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Preventive Maintenance Guide and Tips for Best Performance Axial Fans for Agriculture or Greenhouse Applications

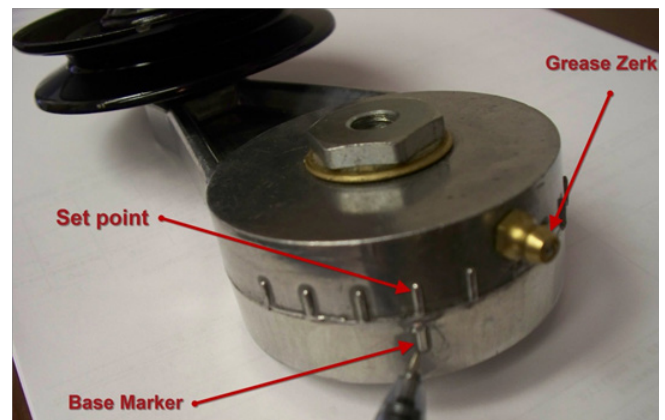
Thank you for purchasing Acme Ventilation products. Acme Fans are designed for top performance for its application range. Many factors could contribute to loss of performance through the life of this product. This document covers recommended maintenance intervals and tips to keep your Acme product performing at its best. It is our goal to insure that your fan performs at its high capacity and gives you years of satisfied service.

NOTE: All service work must be performed only after the power has been disconnected from the fan. At no time should you attempt to work on or adjust the fan while guards or shutters are removed and the fan is running or the prop is moving. By attempting to service a fan in operation, you are risking the safety of yourself and others around you. During fan service and cleaning, always wear gloves to protect your hands from possible sharp edges.

1. **Cleaning your Acme fans** – For best performance your Acme fans need to be cleaned regularly. Cleaning 4 times a year will help insure best possible airflow (more frequently if used in a dirty environment).
 - a. **Fan Motor** – It is recommended that dust accumulation on the fan motor be brushed away with a stiff bristle brush, then a light coat of Simple Green spray cleaner applied, allowing to soak for 30 seconds, and wiping away cleaning residue with a clean dry cloth. If needed, repeat this process. A clean motor will dissipate heat more effectively than a dirty motor, therefore lasting longer. At the same time, insure that the motor is mounted securely and motor bolts are tight. (NEVER use a high pressure washer on electrical devices including Totally Sealed Motors)
 - b. **Bearings/Bearing Housing** – It is recommended that the bearings housing and fan shaft NEVER be pressure washed or premature bearing failure may be induced. The soiled bearing housing should be brushed clean with a stiff bristle brush, then a light coat of Simple Green spray cleaner applied, allowing to soak for 30 seconds, and wiping away cleaning residue with a clean dry cloth. At this time, check to make sure all bolts in the bearing housing is secure.
 - c. **Propeller/ Housing/ Cone** - The prop, cone, and fan housing should have all caked dust and dirt brushed free and a light coat of Simple Green cleaner applied. Then rinsed with a lower pressure water spray, avoiding any overspray onto the motor or bearings. Make sure that all drain holes are free and clear of debris to insure proper drainage of water.
 - d. **Shutter/Damper Blades** – Care should be taken to avoid bending or damaging shutter blades during cleaning. A soft bristle brush and cloth should be used to clean dirt and dust from the shutter blades so that the shutter opens and closes freely. Shutters should NEVER be cleaned using a high pressure washer since damage will likely be induced.
 - e. During the cleaning cycle is a good time to check for any loose fasteners, if found retighten at this time.
 - f. After cleaning and washdown, let the fans run for 3-4 hours to properly dry.

2. Belt Tensioner Maintenance and Inspection

- a. After the first 8-10 hours of operation check the belt for proper alignment and tension and recheck all the bolts for proper torque. Repeat this every 500 hours or 3 months. Insure that your belt tensioner is set correctly by following the instructions located in the Acme supplied installation and maintenance guide that came with your fan.
- b. Most of the rotary belt tensioners used on Acme fans have a grease zerk to lubricate the springs in the tensioner arm. It is suggested that this zerk be greased 4 times a year. (Note grease zerk in photo)
- c. **Grease type** - Lubrimatic White Lithium Grease part number 11354 or equivalent white lithium grease meeting ISO 6743/9:1987 standard.
- d. **Grease volume** – It is recommended that 1 gram (+/- 10%) of grease be applied at each maintenance interval.
- e. **Grease gun** – the standard grease gun producing no more than 6000 psi is recommended for this application. Most dispense an average of .75 grams to 1.25 grams per stroke, but it is up to the consumer to determine the volume/stroke of the grease gun you prefer and lubricate accordingly.
- f. **Idler pulley** – During the maintenance cycle, you should also inspect the idler pulley for cracks, unusual wear in the V groove area, and bearing play. If any issues are found a replacement kit (Acme part # 993485) can be purchased from your local Acme Fan distributor. The Belt Tensioner assembly should NEVER be cleaned using a high pressure washing system.
- g. **Tensioner Adjustment** – As belts are a normal wear item, periodic replacement of belts will be required. Readjustment of the belt tensioner will be required during this process. When resetting the proper tension please adjust the tensioner arm so that the base mark lines up with the 2nd adjustment mark on the tensioner arm as shown in the photo below. (Note: Depending on fan model, your base mark may line up on the opposite side of the grease zerk) After adjustment of tensioner arm and replacement of belt, check to make sure that the arm is freely moving and not binding. Over tightening of the tensioner arm can cause binding.



3. Belt Inspection

- a. Since tension in "V" belts will drop after the initial run-in and seating process, failure to check and retension the belt will result in low belt tension and belt slippage. This slippage will result in premature belt failure and sheave damage. This slippage translates to a loss of fan performance and lower efficiency.
- b. Observing signs of unusual belt wear or damage will help troubleshoot possible drive problems. Mark or note a point on the belt, while wearing gloves, work your hands around the belt feeling or visually inspecting for any problems.
- c. Check for cracks, frayed spots, cuts, or unusual wear patterns. If any of these are found, the belt should be replaced immediately.
- d. Check the "Ride Height" of the belt in the sheave groove as shown in the picture below. A worn belt riding low in the sheave groove is the equivalent to running a smaller drive pulley and reducing your fan performance. As loss of cfm will result when using significantly worn belts.



Figure 1.
A worn fan belt riding low in the pulley reduces the effective pulley size. This belt should be replaced.



Figure 2.
A new fan belt rides high in the pulley so that the top of the belt rides just above the top of the pulley.

- b. **Sheave Inspection** – one of the greatest detriments to long-term fan performance is belt slippage due to worn belts and/or worn sheaves. This can account for as much as a 50% loss in fan performance.
 - i. Wear gloves while inspecting sheaves to protect from sharp edges. Inspect grooves for wear and nicks. Use a Gates sheave gauge (Gates part number 7401-0014) to determine if the V grooves are worn. Place the proper sheave gauge in the V groove and check for wear. A light source such as a flashlight can be used to backlight the gauge. If more than 1/32" of wear can be seen between the sheave wall and gauge, the sheaves are worn and should be replaced.

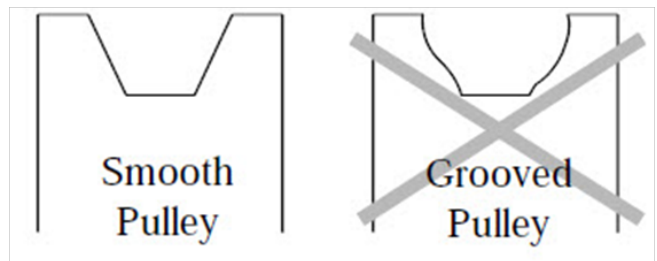
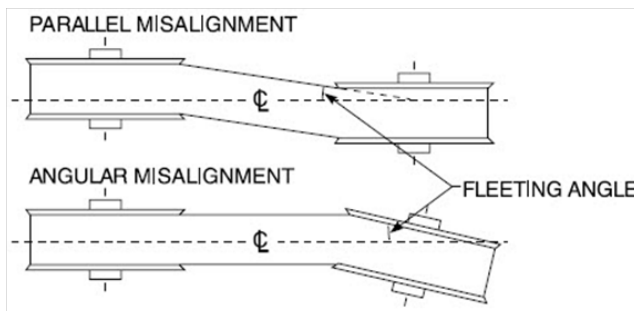


Don't be misled by shiny grooves, this is often an indication that the sheaves are polished due to heavy wear. Inspect the sheave grooves for rust or pitting, if found the sheaves should be replaced.

4. Sheave Alignment and Inspection

– during the routine belt inspection is a good time to check for proper sheave alignment.

- a. Alignment – There are 2 possible causes for sheave misalignment. See diagram
 - i. **Parallel misalignment** – Sheaves are not properly located on the shafts. **CORRECTIVE ACTION:** Loosen and reposition one or both sheaves until properly realigned.
 - ii. **Angular misalignment** – The motor shaft and driven machine shaft is not parallel. **CORRECTIVE ACTION:** Correct alignment adjusting the motor shaft into alignment with the driven shaft.



5. **Sheave adjustment** – On belt drive models equipped with adjustable pitch motor pulleys, the pitch setting made at the factory operates the fan the maximum safe speed and load for the motor. Do not close the motor pulley to increase fan speed as this will overload the motor causing damage to the motor or thermal overload switch. The sheave may be opened reducing the fan speed and decreasing cfm output. If further information is required contact your nearest Acme Engineering representative.