

AIRTECH[®]

VACUUM

Operating and Maintenance Instructions 3BA Regenerative Blowers



INSTALLATION & OPERATING MANUAL 3BA REGENERATIVE BLOWERS

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1. Safety

1.1 General Safety Precautions

WARNING: Improper operation of 3BA units can result in serious or even fatal injuries. Please make sure all personnel have read and understood this manual before operating the unit.

All personnel should familiarize themselves with the units' specifications and be careful not to exceed the unit's capacity.

Transport, installation, operation, shut-down, maintenance and disposal of 3BA units should be carried out by qualified professionals.

Do not attempt to start or run the unit unless it has been completely assembled. Particular attention should be paid to: the vacuum pump/compressor cover, the muffler on the inlet and discharge connections, and the fan guard.

The standard 3BA unit must never come into contact with flammable substances.

1.2 Clothing and Protective Gear

It is recommended that all personnel wear proper protective gear while operating the unit. This may include eye protection, gloves and helmets.

Please be aware that it is possible for hair and clothing to be pulled into the unit. Avoid wearing loose-fitting clothing near the unit while it is operating and wear a hairnet if necessary.

1.3 Electrical Safety

Electrical installation should only be done by qualified electricians. Before doing any electrical work on a 3BA unit, please ensure that **power to the unit has been disconnected**. Do not attempt to open the unit's terminal box until you have made certain that the unit is not connected to a power source.

The terminal box must be kept free of dirt and moisture at all times. Make sure the terminal box cover and cable entries are tightly sealed so they remain dustproof and waterproof. Check the terminal box regularly to make sure it is sealed and free of debris and moisture.

1.4 Vacuum and Gauge Pressure Safety

In order to avoid dangerous situations associated with vacuum and gauge pressure, please utilize secure mounting elements, connections, lines, fittings, and containers. Pipes/hoses must be securely connected to the inlet and discharge connections. The inlet and discharge connections and the pipes/hoses connected to them must not be closed, clogged, or soiled. Check regularly to ensure that these connections and mountings are not becoming unseated. If necessary, support pipes and hoses to ensure that there is no tension on the connections. **Failure to observe these precautions can lead to sudden evacuation of hazardous fluids or dangerous suction that can pull hair or clothing into the unit.**

1.5 Installation/Start-up

The unit and any lines connected to it must be securely installed. In particular, the feed pipes must be securely routed, e.g. in cable ducts, in the floor, etc.

If a separate control panel or other such interface will be used to start and stop the unit, it should be installed in an area with an unobstructed view of the unit to ensure that it is not switched on while being serviced.

Excess vibration can cause damage to the unit and/or unsafe conditions. Install the unit on a solid foundation or a solid mounting surface. Check screw glands/unions for strength and firm seating.

Cables and pipes should be installed in a recess in the floor or duct so they do not present a tripping hazard.

To ensure sufficient cooling of the unit, ventilation screens and openings must remain clear. Ensure that discharge air from other units cannot be pulled into the unit.

Make sure that the inlet and pressure lines are clearly marked to avoid confusion. **Interchanged inlet and pressure lines can lead to damage to the unit and/or serious injury.**

Install a filter in the inlet pipe and replace it regularly. If particulates or debris enter the unit, the blades of the impellers can be damaged and blades could potentially break off, potentially creating a hazardous situation.

If re-starting the unit after it has been idle for a long period of time, measure the insulation resistance of the motor. If values are less than 1 k Ω per volt of nominal voltage, the winding may be too dry.

If the unit is installed or stored in an environment with a temperature of over 104°F (40°C) be aware that the winding may be damaged and the grease might need to be changed more often.

1.6 Maintenance Procedures

Before beginning work on the pump-motor unit, please take the following precautions:

- Make sure power has been completely disconnected
- Wait for the unit to come to a complete stop.
- Allow the unit time to cool.
- Shut off lines and release pressure
- Make certain that no vacuum or gauge pressure is present in the lines/tanks to be opened.
- Make sure that no fluids can escape

Please note that the rotating impeller is accessible when the inlet and discharge connections are open. Do not reach into the unit through open connections or insert objects into the unit through any openings. Serious injury could occur. If the unit is running without piping or tubing, provide the inlet and discharge of the unit with either additional mufflers or piping of a sufficient length to prevent access to the impeller.

Check regularly to ensure the terminal box is free of any dirt or foreign substances and there is no moisture or humidity present. Make certain the terminal box cover and cable entries are tightly closed.

1.7 Hot Surfaces

During operation, the surface of the unit can reach temperatures of 320° F (160° C). It is advisable to cover the unit with suitable touch protection (e.g. a perforated plate or wire cover). Do not touch the unit during operation, and allow time to cool after shut-down. Temperature-sensitive parts such as lines or electronic components should not come into contact with the surface of the unit.

1.8 Hearing Protection

Make certain any missing or defective silencers are replaced. Noise emitted by the unit can cause serious hearing damage. Conduct a noise measurement test while the unit is running. If the unit operates over 90 dB(A), please place a warning sign in the area where the unit has been installed and make certain that

any personnel working in the vicinity wear ear protection at all times while the unit is running.

1.9 Safety Guidelines for Transport of the unit:

Prior to transport and handling, please make sure that all components are properly assembled and secure. Any machinery used to transport these units must have the proper lifting capacity. Please consult the table on page 27 to find the weight of the unit being handled. Do not stand or walk under suspended loads.

If a 3BA unit has come in contact with any dangerous substances, it must be decontaminated before being sent to Airtech for repair evaluation.

2 Technical Data

These operating instructions cover the Airtech 3BA side channel vacuum pumps and compressors supplied with standard TEFC motors. Other configurations are available including V-belt driven units, units with explosion proof motors, mechanical seals, magnetic drives, coatings and modifications for high pressure service. Airtech can provide any combination of modifications to meet your application requirements. Such blowers, however, are outside the scope of this manual.

Description

All regenerative blowers are dynamic compression devices and utilize a non-contacting impeller to accelerate the gas and a specially designed housing to compress the gas. Cooling is accomplished by using the motor fan to blow air over the housing. In larger models, the housing is specially designed with cooling fins to allow a wider range of operation. Both the inlet and outlet ports have built-in silencers and mesh screens. Both the inlet and outlet have an inside connection thread corresponding to DIN ISO 228. On larger units, multiple suction and discharge connection configurations may be available.

The wetted parts are constructed of Aluminum on all models. The blower shares a bearing with the motor. The seal between the bearing and the motor is not gas tight in most models, therefore these blowers are not recommended for handling of toxic or explosive gases. (Contact Airtech Vacuum, Inc. for additional options if explosive or toxic gases will be handled.)

A full range of accessory items are available, including vacuum or pressure relief valves, check valves, suction filters, motor starters, vacuum/pressure cross-over valves, and in-line filters.

Application/Installation Environment

CAUTION! These blowers are designed for use in general industry. Suitable personnel protection according to OSHA requirements is provided, but the equipment should not be operated in residential settings.

Airtech blowers can be operated as either vacuum pumps or compressors. They are suitable for use with air having a relative humidity up to 90 percent, but not generally suitable for handling corrosive or erosive gases. Special versions for toxic or aggressive gases may be available. Use of the standard blower in aggressive environments may cause damage to the blower or exposure to gases being handled in the local environment.

CAUTION! Dangerous (flammable or explosive) or aggressive (corrosive) gases should not be handled by the standard blower.

Handling of flammable or aggressive gases and vapors may be possible by using a specially configured or modified blower. Contact factory for additional information. The standard blower is not suitable for operation in explosive environments as defined by NFPA 70. Contact factory for assistance.

CAUTION! The ambient and suction temperatures should be between 40 and 105 F. For temperatures outside this region, please contact the factory.

The maximum permissible pressure difference for vacuum or pressure is dependent on the motor rating (See Tables 1 to 4 for detailed information by model number.) and power supply frequency. The figures in Tables 1 to 4 are computed assuming an ambient temperature of 77 F (25 C) and a local barometric pressure of 1013 mbar (sea level). Operation at an ambient temperature of 104 F (40C) is the maximum permissible, and will result in a reduction of 10 percent on maximum vacuum or pressure attainable by the unit. For temperatures between 77 F and 104 F, reduce the maximum pressure reduction is a linear function of temperature.

Table 1. Three-phase, Single Stage, 50 Hertz

| Model | Rated Power HP/kW | Voltage | Motor Current (Amps) | Open Flow Capacity CFM/m ³ /hr | Maximum Pressure (mbar) | Sound Pressure Level (dBA) |
|----------------|----------------------|-----------------|----------------------------|---|-------------------------------|----------------------------------|
| 3BA1300-7AT06 | .33/.25 | 200-240/345-415 | 2.1/1.2 | 48/82 | -100/100 | 53 |
| 2BA1300-7AT16 | .54/.4 | 200-240/345-415 | 2.6/1.5 | 48/82 | -120/130 | 53 |
| 3BA1400-7AT06 | .94/.7 | 200-240/345-415 | 3.8/2.2 | 84/142 | -120/120 | 63 |
| 2BA1400-7AT16 | 1.15/.85 | 200-240/345-415 | 4.2/2.4 | 84/142 | -160/160 | 63 |
| 3BA1400-7AT26 | 1.75/1.3 | 200-240/345-415 | 5.7/3.3 | 84/142 | -170/200 | 63 |
| 3BA1500-7AT06 | 1.15/.85 | 200-240/345-415 | 4.2/2.4 | 120/204 | -100/100 | 64 |
| 3BA1500-7AT16 | 1.75/1.3 | 200-240/345-415 | 5.7/3.3 | 120/204 | -170/170 | 64 |
| 3BA1500-7AT26 | 2.15/1.6 | 220-250/415-460 | 7.5/4.3 | 120/204 | -200/190 | 64 |
| 3BA1500-7AT36 | 2.96/2.2 | 200-240/345-415 | 9.7/5.6 | 120/204 | -220/270 | 64 |
| 3BA1530-7AT16 | 1.75/1.3 | 200-240/345-415 | 5.7/3.3 | 165/280 | -120/110 | 65 |
| 3BA1530-7AT26 | 2.15/1.6 | 200-240/345-415 | 7.5/4.3 | 165/280 | -160/150 | 65 |
| 3BA1530-7AT36 | 2.96/2.2 | 200-240/345-415 | 9.7/5.6 | 165/280 | -220/230 | 65 |
| 3BA1600-7AT06 | 2.15/1.6 | 200-240/345-415 | 8.5/4.9 | 188/320 | -160/150 | 69 |
| 3BA1600-7AT16 | 2.96/2.2 | 200-240/345-415 | 9.7/5.6 | 188/320 | -190/190 | 69 |
| 3BA1600-7AT26 | 4.04/3.0 | 200-240/345-415 | 12.5/7.2 | 188/320 | -260/270 | 69 |
| 3BA1600-7AT36 | 5.4/4.0 | 200-240/345-415 | 13.0/7.5 | 188/320 | -290/360 | 69 |
| 3BA1630-7AT06 | 2.15/1.6 | 200-240/345-415 | 8.5/4.9 | 240/408 | -160/150 | 69 |
| 3BA1630-7AT16 | 2.96/2.2 | 200-240/345-415 | 9.7/5.6 | 240/408 | -190/190 | 69 |
| 3BA1630-7AT26 | 4.04/3.0 | 200-240/345-415 | 12.5/7.2 | 240/408 | -260/270 | 69 |
| 3BA1630-7AT36 | 5.4/4.0 | 200-240/345-415 | 15.6/9.0 | 240/408 | -260/290 | 69 |
| 3BA1800-7AT06 | 5.4/4.0 | 200-240/345-415 | 15.6/9.0 | 280/476 | -200/200 | 70 |
| 3BA1800-7AT16 | 7.4/5.5 | 200-240/345-415 | 23/13.3 | 280/476 | -300/300 | 70 |
| 3BA1800-7AT26 | 10/7.5 | 200-240/345-415 | 29/16.7 | 280/476 | -320/430 | 70 |
| 3BA1830-7AT06 | 5.4/4 | 200-240/345-415 | 15.6/9 | 400/680 | -150/140 | 76 |
| 3BA1830-7AT16 | 7.4/5.5 | 200-240/345-415 | 23/13.3 | 400/680 | -200/190 | 76 |
| 3BA1830-7AT26 | 10/7.5 | 200-240/345-415 | 29/16.7 | 400/680 | -270/260 | 76 |
| 3BA1900-7AT06 | 10.8/8 | 200-240/345-415 | 31.5/18.2 | 568/965 | -190/190 | 74 |
| 3BA1900-7AT16 | 16.8/12.5 | 200-240/345-415 | 48.5/28 | 568/965 | -290/280 | 74 |
| 3BA1900-7AT36 | 25/18.5 | 200-240/345-415 | 64.5/37 | 568/965 | -362/462 | 74 |
| 3BA1930-7AT16 | 16.8/12.5 | 200-240/345-415 | 48.5/28 | 744/1264 | -290/280 | 71 |
| 3BA1930-7AT36 | 25/18.5 | 200-240/345-415 | 64.5/37 | 744/1264 | -310/310 | 71 |
| 3BA1930-7AT36 | 25/18.5 | 200-240/345-415 | 64.5/37 | 744/1264 | -310/310 | 71 |
| 3BA7310-0AT167 | .75/.55 | 200-240/345-415 | 2.8/1.6 | 40/68 | -250/250 | 57 |
| 3BA7410-0AT167 | 1.5/1.1 | 200-240/345-415 | 5.4/3.1 | 50/84 | -300/380 | 58 |
| 3BA7510-0AT168 | 2/1.5 | 200-240/345-415 | 7.5/4.3 | 70/120 | -370/650 | 64 |
| 3BA7510-0AT268 | 3/2.2 | 200-240/345-415 | 9.7/5.6 | 70/120 | -310/430 | 64 |
| 3BA7610-0AT168 | 3/2.2 | 200-240/345-415 | 9.7/5.6 | 96/163 | -310/430 | 65 |
| 3BA7610-0AT368 | 4.4/3.3 | 200-240/345-415 | 13/7.5 | 96/163 | -500/750 | 65 |

Table 2. Three-phase, Single-stage, 60 Hz

| Model | Rated Power HP/kW | Voltage | Motor Current (Amps) | Open Flow Capacity CFM/m ³ /hr | Maximum Pressure (mbar) | Sound Pressure Level (dBA) |
|----------------|-------------------|-----------------|----------------------|---|-------------------------|----------------------------|
| 3BA1300-7AT06 | .39/.29 | 220-250/415-460 | 1.74/1.0 | 60/102 | -100/100 | 56 |
| 2BA1300-7AT16 | .67/.5 | 220-250/415-460 | 2.6/1.5 | 60/102 | -150/160 | 56 |
| 3BA1400-7AT06 | 1.12/.83 | 220-250/415-460 | 3.75/2.15 | 105/179 | -130/130 | 64 |
| 3BA1400-7AT16 | 1.28/.95 | 220-250/415-460 | 4.35/2.5 | 105/179 | -160/160 | 64 |
| 3BA1400-7AT26 | 2/1.5 | 220-250/415-460 | 5.5/3.2 | 105/179 | -210/200 | 64 |
| 3BA1500-7AT06 | 1.28/.95 | 220-250/415-460 | 4.35/2.5 | 150/255 | -80/70 | 70 |
| 3BA1500-7AT16 | 2/1.5 | 220-250/415-460 | 5.5/3.2 | 150/255 | -150/140 | 70 |
| 3BA1500-7AT26 | 2.7/2.05 | 220-250/415-460 | 7.5/4.4 | 150/255 | -220/210 | 70 |
| 3BA1500-7AT36 | 3.4/2.55 | 220-250/415-460 | 9.0/5.3 | 150/255 | -260/290 | 70 |
| 3BA1530-7AT16 | 2/1.5 | 220-250/415-460 | 5.7/3.3 | 200/340 | -90/80 | 71 |
| 3BA1530-7AT26 | 2.7/2.05 | 220-250/415-460 | 7.6/4.4 | 200/340 | -260/270 | 70 |
| 3BA1530-7AT36 | 3.4/2.55 | 220-250/415-460 | 10.3/6.0 | 200/340 | -260/250 | 70 |
| 3BA1600-7AT06 | 2.7/2.05 | 220-250/415-460 | 7.5/4.4 | 235/400 | -160/150 | 72 |
| 3BA1600-7AT16 | 3.4/2.55 | 220-250/415-460 | 9.0/5.3 | 235/400 | -190/190 | 72 |
| 3BA1600-7AT26 | 4.6/3.45 | 220-250/415-460 | 12.0/6.5 | 235/400 | -240/230 | 72 |
| 3BA1600-7AT36 | 6.1/4.6 | 220-250/415-460 | 15.2/8.5 | 235/400 | -320/310 | 72 |
| 3BA1630-7AT06 | 2.7/2.05 | 220-250/415-460 | 7.5/4.4 | 300/510 | -160/150 | 72 |
| 3BA1630-7AT16 | 3.4/2.55 | 220-250/415-460 | 9.0/5.3 | 300/510 | -190/190 | 72 |
| 3BA1630-7AT26 | 4.6/3.45 | 220-250/415-460 | 12.0/6.5 | 300/510 | -240/230 | 72 |
| 3BA1630-7AT36 | 6.1/4.6 | 220-250/415-460 | 15.2/8.5 | 300/510 | -260/260 | 72 |
| 3BA1800-7AT06 | 6.1/4.6 | 220-250/415-460 | 15.2/8.5 | 350/595 | -160/160 | 74 |
| 3BA1800-7AT16 | 8.4/6.3 | 220-250/415-460 | 20/11.2 | 350/595 | -300/280 | 74 |
| 3BA1800-7AT26 | 11.5/8.6 | 220-250/415-460 | 27.5/15 | 350/595 | -350/400 | 74 |
| 3BA1830-7AT06 | 6.2/4.6 | 220-250/415-460 | 15.2/8.5 | 500/850 | -90/90 | 79 |
| 3BA1830-7AT16 | 8.4/6.3 | 220-250/415-460 | 20/11.2 | 500/850 | -180/180 | 79 |
| 3BA1830-7AT26 | 11.5/8.6 | 220-250/415-460 | 27.5/15 | 500/850 | -270/260 | 79 |
| 3BA1900-7AT06 | 12.1/9 | 220-250/415-460 | 31.5/18.2 | 710/1207 | -150/140 | 79 |
| 3BA1900-7AT16 | 19.5/14.5 | 220-250/415-460 | 50/29 | 710/1207 | -270/260 | 79 |
| 3BA1900-7AT36 | 28.7/21.3 | 220-250/415-460 | 68/39 | 710/1207 | -382/422 | 79 |
| 3BA1930-7AT16 | 19.5/14.5 | 220-250/415-460 | 50/29 | 930/1581 | -270/260 | 75 |
| 3BA1930-7AT36 | 28.7/21.3 | 220-250/415-460 | 68/39 | 930/1581 | -300/280 | 75 |
| 3BA7210-0AT167 | 1.1/.83 | 220-250/415-460 | 3.75/2.15 | 35/60 | -270/320 | 62 |
| 3BA7310-0AT167 | 1.1/.83 | 220-250/415-460 | 3.75/2.15 | 48/82 | -260/250 | 62 |
| 3BA7410-0AT167 | 2/1.5 | 220-250/415-460 | 5.5/3.2 | 60/102 | -340/370 | 62 |

When operating at altitudes above 3280 feet (1000 m) above mean sea level, contact Airtech Inc.

CAUTION! Operation of the unit outside the recommended range of pressures and ambient conditions will result in shorted operating life.

Table 3. 3 Phase, Two/Three Stage, 50 Hertz

| Model | Rated Power HP/kW | Voltage | Motor Current (Amps) | Open Flow Capacity CFM/m3/hr | Maximum Pressure (mbar) | Sound Pressure Level (dBA) |
|----------------|----------------------|-----------------|----------------------------|------------------------------------|-------------------------------|----------------------------------|
| 3BA1310-7AT26 | .94/.7 | 200-240/345-415 | 3.8/2.2 | 48/81.6 | -120/120 | 55 |
| 3BA1410-7AT36 | 2.15/1.6 | 200-240/345-415 | 7.5/4.3 | 84/142.8 | -200/190 | 66 |
| 3BA1410-7AT46 | 2.96/2.2 | 200-240/345-415 | 9.7/5.6 | 84/142.8 | -320/420 | 66 |
| 3BA1510-7AT46 | 4.04/3.0 | 200-240/345-415 | 12.5/7.2 | 121.6/206.7 | -340/410 | 72 |
| 3BA1510-7AT56 | 5.39/4.0 | 200-240/345-415 | 17.4/10 | 121.6/206.7 | -390/440 | 72 |
| 3BA1610-7AT36 | 2.9/2.2 | 200-240/345-415 | 9.7/5.6 | 188/319.6 | -190/190 | 73 |
| 3BA1610-7AT26 | 4.04/3.0 | 200-240/345-415 | 12.5/7.2 | 188/319.6 | -260/270 | 73 |
| 3BA1610-7AT36 | 5.39/4.0 | 200-240/345-415 | 13.0/7.5 | 188/319.6 | -290/360 | 73 |
| 3BA1610-7AT46 | 7.41/5.5 | 200-240/345-415 | 23/13.3 | 188/319.6 | -420/500 | 73 |
| 3BA1610-7AT56 | 10.1/7.5 | 200-240/345-415 | 29/16.7 | 188/319.6 | -420/610 | 73 |
| 3BA1640-7AT36 | 5.39/4.0 | 200-240/345-415 | 13.0/7.5 | 280/476 | -290/360 | 74 |
| 3BA1640-7AT46 | 7.41/5.5 | 200-240/345-415 | 23/13.3 | 280/476 | -420/500 | 74 |
| 3BA1640-7AT56 | 10.1/7.5 | 200-240/345-415 | 29/16.7 | 280/476 | -420/610 | 74 |
| 3BA1810-7AT16 | 7.4/5.5 | 200-240/345-415 | 23/13.3 | 280/476 | -420/500 | 74 |
| 3BA1810-7AT26 | 10.1/7.5 | 200-240/345-415 | 29/16.7 | 280/476 | -320/430 | 74 |
| 3BA1810-7AT36 | 14.8/11 | 200-240/345-415 | 29/16.7 | 280/476 | -430/600 | 74 |
| 3BA1810-7AT46 | 20.2/15 | 200-240/345-415 | 56.5/32.5 | 280/476 | -460/670 | 74 |
| 3BA1840-7AT26 | 10.1/7.5 | 200-240/345-415 | 29.0/16.7 | 280/476 | -320/430 | 74 |
| 3BA1840-7AT36 | 14.8/11.0 | 200-240/345-415 | 48.5/28.0 | 280/476 | -430/600 | 74 |
| 3BA1910-7AT16 | 16.8/12.5 | 200-240/345-415 | 48.5/28 | 624/1061 | -290/280 | 74 |
| 3BA1910-7AT36 | 26.95/20.0 | 200-240/345-415 | 69/40 | 624/1061 | -443/502 | 74 |
| 3BA1910-7AT46 | 33.51/24.98 | 200-240/345-415 | 90/52 | 624/1061 | -443/592 | 84 |
| 3BA19437AT26 | 20.1/15 | 200-240/345-415 | 59/34 | 1200/2040 | -160/170 | 75 |
| 3BA19437AT36 | 26.8/20 | 200-240/345-415 | 69/40 | 1200/2040 | -250/230 | 75 |
| 3BA19437AT46 | 33.5/25 | 200-240/345-415 | 90/52 | 1200/2040 | -310/280 | 75 |
| 3BA7220-0AT567 | 2/1.5 | 200-240/345-415 | 7.5/4.3 | 28/48 | -370/650 | 58 |
| 3BA7320-0AT467 | 1.5/1.1 | 200-240/345-415 | 5.4/3.1 | 40/68 | -300/380 | 58 |
| 3BA7320-0AT567 | 2/1.5 | 200-240/345-415 | 7.5/4.3 | 40/68 | -480/450 | 59 |
| 3BA7420-0AT267 | 2/1.5 | 200-240/345-415 | 7.5/4.3 | 50/84 | -480/450 | 61 |
| 3BA7420-0AT567 | 4.4/3.3 | 200-240/345-415 | 13/7.5 | 50/84 | -500/750 | 61 |
| 3BA7520-0AT268 | 3/2.2 | 200-240/345-415 | 9.7/5.6 | 70/120 | -470/460 | 64 |
| 3BA7620-0AT368 | 4.4/3.3 | 200-240/345-415 | 13/7.5 | 96/163 | -500/750 | 68 |
| 3BA7620-0AT468 | 5.4/4 | 200-240/345-415 | 14/8.1 | 96/163 | -370/650 | 67 |
| 3BA7620-0AT568 | 7.5/5.5 | 200-240/345-415 | 19.9/11.5 | 96/163 | -520/750 | 68 |
| 3BA7630-0AT668 | 10.1/7.5 | 200-240/345-415 | 29/16.7 | 96/163 | -420/610 | 77 |

Table 4. 3 Phase, Two/Three Stage, 60 Hertz

| Model | Rated Power HP/kW | Voltage | Motor Current (Amps) | Open Flow Capacity CFM/m3/hr | Maximum Pressure (mbar) | Sound Pressure Level (dBA) |
|----------------|-------------------|-----------------|----------------------|------------------------------|-------------------------|----------------------------|
| 3BA1310-7AT26 | 1.11/.83 | 220-250/415-460 | 3.75/2.15 | 60/102 | -130/130 | 61 |
| 3BA1410-7AT36 | 2.7/2.05 | 220-250/415-460 | 7.5/4.4 | 105/179 | -220/210 | 69 |
| 3BA1410-7AT46 | 3.4/2.55 | 220-250/415-460 | 9.0/5.3 | 105/179 | -350/440 | 69 |
| 3BA1510-7AT46 | 4.6/3.45 | 220-250/415-460 | 12.0/6.5 | 152/258 | -380/360 | 74 |
| 3BA1510-7AT56 | 6.1/4.6 | 220-250/415-460 | 15.2/8.5 | 152/258 | -410/480 | 74 |
| 3BA1610-7AT36 | 3.4/2.55 | 220-250/415-460 | 9.0/5.3 | 235/400 | -190/190 | 76 |
| 3BA1610-7AT26 | 4.6/3.45 | 220-250/415-460 | 12.0/6.5 | 235/400 | -240/230 | 76 |
| 3BA1610-7AT36 | 6.4/4.8 | 220-250/415-460 | 16.5/9.8 | 235/400 | -320/310 | 76 |
| 3BA1610-7AT46 | 8.4/6.3 | 220-250/415-460 | 20/11.2 | 235/400 | -440/440 | 76 |
| 3BA1610-7AT56 | 11.5/8.6 | 220-250/415-460 | 27.5/15.0 | 235/400 | -440/670 | 76 |
| 3BA1640-7AT36 | 6.1/4.6 | 220-250/415-460 | 15.2/8.5 | 350/595 | -320/310 | 78 |
| 3BA1640-7AT46 | 8.4/6.3 | 220-250/415-460 | 20.0/11.2 | 350/595 | -440/440 | 78 |
| 3BA1640-7AT56 | 11.5/8.6 | 220-250/415-460 | 27.5/15.0 | 350/595 | -440/670 | 78 |
| 3BA1810-7AT16 | 8.4/6.3 | 220-250/415-460 | 20.0/11.2 | 350/595 | -440/440 | 78 |
| 3BA1810-7AT26 | 11.5/8.6 | 220-250/415-460 | 27.5/15.0 | 350/595 | -350/400 | 78 |
| 3BA1810-7AT36 | 17/12.6 | 220-250/415-460 | 50.2/29.0 | 350/595 | -460/600 | 78 |
| 3BA1810-7AT46 | 23.3/17.3 | 220-250/415-460 | 60.0/34.5 | 350/595 | -490/750 | 78 |
| 3BA1840-7AT26 | 11.5/8.6 | 220-250/415-460 | 27.5/15.0 | 350/595 | -350/400 | 78 |
| 3BA1840-7AT36 | 17/12.6 | 220-250/415-460 | 50.2/29.0 | 350/595 | -460/600 | 78 |
| 3BA1910-7AT16 | 19.5/14.5 | 220-250/415-460 | 50.0/29.0 | 780/1326 | -270/260 | 84 |
| 3BA1910-7AT36 | 31/23 | 220-250/415-460 | 72 /42 | 780/1326 | -443/433 | 84 |
| 3BA1910-7AT46 | 38.9/28.9 | 220-250/415-460 | 90/52 | 780/1326 | -443/542 | 84 |
| 3BA19437AT26 | 23.4/17.5 | 220-250/415-460 | 63/36.5 | 1440/2447 | -120/110 | 84 |
| 3BA19437AT36 | 30.8/23 | 220-250/415-460 | 72/42 | 1440/2447 | -190/180 | 84 |
| 3BA19437AT46 | 38.8/28.9 | 220-250/415-460 | 90/52 | 1440/2447 | -265/230 | 84 |
| 3BA7220-0AT567 | 2.7/2.05 | 220-250/415-460 | 7.5/4.4 | 35/60 | -500/740 | 62 |
| 3BA7320-0AT467 | 2/1.5 | 220-250/415-460 | 5.5/3.2 | 48/82 | -340/370 | 63 |
| 3BA7320-0AT567 | 2.7/2.05 | 220-250/415-460 | 7.5/4.4 | 48/82 | -430/410 | 63 |
| 3BA7420-0AT267 | 2.7/2.05 | 220-250/415-460 | 7.5/4.4 | 60/102 | -430/410 | 66 |
| 3BA7420-0AT567 | 5.1/3.8 | 220-250/415-460 | 13.5/7.8 | 60/102 | -510/850 | 66 |
| 3BA7520-0AT268 | 3.4/2.55 | 220-250/415-460 | 9/5.3 | 84/143 | -500/450 | 70 |
| 3BA7620-0AT368 | 5.1/3.8 | 220-250/415-460 | 13.5/7.8 | 115/196 | -510/850 | 71 |
| 3BA7620-0AT468 | 6.1/4.6 | 220-250/415-460 | 15.2/8.5 | 115/196 | -480/500 | 71 |
| 3BA7620-0AT568 | 8.4/6.6 | 220-250/415-460 | 22.5/12.6 | 115/196 | -520/820 | 72 |
| 3BA7630-0AT668 | 11.5/8.6 | 220-250/415-460 | 27.5/15 | 115/196 | -440/670 | 80 |

| | | | | | | |
|---------------|---------|-----------------|----------|--------|----------|----|
| 3BA7530-7AT76 | 6.2/4.6 | 220-250/415-460 | 16.3/9.5 | 82/139 | -639/729 | 73 |
|---------------|---------|-----------------|----------|--------|----------|----|

Table 5. Single Phase, 50 Hertz

| Model | Rated Power HP/kW | Voltage | Motor Current (Amps) | Open Flow Capacity CFM/m ³ /hr | Maximum Pressure (mbar) | Sound Pressure Level (dBA) |
|---------------|----------------------|---------|-------------------------|--|----------------------------|----------------------------|
| 3BA1100-7AS05 | 0.27/0.2 | 230 | 1.45 | 24/40 | -60/70 | 50 |
| 3BA1200-7AS05 | 0.33/0.25 | 115/230 | 3.5/1.7 | 35/60 | -100/100 | 50 |
| 3BA1300-7AS15 | 0.5/0.37 | 115/230 | 5.4/2.7 | 48/82 | -110/110 | 53 |
| 3BA1330-7AS15 | 0.5/0.37 | 115/230 | 5.4/2.7 | 60/102 | -110/110 | 54 |
| 3BA1400-7AS25 | 1.47/1.09 | 115/230 | 13/6.5 | 84/142 | -149/189 | 64 |
| 3BA1410-7AS25 | 2/1.49 | 115/230 | 22/11 | 84/142.8 | -279/259 | 66 |
| 3BA1500-7AS35 | 2/1.49 | 115/230 | 22/11 | 120/204 | -189/199 | 64 |
| 3BA7210-OAS75 | 0.74/0.55 | 115/230 | 13/6.5 | 28/48 | -229/289 | 57 |
| 3BA7220-OAS75 | 2/1.49 | 115/230 | 19.4/9.7 | 29/49 | -371/600 | 57 |
| 3BA7310-OAS75 | 1.26/0.93 | 115/230 | 15.2/7.6 | 40/68 | -249/351 | 58 |
| 3BA7320-OAS75 | 2/1.49 | 115/230 | 19.4/9.7 | 40/68 | -401/550 | 59 |
| 3BA7410-OAS45 | 1.47/1.09 | 115/230 | 13/6.5 | 50/84 | -299/381 | 59 |

Table 6. Single Phase, 60 Hertz

| Model | Rated Power HP/kW | Voltage | Motor Current (Amps) | Open Flow Capacity CFM/m ³ /hr | Maximum Pressure (mbar) | Sound Pressure Level (dBA) |
|---------------|----------------------|---------|-------------------------|--|----------------------------|----------------------------|
| 3BA1100-7AS05 | 0.31/0.23 | 230 | 1.3 | 30/51 | -75/80 | 53 |
| 3BA1200-7AS05 | 0.38/0.28 | 115/230 | 5/2.8 | 48/82 | -112/112 | 53 |
| 3BA1300-7AS15 | 0.6/0.44 | 115/230 | 6.0/3.0 | 60/102 | -130/139 | 56 |
| 3BA1330-7AS15 | 0.6/0.44 | 115/230 | 6.0/3.0 | 74/126 | -130/139 | 57 |
| 3BA1400-7AS25 | 1.74/1.29 | 115/230 | 14.0/7.0 | 105/179 | -179/189 | 64 |
| 3BA1410-7AS25 | 2.35/1.75 | 115/230 | 24.0/12.0 | 105/179 | -249/229 | 69 |
| 3BA1500-7AS35 | 2.35/1.75 | 115/230 | 24.0/12.0 | 150/255 | -179/179 | 70 |
| 3BA7210-OAS75 | 0.84/0.63 | 115/230 | 14.2/7.1 | 35/60 | -259/309 | 62 |
| 3BA7220-OAS75 | 2.35/1.75 | 115/230 | 20.6/10.3 | 35/60 | -421/660 | 62 |
| 3BA7310-OAS75 | 1.47/1.09 | 115/230 | 18.0/9.0 | 48/82 | -279/391 | 62 |
| 3BA7320-OAS75 | 2.35/1.75 | 115/230 | 20.6/10.3 | 48/82 | -391/541 | 63 |
| 3BA7410-OAS45 | 1.74/1.29 | 115/230 | 14.0/7.0 | 60/102 | -338/391 | 62 |

Operation of any blower is possible at 87 Hertz without modification in most cases. When using a VFD to operate the blower at this frequency, refer to the nameplate for limits on vacuum and pressure, current draw and motor performance.

If your specific model number is not listed above, please consult the nameplate on the unit for electrical data. If the model you are installing is listed above, please confirm the data on the nameplate. Data in Tables 1 through 4 is subject to change and is approximate. Be sure to confirm necessary operating data what that on the nameplate before commissioning the unit.

CAUTION! Do not operate any 3BA blower above 87 Hz without consultation with the factory. Failure of the blower motor is possible when operating out of range. Consult with the factory for assistance.

Expected temperature rise of the handled gas at maximum allowable pressure differential and when operating at sea level is indicated below:

Table 7: Single Stage – Approximate Temperature Rise

| Blower Model | Maximum Rise at 50 Hz speed | | Maximum Rise at 60 Hz speed | |
|----------------|-----------------------------|-----------|-----------------------------|-----------|
| | Degrees F | Degrees C | Degrees F | Degrees C |
| 3BA1100-7..0. | 115 | 64 | 136 | 76 |
| 3BA1200-7..0. | 65 | 36 | 101 | 56 |
| 3BA1300-7..0. | 90 | 50 | 77 | 43 |
| 3BA1300-7..1. | 90 | 50 | 140 | 78 |
| 3BA1300-7..2. | 90 | 50 | 158 | 88 |
| 3BA1400-7..0. | 99 | 55 | 86 | 48 |
| 3BA1400-7..1. | 129 | 72 | 122 | 68 |
| 3BA1400-7..2. | 149 | 83 | 167 | 93 |
| 3BA1500-7..0. | 86 | 48 | 72 | 40 |
| 3BA1500-7..1. | 115 | 64 | 97 | 54 |
| 3BA1500-7..2. | 138 | 77 | 122 | 68 |
| 3BA1500-7..3. | 203 | 113 | 180 | 100 |
| 3BA1500-7..6. | 248 | 138 | 248 | 138 |
| 3BA1600-7..0. | 81 | 45 | 68 | 38 |
| 3BA1600-7..1. | 145 | 81 | 104 | 58 |
| 3BA1600-7..2. | 171 | 95 | 176 | 98 |
| 3BA1600-7..3. | 225 | 125 | 185 | 103 |
| 3BA1600-7..6. | 248 | 138 | 194 | 108 |
| 3BA1600-7..7. | 248 | 138 | 248 | 138 |
| 3BA1800-7..0. | 104 | 58 | 104 | 58 |
| 3BA1800-7..1. | 153 | 85 | 185 | 103 |
| 3BA1800-7..2. | 248 | 138 | 221 | 123 |
| 3BA1900-7..0. | 97 | 54 | 95 | 53 |
| 3BA1900-7..1. | 182 | 101 | 155 | 86 |
| 3BA1900-7..3. | 230 | 128 | 212 | 118 |
| 3BA1943-7..2. | 85 | 47 | 75 | 42 |
| 3BA1943-7..3. | 130 | 72 | 100 | 56 |
| 3BA1943-7..4. | 180 | 100 | 140 | 78 |
| 3BA7210-0..1.. | 126 | 70 | 142 | 79 |
| 3BA7310-0..1.. | 142 | 79 | 142 | 79 |
| 3BA7310-0..2.. | 178 | 99 | 187 | 104 |
| 3BA7410-0..1.. | 194 | 108 | 214 | 119 |
| 3BA7510-0..1.. | 199 | 111 | 232 | 129 |
| 3BA7510-0..2.. | 248 | 138 | 234 | 130 |
| 3BA7610-0..1.. | 244 | 136 | 255 | 142 |
| 3BA7610-0..3.. | 244 | 136 | 255 | 142 |

Table 8: Two/Three Stage – Approximate Temperature Rise

| Blower Model | Maximum Rise at 50 Hz speed | | Maximum Rise at 60 Hz speed | |
|----------------|-----------------------------|-----------|-----------------------------|-----------|
| | Degrees F | Degrees C | Degrees F | Degrees C |
| 3BA1310-7..2. | 127 | 71 | 165 | 92 |
| 3BA1410-7..3. | 154 | 86 | 149 | 83 |
| 3BA1410-7..4. | 181 | 101 | 180 | 100 |
| 3BA1510-7..4. | 190 | 106 | 176 | 98 |
| 3BA1510-7..5. | 194 | 108 | 201 | 112 |
| 3BA1610-7..1. | 92 | 51 | 86 | 48 |
| 3BA1610-7..2. | 129 | 72 | 118 | 66 |
| 3BA1610-7..3. | 176 | 98 | 167 | 93 |
| 3BA1610-7..4. | 221 | 123 | 190 | 106 |
| 3BA1610-7..5. | 246 | 137 | 266 | 148 |
| 3BA1610-7..7. | 176 | 98 | 167 | 93 |
| 3BA1610-7..8. | 176 | 98 | 248 | 138 |
| 3BA1810-7..1. | 113 | 63 | 80 | 45 |
| 3BA1810-7..2. | 185 | 103 | 140 | 78 |
| 3BA1810-7..3. | 248 | 138 | 248 | 138 |
| 3BA1910-7..1. | 119 | 66 | 115 | 64 |
| 3BA1910-7..2. | 203 | 113 | 169 | 94 |
| 3BA1910-7..3. | 248 | 138 | 274 | 152 |
| 3BA1910-7..4. | 248 | 138 | 274 | 152 |
| 3BA7220-0..2.. | 131 | 73 | 171 | 95 |
| 3BA7220-0..5.. | 165 | 92 | 230 | 128 |
| 3BA7320-0..5.. | 178 | 99 | 255 | 142 |
| 3BA7420-0..2.. | 192 | 107 | 176 | 98 |
| 3BA7420-0..5.. | 250 | 139 | 243 | 135 |
| 3BA7520-0..2.. | 192 | 107 | 216 | 120 |
| 3BA7520-0..7.. | 257 | 143 | 262 | 128 |
| 3BA7530-0..7.. | 250 | 121 | 250 | 121 |
| 3BA7620-0..3.. | 255 | 142 | 259 | 144 |
| 3BA7620-0..5.. | 255 | 142 | 262 | 146 |
| 3BA7630-0..6.. | 248 | 138 | 248 | 138 |

Table 9: Tightening Torque Specifications

For non-electrical connections

| Thread | Ft-lbs maximum torque | Nm maximum torque |
|--------|-----------------------|-------------------|
| M4 | 2.43 | 3.3 |
| M5 | 3.25 | 4.4 |
| M6 | 6.49 | 8.8 |
| M8 | 19.47 | 26.4 |
| M10 | 34.10 | 46.2 |
| M12 | 56.76 | 77 |

For electrical connections

| Thread | Ft-lbs torque | Nm torque |
|--------|---------------|------------|
| M4 | 0.6 to 0.9 | 0.8 to 1.2 |
| M5 | 1.3 to 1.8 | 1.3 to 1.8 |

For metal threaded glands/unions

| Thread | Ft-lbs maximum torque | Nm maximum torque |
|---------|-----------------------|-------------------|
| M12x1.5 | 3 to 4.5 | 4 to 6 |
| M16x1.5 | 3.7 to 5.5 | 5 to 7.5 |
| M20x1.5 | 4.4 to 6.6 | 6 to 9 |
| M32x1.5 | 5.9 to 8.9 | 8 to 12 |
| M40x1.5 | 5.9 to 8.9 | 8 to 12 |

For plastic threaded glands/unions

| Thread | Ft-lbs maximum torque | Nm maximum torque |
|---------|-----------------------|-------------------|
| M12x1.5 | 1.5 to 2.6 | 2 to 3.5 |
| M16x1.5 | 2.2 to 3 | 3 to 4 |
| M20x1.5 | 3 to 3.7 | 4 to 5 |
| M32x1.5 | 3.7 to 5.2 | 5 to 7 |
| M40x1.5 | 3.7 to 5.2 | 5 to 7 |

Operating above the indicated maximum pressure or vacuum would overload the motor and/or overheat the unit. In addition to the maximum allowable pressure difference, careful consideration should be given to matching the motor protection devices (provided by others) to the expected current draw. In no case should the blower be operated with inadequate motor overload protection.

Since regenerative blowers are dynamic compression devices, the performance limits shown in Tables 1 to 4 are applicable only for a gas with the same specific gravity, dynamic viscosity and chemical characteristics as air. For gases with different physical properties than air, the limits will be different from those shown in the tables. Please contact Airtech for assistance in determining the proper blower size and configuration if handling gases other than air.

A vacuum relief valve or pressure relief valve should always be installed at the suction or discharge of the regenerative blower. This will prevent operation outside the applicable ranges shown in Tables 1 to 4. If the relief valves were not specified in the ordering process, please contact Airtech for details, price and availability of the needed valves before commissioning the unit. Failure to use the proper relief valve may result in failure of the blower due to operation outside the applicable limits; any such failure is outside the scope of Airtech's standard warranty.

WARNING! Be sure to install the necessary personnel protection devices if unexpected shut-down of the unit presents danger of death or injury.

3. Installation

As illustrated in Figure 1, the Airtech 3BA blower can be installed in any physical configuration.

CAUTION! Regenerative blowers can have surface temperatures in excess of 320° F. To avoid burns or other physical injury, take care to avoid contact with the surfaces of the blower during and immediately after operation.

To ensure adequate cooling of the blower during operation, install the blower with the minimum clearance as indicated in the table below.

Minimum installation clearances, 3BA blowers

| Range | Distance from fan guard to closest obstruction. (inches/mm) | Distance from cover (opposite of fan) to closest obstruction. (inches/mm) |
|---------------------|---|---|
| 3BA11 through 3BA14 | 1.4/34 | 0.79/20 |
| 3BA15 through 3BA19 | 2.1/53 | 1.57/40 |
| 3BA72 and 3BA73 | 1.3/34 | 1.18/30 |
| 3BA74 through 3BA76 | 2.1/54 | 1.18/30 |

Please note that it may be desirable, where possible, to allow for larger clearances to allow access for maintenance or repair personnel. The noted clearances are to ensure adequate air flow for cooling only and are a minimum requirement.

Failure to allow for the noted clearances may result in premature failure of the blower due to lack of cooling, even if all other precautions are taken as recommended. For specific advice about installations requiring closer clearances, please contact Airtech, Inc. for recommendations.

Airtech regenerative blowers can be mounted in any configuration, either horizontally or vertically mounted. It is not usually necessary to bolt the smaller blowers to a rigid surface during operation, though this may be desirable to reduce pipe vibration, movement and noise. Larger models should be bolted in place, especially when installed vertically, to prevent possible rotation, damage or injury due to start-up torque.

CAUTION! For installations at altitudes greater than 3250 Feet above sea level there will be a loss in capacity. Please contact your factory representative for assistance in determining the extent of the loss of capacity likely at your specific location.

WARNING! Be sure to follow all local codes and regulations with respect to installation and operation of the blower. The blower motor should be wired to a branch circuit disconnect and all other safety devices recommended by the relevant sections of NFPA 70, National Electrical Code, and in accordance with all applicable state and local regulations and requirements.

3.1 Installation Procedure

Perform the installation exactly in accordance with the following steps:

1. For vacuum operation, connect the suction pipe to connection A, and for pressure operation connect the pressure pipe to connection B (See Figure 1). Install startup screens before startup to protect pump from debris.

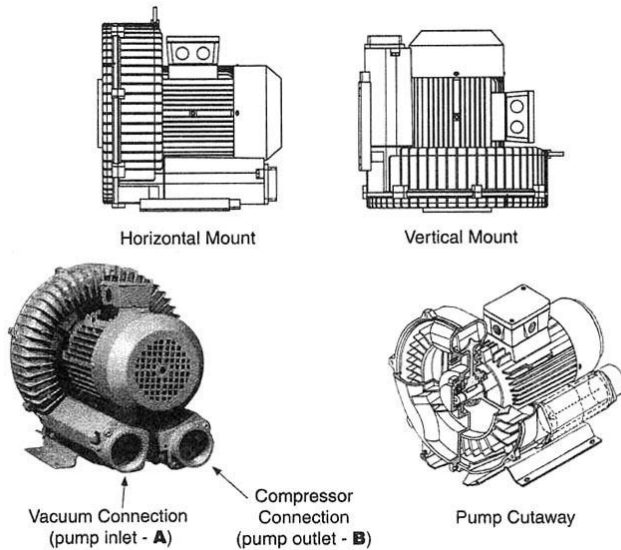


Figure 1

CAUTION! Design your piping system to avoid unnecessary pressure loss, which may significantly affect the operation of any regenerative blower. Contact your Airtech representative for assistance in designing and configuring an appropriate piping system for your application.

For alternation between vacuum and pressure in any application, changeover valves are available. Use of the changeover valve allows the same connection to be used for both vacuum and pressure.

2. The electrical data shown in Tables 1 to 4 (pages 10-14) should be confirmed by examination of the motor data plate on your 3BA blower. The standard motor features Class F insulation as a standard and are UL recognized for applications in both Canada and the United States (CUL). Motors are IEC design IP55, equal to a NEMA TEFC motor design. The connection diagram for the motors can be found in the inside of the terminal box cover. Be sure to confirm that your electrical supply has sufficient capacity to operate the blower according to the nameplate requirements.

3. A magnetic motor starter should always be used to connect the motor to the power supply. It is advisable to use thermal overload motor starters to provide maximum protection for the motor and wiring. All cabling used on starters should be secured with good quality cable clamps.

We recommend that the motor starters used feature a time delay trip on high amperage to avoid nuisance trips on start-up. When the unit is started cold, over amperage may be experienced for a short time due to the higher resistance of the windings at lower temperatures.

If using a change over or solenoid valve, ensure that the voltage connected to the valve matches that shown on the valve instructions or nameplate. Most valves are rated for 110 Volts 60Hz or 220 Volts 50 Hz. Connection of these valves to higher voltages may result in immediate valve failure.

WARNING! The electrical installation should be made by a qualified electrician and in complete compliance with all NFPA 70 (National Electrical Code) requirements along with all state and local code requirements. The main disconnect and motors starters are assumed to be provided by others.

4. Install the necessary relief valves and confirm their proper operation.

4. Start-up

CAUTION! Do not start the blower motor more than 10 times in one hour. If multiple and frequent start-ups are required by your application, install a minimum run timer in the motor control circuit to avoid decreased motor life and possible fire due to over-starting of the motor.

1.1 Start-up Procedure

1. Before operation, confirm the correct direction of rotation by jogging (switching rapidly on and off) the motor and observing the motor fan rotation in the same direction as the arrow. If the direction of rotation is incorrect, lock out the power and switch two leads (three phase) or rewire (single phase) to effect the opposite rotation direction. Recheck the direction of rotation before proceeding.

2. Do not operate the blower at pressure or vacuum ranges that exceed those shown in Tables one through four for the model being installed. This can be achieved by use of the recommended relief valve shown in Table 5.

Note: Relief valves that have been factory pre-set have a label indicating the set pressure and an arrow indicating the direction of flow. The arrow will point into the pipe when installed in vacuum applications and out of the pipe when installed in pressure applications. Do not re-set the relief valve if it has been pre-set from the factory.

In the event the relief valve setting needs to be reset, adjust the set screw to increase or decrease the tension on the spring. Place the blower in operation and note the current draw of the motor. When the current draw of the motor is near the maximum noted on the motor nameplate, tighten the locking nut on the valve and proceed.

3. When checking the current draw of the motor with an ammeter, be sure to confirm the voltage at the motor junction box. Low voltage conditions may result in difficulty starting or in unexpected motor failure or motor starter trips.

1.2 Potential Risks For Operators

Noise emission: Free field noise limits are indicated in Tables 1-4 (pages 10-14). Hearing protection is not normally required at the expected noise generation levels in the table; however, local conditions may result in higher ambient noise. If this is the case and local noise exceeds OSHA recommended levels for expected exposure time (typically 85 dBA for eight hours), hearing protection should be used.

5. Maintenance and Servicing

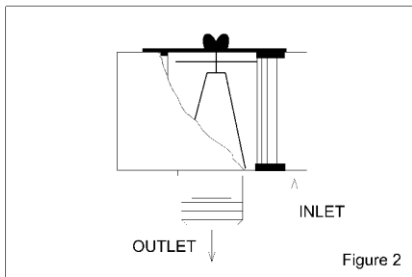
WARNING! Be sure the power supply is disconnected and locked out before attempting to do any maintenance on the unit. It is critical that the unit be locked out from starting during maintenance as severe injury or death could result from exposure to high voltage or rotating parts.

CAUTION! Allow the blower to cool to a surface temperature of less than 100 F before attempting maintenance. Prolonged exposure to temperatures above 120F can cause severe burns.

Clean the blower surfaces periodically to avoid build up of dust or other debris. Build up of debris can cause overheating and premature failure of the blower.

If an inlet filter is being use, ensure that it remains clean during operation by examining the filter cartridge for debris build up. Replace dirty or clogged filter cartridges.

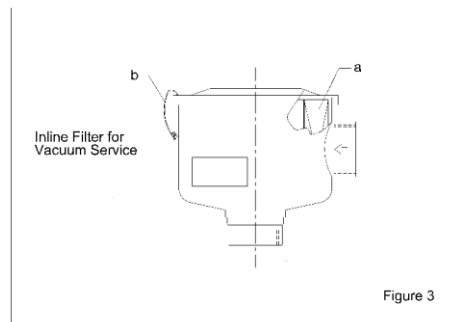
On pressure units, periodically clean the inlet mesh screen to avoid loss of capacity. If an external inlet filter is used, the filter element should be cleaned monthly or as frequently as required by local conditions. Excessive pressure drop will develop from use of clogged or dirty filters. This pressure drop will degrade blower performance and increase operating temperatures, leading possibly to premature pump failure.



To replace the filter, remove the wing nut and cover. Remove the element and either clean with compressed air or replace. Reassemble in reverse order.

For vacuum applications, the optional in-line vacuum filter must be cleaned regularly, depending on local conditions. Cleaning can be achieved by blowing out with compressed air. If cleaning is not possible, replace the cartridge. Access the cartridge by unhooking the relevant clips and removing the cover.

CAUTION! Do not attempt to check the filter cartridge during operation of the blower. Only check the cartridge after disconnecting the power from the blower and locking out the power to prevent an unexpected start.



Bearings are grease-packed for life.

5.1 Troubleshooting Chart

| Fault | Cause | Remedy | Responsible Party |
|--------------------------------------|--|---|--------------------------|
| Motor does not start, no noise. | Two or more power legs interrupted | Check fuses, terminals, etc.. for source of interruption and correct. | Electrician |
| Motor does not start, humming noise. | One power supply lead interrupted | Check fuses, terminals, etc.. for source of interruption and correct. | Electrician |
| | Impeller is jammed. | Open blower cover, remove debris, clean. Check impeller clearance and reset if necessary. | Service Technician |
| | Defective Impeller | Replace impeller. | Service Technician |
| | Defective Bearing | Replace defective bearing. | Service Technician |
| Trip of motor starter at start-up | Incorrect starter setting | Ensure starter setting is correct (check current on nameplate) | Electrician |
| | Winding short-circuit | Megger motor | Electrician |
| | Motor overloaded due to operation of pump at excessive differential pressures. | Inspect filters, mufflers and connection pipes and clean as required. Check relief valve operation. Reset or replace as necessary. | Operator |
| | Impeller Jammed | See above fault Motor does not start, humming noise, cause jammed impeller. | Operator |
| Excessive Power Consumption | Lime or other deposits | Decalcify or clean unit as required (see Maintenance Chart) | Operator |
| No Vacuum or Pressure. | Severe leak in system | Close off pump and run deadheaded to confirm pump is operating properly. If so, find and fix leak in the system. | Operator |
| | Wrong direction of rotation | Check air flow direction and change direction of rotation if necessary. | Operator Electrician |

| Fault | Cause | Remedy | Responsible Party |
|------------------------|--|--|--------------------------|
| Insufficient Vacuum | System too small | Use larger system | Operator |
| | Inlet piping too long or too small. | Increase pipe diameter to reduce pressure loss in inlet piping. Contact Airtech for assistance in determining correct pipe size. | Operator |
| | Leak at connection to vacuum system. | Check for leaks and repair if necessary. | Operator |
| | Density of gas handles different from air. | Consider increased limits on operation due to density differences. Consult Airtech, Inc. for assistance. | Airtech Engineering |
| | Change in impeller geometry due to erosion | Clean impeller and examine for wear. Replace if necessary. | Service Technician |
| | Inlet filter clogged. | Change filter element; remove clog. | Operator |
| | Vacuum relief valve incorrectly set. | Reset or replace vacuum relief valve. Contact Airtech for assistance. | Operator |
| | Seal defective. | Replace seal. | Service Technician |
| Abnormal flow noises. | Flow speed too high. | Clean pipes or use larger pipes to connect unit to process. | Operator |
| | Muffler soiled. | Clean muffler inserts, replace if necessary. | Operator |
| Abnormal running noise | Ball bearing defective or insufficient lubrication on bearing. | Replace bearing if required. | Service Technician |
| Compressor leaky | Seals on muffler defective. | Tighten muffler connection. Replace gasket if necessary. | Operator |
| | Seals in motor area defective | Replace as necessary. | Service Technician |

WARNING! Before attempting an on-site repair, ensure that a qualified electrician has disconnected the motor from the power supply so that accidental starting of the motor is impossible.

After repairing the unit, be sure to follow the instructions noted in this manual in the **Installation** section (page 20).

5.2 Lifting

For smaller units (less than 65 lbs/ 30 kgs), it may be possible to lift the units manually. When doing so, be sure to understand the weight of the unit being lifted and to follow good lifting safety procedures.

| Model | Weight Lbs/kgs | Model | Weight Lbs/kgs |
|----------------|-------------------|----------------|-------------------|
| 3BA1300-7AT06 | 20/9 | 3BA1310-7AT26 | 33/15 |
| 2BA1300-7AT16 | 22/10 | 3BA1410-7AT36 | 55/25 |
| 3BA1400-7AT06 | 29/13 | 3BA1410-7AT46 | 59.5/29 |
| 3BA1400-7AT26 | 37.5/17 | 3BA1510-7AT46 | 86/39 |
| 3BA1500-7AT06 | 40/18 | 3BA1510-7AT56 | 97/44 |
| 3BA1500-7AT16 | 46.5/21 | 3BA1610-7AT26 | 104/47 |
| 3BA1500-7AT26 | 51/23 | 3BA1610-7AT36 | 119/54 |
| 3BA1500-7AT36 | 55/25 | 3BA1610-7AT46 | 163/74 |
| 3BA1600-7AT06 | 57.5/26 | 3BA1610-7AT56 | 172/78 |
| 3BA1600-7AT16 | 64/29 | 3BA1640-7AT36 | 128/58 |
| 3BA1600-7AT26 | 75/34 | 3BA1640-7AT46 | 172/78 |
| 3BA1600-7AT36 | 90.5/41 | 3BA1640-7AT56 | 181/82 |
| 3BA1800-7AT06 | 128/58 | 3BA1810-7AT16 | 250/113 |
| 3BA1800-7AT16 | 143/65 | 3BA1810-7AT26 | 260/118 |
| 3BA1800-7AT26 | 150/68 | 3BA1810-7AT36 | 316/143 |
| 3BA1900-7AT06 | 265/120 | 3BA1810-7AT46 | 341/155 |
| 3BA1900-7AT16 | 314/142 | 3BA1840-7AT26 | 260/118 |
| 3BA19437AT26 | 417/190 | 3BA1840-7AT36 | 316/143 |
| 3BA19437AT36 | 463/210 | 3BA1910-7AT16 | 409/186 |
| 3BA19437AT46 | 509/231 | 3BA1910-7AT36 | 455/206 |
| 3BA7210-0AT167 | 35.3/16 | 3BA1910-7AT46 | 500/226 |
| 3BA7310-0AT167 | 35.3/16 | 3BA7220-0AT567 | 61.7/28 |
| 3BA7410-0AT167 | 50.7/23 | 3BA7320-0AT567 | 66.1/30 |
| 3BA7510-0AT168 | 57.3/26 | 3BA7420-0AT267 | 72.7/33 |
| 3BA7510-0AT268 | 63.9/29 | 3BA7420-0AT567 | 86/39 |
| 3BA7610-0AT168 | 70.5/32 | 3BA7520-0AT268 | 88.2/40 |
| 3BA7610-0AT368 | 77.2/35 | 3BA7620-0AT368 | 106/48 |
| 3BA7530-0AT768 | 200/91 | 3BA7620-0AT568 | 143/65 |
| | | 3BA7630-0AT668 | 207/94 |

When lifting 3BA15 through 3BA19 (but not 3BA1943 units) or the 3BA75 through the 3BA76, use the eye bolt provided (eye bolts are not included on smaller units). One attachment point should be sufficient. Ensure that the crane is rated for the weight being lifted.

For the 3BA1943, use the eye bolt and the holes in the feet of the blower to lift and maintain a balanced load.

5.3 Storage

The 3BA units should be stored in a clean, dry environment. If stored in an area with a humidity of greater than 80 percent, store in a closed container with desiccant drying agents to avoid damage.

5.4 Disposal

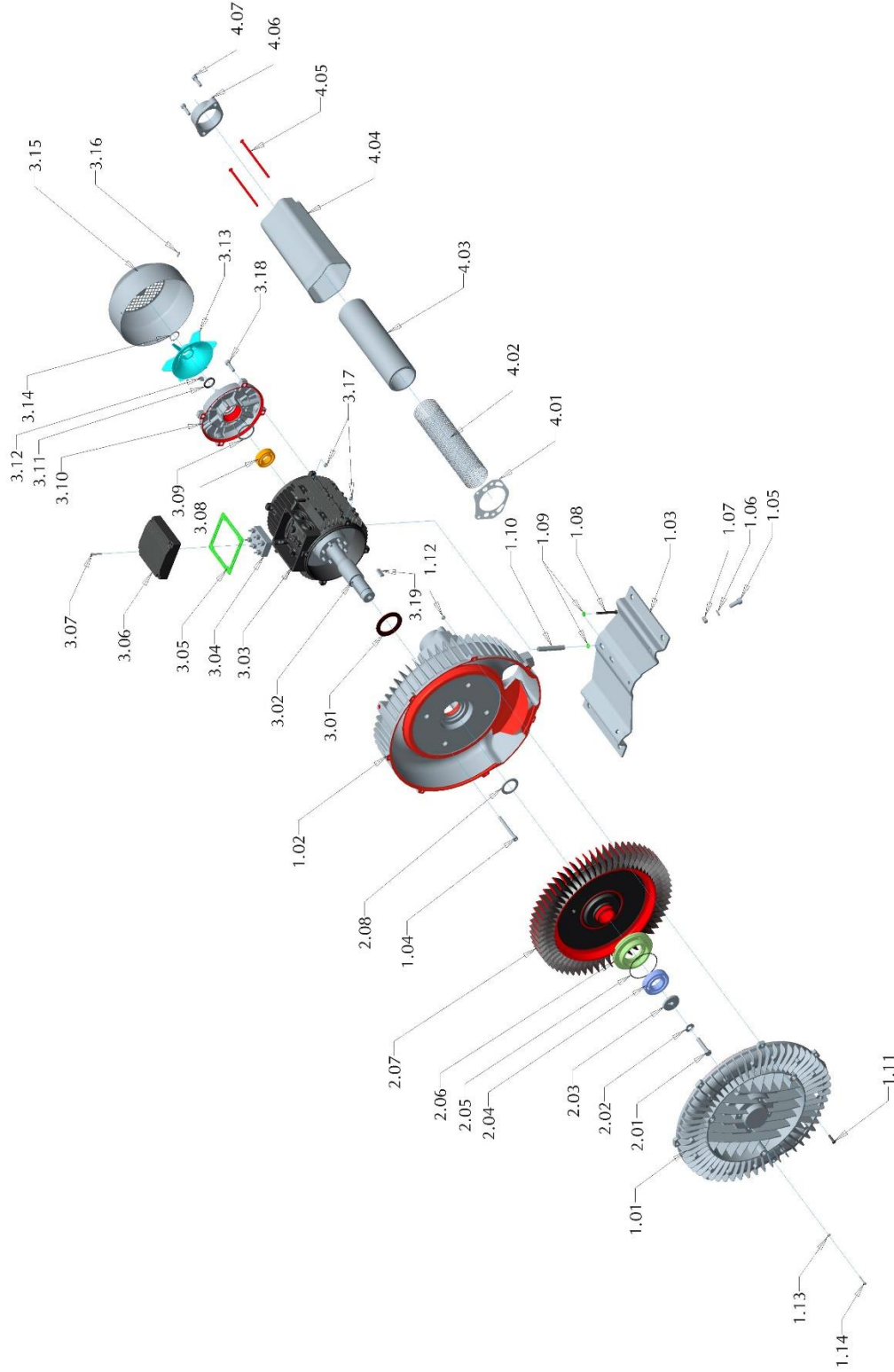
Dispose in accordance with all local health and safety regulations.

Spare parts list are available from your local Airtech service center. Please contact your local Airtech representative for assistance.

For additional assistance, please contact:

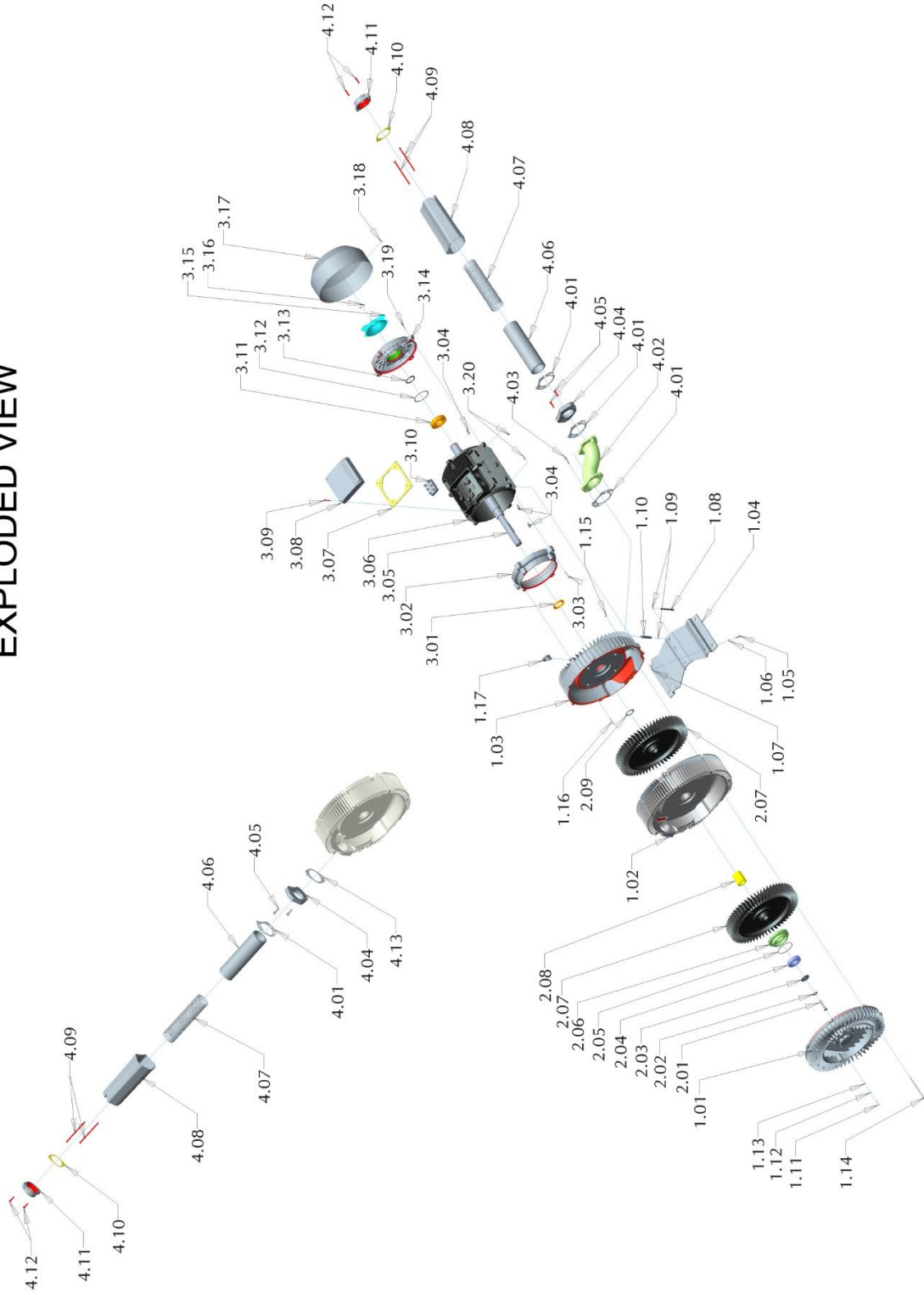
Airtech, Inc.,
301 Veterans Boulevard
Rutherford, NJ, 07070
Phone: 1-201-569-1173
Fax: 201-569-1696.

3BA1 SINGLE STAGE EXPLODED VIEW



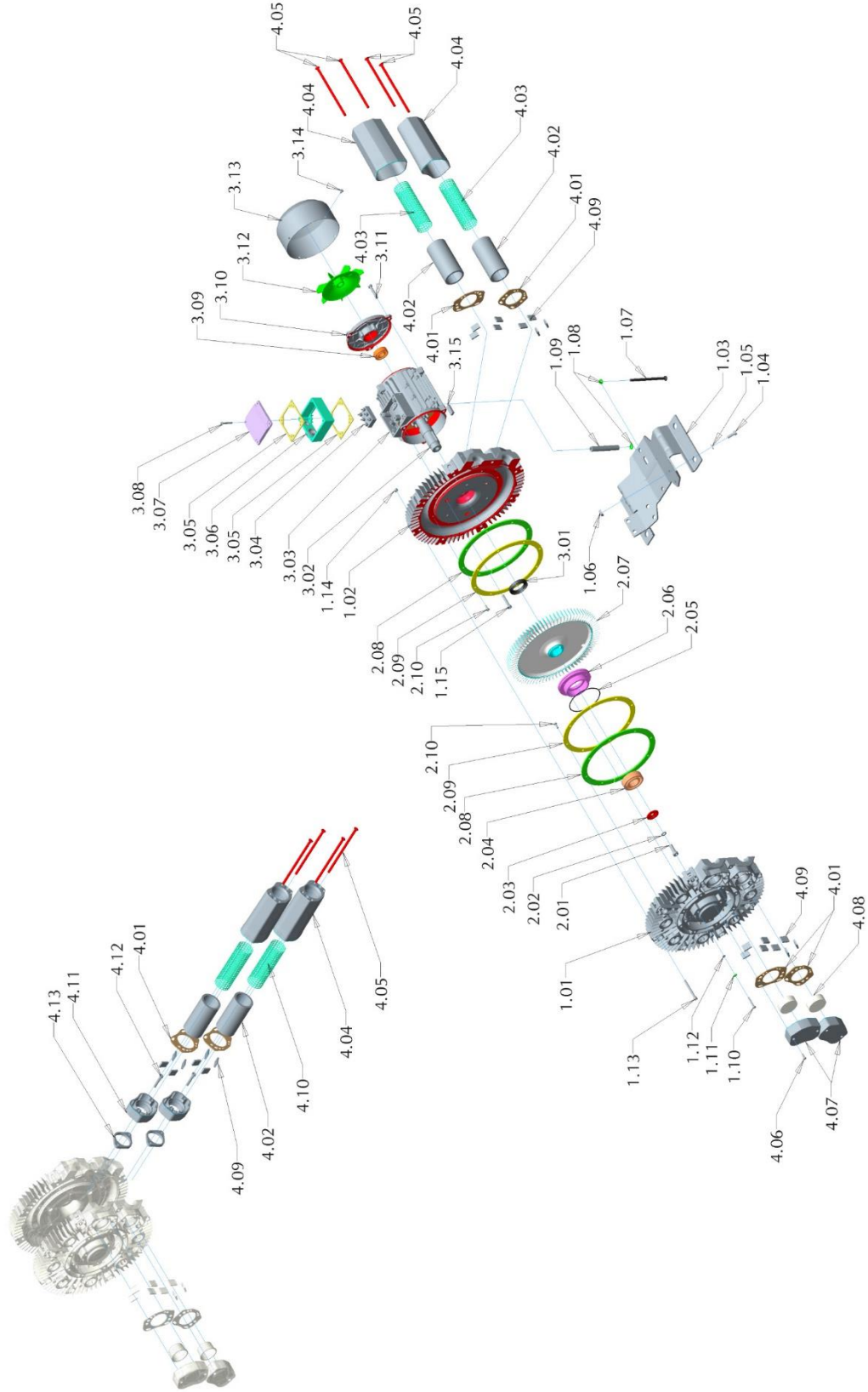
| No. | Qty. | Description |
|------|------|---------------------------|
| 1.01 | 1 | Cover |
| 1.02 | 1 | Housing |
| 1.03 | 1 | Mounting Plate |
| 1.04 | 4 | Motor Mounting Screw |
| 1.05 | 2 | Mounting Plate Screw |
| 1.06 | 2 | Mounting Plate Washer |
| 1.07 | 2 | Mounting Plate Nut |
| 1.08 | 1 | Stator Support Screw |
| 1.09 | 2 | Stator Support Washer |
| 1.10 | 1 | Stator Support Sleeve |
| 1.11 | 8 | Cover Mounting Nut |
| 1.12 | 8 | Cover Mounting Screw |
| 1.13 | 4 | Bearing Cover Washer |
| 1.14 | 4 | Bearing Cover Screw |
| 2.01 | 1 | Shaft Screw |
| 2.02 | 1 | Shaft Lock Washer |
| 2.03 | 1 | Disc |
| 2.04 | 1 | Bearing |
| 2.05 | 1 | Bearing Cover O-Ring |
| 2.06 | 1 | Bearing Cover |
| 2.07 | 1 | Impeller |
| 2.08 | 1 | Disc |
| 3.01 | 1 | Seal |
| 3.02 | 1 | Motor Rotor |
| 3.03 | 1 | Statoring Block |
| 3.04 | 1 | Terminal Block |
| 3.05 | 1 | Motor Terminal Box Gasket |
| 3.06 | 1 | Cover For Terminal Box |
| 3.07 | 4 | Terminal Box Cover Screw |
| 3.08 | 1 | Ball Bearing |
| 3.09 | 1 | Bearing Preloading Ring |
| 3.10 | 1 | End Shield |
| 3.11 | 1 | Tolerance Ring |
| 3.12 | 1 | Shaft Key |
| 3.13 | 1 | External Fan |
| 3.14 | 1 | Retaining Ring |
| 3.15 | 1 | Fan Cowl |
| 3.16 | 4 | Fan Cowl Screw |
| 3.17 | 8 | Stator Nut |
| 3.18 | 4 | End Shield Screw |
| 3.19 | 1 | Parallel Key |
| 4.01 | 2 | Silencer Gasket |
| 4.02 | 2 | Silencer Insert |
| 4.03 | 2 | Silencer Insert Filler |
| 4.04 | 2 | Silencer Casing |
| 4.05 | 4 | Silencer Screw |
| 4.06 | 2 | Flange |
| 4.07 | 4 | Flange Screw |

3BA1 TWO STAGE EXPLODED VIEW



| No. Qty. | Description |
|----------|---------------------------|
| 1.01 1 | Cover |
| 1.02 1 | Center Section |
| 1.03 1 | Blower Housing |
| 1.04 1 | Mounting Plate |
| 1.05 2 | Plate Mounting Screw |
| 1.06 2 | Mounting Plate Washer |
| 1.07 2 | Mounting Plate Nut |
| 1.08 1 | Stator Support Screw |
| 1.09 2 | Stator Support Washer |
| 1.10 1 | Stator Support Sleeve |
| 1.11 4 | Bearing Cover Screw |
| 1.12 4 | Bearing Screw Washer |
| 1.13 4 | Bearing Ring Seal |
| 1.14 8 | Cover Mounting Screw |
| 1.15 8 | Cover Mounting Nut |
| 1.16 2 | Motor Mounting Nut |
| 1.17 4 | Lifting Ring |
| 2.01 1 | Shaft Screw |
| 2.02 1 | Shaft Lock Washer |
| 2.03 1 | Disc |
| 2.04 1 | Bearing Cover O-Ring |
| 2.05 1 | Bearing Cover |
| 2.06 1 | Impeller |
| 2.07 2 | Sleeve |
| 2.08 1 | Disk |
| 2.09 1 | Disk |
| 3.01 1 | Shaft Seal Ring |
| 3.02 1 | Motor Attachment |
| 3.03 4 | Motor Attachment Screw |
| 3.04 3 | Parallel Key |
| 3.05 1 | Motor Rotor |
| 3.06 1 | Stator |
| 3.07 1 | Motor Terminal Box Gasket |
| 3.08 1 | Cover For Terminal Box |
| 3.09 4 | Terminal Box Cover Screw |
| 3.10 1 | Terminal Block |
| 3.11 1 | Rear Bearing |
| 3.12 1 | End Shield Seal |
| 3.13 1 | Rotary Shaft Lip Seal |
| 3.14 1 | End Shield |
| 3.15 1 | External Fan |
| 3.16 1 | Retaining Ring |
| 3.17 1 | Fan Cowl |
| 3.18 4 | Fan Cowl Screw |
| 3.19 4 | End Shield Screw |
| 3.20 8 | Stator Nut |
| 4.01 4 | Silencer Gasket |
| 4.02 1 | Silencer Attachment |
| 4.03 2 | Silencer Attachment Screw |
| 4.04 2 | Silencer Flange |
| 4.05 4 | Silencer Flange Screw |
| 4.06 2 | Silencer Insert Filler |
| 4.07 2 | Silencer Insert |
| 4.08 2 | Silencer Caseing |
| 4.09 4 | Silencer Screw |
| 4.10 2 | Flange Gasket |
| 4.11 2 | Flange |
| 4.12 4 | Flange Screw |
| 4.13 1 | Side Silencer Gasket |

3BA7 SINGLE STAGE EXPLODED VIEW



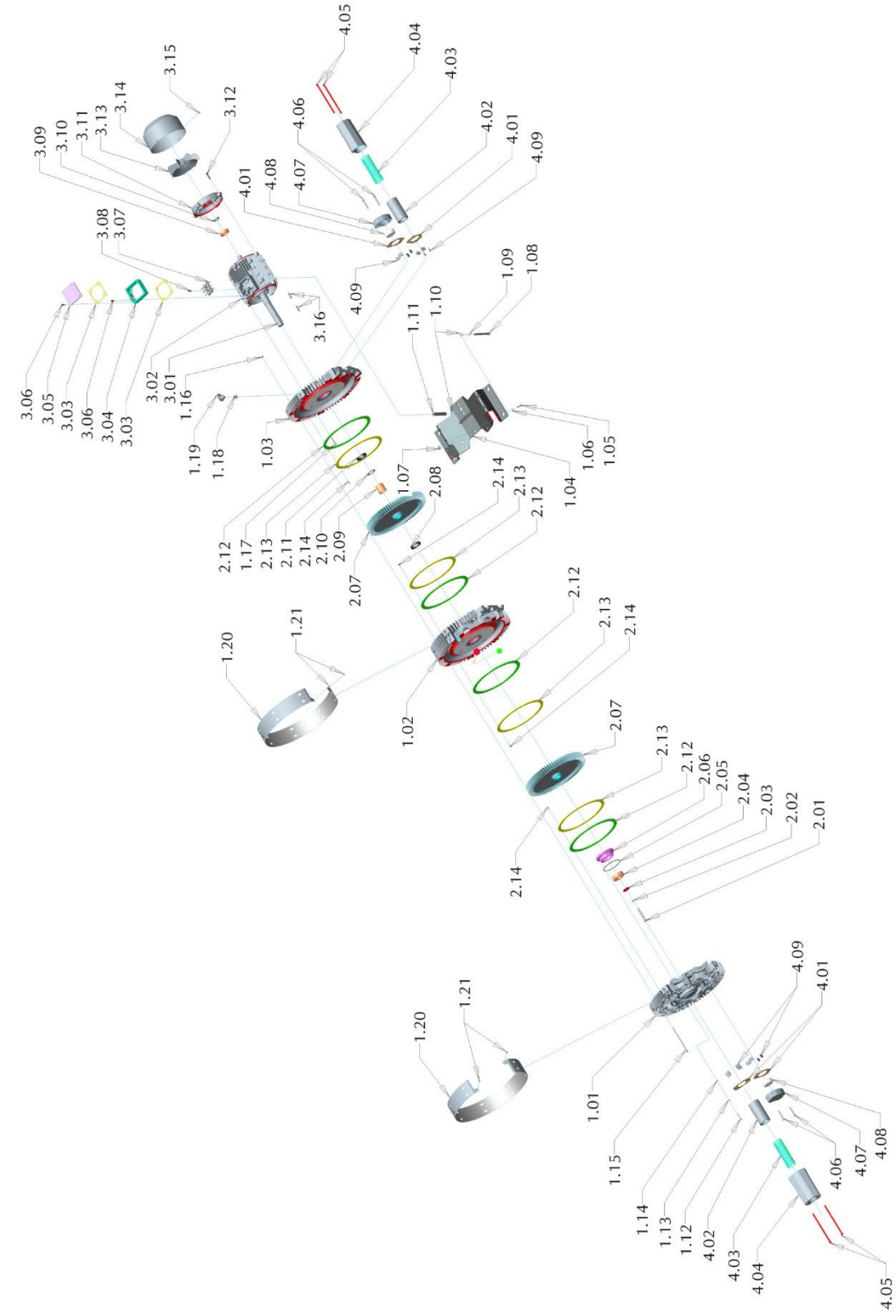
| No. Qty | Description |
|---------|---------------------------|
| 1.01 1 | Cover |
| 1.02 1 | Housing |
| 1.03 1 | Mounting Plate |
| 1.04 4 | Plate Mounting Screw |
| 1.05 4 | Mounting Plate Washer |
| 1.06 4 | Mounting Plate Nut |
| 1.07 1 | Stator Support Screw |
| 1.08 2 | Stator Support Sleeve |
| 1.09 1 | Stator Support Washer |
| 1.10 3 | Bearing Cover Screw |
| 1.11 3 | Bearing Screw Washer |
| 1.12 3 | Bearing Ring Seal |
| 1.13 8 | Cover Mounting Screw |
| 1.14 8 | Cover Mounting Nut |
| 1.15 3 | Motor Mounting Screw |
| 2.01 1 | Shaft Lock Washer |
| 2.02 1 | Disc |
| 2.03 1 | Bearing |
| 2.04 1 | Bearing Cover O-Ring |
| 2.05 1 | Bearing Cover |
| 2.06 1 | Impeller |
| 2.07 2 | Retaining Ring |
| 2.08 2 | Inner Seal Screw |
| 2.10 16 | Shaft Seal Ring |
| 3.01 1 | Motor Rotor |
| 3.02 1 | Stator |
| 3.03 1 | Terminal Block |
| 3.04 1 | Motor Terminal Box Gasket |
| 3.05 2 | Terminal Box |
| 3.06 1 | Cover For Terminal Box |
| 3.07 1 | Terminal Box Cover Screw |
| 3.08 4 | Rear Bearing |
| 3.09 1 | End Shield |
| 3.10 1 | External Fan |
| 3.11 3 | Fan Cowl |
| 3.12 1 | Fan Cowl Screw |
| 3.13 1 | Parallel Key |
| 3.14 4 | Stlencer Gasket |
| 3.15 1 | Stlencer Insert Filler |
| 4.01 4 | Stlencer Insert |
| 4.02 2 | Stlencer Casing |
| 4.03 2 | Flange Screw |
| 4.04 4 | Flange Cap |
| 4.05 4 | Flange Filler |
| 4.06 2 | Flange Filler |
| 4.07 2 | Flange Filler |
| 4.08 16 | Filler |
| 4.09 16 | Filler |
| 4.10 2 | Stlencer Insert |
| 4.11 2 | Flange |
| 4.12 4 | Flange Screw |
| 4.13 2 | Flange Gasket |

*Does not apply for 3BA76XX Blowers

3BA7 TWO STAGE EXPLODED VIEW

| No. | Qty. | Description |
|------|------|----------------------------|
| 1.01 | 1 | Cover |
| 1.02 | 1 | Center Section |
| 1.03 | 1 | Housing |
| 1.04 | 1 | Mounting Plate |
| 1.05 | 4 | Plate Mounting Screw |
| 1.06 | 4 | Mounting Plate Washer |
| 1.07 | 4 | Mounting Plate Nut |
| 1.08 | 1 | Stator Support Screw |
| 1.09 | 1 | Stator Support Lock Washer |
| 1.10 | 2 | Stator Support Washer |
| 1.11 | 1 | Stator Support Sleeve |
| 1.12 | 3 | Bearing Cover Screw |
| 1.13 | 3 | Bearing Ring Seal |
| 1.14 | 3 | Bearing Ring Seal |
| 1.15 | 8 | Cover Mounting Screw |
| 1.16 | 8 | Cover Mounting Nut |
| 1.17 | 4 | Motor Mounting Screw |
| 1.18 | 1 | Lifting Ring Nut |
| 1.19 | 1 | Lifting Ring |
| 1.20 | 2 | Blower Cowl |
| 1.21 | 4 | Blower Cowl Screw |
| 2.01 | 1 | Shaft Screw |
| 2.02 | 1 | Shaft Lock Washer |
| 2.03 | 1 | Disc |
| 2.04 | 1 | Bearing |
| 2.05 | 1 | Bearing Cover O-Ring |
| 2.06 | 1 | Bearing Cover |
| 2.07 | 2 | Impeller |
| 2.08 | 1 | Rotary Shaft Seal |
| 2.09 | 1 | Shaft Seal |
| 2.10 | 1 | Disc |
| 2.11 | 1 | Shaft Seal Ring |
| 2.12 | 4 | Teflon Seal* |
| 2.13 | 4 | Retaining Ring |
| 2.14 | 32 | Inner Seal Screw |
| 3.01 | 1 | Motor Rotor |
| 3.02 | 1 | Stator |
| 3.03 | 2 | Motor Terminal Box Gasket |
| 3.04 | 1 | Terminal Box |
| 3.05 | 1 | Cover For Terminal Box |
| 3.06 | 8 | Terminal Box Screw |
| 3.07 | 1 | Terminal Block |
| 3.08 | 1 | Terminal Block Screw |
| 3.09 | 1 | Rear Bearing |
| 3.10 | 1 | End Shield Disk |
| 3.11 | 1 | End Shield |
| 3.12 | 4 | End Shield Screw |
| 3.13 | 1 | External Fan |
| 3.14 | 1 | Fan Cowl |
| 3.15 | 4 | Fan Cowl Screw |
| 3.16 | 2 | Parallel Key |
| 4.01 | 1 | Silencer Gasket |
| 4.02 | 2 | Silencer Insert Filler |
| 4.03 | 2 | Silencer Insert |
| 4.04 | 2 | Silencer Caseing |
| 4.05 | 4 | Silencer Screw |
| 4.06 | 4 | Flange Screw |
| 4.07 | 2 | Flange Cap |
| 4.08 | 2 | Flange Filler |
| 4.09 | 16 | Filler |

*Does not apply for 3BA76XX Blowers



Airtech, Inc. (“Company”) Warranty Statement

Company warrants that on the date of shipment to Purchaser the goods will be of the kind and quality described herein, merchantable, and free of all defects in workmanship and materials.

If within one year from the date of initial operation, but not more than eighteen months from date of shipment by the Company, of any item of the goods, Purchaser discovers that such item was not as warranted above and promptly notifies Company in writing thereof, Company shall remedy such defect by, at the Company's option, adjustment, repair or replacement of the item and any affected part of the good. Purchaser shall assume all responsibility and expense for removal, reinstallation and freight in connection with the foregoing remedy. The same obligations and conditions shall extend to replacement items furnished by the Company hereunder. Company shall have the right of disposal of items replaced by it. Purchaser shall grant Company access to the goods at all reasonable times in order for Company to determine any defect in the goods. In the event that adjustment, repair or replacement does not remedy the defect, the Company and Purchaser shall negotiate in good faith an equitable adjustment in the contract price.

The Company's responsibility does not extend to any item of the goods which has not been manufactured and sold by the Company. Such item shall be covered only by the express warranty, if any, by the manufacturer thereof. The Company and its suppliers shall also have no responsibility if the goods have been improperly stored, handled or installed, or if the goods have not been operated or maintained according to their ratings or according to the instructions in Company or supplier furnished manuals, or if unauthorized repairs or modifications have been made to the goods.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES (EXCEPT TITLE) INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS, AND CONSTITUTES THE ONLY WARRANTY OF COMPANY WITH RESPECT TO THE GOODS.

The forgoing states Purchaser's exclusive remedy against Company and its suppliers for any defect in the good or for failure of the goods to be as warranted, whether Purchaser's remedy is based on contract, warranty, failure of such remedy to achieve its essential purpose, tort (including negligence), strict liability, indemnity, or any other legal theory, and whether arising out of warranties, representations, instructions, installations, or defects from any cause.

Neither Company nor its suppliers shall be liable, whether in contract, warranty, failure of a remedy to meet its essential purpose, tort (including negligence), strict liability, indemnity or any other legal theory, for loss of use, revenue or profit or for cost of capital or of substitute use or performance or for indirect, liquidated, incidental or consequential damages or for any other loss or cost of a similar type, or for claims by Purchaser for damages of Purchaser's customers.

AIRTECH[®]
VACUUM

301 Veterans Boulevard
Rutherford, NJ 07070
Tel: 1 888 222 9940
Fax: 201 569 1696
airtech@airtechusa.com

AIRTECH[®] SOUTH
VACUUM

2121 Newmarket Pkwy. Suite 110
Marietta, GA 30067
Tel: 770 690 0700
Fax: 770 690 0709
airtechsouth@airtechusa.com

AIRTECH[®] WEST
VACUUM

42 Digital Drive #9
Novato, CA 94949
Tel: 415 382 9000
Fax: 415 382 9700
airtechwest@airtechusa.com

AIRTECH[®] CHINA
VACUUM

2nd Building,
Jiangbian Second Industrial Park
Songgang Town, Bao'an District
Shenzhen, China
Tel: +86 755 81730991(Ext. 8018)
Fax: +86 755 81730986
www.airtechchina.com

AIRTECH[®]
EUROPE

Pfaffenpfad 5
D-97440 Werneck
Germany
Tel: +49 9722 943 96 0
Fax: +49 9722 943 96 29
www.airtecheu.com

AIRTECH[®]
EUROPE

Carrer dels Amics
d'Argentona 40
08310 Barcelona
Spain
Tel: +34 93 797 17 66
Fax: +34 93 797 17 54
www.airtecheu.com

www.airtechusa.com