ROOTS™ RAS-J Whispair™
Rotary Positive Blowers
Pressure & Splash Lubricated
Frames 1000J thru 2000J

BASIC BLOWER DESCRIPTION
RAS-J series Whispair blowers are heavy duty units for continuous service featuring a proprietary design that reduces noise, pulsation, and horsepower levels over conventional blowers. An exclusive wrap-around plenum and Whispair™ jet eliminate rapid backflow of air into the blower from the discharge area - a major problem with conventional blowers.

DESIGN FEATURES
Casing - The blower casing is of one piece close-grained cast iron construction with separate headplates. The casing is suitably ribbed to prevent distortion under the most severe operating conditions and incorporates the ROOTS Whispair™ feature for reduced pulsation, noise, and horsepower levels.

Impellers - The impellers are made from ductile iron with a tensile strength of 60,000 PSI. They are statically and dynamically balanced by removing metal from the impeller body, and operate without liquid seals or lubrication.

Shafts - The blower shafts are alloy steel forgings flange connected to the impeller body with high-tensile socket head capscrews. Labyrinth seals are machined into the shafts to minimize air leakage.

Timing Gears - The impellers are timed by a pair of accurately machined forged steel gears that operate in an oil bath. The wide-faced spur gears are manufactured to AGMA standards, and are carburized and ground with a hardness of 58-60 Rc. On 1000J frame size units, the gears are secured to the shafts by a taper fit. Larger sizes use a taper locking device providing an easily adjustable and releasable mechanical shrink fit. No shaft-weakening keyways or locking pins are required.

Bearings - The impeller/shaft assemblies are supported at each end by double row spherical roller bearings designed for long life. The thrust end bearings are fixed to control the axial location of the impeller assembly in the unit. An inboard bearing is used on 1000J thru 1400J frame size V-belt driven blowers to minimize drive shaft stresses.

Pressure Lubrication - The bearings and gears are lubricated by a positive pressure lubrication system completely mounted and piped on the blower unit. The lube system consists of an integral direct-driven oil pump, distribution piping, oil sump in the bottom of the gear housing, suction strainer, relief valve, oil pressure gauge, low oil pressure safety switch and oil cooler. Bearing life is extended by up to 50% through the use of cooled, pressurized lubrication.

Pressure Pulses -

Testing - Each ROOTS rotary blower is given a complete mechanical run and one-point flow test at full speed and pressure to ensure mechanical integrity and verify performance. The units are operated at elevated pressure rise for a minimum of one hour after temperatures have stabilized. Flow, pressure, and temperature readings are logged during the test, and each air blower must meet suitable vibration levels in three different planes before being certified as acceptable.
**PRODUCT FEATURES**

**LOWER PULSATION**

Whispair™ blowers operate with up to 40% less pressure pulsation than conventional blowers due to the pressure equalizing effect of the Whispair™ jet design.

In conventional blowers, as the impeller opens up to the outlet port, the higher pressure air in the discharge line rapidly expands into the lower pressure pocket formed by the impeller and the case. The resulting shock wave strikes the advancing surface of the impeller at sonic velocity. Four pressure pulses occur during each revolution transmitting shock loads to the gear and bearings.

**LONGER BEARING LIFE**

The pre-pressurization of the low pressure pocket through the Whispair™ jet smoothes the pulsations and results in less shock being transmitted through the impellers to the bearings, resulting in approximately 25% longer bearing life.

**LOWER VIBRATION**

The reduction in the magnitude of the pressure pulsation results in smoother operation.

**LOWER NOISE**

The pressure pulses inherent in the rotary-lobe design are also the major source of blower noise. The rapid backflow of air into the blower from the discharge line, four times per revolution, results in high noise levels in the conventional blower. The Whispair™ jet controls the backflow of air into the blower, reducing noise by approximately 5 dBA.

**HORSEPOWER**

As the impeller passes the Whispair™ jet port, pressurized air channeled in the direction of rotation strikes the backside of the impeller. The air jet imparts energy to the impeller, aiding rotation and reducing the power required to drive the blower.