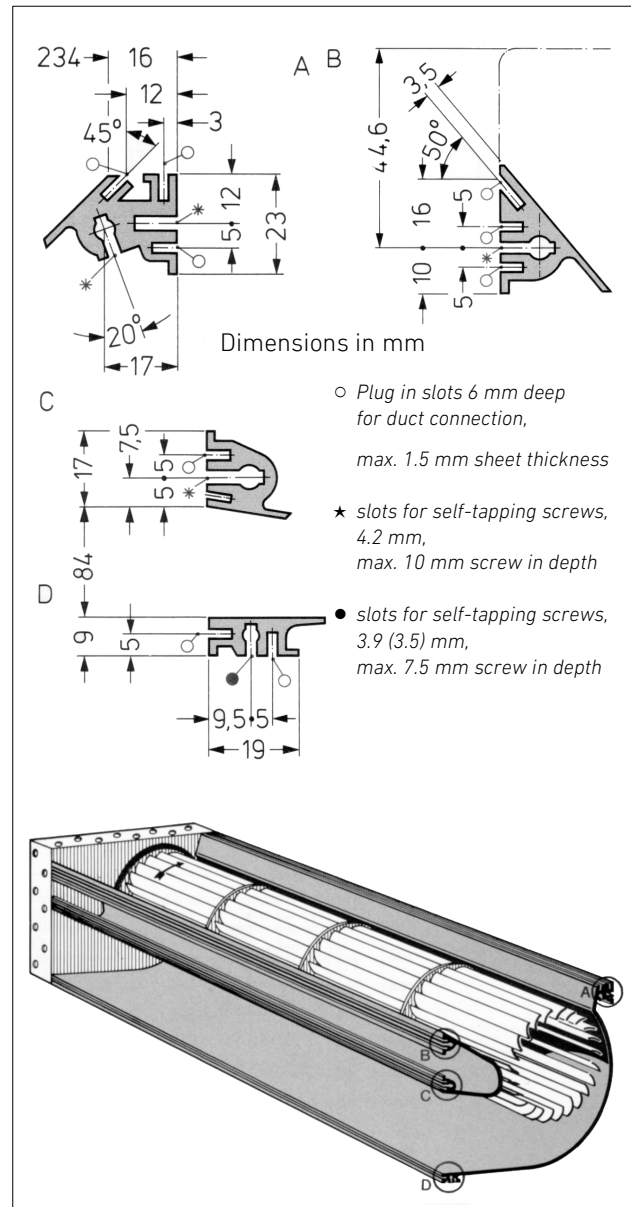
### Electrical equipment

The fan is driven by a 4-pole 3-phase motor, 400 V/460 V / 50/60 Hz. Enclosure is IP 55. This gives protection against dust deposits and low-pressure water jets from any direction.

The motor coil insulation below nominal length 864 is class B, from nominal length up to 1264 it is class F.



Typical installation of type TMt with on site insulation



Plug in slots over the full fan width

## LTG Tangential Fans Type TM Impeller Diameter 5" (125 mm)

### Fan curves

#### Test conditions for the fan curves

The indicated curves are valid for an air density of  $\rho = 0.075 \text{ lb/cft}$  ( $1.2 \text{ kg/m}^3$ ), a supply voltage of  $U = 460 \text{ V}$  with  $f = 60 \text{ Hz}$ , if operated with a 4 pole motor.

The rating tests were done as laboratory test according to VDI 2044 with unrestricted inlet and discharge.

### Acoustical data

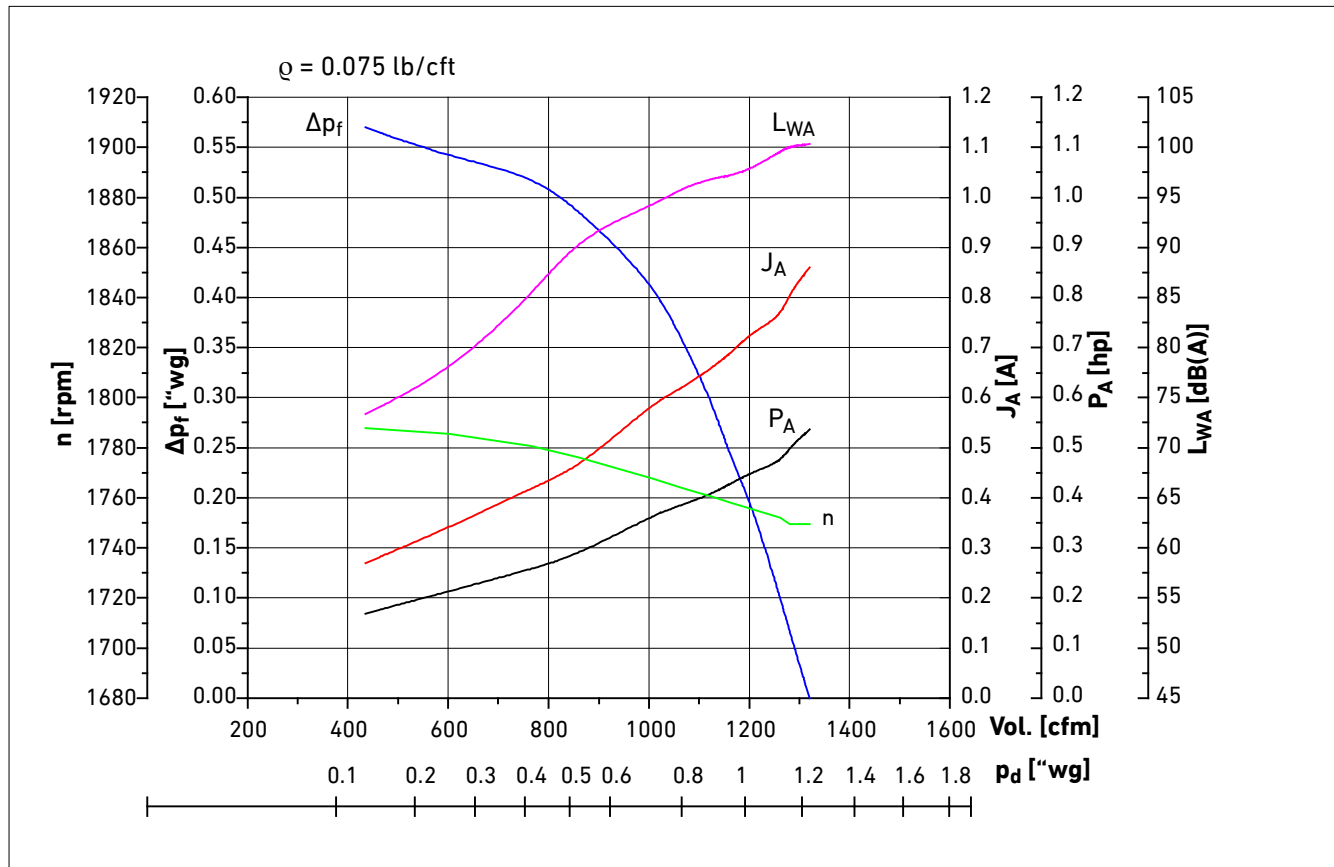
The acoustical data are for discharge side, tested in a reverberant field.

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

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

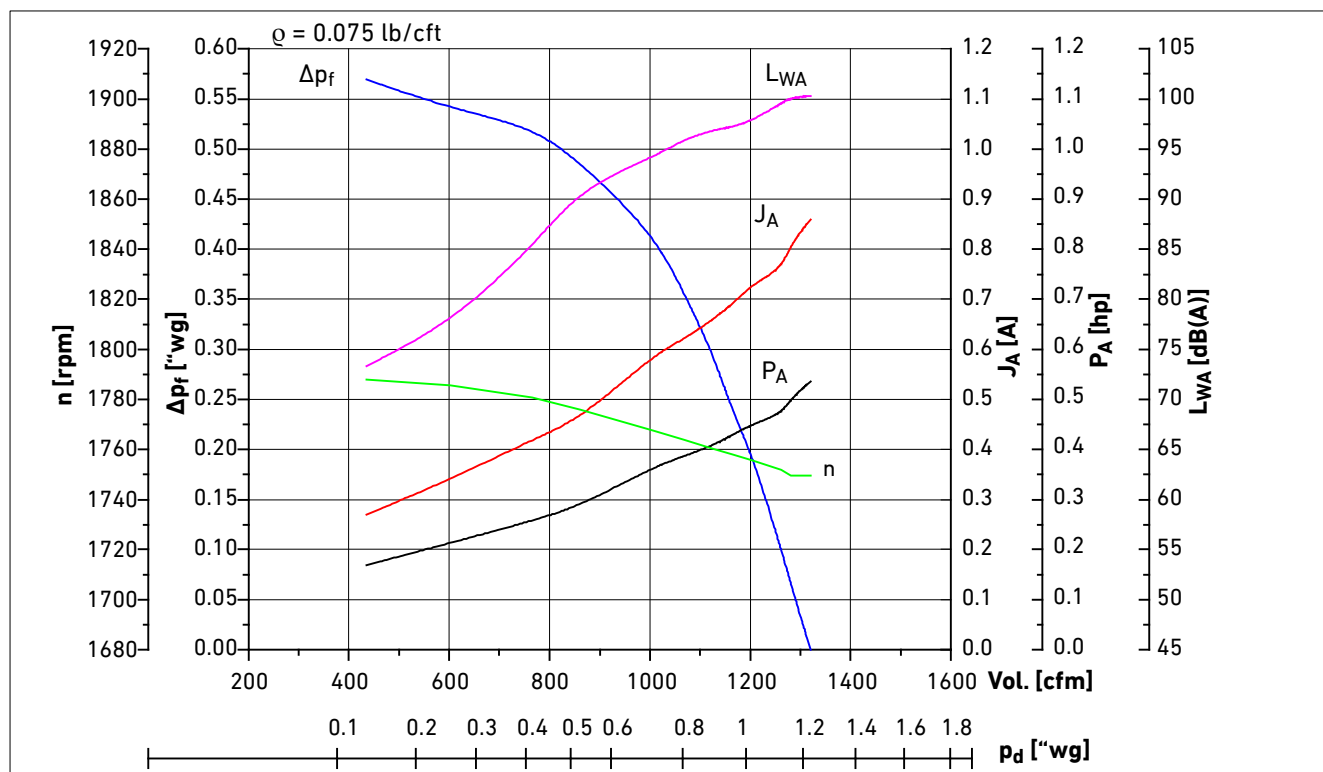
The sound pressure level in the free field in 1 m distance (full spheric sound radiation) is abt. 11 dB less than the sound power level.

### Fan curves for 15.75" (400 mm) nominal length, 4-pole

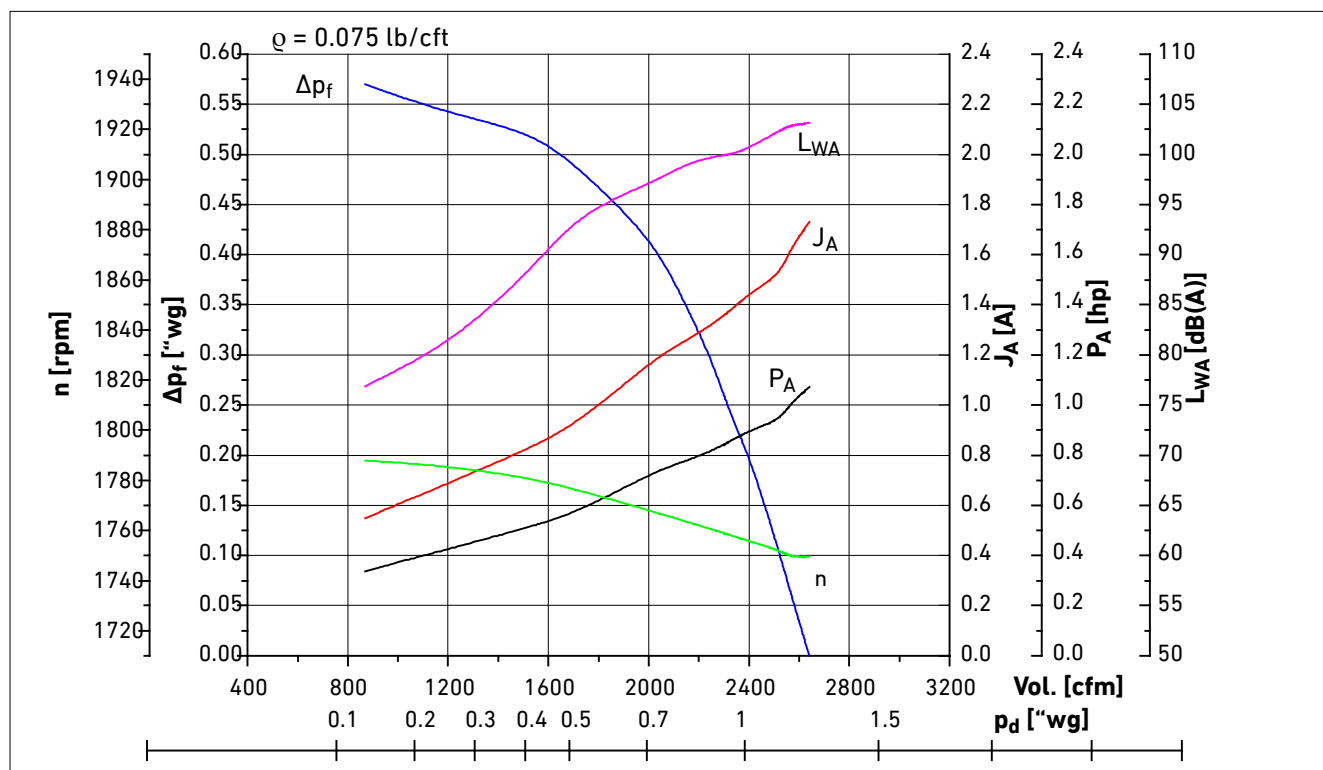


## LTG Tangential Fans Type TM, Impeller Diameter 5" (125 mm)

Fan curves for 23.5" (600 mm) nominal length, 4-pole



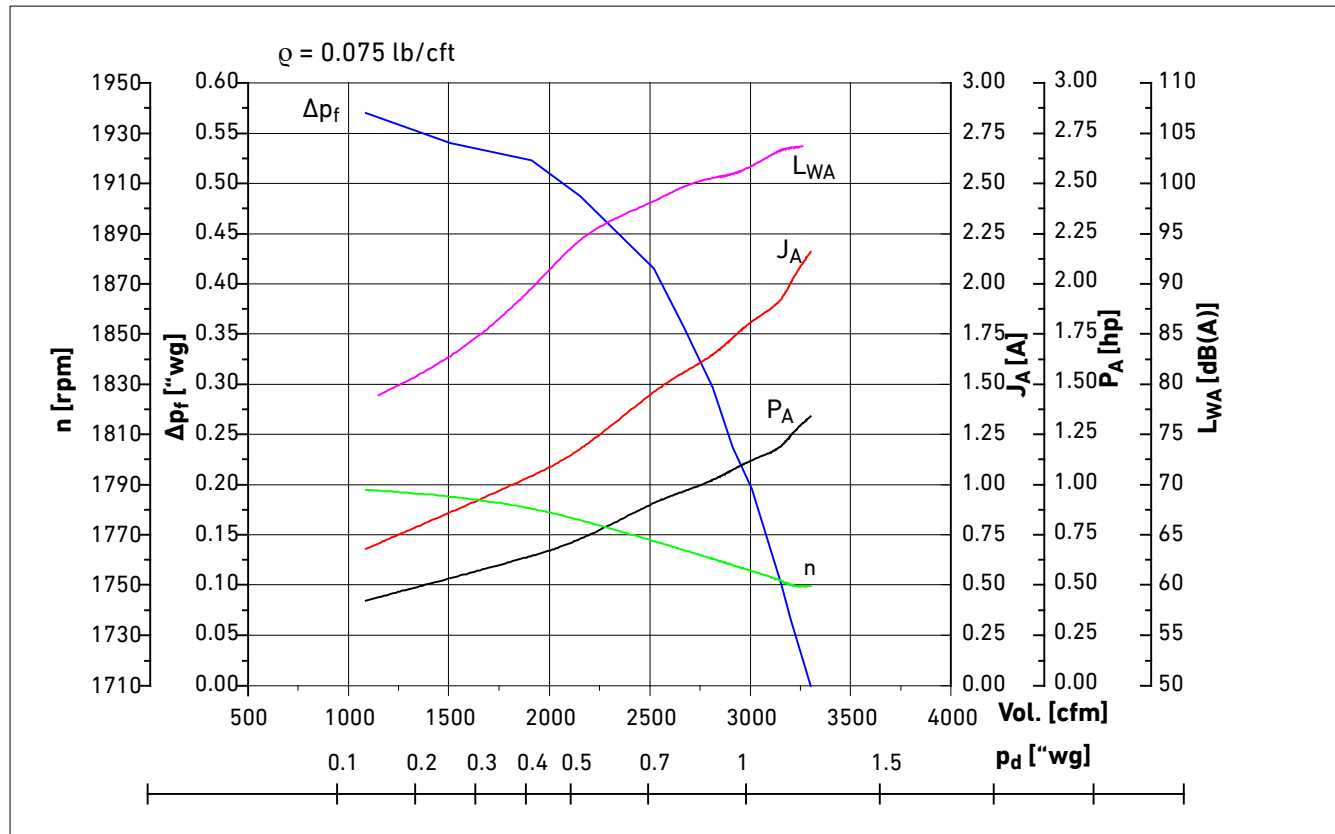
Fan curves for 31.5" (800 mm) nominal length, 4-pole



## LTG Tangential Fans Type TM

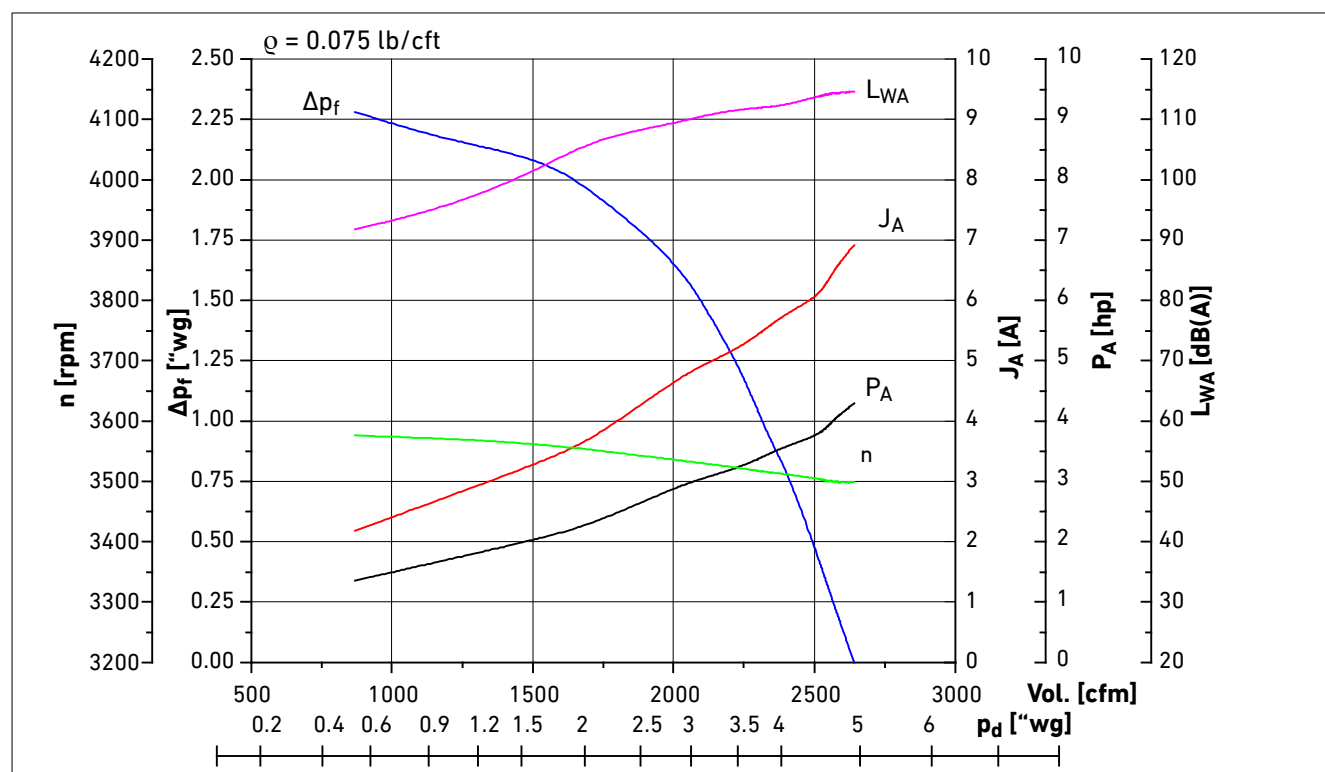
### Impeller Diameter 5" (125 mm)

Fan curves for 1000 (39.5") mm nominal length, 4-pole

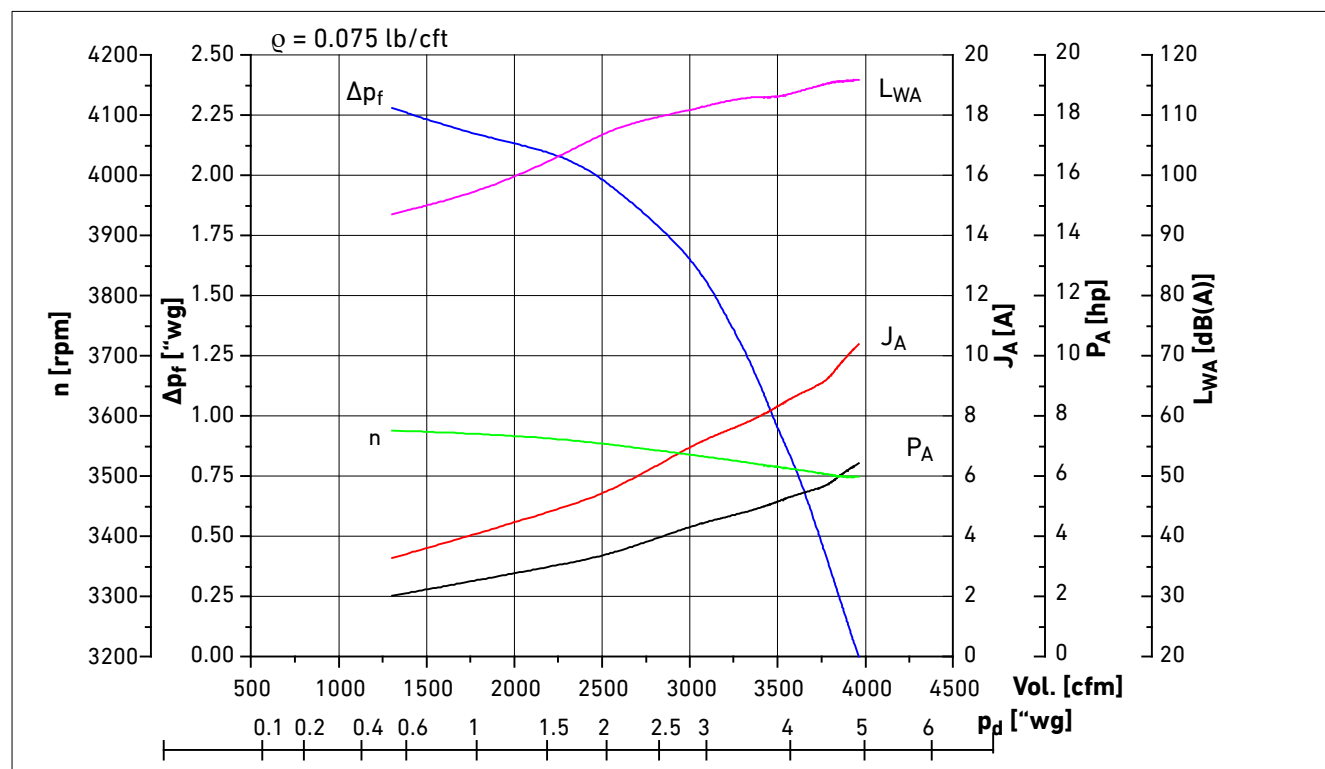


## LTG Tangential Fans Type TM, Impeller Diameter 5" (125 mm)

Fan curves for 15.75" (400 mm) nominal length, 2-pole



Fan curves for 600 mm (23.5") nominal length, 2-pole



## LTG Tangential Fans Type TM / TMt Impeller Diameter 6" (150 mm)

### Fan curves

#### Test conditions for the fan curves

The indicated curves are valid for an air density of  $\rho = 0.075 \text{ lb/cft}$  ( $1.2 \text{ kg/m}^3$ ), a supply voltage of  $U = 460 \text{ V}$  with  $f = 60 \text{ Hz}$ , if operated with a 4 pole motor.

The rating tests were done as laboratory test according to VDI 2044 with unrestricted inlet and discharge.

### Acoustical data

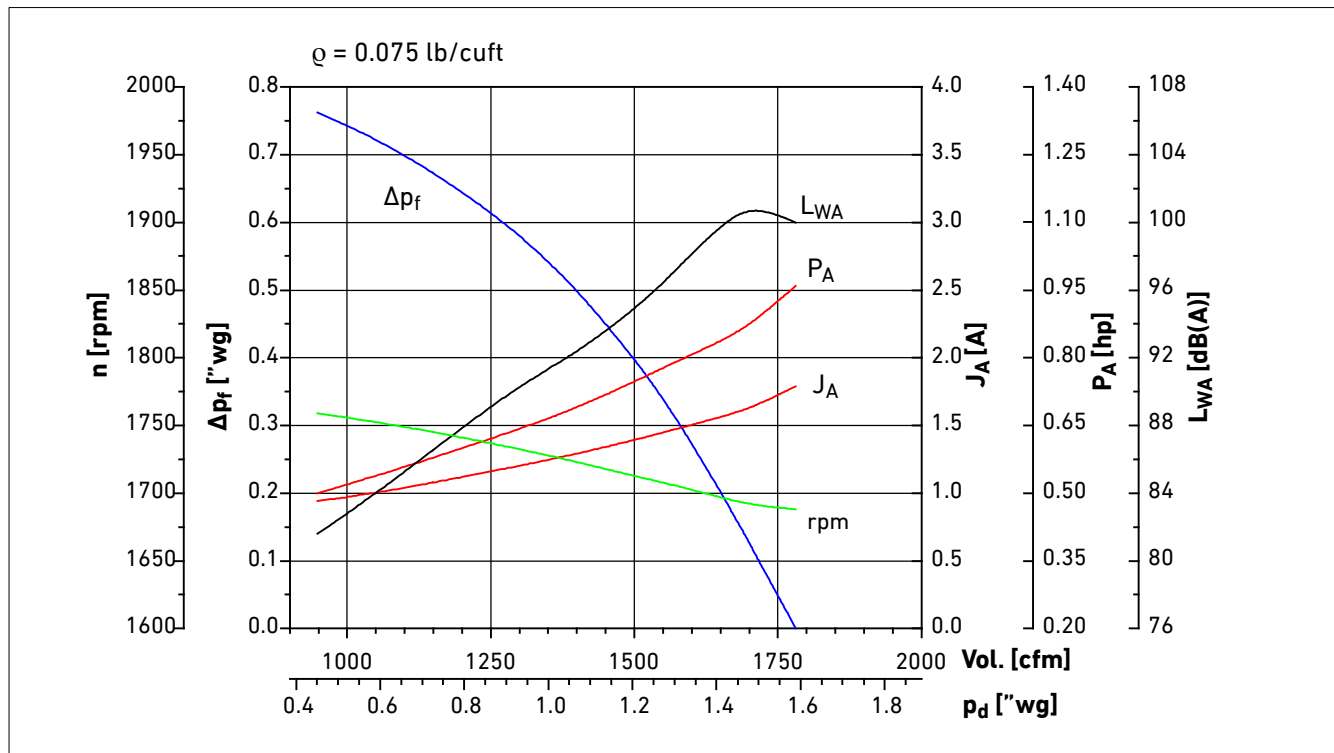
The acoustical data are for discharge side, tested in a reverberant field.

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

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

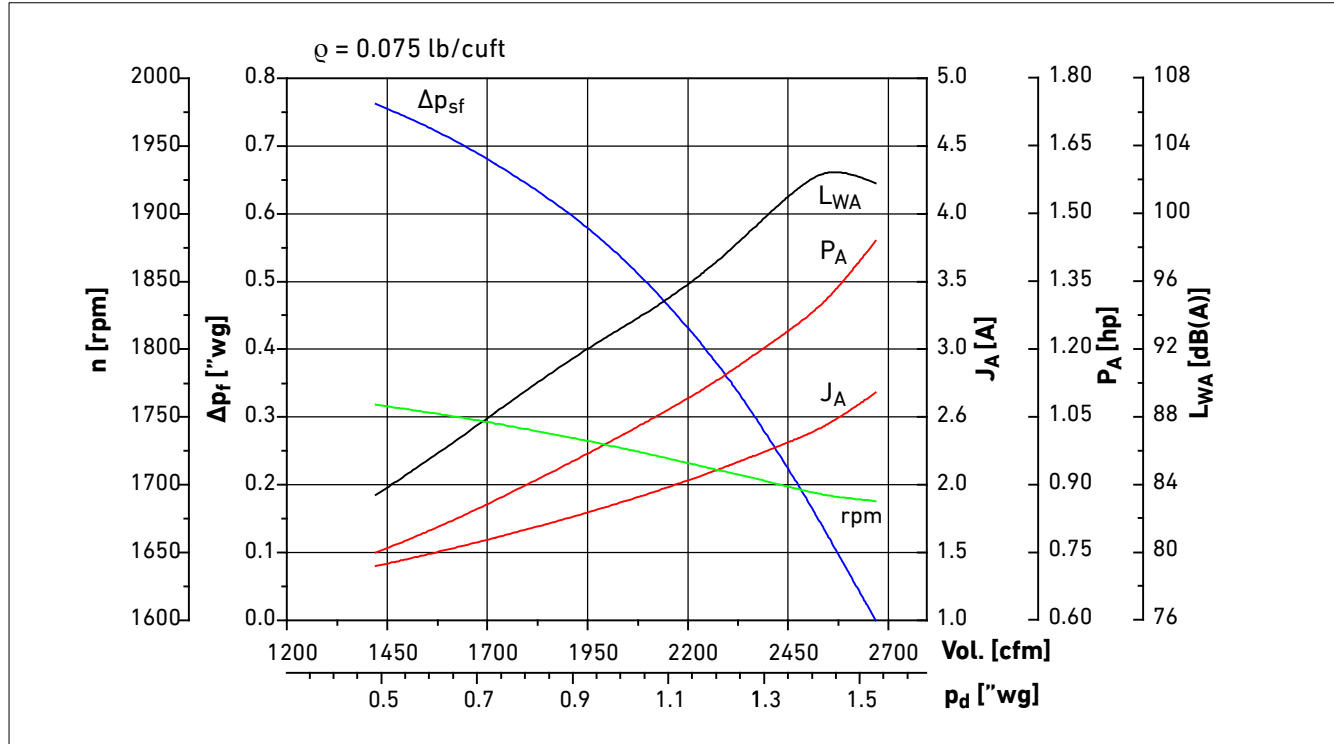
The sound pressure level in the free field in 3' distance (full spheric sound radiation) is abt. 11 dB less than the sound power level.

### Fan curves for 16" (401 mm) nominal length, 60 Hz

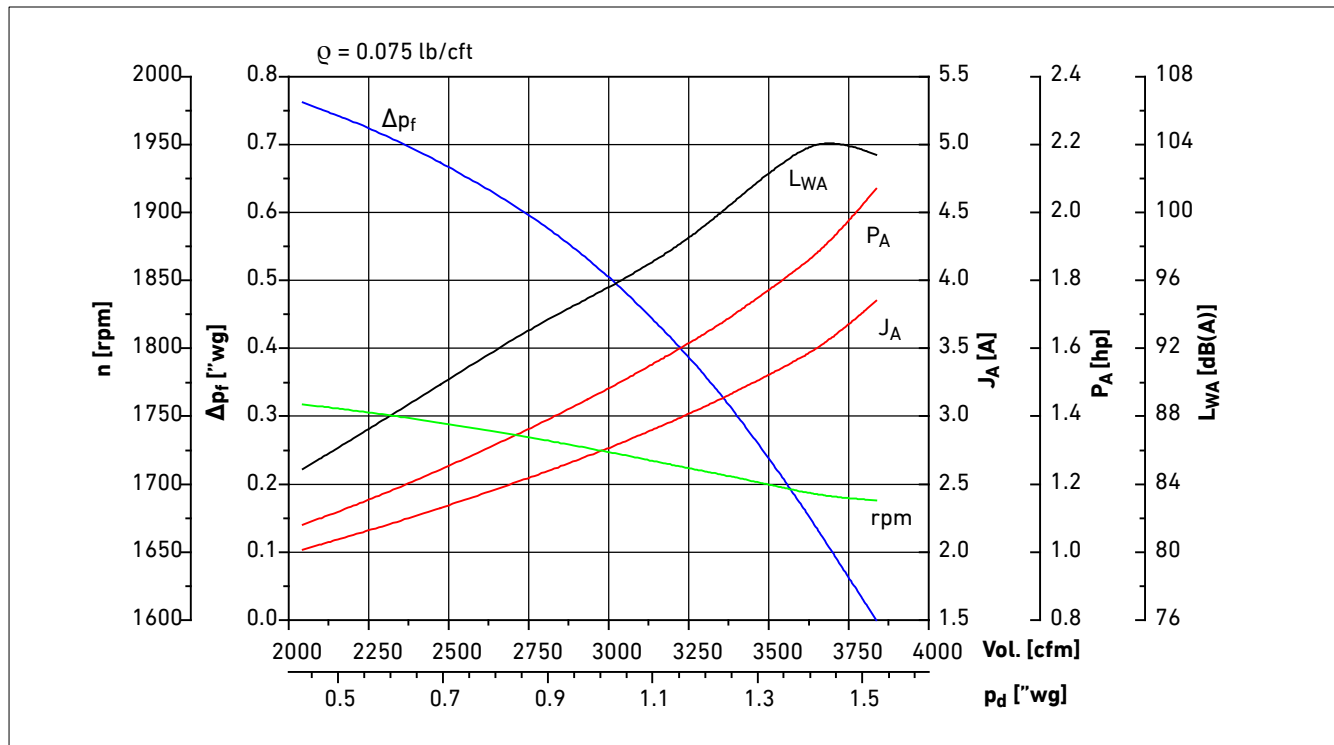


## LTG Tangential Fans Type TM / TMt Impeller Diameter 6" (150 mm)

Fan curves for 23.5" (601 mm) nominal length, 60 Hz

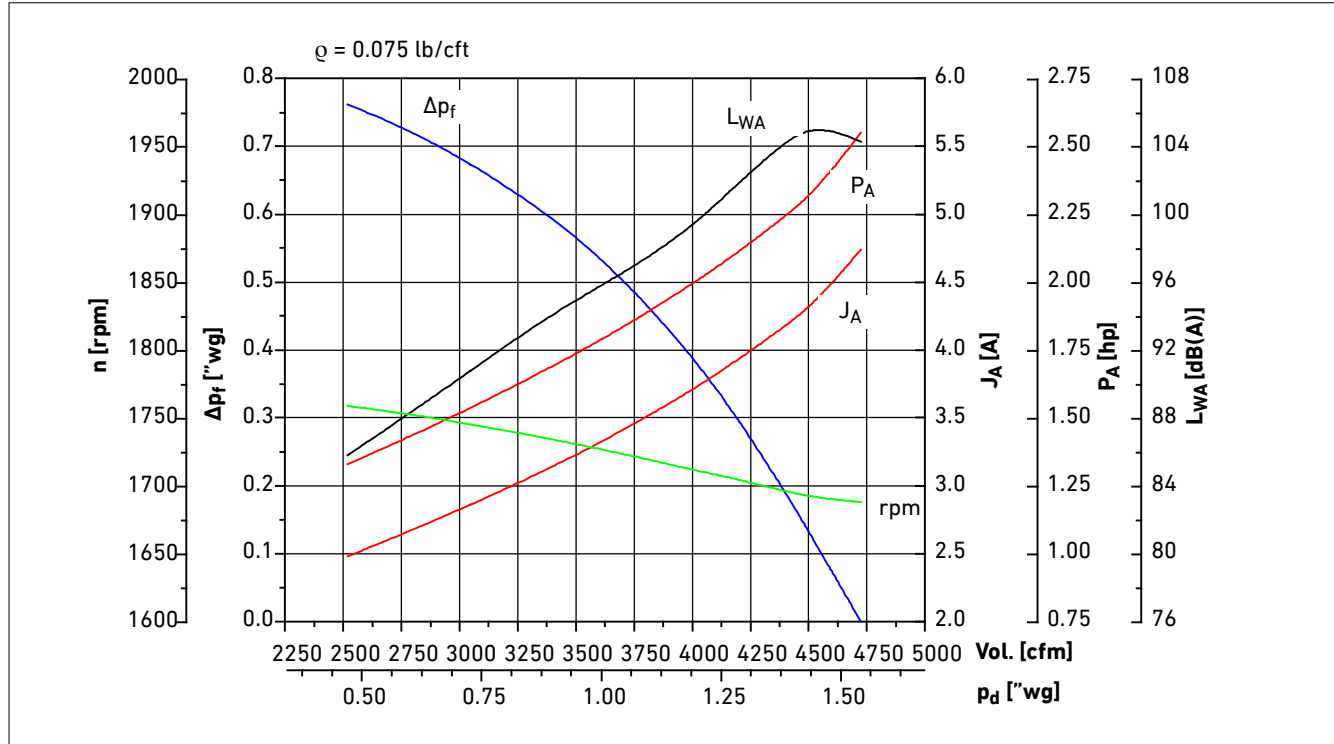


Fan curves for 34" (864 mm) nominal length, 60 Hz

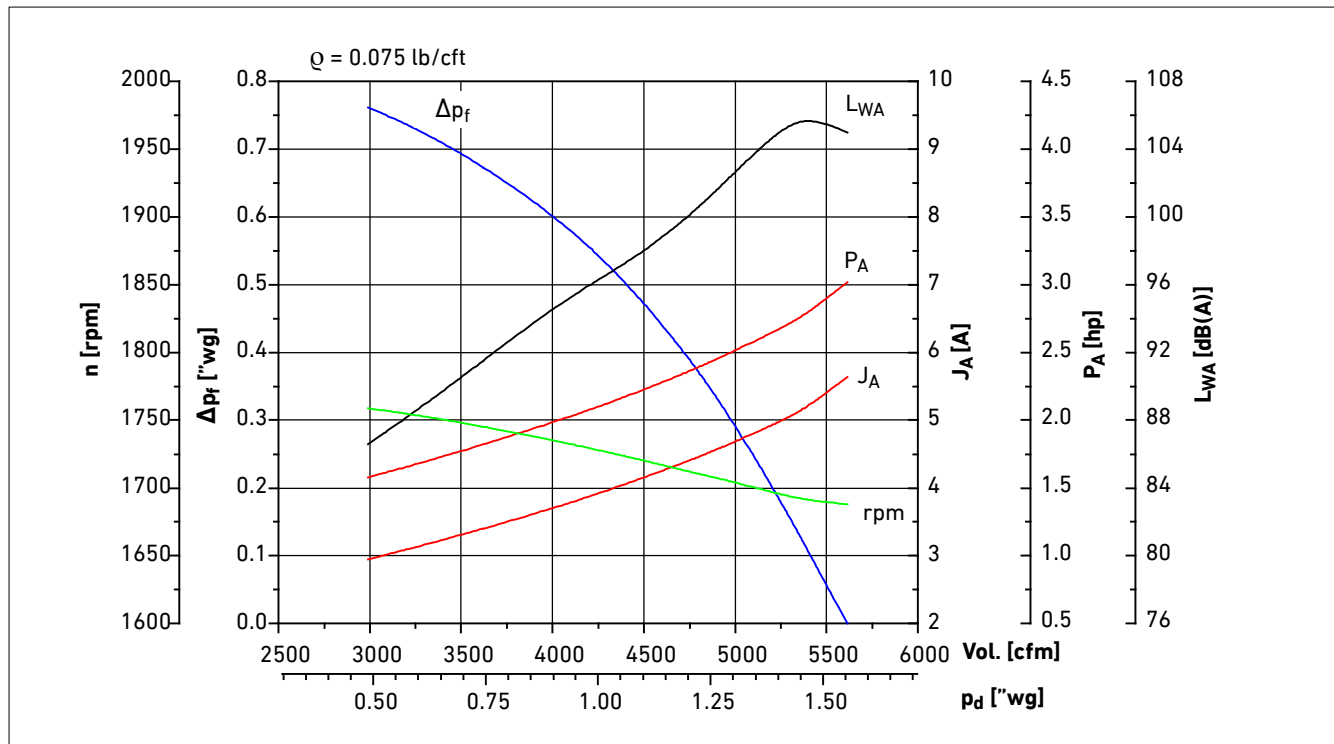


## LTG Tangential Fans Type TM / TMt Impeller Diameter 6" (150 mm)

Fan curves for 42" (1064 mm) nominal length, 60 Hz

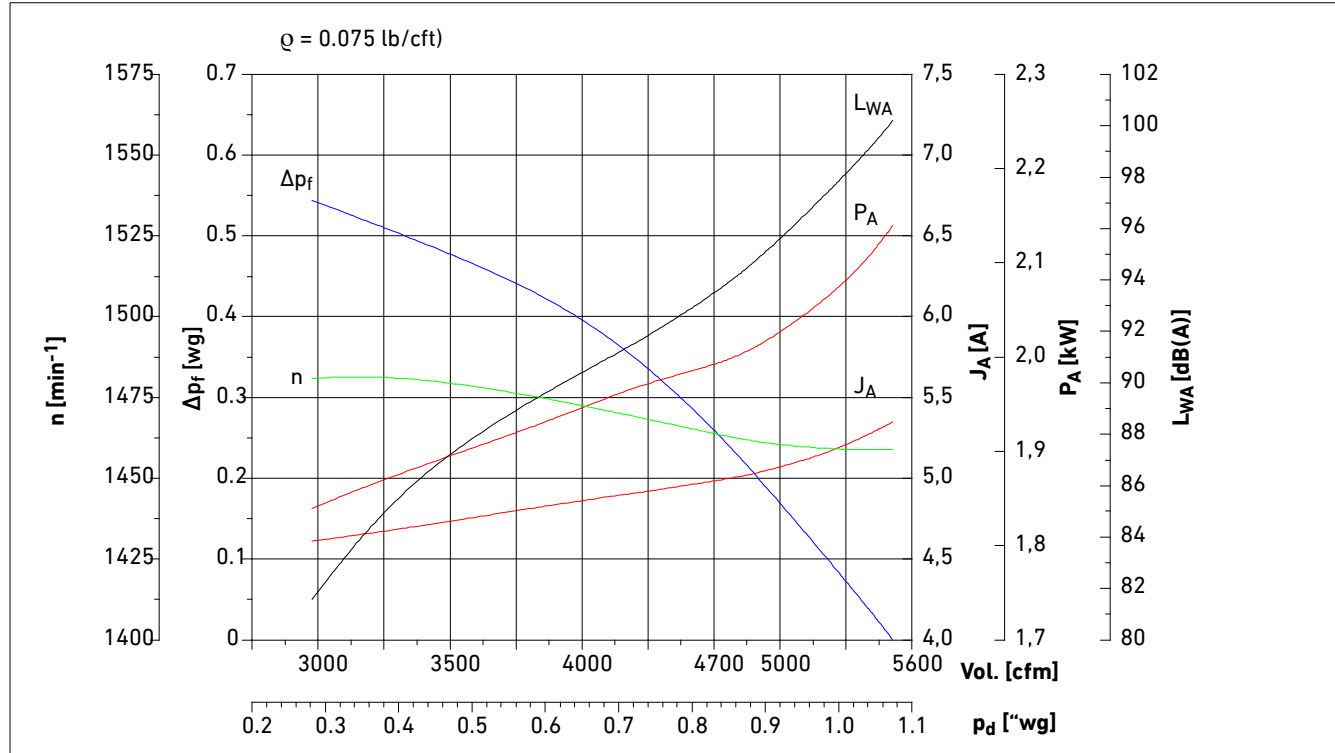


Fan curves for 50" (1264 mm) nominal length, 60 Hz (only type TM 150)



## LTG Tangential Fans Type TM / TMt Impeller Diameter 6" (150 mm)

Fan curves for 57.64" (1464 mm) nominal length (only Type TM 150)



## LTG Tangential fan Type TM 125 / TM 150 / TMt 150

### Selection

Application	Example	Your data	Designations
gas	cold air		V [cfm] air volume
gas temperature t [°F]	14		$\Delta p_f$ ["wg] static pressure
ambient temperature			$p_d$ ["wg] dynamic pressure at the discharge
drive side t [°F]	23		area
counter side t [°F]	23		c [fpm] velocity at the discharge area
condensation	yes		q [lb/cft] specific gravity
located at	ventilation for refrigerated rooms		$p_d = q/2 \cdot c^2$ $J_A = P_A/U$
drive side	right hand		n [rpm] speed
arrangement	vertical		U [V] voltage
<b>Drive motor</b>			f [Hz] frequency
power supply	3-phase		$J_A$ [A] full load amps
voltage U [V]	460		$P_A$ [hp] power consumption
frequency f [Hz]	60		$L_{WA}$ [dB(A)] A-weighted sound power level
<b>Specified performance</b>			$L_{pA}$ [dB(A)] A-weighted sound pressure level
air volume* V [cfm]	3250		S [sqft] panel area
static pressure* $\Delta p_f$ ["wg]	0.6		
*at specific gravity q [lb/cuft]	0.075		
active impeller length min L ["]	30		
max L ["]	44		
total length A ["]	59		
<b>Procedure</b>			
1. conditions of application fan type	cold air 14 °F TM		
2. air volume V [cfm]	3250		
achievable with length [mm]	864, 1064, 1264		
3. static pressure $\Delta p_f$ ["wg]	0.6		
achievable with length [mm]	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 [cfm]	3250		
static pressure $\Delta p_f$ ["wg]	0.63		
dynamic pressure $p_d$ ["wg]	0.83		
exhaust velocity c [fpm]	3378		
speed n [rpm]	1740		
<b>Electrical data</b>			
power input $P_A$ [hp]	1.63		
full load amps $J_A$ [A]	3.76		
<b>Acoustical data</b>			
sound power level A-weighted $L_{WA}$ [dB(A)]	92.1		
sound pressure level in the free field in 1 m distance (full spheric sound radiation) $L_{pA}$ [dB(A)]	81.1		