

ShinMaywa

Three-Lobe Blower

(Roots-Type) ARS/ARS-E Series

ARS Series
with IE1/IE2 Motor

ARS-E Series
with Premium Efficiency IE3 Motor

ARS
ARS-E
Series



Introducing ShinMaywa Energy-Efficient, Low -Maintenance Blowers Inspired by the Innovative **Cooling Silencer**



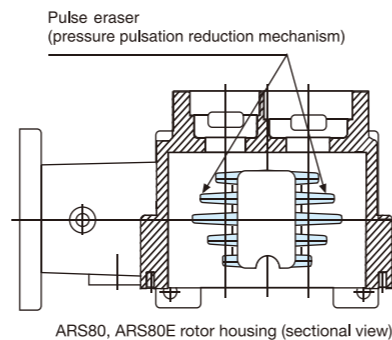
ARS ARS-E Series

50-250 mm outlet diameter
1.5-132 kW rated output

The ARS series of high-efficiency blowers feature innovations such as the Cooling Silencer and spur-type rotors. The features enhance energy efficiency, lower maintenance and improve durability across a wide range of applications.

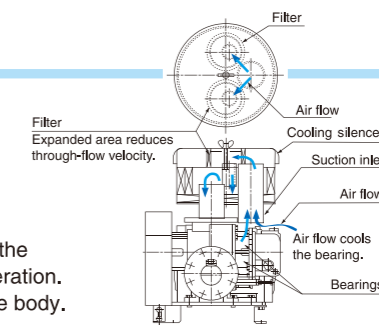
Now featuring a Pulse Eraser (pressure pulsation reduction mechanism) to reduce noise and pressure pulsation.

Spur-type rotors, which discharge air rhythmically, tend to generate more noise and pressure pulsations than do helical rotors. Our new ARS series features specially designed nozzle-shaped grooves of varying lengths on the inner wall of the rotor housing. They absorb the abrupt backflow of compressed air, resulting in less noise and pressure pulsations.



The Benefits of the Cooling Silencer

The ARS series incorporates our innovative cooling silencer. Air is drawn in over the gear-side bearing to significantly cool the bearing, resulting in improved durability and higher-speed operation. This feature is effectively integrated into a compact, low-profile body.



With a significant bearing-cooling effect

Higher-speed operation

Greatly improved isentropic efficiency

Advanced spur-type rotors—a recent innovation—contribute to high-speed operation for greatly improved isentropic efficiency.

Estimated annual energy savings:

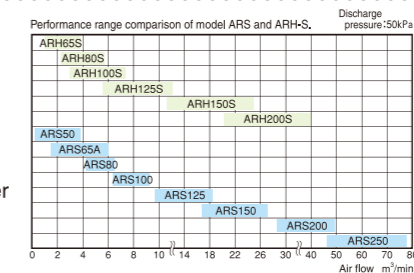
	Conventional model	ARS
Air flow (m ³ /min)	5.74	
Discharge pressure (kPa)	50	
Power requirement (kW)	8.5	7.1
Isentropic efficiency (%)	48.5	58.1
Motor output (kW)	11	7.5
Energy cost (¥)	1,266,000	1,057,000

[Operating period: 24 hrs/day (8,760 hrs/year) ¥17/ kWh]

The energy savings are estimated as follows:
Difference in electricity cost:
1,266,000—1,057,000 = ¥209,000/year

Extended air flow range

The bearing-cooling effect extends air flow range by enabling high-speed operations. This allows you to use the next-size-smaller outlet diameter model for your application.



Standard models develop pressure up to 80 kPa. An Industry First

For the first time in the industry, the bearing cooling effect achieved pressures as high as 80 kPa without forced cooling. Our new standard models correspond pressure of over 60 kPa which conventional models require a water-cooled system or air cooling fan. (Outdoor type and suction pipe-connection type are only available up to discharge pressure of 60 kPa.)

This blower requires no cooling water or air cooling fan.

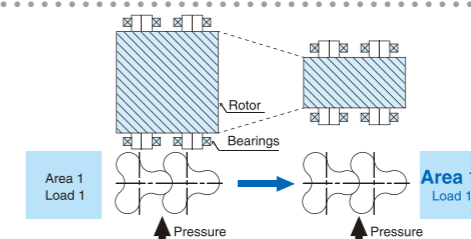
Extended maintenance interval

The combination of an enhanced-efficiency blower with the bearing-cooling function of the cooling silencer significantly lowers the bearing temperature. This improved bearing reliability and greatly extended maintenance intervals of grease and oil. (The grease and oil maintenance interval is three months when the discharge pressure exceeds 60 kPa.)

Double the grease and oil maintenance intervals to six months.

Compact rotors

The high-speed capability allows for smaller rotors. Compact rotors reduce the load on the bearings, resulting in equal or better reliability.



Count on extended bearing life through improved durability.

Lower Maintenance and Reduced Energy Costs

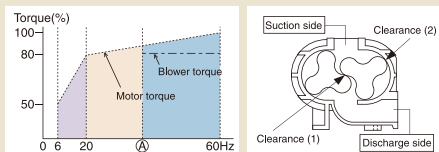
Greater selection & enhanced space efficiency

Our ARS series cover a wide range of needs. They offer highly compact designs, outlet diameters ranging from 50 to 250 mm, and outputs from 1.5 to 132 kW. (Installation space for Model ARS50/65A is equivalent to our Helical Blower ARH50S, and Model ARS80/100 is equivalent to ARH65S/80S.)

Selecting a VFD-Controlled Model

VFD control is available for all models. This feature allows precise control of the air flow rate to accommodate water treatment volumes that vary over season and time.

Operation at excessively slow speeds with the VFD may allow high-temperature compressed air to leak into the suction side through Clearance (1) between rotors and Clearance (2) between rotors and housing wall as illustrated below. This may result in a temperature rise that exceeds the bearing temperature limit, resulting in a blower failure.



Notes: (A) indicates the lower limit of the frequency control range based on the blower temperature rise.

- 1) Blower torque remains constant when the motor speed is reduced because of the blower's constant-torque characteristic.
- 2) When selecting a VFD, ensure the rated output of the VFD is equal to or greater than the rated output of the motor.
- 3) The control range of the VFD starts at 60 Hz regardless of the frequency of the power source. The control range depends on several factors including the application, motor output, and model.

Combination 1 General-purpose motor and VFD (V/F control)

Blower application (a) (Fig. 1)
The blower is usable within the frequency range from (A) to 60 Hz because the blower torque is less than the motor torque. The blower is not usable if the frequency falls below (A) because the blower temperature will rise.

Blower application (b) (Fig. 2)
The blower torque exceeds the motor torque when the frequency is below (B). The blower is usable within the frequency range from (B) to 60 Hz.

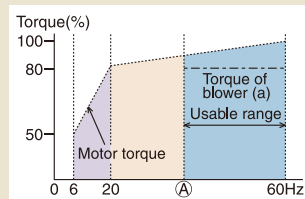


Figure 1 Blower (a)

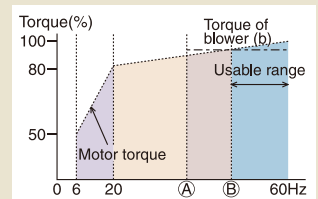


Figure 2 Blower (b)

Combination 2 General-purpose motor and VFD (Vector control)

Both blowers (a) and (b) are usable within the range from (A) to 60 Hz. The blowers are not usable below (A) because the blower temperature will rise.

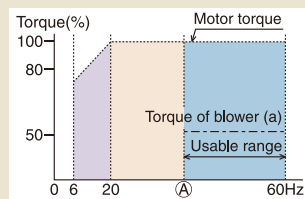


Figure 3 Blower (a)

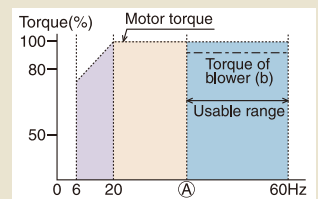


Figure 4 Blower (b)

Consult us if you require VFD control. We can provide an VFD calculation sheet.

Differences between ARS-E type equipped with IE3 motor and type equipped with IE1 motor (Points to note if replacing your previous model with the IE3 motor)

Significant differences in motor size and weight

- Motor outer dimensions: The frame size of IE3 motor does not differ from the IE1 motor, so it can be installed to the blower with IE1 motor. However, with the IE3 motor, the diameter and length of motor both tend to be larger. Because of this, the outer dimensions will be larger for some models, and so check the matching dimensions for cables, etc. and make sure that there is no interference with surrounding equipment during installation.
- Motor weight: As mentioned above, the motor size is larger, and so the weight of the motor has also increased as a result. (However, there is no need to reselect the anti vibration rubbers for ShinMaywa blowers as a result of this weight increase.)

Starting current increased

- With the IE3 motor, the starting current tends to be larger. As a result of this, it will be necessary to inspect equipment such as circuit protector to make sure they are appropriate. In addition, it is also possible that the capacity of the electromagnetic switch may need to be changed when replacing the motor.

Increase in rated operating speed of motors

- With the IE3 motor, the rated operating speed will increase. When replacing an IE1 motor with an IE3 motor, the air volume and output power increase as a result of the increased operating speed. Customers using the motor at around the maximum rated current (95% or more of the rated current), and looking into replacing their motors should notify ShinMaywa, as there is a possibility that excessive power may be generated as a result of the increased air volume.

Comparison of starting current values between ShinMaywa typical IE1 and IE3 motors

5.5kW (50Hz/60Hz)	150/131 → 203/167
7.5kW (50Hz/60Hz)	206/180 → 261/217

* For details, contact to your dealer or ShinMaywa.

Specifications and dimensions are subject to change without notice.

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ShinMaywa ONO PLANT

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