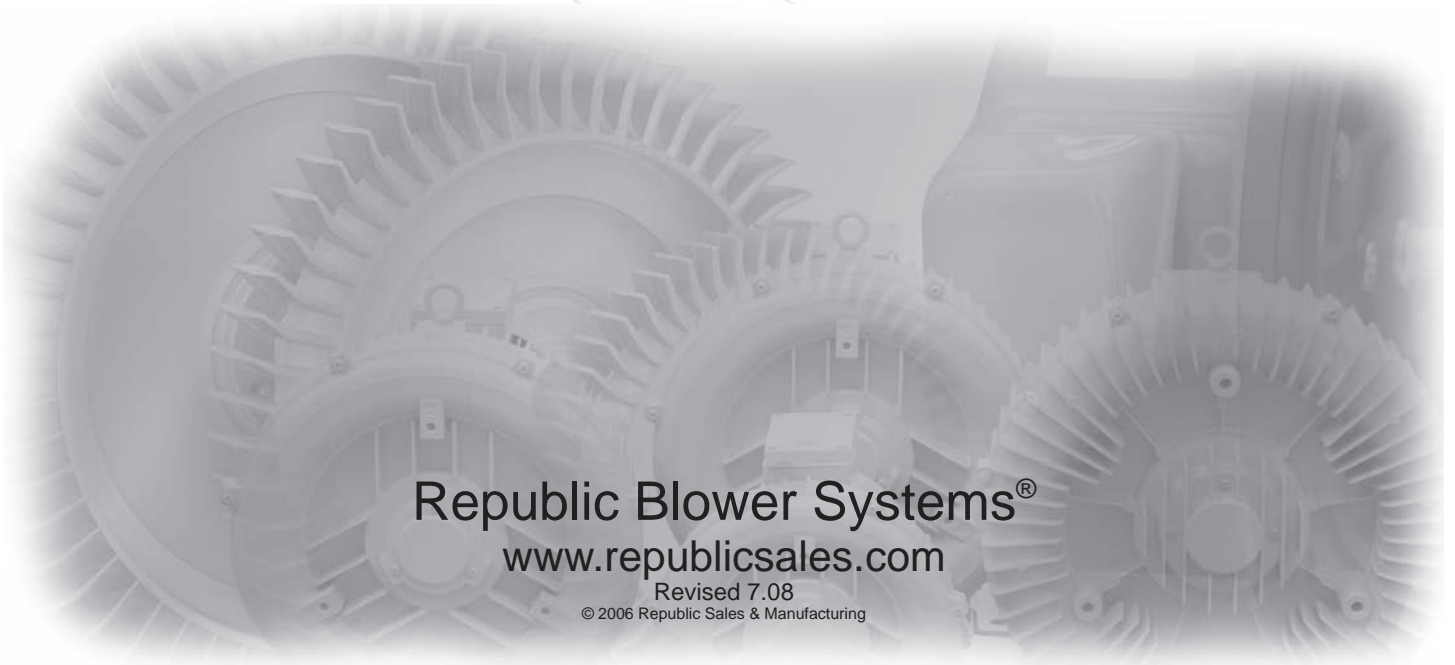


Republic Blowers

Ring Blower • Side Channel Blower • Regenerative Blower
Owner's Manual



REPUBLIC
Blower Systems®



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Revised 7.08

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Criteria

Use Criteria

- ▲ Use only clean, dry air.
- ▲ Do not use flammable or explosive gases or atmosphere that contains such gases.
- ▲ Operate at 0°C – 40°C (32°F – 104°F).
- ▲ Protect unit from contaminants and moisture.
- ▲ Protect all surrounding items from exhausted air. This exhausted air can be very hot.
- ▲ Air particles, water vapor, oil based contaminants or other liquids must be filtered out.
- ▲ This blower must be installed with the proper sized inlet and inline filter, gauge and relief valve to protect the blower from contaminants and over-heating.
- ▲ When using the blower at a high altitude or high temperatures, please consult with Republic Blower Systems prior to use.

Safety

Safety Notice

To insure safe operation, we have provided many important safety guidelines in this manual for the Republic Regenerative Blower. Please read this instruction manual carefully and pay particular attention to instructions with the following signs:



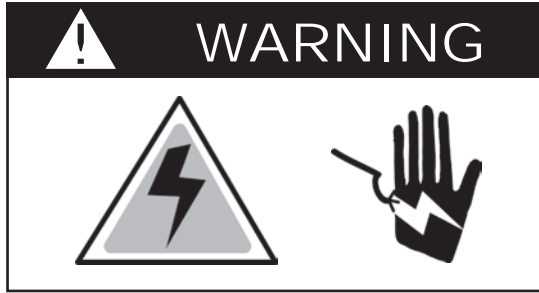
DANGER: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



WARNING: Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.



Installation



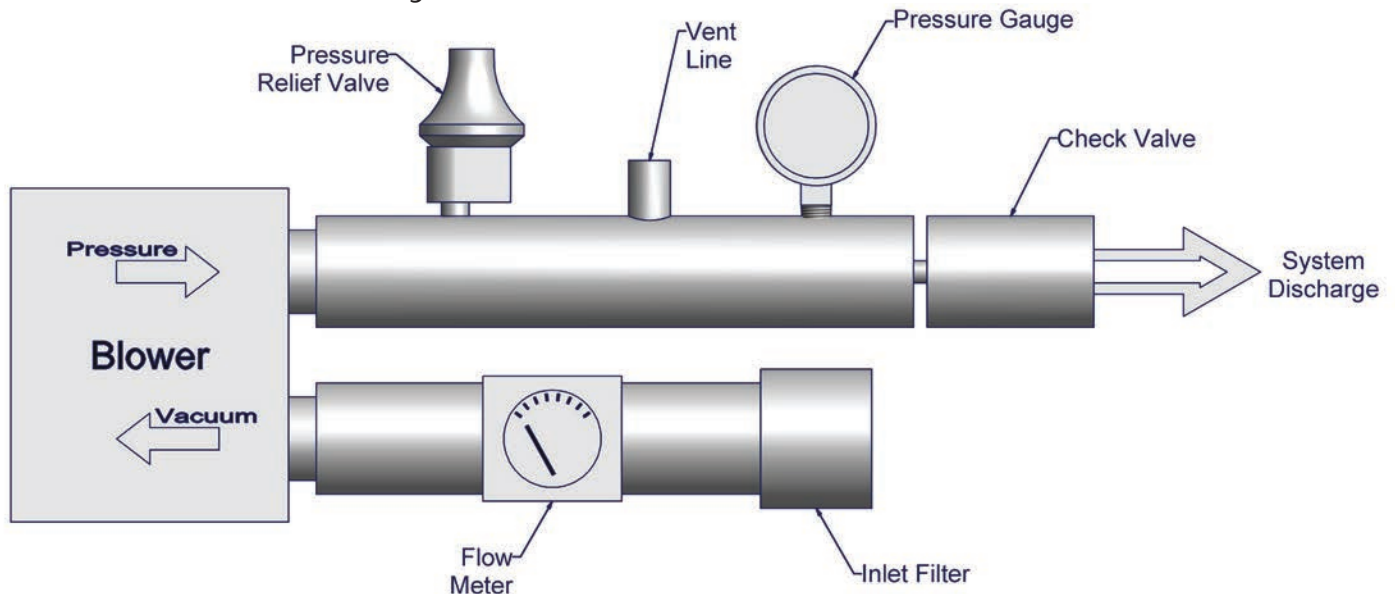
Electrical Shock Hazard

- ▲ Disconnect electrical power at the circuit breaker or fuse box before installing this product.
- ▲ Install the blower in a location where it will not come into contact with water or other liquids.
- ▲ Install the blower in a location protected from the weather.
- ▲ Electrically ground the blower.
- ▲ Failure to follow these instructions can result in death, fire or electrical shock.

Notice of Installation

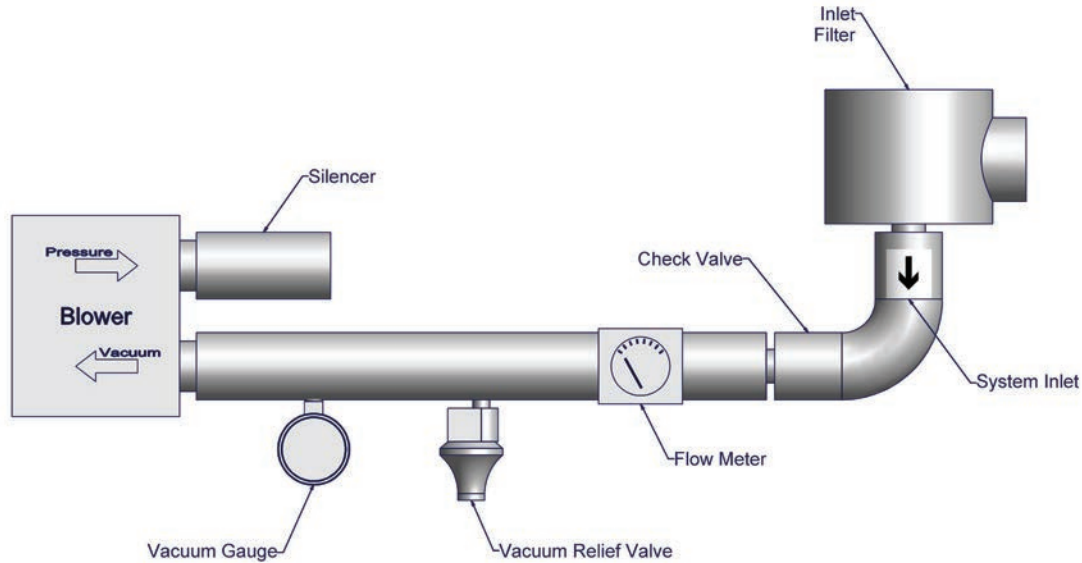
- ▲ Correct installation is your responsibility.
- ▲ Make sure you have the proper installation conditions and that installation clearances do not block air flow.
- ▲ Blocking air flow over the blower in any way can cause the product to overheat.
- ▲ The blower must be installed with the proper sized inlet filter, gauge and relief valve to protect the product from contaminants and over-heating.

Standard Installation Layout





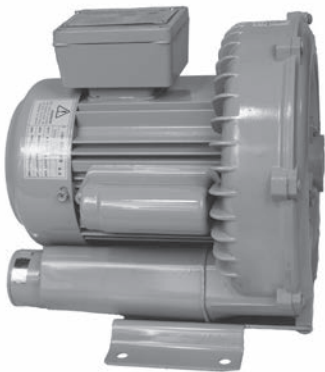
Typical Vacuum Arrangement



1. Recommended piping should be, at minimum, the same size as the inlet and outlet ports.
2. Metal piping is recommended for the first five (5') to eight (8') feet from the blower on pressure systems.
3. Elbows increase friction. Minimizing the amount of elbows in the piping run will decrease friction loss.
4. Pressure or relief valves should be installed in a "T" that is at least one (1) pipe size larger than the port diameter.
5. Exhaust air temperature increases significantly above 65" of water column. Discharged air is typically too hot for most plastic piping. Therefore, metal piping is recommended for at least the first five (5') to eight (8') feet from the blower on the discharge side. In addition, this piping **MUST** be guarded and marked "DANGER-HOT-DO NOT TOUCH."

1-1. Installation

Install the blower on a level, stable operating surface and use the isolation pads provided to reduce noise and vibration.



Horizontal Position



Vertical Position



Position Unapproved

1-2. Rotation

From the motor side of the blower, verify the blower is rotating in the direction indicated by the arrow on the motor. (The motor side is marked with an arrow on most models.) Proper rotation can also be checked by the air flow at the inlet and outlet ports. On blowers powered by a 3-phase motor, change the connection of any two (2) wires to reverse blower rotation.

1-3. Plumbing

Remove any foreign material (burrs, chips, welding drops, slag, pipe cuttings, excess sealant, sand or lime) from plumbing.

Verify the motor is securely mounted and proper blower rotation before connecting to plumbing. The inlet and outlet port are not designed to support the plumbing without proper supporting elements. Remove safety rubber plugs from the inlet and outlet ports. Connect the plumbing with properly sized fittings.

Use a relief valve to discharge excess air beyond the preset level on pressure applications. Use a vacuum relief valve to draw in excess air when preset vacuum level is achieved.

Install an intake filter to prevent foreign material from entering the blower. In applications where there is high humidity or liquids being used in the process, install a moisture separator with a drain valve.

1-4. Accessories

Install two gauges (vacuum or pressure), one before and one after the filter, to monitor differential through the filter element. As filters become clogged, performance efficiency will be reduced. Filters should be checked periodically and replaced when necessary. The recommended check valves provide minimal pressure drop, positive sealing, and are resistant to the high discharge temperatures of the blowers. (Refer to Republic Regenerative Blower Check Valves List)

1-5. Motor Control

It is your responsibility to contact a qualified electrician and assure that the electrical installation is adequate and in compliance with all national and local electrical codes.

Select fuses, motor protective switches, or thermal protective switches to provide protection. Fuses act as short circuit protection for the motor, not as protection against overload. Incoming line fuses must be able to withstand the motor's starting current. Motor starters with thermal magnetic overload or circuit breakers protect motor from overload or reduced voltage conditions. Motors without automatic restart require thermal protection or magnetic over-current cutout to prevent motor overloading from single phasing in a 3-phase circuit, high starting frequency, or locked blower.



1-6. Electrical Connection



Electrical Shock Hazard

- ▲ This product must be properly grounded.
- ▲ Do not modify the plug provided. If it will not fit the outlet, have the proper outlet installed by a qualified electrician.
- ▲ If repairing the cord or plug, do not connect the ground wire (green or green with yellow stripes) to either terminal.
- ▲ Check the condition of the power supply wires.

Connection								
HRB100,101,102,102/ 1,200,201,202,202/1,300,301,302,302/ 1,400,401,402,402S,500,502,600,602,700,702,802				HRB800,900,902,1000,1002,1100,1102,1200,1202, 1300,1302,1402,1502				
6 cable		Y 9 cable		Δ 9 cable		12 cable		High Voltage 440
Low Voltage 220-220	High Voltage 380-440	Low Voltage 220	High Voltage 440	Low Voltage 220	High Voltage 440	Low Voltage 220	Middle Voltage 380	L ₁ L ₂ L ₃
L ₁ L ₂ L ₃	L ₁ L ₂ L ₃	L ₁ L ₂ L ₃	L ₁ L ₂ L ₃	L ₁ L ₂ L ₃	L ₁ L ₂ L ₃	L ₁ L ₂ L ₃	L ₁ L ₂ L ₃	
								1 2 3
1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	1 2 3	
	6 - 4 - 5		4 5 6		4 5 6			12 10 11
6 4 5		7 8 9		6 4 5		6 4 5	7 8 9	4 5 6
		4 - 5 - 6	7 8 9		7 8 9		4 5 6	
				7 8 9	7 8 9	7 8 9		7 8 9
						12 10 11	12-10-11	

Connection			
Low Voltage (2Y)		High Voltage (Y)	
110V		230V	
R	S	R	S
1	2	4	1
3	4	5	
6	5	2 - 3 - 6	
Reverse: R-1-3-5 S-2-4-6		Reverse: R-4 S-1-5 2-3-6	
Connect hot lead to 1. Connect neutral lead to 4.			



- ▲ Do not permanently connect this product to wiring not in good condition or that is inadequately sized for the requirements of this blower.
- ▲ Failure to follow these instructions can result in death, fire or electrical shock.
- ▲ This product must be grounded. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an escape wire for the electric current.
- ▲ Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if you are not sure whether the product is properly grounded.

2. Operation

WARNING

Injury Hazard

- ▲ Install proper safety guards as needed to prevent any close contact with blower suction area.
- ▲ Keep fingers and objects away from openings and rotating parts.
- ▲ Blower surfaces become very hot during operation. Allow these surfaces to cool before handling.
- ▲ Wear proper eye protection. Air stream from product may contain solid or liquid material that can result in eye or skin damage.
- ▲ Wear hearing protection. Sound level from some models may exceed 85 dBA.
- ▲ Failure to follow these instructions can result in burns, eye injury or other serious injury.
- ▲ It is your responsibility to operate this product at recommended pressures or vacuum duties and room ambient temperatures. Do not throttle discharge or suction pipe to reducer capacity. Throttle will increase differential pressure causing increasing power absorption and working temperatures.

Start Up

Operate blower for an hour and then check:

1. **Ambient temperature** – Increased room temperatures may require stronger ventilation especially for larger blowers. Room temperature should not exceed 100°F.
2. **Pressure and vacuum valves** – Adjust relief valve pressure or vacuum setting, if needed.
3. **Motor current** - Check that supply current matches recommended current rating on blower nameplate.
4. **Electrical overload cutout** – Check that current matches rating on blower nameplate.

If motor fails to start or slows down significantly under load, shut off and disconnect from power supply. Check that the voltage is correct for the motor and that the motor is turning in the proper direction.

3. Maintenance



Electrical Shock Hazard

- ▲ Disconnect electrical power supply cord before performing maintenance on the blower.
- ▲ If product is hard wired into system, disconnect electrical power at the circuit breaker or fuse box before performing maintenance on the blower.
- ▲ Failure to follow these instructions can result in death, fire or electrical shock.



Injury Hazard

- ▲ Blower surfaces become very hot during operation. Allow blower surfaces to cool before handling.
- ▲ Wear proper eye protection. Air stream from product may contain solid or liquid material that can result in eye or skin damage.
- ▲ Failure to follow these instructions can result in burns, eye injury or other serious injury.
- ▲ It is the customer's responsibility to regularly inspect and make necessary repairs to the blower in order to maintain proper operation. Make sure that pressure and vacuum is released from product before starting maintenance.

Preventive Maintenance

- ▲ After the first 500 hours of operation, the following need to be checked:
 - filter elements
 - noise absorbing foam used in mufflers
 - clean motor and blower
- ▲ Replace filter elements as needed. Mufflers should be checked on a monthly basis.



Lubrication

Lubrication Interval

To lubricate the bearings, the roller contact bearings and adjacent bearing housing should have the used grease removed and replaced with fresh grease. About 50 percent of the roller balls should be filled. No more than 65 percent of the adjacent bearing housing should be filled. Sealed bearings should be replaced within the listed conditions below with new bearings or as conditions warrant.

Hours of Service Per Year	Relubrication Intervals
5,000	3 years
Continual Normal Services	1 year
Seasonal Service (motor idle for 6+ months)	1 year at beginning of season
Continuous—high ambients, dirty or moist applications	6 months

Bearing

Bearing Types

A variety of types and lubricants are used in all Republic Regenerative Blowers. A summary of data is included in the Bearing Specification Table. Greasable bearings are supplied with a sufficient amount of lubricant at the factory to permit initial operation. The frequency of replacing the grease depends upon the conditions and application.

Grease

Grease Types

Republic Regenerative Blowers utilize proprietary lubricants from long experience. These lubricants are available from Esso or Exxon. You can check with your local supplier for a recommended equivalent. (High temperature resistance and high speed: NLGI N3 Grade). Lubricants of different manufacturers should not be mixed. If changing lubricant types, the bearing and housing should be thoroughly cleaned to remove all lubricant before adding grease from a new supplier.



Bearing

Bearing Specification (Recommendable Bearing: NSK C3 Grade)

Single Stage			Double Stage		
Item	Front	Rear	Item	Front	Rear
HRB-101	6203z	6203zz	HRB-102/1	6203z	6203zz
HRB-201	6204z		HRB-202/1		
HRB-301	6205z	6205zz	HRB-302/1		
HRB-401			HRB-402/1	6204z	6205z
HRB-100	6203z	6203zz	HRB-102	6203z	6203zz
HRB-200	6204z	6203zz	HRB-202		
HRB-300	6205z	6205zz	HRB-302	6204z	6205z
HRB-400			HRB-402,S		
HRB-500	6206z		HRB-502		
HRB-600			HRB-602		
HRB-700		HRB-702			
HRB-800	6207z	6207zz	HRB-802	6206z	6208z
HRB-900			HRB-902		
HRB-1000	6208z	6208zz	HRB-1002		
HRB-1100			HRB-1102	6207z	
HRB-1200			HRB-1202		
HRB-1300			HRB-1302	6308z	6308z
		HRB-1402			
			HRB-1502		



Trouble-Shooting Chart

Problem	Reason	Remedy
Increased sound	Noise absorbing foam is damaged Impeller rubbing inside	Replace foam Send unit to Republic Authorized Repair Facility
Excessive vibration	Damaged impeller Motor and/or impeller are dirty	Replace impeller Clean motor and impeller periodically
Ambient and exhaust temperature increases	Motor and/or blower are dirty Filters are dirty	Clean motor and blower periodically Replace filters
Decreased inlet air pressure	Inlet air filter is clogged	Clean inlet filter Replace cartridge
Unit is very hot	Wrong wiring Low voltage Inlet air filter is clogged Motor and/or blower are dirty Operating pressure or vacuum is too high	Check wiring Supply proper voltage Clean inlet filter Replace cartridge Clean motor and blower periodically Install a relief valve and pressure or vacuum gauge
Unusual sound	Impeller is damaged or dirty Bearing failure	Clean or replace impeller Send unit to Republic Authorized Repair Facility
Motor overload	Low voltage	Check power source Check wire size and wire connections
Unit does not start	Incorrect electrical connection or power source Impeller is damaged	Check wiring diagram, circuit fusing and circuit capacity Clean or replace impeller Install proper filtration



Warranty Warranty

Republic Regenerative Blowers, when properly installed and operated under normal conditions of use, are warranted by Republic to be free from defects in material and workmanship for a period of twelve (12) months from the date of purchase from Republic or an authorized Republic Representative or Distributor. In order to obtain performance under this warranty, the buyer must promptly (in no event later than 30 days after discovery of the defect) give written notice of the defect to Republic Blower Systems (Fax: 214-631-3673 or E-mail: warranty@republicsales.com) or a representative in your country. Customer is responsible for freight charges to Republic in all cases.

This warranty does not apply to electrical controls and gasoline engines not supplied by Republic and does not extend to any goods or parts which have been subjected to misuse, lack of maintenance, neglect, damage by accident or transit damage.

This express warranty excludes all other warranties or representations expressed or implied by any literature, date or person. Republic's maximum liability under this exclusive remedy shall never exceed the cost of the subject product. Republic reserves the right, at its sole discretion, to refund the purchase price in lieu of repair or replacement.

Republic is not responsible or liable for indirect or consequential damages of any kind however, including but not limited to those for use of any products, loss of time, inconvenience, lost profit, labor charges, or other incidental or consequential damages with respect to persons, business, or property, whether as a result of breach of warranty, negligence or otherwise.

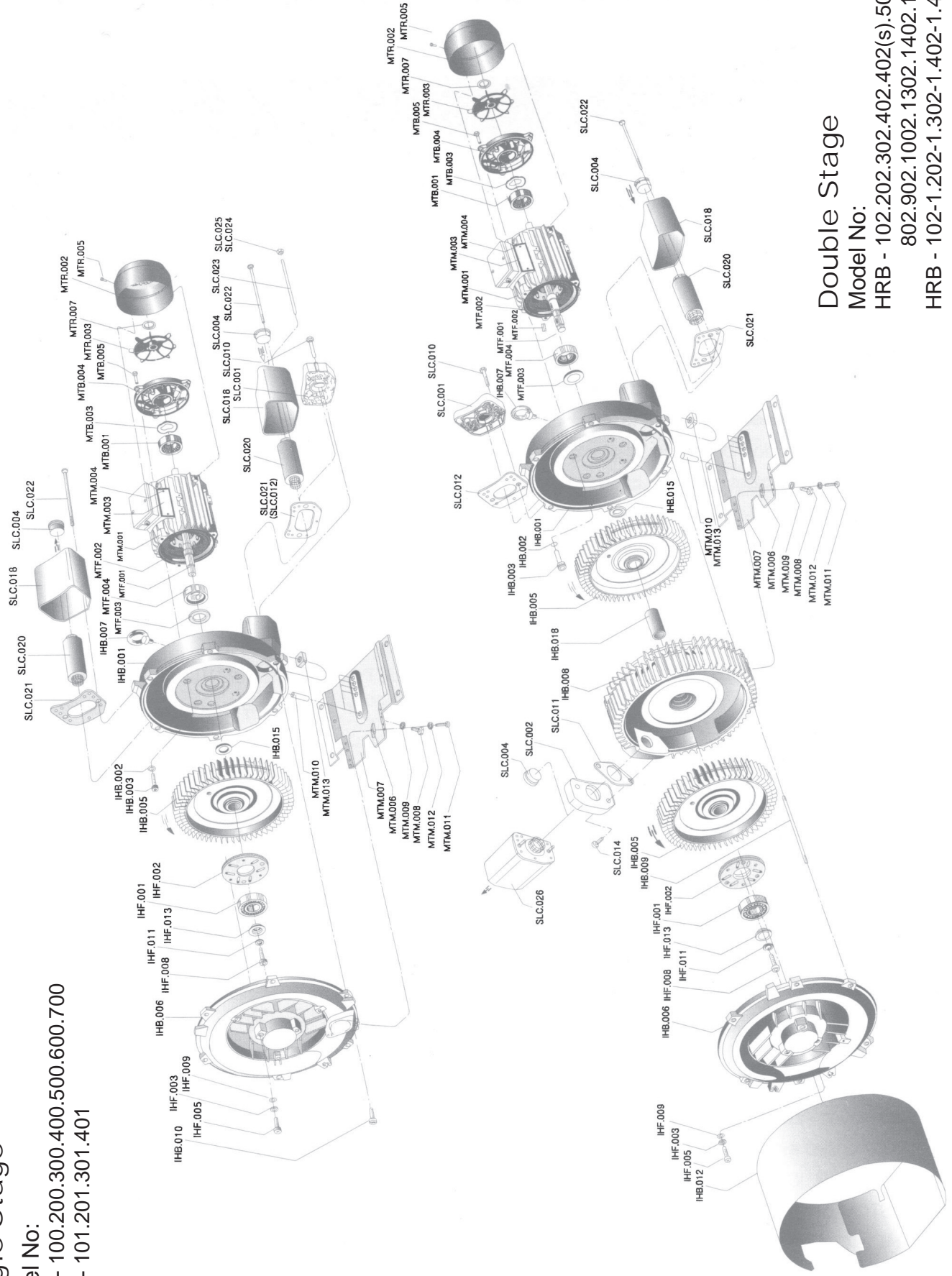
Notwithstanding any other provision of this warranty: **Customer's remedy against Republic for goods supplied or for non-deliverable goods or failure to furnish goods, whether or not based on negligence, strict liability or breach of express or implied warranty is limited solely to Republic's option, to replacement of or cure of such nonconforming or non-deliverable goods or return of the purchase price for such goods and in no event shall exceed the price or charge for such goods. Republic expressly disclaims any warranty of merchantability or fitness for a particular use or purpose with respect to the goods sold. There are no warranties that extend beyond the descriptions set forth in this warranty, notwithstanding any knowledge of Republic regarding the use or uses intended to be made of goods, proposed changes or additions to goods, or any assistance or suggestions that may have been made by Republic's personnel. Unauthorized extensions of warranties by the customer shall remain the customer's responsibility.**

Customer is responsible for determining the suitability of Republic's products for customer's use or resale, or for incorporating them into objects or applications which customer designs, assemblies, constructs or manufacturers.

This warranty can be modified only by authorized Republic personnel, by signing a specific written description of any modifications.

Exploded View Single Stage

Model No:
HRB - 100.200.300.400.500.600.700
HRB - 101.201.301.401



Double Stage

Model No:

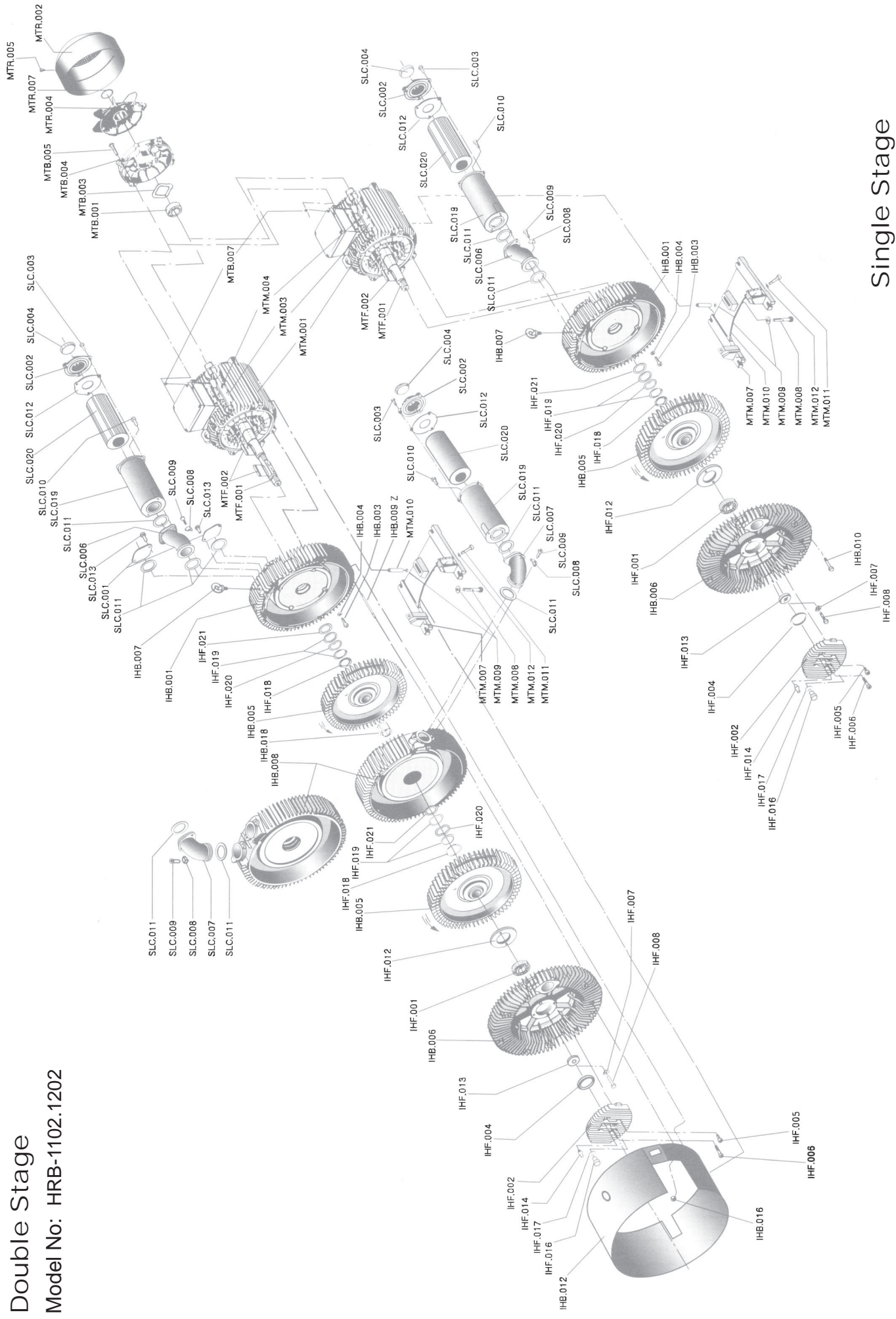
HRB - 102.202.302.402(s).502.602.702.

802.902.1002.1302.1402.1502.1602

HRB - 102-1.202-1.302-1.402-1.402(s)-1

Exploded View Double Stage

Model No: HRB-1102.1202



Single Stage

Model No: HRB-800.900.1000



Part List

Ring Blower Part List

Part Number	Part Name
IHF.001	Bearing
IHF.002	Bearing Cover
IHF.003	Plain Washer
IHF.004	Spacer Washer
IHF.005	Cheese Head Screw
IHF.006	Socket Head Cap Screw
IHF.007	Lock Plate
IHF.008	Cap Bolt
IHF.009	O-Ring Seal
IHF.011	Spring Washer
IHF.012	Mating Ring
IHF.013	Disc
IHF.014	Grease Nipple
IHF.016	Hexa Head Bolt
IHF.017	Plain Washer
IHF.018	Internal Retaining Ring
IHF.019	Compensate Ring
IHF.020	Spring Washer
IHF.021	Sealing Ring

Part Number	Part Name
IHB.001	Compressor Housing
IHB.002	Spring Washer
IHB.003	Cap Bolt
IHB.004	Spring Washer
IHB.005	Impeller
IHB.006	Compressor Cover
IHB.007	Eye Bolt
IHB.008	Center Section
IHB.009	Threaded Rod
IHB.010	Cheese Head Screw
IHB.012	Compressor Cowl
IHB.015	Disc
IHB.016	Plain washer
IHB.018	Sleeve


Part Number	Part Name
MTF.001	Compressor Housing
MTF.002	Spring Washer
MTF.003	Cap Bolt
MTF.004	Spring Washer

Part Number	Part Name
MTB.001	Bearing
MTB.003	Resilent Preloading Plate
MTB.004	Endshield
MTB.005	Cheese Head Screw
MTB.007	Hexagonal Nut

Part Number	Part Name
MTM.001	Stator
MTM.003	Rating Plate
MTM.004	Screw
MTM.006	Square Nut
MTM.007	Foot
MTM.008	Hexagonal Head Screw
MTM.009	Spring Washer
MTM.010	Sleeve
MTM.011	Cap Bolt
MTM.012	Spring Washer
MTM.013	Square Nut

Part Number	Part Name
MTR.002	Fan Cowl
MTR.003	External Fan
MTR.004	External Fan
MTR.005	Screw
MTR.007	Circlip

Part Number	Part Name
SLC.001	Plug
SLC.002	Flange
SLC.003	Cap Bolt
SLC.004	Plug
SLC.005	Hexagonal Nut
SLC.006	Graded Tube
SLC.007	Graded Tube
SLC.008	Clip
SLC.009	Cap Bolt
SLC.010	Cap Bolt
SLC.011	Gasket
SLC.012	Gasket
SLC.013	Cap Bolt
SLC.014	Cap Bolt
SLC.015	Cap Bolt
SLC.016	Cap Bolt
SLC.017	Silencer Casing
SLC.018	Silencer Casing
SLC.019	Silencer Insert
SLC.020	Gasket
SLC.021	Flat Head Screw
SLC.022	Threaded Rod
SLC.023	Hexagon Nut
SLC.024	Hexagon Cap Nut
SLC.025	Silencer



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