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Technical Documentation

LTG Tangential Fans

Series TW

Impeller diameter from 5“ to 8“ (125 to 200 mm)

LTG Tangential Fans Type TW

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LTG Tangential Fans - an advantage for best 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 this requirements in the best possible way.

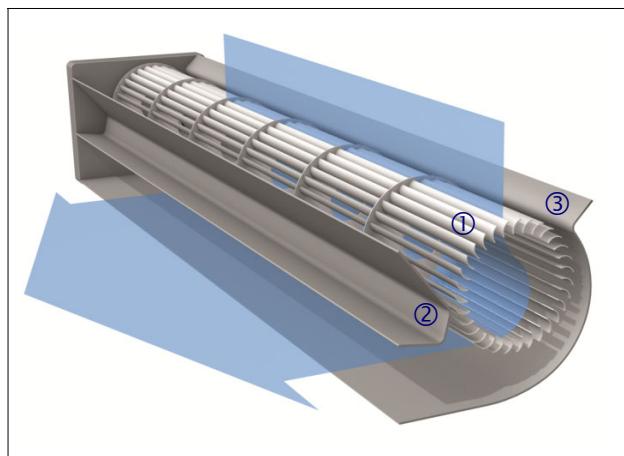
The rigid design and the use of high quality materials secure a long service life. By the working principle, that does away with additional baffles and vanes and the space saving design, the use of tangential fans is very economic.

The 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 Scroll

The advantages

- Uniform air flow over the entire fan width. Additional baffles, plenums and guide vanes are not required.
- Space saving due to a 90° or 180° 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 impeller and housing design.
- Long live expectancy due to robust design and location of impeller bearings outside the hot air/gas zone.
- Explosion-proof models according to ATEX available.

Fields of application

LTG tangential fans are used for needs of regular air flow over large areas:

- 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 TW Impeller Diameter 5" (125 mm)

The tangential fan series TW 125 is a rigid industrial grade fan with enhanced corrosion protection and high power density.



LTG Tangential Fan type TWL 125 (left hand drive)

Service conditions

Gas temperatures:

-13 °F up to +250 °F (-25 °C up to max. +120 °C)

Ambient temperatures:

-13 °F up to +105 °F (-25 °C up to max. +40 °C)

Specification and design features

Tangential fan with shaft end on the drive side and feather key.

Rigid bolted, corrosion proof casing of marine grade aluminum. Impeller of galvanized sheet steel.

The impeller is both sides bedded in self-aligning ball bearings. Bearing design life is 25 000 hours.

The counter side bearing is vibration damped.

Both bearings are maintenance free.

Recommended V-belt pulley:

dw = 4.9 in (125 mm), profile SPA 0.49 inch (12.5 mm), DIN 7753.

The maximum rated power transmission for the pulley is 5.36 hp (4 kW).

Intake and discharge openings have sealing planes and plug in slots to connect exactly to ducts and appliances. The complete fan (including bearing clearance etc.) is balanced to grade Q 6.3 according to VDI 2060.

Length tolerances acc. to ISO 2768 vL.

Delivery range

Type	Max. medium temperatures	Nominal impeller length	Casing	Impeller
TWR 125/400/N	-13 °F to +250 °F (-25 °C to +120 °C)	15.75 " (400 mm)	stainless steel, aluminum	galvanized steel
TWL 125/400/N		23.5 " (600 mm)		
TWR 125/600/N		31.5 " (800 mm)		
TWL 125/600/N		40 " (1000 mm)		
TWR 125/800/N				
TWL 125/800/N				
TWR 125/1000/N				
TWL 125/1000/N				

TWR = right hand drive

TWL = left hand drive

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

Position of the fan

Any arrangement is possible.

Installation and start up

Fix the fans without any distortion to a plane base frame. For fixation of the fan use only the bolt holes provided in the side elements.

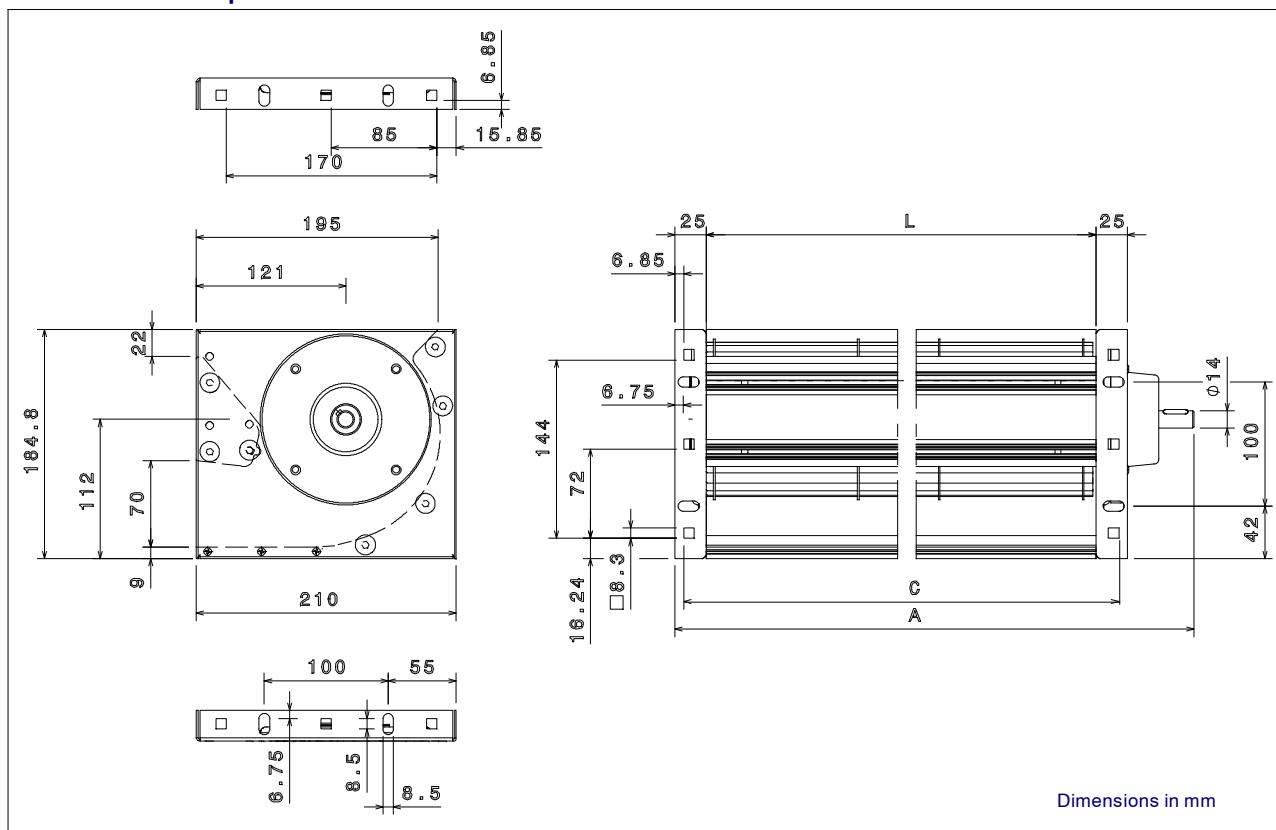
To connect to ducts and appliances plug in slots and sealing planes are provided over the whole fan width for the intake and discharge openings.

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

For higher temperatures check V-belt selection.

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

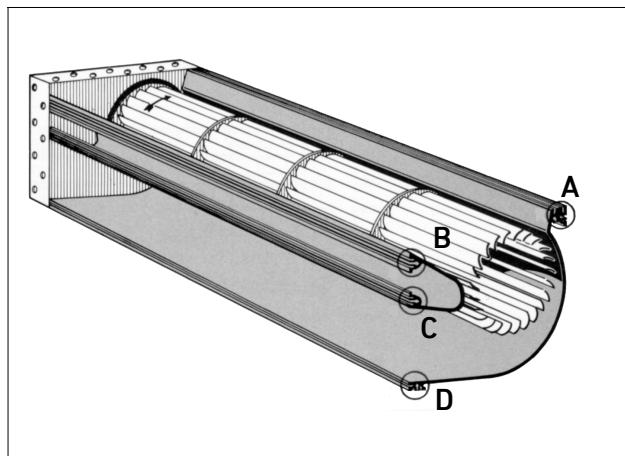
Dimensions and performance data



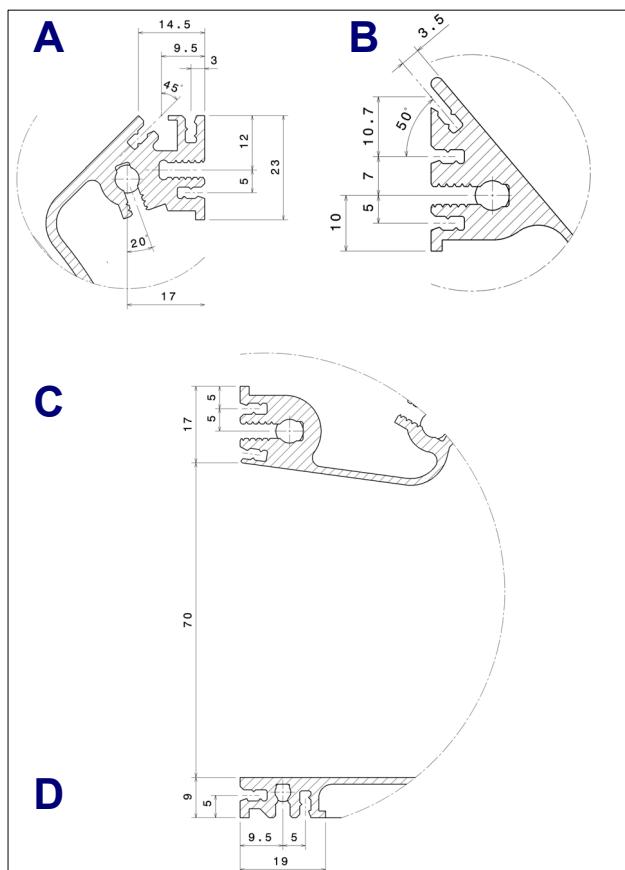
Type/ nominal length	Dimensions [inch] (mm)			Air volume V_{max} [cfm] (m³/h)	Pressure Δp_{fmax} ["wg] (Pa)	Speed n_{max} [rpm]	Masses appr. [lb] (kg)
	L	A	C				
TWR 125/400/N	15.75)	19.85	17.16	2300	2 (500)	3515	17.6 (8)
TWL 125/400/N	(400)	(504)	(436)	(3900)			
TWR 125/600/N	23.62	27.72	25	2825	0.9 (220)	2920	23.15 (10.5)
TWL 125/600/N	(600)	(704)	(636)	(4800)			
TWR 125/800/N	31.5	35.6	32.9	2200	0.5 (117)	1680	28.66 (13)
TWL 125/800/N	(800)	(904)	(836)	(3750)			
TWR 125/1000/N	39.37	43.46	40.78	2240	0.3 (80)	1390	34.17 (15,5)
TWL 125/1000/N	(1000)	(1104)	(1036)	(3800)			

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

Plug in slots



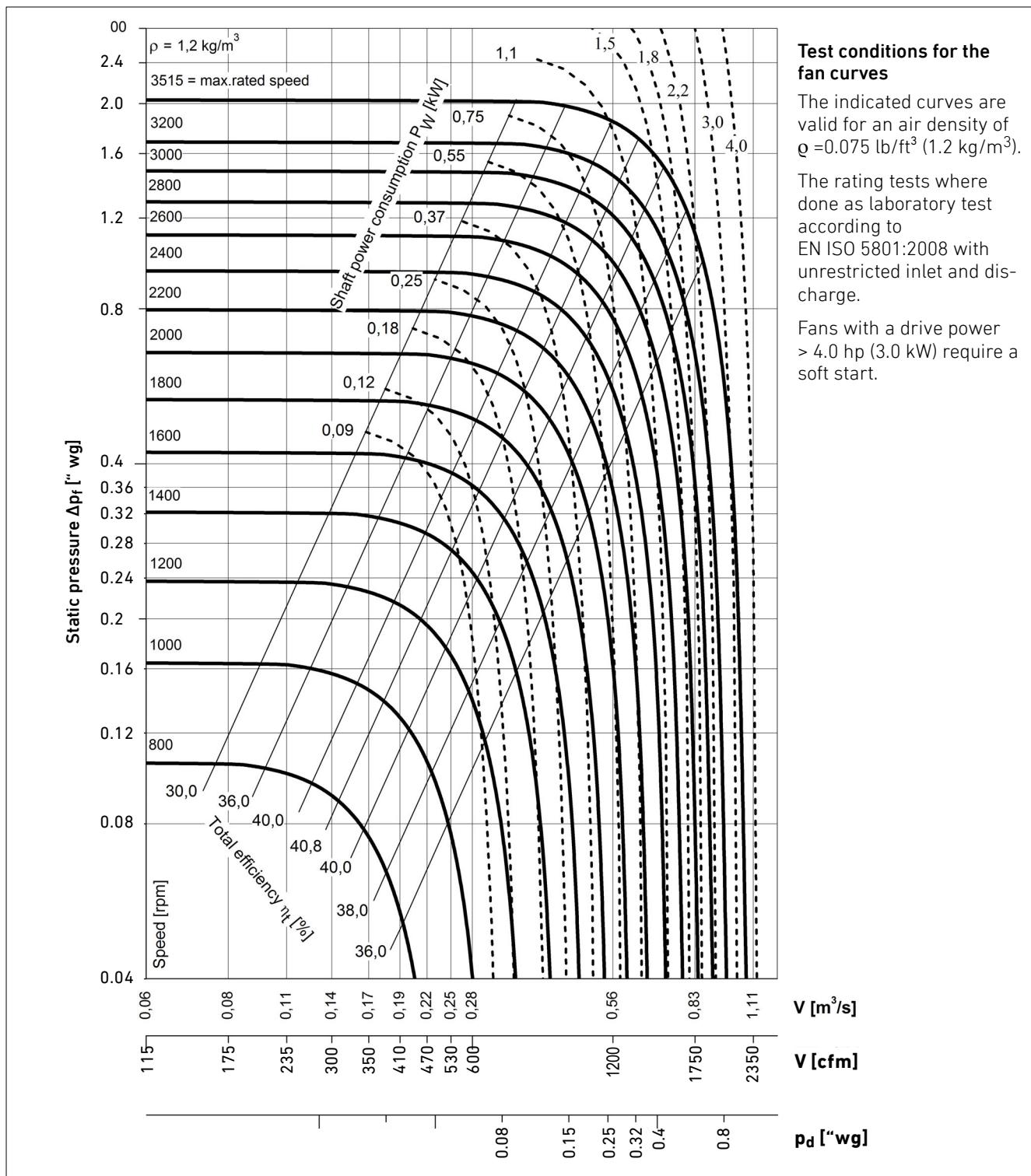
Plug in slots over the full fan width



LTG High Tangential Fans Series TW Impeller Diameter 5" (125 mm)

Fan curves for nominal length 16" (400 mm)

The indicated shaft power consumption does **not** include the belt drive losses.

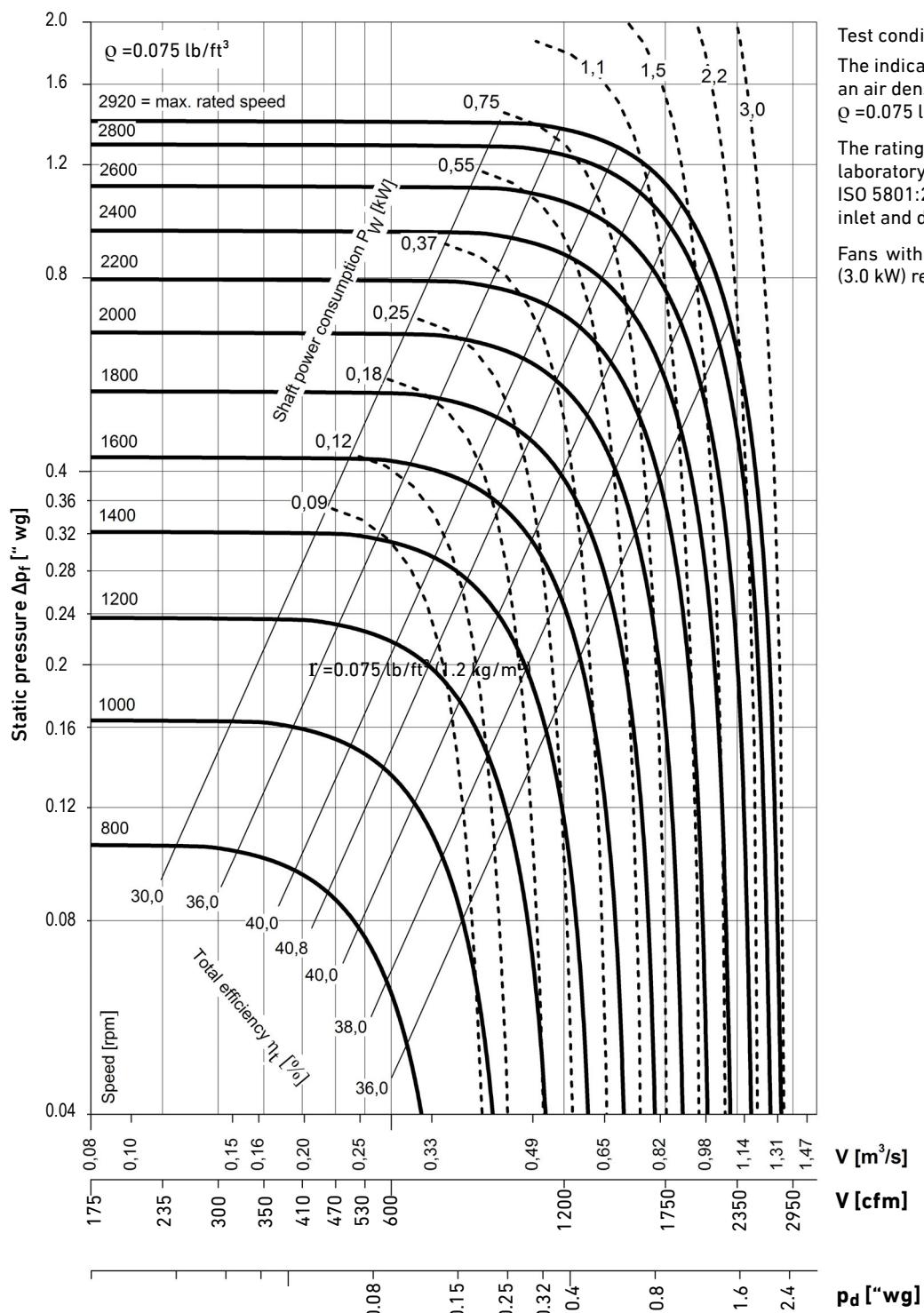


LTG Tangential Fans Type TW

Impeller Diameter 5" (125 mm)

Fan curves for nominal length 23.5" (600 mm)

The indicated shaft power consumption does **not** include the belt drive losses.



Test conditions for the fan curves

The indicated curves are valid for an air density of $\rho = 0.075 \text{ lb/ft}^3 (1.2 \text{ kg/m}^3)$.

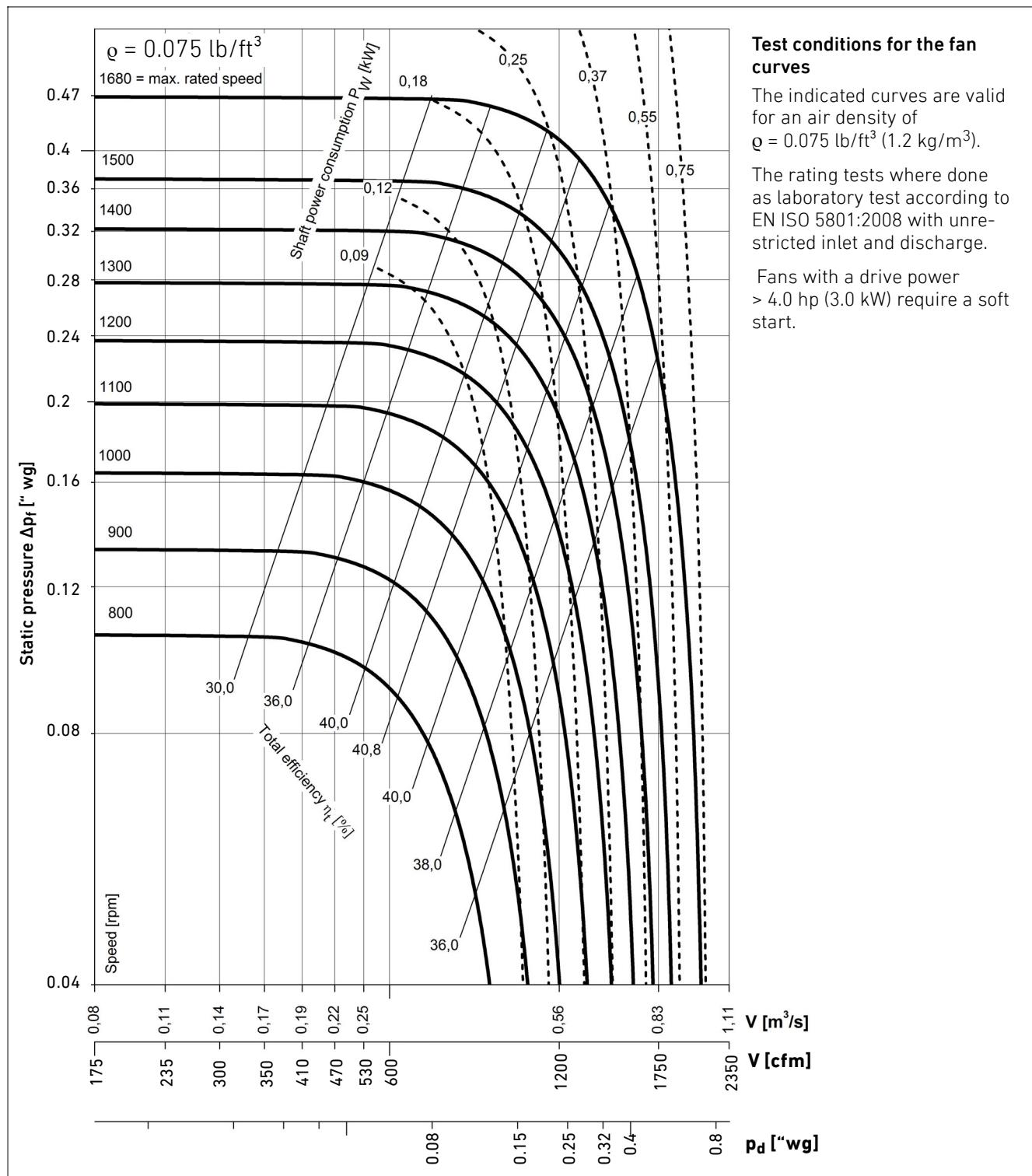
The rating tests were done as laboratory test according to EN ISO 5801:2008 with unrestricted inlet and discharge.

Fans with a drive power > 4.0 hp (3.0 kW) require a soft start.

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

Fan curves for nominal length 31.5" (800 mm)

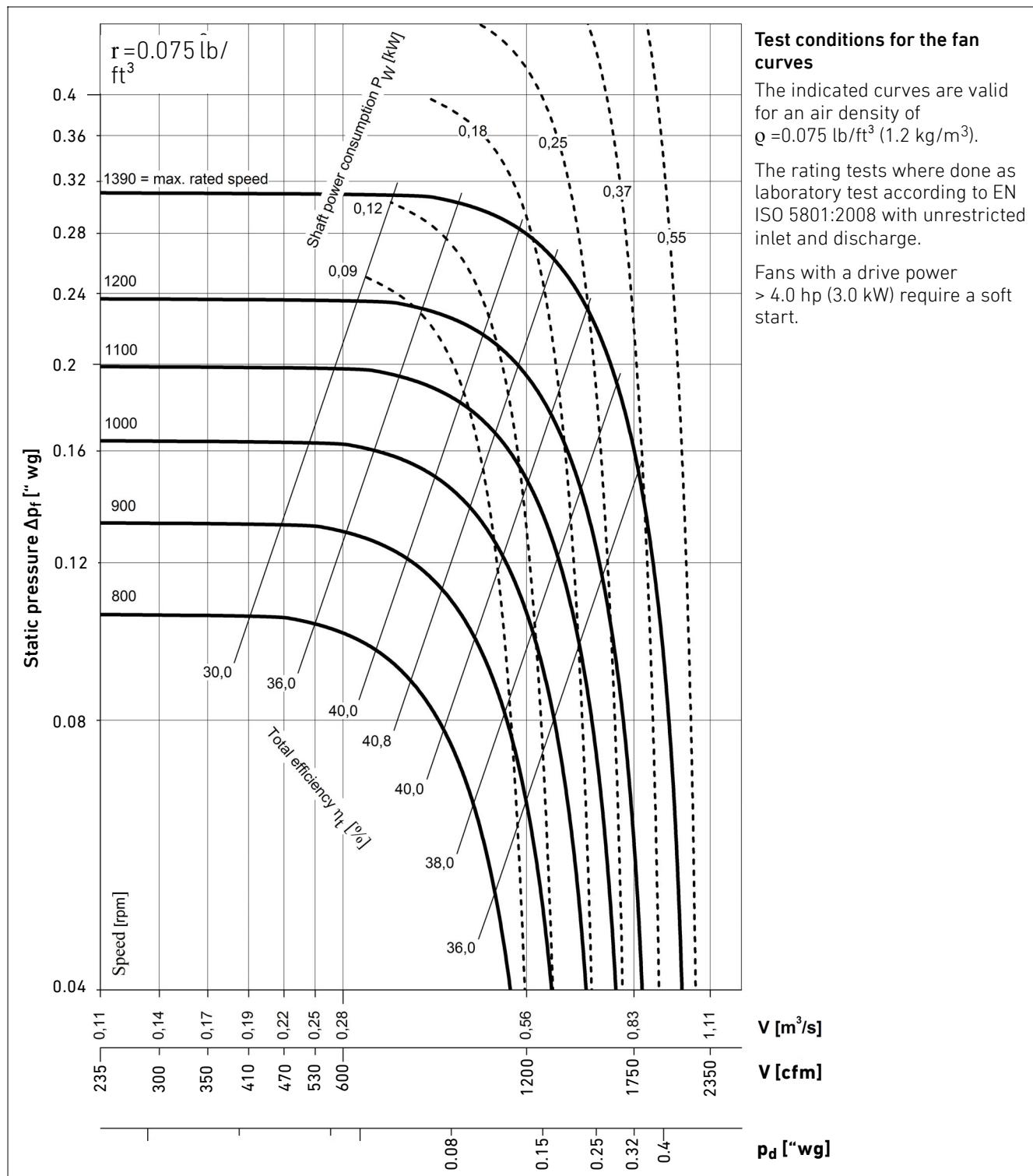
The indicated shaft power consumption does **not** include the belt drive losses.



LTG Tangential Fans Type TW Impeller Diameter 3" (125 mm)

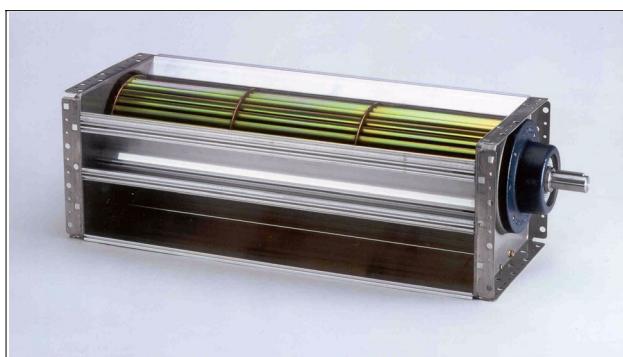
Fan curves for nominal length 40" (1000 mm)

The indicated shaft power consumption does **not** include the belt drive losses.



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

The tangential fan series TW 150 is a rigid industrial grade fan with enhanced corrosion protection and high power density.



LTG Tangential Fan Type TWR 150 (right hand drive)

Service Conditions

Gas temperatures:

-13 °F up to +250 °F (-25 °C up to +120 °C)

Ambient temperatures:

-13 °F up to +105 °F (-25 °C up to +40 °C)

Delivery Range

Type	Max. Medium Temperatures	Nominal impeller length	Casing	Impeller
TWR 150/401/N TWL 150/401/N	-13 °F to +250 °F (-25 °C to +120 °C)	16.0 inch (401 mm)	marine grade aluminum	galvanized steel
TWR 150/601/N TWL 150/601/N		23.5 inch (601 mm)		
TWR 150/864/N TWL 150/864/N		34.0 inch (864 mm)		
TWR 150/1064/N TWL 150/1064/N		42.0 inch (1064 mm)		
TWR 150/1264/N TWL 150/1264/N		50.0 inch (1264 mm)		

TWR = right hand drive

TWL = left hand drive

Specification and design features

Tangential fan with shaft end on the drive side and feather key.

Rigid bolted, corrosion proof casing of marine grade aluminum. Impeller of galvanized sheet steel.

The impeller is both sides bedded in self-aligning ball bearings. Bearing design life is 25 000 hours.

The counter-side bearing is vibration damped. Both bearings are maintenance free.

Recommended V-belt pulley:

profile SPA 0.49 inch (12.5 mm), dw = 6.3 inch1 (60 mm).

The maximum rated power transmission for the pulley is 12 hp.

Intake and discharge openings have sealing planes and plug in slots to connect exactly to ducts and appliances. The complete fan (including bearing clearance etc.) is balanced to grade Q 6.3 according to VDI 2060.

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

Position of the fan

Any arrangement is possible.

Installation and Start Up

Fix the fans without any distortion to a plane base frame. For fixation of the fan use only the bolt holes provided in the side elements.

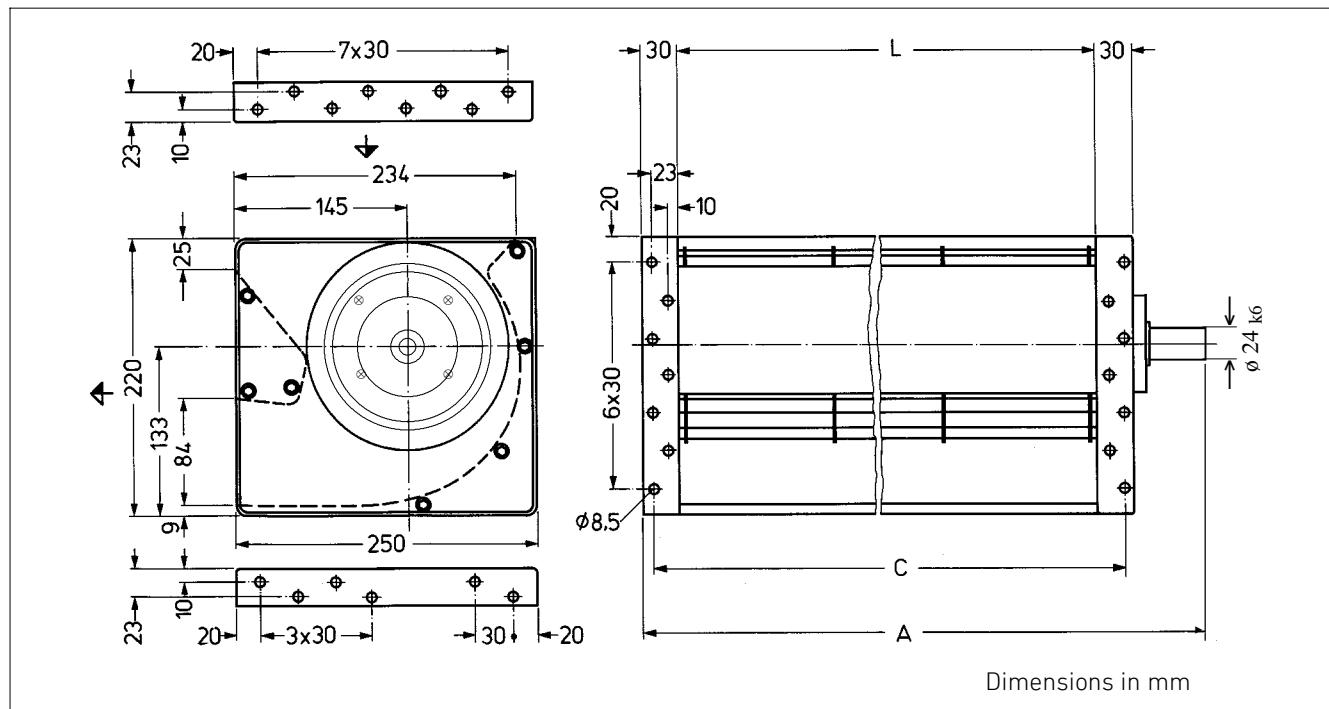
To connect to ducts and appliances plug in slots and sealing planes are provided over the whole fan width for the intake and discharge openings.

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

For higher temperatures check V-belt selection.

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

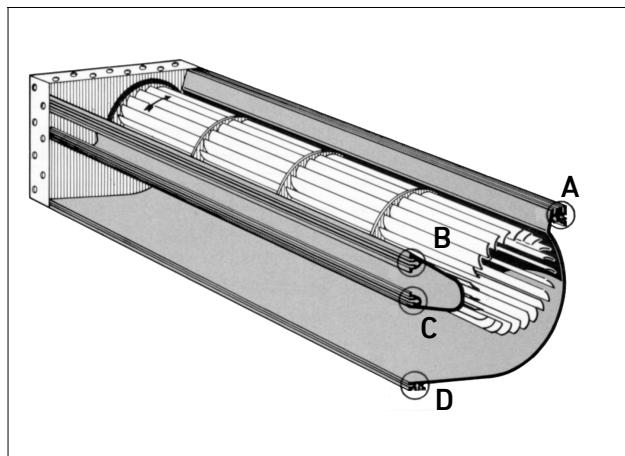
Dimensions and Performance Data



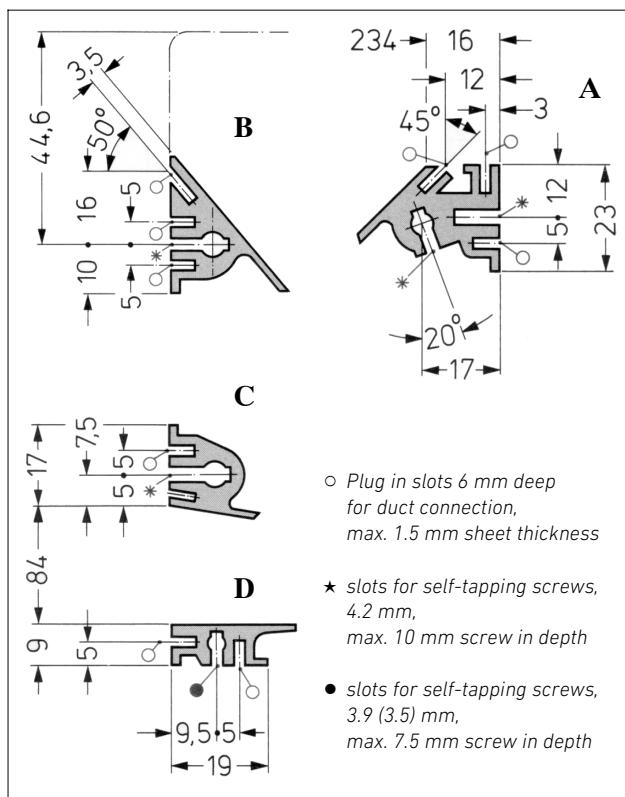
Type/ Nominal Length	L	Dimensions		C	Air-Volume V_{max} [cfm] (m ³ /h)	Pressure Δp_{fmax} ["wg] (Pa)	Speed n_{max} [rpm]	Masses appr. [lb] (kg)
		A	[inch] (mm)					
TWR 150/401/N TWL 150/401/N	15.79 (401)	21.54 (547)		17.60 (447)	3650 (6200)	2.4 (600)	2800	22 (10)
TWR 150/601/N TWL 150/601/N	23.66 (601)	29.41 (747)		25.47 (647)	5180 (8800)	2.4 (600)	2800	29 (13)
TWR 150/864/N TWL 150/864/N	34.02 (864)	39.76 (1010)		35.83 (910)	7060 (12,000)	2 (510)	2600	36 (16)
TWR 150/1064/N TWL 150/1064/N	41.89 (1064)	47.64 (1210)		43.70 (1110)	8240 (14,000)	1.7 (430)	2400	42 (19)
TWR 150/1264/N TWL 150/1264/N	49.76 (1264)	55.52 (1410)		51.58 (1310)	7060 (12,000)	1 (240)	1800	49 (22)
TWR 150/1464/N TWL 150/1464/N	57.64 (1464)	63.39 (1610)		59.45 (1510)	6475 (11,000)	3.2 (155)	1440	55 (25)

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

Plug in slots



Plug in slots over the full fan width

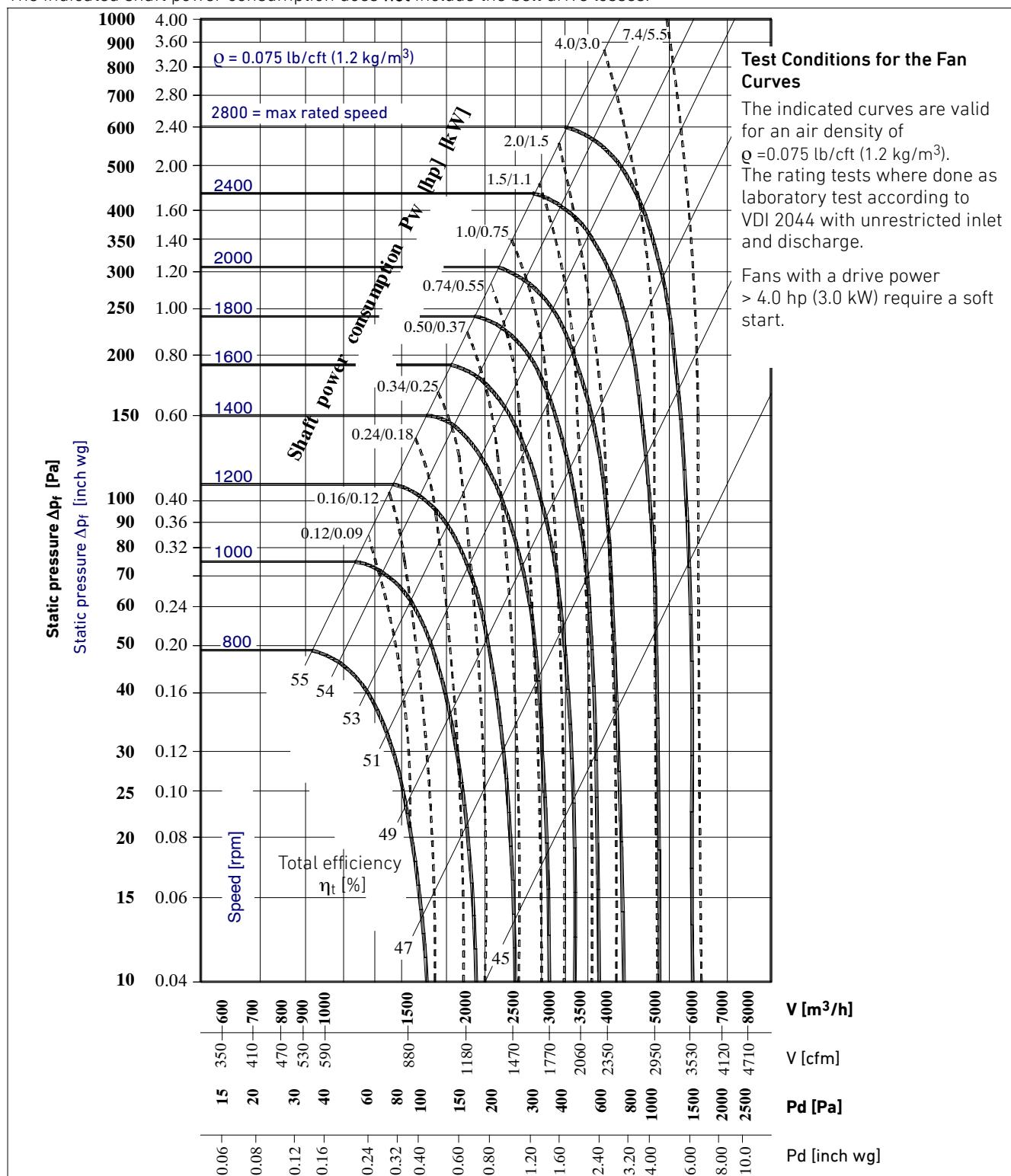


LTG Tangential Fans Type TW

Impeller Diameter 6" (150 mm)

Fan Curves for nominal length 16" (401 mm)

The indicated shaft power consumption does **not** include the belt drive losses.

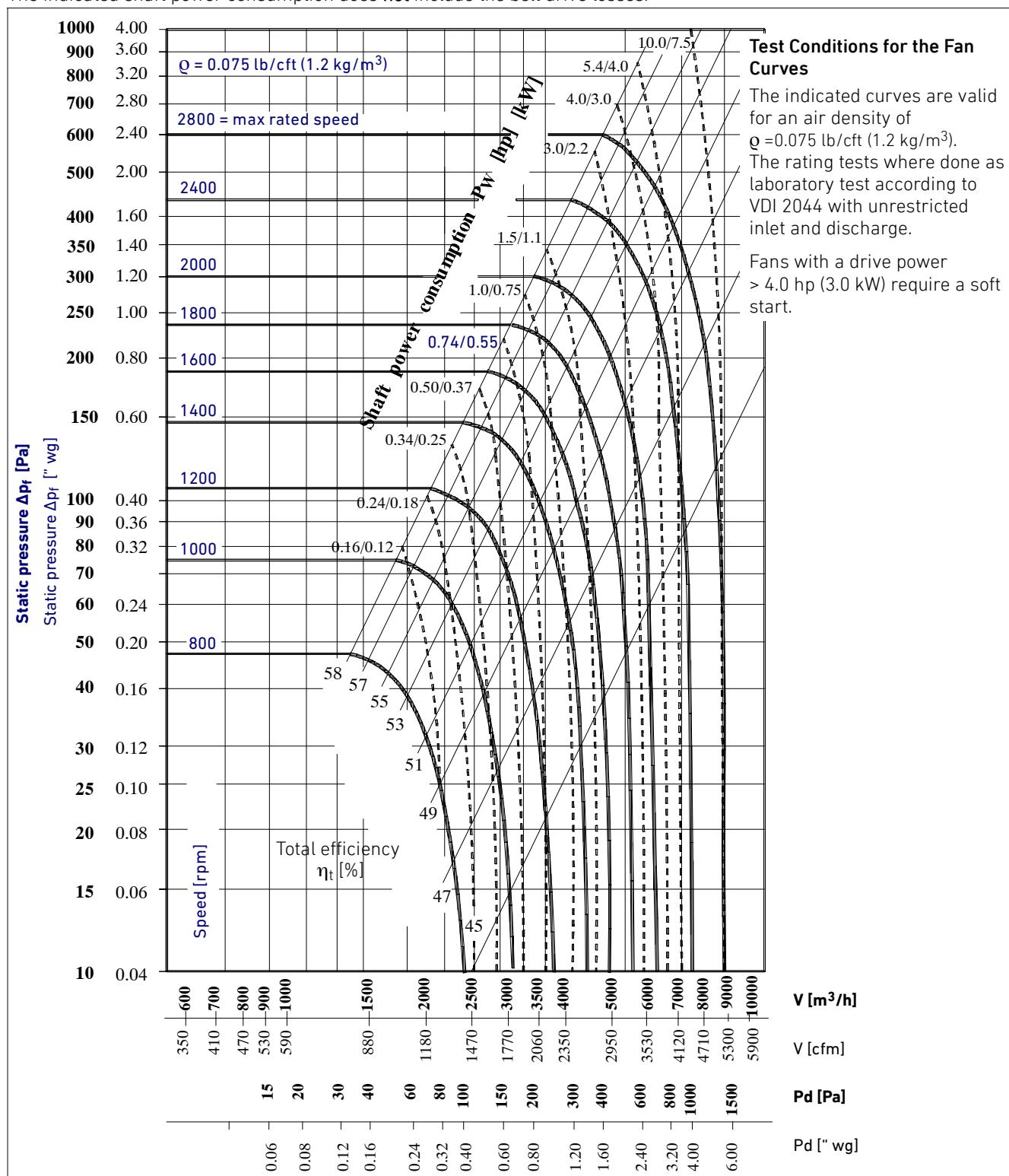


LTG Tangential Fans Type TW

Impeller Diameter 6" (150 mm)

Fan Curves for nominal length 23.5" (601 mm)

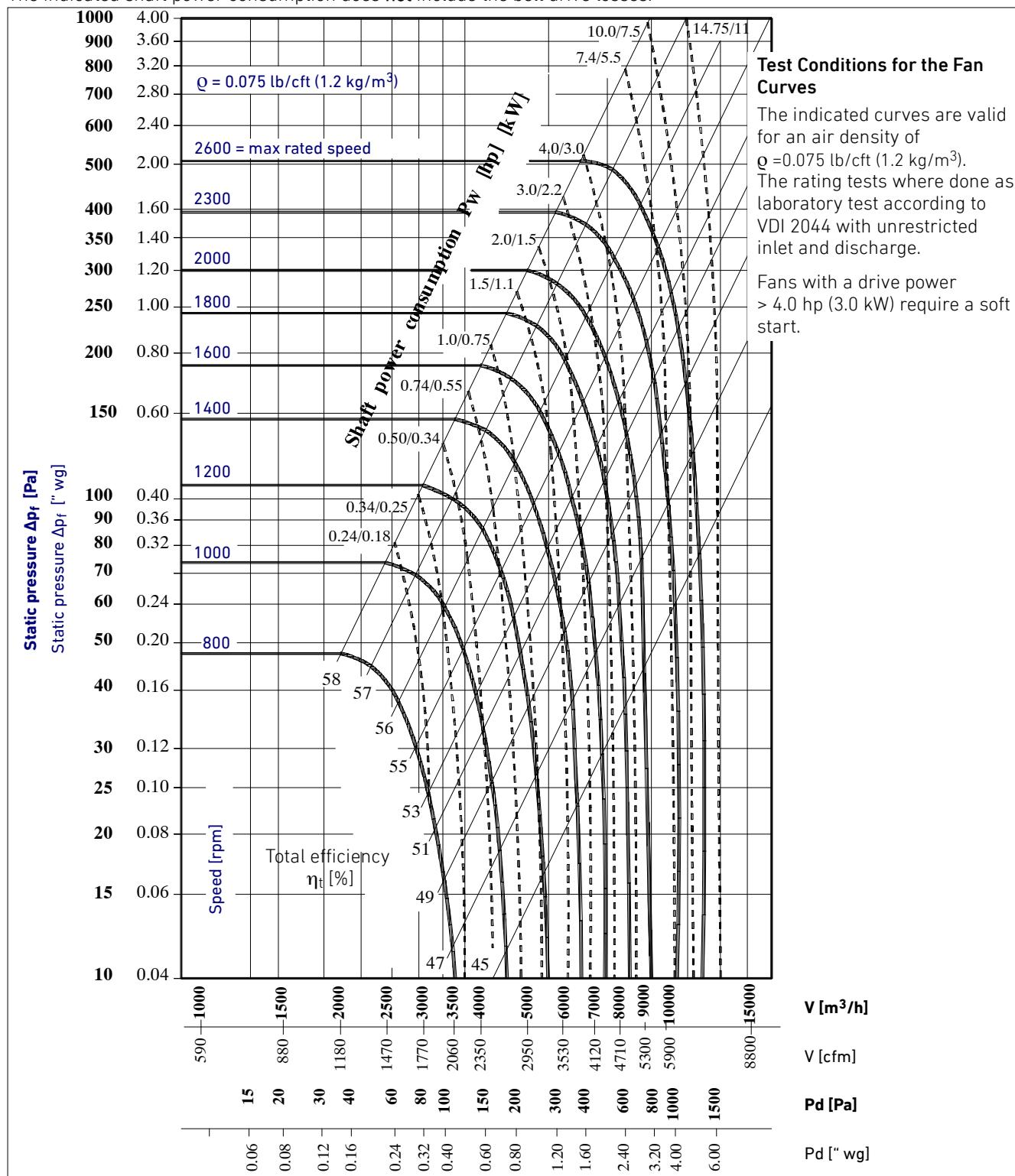
The indicated shaft power consumption does **not** include the belt drive losses.



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

Fan Curves for nominal length 34" (864 mm)

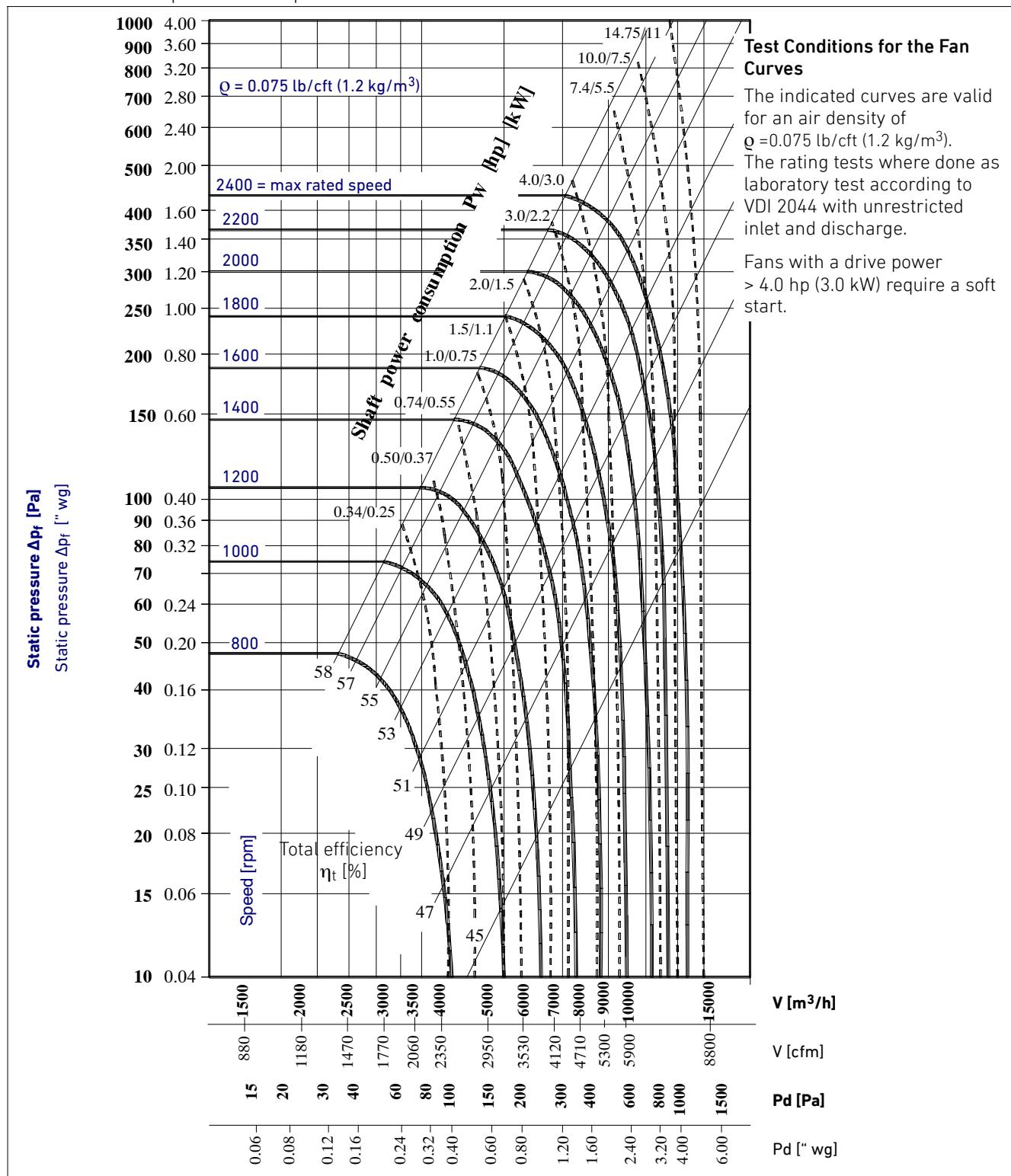
The indicated shaft power consumption does **not** include the belt drive losses.



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

Fan Curves for nominal length 42" (1064 mm)

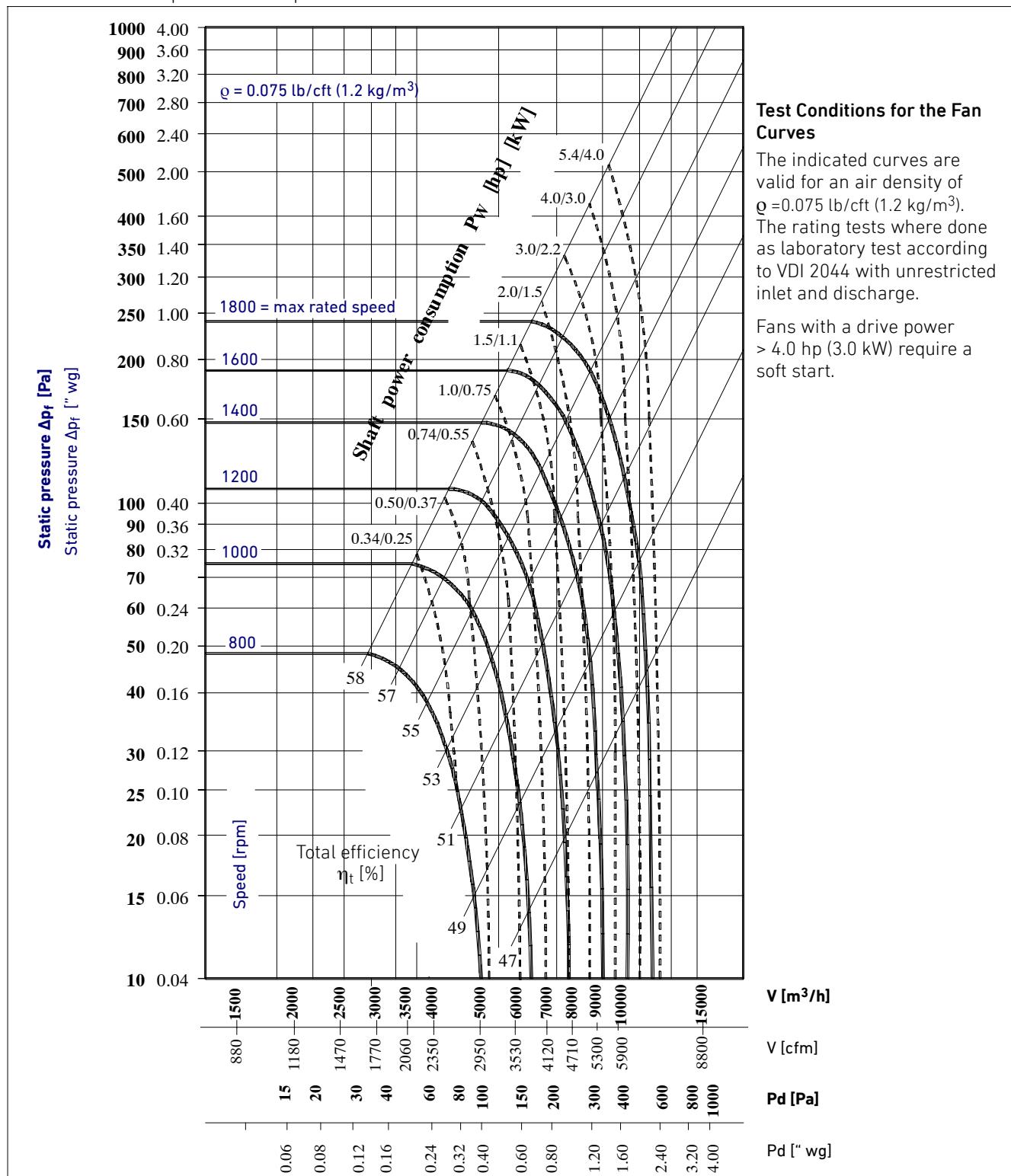
The indicated shaft power consumption does **not** include the belt drive losses.



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

Fan Curves for nominal length 50" (1264 mm)

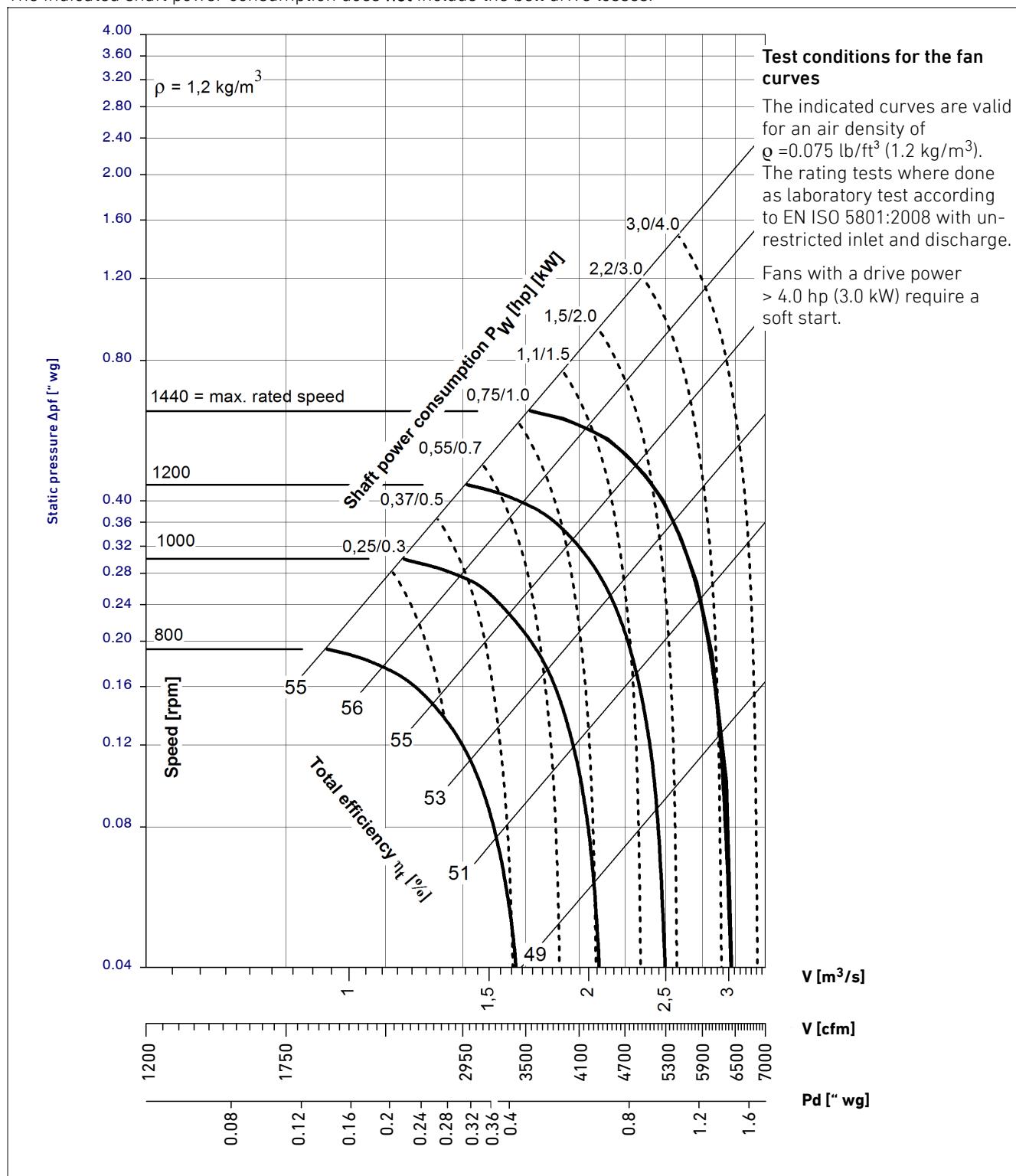
The indicated shaft power consumption does **not** include the belt drive losses.



LTG Tangential Fans Type TW, Impeller Diameter 6" (150 mm)

Fan curves for nominal length 50" (1464 mm)

The indicated shaft power consumption does **not** include the belt drive losses.



LTG Tangential Fans Type TW Impeller Diameter 8" (200 mm)

The tangential fan series TW 200 is a rigid industrial grade fan with enhanced corrosion protection and high power density.



LTG Tangential Fan Type TWR 200 (right hand drive)

Service Conditions

Gas temperatures:

-13 °F up to +250 °F (-25°C up to +120 °C).

Ambient temperatures:

-13 °F up to +105 °F (-25 °C to +40 °C)

Delivery Range

Type	Max. Medium Temperatures	Nominal impeller length	Casing	Impeller
TWR 200/400/N TWL 200/400/N	-13 °F to +250 °F (-25 °C to +120 °C)	15 ¾ inch (400 mm)	marine grade aluminum	galvanized steel
TWR 200/630/N TWL 200/630/N		25 inch (630 mm)		
TWR 200/800/N TWL 200/800/N		31.5 inch (800 mm)		
TWR 200/1000/N TWL 200/1000/N		39.5 inch (1000 mm)		
TWR 200/1250/N TWL 200/1250/N		49 inch (1250 mm)		

TWR = right hand drive

TWL = left hand drive

Specification and Design Features

Tangential fan with shaft end on the drive side and feather key.

Rigid bolted, corrosion proof casing of marine grade aluminum (DIN 1725). Impeller of galvanized steel.

The impeller is both sides bedded in self-aligning ball bearings. Bearing design life is 25 000 hours. The counter side bearing is vibration damped. Both bearings are maintenance free.

Recommended V-belt pulley: profile SPA 0.49 inch (12.5 mm), dw = 6.3 inch (160 mm). DIN 7753.

The maximum rated power transmission for the pulley is 12 hp (9 kW).

Intake and discharge openings have sealing planes and plug in slots to connect exactly to ducts and appliances. The complete fan (including bearing clearance etc.) is balanced to grade Q 6.3 according to VDI 2060.

Length tolerances acc. to ISO 2768 vL.

LTG Tangential Fans Type TW Impeller Diameter 8" (200 mm)

Position of the Fan

Any arrangement is possible.

Installation and Start Up

Fix the fans without any distortion to a plane base frame. For fixation of the fan use only the bolt holes provided in the side elements.

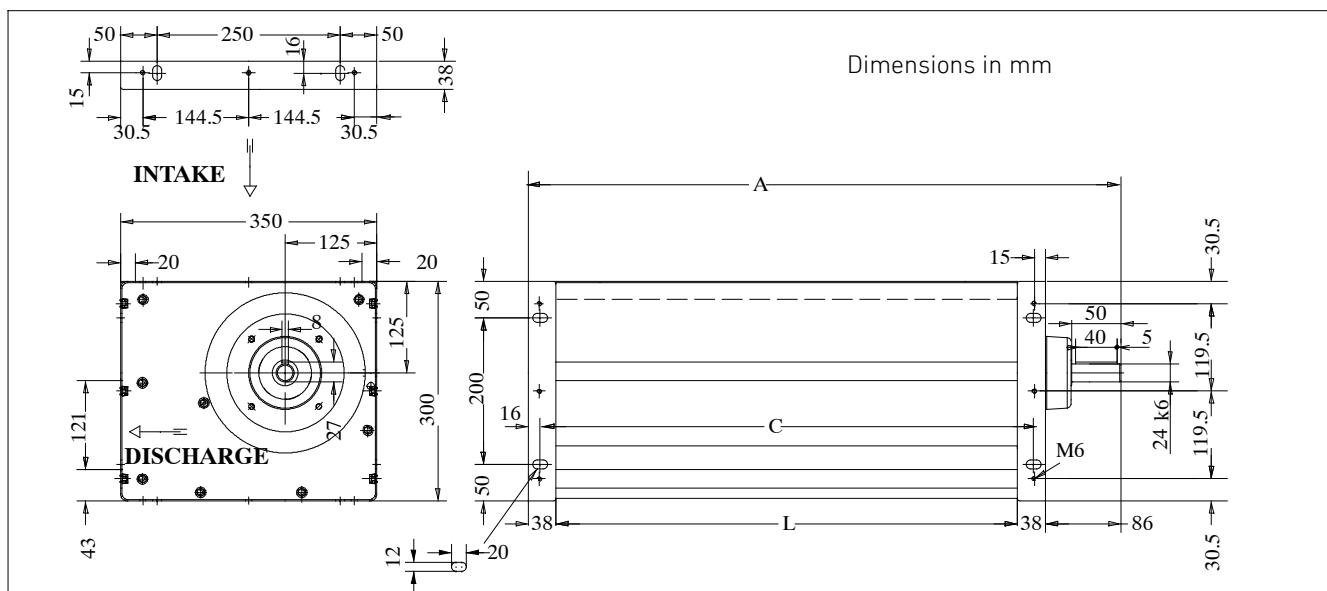
To connect to ducts and appliances sealing planes are provided over the whole fan width for the intake and discharge openings.

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

For higher temperatures check V-belt selection.

The fans are designed for continuous operation with constant load (operation mode S1 analogous to VDE 0530): For frequent start/stop operation please check with LTG.

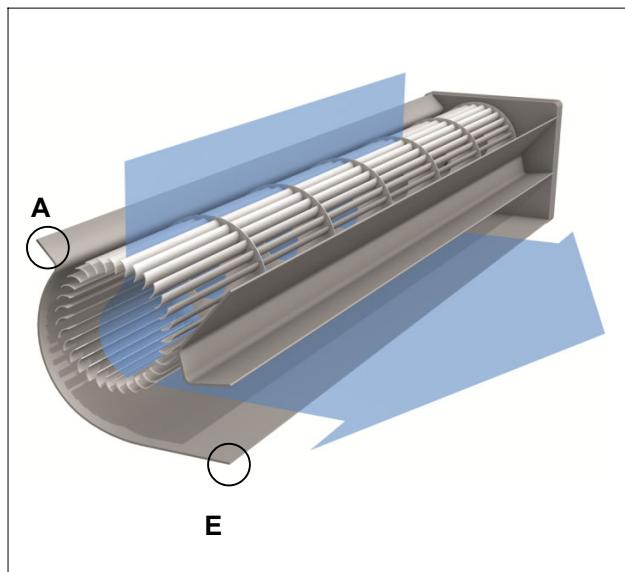
Dimensions and performance data



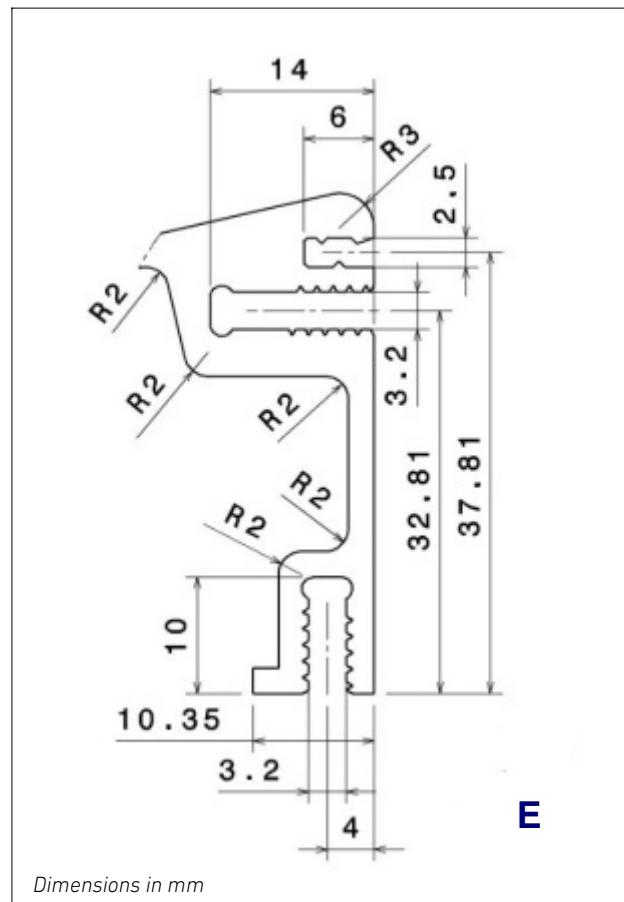
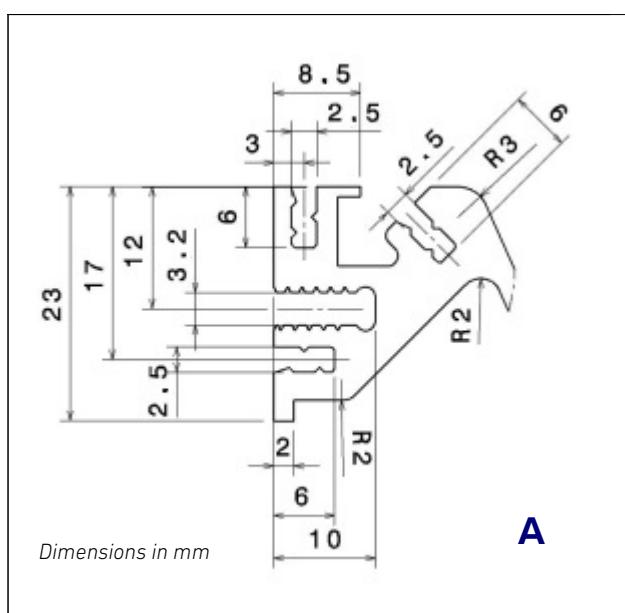
Type/ Nominal Length	Dimensions			Air-Volume V_{max} [cfm] (m^3/h)	Pressure Δp_{fmax} [" wg] (Pa)	Speed n_{max} [rpm]	Masses appr. [lb] (kg)
	L [inch] (mm)	A [mm]	C [mm]				
TWR 200/400/N TWL 200/400/N	15.75 (400)	22.126 (562)	17.48 (444)	3550 (6000)	2.2 (550)	2400	36 (16)
TWR 200/630/N TWL 200/630/N	24.8 (630)	31.18 (792)	26.54 (674)	4700 (8000)	1.6 (400)	2100	44 (20)
TWR 200/800/N TWL 200/800/N	31.5 (800)	37.87 (962)	33.23 (844)	5300 (9000)	1.2 (300)	1800	53 (24)
TWR 200/1000/N TWL 200/1000/N	39.37 (1000)	45.75 (1162)	41.10 (1044)	5900 (10,000)	1 (240)	1600	62 (28)
TWR 200/1250/N TWL 200/1250/N	49.21 (1250)	55.59 (1412)	50.94 (1294)	5300 (9000)	0.6 (140)	1200	71 (32)

LTG LTG Tangential Fans Type TW Impeller Diameter 8" (200 mm)

Plug in slots



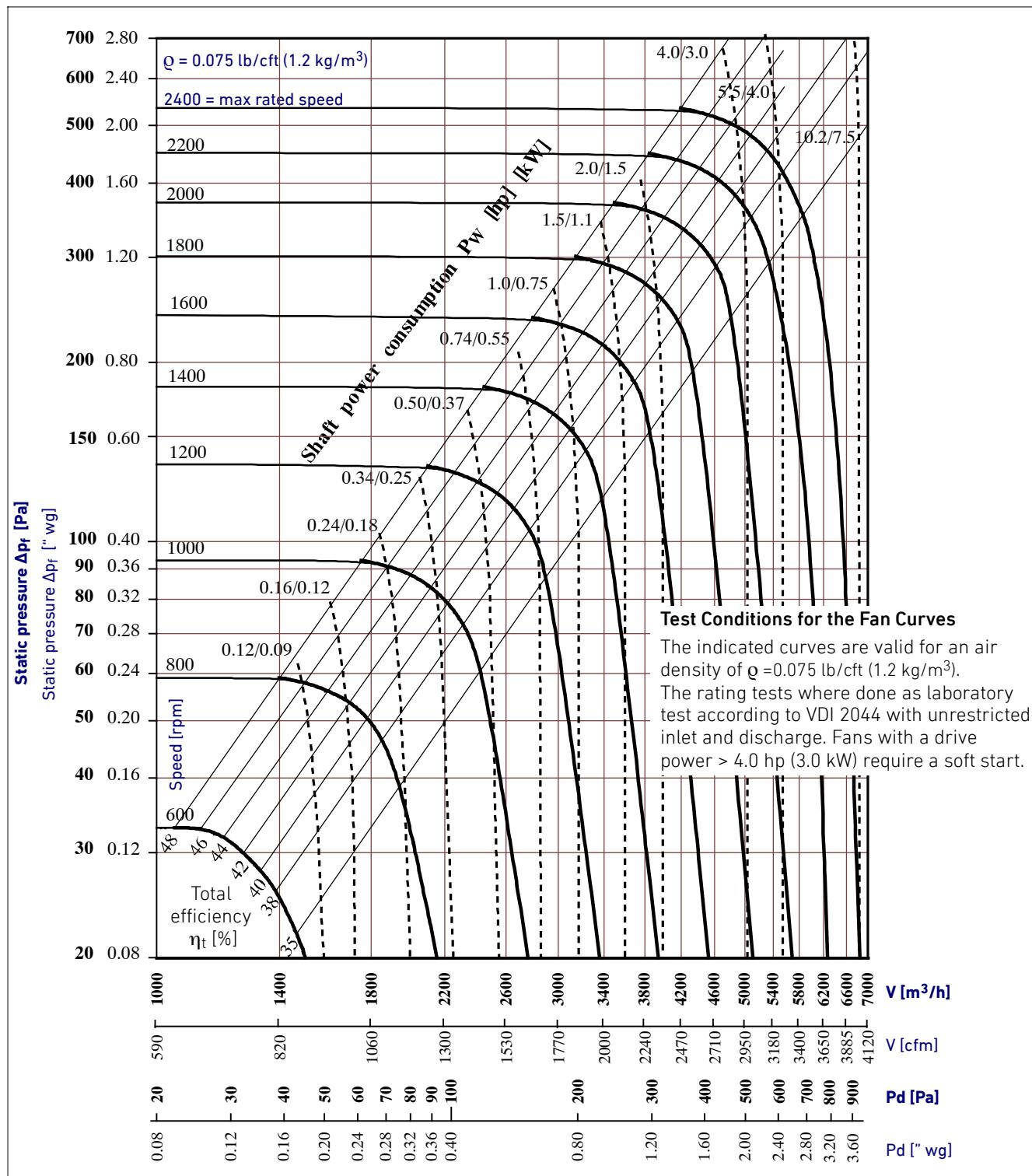
Plug in slots over the full fan width



LTG Tangential Fans Type TW Impeller Diameter 8" (200 mm)

Fan Curves for nominal length 15¾" (400 mm)

The indicated shaft power consumption does **not** include the belt drive losses.

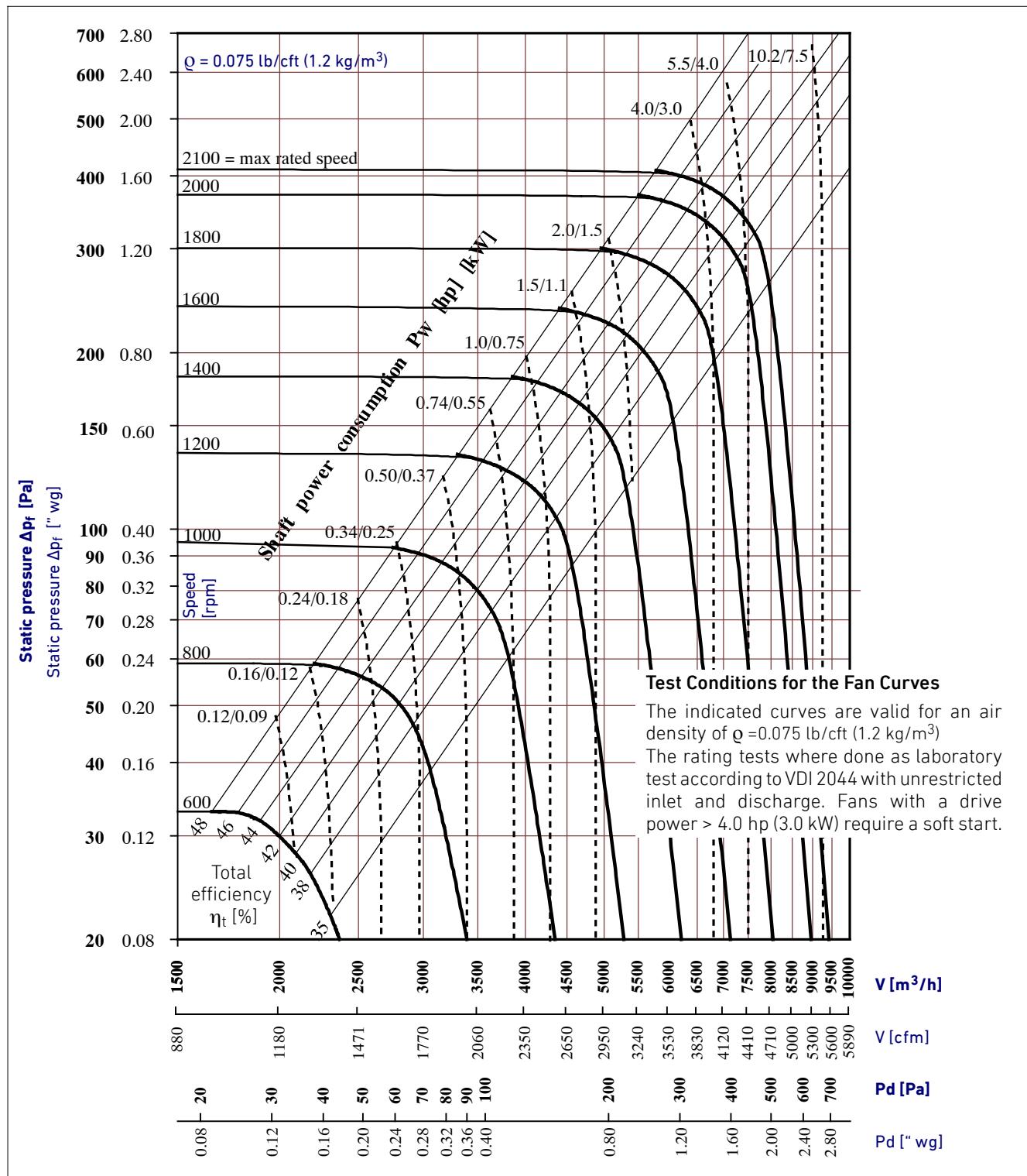


LTG Tangential Fans Type TW

Impeller Diameter 8" (200 mm)

Fan Curves for nominal length 25" (630 mm)

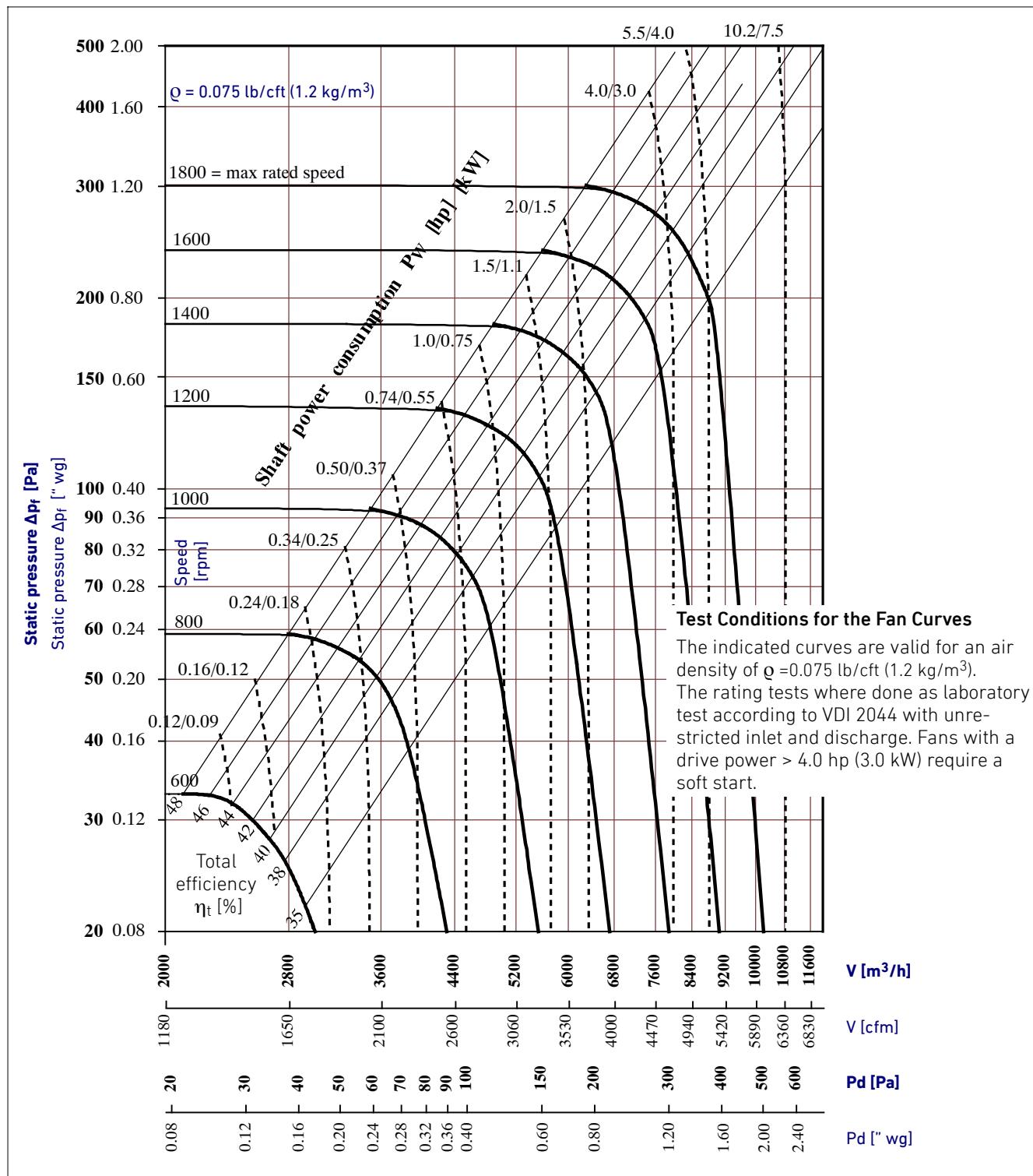
The indicated shaft power consumption does **not** include the belt drive losses.



LTG Tangential Fans Type TW Impeller Diameter 8" (200 mm)

Fan Curves for nominal length 31.5" (800 mm)

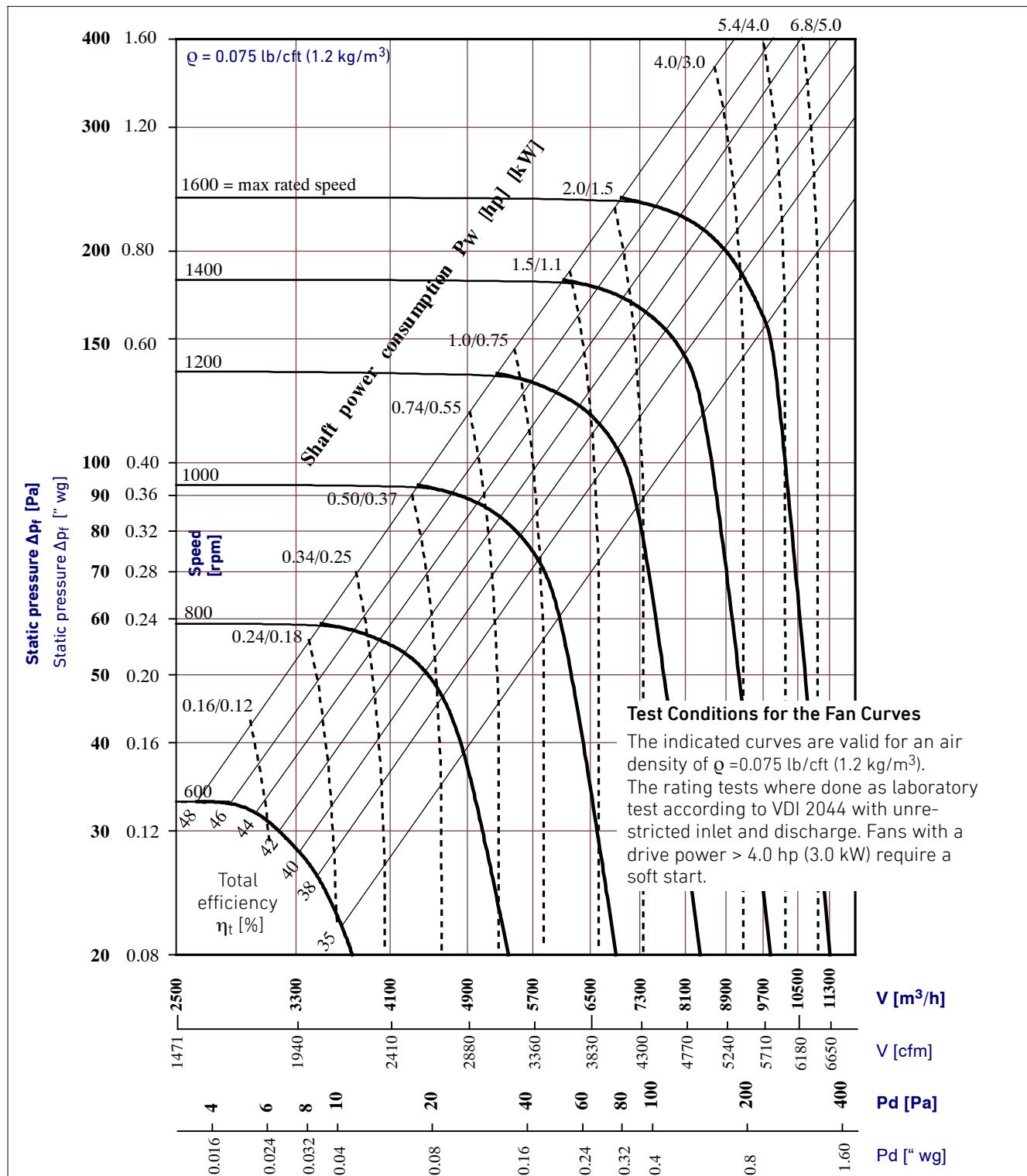
The indicated shaft power consumption does **not** include the belt drive losses.



LTG Tangential Fans Type TW Impeller Diameter 8" (200 mm)

Fan Curves for nominal length 39.5" (1000 mm)

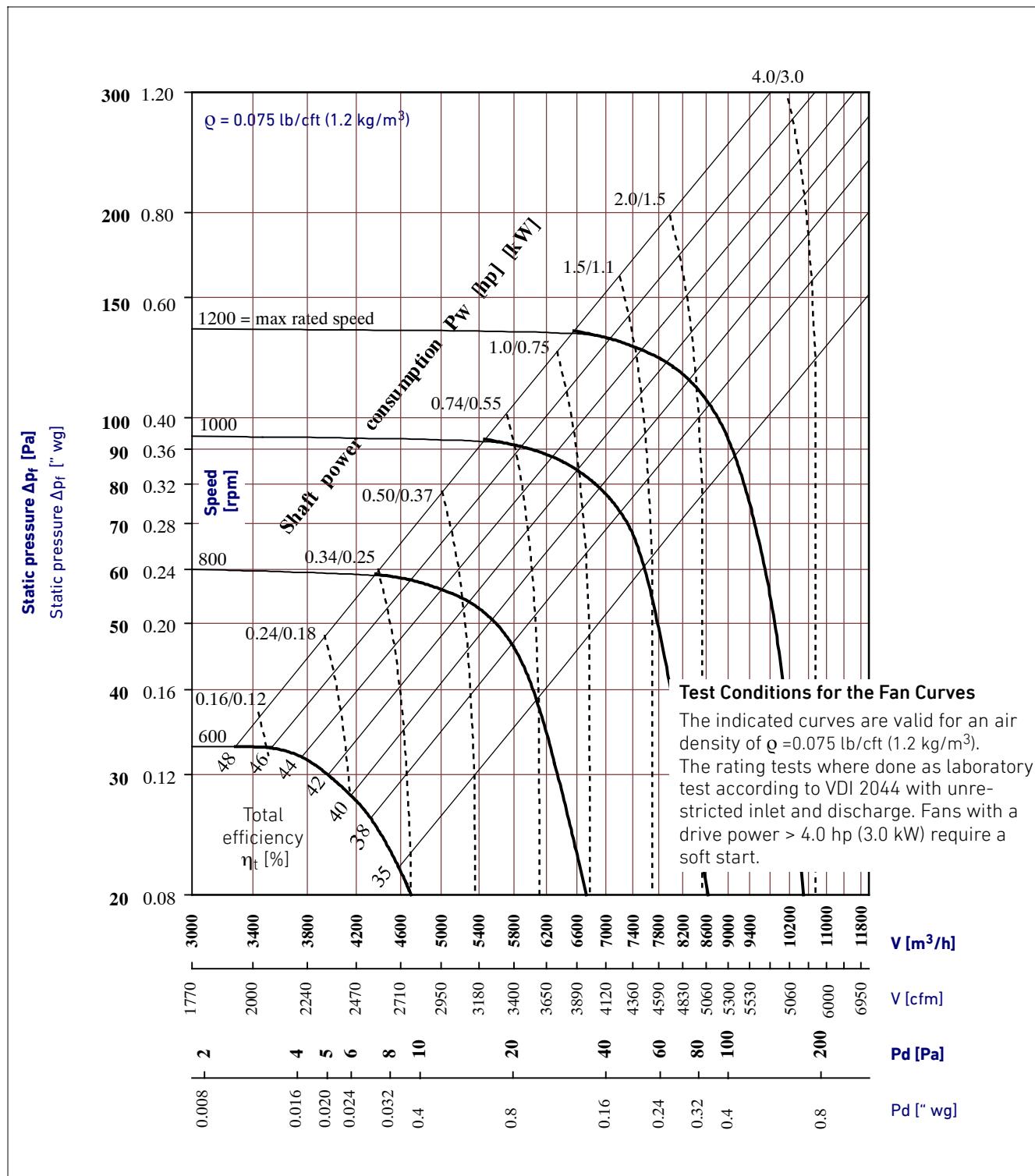
The indicated shaft power consumption does **not** include the belt drive losses.



LTG Tangential Fans Type TW Impeller Diameter 8" (200 mm)

Fan Curves for nominal length 49" (1250 mm)

The indicated shaft power consumption does **not** include the belt drive losses.



LTG Tangential Fans Type TW

Impeller Diameter 6 and 8" (150 and 200 mm)

Specification and Design Features

Drive Side

With the suction opening on top, viewed against the discharge opening, the drive pulley is bolted on optional either right hand (TWR) or left hand (TWL).

Accessories and Special Versions

For extra high corrosion protection requirements, the impellers can be made of stainless steel.

Belt pulley:

V-belt pulley with sleeve, $d_w = 6.3$ inch (160 mm), profile SPA 0.49 inch (12.5 mm).

Acoustical Data

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

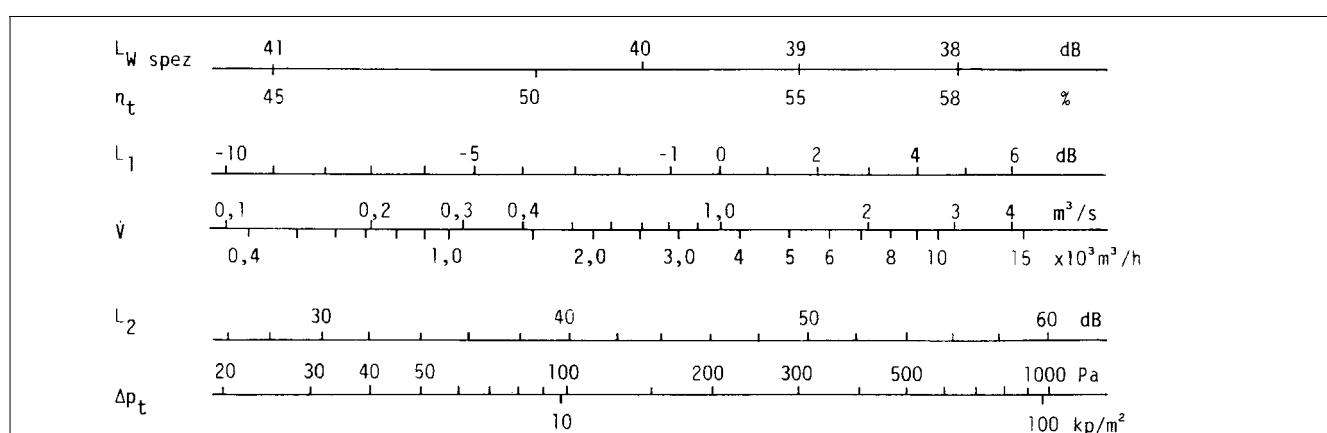
The A-weighted sound power level L_{WA} can be transformed into a A-weighted sound pressure level L_{PA} by the equation $L_{PA} = L_{WA} - 10 \log s/1 \text{ m}^2$.

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.

The equation for the unweighted sound power level according to VDI 2081 is:

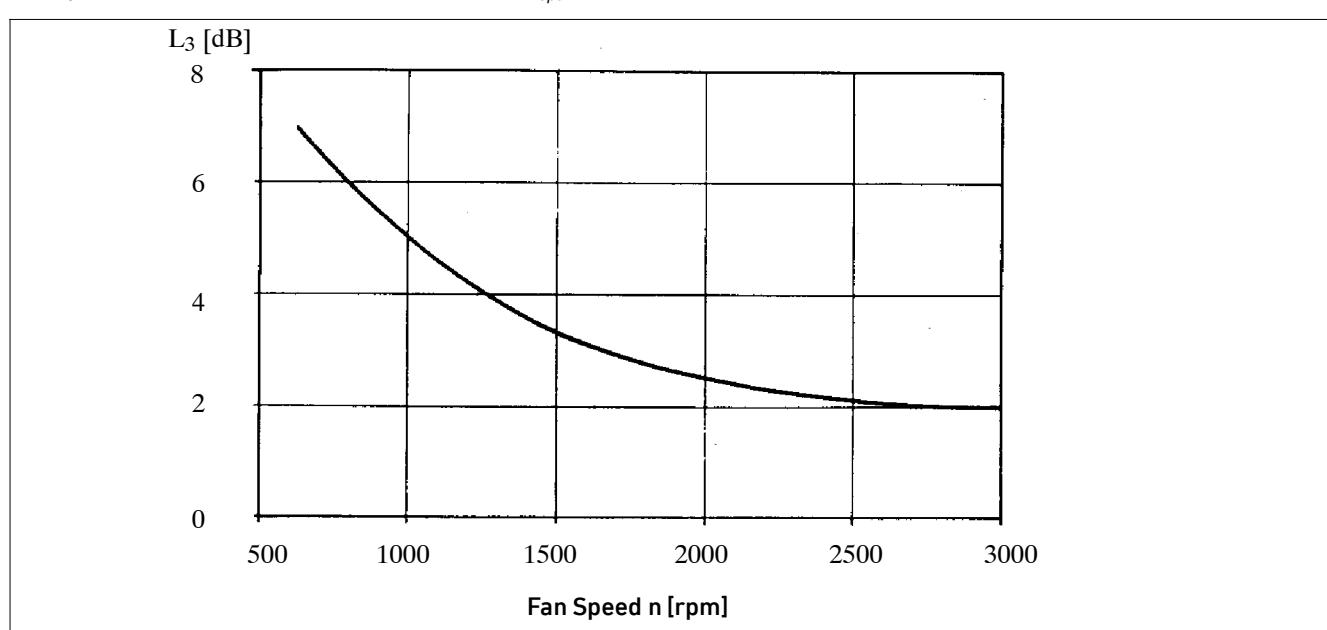
$$L_W = L_{wspecific} + 10 \log V + 20 \log \Delta p_t$$

For the total pressure Δp_t use Pa and for the air volume V use m^3/s .



Unweighted Sound Power Level L_W [dB]

$$L_W = L_{wspez} + L_1 + L_2 \text{ [dB]}$$

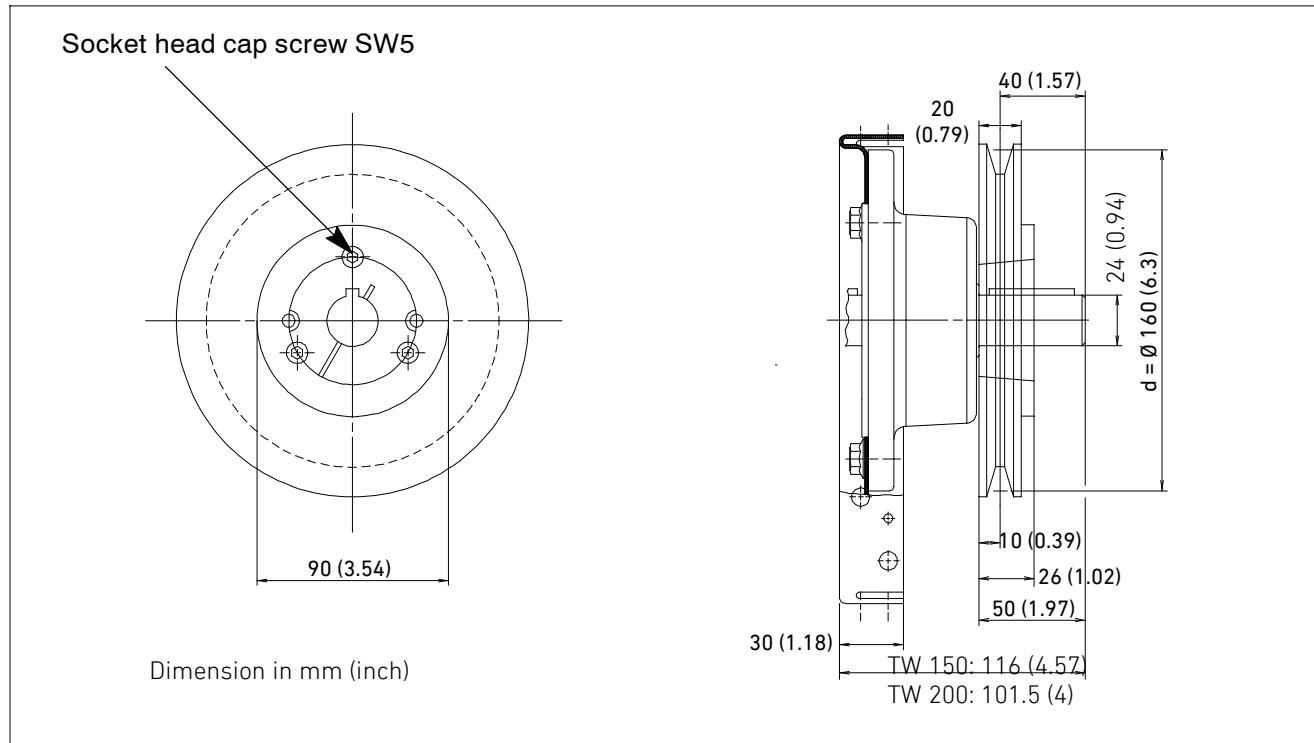


A-weighted Sound Power Level L_{WA} [dBA]

$$L_{WA} = L_W - L_3 \text{ [dBA]}$$

LTG Tangential Fans Type TW

Impeller Diameter 6 and 8" (150 and 200 mm)



General Remarks

Belt pulley and taper clamping sleeve are made from grey cast iron GG 20.

LTG Accessories

V-belt pulley 1 x SPA Ø 6.3 inch (160 mm)
incl. clamping sleeve Ø 0.94 inch (24 mm)
Part No. 1004586

Installation / Initiation

- Clean and degrease all shiny surfaces. Insert taper clamping sleeve into the hub and bring bores to a flush.
- Slightly grease screws and insert. Do not yet tighten the screws.
- Clean and degrease shaft. Push belt pulley with taper clamping sleeve to the desired position on the shaft.
- Tighten the screws uniformly, alternating between the sides and using 14¾ ft-lb torque.
- Check the torque of the screws after a short period of service (½ to 1 h) and correct if necessary.
- To keep foreign bodies from entering the empty bores, fill them with grease.

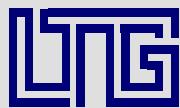
Dissassembly

- Loosen all screws. Remove one or two of them completely, grease and insert them into the ejection bores.
- Remove belt pulley with sleeve from the shaft.

LTG Tangential Fans Type TW

Selection

Application		Example		Your Data		Designations	
gas			cold air			t [°F]	temperature
gas temperature	t	[°F]	-4			U [V]	voltage
ambient temperature						f [Hz]	frequency
drive side	t	[°F]	-5			V [cfm]	air volume
counter side	t	[°F]	-5			ρ [cu ft/lb]	specific gravity
condensation			yes			Δp _f [in. "wg]	static pressure
located at			vehicle refrigeration			p _d [in. "wg]	dynamic pressure at the discharge area
drive side			right hand			Δp _t [in. "wg]	total pressure
arrangement			horizontal			c [m/s]	velocity at the discharge area
Drive Motor							
power supply			3-phase			ρ [cft/lb]	specific gravity
voltage	U	[V]	208/480			n [rpm]	speed
frequency	f	[Hz]	60			η _t [%]	efficiency
Specified Performance						P _w [hp]	shaft power consumption
air volume	V	[cfm]	4709			L _w [dB]	sound power level
static pressure	Δp _f	[in "wg"]	1			L _{WA} [dB(A)]	A-weighted sound power level
at specific gravity	ρ	[cft/lb]	19.22			L _{pA} [dB(A)]	A-weighted sound pressure level
active impeller length	min.	L [inch]	35.43				
	max.	L [inch]	51.18				
total length	max.	A [inch]	55.12				
Procedure							
1. air volume	V	[cfm]	4709				
achievable with length			1064, 1264				
2. static pressure	Δp _f	[in "wg"]	1				
achievable with length		[inch]	41.89				
3. drive side			right hand				
Selected							
LTG Tangential Fan type			TWR 150/1064 N				
Performance Data							
flow rate	V	[cfm]	4709				
static pressure	Δp _f	[in "wg"]	150				
dynamic pressure	p _d	[in "wg"]	1,51				
total pressure	Δp _t	[in "wg"]	2.51				
exhaust velocity	c	[ft/min]	4920				
speed	n	[rpm]	2000				
efficiency	η _t	[%]	54				
shaft power consumption	P _w	[hp]	3.35				
smooth starting			no				
Acoustical Data							
L _{w spez} spec. sound power level		[dB]	39.5				
L ₁		[dB]	3.5				
L ₂		[dB]	56				
sound power level	L _w	[dB]	99				
L ₃		[dB]	2.5				
sound power level A-weighted	L _{WA}	[dBA]	96.5				
sound pressure level in the free field in 1 m distance (full spheric sound radiation)	L _{pA}	[dBA]	85.5				



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