

8300101291
VBH0450CTRNS

EC centrifugal module - RadiPac

backward-curved, single-intake
with support bracket

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General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen

Amtsgericht (court of registration) Stuttgart · HRB 590142

Nominal data

Item	8300101291	
Motor	E11233-80	

Phase		3~
Nominal voltage	VAC	400
Nominal voltage range	VAC	380 .. 480
Frequency	Hz	50/60
Method of obtaining data		ml
Status		prelim.
Speed (rpm)	min ⁻¹	2690
Power consumption	W	3050
Current draw	A	4.7
Min. ambient temperature	°C	-40
Max. ambient temperature	°C	40

ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment
Subject to change

Data according to Commission Regulation (EU) 327/2011 (prEN 17166)

		Actual	Req. 2015			
01 Overall efficiency η_{es}	%	72.1	56.5	09 Power consumption P_{ed}	kW	2.99
02 Measurement category		A		09 Air flow q_v	m³/h	7755
03 Efficiency category		Static		09 Pressure increase p_{fs}	Pa	956
04 Efficiency grade N		77.6	62	10 Speed (rpm) n	min ⁻¹	2685
05 Variable speed drive		Yes		11 Specific ratio*		1.01

Data obtained at optimum efficiency level.

* Specific ratio = $1 + p_{fs} / 100\,000\text{ Pa}$

LU-219151

The efficiency values displayed for achieving conformity with the Ecodesign Regulation EU 327/2011 has been reached with defined air duct components (e.g. inlet rings).
The dimensions must be requested from ebm-papst. If other air conduction geometries are used on the installation side, the ebm-papst evaluation loses its validity/the conformity must be confirmed again.
The product does not fall within the scope of Regulation (EU) 2019/1781 due to the exception specified in Article 2 (2a) (motors completely integrated into a product).

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Technical description

Weight	28.85 kg
Size	450 mm
Motor size	112
Rotor surface	Painted black
Electronics housing material	Die-cast aluminum
Impeller material	PP plastic
Support plate material	Sheet steel, galvanized and painted light gray (RAL 7035)
Support bracket material	Steel, painted light gray (RAL 7035)
Inlet nozzle material	ABS plastic
Number of blades	5
Direction of rotation	Clockwise, viewed toward rotor
Degree of protection	IP55
Insulation class	"F"
Moisture (F) / Environmental (H) protection class	H2+S
Ambient temperature note	Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.
Max. permitted ambient temp. for motor (transport/storage)	+80 °C
Min. permitted ambient temp. for motor (transport/storage)	-40 °C
Installation position	See legend on product drawing
Condensation drainage holes	On rotor side
Mode	S1
Motor bearing	Ball bearing
Technical features	- Operation and alarm display with LED - External 15-50 VDC input (parameterization) - Alarm relay - Integrated PI controller - Configurable inputs/outputs (I/O) - MODBUS V6.3 - Motor current limitation - RS-485 MODBUS-RTU - Soft start - Voltage output 3.3-24 VDC, Pmax = 800 mW - Control interface with SELV potential safely disconnected from the mains - Thermal overload protection for electronics/motor - Line undervoltage / phase failure detection - Vibration sensor
EMC immunity to interference	According to EN 61000-6-2 (industrial environment)
EMC interference emission	According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW
Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)	<= 3.5 mA
Electrical hookup	Terminal box
Motor protection	Electronic motor protection

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Protection class assignment	I; If a protective earth is connected by the customer This component for installation may have several local protection classes. This information relates to this component's basic design. The final protection class is based on the component's intended installation and connection.
Conformity with standards	EN 61800-5-1; CE; UKCA
Approval	CSA C22.2 No. 77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730-1

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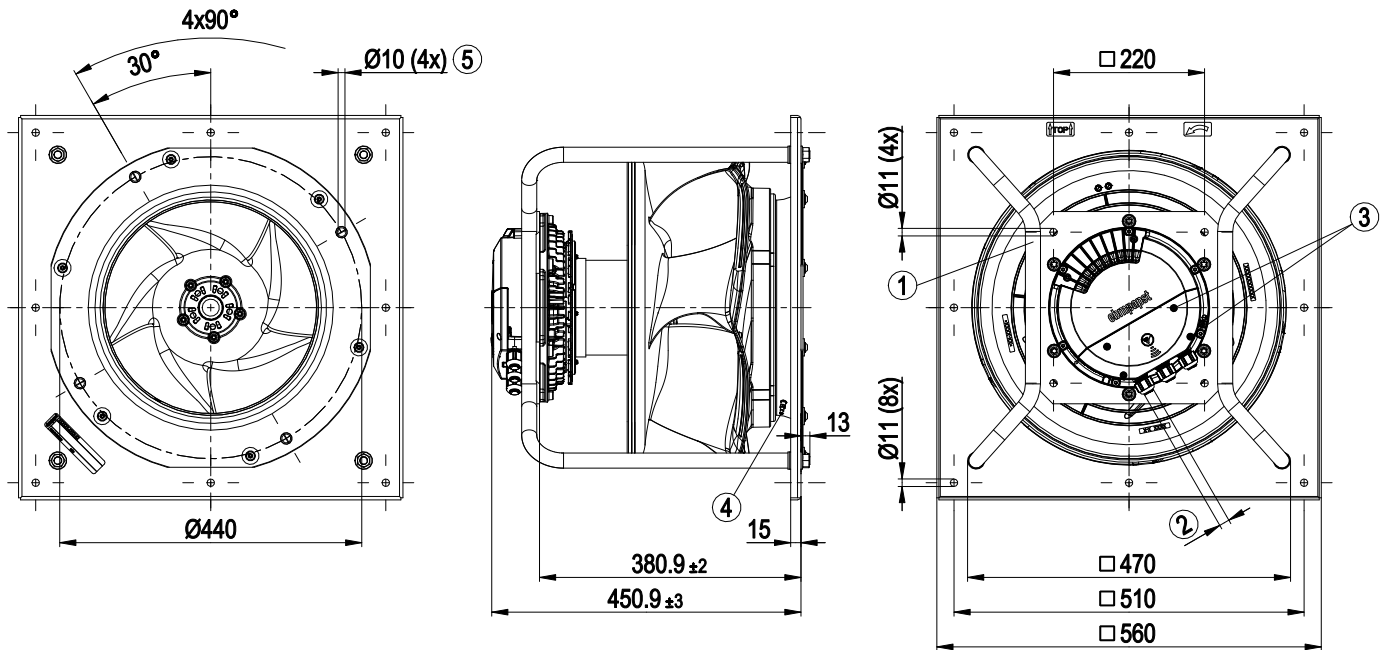
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Product drawing

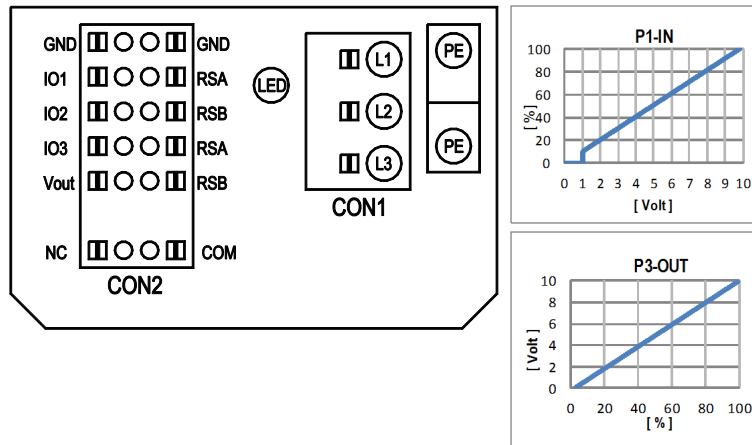


1	Installed position: shaft horizontal (install support struts only vertically as illustrated) or rotor on bottom; rotor on top on request
2	Cable diameter min. 4 mm, max. 10 mm, tightening torque 4 ± 0.6 Nm (The tightening torque is designed for PVC cables. If the cable materials are different, the tightening torque may have to be adjusted)
3	Tightening torque 1.5 ± 0.2 Nm
4	Inlet ring with pressure tap (k-factor: 232)
5	Fastening holes for FlowGrid 35505-2-2957 (not included in scope of delivery) are provided and must be subsequently opened as required

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Connection diagram



No.	Conn.	Designation	Function/assignment
	CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
	PE	PE	Protective earth
	CON2	RSA	RS485 interface for MODBUS, RSA; SELV
	CON2	RSB	RS485 interface for MODBUS, RSB; SELV
	CON2	GND	Reference ground for control interface, SELV
	CON2	IO1	Function parameterizable (see "Optional interface functions" table) Factory setting: Digital input - high active, function: Disable input, SELV - inactive: Pin open or applied voltage < 1.5 VDC - active: applied voltage 3.5-50 VDC Reset function: Triggering of error reset on change of state from "enabled" to "disabled"
	CON2	IO2	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog input 0-10 V/PWM, Ri=100 kΩ, function: Set value Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV
	CON2	IO3	Function parameterizable (see "Optional interface functions" table) Factory setting: Analog output 0-10 V, max. 5 mA, function: Actual speed Characteristic curve parametrizable (see output characteristic curve P3-OUT), SELV
	CON2	Vout	Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable Factory setting: 10 VDC short-circuit-proof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage
	CON2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side
	CON2	NC	Status relay, floating status contact, break for failure
		LED	green: status = good, ready for operation orange: status = warning red: status = failure
		P1-IN	Input characteristic curve
		P3-OUT	Output characteristic curve

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Terminal/plug assignment

configurable IO functions: normal / inverse		MODBUS Register for IO mode configuration	electrical specification	configurable IO mode	CON2	inverse																							
						INPUT												OUTPUT											
IO1	○ Din1 (active high): digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D158 [0]	○	○	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [0]	signal: fan modulation level %	D130 [1]	signal: actual speed	D130 [2]	signal: system modulation level %	D130 [5]	signal: remote control output 0-10V	D00C [1]	pulse output for auto-addressing	D130 [4]										
	○ Ain1 0-10V/PWM: analog input	RI = 100K, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$, SELV	D158 [2]	○	○	switch: control function: heating (pos.) / cooling (neg.)	D148 [...]	switch: direction of rotation: cw / ccw	D16C [...]	switch: tach out	(selected directly via IO mode)	D130 [10]	signal: diagnostics out	D130 [0]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]							
	○ Tach out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV	D158 [5]	○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
	○ Diagnostics out (open collector output)	Umax = 50VDC, Imax = 20mA, SELV	D158 [6]	○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
IO2	○ Din2 (active high): digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D159 [0]	○	○	switch: control function: heating (pos.) / cooling (neg.)	D148 [...]	switch: direction of rotation: cw / ccw	D16C [...]	switch: tach out	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]									
	○ Ain2 0-10V/PWM: analog input	RI = 100K, characteristic curve parameterizable, $f_{PWM} = 1k..10kHz$, SELV	D159 [2]	○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
	○ Ain2 4-20mA: analog input	RI = 125R, characteristic curve parameterizable, SELV	D159 [3]	○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
	○ Din3 (active high): digital input	active: applied voltage 3.5-50VDC, SELV not active: pin open or applied voltage < 1.5VDC	D15A [0]	○	○	switch: control function: heating (pos.) / cooling (neg.)	D148 [...]	switch: direction of rotation: cw / ccw	D16C [...]	switch: tach out	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]									
IO3	○ Din3 (active low): digital input	active: applied voltage < 1.5VDC, SELV not active: pin open or applied voltage 3.5-50VDC	D15A [1]	○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
	○ PWMIn3: digital input, idle level high	PWM = 40Hz - 10kHz, characteristics parameterizable active: pin open or applied voltage 3.5-50VDC not active: applied voltage < 1.5VDC, SELV	D15A [7]	○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
	○ PWMIn3: digital input, idle level low	40Hz - 10kHz, characteristics parameterizable active: applied voltage 3.5-50VDC not active: pin open or applied voltage < 1.5VDC, SELV	D15A [8]	○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
	○ Aout3 0-10V: analog output	function parameterizable, max. 5mA max output frequency 300Hz SELV 0-10V max. 5mA max output frequency 300Hz, SELV 0-10V max. 5mA max output frequency 300Hz, SELV	D15A [4]	○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
RSA RSB	○ Tacho out (pulses), analog output	0-10V max. 5mA max output frequency 300Hz, SELV	D15A [5]	○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
	○ Diagnostics out (pulses)	0-10V max. 5mA max output frequency 300Hz, SELV	D15A [6]	○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
Vout	○ Diagnostics out (pulses)	MODBUS RTU, specification V6.3, SELV		○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
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	○ Diagnostics out (pulses)	MODBUS RTU, specification V6.3, SELV		○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D147 [...]	switch: fan enable / disable	D16A [...]	(selected directly via IO mode)	D130 [10]	signal: fan modulation level %	D130 [1]	signal: system modulation level %	D130 [2]	signal: remote control output 0-10V	D130 [5]	pulse input for auto-addressing	D00C [1]								
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Vout	○ Diagnostics out (pulses)	MODBUS RTU, specification V6.3, SELV		○	○	switch: parameter set: #1 / #2	D104 [...]	source: sensor value	D1																				

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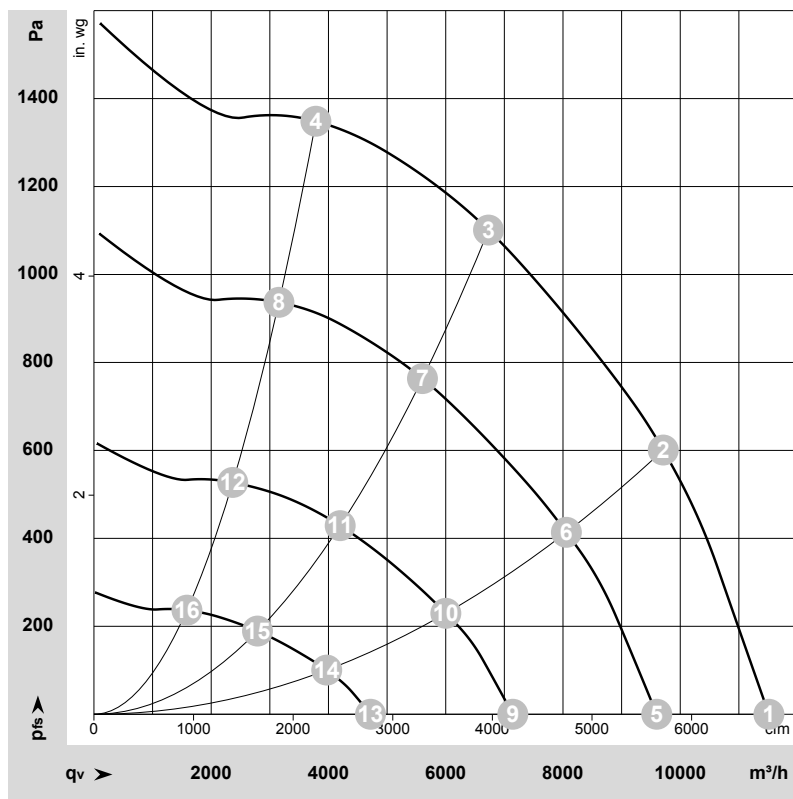
VBH0450CTRNS

EC centrifugal module - RadiPac

backward-curved, single-intake

with support bracket

Curves: Air performance 50 Hz



$$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$$

Measurement: LU-219151-1

Date: 2022-01-27

Nozzle: 8217101922

Air performance measured according to ISO 5801 installation category A. For detailed information on the measurement setup, contact ebm-papst. Intake sound level: Sound power level according to ISO 13347 / sound pressure level measured at 1 m distance from fan axis. The values given are valid under the specified measuring conditions and may vary due to conditions of installation. For deviations from the standard configuration, the parameters have to be checked on the installed unit.

Measured values

	Wired	U	f	n	P _e	I	LpA _{in}	LwA _{in}	LwA _{out}	q _v	p _{fs}	q _v	p _{fs}
		V	Hz	min ⁻¹	W	A	dB(A)	dB(A)	dB(A)	m ³ /h	Pa	cfm	in. wg
1	3~	400	50	2690	1983	3.10	84	93	96	11510	0	6775	0.00
2	3~	400	50	2690	2663	4.11	80	87	90	9710	600	5715	2.41
3	3~	400	50	2690	3050	4.70	75	81	86	6730	1100	3960	4.42
4	3~	400	50	2690	2601	4.01	80	87	91	3785	1350	2230	5.42
5	3~	400	50	2235	1179	1.95	80	89	92	9600	0	5650	0.00
6	3~	400	50	2235	1562	2.50	75	83	86	8060	415	4745	1.67
7	3~	400	50	2235	1758	2.78	70	77	82	5605	766	3300	3.08
8	3~	400	50	2240	1557	2.49	75	81	86	3155	937	1855	3.76
9	3~	400	50	1675	549	1.11	74	82	86	7145	0	4205	0.00
10	3~	400	50	1675	700	1.30	68	76	80	6000	230	3535	0.92
11	3~	400	50	1675	789	1.42	63	70	75	4200	430	2470	1.73
12	3~	400	50	1675	709	1.31	66	73	77	2365	527	1395	2.12
13	3~	400	50	1115	195	0.56	63	73	76	4715	0	2775	0.00
14	3~	400	50	1115	242	0.64	57	67	71	3970	101	2335	0.41
15	3~	400	50	1115	265	0.68	53	60	66	2790	190	1640	0.76
16	3~	400	50	1115	243	0.64	55	61	67	1585	237	935	0.95

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P_e = Power consumption · I = Current draw · LpA_{in} = Sound pressure level intake side · LwA_{in} = Sound power level intake side
LwA_{out} = Sound power level outlet side · q_v = Air flow · p_{fs} = Pressure increase