Bifurcated Fans

with adjustable blades

The Quality Industrial Fans of Germany

rosenberg

BIFURCATED FANS WITH ADJUSTABLE BLADES BR SERIES

Technical Description

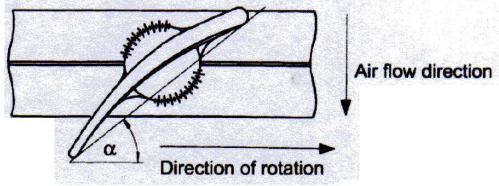
Bifurcated fans with adjustable blades cover a wide capacity range due to their large variation possibilities with hub relation, number of blades and blade angle. With the Rosenberg BR series pressure increases up to 830 Pa and volumes up to 85000 m3/h can be realized. The allowed temperatures of the ventilated mediums are from -30°C up to +40°C as a standard (Follow description of motor manufacturer. Special motors for higher temperatures on request). The casings with flange master-gauge for holes according to DIN 24154 line 2 ensure a simple connection to the duct system. The standard air flow direction is pressured over the motor. To reverse air flow direction blade position must be rotated 180° and the direction of motor rotation must be changed. The fans are suitable for vertical and horizontal installation. For sizes 315-630 the maximum fan speed is 2880 r.p.m., from size 560-1250 1440 r.p.m. During operation with invertor a maximum peripheral speed of 75 m/s must not be exceeded.

Casings

The casings are made of mild steel as a standard and are equipped with a mounting bracket for terminal box, service switch or similar. On request the casings can be supplied plastic-coated or made of special steel. The flanges are welded on and have a master-gauge for holes according to DIN 24154, line 2. The casings can be equipped with a service access. Also available are inlet cones with or without protection guards, feet sleeves with two steel flanges as well as matching flanges, matching to the casing. The motor suspension is vertically adjustable and therefore allows the installation of motors of different sizes (according to power requirement.)

Impellers

The impellers are balances on balancing standard G 6,3 according to DIN ISO 1940. The hubs of aluminum drilled casting are in two parts and have removal drillings for easy dismounting of the impeller. For sizes 315 to 800 hubs with outside diameter 150 mm are used. These hubs can be equipped with 5 resp. 10 blades. From size 500 to 1000 the hubs have an external diameter of 250 mm and can be equipped with 7 to 14 blades. From size 1000 to 1250 the hubs haves an external diameter of 500 mm and can be equipped with 9 & 18 blades. The profiled blade angles are adjustable. The adjusting dial is on the blade foot. If the blade angle is adjusted after delivery the power requirement must be checked for overload of the motor. The balance of the impeller must be checked after blade adjustment. The blade angle α is measured on the wing tip.



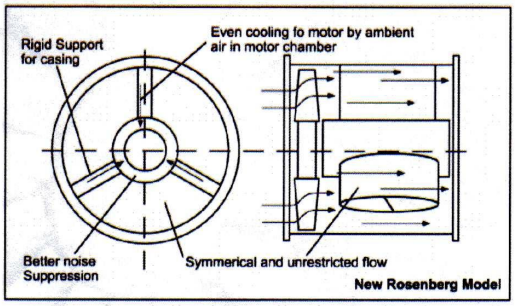
Motors

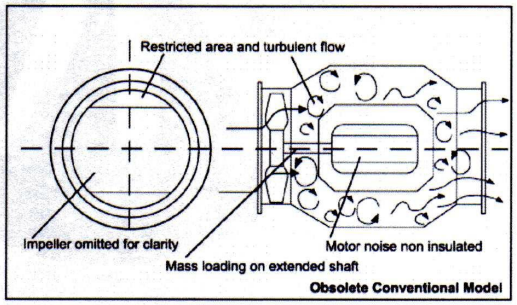
3-phase IEC standard motors of type BR with protection class IP 54, insulation class F in 2-, 4-, 6- or 8 pole execution is used. Pole-changeable, voltage-controllable, invertor motors and single phase a.c. motors or motors for medias to be ventilated wit higher temperatures are available on request. EExe-executions please see explosion protection.

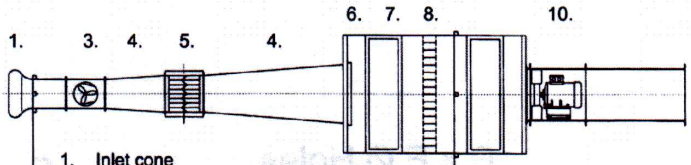
Comparison Of BR Series & Conventional Bifurcated Design

In summary, a comparison of Rosenberg BR Series and conventional bifurcated designs will find the following to be apparent:

- BR fans provide more airflow & more uniform airflow pattern;
- Motor bearing load on BR fans is reduced;
- BR casing construction is more rigid & stronger;
- Cooling of BR fan motor is more efficient;
- BR fans have lower noise level.







1. Inlet cone
2. Inlet cone with pressure measurement point
3. Auxiliary fan
4. Transistion piece
5. Reducing damper
6. Sreens
7. Measuring chamber
8. Straightener
9. Pressure manometer p and pressure measurement point
10. Tested fan

Measuring method for performance curves and noise

Performance curves were made in accordance to DIN 24163 part 1 in mounting position B, using the inlet method in the test chamber as shown below. The performance curves in this catalogue show the static pressure increase and the dynamic pressure in Pascal (Pa) over the air volume flow in m^3/h. The performance curves are valid for air with a density of 1,2 kg/m^3 with a temperature of 20°C.
Inlet test chamber as per DIN 24163:

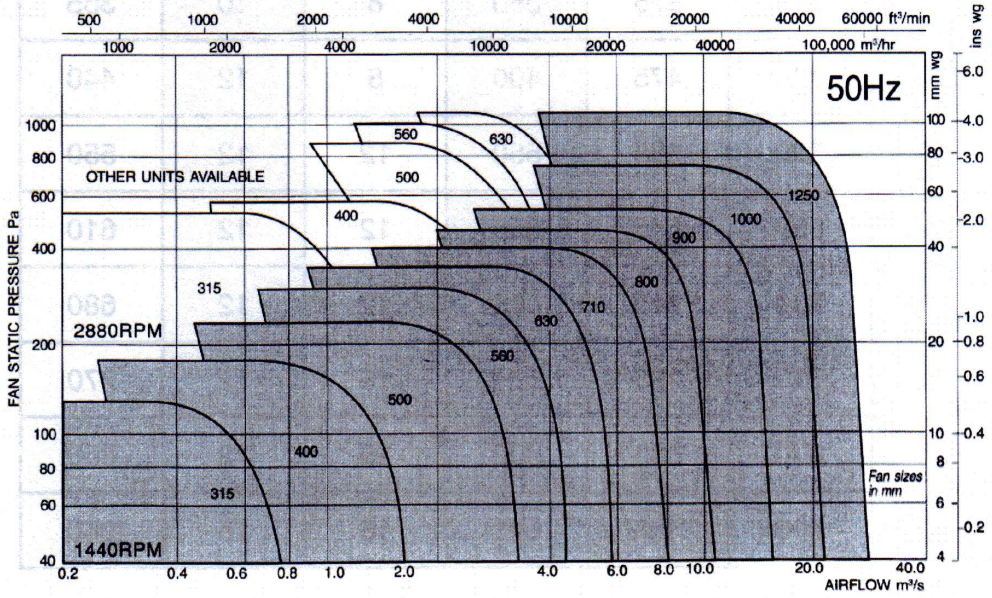
Noise level measurements

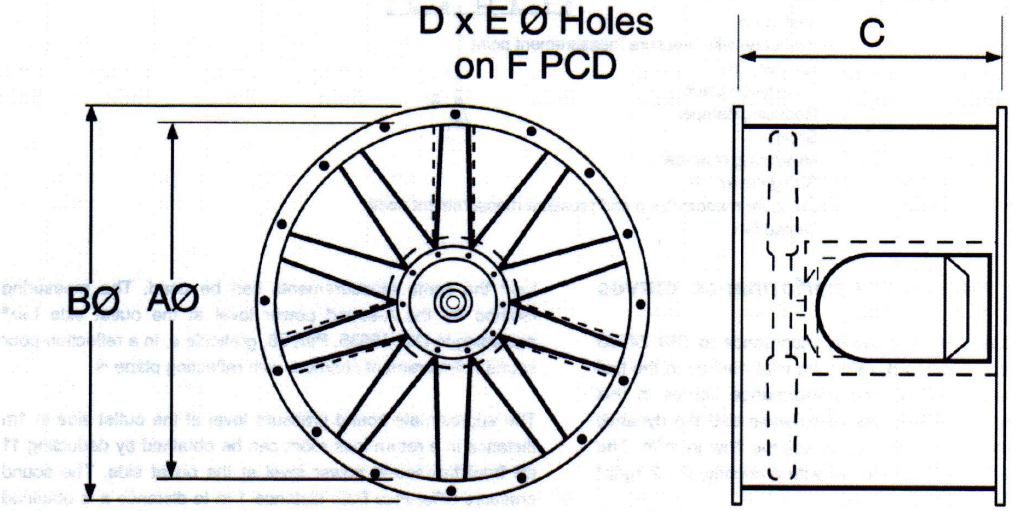
Noise specifications are in accordance to DIN 45635 Part 1 resp. VDI 3731. For each blade angle the A-weighted outlet duct sound power level L_{WA}^4 is mentioned in dB(A). The results please find in the tables under the performance curves. In order L_{WA}^6 the same measurements can be used. The measuring method for the A-sound power level at the outlet side L_{WA}^6 according to DIN 45635, Part 38, graticule e, in a reflection-poor sound measurement chamber with reflecting plane is

The approximate sound pressure level at the outlet side in 1m distance in a return loss room can be obtained by deducting 11 dB from the sound power level at the outlet side. The sound pressure difference from distance 1 m to distance a is obtained as follows: $\Delta Lp = 10 * \log (1/a)$. Please note that reflections and room characteristics as well as natural frequencies influence the size of the sound pressure level differently. Assuming that $L_{WA}^3 \approx L_{WA}^4$, resp. $L_{WA}^3 \approx L_{WA}^4$ the acoustic values of the outlet side can be used for the inlet side of the fans as well (L_{WA}^3 = sound power level of inlet side).

STANDARD SELECTION CHARTS

TYPICAL PERFORMANCE WITH 2 AND 4 POLE MOTORS - 2880 AND 1440 RPM





All Dimension in mm

MODEL	A	B	C (Max)	D	E	F
315	315	375	350	8	10	355
400	400	475	400	8	12	440
500	500	585	550	12	12	550
560	560	645	550	12	12	610
630	630	715	600	12	12	680
710	710	795	650	16	12	770
800	800	885	800	16	12	860
900	900	1000	800	16	15	960