ALL-STAR™
Process Blowers
Vacuum Pumps
Process Compressors

OPERATION/MAINTENANCE INSTRUCTIONS

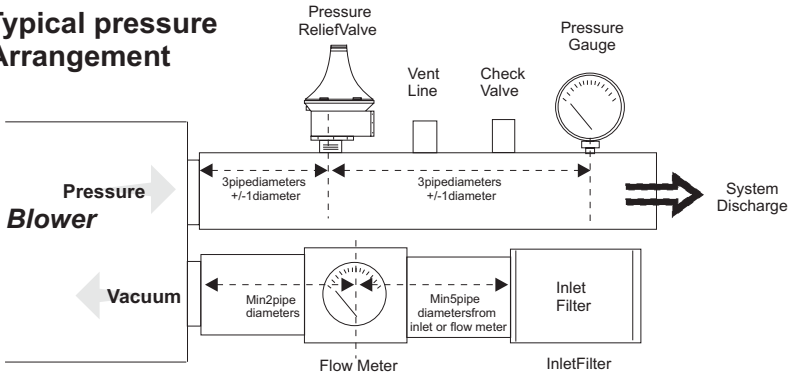
REGENERATIVE BLOWER

CE ISO 9001:2008 RoHS Compliant c UL us

REACH Declaration ANSI/AMCA 210-85

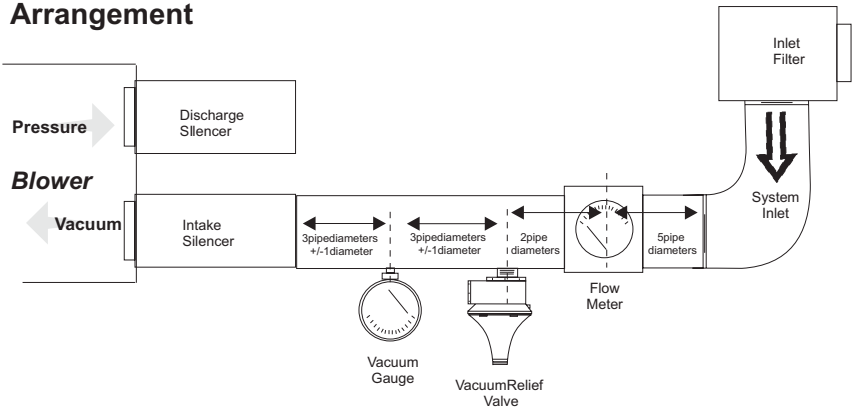
Sample Installation Layout

Typical pressure Arrangement



1. Recommendedpipingshouldbeonediameterlargerthantheinletandoutletdiameteruntil piping has reached the working area
2. Metalpipingisrecommendedforthefirst5to8feetfromthebloweronpressuresystems
3. Elbowsincreasefriction.Pipingonediameterlargerthantheblowerporthelpstominimize suchlosses.
4. Pressure or relief valves should be in stalled in a"T"which is at least one(1)pipe diameter largerthantheexhaustportdiameter.Forsafetyreasons,itishighrecommendedtosetthe reliefvalve10%below the blower's continuous duty rating for pressure or vacu.
5. Exhaustairtemperatureincreasesatratingsabove65"of water and the air is too hot for most plasticpiping.Therefore,metalpipingisrecommended.Inaddition,thispipingMUSTbe guarded and marked"DANGER-HOT-DONOTTOUCH".

TypicalVacuum Arrangement



Mounting Position of Discharge Silencers on 2-Stage High Pressure Models

Standard 2-stage high pressure blowers model RBH6X... are supplied with the discharge silencer housing facing towards the rear of the blower as shown in Position B, below.

This new mounting position provides a more compact package.

A separate set of mounting parts are included with each blower to allow customers to change the direction of the mounting flange to position “A”.

If mounting position “B” is desired, the extra mounting parts can be discarded.

Should you have any questions regarding this conversion, feel free to contact All-Star Products at 800-431-8258.

DISCHARGE POSITION “A”

DISCHARGE POSITION “B”

1 INTRODUCTION

To insure safe operation of your All-Star blower, please read this instruction manual and pay particular attention to the instructions marked 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.
CAUTION	Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.

1.1 Application

The All-Star blower is a complete unit, ready for immediate installation as a vacuum pump or as a compressor.
It is designed for handling air and other non-flammable non-corrosive and non-explosive gasses only.

1.2 Suction and compressor pressure

The drive motor can be loaded to the total differential pressure given in the Technical Data Table. Blowers with limited performance curves in the high pressure ranges should be fitted with relative pressure relief valves in order to avoid overloading of the motor. Pressure relief valve can be mounted directly on the outlet and vacuum relief valves can be mounted directly on the inlet of the blower.

1.3 Environment (Ambient) Temperature

The blower motor rating is based on an ambient temperature of 40 Deg C (104 Deg F). For operation in higher temperature ambients, refer to All-Star Products.

1.4 Performance Specifications

All blower motors are 2 pole design and operate at approximately 3450 rpm at 60HZ. Motors are suitable for operation on 3/50/220/380. Motor nameplate currents vary from time to time. If the current listed below is different from the current on your motor nameplate, use the nameplate current for sizing and selection purposes.
*P = Pressure & V = Vacuum in "H20.

Model No	Prior Model	HP	Voltage	Current	Maximum Performance SCFM	*P	*V	Sound db(A)	Wt lbs
RB1-025-1	HB-129-1	.25	1/60/115/230	1.8 / .9	33	47	27	55	15
RB1-025-3	HB-129	.25	3/60/208-230/460	.94 / .86 / .43	33	45	27	55	15
RB1-033-1	HB-129-12	.33	1/60/115/230	3.2 / 1.6	33	53	35	55	15
RB1-033-3	HB-129A	.33	3/60/208-230/460	1.2 / 1.14 /.67	33	53	35	55	15
RBH2-067-1	HB-229-1	.67	1/60/115/230	6 / 3	60	52	50	61	27
RBH2-067-3	HB-229	.67	3/60/208-230/460	2.4 / 2.2 / 1.1	60	56	50	61	27
RBHL2-067-3	HB-229L	.67	3/60/208-230/460	2.4 / 2.2 / 1.1	63	56	54	61	27
RBH3-101-1	HB-329-1	1.1	1/60/115/230	12 / 6	103	56	58	64	36
RBH3-101-3	HB-329	1.1	3/60/208-230/460	4 / 3.7 / 1.9	103	58	54	64	32
RBH3-101-3	HB-329L	1.1	3/60/208-230/460	4 / 3.7 / 1.9	103	58	54	64	33
RBH3-105-3	HB-329A	1.47	3/60/208-230/460	5.2/4.7/2.4	103	72	72	64	34
RBH3-174-1	HB-339-1	1.74	1/60/115	14.0	103	81	72	64	33
RBH3-2-3	HB-339	2	3/60/208-230/460	6.1/5.5/2.8	103	92	82	64	35
RBH4-176-1	HB-429-11	1.76	1/60/230	8.1	145	56	60	73	46
RBH4-2-3	HB-429-12	2	1/60/230	8.8	145	68	64	73	49
RBH4-205-3	HB-429	2.5	3/60/208-230/460	7.4 / 6.7 / 3.8	148	80	81	73	51
RBHL4-205-3	HB-429L	2.5	3/60/208-230/460	7.4 / 6.7 / 3.8	165	80	80	73	52
RBH4-2-3	HB-429A	2	3/60/208-230/460	6.1 / 5.5 / 2.8	145	68	64	72	48
RBH4-3-3	HB-439	3	3/60/208-230/460	9.7 / 9.0 / 4.5	145	108	96	73	58
RBH-305-3	HB-529	3.5	3/60/208-230/460	10.0 / 9.1 / 4.6	219	80	88	77	71
RBHL6-305-3	HB-529L	3.5	3/60/208-230/460	10.0 / 9.1 / 4.6	219	80	88	77	72
RBH6-5-3	HB-629	5	3/60/208-230/460	14.3 / 12.9 / 6.5	219	109	113	77	78
RBHL6-5-3	HB-629L	5	3/60/208-230/460	14.3 / 1292/ 6.5	219	113	113	77	79
RBH6-601-3	HB-639	6.1	3/60/208-230/460	17.2 / 15.5 / 7.8	218	133	129	77	84
RBH7-805-3	HB-729	8.5	3/60/208-230/460	33.8 / 30.6/15.3	385	113	125	75	172
RBH8-1105-3	HB-829	11.5	3/60/208-230/460	35.9 / 32.5 /16.2	385	181	141	75	182
RBH9-15-3	HB-919	15	3/60/208-230/460	47.4 / 42.8 / 21.4	808	68	78	NA	221
RBH9-20-3	HB-929	20	3/60/208-230/460	65 / 59.6 / 29.8	808	107	107	NA	247
RBH9-30-3	HB-939	30	3/60/208-230/460	93 / 88 / 44	808	166	146	NA	351
2 STAGE									
RBH33-205-3	HB-3319	2.5	3/60/208-230/460	7.4 / 6.7 / 3.8	106	117	119	69	56
RBH33-305-3	HB-3326	3.5	3/60/208-230/460	10.0 / 9.1 / 4.6	106	175	133	69	62
RBH43-5-3	HB-4337	5	3/60/208-230/460	14.3 / 12.9 / 6.5	158	169	165	77	89
RBH43-601-3	HB-4346	6.1	3/60/208-230/460	17.2 / 15.5 / 7.8	160	205	169	77	95
RBH63-601-3	HB-6346	6.1	3/60/208-230/460	17.2 / 15.5 / 7.8	220	141	157	79	122
RBH63-8.5-3	HB-6355	8.5	3/60/208-230/460	27.9 / 25.3 / 12.2	218	209	171	79	159
RBH63-1105-3	HB-6375	11.5	3/60/208-230/460	35.9 / 32.5 / 16.2	220	265	181	79	175
RBH64-805-3	HB-6455	8.5	3/60/208-230/460	27.9 / 25.3 / 12.2	310	85	72	79	155
RBH64-1105-3	HB-6475	11.5	3/60/208-230/460	35.9 / 32.5 / 16.2	310	105	105	79	178
RBH83-1105-3	HB-8310	11.5	3/60/208-230/460	35.9 / 32.5 / 16.2	385	117	119	81	247
RBH83-1705-3	HB-8315	17.5	3/60/208-230/460	55 / 49.8 / 24.9	385	241	183	81	314
RBH83-25-3	HB-8320	25	3/60/208-230/460	78.3 / 70.8 / 35.4	385	314	----	81	353
RBH84-1105-3	HB-8410	11.5	3/60/208-230/460	35.9 / 32.5 / 16.3	582	110	44	81	243
RBH84-1705-3	HB-8415	17.5	3/60/208-230/460	55 / 49.8 / 24.9	582	230	105	81	309

2 OPERATION

2.1 Transport and Storage

When lifted by crane, All-Star blowers must be secured at the eye balled on the pump casing

Attention should be paid to the load bearing capacity of the hoisting equipment (refer to Table 1 for unit weight).

2.2 Installation

All-Star blowers can be installed and mounted in any horizontal or vertical position. Quiet vibration-free running is achieved by insuring the blower is mounted onto a firm foundation or structure.

Keep intake and discharge ventilation openings clear. The direction of flow is indicated by an arrow marked on the silencer housing.

WARNING On installation or after maintenance, it is required to check that the blower rotation is correct before returning to service.

WARNING Do not operate the blower with the outlet blocked or restricted.

Solid particles and impurities must be filtered and eliminated from the air or gas from entering the blower by installing a filter on the intake. Open discharge or intake are to be fitted with protective screens.

If the blower is mounted on its cover or close to a wall, a minimum of 30mm (1-½") clearance must be maintained between the housing and the mounting surface or wall.

Oh the discharge side, the cover, impeller, silencer housing must not come in contact with flammable materials.

The flow noise is reduced by the built-in silencers. In the case of free-gas intake or exhaust, the noise can be further reduced by attaching silencers to the blower. In order to reduce the noise emissions further, the blowers should not be attached onto components that radiate sound, such as thin-walled structural steel or metal plates. If necessary, intermediate sound absorbent materials should be included in the installation.

2.3 Electrical Connection

DANGER **The electric power must be disconnected before any work is performed on the blower or associated equipment.**

The system voltage and frequency must be the same as stated on the blower nameplate. +/-5% voltage and +/- 2% frequency variations are permitted without affecting the blower performance. The incoming electrical power should be connected according to the wiring diagram located in this brochure or in the conduit box. The protective earth connections should be connected to the ⏚ terminal.

CAUTION **High surface temperatures of more than 70 Deg C (158 Deg F) can occur on the blower's surface. No heat-sensitive parts such as normal electrical leads or electronic components can make contact with or be attached to the blower. Warning signs and protective screens must be installed around the blower surfaces to prevent accidental contact by individuals.**

The rated motor current and operating temperatures are based on a 40 Deg C ambient.

Select motor circuit breakers to match the rated motor full load and starting currents, which typically are 600-650% higher than full current. Due to the high inertia of the blower's impeller, starting time can extend to 5-9 seconds. As a result "slow blow" fuses should be considered.

All-Star blower motors are suitable for operation on VFDs as standard. Shielded power leads are recommended to control high frequency currents and voltage harmonics caused by EMF (electro-magnetic interference).

When operating the blower with a VFD, the blower speed should not exceed 4000 rpm. For higher speed operation, contact All-Star.

2.4 Commissioning

CAUTION **The blower must not be operated with the Intake or outlet closed or blocked.**

CAUTION **If the blower is started without being bolted to a mounting base, the initial starting torque of the motor will cause the blower to move suddenly and possibly topple over.**

For safe operation, the following conditions, as a minimum must be followed:

1. The blower should be assembled and operated according to the data on the nameplate.

2. When a VFD is used, the blower motor speed must not exceed 4000 rpm, unless the blower has been specifically approved to operate at a higher speed.

3. The blower must be properly assembled, aligned and connected to the intake and discharge piping or hose.

4. Installation elevation is taken into account when adjusting the blower's pressure or vacuum relief valves.

5. The direction of the motor rotation is correct.

6. The intake and discharge connections are corrent.

7. All fastenings, bolts and electrical connections are correct.

8. Earth and equi-potential bonding connections are proper.

9. All measures are taken to prevent contact with any moving or energized parts.

CAUTION **The intake ports must be sited so that no foreign elements are allowed to enter the blower and to be ejected through the exhaust (discharge) port. this is a hazard for eyes and skin.**

CAUTION **When air is drawn in from the atmosphere, the intake port must be covered with a protective screen to prevent foreign matter from being sucked into the blower, including parts of the body and clothlng.**

3.0 Lubrication

DANGER Before any work is performed on the blower, equipment and especially when removing covers on moving parts, the motor is to be disconnected from electrical power.

DANGER Do not connect electrical power supply until the blower and other equipment are completely re-assembled.

3.1 Disassembly

Blower models RB8 series and larger and all 2-stage blowers have an external grease fitting for the blower end bearing. Other models do not, therefore disassembly is required to lubricate the bearings.

WARNING After removing the blower cover some parts held with centering fits and can suddenly separate, fall and possibly cause injury and damage to the parts. Care needs to be taken during disassembly to insure all parts are securely held in place.

3.2 Bearing Types

Shielded and open bearings require lubrication. The frequency of greasing depends upon the application. As a guideline, in normal clean environments with less than a 40 deg C ambient, bearings should be relubricated after approximately 10,000 hours of service or 2.5 years. If service conditions are dusty, dirty or include high operating temperatures, bearings should be lubricated more frequently.

To lubricate the bearings, the rolling contact bearings and adjacent bearing housing should have the spent grease removed and replaced with resh grease. About 50% of the rolling balls should be filled and not more than 65% of the adjacent bearing housing should be filled.

Sealed bearings, should be replaced within the above conditions with new bearings or as conditions warrant.

External Grease Fittings: Lubricating these bearings, the blower needs be at full operating temperature. ***REMOVE*** grease relief located at the 6 o'clock position on the blower end cover; add grease through the grease fitting until new grease begins to discharge from the relief, then STOP. Wait for approximately 30 minutes to allow the fresh grease to reach the blower temperature, then install the grease relief plug.

3.3 Grease Type Mobilgrease XHP 222

The bearings in All-Star blowers are filled with this lubricant, suitable for service from -30 to +428 Deg F. Detailed information is available at https://www.mobil.com/en/lubricants/for-businesses/heavy-duty-lubricants/products/mobilegrease-products xhp-222 If possible, different manufacturers grease should not be mixed. Check a local supplier for a compatible grease.

TABLE 3.4 Bearing Types, Sizes and Lubricant

Model	Impeller Side Bearing	Type	Max DegC	Motor FanEnd Bearing	Type	Max Deg C
HB-1xx RB1 Series	6202zz	Shield	280	6201zz	Shield	280
HB-2xx RB2 Series	6203zz	Shield	280	6202zz	Shield	280
HB-3xx RB3 Series	6204z	Shield Open	280	6004zz	Shield	280
HB-4xx RB4 Series	6205z	Shield Open	280	6204zz	Shield	280
HB-5xx HB-6xx RB6 Series	6206z	Shield Open	280	6304zz	Shield	280
HB-729 HB-829 RB8 Series	6207z	Shield Open	280	6207zz	Shield	280
HB-9xx RB9 Series	6308z	Shield	280	6209zz	Shield	280
HB-2308 RB23 Series	6203zz	Shield	280	6202zz	Shield	280
HB-33xxx RB33 Series	6204z	Shield	280	6202zz	Shield	280
HB-43xx RB43 Series	6205z	Shield	280	6304zz	Shield	280
HB-6346 RB63-601-3	6206z	Shield	280	6204zz	Shield	280
HB-6355 HB-6375 HB-64xx RB63 Series RB64 Series	6206z	Shield	280	6207zz	Shield	280
HB-83xx RB83 Series	6207z	Shield	280	6209zz	Shield	280
HB-84xx RB84 Series	6207z	Shield	280	6209zz	Shield	280

Note: Bearlng slzes, types and lubrlcant are subject to change and may be dlfferent from the bearlngs ln your partlcular blower model.

WARNING On installation or after maintenance, it is required to check that the blower rotation is correct before returning to service.

WARNING Do not operate the blower with the outlet blocked or restricted.

DANGER **Covers which prevent contact with rotating parts are not to be opened during operation.**

4 MAINTENANCE

DANGER **Before any work is performed on the blower, equipment and especially when removing covers on moving parts, the motor needs to be disconnected from the electrical power supply.**

DANGER **Do not connect the electrical power supply until the blower and other equipment have been completely reassembled.**

4.1 Cleaning

The surface of the blower should be clean and free from dust or other contaminants. Surface dust can be blown with a low pressure air hose or supply periodically to prevent a build-up on material.

When required by the operating conditions, dismantle the cover from the blower by removing the screws or nuts from the cover. Do not lose the screws or nuts, they are required for reassembly. Remove and clean the cover. Clean impeller and the internal portion of the blower with low pressure air after covering the rolling contact bearing and bearing grease housing. Becareful not to blow any dirt or contaminants into the bearing grease.If dirt enters the lubrication or bearing, remove the contaminated grease, clean the bearing and replenish with new grease.

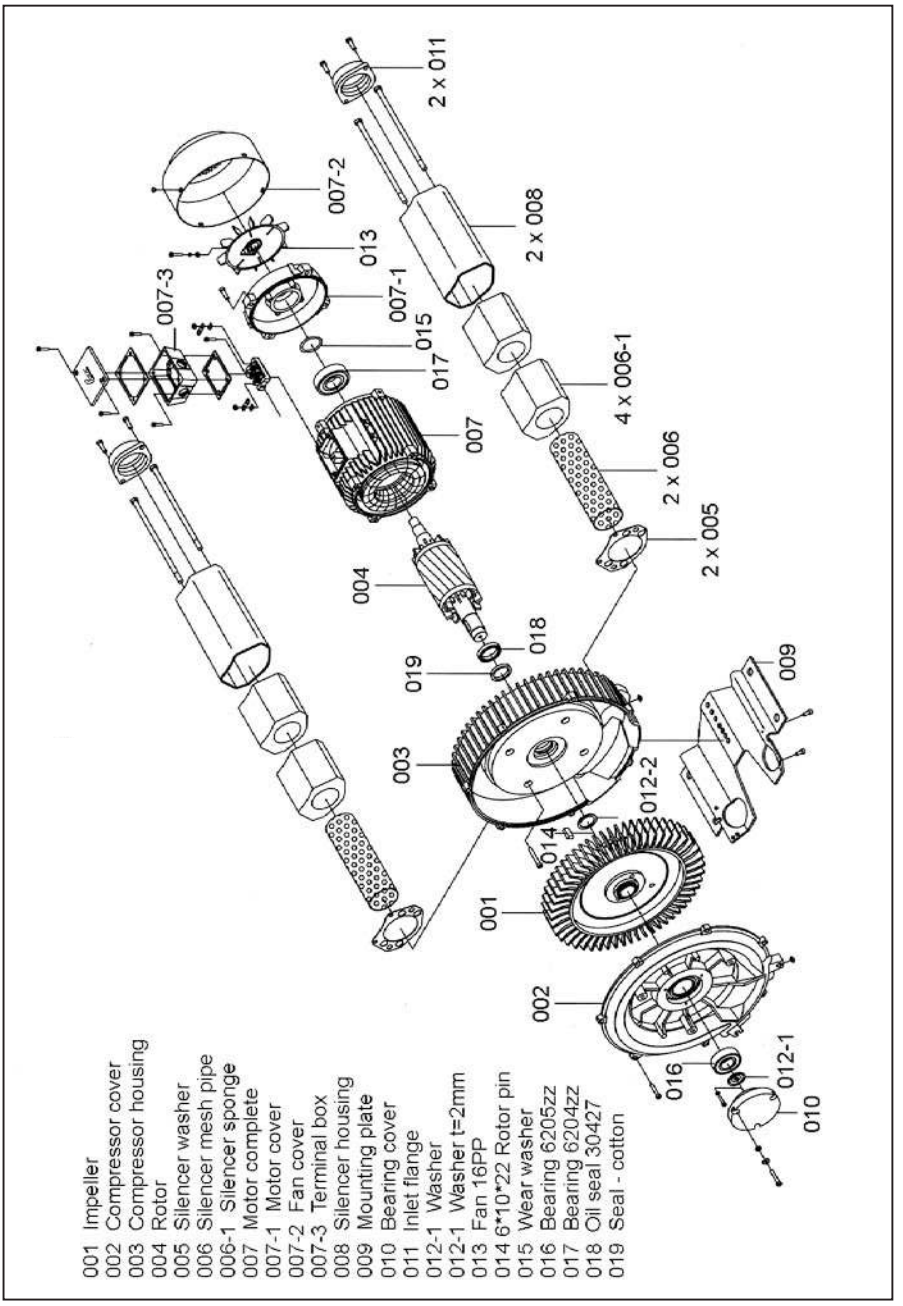
WARNING **After femoving the blower cover screws or nuts, some parts held with centering fits and can suddenly separate, fall and possibly cause injury and damage to the parts. Care needs to be taken during disassembly to insure all parts are securely held in place.**

DANGER **Covers which prevent contact with rotating parts are not to be opened durlng operatlon.**

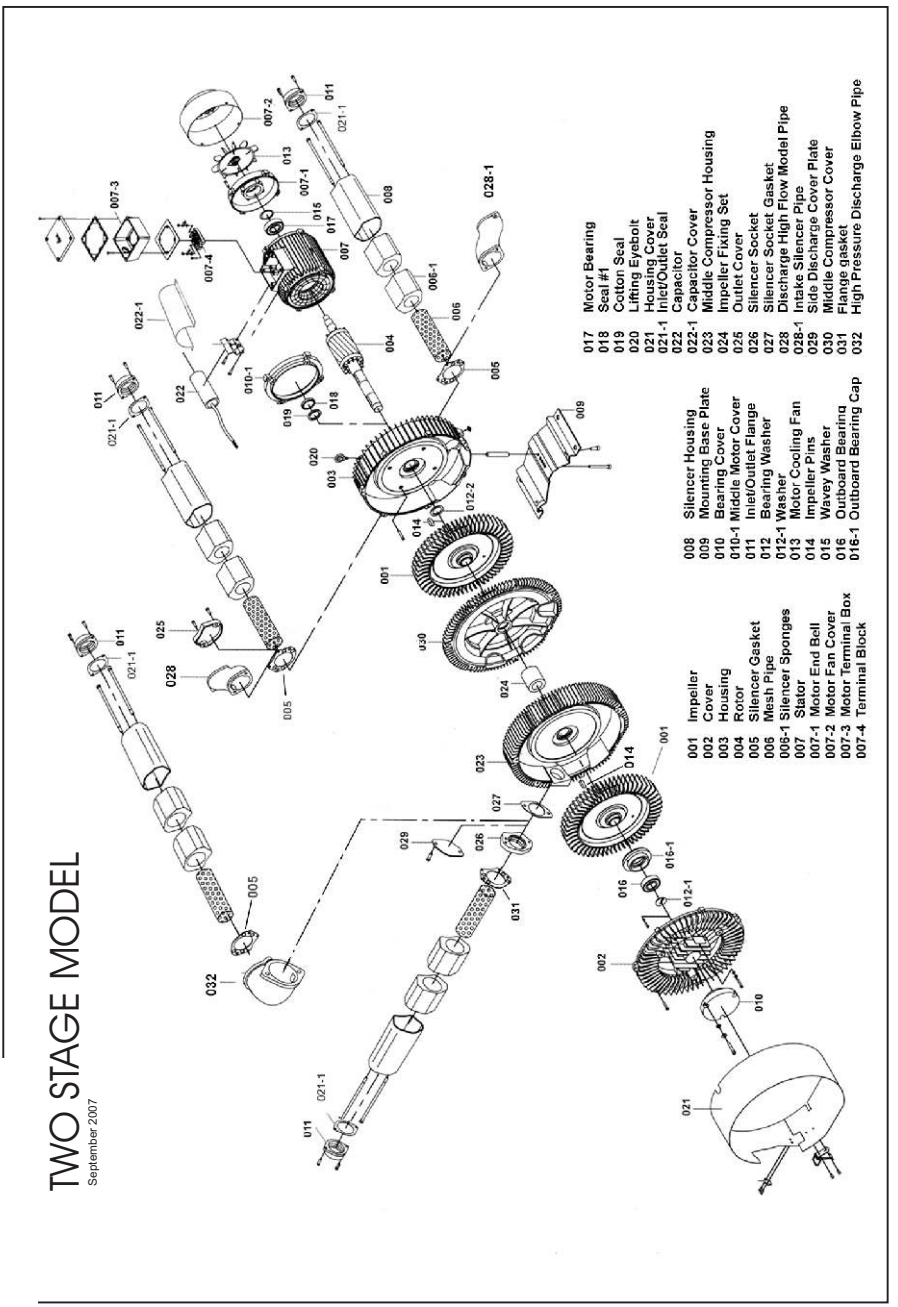
4.2 Trouble Shooting

Problem	*Cause*	*Corrective steps*
Motor does not start, Morotor noise.	At least two power supply conductors interrupted	Eliminate interruption by mean so fuses, terminals or lead feeder.
Motor does not start, hummingnoise	Interruption in one power Supply conductors	See "Motor does not start, no running noise."
	Impeller jammed	Open cover, remove foreign matter, clean; if necessary, check impeller gap and adjust if necessary
	Impeller defective	Replace impeller
	Bearing defective	Replace bearing
Motor-protective circuit breaker trips again afte rmotor is switched on power consumption too high	Short-circuiting the winding	Inspect motor winding
	Motor overloaded	Reduce operating pressure, clean filter, silencer, connecting pipes.
	Compressor jammed	See"Motor does not start, humming noise."
No vacuum or too weak vacuum is produced.	Leak in the system	Make system air-tight
	Wrong direction of rotation	Change direction of rotation
	Compressor too small	Use larger compressor Fit new shaft seal Confirm calculations Clean impeller Replace worn impeller.
Compressor is not air tight.	Sealed is defective	Inspect sealing disc

5.0 Single Stage Sample Assembly



5.1 Two Stage Sample Assembly



CONNECTION DIAGRAM

The bloweris designed to operate on:

60HZ Single Phase 115/230 volts
Three Phase 208, 230, 460 volts

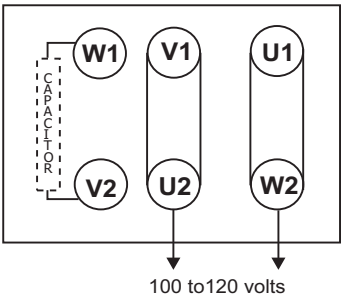
50HZ Single Phase 220 volts
Three Phase 220, 380 volts

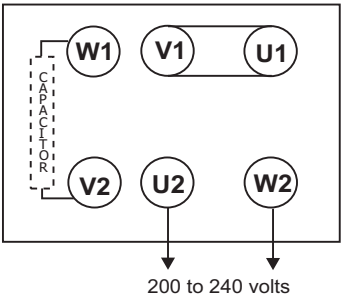
Note: 1. Dual voltage motors are pre-connected for high voltage.
2. Thermal protectors are included with all single phase motors. Refer to the page 15.

Wiring Diagram#1DualVoltageSinglePhaseMotors1/60/50/115/230

Connection diagram for blower models:

Current models		Prior Models	
RB1-025-1	RB3-101-1	HB-129-1	HB-329-1
RB1-033-1	RB23-101-1	HB-139-1	
RB2-067-1		HB-229-1	

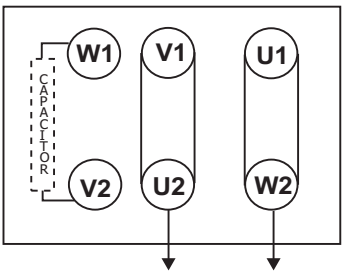




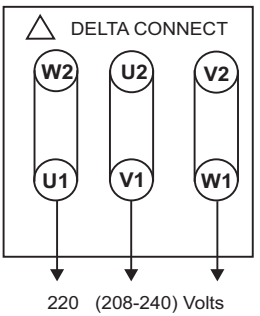
Wiring Diagram #2 Single Voltage Single Voltage Motors 1/60/50/230

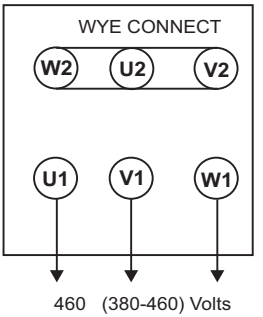
Connection diagram fo blower models:

Current models	Prior Models
RB3-2-2	HB-339-1
RB33-2-2	HB-3319-1
RB4-2-2	HB-429-12
RB4-205-2	HB-4326
RB43-305-2	HB-429-1
RB6-305-2	
RB6-5-2	



Wiring Diagram #3 For All Three Phase Voltage Motors

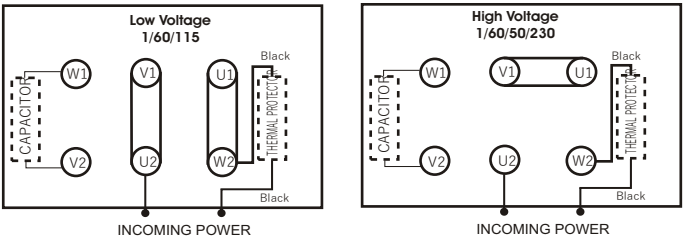




AUTO RESTART DUAL VOLTAGE MOTORS WIRED WITH THERMAL PROTECTOR CIRCUIT

Models

RB1-025-1
RB1-033-1
RBH2-067-1



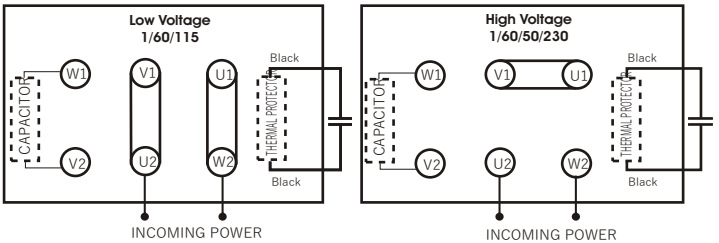
1. The capacitor connection to W1 and V2 is already connected at the factory.
2. Remove the metal spade connectors on the two black wires.
3. Connect these two black wires as follows:
   a. Connect one of the black leads to terminal W2.
   b. Connect the other black leads to the incoming power.
4. Brass metal jumpers (connectors) should be attached as shown above, Between V1 and U2; U1 and W2 and for high voltage, between V1 and U1.

PILOT DUTY DUAL VOLTAGE MOTORS - REQUIRES A MOTOR STARTER WITH AN AUXILLARY RELAY

***** Note: Pilot duty restart need to be wired as shown below***

Models

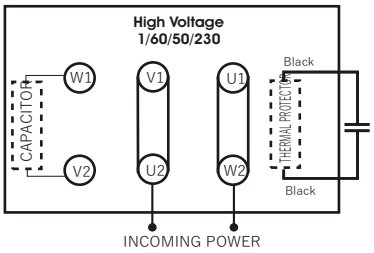
RB1-025-1
RB1-033-1
RBH2-067-1



SINGLE VOLTAGE 1/60/50/230 - PILOT DUTY ONLY - REQUIRES A MOTOR STARTER WITH AN AUXILARY RELAY

Models

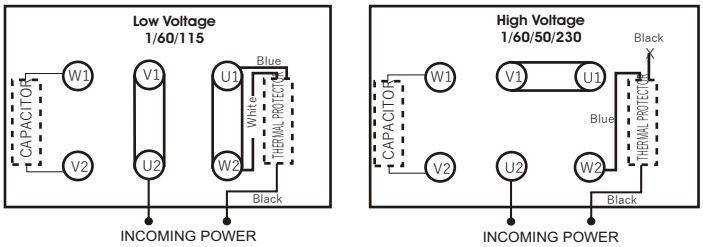
RBH3-105-2
RBH3-2-2
RBH33-2-2
RBH4-105-2
RBH4-2-2
RBH4-205-2
RBH43-305-2
RBH6-305-2
RBH6-5-2



The RBH3-101-1 has three leads to connect the thermal protector.

Model

RBH3-101-1



All Star blowers are high quality engineered and manufactured blowers. They are designed to meet international standards and have received approvals and recognition from the following agencies.

CE ISO 9001:2008 RoHS Compliant c UL us

REACH Declaration ANSI/AMCA 210-85

Warranty

All Star Products warrants all of its products against defects in material and workmanship for a period of one(1)year from the date the product is placed in service to a maximum of eighteen (18) months from the date of shipment, which ever occurs first. Purchaser is responsible for providing adequate and approved storage during the 18 month period. Noth withstanding the fore going, any equipment or components of the products not of All Stars Products own manufacture and/or specified by the purchaser, is sold under only such warranty as the maker there of extends to All Star Products and All Star Products are able to enforce, but such items are not warranted by All Star Productsin anyway. All Star Products is not responsible for product failures caused by the purchaser or their customer is applying the product, operating the product beyond the published ratings and values, misuse, field alterations and changes, lack of proper maintenance or improper storage, neglect or accident are also excluded from this Limited Warranty. This Limited Warranty is effective, provided (1)Thepurchaser immediately notifies All Star Products in writing of the alleged defect after it becomes known to the purchaser and (2) No alterations, repairs or services have been performed by the purchaser or third parties on the product, without the written approval of an officer of All Star Products (3) a properly sized intake air filter has been installed (4) a correctly set pressure or vacuum relief valve is installed. This Warranty is in lieu of all other expressed or implied warranties, including any warranty of merchantability or fitness for any purpose.

The warranty does not cover misuse or misapplication, abuse, neglect or other causes of failure beyond the manufacture's control. Do not disassemble or try to repair the blower/pump or any component. Any attempt to repair or correct a problem by the customer or their agent will void your warranty. A disassembled unit will not be considered as a warranted failure under any circumstances.

For more detailed information, visit http://www.all-star-usa.com

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