



TROUBLE SHOOTING GUIDE

Issue	Possible Cause	Corrective Action
No Air Flow	Broken belts or Drive Coupling Non-operating blower(s) turning Inlet vacuum on a pressure system Pipe leak	<ul style="list-style-type: none"> > Check for cause and replace > Check valve missing or failed / replace or add > In-correct rotation requiring a reverse of motor wiring > Confirm is operating by: Removing drain plug from discharge silencer to check for air flow or slowly close isolation BFV until PRV opens to confirm blower is operating. > Check motor amp draws against other units and O&M > Tighten connection or replace gasket
Blower fails to Rotate when motor is under power	Rust in blower impeller chamber Motor winding damaged Improper motor wiring connections	<ul style="list-style-type: none"> > Turn off power and proceed to clean impeller chamber > Have a qualified electrician inspect motor for damage > Have a qualified electrician inspect motor connections
Blower exceeds maximum allowed vibration	Loose mounting bolts Bearing failure Loose sheaves Harmonic vibration in base Foundation base is not secured Insufficient V-belt tension Insufficiently supported piping Bolts holding blower to base are broken	<ul style="list-style-type: none"> > Turn off power and tighten bolts > Feel for excessive shaft play. Replace bearing / rebuild blower > Make certain V-belt sheaves are installed as close as possible face of the blower and motor. Align and tighten sheaves per O&M Manual > Change blower speed > Replace or re-anchor foundation > Set proper V-belt tension > Install more pipe supports > Check blower and base for soft foot before replacing bolts
Impeller end or tip drag	Insufficient assembled clearances Case or frame distortion Excessive operating pressure Excessive operating temperature	<ul style="list-style-type: none"> > Turn off power and correct clearances > Check mounting and pipe strain > Remove cause > Remove cause





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Excessive blower temperature	<ul style="list-style-type: none"> Too much oil in gear case Too low operating speed Dirty air filter Clogged filter on silencer or piping Excessive pressure differential Worn impeller clearances Internal contact Inlet air flow restricted Discharge air flow restricted 	<ul style="list-style-type: none"> > Turn off blower and reduce oil level to proper amount > Increase blower speed > Clean or replace air filter > Remove obstruction > Reduce pressure differential across the blower > Replace impellers > Looked for failed bearings / excessive pressure > Inspect for obstruction, closed valve and clogged filters > Inspect for obstruction, closed valve and clogged diffusers
Low air flow	<ul style="list-style-type: none"> Belts slipping / insufficient V-belt tension Pipe Leak Worn blower clearances Dirty air filter 	<ul style="list-style-type: none"> > Turn off power and tighten belt tension > Correct > Re-establish proper clearances > Clean or replace air filter
Excessive bearing or gear wear	<ul style="list-style-type: none"> Improper lubrication 	<ul style="list-style-type: none"> > Correct lubrication level and replace dirty oil
Loss of lubricant (oil pool on pad / floor under the blower)	<ul style="list-style-type: none"> Head plate, gear case or drive cover vents plugged Worn seal Loose oil cover Drain plug line loose or missing Gasket failure Too much oil in blower Wrong oil is used Greases with different thickeners used 	<ul style="list-style-type: none"> > Turn off power and clean vents > Replace seals > Check tightness of oil cover bolts > Check tightness / replace > Replace gasket > Drain excessive oil > Change to recommended oil and run until blower is at normal operating temperature drain and refill > Replace bearings and clean bearing pockets





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Motor will not start	Usually caused by line trouble such as single phasing at the starter Motor wired for WYE start WYE run	<ul style="list-style-type: none"> > Check source of power, check overloads, fuses, controls, etc. > Rewire connections > On VFD controlled motor, check for fault reading
Motor overload trips	Wrong overload setting or size Wrong motor wiring connections Pressure relief valve open Blower will not rotate Discharge pipe blocked Inlet filter clogged Motor failure Starter failure	<ul style="list-style-type: none"> > Change setting. Use correct size overload > Rewire connections > See pressure relief valve trouble shooting in O&M > See blower trouble shooting in O&M > Remove obstruction > See inlet trouble shooting in O&M > Replace motor / contact Universal Blower Pac > Replace starter > On VFD controller motor, check for fault reading
Excessive motor humming	High voltage Eccentric air gap	<ul style="list-style-type: none"> > Turn off power – have qualified electrician check line connections > Check for bearing failure
Motor bearing overheating	Misalignment Excessive belt tension Excessive end thrust Excessive grease in bearing Insufficient grease in bearing Dirt in bearing	<ul style="list-style-type: none"> > Turn off power and check and align motor and driven equipment > Reduce belt tension to proper point for load > Reduce end thrust from driven machine. Check belt alignment > Remove grease until cavity is approximately 3/4 filled > Add grease until cavity is approximately 3/4 filled > Clean bearing cavity and bearing. Repack with correct grease until cavity is approximately 3/4 filled





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Motor over heating	Overload Single Phasing Improper ventilation Unbalanced voltage Rotor rubbing on starter Over or under voltage Open stator winding Ground winding Improper connection	<ul style="list-style-type: none"> > Turn off power and compare actual amps (measured) with nameplate rating > Locate and remove source of excessive friction in motor or load > Reduce load or replace with motor of greater capacity > Check current at all phases (should be approximately equal) to isolate and correct problem > Check external cooling fan to be secure air is moving properly across cooling fins. Clean off any dirt build up on motor > Check voltage at all phases (should be approximately equal) to isolate and correct problem > Check air gap clearance and bearings and tighten "thru bolts" > Check input at each phase to motor > Check stator resistance at all three phases for balance > Perform dielectric test and repair as required > Inspect all electrical connections for proper termination, clearance, mechanical strength and electrical continuity (refer to motor lead connection diagram on motor name plate)
Excessive motor vibration	Bearing failure Soft foot Misalignment Rubbing between rotating parts and stationary parts Rotor out of balance Loose mounting bolts	<ul style="list-style-type: none"> > Have bearing replaced > Correct with shims > Turn off power, check and align motor and driven equipment > Isolate and eliminate cause of rubbing > Have rotor balanced, checked and repaired > Tighten bolts and check for soft foot
Excessive motor Noise	Foreign material in air gap or ventilation opening	<ul style="list-style-type: none"> > Turn off power and remove rotor and foreign material. Reinstall rotor and check insulation integrity. Clean ventilation openings





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Motor growling or whining	Bad bearing	<ul style="list-style-type: none"> > Turn off power and clean all grease from cavity and replace bearing > Re-pack with proper grease until cavity is approximately 3/4 full
V-Belt(s) broken	Belts worn out from normal use Belt tension too high Sheaves not aligned	<ul style="list-style-type: none"> > Turn off power and replace all V-belts. Re-align per O&M > Set proper belt tension and check > Set proper alignment
V-Belt(s) flapping	Low belt tension	<ul style="list-style-type: none"> > Turn off power and reset belt tension. Belts should be same type, Manufacture, lot number and age. Re-align
Pressure relief valve (PRV) venting to atmosphere	Discharge air flow restricted Valve spring failure (if spring loaded) Air flowing directly into the valve	<ul style="list-style-type: none"> > Check pressure gauge reading and if higher than normal system pressure, turn off power and inspect for obstruction, closed valve and clogged diffusers. If lower than normal system pressure turn off power and replace relief valve. > Replace valve > Move the valve to the side of the air flow
Cracked / Broken Components, Housings, Mountings, Fasteners	Improper maintenance Improper installation Loose mounting bolts	<ul style="list-style-type: none"> > Turn off power and replace broken part > Check for jack nuts on anchor bolts and remove if found > Tighten bolts





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Inlet restriction more than 13" inches of water column vacuum on pressure units	Dirty filter element Obstruction in inlet Frozen filter element	<ul style="list-style-type: none"> > Turn off power and clean element > Look for obstruction > If below 30 degrees F, humidity from a lake or process can form hoarfrost inside the housing
Considerable change in sound level and or tone	LOUD HISS / air leak Silencer(s) cracked Excessive pressure Cyclic – impeller(s) hitting. Rust spot in blower casing head plate Constant – blower impellers hitting. Worn bearings Out of timing Worn timing gears Blower or motor bearing	<ul style="list-style-type: none"> > Turn off power and inspect piping, silencers, and joints > Install more pipe supports and weld cracks > Correct any pipe misalignment, remove pipe stress from silencers > Check and remove jack / leveling nuts under base or silencer feet > Tighten anchor bolts and weld cracks > Conduct vibration level tests while changing variable speed frequency speed. Lock out high vibration RPM's and weld cracks > Reduce to manufacture's recommended pressure > Clean impeller chamber > Replace bearings and make sure V-belts sheaves are installed as close as possible to face of the blower and motor > Retime blower. Contact Universal Blower Pac > Replace bearing(s) > Replace bearing(s) Contact Universal Blower Pac > Erratic improper mounting of pipe strain > Check mounting alignment and relieve pipe strain

