

Belt Drive Galvanized Fans

Installation and Operation Manual



PNEG-942 Date: 05-27-15



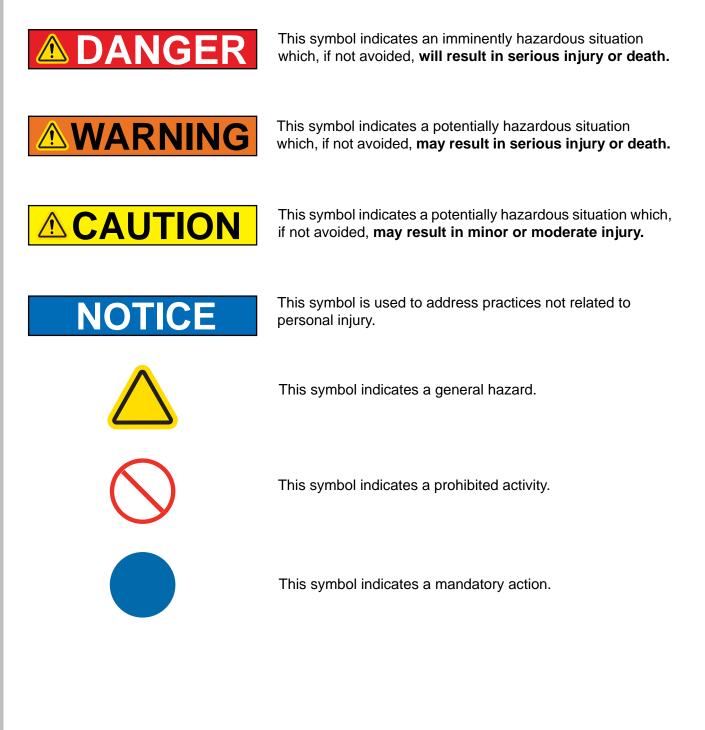
All information, illustrations, photos and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

Contents

Chapter 1	Safety	4 5
Chapter 2	Safety Decals	
Chapter 3	Galvanized Fan Specifications	
Chapter 4	Belt Drive Galvanized Fan Assembly Instructions	13 15 23 27 29 29
Chapter 5	Troubleshooting	33
Chapter 6	Replacement Parts List	34
Chapter 7	Warranty	35

Cautionary Symbols Definitions

Cautionary symbols appear in this manual and on product decals. The symbols alert the user of potential safety hazards, prohibited activities and mandatory actions. To help you recognize this information, we use the symbols that are defined below.



General Safety Statement

Thank you for choosing a Cumberland Galvanized Fan. It is designed to give excellent performance and service for many years. Cumberland's principle concern is your safety and the safety of others associated with poultry equipment. We want to keep you as a customer. This manual is to help you understand safe operating procedures and some problems which may be encountered by the operator and other personnel.

As owner and/or operator, you are responsible to know what requirements, hazards and precautions exist and inform all personnel associated with the equipment or in the area. Safety precautions may be required from the personnel. Avoid any alterations to the equipment, which may produce a very dangerous situation, where serious injury or death may occur.

Cumberland recommends that you contact your local power company and have a representative review your installation to verify that all wiring is compatible with their system and ensure an adequate power will be supplied to your unit.

Electrical Safety

An adequate and safe power supply to the Galvanized Fan is essential for safety. A competent and qualified electrician must undertake all electrical wiring. All wiring is to be installed according to the National Standards and Regulations relevant to your Country and Region.

Cumberland recommends that the electrical supply to the Galvanized Fan be provided with a single lockable isolator (not supplied) in accordance with the requirements of IEC 60204-1: 1997. The isolator should meet the requirements of IEC 60947-3. An isolator is essential for safety. This should be installed as indicated on the motor diagrams and in accordance with the relevant codes and directives.

Users Manual

This manual contains information and instructions essential to the safe installation and use of the Cumberland Galvanized Fans. Read this manual thoroughly **before** attempting any installation or use of the Galvanized Fans. Keep this manual with the Galvanized Fans or in a location where it can be readily accessed. Failure to read this manual and its safety instructions is a misuse of the equipment.

Structural Safety

Mounting the Galvanized Fans in a poultry house imposes additional load on the building. It is essential that the building is able to bear this additional load. Consult a structural engineer to verify the building's load capacity. Likely/estimated weights of the Galvanized Fans are provided in this manual.

Correct Use of Your Galvanized Fans

Only genuine Cumberland parts are to be used in the installation, maintenance and use of the Galvanized Fans. Use of other non-genuine parts is a misuse of the system and may lead to dangerous situations imperilling the safety and health of you and others.

This machine is not designed for use in atmospheres where there is a risk of explosion. Such environments may include enclosed areas of high dust concentrations, gas vapors and fumes. Use of the Galvanized Fans in such an environment is prohibited. If in doubt, contact Cumberland or your dealer.

1. Safety

Safety Guards

The Galvanized Fans contain many moving and electrical parts which will cause serious injury or death if touched. Guards are placed on the units for your protection. Operating the units at any time with guards removed or incorrectly fitted is a serious misuse of the machine and endangers safety.

Safety in Handling the Galvanized Fans

Components of the Galvanized Fans require manual handling during assembly and installation. To prevent injury, seek assistance where necessary.

Some items may have sharp, rough or abrasive edges. To prevent injury, use suitable hand protection when manually handling the components of this system.

Safety in Maintenance

While the Galvanized Fans are designed to keep maintenance to a minimum, some repairs will be necessary in the course of the life of the unit. Do not attempt any repairs on the unit unless you are competent to do so. Never attempt any work on the Galvanized Fans without first isolating the unit from the power and locking the isolator so that only you can turn the power back ON.

Take special care when approaching the belt or other driven components as there may be tension stored up in the system which could cause injury when released. Approach these items with care using a suitable tool rather than your hands until it is clear that the tension is released.

Before restarting the Galvanized Fans, ensure that all electrical enclosures are locked closed and all guards and other safety measures are correctly fitted.

If in any doubt, contact your dealer or Cumberland for assistance.

Safety Signs and Warnings

The following pages show you exactly where the safety signs, warnings and other decals should be placed on the Galvanized Fans. If a decal is missing, damaged or unreadable, please contact your dealer or Cumberland, a member of GSI Group, for a free replacement.

Installation Notes

To ensure the safety during installation, make all electrical connections as the final step of installation. This should be done only when the Galvanized Fans have been fully installed and all guards and covers are fixed in place. Electrical connection should be carried out only by a qualified electrical installer and should be to the relevant rules and directives in force in your region.

Installation Tools

The following are the recommended tools for assembly and installation of Galvanized Box Fans:

- 1. Cordless drill
- 2. 3/8" Drive ratchet
- 3. 1/2" and 9/16" Open end box wrench
- 4. 5/16" Nut driver bit for cordless drill
- 5. Hammer
- 6. Scratch awl (to help line up holes)
- 7. 3/8" Drive inch-pound torque wrench
- 8. 3/8" Drive 3" extension
- 9. 3/8" Drive 12 point 3/8" socket (to tighten propeller bolt)
- 10. 5/32" and 1/8" Hex key wrench
- 11. 3/16" Drift punch (to set lock collars)

NOTE: It is recommended to use anti-seize compound (not supplied) for all shaft connections.

For guidance or assistance on any issues relating to the safe use of the Galvanized Fans,

Contact:

Cumberland 1004 E. Illinois St. Assumption, IL. 62510 Phone: 1-217-226-4421

Use Caution in the Operation of this Equipment

The design and manufacture of the Galvanized Fans is directed toward operator safety. However, the very nature of a Galvanized Fan requiring electrical power and possessing moving parts does present a hazard to personnel which cannot be completely safeguarded against without interfering with efficient operation and reasonable access to components.

Continued safe, dependable operation of automatic equipment depends, to a great degree, upon the owner/operator. For a safe and dependable Galvanized Fan, follow the recommendations within this manual and make it a practice to regularly inspect the operation of the unit for any developing problems or unsafe conditions.

Take special note of the safety precautions listed before attempting to operate the Galvanized Fans.

READ THESE INSTRUCTIONS BEFORE INSTALLATION, OPERATION AND SERVICE SAVE FOR FUTURE REFERENCE

- 1. Read and understand the operating manual before trying to install or operate the Galvanized Fans.
- 2. Power supply should be OFF and LOCKED OUT for service of electrical components. Use CAUTION in checking voltage or other procedures requiring power to be ON.
- 3. Never attempt to operate the Galvanized Fans by jumping or otherwise bypassing any safety devices on the unit.
- 4. Keep the Galvanized Fans clean. Do not allow debris to collect around motors, belts, pulleys or bearings.
- 5. Use CAUTION in working around the Galvanized Fans moving parts.

This product is intended for the use in ventilation of livestock buildings only. Any other use is considered a misuse of the product.

Some edges of the product's components are sharp. Examine each product component to determine if there are any safety considerations to be taken prior to use and/or installation. Any and all necessary personal protective equipment should be worn at all times when handling, assembling, installing and operation of the product and/or its components.

Throughout this manual, guards are removed for illustration purposes only. All guards must be in place before and during operation.

Safety Sign-Off Sheet

As a requirement of O.S.H.A., it is necessary for the employer to train the employee in the safe operating and safety procedures for this fan. This sign-off sheet is provided for your convenience and personal record keeping. All unqualified persons are to stay out of the work area at all times. It is strongly recommended that another qualified person who knows the shut down procedure be in the area in the event of an emergency.

Employee Name	

2. Safety Decals

This manual describes the installation and operation for all standard production Galvanized Fans. Safety decals should be read and understood by all people in the Galvanized Fan area. If a decal has been damaged or is missing, contact Cumberland for a free replacement:

Cumberland 1004 E. Illinois St. Assumption, IL. 62510 Phone: 1-217-226-4421

Decals are identified by the "DC" part number in the bottom right hand corner of all decals.

The decal for the Galvanized Fan is shown here. The following page shows its location on the Galvanized Fans.





DC-1540: These decals are located on the bottom right hand side of the venturi on all Galvanized Box Fans. It measures 5-3/4" (14.6 cm) long x 3-3/4" (9.5 cm) wide.





SHEAR POINT

Keep hands clear of moving parts. Do not operate with guard removed. Disconnect and lockout power before servicing.

DC-995

DC-995: This decal is located on the bottom right hand side of the venturi on all Belt Drive Galvanized Box Fans. It measures 4-1/2" (11.4 cm) long x 2" (5 cm) wide.

Safety Decal Locations

This Figure 2A shows the location of the decals detailed on the Page 10.



Figure 2A

Rough in Openings

These are the exact sizes, including the protruding screw heads, for the openings for the fans. They do not include any extra clearance for installation. Any extra clearance should be added as desired to these numbers for frame size opening. Weights given are the maximum weight prior to shutter installation.

Model of Fan	Rough Opening	Maximum Weight (Less Shutter)
50" Box Fan	55-3/8" wide x 55-1/4" Tall (140.65 cm x 140.34 cm)	215 lbs. (97.7 kg)
50" Slantwall and Cone Fan	55-3/8" wide x 57-1/2" Tall (140.65 cm x 146.05 cm)	250 lbs. (95.5 kg)
36" Box Fan	40-15/16" wide x 40-1/2" Tall (103.98 cm x 102.87 cm)	115 lbs. (52.3 kg)
36" Slantwall Fan	40-15/16" wide x 42-5/16" Tall (103.98 cm x 107.47 cm)	150 lbs. (68.2 kg)
36" Slantwall Cone Fan	40-15/16" wide x 42-5/16" Tall (103.98 cm x 107.47 cm)	170 lbs. (77.3 kg)

All of the above slant fans have a flat "step" at the flange and then begin to drop at 15°, except for the 36" cone fan, which begins the 15° drop right at the flange. It's horizontal mounting materials should also be tilted to 15°.

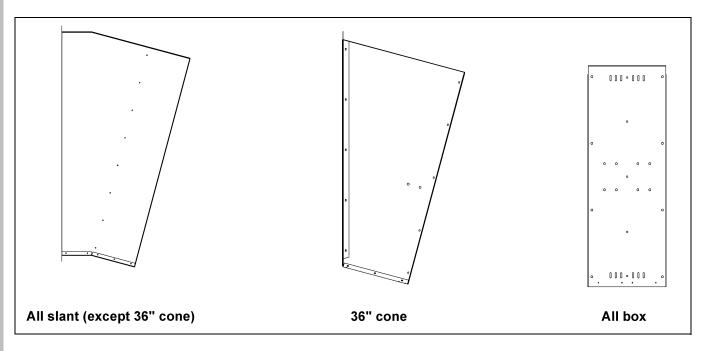


Figure 3A

Venturi/Bearing Plate/Support Strut Assembly Instructions (All Fans)

Step 1 for All Belt Drive Fans



Be careful, there are many sharp edges that can cut while assembling the Galvanized Fans. Wear protective clothing and gloves.

Use 5/16"-18 x 1/2" hex washer head bolts and 5/16"-18 flange whiz nuts for Step 1 and Step 2 on Page 14.



Figure 4A

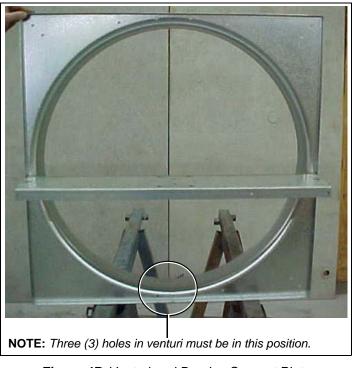


Figure 4B Venturi and Bearing Support Plate

Step 2 for All Belt Drive Fans



Bearing support plate strut



Figure 4C

Fan Housing Assembly Instructions

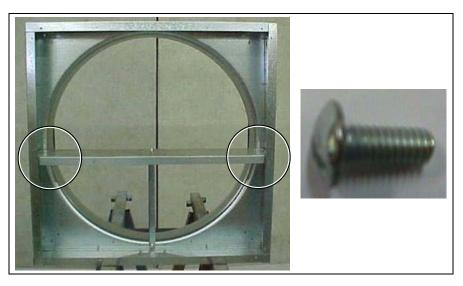
Step 3A for 36" and 50" Box Fans

NOTE: Do not overtighten type F screws or stripping of the holes and/or screws will occur.



Figure 4D

Use 5/16"-18 slotted truss head bolts and nuts for connection of bearing support plate to housing panels.





Step 3A for 36" and 50" Box Fans (Continued)

Direct drive shown for illustration purposes only.



When assembling 50" box fan, note position of these four (4) holes to the rear of the fan.

Figure 4F

Step 3B for 36" and 50" Slantwall Fans

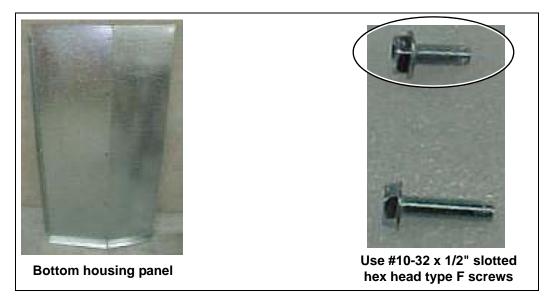


Figure 4G

Direct drive shown for illustration purposes only.



Figure 4H

Step 3B for 36" and 50" Slantwall Fans (Continued)

Direct drive shown for illustration purposes only.



Left and right hand housing side panels





Top housing panel



Figure 4I

Step 3C for 50" Slantwall Cone Fans



Use #10-32 x 1/2" slotted hex head type F screws



Top panel



Bottom panel





Left and right hand side panels



Figure 4J

Step 3C for 50" Slantwall Cone Fans (Continued)



Figure 4K

Step 3D for 36" Slantwall Cone Fans

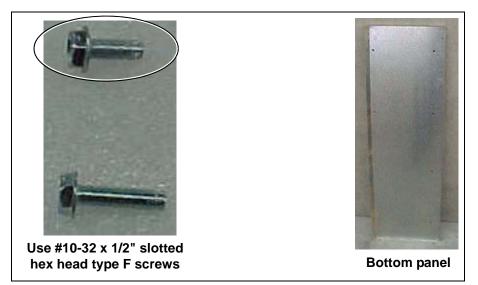


Figure 4L

Direct drive shown for illustration purposes only.



Figure 4M

Step 3D for 36" Slantwall Cone Fans (Continued)



Figure 4N

Direct drive shown for illustration purposes only.





Bearing/Drive Shaft Assembly Instructions (All Fans)

Step 4 for All Belt Drive Fans



Figure 4P

Use $3/8"-16 \times 1-1/2"$ hex flange head bolts, 3/8" washers and 3/8" nylock nuts. Do not tighten at this time. Make sure there are two (2) washers between the head of bolt and the bearing and one washer between the bearing mount plate and the nylock nut.



Figure 4Q

Step 4 for All Belt Drive Fans (Continued)

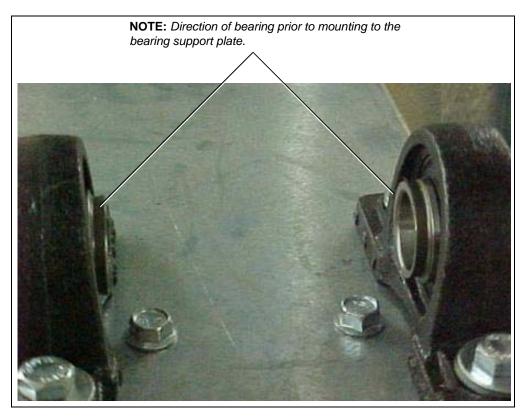


Figure 4R

Step 5 for All Belt Drive Fans

Slide shaft through bearings, propeller will be placed on turned down end of shaft (50" no turn down). Eccentric lock collars are placed between the bearings with the lock mechanism pointing toward the bearing. (See Figure 4S.)





Step 5 for All Belt Drive Fans (Continued)

Installation Tip

Align the bearings/shaft assembly by placing the sheave and propeller on the shaft. Press the sheave against the bearing support plate to ensure the bearings are square to the mount. Spin the propeller around the venturi to ensure that the propeller turns freely and is evenly spaced. Once both conditions are satisfied, tighten the bearings to the bearing support plate. Remove propeller for later assembly. *(See Figure 4T.)*



Figure 4T

Space the shaft in the bearings so that the end of the shaft protrudes about 3/4" (19 mm) beyond the bearing. Place the sheave on the shaft and leave a 3/16" (5 mm) gap between the sheave and the bearing support plate. Slide the key in the keyway engaging the sheave to the drive shaft. Tighten the set screw on the shaft to 45 inch-pounds of torque. (See Figure 4U.)

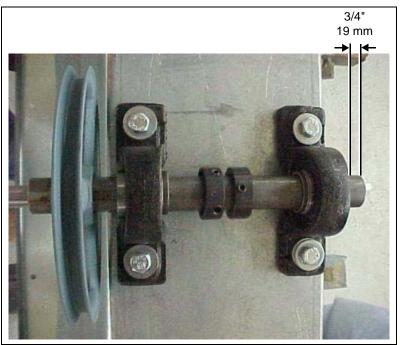


Figure 4U

Step 6 for All Belt Drive Fans

Ensure the set screws of the eccentric lock collars are not protruding into the bore of the collars. Maintaining the 3/16" (5 mm) gap between the sheave and bearing support, align the lock collars with the bearings and tighten by hand by **rotating in the direction of shaft rotation** (counterclockwise when facing the air inlet side).



Figure 4V

Insert a punch into the drift holes on the outside of the collars and tap to set the collars. Again, ensure the collars are **locked in the direction of shaft rotation** (counterclockwise when facing the air inlet side). Tighten the set screws of the collars to 25 inch-pounds of torque.



Figure 4W

Motor Assembly and Mounting Instructions

Step 7 for All Belt Drive Fans

Place the motor sheave on the motor until it is flush with the end of the motor shaft, hub on sheave faces out away from the motor. Slide the key into the keyway engaging the sheave to the motor shaft. Tighten the set screw of the sheave to 45 inch-pounds of torque.



Figure 4X

Step 8 for All Belt Drive Fans

Align holes in the bearing support plate (A) with the holes in motor bracket. Use 5/16"-18 x 3/4" hex head flange bolts and 5/16" whiz nuts to mount the motor to the bearing support plate (A).

Install the tensioner arm to the bearing support plate (A) using a 3/8" x 2" bolt and washer (B).

Place the belt on motor sheave and tensioner, matching the profile of the belt to the sheave profile. "Thread" the belt onto the larger pulley by starting the belt at the top and turning the sheave 1/3 of a turn counterclockwise to guide the belt into the groove. Make sure the belt does not come out of the sheave as you are rotating the sheave. (See Figure 4Y.)

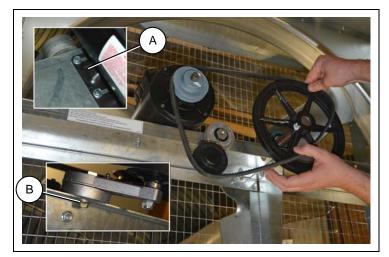


Figure 4Y

Ref #	Description		Ref #	Description
Α	A Bearing Support Plate		В	Bolt and Washer

Step 8 for All Belt Drive Fans (Continued)

Adjust the tensioner arm to the proper tension. The setting notch (C) should be aligned between the first set of adjustment notches (D). (See Figure 4Z.)

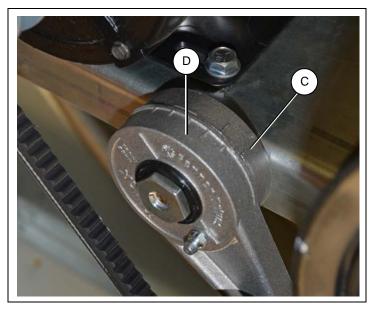


Figure 4Z

	Ref #	Description	
	С	Setting Notch	
D A		Adjustment Notch	

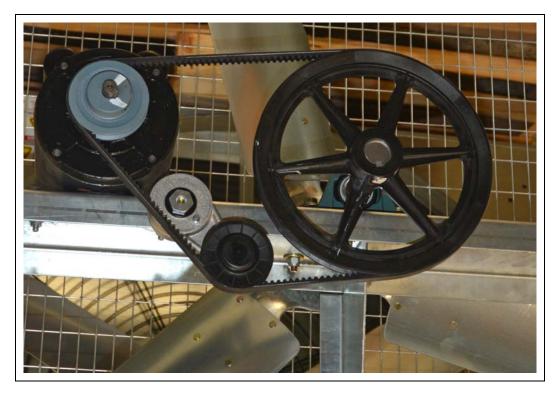


Figure 4AA Finished Belt Assembly

Propeller Installation

Step 9 for All Belt Drive Fans

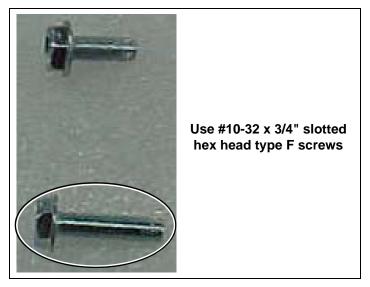
Place propeller on drive shaft until the outside of the hub of the propeller is flush with the end of the shaft. Tighten to 120 inch-pounds of torque.



Figure 4AB

Wire Mesh Guard Installation

Step 10 for All 36" and 50" Box (both sides) and Slantwall (discharge side) Belt Drive Fans





Step 10 for All 36" and 50" Box (both sides) and Slantwall (discharge side) Belt Drive Fans (Continued)

Place corner supports on corners as shown. Do not secure to housing yet.



Figure 4AD

Place screen on assembled housing, make sure all four (4) corners of the screen match up to the four (4) corners of the housing.



Figure 4AE

NOTE: *Trim the mesh on the side the motor protrudes through for box fans.*

Secure wire mesh guard and corner supports on both sides of fan with #10-32 x 3/4" hex washer head type "F" screws and 1-1/2" outer diameter washers as shown.





Cone and Guard Mounting Instructions

Step 11 for All 36" and 50" Cone Fans

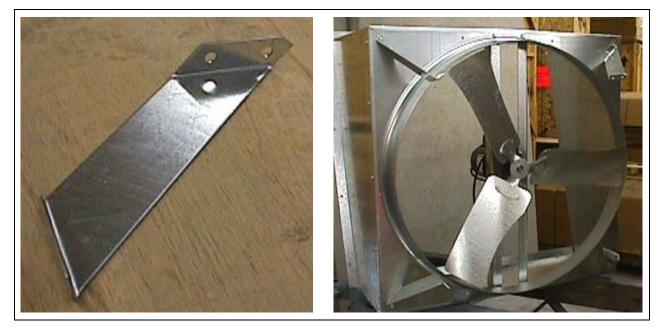


Figure 4AG

Direct drive shown for illustration purposes only.

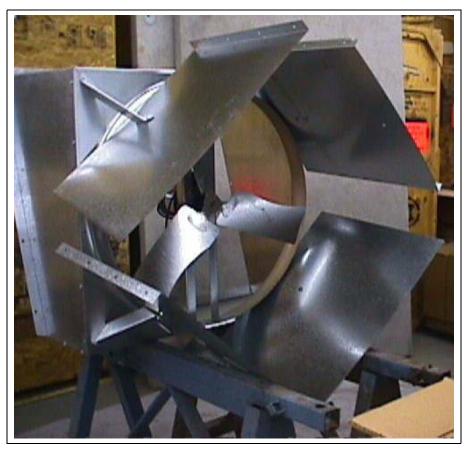


Figure 4AH

Step 11 for All 36" and 50" Cone Fans (Continued)

Direct drive shown for illustration purpose only.



Figure 4AI

Troubleshooting Guide

Symptom	Probable Cause(s)	Corrective Action	
	Defective motor bearing.	Replace.	
	Defective pillow block bearing (if applicable).	Replace.	
Excessive noise.	Damaged fan blade.	Replace blade. Recoat shaft with anti-seize lubricant.	
	Motor not securely anchored.	Secure properly.	
	Housing fasteners loose, causing housing to "oil can".	Tighten fasteners.	
	Open power supply circuit.	Replace fuse or reset circuit breaker. Check for disconnected, cut or damaged power cord.	
Fan inoperative.	Electricity turned OFF.	Contact local utility supplier.	
	Defective motor.	Repair or replace.	
	Belt broken (if applicable).	Replace.	
Insufficient airflow.	Intake or exhaust shutter jammed/clogged.	Repair/replace/clean as necessary.	
	Inlet/outlet guards clogged with dirt/debris.	Repair/replace/clean as necessary.	
	Fan blade has excessive build up of dirt.	Clean unit.	
Excessive Vibration.	Fan blade is bent or otherwise damaged.	Replace blade. Recoat shaft with anti-seize lubricant.	
	Motor/drive shaft (if applicable) is bent.	Replace.	
	Intake or exhaust shutter jammed/clogged.	Repair/replace/clean as necessary.	
	Inlet/outlet guards clogged with dirt/debris.	Repair/replace/clean as necessary.	
	Building operating static pressure too high.	Adjust air inlets to lower static pressure.	
Motor overheats and nuisance trips.	Motor has excessive build up of dirt.	Clean unit.	
המושמווטב נווףש.	Fan blade has excessive build up of dirt.	Clean unit.	
	Power supply voltage is too low.	Check line voltage at motor, verify wiring is of sufficient gauge for load and length of conductor. Check with local utility supplier for possible line problems.	

36" Belt Drive Galvanized Fan Replacement Parts List

Part #	Model	Description
13-0100R	Belt Drive	Propeller
13-0100R	Direct Drive	Propeller
16-0088	Belt Drive	Belt
15-0032	Belt Drive	Motor
15-0032	Direct Drive	Motor
13-0226	Belt Drive	Bearing
16-0045	Belt Drive	Drive Shaft
16-0014	Belt Drive	Pulley (Propeller)
1011-2638	Belt Drive	Pulley (Motor)
91-0057	Belt Drive	Tension Arm
10-0040	All	Shutter Mount Hardware

50" Belt Drive Galvanized Fan Replacement Parts List

Part #	Model	Description
13-0103RS	Belt Drive	Propeller
13-0047	Direct Drive	Propeller
16-0065	Belt Drive	Belt
15-0029	Belt Drive	Motor
15-2112	Direct Drive	Motor
13-0226	Belt Drive	Bearing
16-0057	Belt Drive	Drive Shaft
12-0493	Belt Drive	Pulley (Propeller)
16-0016	Belt Drive	Pulley (Motor)
91-0057	Belt Drive	Tension Arm
10-0040	All	Shutter Mount Hardware

Parts shown for 1 Phase, 60 Hz application.

Call for others.

GSI Group, LLC Limited Warranty

The GSI Group, LLC ("GSI") warrants products which it manufactures to be free of defects in materials and workmanship under normal usage and conditions for a period of 12 months after sale to the original end-user or if a foreign sale, 14 months from arrival at port of discharge, whichever is earlier. The end-user's sole remedy (and GSI's only obligation) is to repair or replace, at GSI's option and expense, products that in GSI's judgment, contain a material defect in materials or workmanship. Expenses incurred by or on behalf of the end-user without prior written authorization from the GSI Warranty Group shall be the sole responsibility of the end-user.

Warranty Extensions:

	Product	Warranty Period	
	Performer Series Direct Drive Fan Motor	3 Years	* 10/
AP Fans and Flooring	All Fiberglass Housings	Lifetime	* Warranty prorated from list price: 0 to 3 years - no cost to end-user
	All Fiberglass Propellers	Lifetime	3 to 5 years - end-user pays 25%
AP and Cumberland	Flex-Flo/Pan Feeding System Motors	2 Years	5 to 7 years - end-user pays 50%
	Feeder System Pan Assemblies	5 Years **	7 to 10 years - end-user pays 756 ** Warranty prorated from list price 0 to 3 years - no cost to end-use 3 to 5 years - end-user pays 509
Cumberland	Feed Tubes (1-3/4" and 2.00")	10 Years *	
Feeding/Watering Systems	Centerless Augers	10 Years *	
	Watering Nipples	10 Years *	
Grain Systems	Grain Bin Structural Design	5 Years	† Motors, burner components
Grain Systems	Portable and Tower Dryers	2 Years	and moving parts not included. Portable dryer screens included.
Farm Fans Zimmerman	Portable and Tower Dryer Frames and Internal Infrastructure †	5 Years	Tower dryer screens not included.

The Limited Warranty period is extended for the following products:

GSI further warrants that the portable and tower dryer frame and basket, excluding all auger and auger drive components, shall be free from defects in materials for a period of time beginning on the twelfth (12th) month from the date of purchase and continuing until the sixtieth (60th) month from the date of purchase (extended warranty period). During the extended warranty period, GSI will replace the frame or basket components that prove to be defective under normal conditions of use without charge, excluding the labor, transportation, and/or shipping costs incurred in the performance of this extended warranty.

Conditions and Limitations:

THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE LIMITED WARRANTY DESCRIPTION SET FORTH ABOVE. SPECIFICALLY, GSI MAKES NO FURTHER WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE IN CONNECTION WITH: (I) PRODUCT MANUFACTURED OR SOLD BY GSI OR (II) ANY ADVICE, INSTRUCTION, RECOMMENDATION OR SUGGESTION PROVIDED BY AN AGENT, REPRESENTATIVE OR EMPLOYEE OF GSI REGARDING OR RELATED TO THE CONFIGURATION, INSTALLATION, LAYOUT, SUITABILITY FOR A PARTICULAR PURPOSE, OR DESIGN OF SUCH PRODUCTS.

GSI shall not be liable for any direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profits or benefits. The sole and exclusive remedy is set forth in the Limited Warranty, which shall not exceed the amount paid for the product purchased. This warranty is not transferable and applies only to the original end-user. GSI shall have no obligation or responsibility for any representations or warranties made by or on behalf of any dealer, agent or distributor.

GSI assumes no responsibility for claims resulting from construction defects or unauthorized modifications to products which it manufactured. Modifications to products not specifically delineated in the manual accompanying the equipment at initial sale will void the Limited Warranty.

This Limited Warranty shall not extend to products or parts which have been damaged by negligent use, misuse, alteration, accident or which have been improperly/inadequately maintained. This Limited Warranty extends solely to products manufactured by GSI.

Prior to installation, the end-user has the responsibility to comply with federal, state and local codes which apply to the location and installation of products manufactured or sold by GSI.

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(revised January 2014)

This equipment shall be installed in accordance with the current installation codes and applicable regulations, which should be carefully followed in all cases. Authorities having jurisdiction should be consulted before installations are made.



1004 E. Illinois St. Assumption, IL 62510-0020 Phone: 1-217-226-4421 Fax: 1-217-226-4420 www.gsiag.com



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