Series

VENTS TT Silent-M

Inline mixed-flow fans in sound- and heat-insulated casing with the air capacity up to **1950 m³/h**

Application

New inline VENTS TT Silent-M fans are enclosed in a specially designed sound-insulated casing that ensures silent fan operation in combination with high aerodynamic characteristics. The fans are compatible with round air ducts from Ø 100 up to 355 mm. The VENTS TT Silent-M fans combine wide capabilities and high performance characteristics of both axial and centrifugal fans, thus providing powerful air flow and high pressure. The VENTS TT Silent-M fans are recommended as a component of the air handling systems for various commercial and industrial premises with high requirements to noise level, i.e. libraries, conference halls, educational institutions, kindergartens, etc.

Design

The external casing is made of polymer-coated steel. The inner casing perforation let sound waves pass through the holes and fall at a specific angle to the sound-absorbing layer. The casing is internally heat- and sound-insulated with 50 mm mineral wool layer. The specially perforated casing and sound-absorbing material provide sound attenuation in a broad frequency band. The inner casing and the impeller are made of high-quality durable plastic.

Due to the conic impeller and special blade profiling the circumferential air speed increases thus providing higher air pressure and capacity as compared to standard axial fans. The diffuser, the specially profiled impeller and the directing vanes at outlet from the fan casing distribute air flow in such a way as to attain the best combination of high performance and high pressure at low noise level. The fan casing is equipped with an airtight terminal box for connection to power mains.

Motor

Single phase energy efficient double-speed motor with low energy demand. The motor is equipped with thermal switches for the motor overheating protection. The ball bearings extend the motor service life up to 40 000 hrs. at non-stop operation. The motor has IP X4 ingress protection rating.

Control

The double-speed motors are controlled with a built-in switch (V option) or an external switch for multi-speed fans (available upon separate order).

TT Silent–M fan with a three–position speed switch

A built-in speed controller (P option), an external TRIAC or autotransformer speed controller (available upon separate order) enable smooth motor speed control when connected to the maximum speed terminal. T option models are equipped with an adjustable turn-off delay timer, adjustable from 2 to 30 minutes.

TT Silent–M fan with a built–in speed controller

Mounting

The fan may be mounted at any place and at any angle

Designation key:

Series	Air duct diameter	Options
VENTS TT Silent–M	100; 125; 150; 160; 200; 250; 315; 355	**T** – off-delay timer adjustable from 2 to 30 minutes. **U** – speed controller with electronic thermostat and temperature sensor integrated into the air duct. Equipped with power cord and IEC C14 electric plug. Temperature-based operation logic. **Un** – speed controller with electronic thermostat and external temperature sensor fixed on 4 m cable. Equipped with power cord and IEC C14 electric plug. Temperature-based operation logic. **U1** – speed controller with electronic thermostat and temperature sensor integrated into the air duct. Equipped with power cord and IEC C14 electric plug. Timer-based operation logic. **U1n** – speed controller with electronic thermostat and external temperature sensor fixed on 4 m cable. Equipped with power cord and IEC C14 electric plug. Timer-based operation logic. **R** – power cord with IEC C14 electric plug. **V** – three-position speed switch. **P** – built-in smooth speed controller and power cord with IEC C14 electric plug.

ErP data	
Overall efficiency	η, [%]
Measurement category	MC
Efficiency category	EC
Efficiency grade	N
Variable speed drive	VSD
Power	[kW]
Current	[A]
Air flow	[m³/h]
Static pressure	[Pa]
Speed	[n/min⁻¹]
Specific ratio	SR

Accessories

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within the ductwork system. Several fans may be installed in one system in parallel to attain higher air capacity or in series to increase operating pressure in the system. The fan casing is equipped with fixing brackets for fastening to the floor, wall or ceiling.

The fan with electronic module of the temperature sensor and speed controller (U option)

The ideal solution for ventilation of the premises with high demands to permanent temperature control e.g. greenhouses. The fan with the electronic temperature and speed control module provides automatic control of motor speed (air capacity) depending on the air temperature in the air duct or in the room.

The front panel of the electronic module has the following control knobs:

– speed control knob for setting the motor speed;

– thermostat control knob for setting the temperature set point;

– thermostat indicator light.

The fan is available in two modifications:

– with a temperature sensor integrated inside the fan air duct (U/U1 option);

– with an external temperature sensor fixed on the cable, 4 m long (Un / U1n option).

Control logic of the fan with the electronic temperature and speed control module

Set the desired air temperature (set point of the thermostat) with the thermostat control knob.

Set the required minimum impeller speed (air flow) with the speed control knob.

The motor switches to maximum speed (maximum air flow) as the temperature reaches and exceeds the set temperature set point.

The motor switches to the pre-set lower speed as the temperature drops down below the set temperature point.

To avoid the frequent motor speed changes, e.g. when the temperature in the supply air duct is equal to the threshold value, the switching delay time is activated. There are two switch delay control logics for various cases:

1. The temperature sensor-based switch delay (U option): the motor switches to higher speed as the air temperature exceeds 2 °C above the set thermostat set point. The motor revers to the pre-set lower speed as the air temperature drops below the thermostat set point. This control logic is used to keep air temperature to within 2 °C. In this case the motor speed switches are rare.

2. The timer-based switch delay (U1 option): as the air temperature exceeds the set thermostat set point, the motor switches to higher speed and the switch delay timer is activated for 5 minutes. The motor reverts to lower speed as the air temperature drops down below the thermostat set point and only after the delay timer countdown.

This pattern is used for exact air temperature control. The speed switches for the fan with U1 option are more frequent as compared to the fan with U option, however the minimum operating cycle at one speed is 5 minutes.

Fan overall dimensions:

Type	Dimensions [mm]					Weight [kg]	Fig. no.
	∅D	B	B1	L	H		
TT Silent-M 100	98	215	243	505	237	4.6	1
TT Silent-M 125	123	215	243	474	237	4.6	1
TT Silent-M 150	147	247	274	580	260	6.1	1
TT Silent-M 160	157	247	274	580	260	6.1	1
TT Silent-M 200	198	293	386	550	295	8.0	2
TT Silent-M 250	248	358	445	658	360	15.0	2
TT Silent-M 315	313	432	520	780	434	25.0	2
TT Silent-M 355	353	512	563	1069	538	35	3

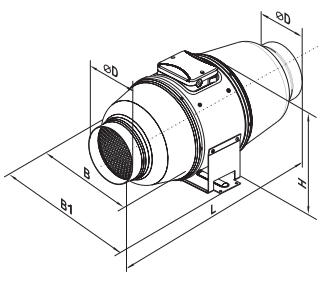


Fig.1

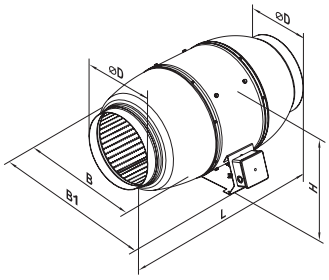


Fig.2

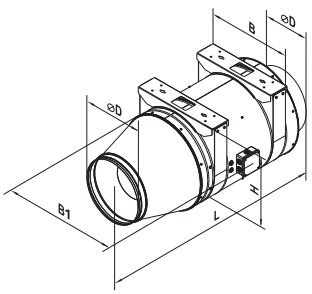


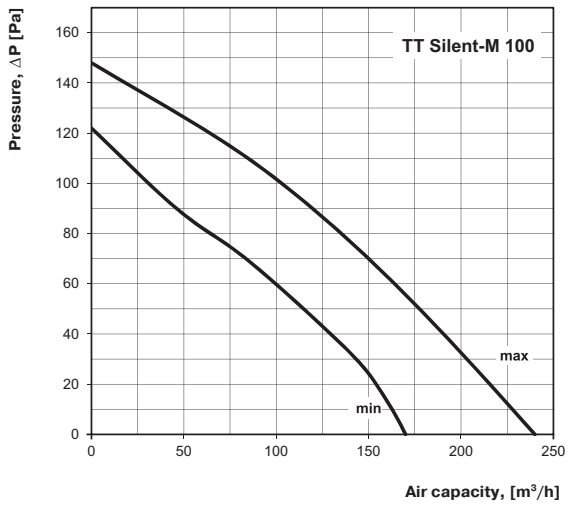
Fig.3

Technical data:

	TT Silent-M 100*		TT Silent-M 125*		TT Silent-M 150* TT Silent-M 160*	
Speed	min	max	min	max	min	max
Voltage [V / 50/60 Hz]	1~ 230		1~ 230		1~ 230	
Power [W]	24	26	25	30	45	52
Current [A]	0.10	0.11	0.11	0.13	0.20	0.23
Max. air capacity [m^3/h]	170	240	230	340	405	555
RPM [min^{-1}]	2030	2630	1650	2310	1970	2645
Noise level at 3 m [dBA]	24	29	23	28	26	33
Max. transported air temperature [°C]	60		60		60	
Protection rating	IP X4		IP X4		IP X4	

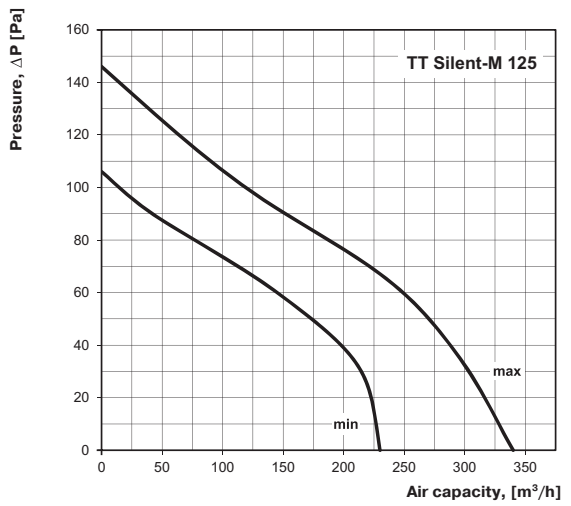
* Compliant to the ErP-regulation (EC) 327/2011, the power consumption at optimum efficiency is < 125W.

VENTS TT Silent-M



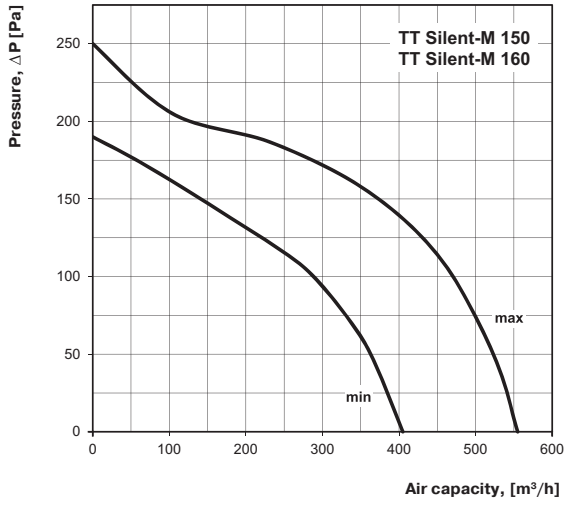
Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dBA	42	19	18	29	35	39	39	31	24
L_{wA} to outlet	dBA	45	20	19	30	38	42	35	35	23
L_{wA} to environment	dBA	34	15	14	17	25	29	21	22	14

VENTS TT Silent-M



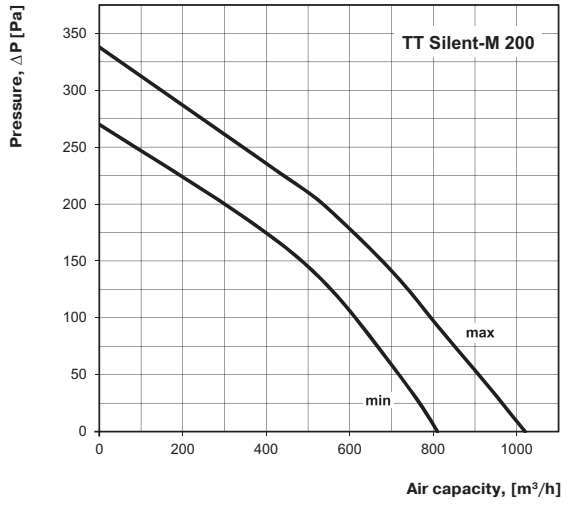
Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dBA	47	19	21	35	38	42	41	35	28
L_{wA} to outlet	dBA	46	21	24	35	39	41	43	37	29
L_{wA} to environment	dBA	35	17	20	23	27	28	22	21	15

VENTS TT Silent-M



Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dBA	61	25	33	49	55	53	55	53	39
L_{wA} to outlet	dBA	59	35	36	51	55	55	55	50	42
L_{wA} to environment	dBA	39	19	22	39	35	36	33	24	21

VENTS TT Silent-M



Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dBA	62	26	38	54	57	58	55	52	48
L_{wA} to outlet	dBA	65	28	42	48	62	60	62	50	44
L_{wA} to environment	dBA	45	22	30	31	38	41	42	29	22

Technical data:

	TT Silent-M 200*		TT Silent-M 250		TT Silent-M 315		TT Silent-M 355
Speed	min	max	min	max	min	max	–
Voltage [V / 50/60 Hz]	1~ 230		1~ 230		1~ 230		1~ 230 / 50 Hz
Power [W]	78	110	127	178	213	313	310
Current [A]	0.35	0.49	0.52	0.79	0.93	1.41	1.35
Max. air capacity [m³/h]	810	1020	1050	1330	1530	1950	3200
RPM [min⁻¹]	2015	2445	1965	2495	1975	2545	1390
Noise level at 3 m [dBA]	31	36	34	38	36	40	–
Max. transported air temperature [°C]	60		60		60		60
Protection rating	IP X4		IP X4		IP X4		IP X4

* Compliant to the ErP-regulation (EC) 327/2011, the power consumption at optimum efficiency is < 125W.

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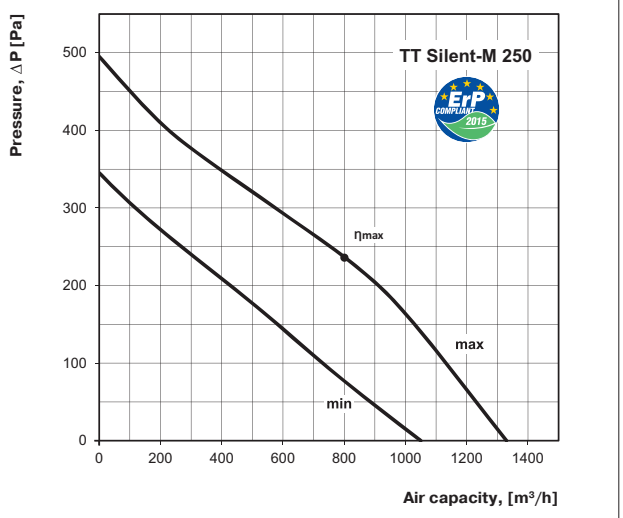

Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dBA	65	29	41	57	60	61	58	55	51
L_{wA} to outlet	dBA	75	31	45	58	65	73	65	53	47
L_{wA} to environment	dBA	55	25	33	48	41	53	49	41	29

η, [%]	MC	EC	N	VSD	[kW]	[A]	[m³/h]	[Pa]	[RPM]	SR
30.9	A	Static	49.4	No	0.174	0.8	803	236	2505	1

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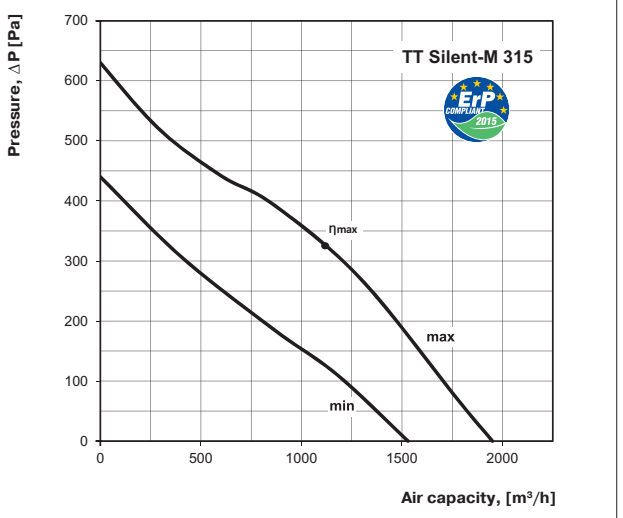

Sound-power level		Octave-frequency band [Hz]								
	Hz	Gen	63	125	250	500	1000	2000	4000	8000
L_{wA} to inlet	dBA	69	35	47	62	61	64	67	58	55
L_{wA} to outlet	dBA	75	40	53	69	69	70	65	55	51
L_{wA} to environment	dBA	58	25	32	41	51	55	52	49	37

η, [%]	MC	EC	N	VSD	[kW]	[A]	[m³/h]	[Pa]	[RPM]	SR
32.4	A	Static	48.2	No	0.317	1.43	1112	326	2320	1

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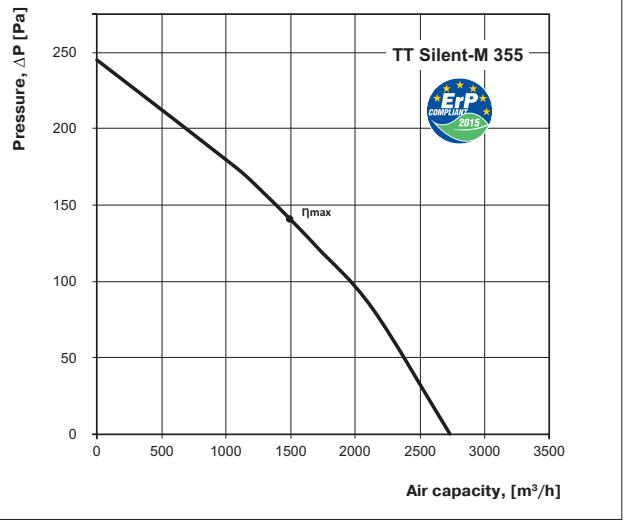

η, [%]	MC	EC	N	VSD	[kW]	[A]	[m³/h]	[Pa]	[RPM]	SR
29.7	A	Static	46.8	No	0.235	1.13	1748	141	1405	1