

## KARTA KATALOGOWA

# R3G280-AK54-01

Wentylator promieniowy EC, łopatki zakrzywione do tyłu, jednostronnie ssący

Producent: ebm-papst



## Dane znamionowe

|                           |                        |
|---------------------------|------------------------|
| Napięcie znamionowe       | 3~ 400 V (380...480 V) |
| Częstotliwość             | 50/60 Hz               |
| Prędkość obrotowa         | 3400 obr/min           |
| Pobór mocy                | 1030 W                 |
| Pobór prądu               | 1,8 A                  |
| Maks. wydajność           | 3320 m³/h              |
| Maks. ciśnienie statyczne | 1100 Pa                |
| Temperatura otoczenia     | -25...+50 °C           |

## Budowa

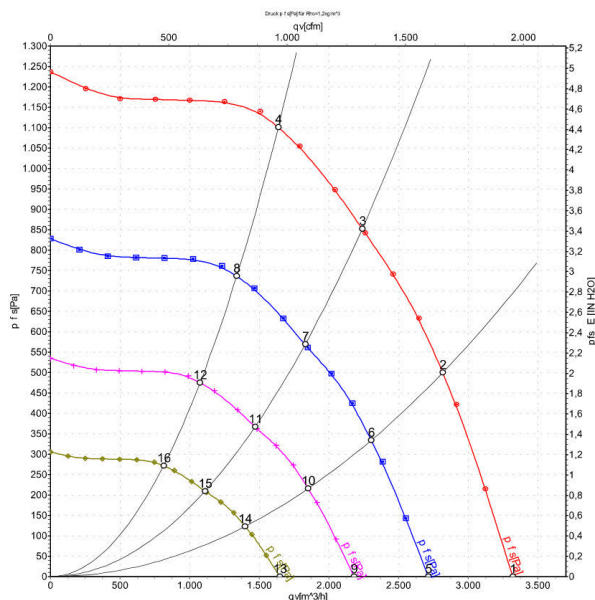
|                        |                   |
|------------------------|-------------------|
| Średnica wirnika       | 280 mm            |
| Materiał wirnika       | blacha aluminiowa |
| Liczba łopatek         | 6                 |
| Stopień ochrony        | IP54              |
| Klasa izolacji         | B                 |
| Zabezpieczenie silnika | termik (TOP)      |
| Masa                   | 7,7 kg            |

## Dane ErP (UE 327/2011)

|                            |                    |
|----------------------------|--------------------|
| Sprawność całkowita        | 52,7 %             |
| Przepływ w pkt. optymalnym | 1790 m³/h          |
| Przyrost ciśnienia         | 1003 Pa            |
| Regulacja obrotów          | tak (0-10 V / PWM) |

## Charakterystyka przepływowa

Curves: Air performance 50 Hz



Measurement: LU-114283-1

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.

Dane na podstawie karty producenta ebm-papst (oryginał na kolejnych stronach).

Wartości znamionowe dla punktu maksymalnego obciążenia; producent zastrzega możliwość zmian.

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**R3G280-AK54-01**

# EC centrifugal fan - AHU

backward-curved, single-intake


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## Nominal data

|                          |                   |            |
|--------------------------|-------------------|------------|
| Type                     | R3G280-AK54-01    |            |
| Motor                    | M3G112-EA         |            |
| Phase                    |                   | 3~         |
| Nominal voltage          | VAC               | 400        |
| Nominal voltage range    | VAC               | 380 .. 480 |
| Frequency                | Hz                | 50/60      |
| Method of obtaining data |                   | ml         |
| Speed (rpm)              | min <sup>-1</sup> | 3400       |
| Power consumption        | W                 | 1030       |
| Current draw             | A                 | 1.8        |
| Min. ambient temperature | °C                | -25        |
| Max. ambient temperature | °C                | 50         |

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 (EN 17166)

|                                   |   | Actual | Req. 2015 |                               |                   |      |
|-----------------------------------|---|--------|-----------|-------------------------------|-------------------|------|
| 01 Overall efficiency $\eta_{es}$ | % | 52.7   | 51.6      | 09 Power consumption $P_{ed}$ | kW                | 1.02 |
| 02 Measurement category           |   | A      |           | 09 Air flow $q_v$             | m <sup>3</sup> /h | 1790 |
| 03 Efficiency category            |   | Static |           | 09 Pressure increase $p_{fs}$ | Pa                | 1003 |
| 04 Efficiency grade N             |   | 63.1   | 62        | 10 Speed (rpm) n              | min <sup>-1</sup> | 3420 |
| 05 Variable speed drive           |   | Yes    |           | 11 Specific ratio*            |                   | 1.01 |

Data obtained at optimum efficiency level.

The ErP data is determined using a motor-impeller combination in a standardized measurement setup.

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

LU-114283



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## Technical description

|                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Weight                                                                     | 7.7 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Size                                                                       | 280 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Motor size                                                                 | 112                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Rotor surface                                                              | Painted black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Electronics housing material                                               | Die-cast aluminum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Impeller material                                                          | Sheet aluminum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Number of blades                                                           | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Direction of rotation                                                      | Clockwise, viewed toward rotor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Degree of protection                                                       | IP54                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Insulation class                                                           | "B"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Moisture (F) / Environmental (H) protection class                          | H1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Max. permitted ambient temp. for motor (transport/storage)                 | +80 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Min. permitted ambient temp. for motor (transport/storage)                 | -40 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Installation position                                                      | Shaft horizontal or rotor on bottom; rotor on top on request                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Condensation drainage holes                                                | On rotor side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Mode                                                                       | S1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Motor bearing                                                              | Ball bearing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Technical features                                                         | <ul style="list-style-type: none"> <li>- Output 10 VDC (<math>\pm 3\%</math>) max. 10 mA</li> <li>- Output 20 VDC (+25%/-10%) max. 50 mA</li> <li>- Output for slave 0-10 V max. 3 mA</li> <li>- Input for sensor 0-10 V or 4-20 mA</li> <li>- Alarm relay</li> <li>- Integrated PID controller</li> <li>- Motor current limitation</li> <li>- PFC, passive</li> <li>- RS-485 ebmBUS</li> <li>- Soft start</li> <li>- Control input 0-10 VDC / PWM</li> <li>- Control interface with SELV potential safely disconnected from supply</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Undervoltage / phase failure detection</li> </ul> |
| EMC immunity to interference                                               | According to EN 61000-6-2 (industrial environment)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| EMC circuit feedback                                                       | According to EN 61000-3-2/3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| EMC interference emission                                                  | According to EN 61000-6-3 (household environment)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system) | $\leq 3.5$ mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Electrical hookup                                                          | Terminal box                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Motor protection                                                           | Thermal overload protector (TOP) internally connected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| With cable                                                                 | Variable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Protection class                                                           | I (with customer connection of protective earth)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Conformity with standards                                                  | EN 61800-5-1; CE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Approval                                                                   | CCC; EAC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

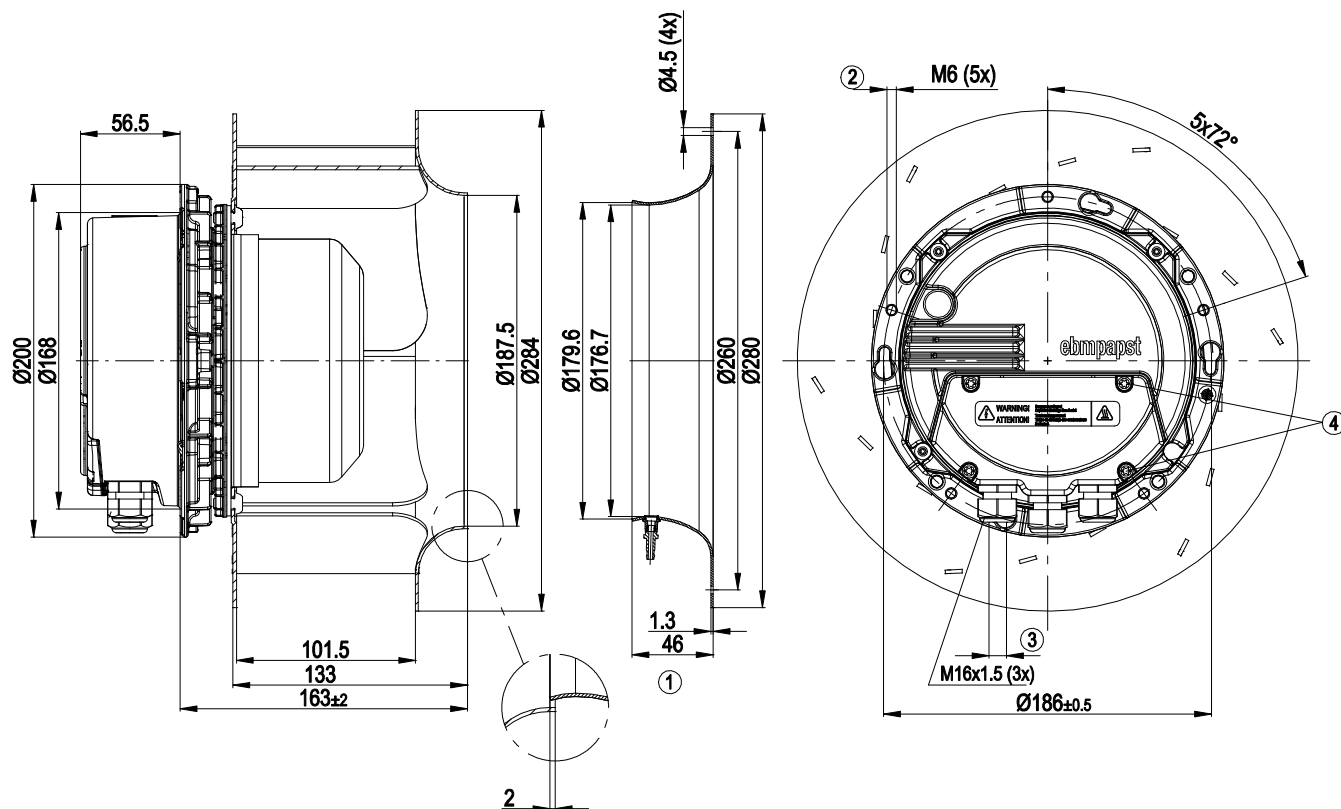


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backward-curved, single-intake

## Product drawing



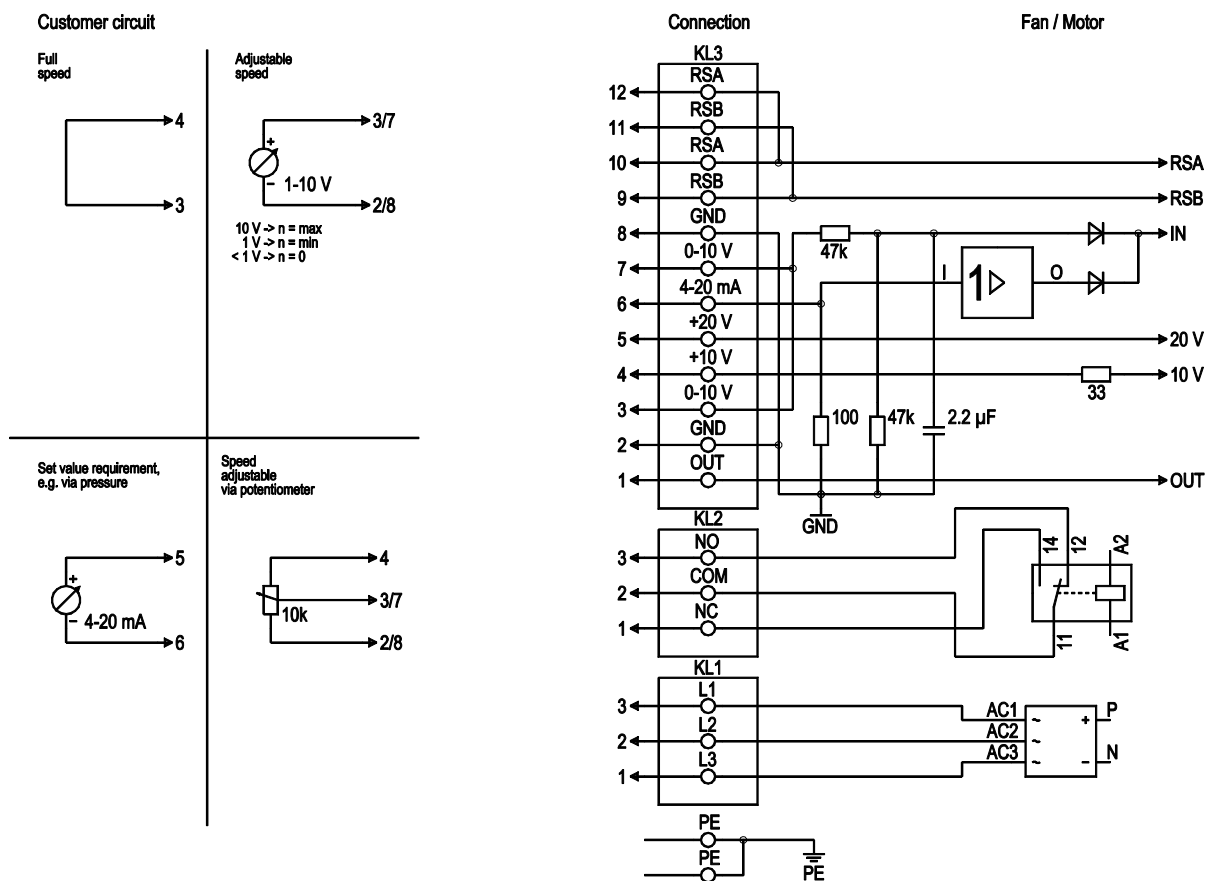
- |   |                                                                                         |
|---|-----------------------------------------------------------------------------------------|
| 1 | Accessory part: inlet ring 28002-2-4013 (k-factor 88) not included in scope of delivery |
| 2 | Max. clearance for screw 16 mm                                                          |
| 3 | Cable diameter min. 4 mm, max. 10 mm                                                    |
| 4 | Tightening torque $3.5 \pm 0.5$ Nm                                                      |

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## Connection diagram



| No. | Conn.   | Designation | Function/assignment                                                                                                                                                     |
|-----|---------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PE  |         | PE          | Protective earth terminal                                                                                                                                               |
| KL1 | 1, 2, 3 | L1, L2, L3  | Power supply 50/60 Hz                                                                                                                                                   |
| KL2 | 1       | NC          | Floating status contact, break for failure                                                                                                                              |
| KL2 | 2       | COM         | floating status contact, changeover contact, common connection (2 A, max. 250 VAC, min. 10 mA, AC1)                                                                     |
| KL2 | 3       | NO          | Floating status contact, make for failure                                                                                                                               |
| KL3 | 1       | OUT         | Analog output, 0-10 VDC, max. 3 mA, SELV, output of current motor modulation level: 1 V corresponds to 10% modulation level. 10 V corresponds to 100% modulation level. |
| KL3 | 2, 8    | GND         | Reference ground for control interface, SELV                                                                                                                            |
| KL3 | 3, 7    | 0-10 V      | Use control / current sensor value input 0-10 VDC, impedance 100 kΩ only as alternative to 4-20 mA input, SELV                                                          |
| KL3 | 4       | +10 V       | Voltage output 10 VDC (±3%), max. 10 mA, power supply for external devices (e.g. potentiometer), SELV                                                                   |
| KL3 | 5       | +20 V       | Voltage output 20 VDC (+25%/-10%), max. 50 mA, power supply for external devices (e.g. sensors), SELV                                                                   |
| KL3 | 6       | 4-20 mA     | Use control / current sensor value input 4-20 mA, impedance 100 Ω only as alternative to 0-10 V input, SELV                                                             |
| KL3 | 9, 11   | RSB         | RS485 interface for ebmBUS, RSB, SELV                                                                                                                                   |



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| No. | Conn.  | Designation | Function/assignment                   |
|-----|--------|-------------|---------------------------------------|
| KL3 | 10, 12 | RSA         | RS485 interface for ebmBUS, RSA, SELV |

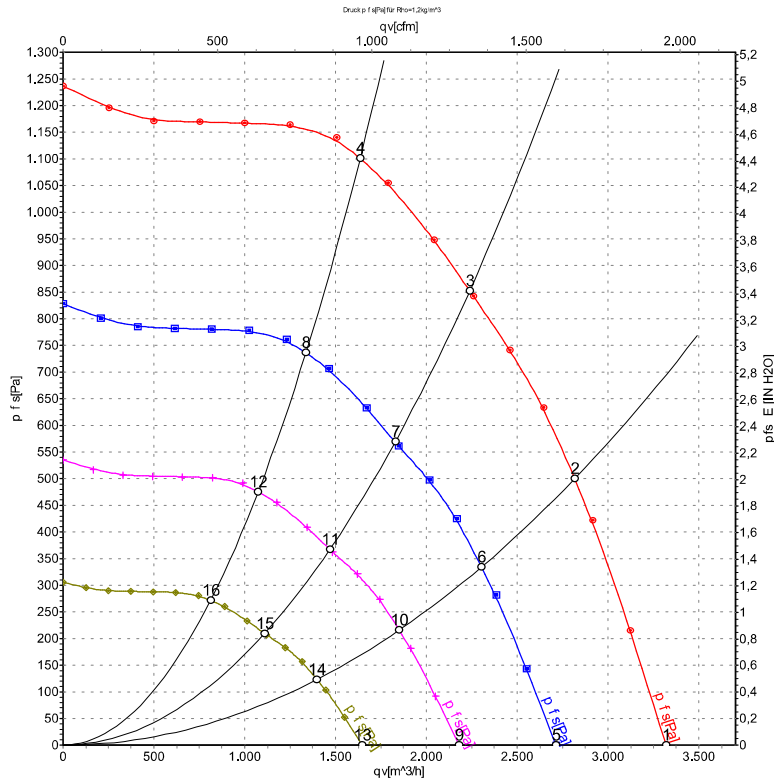


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## Curves: Air performance 50 Hz



Measurement: LU-114283-1

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

|    | U   | f  | n                 | P <sub>ed</sub> | I    | LpA <sub>in</sub> | LwA <sub>in</sub> | q <sub>v</sub> | p <sub>fs</sub> | q <sub>v</sub> | p <sub>fs</sub> |
|----|-----|----|-------------------|-----------------|------|-------------------|-------------------|----------------|-----------------|----------------|-----------------|
|    | V   | Hz | min <sup>-1</sup> | W               | A    | dB(A)             | dB(A)             | m³/h           | Pa              | cfm            | in. wg          |
| 1  | 400 | 50 | 3400              | 817             | 1.44 | 84                | 91                | 3320           | 0               | 1955           | 0.00            |
| 2  | 400 | 50 | 3400              | 997             | 1.72 | 80                | 88                | 2815           | 500             | 1655           | 2.01            |
| 3  | 400 | 50 | 3400              | 1030            | 1.80 | 78                | 86                | 2240           | 850             | 1320           | 3.41            |
| 4  | 400 | 50 | 3400              | 980             | 1.69 | 77                | 84                | 1635           | 1100            | 960            | 4.42            |
| 5  | 400 | 50 | 2800              | 446             | 0.79 | 80                | 87                | 2715           | 0               | 1595           | 0.00            |
| 6  | 400 | 50 | 2800              | 545             | 0.94 | 76                | 83                | 2305           | 335             | 1355           | 1.34            |
| 7  | 400 | 50 | 2800              | 575             | 0.95 | 74                | 81                | 1830           | 568             | 1075           | 2.28            |
| 8  | 400 | 50 | 2800              | 547             | 0.93 | 72                | 80                | 1335           | 736             | 785            | 2.95            |
| 9  | 400 | 50 | 2250              | 232             | 0.41 | 75                | 82                | 2180           | 0               | 1285           | 0.00            |
| 10 | 400 | 50 | 2250              | 283             | 0.49 | 71                | 79                | 1850           | 216             | 1090           | 0.87            |
| 11 | 400 | 50 | 2250              | 298             | 0.49 | 69                | 77                | 1470           | 367             | 865            | 1.47            |
| 12 | 400 | 50 | 2250              | 284             | 0.48 | 67                | 75                | 1075           | 475             | 635            | 1.91            |
| 13 | 400 | 50 | 1700              | 100             | 0.18 | 69                | 76                | 1645           | 0               | 970            | 0.00            |
| 14 | 400 | 50 | 1700              | 122             | 0.21 | 65                | 72                | 1400           | 123             | 825            | 0.49            |
| 15 | 400 | 50 | 1700              | 129             | 0.21 | 63                | 70                | 1110           | 209             | 655            | 0.84            |
| 16 | 400 | 50 | 1700              | 122             | 0.21 | 61                | 69                | 810            | 271             | 480            | 1.09            |

U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>ed</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
q<sub>v</sub> = Air flow · p<sub>fs</sub> = Pressure increase

