

RB POSITIVE DISPLACEMENT ROTARY BLOWERS

OPERATING PRINCIPLE

The blowers of the RB range are positive displacement rotary machines constituted by two mated profile rotors, which rotate inside a properly shaped casing. The movement of the rotors is synchronized by timing gears located on the shafts, hence no friction between rotors and between rotors and casing.

During the rotation the gas is trapped by the rotors at the suction side, and it is conveyed towards the discharge side. This action is repeated four times for each revolution of the driving shaft. The volume of the gas thus conveyed is proportional to the speed of rotation and it is almost constant at varying pressure.

The operating pressure is that one caused by the friction losses met by the gas in the system.

DESIGN FEATURES

The sturdy construction, the quality of the materials and the manufacturing process by which these machines are manufactured, assure a long life and a high degree of reliability also under the most severe conditions of service.

The rotors are manufactured in spheroidal cast iron and prior to assembly they undergo an accurate dynamic balancing carried out on modern electronic balancing machines. The shafts are obtained from high tensile steel, and they are ground.

The gears are obtained from heat-treated special steel; their helical toothing grant a smooth lead-in, a higher load capacity, a silent running and its profile is ground in order to minimize the geometric errors.

The rolling bearings are widely sized in order to grant a B10 life.

The lubrication of the gears and of the bearings is oil bath type with auxiliary lubricating disks. Every piece is manufactured on modern N/C machining centers and it is subjected, prior assembly, to accurate checks.

Every manufactured blower undergoes a final running test to ascertain its performances and its good mechanical running.

ADVANTAGES

- Oil-free air or gases;
- nearly constant air volume at varying pressures;
- possibility of direct coupling to 2-4-6-8 poles electric motors or belt coupling; in latter case air capacity conforms to the actual requirement;
- sturdy design and tight clearances for operation up to 1 bar pressure;
- low installation costs and limited foundations thanks to the compact design;
- minimum servicing, economy in operation and long life (our blowers have been working for over 20 years).

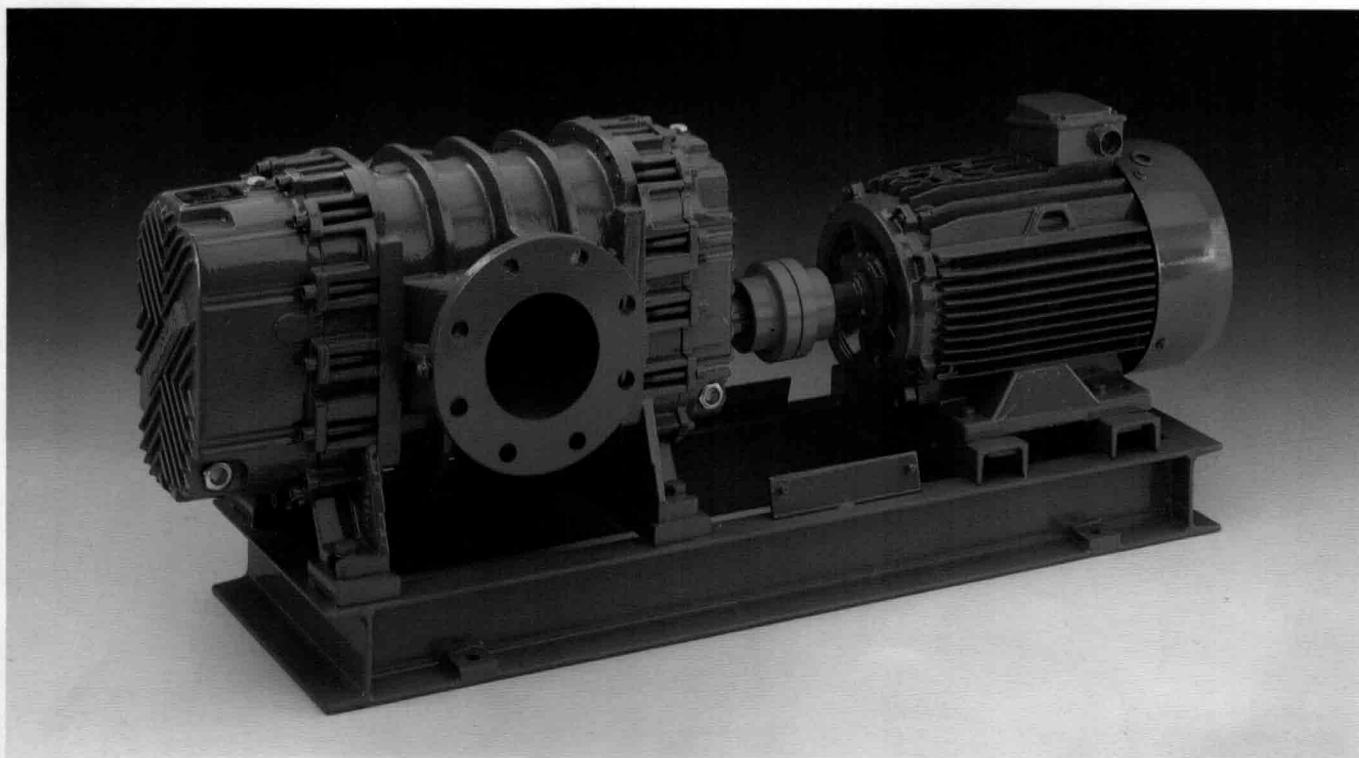
APPLICATIONS

RB blowers are used when it is required to compress air up to 1 bar, or to produce vacuum up to 500 mbar abs.

They find applications in all the main fields and industries: chemical, textile, mechanical, metallurgic, farmaceutical, foodstuff, in the paper mills, sugar factories, glassworks.

Non restrictive example of application:

- pneumatic conveyance of bulk materials, galvanic baths, chemical process industries, sewage treatment aeration tank
- yeast and beer industries, steam circulation in distilleries, rotary filters scouring
- furnaces and cupolas air feeding
- vacuum production in paper machines.



Soffiatore orizzontale con accoppiamento diretto - Direct driven horizontal blower

TECHNICAL INFORMATION

- Suction pressure from 500 up to 1000 mbar abs.
- max allowable differential pressure: 1000 mbar
- compression ratio: 2
- max allowable discharge temperature: 140°C
- direction of rotation: both c.w. and/or c.c.w.
- air flow direction: according to the direction of rotation
- suction and discharge nozzles: side-side or top-bottom (V) nozzles. The top-bottom (V) execution is recommended when wet gas is conveyed and condensate can be formed.
- gas sealings: labyrinth seals as standard execution; soft packing (PR) when the conveyed gas can pollute the lubricating oil; mechanical seals (TM-TMS) when the gas being conveyed is expensive and/or dangerous so that no leakage towards the atmosphere is allowed.

Special executions are foreseen; like for instance for application on high vacuum plants (AV) till max 10^{-4} torr and application on plants having static pressures till max. 4000 mbar abs. above atmospheric pressure.

ACCESSORIES

The use of adequate and efficient silencers and safety valves is highly recommended.

As outfit to these units the following are supplied:

- shock insulating feet and flexible connectors
- suction filters
- suction and discharge silencers of the resonance or absorption type.
- safety valves with 3-way or multiway pipe connector
- non return valves
- discharge air cooler
- pressure gauges, thermometers.

PERFORMANCES

Performances of the blowers used as compressors under standard conditions are reported in tables at following pages, with a tolerance of $\pm 5\%$, i.e. barometric pressure: 1 bar abs., suction temperature 20°C, specific gravity 1,2 Kg/m³. The given capacity varies according to the following factors:

- pressure below or above 1 bar abs. taken at suction orifice;
- operation above sea-level;
- mixed operation; i.e. depression at suction and simultaneous compression at discharge;
- operation as vacuum pump; i.e. depression at suction and

- atmospheric pressure at discharge;
- gas density below air density;
- gas other than air.

In these cases our technical department should be consulted.

Absorbed power is taken at the blower shaft with tolerances as indicated. Drive motor power must be increased as reported at the foot of the tables due to possible absorption caused by belt drive or by step-up or step-down gears.

COOLING

If the temperature of the air or gas sucked is not higher than 20°C the cooling of the blower occurs by natural thermal exchange with the ambient air, provided that site is properly ventilated. If suction temperature is over 20 °C and discharge temperature exceeds 130 °C a water cooled blower ("RV" execution) should be selected. Discharge temperature should never exceed 140 °C. Refer to graph at last page to work out discharge temperature. **Water cooled blowers are available in the vertical execution only.**

Quantity of water at 20 °C required for cooling:

- type RB/RV 30+ 81 = 150 l/h
- type RB/RV 90+121 = 300 l/h
- type RB/RV 130+150 = 450 l/h
- type RB/RV 160+170 = 600 l/h
- type RB/RV 200+220 = 750 l/h

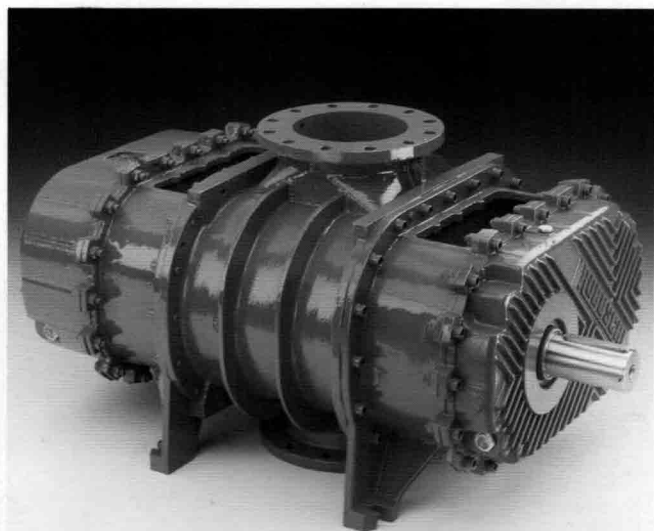
DRIVING

Blowers can be driven through:

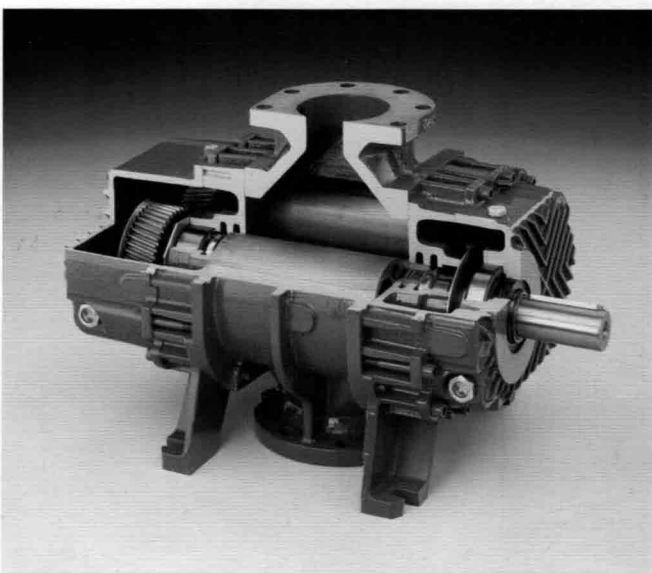
- flexible coupling
- V-belt and overhung pulley
- V-belt and countershaft
- step-up or step-down gears.

When foreseeing an overhung pulley its pitch diameter shall not be less than the value given in the table at last page.

It is the policy of Robuschi to always improve its products and the right is reserved to alter specifications at any time without prior notice.

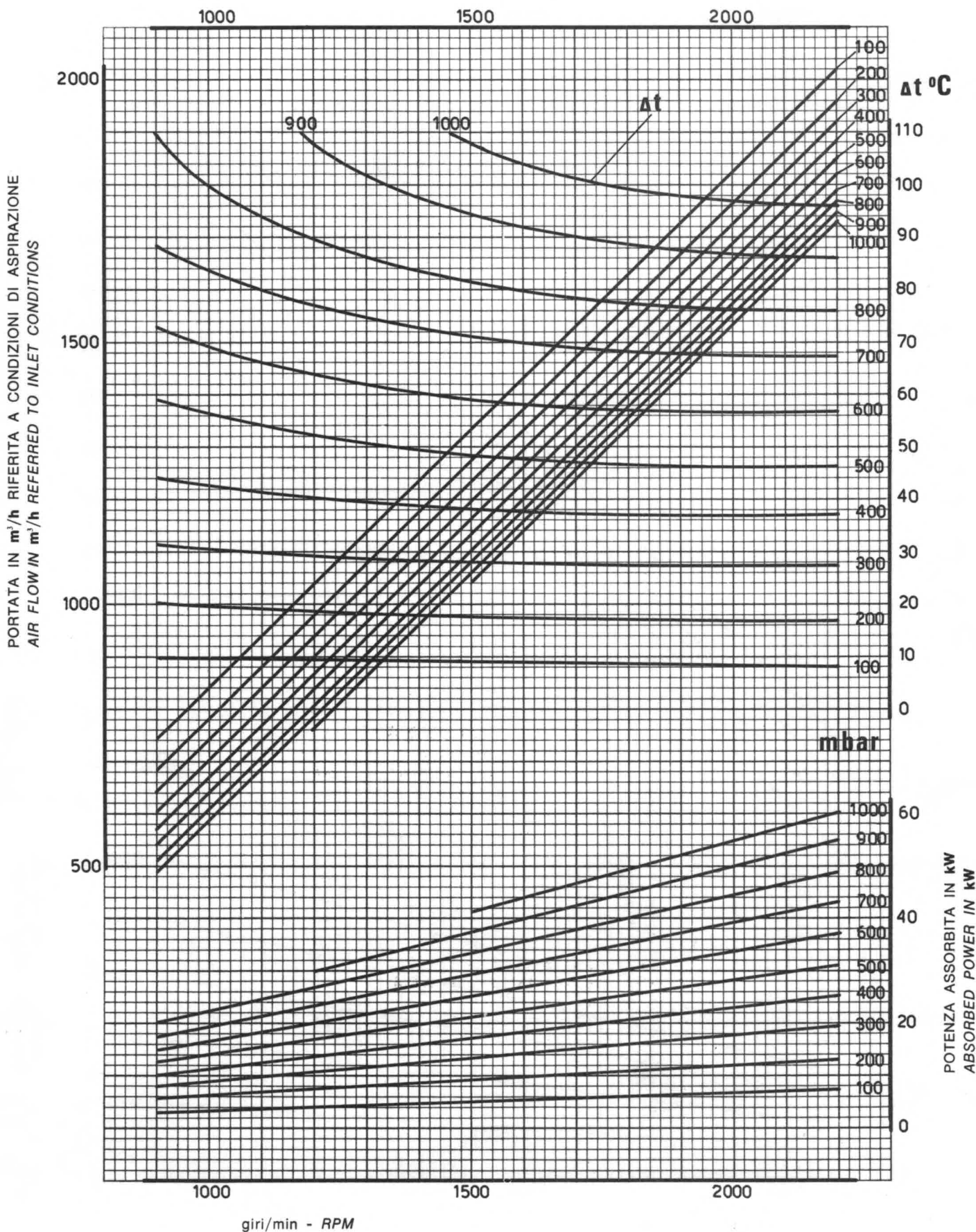


Soffiatore verticale ad albero nudo esecuzione PR
Vertical bare shaft blower PR execution



Spaccato di soffiatore in esecuzione verticale - Cutaway blower

CURVE RIFERITE AD ARIA CON $\gamma = 1,2 \text{ Kg/m}^3$ - $t = 20^\circ\text{C}$ - PRESSIONE DI ASPIRAZIONE 1 bar. ass. - TOLLERANZA $\pm 5\%$
 CURVES REFERRED TO AIR $\gamma = 1,2 \text{ Kg/m}^3$ - $t = 20^\circ\text{C}$ - INLET PRESSURE 1 bar. abs. - ALLOWANCE $\pm 5\%$



ITEM:

data
 date 1-7-84

N° 250170 C

CURVE RIFERITE AD ARIA - t = 20°C - A CONDIZIONI DI ASPIRAZIONE - PRESSIONE DI MANDATA 1 bar. ass. - TOLLERANZA ± 5%
 CURVES REFERRED TO AIR - t = 20°C - AT INLET CONDITIONS - OUTLET PRESSURE 1 bar. abs - ALLOWANCE ± 5%

