



AirMaxGL

Industrial Axial
and Exhaust fans

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1. GENERAL INFORMATION

To ensure correct installation and operation of the equipment, read all the instructions included in this manual. Skipping any step in these processes could void the warranty.

1.1 INTRODUCTION

The purpose of this manual is to provide instructions that guarantee the best operating conditions for the axial fans/extractors of the AirMax GL line.

It is the buyer's responsibility to have qualified and experienced personnel in the installation, operation and maintenance of industrial machinery and/or equipment.

The fans include protective accessories, but the responsibility of the end user to determine the appropriate safety measures when handling, installing, operating and servicing the AirMax GL is not eliminated.

Always use gloves, dielectric safety boots, and other personal protection elements recommended by industrial safety standards.

1.2 SHIPMENT AND RECEPTION

All equipment is inspected prior to shipment. All AirMax GL are inspected and tested at the plant to ensure proper operation before being packed and shipped.

When a fan is received, all parts should be checked against the shipping consignment to verify component completeness and serial numbers match. The units should also be checked to rule out possible damage that occurred during transport.

Please note that the packaging of the AirMax GL has a wooden reinforcement on the air outlet side, to protect the shutter system.

NOTES:

Any damage must be reported immediately to the carrier. Keep track of the serial number of the equipment you receive. In this way, traceability can be carried out in case of claims or guarantees.



Figure 1.1 and 1.2. AIRMAX GL packaging.

1.3 HANDLING

Handling of fans must be carried out by trained personnel and consistent with all safe practices in handling heavy loads. Verify the capacity, operability and conditions of loading equipment such as forklifts, cranes or elevators. Keep loading and transport equipment out of range of causing injury to personnel present.

The equipment must be lifted to its installation point, ideally on platforms. If this is not possible, they can be lifted by means of cables, chains or straps. Whenever

these elements are used, the safety of the personnel in charge of the work must be guaranteed, as well as the integrity of the fan in the process.

IMPORTANT: Do not lift fan by pulleys, belt, casing tabs, safety screen, or louvers. Do it only by raising it on the platform, or surrounding the entire casing externally with one of the elements mentioned in the previous paragraph.

1.4 STORAGE

If the fan is received at the end user's premises, but will not be installed for an extended period of time, follow the procedures listed below:

Completely cover the fan with canvas or plastic to protect it from dust and moisture (Make sure that the material used to cover the equipment does not generate moisture condensation).

Periodically check that the opening and closing mechanism of the blinds moves freely (at least once every 3 months).

Make sure that the equipment is stored in a safe place, free from excessive vibrations, without exposure to possible falls, shocks or sudden movements.

After the storage period is over, it may be necessary to apply grease to the shaft on which the fan propeller rotates and check the belt tension.

NOTE:

Improper storage could affect the integrity and full performance of the equipment.

When the storage period is over and you are going to install the equipment, be sure to connect the motor to a voltage source of 220 or 440 volts ac (according to the connection requested from the factory), / 60 hz / 3 phases, with your respective ground connection and protection against overloads, short circuits and phase failure. Turn on the fan and verify that the direction of rotation is clockwise (clockwise, seen from the side of the shutters). Check that the louvers open completely, remaining in a horizontal position (in the same direction as the air flow). Always carry out this procedure prior to the definitive installation of the equipment.

2. SETUP

2.1 OPERATION AND SAFETY

Improperly installed or operated fans pose a danger to both people and facilities.

Fans should always be installed by trained and experienced personnel.

The established occupational health and safety standards must be complied with, including current electrical regulations.

The AirMax GL is designed to operate safely up to a maximum number of revolutions per minute and a maximum temperature limit. Do not alter the original transmission ratio (diameters of the pulleys), with which the fans are manufactured.

Propeller and fan housing materials can withstand certain temperature levels. However, the maximum temperature at which the motors can operate is what defines the operating limits.

In this case, the maximum ambient operating temperature for the AirMax GL 36 and 50 is 40°C (104°F).

On the other hand, it is important to guarantee that the fans are connected to a 220 or 440 Volts AC network, depending on the customer's purchase specification. In either case, the voltage must be supplied through a 60 Hz three-phase network.

Each fan must be connected to its respective grounding (earth connection), and protected against overloads, short circuits and phase losses. Consult your certified electrician with knowledge of the electrical regulations.

If you require more technical details to carry out the electrical installation, consult the technical datasheet of the AirMax GL fans.

2.2 MOUNTING FRAME

An important aspect for the installation of an axial fan is its support structure, which must prevent excessive vibrations and guarantee the stability of the equipment.

Wall mounted fans

AirMax GL axial fans/extractors can be embedded directly in walls or through a fan-holder frame (SUGGESTED), which is embedded in the wall and to which the fan is subsequently screwed (see Figure 2).

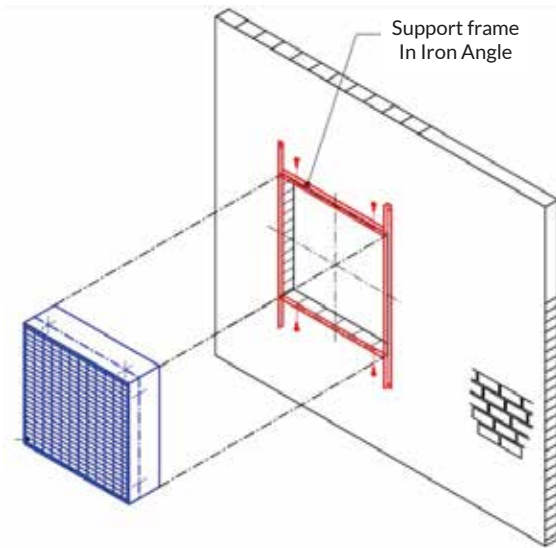


Figure 2. AirMax GL Fan/Exhaust (Blue) wall-mounted, with fan-holder frame (red).

The opening used to embed the fan or the fan-holder frame must include sufficient tolerances to allow the equipment or frame to be located (see table of dimensions in the technical datasheet of each unit), and subsequently fix it with a cement mixture as if it were of a window frame.

2.3 OTHER SUPPORT STRUCTURES

The fans/extractors supported or fastened to metal structures can be directly screwed to said structures, providing NOT to impede the passage of air through the equipment, as this could reduce efficiency and performance.

NOTES: If you have another type of support structure, consult the factory or a sales engineer.

Some accessories attached to the fan are shown in figures 3, 4 and 5.

If these or other accessories are needed to operate the fan according to the customer's requirement, it is his responsibility to attach or assemble them properly.

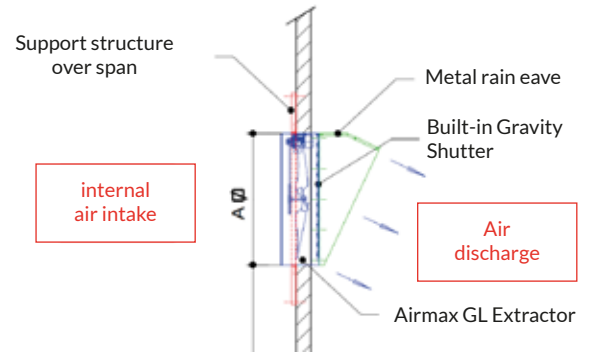


Figure 3. AirMax GL Fan Assembly (Blue) with rain cover (green) as an accessory.

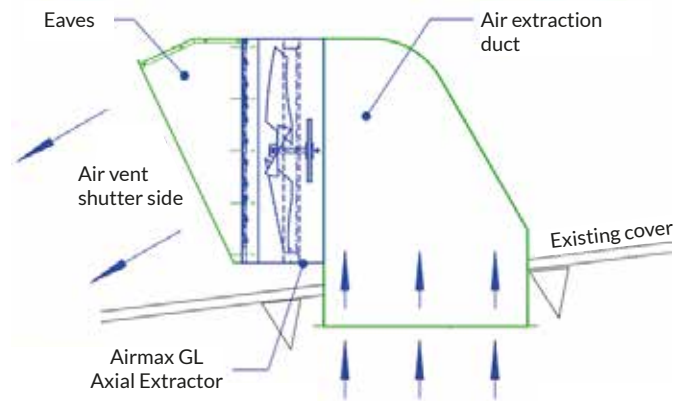


Figure 4. Mounting of Airmax GL on the ceiling with duct in the suction and eaves in the discharge.

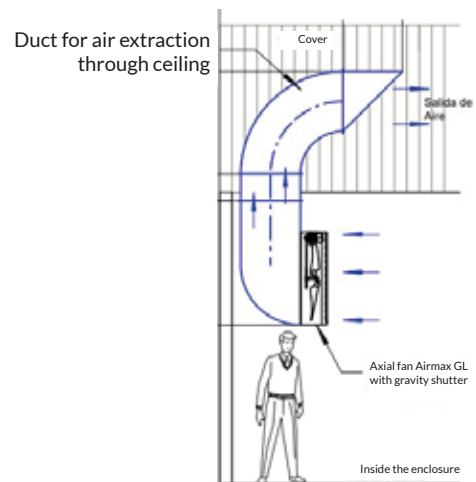


Figure 5. Installation of Airmax GL indoors with discharge duct.

To reverse the direction of rotation of the fan, simply swap two of the electrical lines that feed the motor. Ask the electrician in charge to make this modification to the installation cables and not to the motor terminal box.

2. Check for any abnormal noise or vibration. If you find them, immediately turn off the equipment and repeat the steps listed in the previous point. If the problem persists, contact the technical support area and request assistance.

WARNING:

Always identify, disconnect and lock out the power source before installing or performing any maintenance. Failure to disconnect the power source may result in fire, electric shock, or serious injury.

4. ROUTINE MAINTENANCE

Once the unit has been put into operation, it is recommended to establish a routine maintenance schedule, which includes:

1. Verification of the direction of rotation of the propeller.
2. Check for vibrations or abnormal noises.
3. Verification of wear on the transmission belt.
4. Verification of the free movement of shutters in the discharge.
5. Verification of the adjustment of the fastening bolts of the entire fan (motor and structure).
6. Removal of excess dirt on the propeller and inside the casing.
7. Removal of dirt on the shutters and on the security mesh.
8. Verification of possible corrosion or possible cracks in the components.

NOTES:

When performing any inspection or maintenance service on the fan, make sure the power supply is off and the propeller is locked.

Wear safety gloves. The fan casing has sharp edges that can cut or tear skin.

No repairs or modifications should be made during the warranty period without the manufacturer's written authorization.

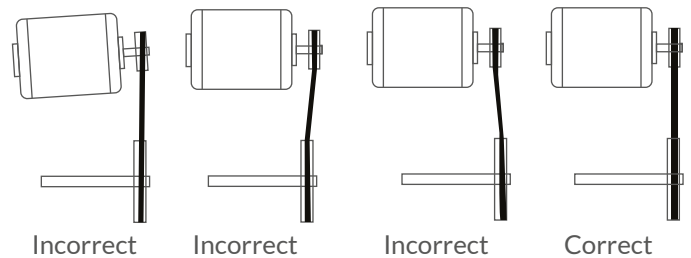
4.1 TRANSMISSION

Belts should be checked in routine maintenance for wear, tension, alignment, and dirt buildup. Various failures can be caused by improper belt tension level (over or under tension).

Do not install new belts on worn pulleys. If a pulley shows any damage to its groove, it must be replaced before installing a new belt.

Pulley alignment can shift on AirMax GL fans if the bolts that hold the motor to its base lose their tightening and the motor moves from its original position (see figure below):

Figure 9. Pulley alignments in a transmission.



Check whether the drive belt is worn at least 1 time every 6 months (every six months).

If it is necessary to change it, the belt used in the AirMax GL fan has the following reference, depending on the model:

AirMax GL model	Belt type	Belt reference
36	V-belt, toothed	AX70BL
50	V-belt, toothed	AX83BL

Table 1. Reference of transmission belts for the AirMax GL.

4.2 MOTOR

Motor maintenance on an AirMax GL is generally limited to cleaning.

In maintenance routines, it is recommended to check the motors to ensure that they are free of excessive dirt, and that the fan they have in the rear is turning freely so that the air can cool the surface.

Do not allow water, steam, or any solvent to come in contact with the surface of the motor.

It is recommended to measure the motor temperature with a laser thermometer in 3 zones: front cover near the shaft, rear cover near the shaft and in the center of the motor body. These surface temperatures can typically range from 60°C to 90°C.

These procedures should be performed 1 time every 6 months (2 times a year).



Figure 10. Measurement of temperature in the motor with a laser thermometer.

If the temperature is above this range, it may indicate overheating and will need to be checked:

- Electrical contacts in the joints.
- Bearing wear.

A bearing change should only occur, under normal operating conditions, after 30,000 accumulated hours (approximately 3.5 years of continuous work).

4.3 SCREWS AND GENERAL ADJUSTMENT

The periodic review should include checking the tightness of all bolts/screws, making sure they are properly tightened. Particular attention should be paid to the bolts that attach the blades to the propeller hub/hub and the nut that adjusts the propeller shaft.



Figure 11. Propeller Shaft Adjustment.



Figure 12. Adjustment of blade-to-hub fastening bolts.

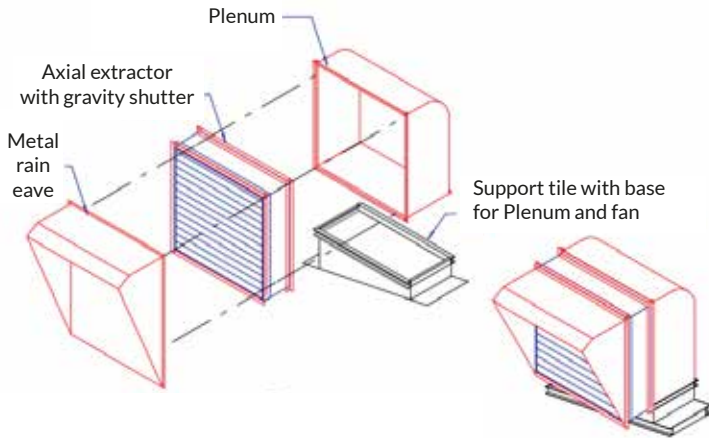


Figure 6. Mounting Airmax GL on the ceiling with Plenum in the suction and eaves in the discharge.

2.4 ELECTRICAL INSTALLATION

The fan/exhauster motors must be connected by qualified and experienced personnel. Consult a certified electrician.

Additionally, electrical installations must have thermo-magnetic protections and appropriate connections, as indicated by current regulations.

Depending on the end customer's request, the AirMax GL motors can be configured to run at 220 or 440 Volts AC. In either case, the source/mains frequency must be equal to 60 Hz. For both size 36 and size 50 AirMax GL, the motors are three-phase asynchronous induction, TEFC type.

AirMax GL motors must have short-circuit, overload and two-phase running protection. Failure to install these protection elements will void the manufacturer's motor warranty.

NOTE: The AIRMAX GL are delivered with a 4x16 AWG rubberized cable, 70 cm long.

2.5 ADDITIONAL RECOMENDATIONS

It is NOT recommended to weld the fan to the supporting structure or to the reinforcement beams of the walls. AirMax GL fans are delivered properly balanced, and their operation involves a minimum level of vibration.

DO NOT drill holes to fasten or fix the equipment. Use the holes provided by the factory for this purpose.

DO NOT modify the fan casing by cutting or bending it, or allow it to receive strong blows that could deform it.

DO NOT make any changes to the layout of the electrical connections on the motor terminal board.

DO NOT handle or hit the fan blades/fins. Any modification can unbalance the propeller and generate excessive vibrations that lead to future cracks or fractures of the components.

DO NOT modify the original gear ratio. The factory-installed pulleys give the fan a turning speed that guarantees the flow of air moved, while fully exploiting the capabilities of the motor.



Figure 7. Airmax GL electrical cable.

3. PRE-OPERATION CHECKS

3.1 CHECK LIST

1. Disconnect and lock out the power source to the fan motor.
2. Check that all bolts, pulleys, motor base and guard mesh are properly tightened.
3. Rotate the fan rotor/propeller by hand to ensure it is not rubbing against any part of the casing.
4. Check the correct alignment of the pulleys.
5. Check drive belt alignment and tension.
6. Check if your equipment has a belt tensioner. If so, rotate the tensioner away from the belt, then release it. The belt should return to its original tension state. Repeat the procedure to also verify that the tensioner torsion spring is working properly.
7. Check that the shutter mechanism has free movement. Raise one of the shutter by hand. The mechanism will make all the shutters go up at the same time. When released, all the shutters should fall freely and return to the rest position (closed shutters).
8. Check the proper electrical connection and the tightening torque on the motor terminal board:
 Voltage: 220 or 440 volts ac (according to the factory connection request).
 Frequency: 60Hz
 Number of phases: 3 phases.
 Electrical protections: grounding, protection against overloads, protection against short circuits and protection against phase failure.
 Tightening torque on the terminal board: 4.5 N.m.
9. Check that the blades and the casing are not deformed. Before energizing the equipment, check that there are no mounting materials or tools inside the fan housing.

3.2 ADDITIONAL STEPS BEFORE STARTING

One of the most frequent inconveniences found in the start-up of fans is the wrong connection of the motor wiring, which causes the fan to rotate in the opposite direction. This is especially the case in three-phase installations, where the motor can rotate in both directions, depending on how it has been connected.

Once the previous checklist has been completed, carry out the following checks:

1. Verify the correct direction of rotation of the fan propeller by means of a momentary ignition or start (energize the equipment, allow it to rotate for a few seconds and suspend the power again). The correct rotation can be determined in different ways:

Check that the direction of rotation of the propeller is the same as indicated by the arrows inside the motor casing (see figure below):



Figure 8. Arrows indicating the correct direction of rotation of the propeller. Check that the shutters open when the fan starts to turn. If this does not happen and the check from the previous list has already been carried out where it is checked that the shutter mechanism is moving freely, then the fan is turning in the opposite direction to that required.

An eventual misalignment or loss of a nut or bolt can cause vibrations that lead to imbalance, cracks or fracture of any of the elements.

Check that the walls of the casing remain rigid and well adjusted, as well as the base that supports the motor. These procedures should be performed 1 time every 6 months (2 times a year).

4.4 CLEANING

Possible accumulations of grease, dust or dirt can block the motor’s rear fan, as well as the cooling fins that are found on its entire surface. This can cause motor overheating due to poor cooling.

The same can happen with the blades of the propeller, which can cause unbalance of the fan.

Louvers located on the discharge side of the fan can also experience dirt buildup.

If it accumulates in excess, it can cause the mechanism not to open correctly and the fan not to move the amount of air that is expected. Also check that the louvers do not have large accumulations of dirt.

Whenever intervening on a fan, for cleaning or maintenance, it must be ensured that it is disconnected from the grid and the propeller is blocked.

As stated above, safety gloves should be worn as the fan has metal components with sharp edges that can be dangerous.

These components should preferably be cleaned with compressed air at room temperature, always verifying that there are moisture filters in the line. In this case, also wear eye and nose protection.

If this is not possible, a cloth moistened with water can be used.

Avoid using detergents or solvents to clean equipment.

Do not throw water at the fan, or use hoses or pressure washers. Fan materials have a good level of corrosion resistance, but are not 100% stainless.

In addition, pressurized water could penetrate the motor or cause deformation of the blades or the casing.

Do not allow water, steam, or solvents to come into contact with the motor.

Perform these cleaning procedures at least 1 time per semester.

4.5 BEARINGS AND LUBRICATION

There is no lubrication required on AirMax GL fans.

The motor bearings are sealed, permanently lubricated ball bearings that, under proper fan operation, should be replaced approximately every 30,000 hours; which is equivalent to 3 and a half years of continuous operation (that is, working 24 hours a day, 365 days a year, without stopping).

If a change of bearings is required, and the fan is under warranty, inform the contact through which the equipment was sold, to coordinate the solution by factory personnel.

In case of not being in the guarantee period, if the customer is going to be in charge of changing the bearings, the references are the following:

AirMax GL model	bearing position	bearing reference
36	Forward	6204 - ZZ
	rear	6203 - ZZ
50	Forward	6205 - ZZ
	rear	6204 - ZZ

Table 2. Reference of motor bearings for the AirMax GL.

The propeller bearings are also sealed, double row, permanently lubricated ball bearings designed to last over 50,000 cumulative working hours (over 6 years non-stop).

In a similar way to the handling of motor bearings, if the equipment is under warranty, inform your commercial contact to attend to the request.

Otherwise, if the customer is going to be responsible for the change, the only bearing of the propeller has the following reference:

- Single bearing: PW 30600337-CS

5. EXPLODED PARTS AND ACCESSORIES

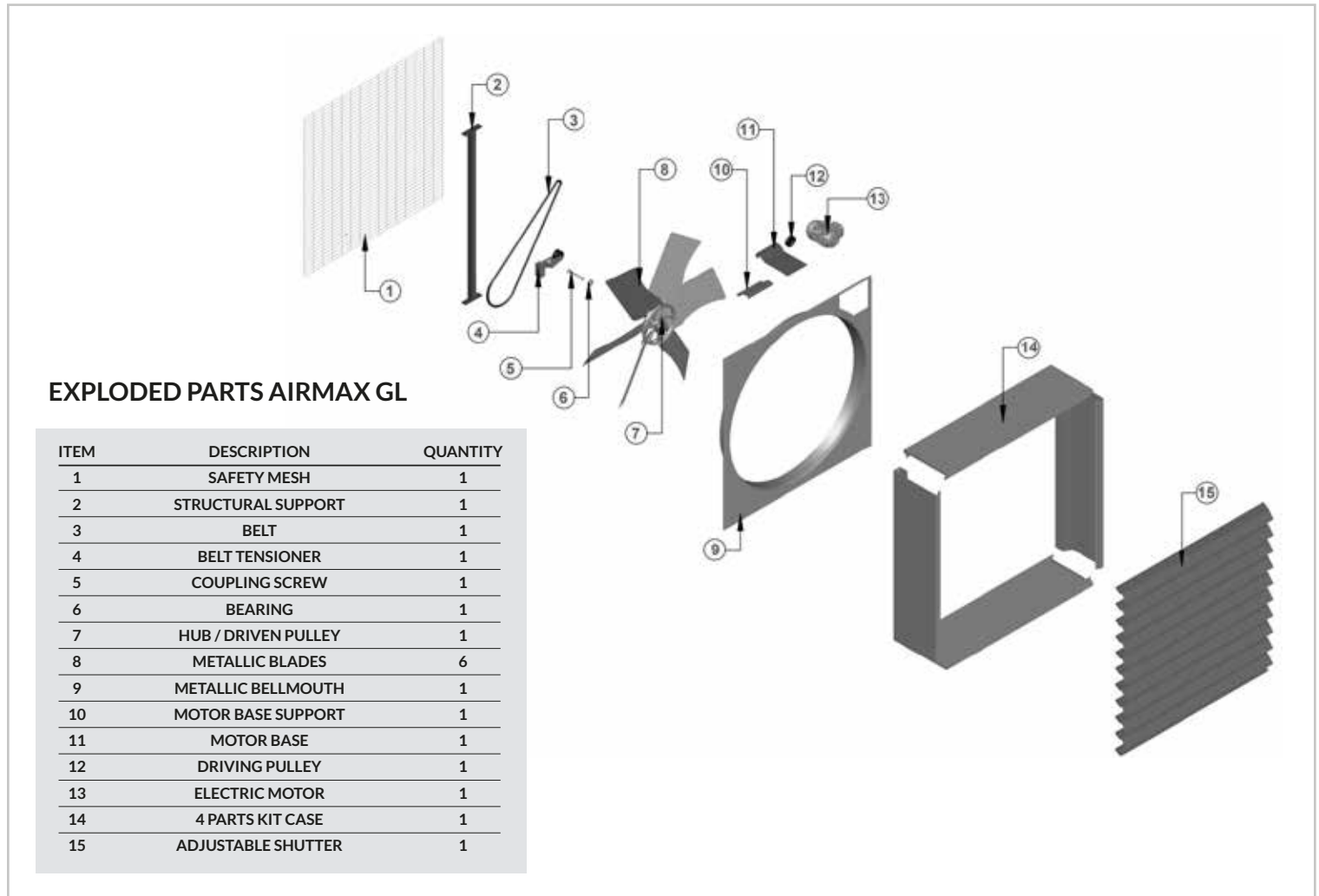


Figure 12. Exploded view of Airmax GL components.

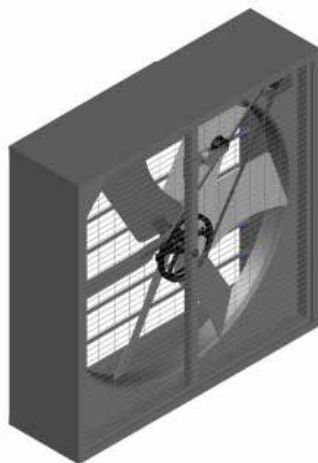


Figure 13.
Assembly Isometric View
(suction side).

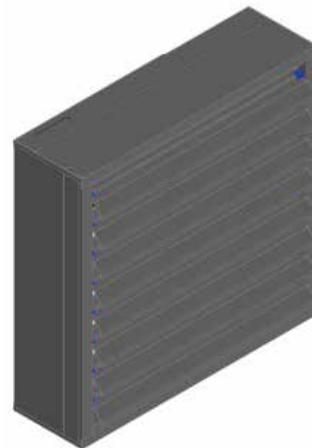


Figure 14.
Assembly Isometric View
(discharge side).

6. TROUBLESHOOTING (PAGE 1)

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTIONS
Fan does not turn on	Improper electrical connection	<ul style="list-style-type: none"> • Check that the power cables are well connected, from the voltage source to the motor, passing through the protection devices. • Check the grounding and continuity of the conductors. • Check that the proper voltage level is reaching the motor terminal box.
Fan rotates in the opposite direction	Reversal of supply lines in the motor terminal box	<ul style="list-style-type: none"> • Since the motors are three-phase, take 2 of the power lines that reach the terminal box and invert the connection points between them.
Shutters do not open	Blockage/damage of counterweight mechanism	<ul style="list-style-type: none"> • Check that the links of the counterweight mechanism that moves the shutters move freely. • Remove any foreign objects that are causing blockages. • Replace missing or damaged mechanism parts
	dirt accumulation	<ul style="list-style-type: none"> • Check the cleanliness of the shutters. • Remove accumulations of dirt or any foreign object/substance that may be weighing down the shutters.
	Stuck warped blinds	<ul style="list-style-type: none"> • Check the integrity of all shutters. • If any shutter is deformed by a possible blow, it may be rubbing against the casing and prevent the entire mechanism from moving. • Request a change of shutters to your business contact.
Shutters partially open	Worn strap / with little tension	<ul style="list-style-type: none"> • Check that the transmission belt has an adequate level of tension. • If the belt is under-tensioned, it can slide/slip on the pulleys and cause a rotational speed lower than the design speed, causing the shutters not to open fully. • Check that the transmission belt is in good condition. As well as an improper level of tension, wear and tear can cause a slowdown in speed and result in incomplete opening of the shutters.

6. TROUBLESHOOTING (PAGE 2)

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTIONS
Shutters partially open	Low voltage level on the motor	<ul style="list-style-type: none"> Check that the motor is turning at the rpm indicated on the technical characteristics plate. <p>Air Max GL 36:</p> <ul style="list-style-type: none"> - WEG motor: 1730 rpm - Hercules motor: 1670 rpm <p>Air Max GL 50:</p> <ul style="list-style-type: none"> - WEG motor: 1755 rpm - Hercules motor: 1730 rpm <ul style="list-style-type: none"> If the motor rpm is lower than indicated, check that the supply voltage is at adequate levels, according to the nominal voltage of the installation.
Fan presents an abnormal sound	Excessive vibration due to rotor imbalance	<ul style="list-style-type: none"> Check fan blades. If any blades have been hit, they may have deformed and be causing an imbalance in the propeller. Uninstall the defective propeller and replace it with a new one. Ask your sales contact for the propeller as a spare part. Check that the fan blades have no accumulation of grease, dirt, or any other substance. Excessive accumulation can create imbalance due to the additional weight on the blade.
	The fan is not properly embedded in the wall/frame or fixing structure	<ul style="list-style-type: none"> The fan can vibrate if the structure that supports it is not a solid and firm base. If the structure is not stable, it is very likely that it is itself the source of the vibration. You may have to reinforce or modify the structure, to ensure rigidity and stability. Check that the fixing screws of the equipment to the wall or frame are properly tightened. If necessary, readjust them.
	Drive elements are worn/damaged	<ul style="list-style-type: none"> Check that the pulleys are well adjusted, well aligned and without wear. Check that the belt is not worn or with an insufficient or excessive level of tension.