Troubleshooting Guide

Symptom	Possible Cause	Solution
The compressor is working, but no air is supplied to the discharges.	The auto-sync switch is not in the correct position.	• Make sure that the air pressure produced in unload mode is between 25 to 40 psi. • Make sure that the air pressure produced in auto mode is 50 psi or more and changes with water pressure. • Make sure that the air pressure produced in fixed mode is between 145 to 150 psi.
	The air discharge solenoid is not working.	Verify that the air discharge solenoid has power and is operational—repair or replace the solenoid.
	There is a leak in the air solenoid or in the tubing between the solenoid and discharge.	Repair or replace the leaking components.
	The air check valve is defective or mounted backwards.	Replace the air check valve or mount it correctly.
	The trim valve is out of adjustment.	Adjust the trim valve.
	The minimum pressure valve is stuck.	• Disassemble and clean the minimum pressure valve, then assemble the minimum pressure valve with moly grease. • Replace the minimum pressure valve.
	The air lines were plumbed prior to the discharge valve seal.	Relocate air lines to the discharge side of discharge valve.
	The compressor speed (rpm) is too low.	Increase the compressor speed (rpm).
The air supply is insufficient.	The air lines are the wrong size.	Replace the lines with the correct size.
	The minimum pressure valve is restricted.	Clear any debris hindering valve operation.
	The throttle valve is closed (if the system uses a throttle valve to control air flow).	Make sure that the throttle valve is open and properly adjusted.
The system is functional, but the pressure gauge is not indicating the correct pressure.	• The gauge is malfunctioning. • The air line has detached or is leaking. • The air line is restricted.	• Check the components for air leaks. • Reattach, repair, or replace the malfunctioning components. • Make sure that the air line is not kinked or obstructed—clear any obstructions.
Air pressure is produced in fixed mode, but no pressure is produced in auto mode.	• The balance valve is malfunctioning. • Water is not being supplied to the balance valve.	• Make sure that the balance valve tubing is installed properly. • Make sure that the balance valve tubing is not leaking, kinked, or obstructed—clear any obstructions.
	The balance trim valve is closed.	Make sure that the trim valve is open and properly adjusted.
Air pressure is produced in auto mode, but it remains at the fixed pressure.	The balance valve is malfunctioning.	• Make sure that the balance valve tubing is installed properly. • Make sure that the balance valve tubing is not leaking, kinked, or obstructed—clear any obstructions.
	The balance trim valve is closed.	• Make sure that the trim valve is open and properly adjusted. • If the trim valve is already open, make sure that it is not obstructed—clear any obstructions.

Symptom	Possible Cause	Solution
The air discharge pressure is too high.	The red auto-sync tube has detached or is leaking.	Reattach, repair, or replace the tubing.
	The trim valve is out of adjustment—the air inlet trim valve is too far open, the balance trim valve is closed.	Adjust the trim valve.
	The PMC valve is out of adjustment.	Adjust the system to approximately 150 psi in fixed mode.
The system is overheating (air/oil cooling).	The electric cooling fan is malfunctioning.	• Make sure that the fan control wiring and motor are not damaged—repair or replace damaged components. • Make sure that no fuses or breakers are blown or tripped—replace or reset blown fuses and breakers.
	Not enough air is flowing through the cooler.	• Make sure that there is no debris obstructing the cooling fins on the fan—clear any obstructions. • Make sure that there is adequate space in front of and behind the cooler for air to flow through the fan. • Repair or replace the cooler.
The system is overheating with adequate flow to the cooler (liquid shell/tube cooling).	The compressor oil level is too low.	• Add the appropriate amount of oil—the proper oil level is halfway up the sight window when the apparatus is on level ground. • Make sure that the lines are not kinked or obstructed—clear any obstructions. • Replace the oil filter.
	The temperature sending unit and/or temperature gauge is malfunctioning.	• Check the wire connections at the sending unit. • Make sure that the wiring is not damaged or corroded—repair or replace any damaged or corroded wiring. • Make sure that the components are not malfunctioning or corroded—repair or replace worn or corroded components.
	The water being recirculated through the system has become saturated with heat.	Introduce cool water to the tank or stop operation until the system is no longer overheating.
	The cooler is partially restricted.	Check the cooler for debris—clear any debris hindering the flow and determine where debris entered the cooler.
	The wye strainer or panel strainer is plugged with debris.	Clean the wye strainer or panel strainer.
	There is a hole in the wye strainer.	Replace the wye strainer.
	There is a buildup of material in the cooling tubes.	Clean the cooler as needed and clear any obstructions in the tubing.
The air flow meter is not reading correctly (stuck at 0 cfm).	The magnetic coupler has decoupled.	Turn the air flow off and then on to reset the air flow meter.
	There is debris on the magnet.	Disassemble and clean the magnet, then assemble the magnetic coupler.
	The magnet is loose and sliding off of the piston.	Remove the magnet, then securely attach the magnet to the piston.
	The air flow meter is malfunctioning.	Replace the air flow meter.
The air flow meter is not reading correctly (stuck at a high cfm).	The magnetic coupler has decoupled.	Allow excess air (pressure) in the compressor to bleed off, then turn the air flow off and then on to reset the air flow meter.
	The air flow meter is malfunctioning.	Replace the air flow meter.

Symptom	Possible Cause	Solution
The oil consumption is high.	The compressor oil level is too high.	Remove the appropriate amount of oil—the proper oil level is halfway up the sight window when the apparatus is on level ground.
	The compressor oil is not suitable for your system.	Switch to low- or non-foaming compressor oil.
	The separator filter is damaged.	Replace the separator filter.
	There is water in the separator filter.	Remove the water or replace the separator filter.
	An incompatible separator filter is being used.	Replace the separator filter with another separator filter from the factory-recommended brand.
	Air flow exceeds the system's cfm.	• Check the maximum cfm of the system and test again. • Lower the engine speed and flow CAFS to relieve pressure. • Replace the separator filter.
	The scavenge tube is restricted.	Make sure that the tube is not kinked or obstructed—clear any obstructions.
	The scavenge tube is sitting too high in the separator filter.	Adjust the height of the scavenge tube.
	There is an oil leak in the system.	Repair or replace the leaking components.
The engine stalls when the compressor is engaged.	The compressor was engaged while under load.	Allow the air (pressure) in the compressor to bleed off before engaging the compressor.
	The compressor is flooded with oil.	Allow the air (pressure) in the compressor to bleed off, then start the compressor and flow air.
	The engine horsepower was underrated.	Increase the engine speed (rpm) before engaging the compressor—do not engage the compressor when the engine speed is over 1000 rpm.
	The auto-sync system is in fixed mode.	Engage the compressor in auto or unload mode, then switch to fixed mode.
	The compressor oil level is too low.	Add the appropriate amount of oil—the proper oil level is halfway up the sight window when the apparatus is on level ground.
	The compressor oil level is too high.	Remove the appropriate amount of oil—the proper oil level is halfway up the sight window when the apparatus is on level ground.
	The compressor is locked up.	Replace the compressor.
	The sump is positioned too high above the compressor.	Lower the sump or install a check valve into the oil line between the oil cooler and compressor.
	There is a dome on the compressor discharge hose.	Reroute the hose per the requirements of your application.
The compressor is locked up.	The oil level is too high and the compressor is flooded.	Remove the appropriate amount of oil—the proper oil level is halfway up the sight window when the apparatus is on level ground.
	There was a sump fire.	Check the system and repair the damaged components. Contact Waterous for more information.
	The oil level is low or there is no oil.	• Add the appropriate amount of oil—the proper oil level is halfway up the sight window when the apparatus is on level ground. • Check the system and repair the damaged components. Contact Waterous for more information.

Symptom	Possible Cause	Solution
The air pressure is appropriate but the system produces poor quality foam.	The foam system has not been calibrated or is out of calibration.	Make sure that the foam system has been calibrated—recalibrate the system.
	You are using a wetting agent, not foam concentrate.	Use foam concentrate rated for CAFS.
	The foam proportioning control is too low.	Increase the amount of concentrate to the manufacturer's recommended percentage.
	The air supply is restricted.	Make sure that the lines are not kinked or obstructed—remove any obstructions.
	The air/water volume was not adjusted properly.	Adjust the air/water volume to achieve the proper mixture for foam.
	The air/water pressure is not balanced.	Adjust the trim valve.
	The foam proportioning control is too low or disabled, or the foam tank is empty.	Make sure that the proportioner is turned on, the foam supply valve is open, the foam tank has concentrate, the wye strainer is clear, and the supply line is connected to the injector.
The foam pump is disabled and there is foam in the water system.	Foam concentrate was poured into the on-board water tank.	Flush the tank and pump with clean water, then refill.
	The foam manifold drain line is not isolated from the water drain lines.	Isolate to a separate drain valve.
	The cooler line is plumbed from the foam manifold.	Relocate the cooler line to the discharge side of the fire pump.
	The foam concentrate inject check valve is defective.	Repair or replace the check valve.
	There is a leak between the water and foam tanks.	Repair or replace the tanks.
	The dry vacuum test forces foam concentrate into the foam manifold.	Set the proportioner to flush during the test.
Water is in the compressor oil/air.	The air check valves are malfunctioning.	Repair or replace the check valves.
	Check valves were not installed on the discharges.	Install check valves on the discharges.
	Condensation has built up in the oil/air mixture.	Flow air once per week at a minimum, more often if operating in high humidity.
	The system was exposed to cold temperatures without the oil cooler being drained.	Test the oil cooler for internal leaks from the water side to the oil side—replace the cooler.
The air flow meter is not reading correctly.	The magnetic coupler has decoupled.	Turn the air flow off and then on to reset the air flow meter.
	The meter is malfunctioning.	Replace the air flow meter.

Symptom	Possible Cause	Solution
The safety pop-off valve is opening at a low pressure or opening repeatedly.	The auto-sync system is out of balance.	Adjust the auto-sync system—make sure to not open the compressor trim valve more than 3 turns.
	A sump fire damaged the pop-off valve.	Check the system for other damaged components, then replace the pop-off valve.
	The trim valve or inlet is completely open.	Adjust the trim valve.
	The red tube circuit has detached or is leaking.	Reattach, repair, or replace the red tubing.
	The black tube circuit is restricted.	Make sure that the black tubing is not kinked or obstructed—clear any obstructions.
	Operating in high humidity has trapped water vapor in the compressor oil.	Operating the system at the boiling point of water allows the water vapor to escape as steam.
The bleed-down time seems too long during system operation.	The bleed-down time varies between systems.	If the auto-sync system is working properly and the compressor output is within spec, the bleed-down time is normal.
	The trim valve or inlet is too far closed.	Adjust the trim valve.
	The air inlet trim valve is restricted.	Clear any debris hindering the trim valve operation.
The bleed-down time seems too long during system shutdown.	The bleed-down time varies between systems.	If the auto-sync system is working properly and the compressor output is within spec, the bleed-down time is normal.
	There is a plugged restrictor jet at the air inlet trim valve tee.	Remove and discard the restrictor jet at the tee fitting.
	The green/gray air-brake tube is restricted.	Make sure that the green/gray tubing is not kinked or obstructed—clear any obstructions.
	The shuttle valve is stuck.	Disassemble and clean the shuttle valve, then install it back into the PMC. ***Note:*** *Because it is easy to reverse the shuttle valve connections, make sure to note how the shuttle valve is connected during disassembly.*
The clutch is smoking.	The auto-sync system is engaged in the wrong mode.	Engage the system in auto or unload mode.
	The clutch solenoid has an air leak.	Repair the air leak or replace the solenoid.
	The clutch disc is contaminated.	Clean or replace the clutch disc.
	The clutch is engaged at a high engine speed.	Only engage the clutch at a lower engine speed.
	The clutch is engaging the system when the compressor has not had adequate bleed-down time.	Allow the air (pressure) in the compressor to bleed off before engaging the compressor.
	The air supply for the clutch does not have an isolated air line.	Plumb an air line exclusively for clutch operation.

Symptom	Possible Cause	Solution
The discharge hose is shaking (slug flow).	The foam proportioner is on, the setting is correct, and the tank has concentrate, but it is not providing foam solution.	Refer to foam proportioner instructions for detailed calibration and troubleshooting instructions.
	Foam concentrate is not being injected into the foam manifold.	Make sure that the foam system is turned on.
	The discharge has low water flow and the foam concentrate is not being injected into the foam manifold.	• Increase water flow. • Raise the foam percentage. • Make sure that the flow meter is the correct size. • Make sure that the foam system has been calibrated—recalibrate the system.
	Poor quality foam concentrate is being used.	• Make sure that the foam system is calibrated correctly. • Raise the foam percentage until slug flow stops.
	The wye strainer is plugged with debris.	Clean the foam tank and wye strainer, then open the foam concentrate shut-off valve.
	The foam concentrate shut-off valve is closed.	Open the shut-off valve.
	The foam concentrate inject check valve is in the bypass position.	Move the check valve to the inject position.
The compressor is producing no air pressure.	The clutch is not engaging.	• Make sure that the clutch is operating properly—check air clutch systems for leaks. • Make sure that the *OK TO PUMP* light is illuminated. • Check the wire connections at the clutch or PTO. • Make sure that the wiring is not damaged or corroded—repair or replace any damaged or corroded wiring. • Make sure that the PTO is not malfunctioning—repair or replace any damaged components.
	The auto-sync system is not engaged in fixed mode.	• Make sure that the air pressure produced in unload mode is between 25 to 40 psi. • Make sure that the air pressure produced in auto mode is 50 psi or more and changes with the water pressure. • Make sure that the pressure produced in fixed mode is between 145 to 150 psi.
The compressor is producing low air pressure.	The clutch is not engaging.	• Make sure that the clutch is operating properly—check air clutch systems for leaks. • Make sure that the *OK TO PUMP* light is illuminated. • Check the wire connections at the clutch or PTO. • Make sure that the wiring is not damaged or corroded—repair or replace any damaged or corroded wiring. • Make sure that the PTO is not malfunctioning—repair or replace any damaged components.
	The auto-sync system is not engaged in fixed mode.	• Make sure that the air pressure produced in unload mode is between 25 to 40 psi. • Make sure that the air pressure produced in auto mode is 50 psi or more and changes with the water pressure. • Make sure that the pressure produced in fixed mode is between 145 to 150 psi.