

Field Troubleshooting Guide

VIP4Air

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Revision 1.0

Date: July 23, 2026

Revised by: MM

Field Troubleshooting Guide

Introduction

This guide will walk you through identifying, diagnosing, and resolving alarm codes displayed on the Dropsa VIP4Air series. The diagnostic procedures and flowcharts contained within this document are applicable to air-oil lubrication applications.

The content within this guide is based on the official Dropsa VIP4Air Operation Manual, supplemented with expanded technical explanations and diagnostic flowcharts to facilitate more thorough issue identification and resolution.

1. Safety & Escalation Notice

Important: If you are in any doubt about the correct solution to a problem, do not dismantle parts of the VIP4Air. Contact Industrial Autolube for technical assistance.

2. Diagnostic Flow

- Step 1. Check VIP** Confirm running, display lit, no low-level alarm. Read any active code (5. VIP4Air Alarm Code Reference)
- Step 2. Check Flow sensors** Check for the green blinking lights on the flow sensors. There should be a couple of flashes after pressing the reset button, then another flash after a successful cycle.
- Step 3. Confirm oil flow** in the nylon lube lines with a flashlight at the VIP
- Step 4. Confirm oil flow** at the lube point with the spray orifice aimed at a piece of paper, cardboard or other material. (fine mist)

For more details, please see section 6. Detailed Troubleshooting Steps

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3. A Note on Contamination

The single most common cause of failure in any automated lubrication system is contamination. Due to the precision manufacturing tolerances of these components, which exceed those of standard hydraulic components, the introduction of foreign debris can result in accelerated wear, premature component failure, mechanical jamming, and the generation of false or recurring alarm codes.

Proper lubricant handling and strict cleanliness standards must be always maintained. All lubricants must be introduced exclusively through the designated fill ports provided for the specific application. Failure to do so risks introducing contamination directly into the system and may result in significant damage.

4. VIP4Air Manual References

The following sections of the official Dropsa VIP4Air Operation Manual are directly referenced throughout this guide.

Section	Title	Pages
6.7	Electrical Connections	6
7.3	Regulation	7
8	Troubleshooting	9 - 10

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5. VIP4Air Alarm Code Reference

Coded output	Code	Alarm Name	Description	Remedy
1	A PF	Alarm Pump Fault	The flow sensor has not detected the correct dose	Prime cycle, confirm oil delivery from outlet, flow sensor defective (replace)
2	A AH	Alarm Air High	Air pressure too high (could be a plugged lube line)	Check for plug in line, and confirm settings
3	A AL	Alarm Air Low	Air pressure too Low (could be a broken lube line)	Check for line integrity, and confirm settings
4	A LL	Alarm Low Level	Low lubricant level in reservoir	Refill with clean lubricant
5	A PE	Alarm Pre-cycle	No pre-cycle reading	Treat like A PF

Key Button Sequences

Action	Key Combination
Enter Prime mode	MODE + ↓ (hold 10 sec)
Freeze pressure display	↑
Freeze time display	↓
Enter programming mode	Hold MODE (~5 sec) → P-05
Step through parameters	Press MODE repeatedly
Adjust pressure setpoint	↑ / ↓ arrows once on AH/AL screen
Save changes	Scroll through entire parameter list to end

Terminal Reference (Alarm Connector)

Terminal	Function
1	0V- (DC output from converter)
2	24V+ (DC output from converter)
5	Alarm N.O.
6	Alarm Common
7	Alarm N.C. (recommended — has trace for line integrity check)

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5. General Troubleshooting

Problem	Possible Cause	Remedial Action
VIP does not power on	Power missing	Confirm 24 VDC is present at input, or 120 VAC present at HDR-60-24 converter input (Terminal 3 = N, Terminal 4 = L)
	Wrong voltage	Confirm supply voltage matches ID sticker on front of oil tank
	Converter voltage	Verify HDR-60-24 is outputting 24 VDC to Terminal 1 (24V+) and Terminal 5 (0V/-)
VIP sending persistent alarm to PLC	Startup verification still in progress	Allow full 15–20 seconds for VIP4Air to start, check, confirm, and clear all monitored components
	Alarm circuit breakage	Confirm wiring uses Terminal 6 (COM) and 7 (N.C.)
	A monitored component has an actual fault	Do NOT start the arbor. Investigate flow sensor base green LEDs. Check for an unlit flow sensor
No arbor shutdown on alarm	PLC logic	Any physical alarm at the input must stop infeed, clear the sawbox, and initiate fatal shutdown. DO NOT power cycle the VIP on alarm.
Alarm code missing after fault	VIP unit power cycled	Codes are only retained while the unit remains powered.
Pump Fault	Flow sensor failure	Clean and/or replace flow sensor (section 6)
	Mini-pump failure	Replace mini-pump (section 6)
Air High	Vent or hose plugged	Remove plug, replace lines if needed
Air Low	No spray orifice or hose breakage	Replace lines, replace spray orifice, confirm air supply pressure
Display not updating	Normal function	Time and pressure alternate every ~5 seconds. Check if ↑ key was pressed (freezes pressure display) or ↓ key was pressed (freezes time display). Confirm with indicator light

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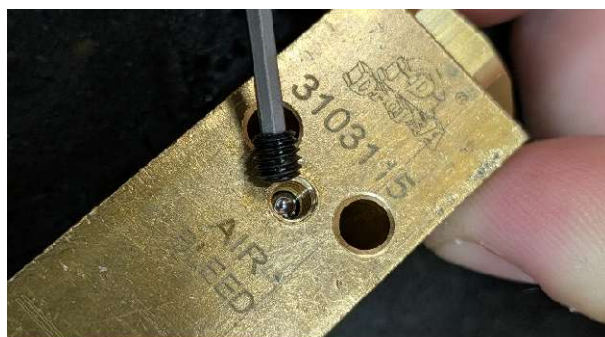
6. Detailed Troubleshooting Steps

Priming Minipumps

1. Run **Prime mode** (MODE + ↓ held 10 sec, 10 min duration) to purge air
2. Oil will travel through the nylon tubes usually after 4-5 minutes of running the purge. This can be confirmed with a flashlight behind the nylon tube.



3. To speed up purging, the set screw on the mini-pump can be removed. There is a small steel ball behind the set screw that **must not** be lost.



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A-PF (Pump Fault)

Flow sensor Failure

Please note: The green LEDs can blink differently per flow sensor. This includes the number of flashes as well as the frequency. If they flash at minimum once per cycle, they are operational.

Symptoms:

1. No green LED activity on power-up or during any cycle
2. Mini-pump is cycling normally, oil is visibly present and moving in the nylon tube, but LED never blinks

Diagnostic Steps:

1. Confirm mini-pump is cycling (piston moving, oil visibly pulsing in tube).
2. Confirm oil is reaching the lube point (check tube for oil presence/movement).
3. Rule out wiring: check the electrical bridge connector between this flow sensor base and the adjacent base/central unit — reseal and inspect for damage before condemning the sensor.
4. If wiring checks out and LED still shows no activity → confirmed flow sensor failure.



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Mini-pump piston not moving, or moving slowly

Causes:

1. Water contamination in the air supply — moisture in the compressed air line enters the pneumatic actuator and causes the piston to hydrolock.
2. Internal oil bypass due to flow sensor blockage — a blocked/failed flow sensor can cause oil to back up internally into the mini pump, leading to lock-up.

Diagnostic Steps:

1. Confirm piston is not moving. Manually try to cycle the piston by hand. If the piston does not move easily still, replace the mini-pump.
2. Check air supply quality:
 - Inspect air line filter/dryer (if equipped) for moisture or contamination.
 - Drain any visible condensation from air supply lines/filters.
3. Check for flow sensor blockage:
 - If the affected flow sensor base's flow sensor is also found to be blocked/faulty, this may have caused oil to back up and lock the pump.
 - Replace **both** the flow sensor and the mini-pump in this case.
4. Confirm hydrolock is not a one-off. If hydrolock recurs on this or other lube points shortly after replacement, escalate the air supply moisture issue.

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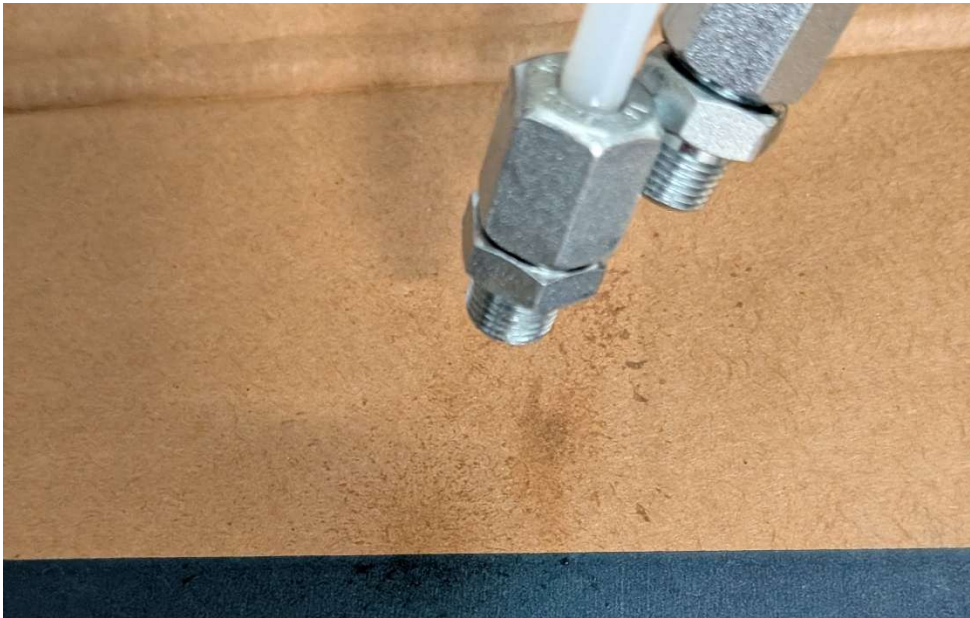
Mini-pump worn

Symptoms:

1. Less oil visible in the nylon tube compared to other lube points on the same system
2. Typical service life: 2–3 years
3. Flow sensor may sense a cycle after priming, and then not receive the next cycle signal.

Diagnostic Steps:

1. Visually compare oil delivery volume in this line's nylon tubing against 2–3 other lube points on the same unit.
2. Check maintenance records/install date. If pump is approaching or past 2–3 years in service, wear failure is the most likely explanation.
3. Confirm this is not a blocked line issue instead (see Troubleshooting Section for AH/AL pressure alarms). A wear-failed pump will show reduced flow/blinks but should NOT show abnormal air pressure spikes.



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A-AH / A-AL (Air High/ Air Low)

High/Low pressure alarm after bearing change

Cause: High – vent is plugged, Low – Lube line and orifice not installed.

1. Do not change air settings or regulator until the vent and lube lines have been confirmed.
2. Verify lube line has air coming out
3. Verify lube line is reconnected to the bearing with spray orifice
4. Verify exhaust vent on the arbor has air out flow
5. Check pressure and alarm settings on the main controller.

Nuisance high/low pressure alarms during normal operation

Cause: AH (high) and AL (low) setpoints too close to normal operating pressure.

1. Set normal operating pressure via red knob on regulator (typically ~1.2 Bar). Pressure can be read with the ↑ key on the main controller. Divide the number seen by 10 (12 = 1.2bar)
2. Starting pressure is typically 1.2bar but can be higher or lower depending on the application. Minimum recommended pressure is 0.8bar.
3. Determine blocked-line pressure: Plug one bearing line, note pressure rise (typically +0.1 to +0.5 Bar).
4. Determine broken-line pressure: Disconnect one bearing line, note pressure drop (typically -0.1 to -0.5 Bar).
5. Set **AH (high alarm)** ~0.1 Bar below the blocked-line reading (e.g., blocked = 1.5 Bar → set AH to 14 (1.4 Bar).
6. Set **AL (low alarm)** ~0.1–0.2 Bar above the broken-line reading (e.g., broken = 0.9 Bar → set AL to 10 (1.0 Bar).

Alarm does not trigger despite blocked or broken line

1. Check that AH/AL values were saved. **Every parameter in the list must be scrolled through to completion** after any change, or the settings will not be saved.
2. Re-enter programming mode (hold MODE ~5 sec → screen shows P-05) and verify AH/AL values at the correct parameter screens.
3. Re-confirm spray orifice, vents, and line connections
4. Change AH/AL to tighter setpoints (this may cause nuisance alarms)
 - A. Using the above example, set AH to 13 (1.3bar) and AL to 11 (1.1bar)

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7. Repair Procedures

Before you start:

- Disconnect electrical power supply to the VIP4Air panel
- Close off / disconnect air supply
- Drain the reservoir of oil before beginning work
- Discharge any residual pressure from tubing/components

Mini-pump replacement

Step 1. Confirm Spacer Match

- Before removing the old pump, identify its flow rate spacer so the replacement matches
- Industrial Autolube standard is 3 rings



Step 2. Remove Old Mini-Pump

1. Remove the two securing screws holding the mini-pump to the flow sensor base.
2. Carefully lift the mini-pump away, noting o-ring positions between pump and base.

Step 3. Install New Mini-Pump

1. Position new o-rings correctly between mini-pump and flow sensor base
2. Secure with the two mounting screws.

Flow Sensor replacement

Step 1. Remove Faulty Flow sensor

1. Remove the three securing screws holding the flow sensor base assembly.
2. Disconnect the electrical bridge connector, noting alignment/orientation.
3. Unscrew the mini-pump from the old base (two securing screws) if it is being transferred to the new base — note o-ring positions.

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Step 2. Install New Flow Sensor Base

1. Connect the new flow sensor base, inserting the electrical bridge and paying close attention to alignment and pin penetration into both bases.
2. Secure using the two screws supplied for the purpose.
3. Reinstall the mini-pump (new or transferred) onto the new base, confirming o-rings are correctly seated and spacer notch count matches the original.
4. Reposition the blanking plate and relative solenoid valve if these were disturbed.

Return to Service

4. Refill reservoir with oil.
5. Reconnect air supply.
6. Reconnect electrical power.
7. Run **Prime mode** (MODE + ↓ held 10 sec, 10 min duration) to purge air and verify lubrication.
8. Confirm new pump's flow sensor LED shows at least one blink per cycle