



ABOVE PAR
TECH

TROUBLESHOOTING GUIDE

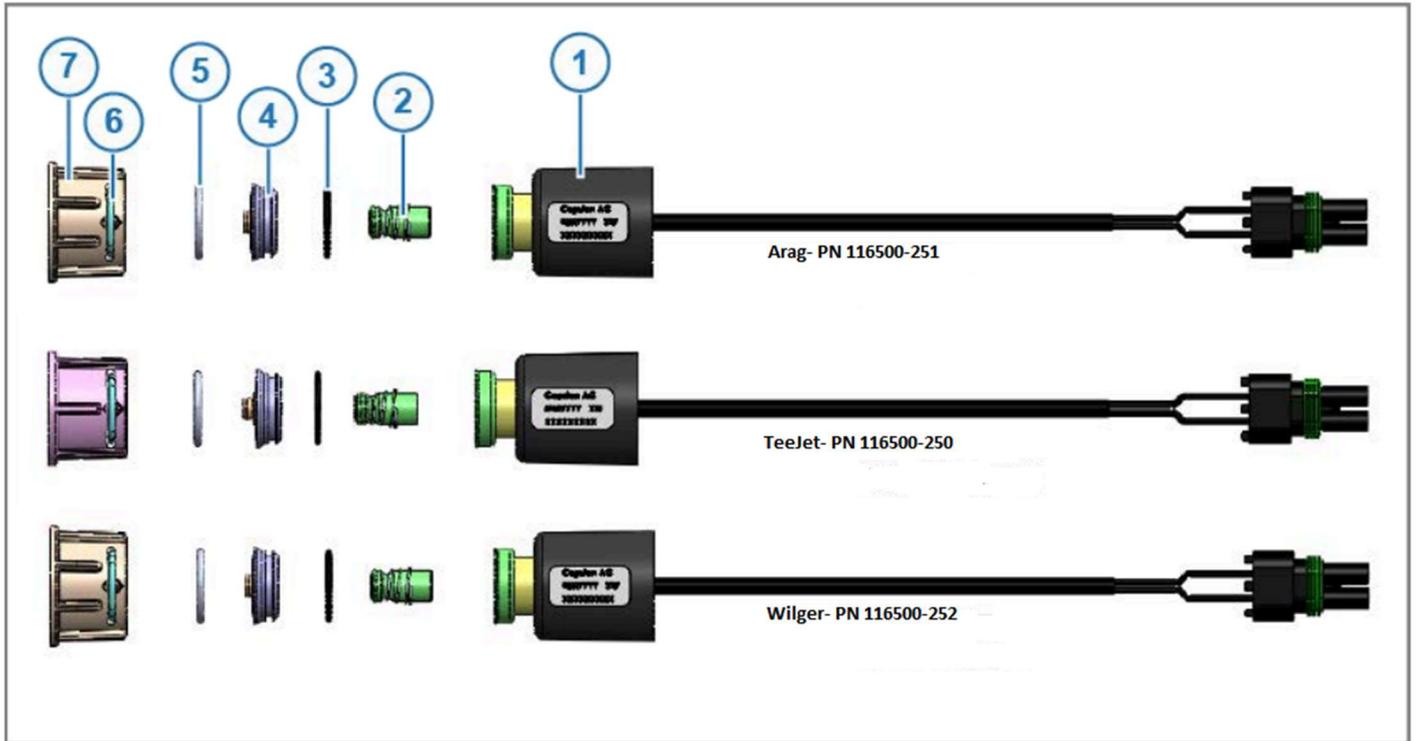
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Service Parts

Valve Assemblies



Item	Description	Arag	Teejet	Wilger
Assembly	Full Assembly	116500-251	116500-250	116500-252
1	Coil	116500-200	116500-200	116500-200
2	Plunger	116500-008 (10 pack)	116500-008 (10 pack)	116500-008 (10 pack)
3	O-ring (Inner)	116500-010 (10 of each)	116500-009 (10 of each)	116500-009 (10 of each)
4	Orifice Assembly			
5	O-ring (Spoked)			
6	U-clip	116500-006 (5 of each)	116500-005 (5 of each)	116500-007 (5 of each)
7	Fly Nut			

Pump Seals

Pump Assembly	FMCS-150FS-HYD-206	GE-660	PTOC-150
Models used on	HP200, HP300, River300	HP500	HP500
Pump seal repair kit	RK-FMC-150	RK-GE-660	RK-FMC-150
Silicon Carbide pump seal repair kit	RK-FMCS-150	R-GE-660	RK-FMCS-150

Troubleshooting Guide

General

Input a Manual Speed	From run screen: three bars in upper left > settings > speed input > change from "Display GPS" to "Manual Speed"
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GPS

Symptom	Potential Solution
Satellite is grey	Verify GPS7500 is receiving power. Check GPS 7500 cable connections inside of the box. Ensure both port A/B are properly connected to the display cables.
Satellite is Green with exclamation point	Check GPS diagnostics to ensure that the NTRIP client is connected. Ensure the display is connected to the internet. Follow AgFiniti / cell diagnostics in the next section
Satellite is yellow	Check auxiliary cable on back of display. Check that the Port B cable going into the GPS cable is properly connected.
Internet/modem issues	If RTK is not present due to internet connectivity, proceed to modem section of the manual

AgFiniti Connection Issues

Symptom	Potential Solution
AgFiniti status can be always viewed in the upper right of the screen.	
AgFiniti won't connect (Red X or Exclamation in upper right)	Select Setup > Console Setup > AgFiniti Verify display is connected to the "br1minihotspot" network. If not, attempt to connect again.

	<p>Proceed to Network Diagnostics screen and identify problem.</p> <p>If the display is not recognizing the wireless adapter, unplug Wi-Fi dongle on back of display and plug back in.</p> <p>In adapter is recognized and there is no internet connection, verify there are green flashing light on the BR1 mini modem.</p> <p>Verify modem has power and is emitting a Wi-Fi signal.</p>
AgFiniti- no cloud	Not Connected to customer's AgFiniti account. Log back in to account and verify that license isn't expired.
DisplayCast not working	<p>Ensure both machines are in the same event.</p> <p>Select satellite > DisplayCast. Verify that DisplayCast is turned "On"</p> <p>Verify both machines have a cloud underneath AgFiniti icon.</p>
Internet/modem issues	If RTK is not present due to internet connectivity, proceed to modem section of the manual

Electrical / Communication

Symptom	Potential Solution
Lost CAN node	<p>Select satellite > diagnostics, verify which module is not communicating.</p> <p>Check L2 module diagnostic lights are flashing green.</p> <p>If yellow, or not not flashing:</p> <ul style="list-style-type: none"> -Check breakout cables on L2/RightSpot/Swath module. -Check CAN extension cables -Check terminators on breakout cables
RightSpot Hub not powering on	<p>When the display is powered on and the RightSpot Hub is not powering on, follow steps below:</p> <p>Power cycle display</p> <ul style="list-style-type: none"> -Power cycling the display will cause the L2 module to send power to the RightSpot Hub again. <p>If the RightSpot Hub still does not power on after power cycle, continue to step 2.</p> <p>Test continuity at PN: 4006728-005 and inspect pin for damage.</p> <p>If continuity is not present or connection pin is damaged, replace PN: 4006728-005.</p>

	<p>If continuity is present and connection is not damaged, continue to step 3.</p> <p>Test continuity on PN: 4006681 and inspect pin for damage.</p> <p>If continuity is not present, replace PN: 4006681.</p> <p>If continuity is present, swap hub.</p>
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Steering

Symptom	Potential Solution
Steering randomly kicks out while engaged on the line	Increase steering kickout settings
Steering drifts away from line without trying to steer towards it	Remove motor from steering wheel and check if plastic gear is still intact
SteadySteer Communication warning when trying to engage	<p>Ensure the motor is on. Check the green light on the front of the motor. Next try a power cycle of the entire system.</p> <p>Verify the ethernet cable is not damaged.</p>
Unwanted guidance line around perimeters of all boundaries	Navigate to steering settings. Disable outer boundary guidance line.

Rate

Symptom	Potential Solution
Solenoid dripping	<p>Ensure solenoid is tightened down.</p> <p>Verify O-rings is not torn or worn.</p> <p>Inspect plunger and cap for wear.</p>
Solenoid won't open	<p>Check connection from the backbone harness to the solenoid.</p> <p>If visually good, move the solenoid from one nozzle to the next to see if the problem follows the solenoid or the drop harness.</p> <p>Verify 12V is present at solenoid.</p> <p>Proceed to "Valve Assembly Troubleshooting" section of the manual for further information</p>
Master Valve won't open	<p>Check fuses in the cabinet (specifically lower left 10 amp)</p> <p>Check connections on terminal strip (see power schematic).</p>
Rate not responding	Check strainers to ensure system is not backed up / blocked with product.

	Switch rate control to manual and verify that control valve is functioning properly
Rate oscillating	Switch rate control to manual and verify that control valve is functioning properly. Adjust control valve settings appropriately
Sprayer not "painting"	Navigate to Liquid controller diagnostics screen and verify there is a pulse sensed from the flowmeter. If not, check voltage at flow meter Verify that the display is receiving a speed and has a rate specified.
Rate in oz rather than gallons	Edit or create new product with "gallons" as unit of control.
Sections turning on too late/early	Adjust look ahead settings in increments of .1s at a time. Turn On: Increase if not turning on quick enough. Decrease if turning on too quickly. Turn Off: Increase if not turning off quick enough. Decrease if turning off too quickly.
Pump won't turn on	Ensure hydraulics on the machine are working properly
Nozzles are dribbling	Is there a rate not responding warning? No -Verify rate is not in oz/acre -Verify flow meter calibration number is correct Yes, -Check strainer -Verify speed is correct -Verify pump functions

Switch Diagnostics

Symptom	Potential Solution
Left/Center/Right switches aren't working	Navigate to Aux input module diagnostic screen and verify signals are being received properly. Check voltage from switchbox. Check connections from switchbox to section signal cable to Aux Module.

Pump Specific

Symptom	Potential Solution
Chemical dripping from rear of pump	Replace pump seal. Consult chart above to order appropriate seal repair kit.

Valve Assembly Troubleshooting



Symptom	Potential Solution
Leaking or dripping at the nozzle / tip	<p>This is usually caused by contamination in the valve.</p> <p>Check 80 mesh final filtration and clean filters.</p> <p>Check the o-ring on the stem of the valve. If rolled, cracked, missing, or otherwise compromised, replace it. Disassemble the valve and rinse / clean it out. Inspect the plunger sealing surface. If plunger is worn/compromised replace plunger. If valve seat is worn/compromised replace valve seat.</p>
Leaks from around the flynut – not at the nozzle/tip	<p>Generally caused by a failure to seal of the larger, outer o ring in the valve body.</p> <p>Confirm tight enough not to wiggle. Ensure proper seating of outer o ring. Sometimes the o ring must be seated into the groove on the nozzle body rather than just held loose in flybody.</p> <p>If not seated properly, it can be pinched or compromised.</p>
Leaks from between the flynut and coil (less applicable with RightSpot U Clip valves)	<p>Generally caused by a missing o ring or valve that is not sufficiently tightened onto the flybody.</p> <p>Confirm the coil is tightened to a full stop onto the flybody (about 40 in/lbs).</p>

	If leaking still occurs, disassemble, and inspect o ring. Replace as needed.
Stuck/lodged plungers	<p>Mainly caused by contamination.</p> <p>Disassemble and clean. Make sure the plunger can be moved. This can be pressed on to ensure that it moved and to unstick it.</p> <ul style="list-style-type: none"> - Boom strainers and confirm 80 mesh final filtration - Consider chemical mix and mixing order - Thoroughly rinse boom when switching chemicals to avoid chemical reactions that may result in precipitates or other unwanted byproducts - Increase carrier volume - Thoroughly rinse boom when switching chemicals to avoid chemical reactions that may result in precipitates or other unwanted byproducts
Coil issues (short circuits, won't open, etc.)	<p>Measure resistance on the coil to confirm good. If the coil does not measure resistance within the range provided below the coil is bad and needs to be replaced.</p> <ul style="list-style-type: none"> -7W coils: 20-35 ohms -12W coils: 10-13 ohms <p>If resistance is good:</p> <ul style="list-style-type: none"> - Swap valves or valve parts from one valve to another (good to questionable) to see if the issue follows or not - Swap whole nozzle bodies with valves from one place to another (good to questionable) to see if the issue follows or not

Factory Reset a BR1 Modem

If modem cannot connect to the internet, a factory reset may be required:

- Press and hold reset button on modem for 20 seconds
- Status light should go to solid red
- Let modem reboot itself
- Connect to the modem's WiFi network on a laptop or phone
- New WiFi network name will be "PEPLINK_XXXX"
- WiFi password will be found on the tag on the rear of the modem
- Type 192.168.50.1 into a web browser



Login

Username:

Password:

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- Username: admin
- Password: admin

Change Password

Current Password	<input type="password"/>
New Password	<input type="password"/> ✖ Require at least 10 characters, lower and upper case, with numbers.
Confirm New Password	<input type="password"/>

- A password change will be required
 - Current Password: admin
 - New Password: Password1234

You must change your default password now to proceed

Change Default Wi-Fi AP Password

SSID	<input type="text" value="PEPLINK_6907"/>
New Password	<input type="password"/> ✖ Require at least 8 characters.
Confirm New Password	<input type="password"/>

- WiFi name change will be required
 - Change SSID to: br1minihotspot
 - New password: br1minihotspot
 - Modem will reboot and you will need to connect to the new “br1minihotspot” network

WAN Connection Status	
Priority 1 (Highest)	
Cellular	WAN failed SmartCheck LTE Details
Priority 2	
Drag desired (Priority 2) connections here	
Disabled	
Drag desired (Disabled) connections here	

- Select "Details"
- Scroll down to "Cellular Settings"

Cellular Settings	
SIM Card	<input checked="" type="radio"/> Both SIMs <input type="radio"/> SIM A Only <input type="radio"/> SIM B Only <input type="radio"/> Alternate periodically between SIM A Only and SIM B Only
Preferred SIM Card	<input checked="" type="radio"/> No preference <input type="radio"/> SIM A <input type="radio"/> SIM B
	SIM Card A SIM Card B
Carrier Selection	<input checked="" type="radio"/> Auto <input type="radio"/> Auto
LTE/3G	<input type="text" value="Auto"/> <input type="text" value="Auto"/>
Band Selection	<input type="text" value="Auto"/> <input type="text" value="Auto"/>
Data Roaming	<input type="checkbox"/> <input type="checkbox"/>
Authentication	<input type="text" value="Auto"/> <input type="text" value="Auto"/>
Operator Settings	<input checked="" type="radio"/> Auto <input type="radio"/> Custom <input checked="" type="radio"/> Auto <input type="radio"/> Custom
APN	<input type="text"/> <input type="text"/>
Username	<input type="text"/> <input type="text"/>
Password	<input type="text"/> <input type="text"/>
Confirm Password	<input type="text"/> <input type="text"/>
SIM PIN (Optional)	<input type="text"/> (Confirm) <input type="text"/> (Confirm)
Bandwidth Allowance Monitor	<input type="checkbox"/> Enable <input type="checkbox"/> Enable

- Change "Operator Settings" to "Custom"
- Type "vzwinternet" in the APN box

Cellular Settings		
SIM Card	<input checked="" type="radio"/> Both SIMs <input type="radio"/> SIM A Only <input type="radio"/> SIM B Only <input type="radio"/> Alternate periodically between SIM A Only and SIM B Only	
Preferred SIM Card	<input checked="" type="radio"/> No preference <input type="radio"/> SIM A <input type="radio"/> SIM B	
	SIM Card A	SIM Card B
Carrier Selection	<input checked="" type="radio"/> Auto	<input checked="" type="radio"/> Auto
LTE/3G	Auto ▾	Auto ▾
Band Selection	Auto ▾	Auto ▾
Data Roaming	<input type="checkbox"/>	<input type="checkbox"/>
Authentication	Auto ▾	Auto ▾
Operator Settings	<input type="radio"/> Auto <input checked="" type="radio"/> Custom	<input checked="" type="radio"/> Auto <input type="radio"/> Custom
APN	vzwinternet	
Username		
Password		
Confirm Password		
SIM PIN (Optional)	<input type="text"/> <input type="text"/> (Confirm)	<input type="text"/> <input type="text"/> (Confirm)
Bandwidth Allowance Monitor	<input type="checkbox"/> Enable	<input type="checkbox"/> Enable

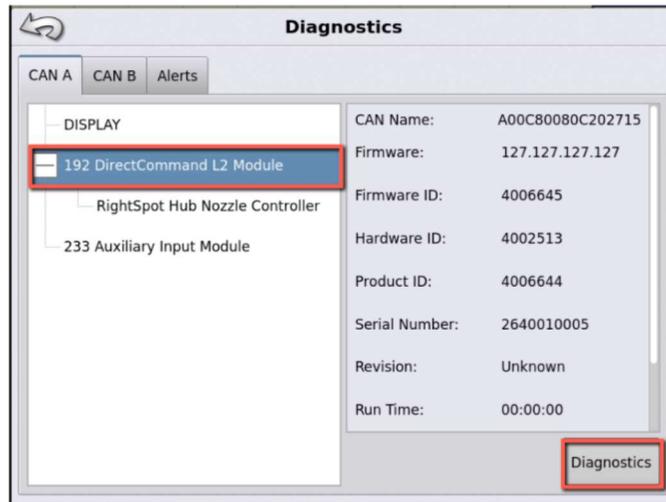
- Select “Save and Apply”
- Power may need to be cycled on the modem. Verify that internet connection is now active.

How to test a Flowmeter

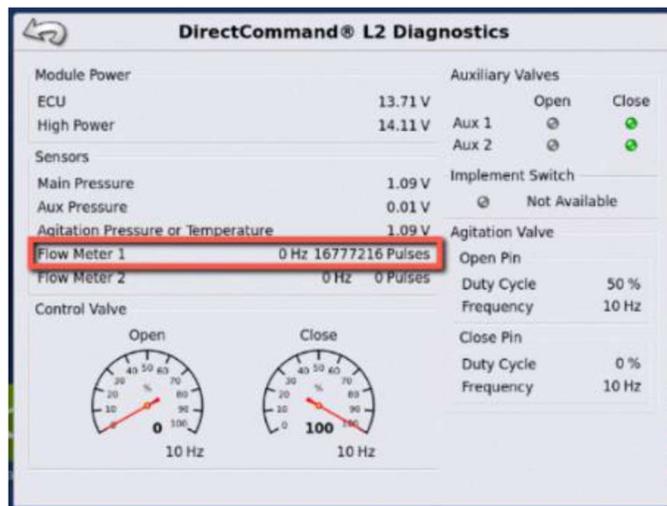
When flow related issues are present testing the flow meter is a necessary troubleshooting step.

The following steps will walk through how to test a flow meter:

- 1) Access the DirectCommand L2 diagnostic screen
 - Select in the upper right-hand corner
 - Select Diagnostics
 - Select DirectCommand L2 Module and then Diagnostics in bottom right-hand corner.



- 2) Locate the flow meter pulse count in Diagnostics. DirectCommand L2 has a running pulse count and will continue to count.



- Are the pulses increasing?
 - This would indicate feedback from the flow meter.
 - Are the pulses stuck at zero or staying the same?
 - This would indicate no feedback from flow meter. Continue to step 3.
- 3) Verify voltage at flow meter across power and ground

Reference the chart below to determine the appropriate pins for your flow meter.

Flow Meter	Power	Ground
Raven (conaxall)	2	1 (2 o'clock)
Raven (weather pack)	A	C
Dickey John	A	B
Mid-Tech	B	A
Tee Jet	A	C
Hiniker	3	1

- 4) Simulate a pulse at the flow meter connection a. Disconnect the flow meter
 - o Using a jumper wire, Jump signal and ground
 - o Pulse the pin repeatedly by inserting and removing one pin to simulate flow.

Reference the chart below to determine the appropriate pins for your flow meter.

Flow Meter	Signal	Ground
Raven (conxall)	3 (6 o'clock)	1 (2 o'clock)
Raven (weather pack)	B	C
Dickey John	C	B
Mid-Tech	C	A
Tee Jet	B	C
Hiniker	2	1

- 5) You should see the pulse count increase. The numbers may be sporadic, but overall should see them increase.
 - o If the pulse count increases in diagnostics, this indicates the cabling is good and the issue lies with the flow meter.
 - o If pulses do not increase, continue to step 4.
- 6) At the DirectCommand L2 module, disconnect the Channel connection and jump pins B7 and C5 (signal and ground). Create a pulsing effect by repeatedly inserting and removing one pin. The pulse count in the diagnostics window should increase.
 - o When jumping B7 and C5, and the pulse count does increases, then the issue is in the channel cable.
 - o When jumping pins B7 and C5, and the pulse count does not increase, then the issue is in the DirectCommand L2 module.



Common Machine Settings

Configuration Setup Settings	
Operating Configuration Type	Application
Vehicle Type	Self-Propelled Applicator

Make	Custom
Custom Make	HP
Custom Model	300
Controller Setup Settings	
Device	DirectCommand
Device Type	Directcommand L2
Controller Name	Direct L2
Tank Capacity	300 gallons
Number of Nozzles	12
Nozzle Spacing	20 inches
Number of Section Boom Valves	12
Section Signal Type	12V-High
Valve Type	Standard
Distance from Rear Axle to Application Point	3.25 ft Behind
Automatic Swath Control Settings	
Outside Boundary Option	Turn Section Off
Coverage Option	Minimize Skip
Look Ahead Settings	
Turn On	0.3 seconds
Turn Off	0.1 seconds
Pressure Sensor Calibration	
Sensor Type	Voltage
Voltage/Pressure Ratio	16.0 mV/PSI
Controller Settings	
Feedback Type	Flow Meter
Flow Meter Calibration 1	310 pls/gal
Flow Meter Calibration 2	0 pls/gal
Flow Control Delay	0 s
Pressure Fallback	Unchecked
Control Valve Settings	
Control Valve	ByPass Servo
Valve Response 1	100
Valve Response 2	24
Response Threshold	1
Allowable Error	2%
Rate Settings- Rate Off Behavior	
Flow Control Valve	Maintain Standby Pressure
Standby Pressure	40 PSI
Auxiliary Valve 1	Open
Auxiliary Valve 2	Close
Rate Settings- Rate Error Alarm	
Timeout	5 s

Threshold	30%
GPS Settings	
Hertz Rate	10 Hz
NMEA Strings Enabled	GGA, VTC, GSV, ZDA
GPS Offsets	
Antenna Fore from Rear Axle	59 inches (Re-measure on your machine)
Antenna Left/Right Offset	0 inches (Re-measure on your machine)
Antenna Height	76 inches (Re-measure on your machine)
Steady Steer Controller Offsets	
Wheelbase	65 inches (Re-measure on your machine)
SCM Distance Fore of Rear Axle	10 inches (Re-measure on your machine)
SCM Left/Right Offset	29 inches RIGHT (Re-measure on your machine)
SCM Height	40 inches (Re-measure on your machine)