

Rain Tracker RT-50 Troubleshooting Procedure

Motor Switching Applications

This procedure is for Rain Tracker installations that apply current directly to the wiper motor. For example, HSS (Hot Side Switching) and GSS (Ground Side Switching) applications. If the installation required external resistors, see the “External Component Applications” procedure.

1. Check Rain Tracker getting power and ground—Is the LED Blinking?

Check the Green LED next to the DIP switch.

<i>Symptom</i>	<i>Check</i>
LED Blinking	Go to step 2
No LED Blinking	If possible, check the ground with a multi-meter. It should be no more than a couple ohms from the Rain Tracker ground (black wire) to a good chassis ground. (Such as the connection outside metal sleeve of the cigarette lighter.)

2. Check how the system behaves in each of the manual modes.

With the Rain Tracker activation switch off:

<i>Symptom</i>	<i>Check</i>
Manual off, slow, and fast and wash work as before	Go to step 3
Manual slow does not work	Check the connections to the SLOW relay, both the motor and the switch side. (PPL and BLU on the Rain Tracker.) If the system is responding to water but <u>manual</u> slow is not working, then the problem is probably the SNC connection. (PPL wire from the Rain Tracker.)
Wipers run all the time	Could be a damaged Rain Tracker interface module. See “Bypassing the Rain Tracker”, below.
Fast speed is slower than it should be	There is some wiring error that is shorting the wiper motor slow and fast windings together. For example, if the power diode (YEL & WHT) from Rain Tracker not wired in place. Be sure to correct this, as it wears the wiper motor out.
Fast does not work	Did you cut the FAST wire, rather than Tee into it?
Wash does not work	The Rain Tracker does not control wash. Did you cut a wire you should not have?

Bypassing the Rain Tracker

If you are still having trouble with the system in manual modes, try this diagnostic:

Remove the Rain Tracker interface module. Use a stiff wire to connect the BLU and GRN wires together at the Rain Tracker interface connector. Connected this way, the wiper system should behave just as it did from the factory. If it does not, there is some problem with the interface wiring.

3. Verify that the interface can make the wiper motor run—Unplug the sensor and turn on the Rain Tracker activation switch.

You do not need to turn ignition off before unplugging the sensor. When you unplug the sensor, the interface should run the wipers at a 5-second delay.

<i>Symptom</i>	<i>Check</i>
Wipers run at 5 second delay	Go to step 4.
LED diagnostic code NOT 3-5	The LED should be flashing three times, and then flashing five times, repeating. This indicates that the Rain Tracker is activated, and is at default sensitivity, but the sensor is disconnected. If not: Check to see that the activation switch is working: there should be about 12V at the mode read (GRY wire) coming into the Rain Tracker. (Note that the DIP switches do not affect the displayed sensitivity value. An external resistor,

	such as with the XC-1, can change the sensitivity to some value other than 5.)
Wipers do NOT run at 5 sec interval	<p>If you are not hearing the SLOW relay in the Rain Tracker click every 5 seconds, you probably have a problem with the power, ground, or activation switch.</p> <p>Check the wiring around the SNO terminal, and the power diode (GRN, WHT, YEL wires from the Rain Tracker.)</p> <p>Check for this especially common problem: the Switch and Motor side connections to the Rain Tracker are reversed. The PPL wire from the Rain Tracker should go to the switch side of the break you made in the SLOW wire. The BLU wire from the Rain Tracker should go to the motor side.</p> <p>Check: for all motor-switching applications, the connections are fairly heavy gage wire—18 AWG or thicker. If you are connected to thin wires for any of the Rain Tracker connections, you probably have connected to a wrong wire.</p> <p>Could you have connected to some wire other than SLOW?</p> <ul style="list-style-type: none"> • For Hot-Side Switching systems: check that the SLOW wire goes to +12V for manual slow mode, ground for off mode. • For Ground-Side Switching systems: check that the SLOW wire goes to 0 for manual slow mode, +12V for off mode.
Wipers stop on the middle of the windshield.	<p>Check the SNC connection (PPL wire from the Rain Tracker). Be sure it is going to the switch side, not the motor side.</p> <p>Some applications will do this if you try to run both the Rain Tracker and the intermittent mode simultaneously. Keep the factory system off when running the Rain Tracker.</p>

4. Diagnosing Sensor problems.

- If you skipped straight to this step, go back and systematically go through the procedure from the beginning, eliminating more common problems.
- The sensor adjusts itself to the windshield when it powers up. To be sure that it has done this, turn the ignition off and then on.
- Place the existing wiper switch in manual off, and activate the Rain Tracker system
- See how the system responds to a spray bottle or garden hose.

<i>Symptom</i>	<i>Check</i>
System does not respond to water at all.	<p>Did you mount the sensor so that the double-stick tape wets out against the glass?</p> <ul style="list-style-type: none"> • The sensor will not see through the red release-liner tape—you must remove it. • You cannot just tape the sensor against the glass without mounting it. • The tape must be fully ‘wetted out’ (appears black from outside the vehicle)—you cannot lightly tack the sensor to the glass.
Wipers wipe every five seconds, regardless of rain	<p>This is what the system does when the sensor is disconnected. So, check that the sensor cable was not cut during installation.</p> <p>Also, the cause could be one of the “Wipers Keep Wiping” issues below.</p>
Sensor responds barely at all.	<p>Is the sensor mounted too far in the shade band? From the mid 90's on, most US vehicles come with infrared-absorbing shade bands. The Rain Tracker sensor can be mounted on the edge, but not deeply within, the shade band.</p> <p>Is the windshield an infrared reflective type? These are rare! On some Chevy venture vans, 1995-2001. You can see the yellowish coating ending near the edge of the windshield, and usually built-in antennas. The windshield logo may read "Sun Gate"</p> <p>Is the windshield more than 0.25" (6 mm) thick? These are used on some large RV's with single-piece windshields. (Not on any passenger cars, vans or light trucks.)</p>
Wipers keep wiping without water	<p>A few follow-up wipes are normal. These are to clear water that might have blown off the hood but might have missed the sensor.</p>

	<p>The Rain Tracker (as well as the rest of the wiper system) works better with good wiper blades. Extremely worn wiper blades will cause the system to over-wipe. In such cases, replace the blades.</p> <p>The sensor will be fooled by vibration; if you tap on the sensor, it will run the wipers. Don't tap on the sensor. False wipes due to vibration / road bumps are almost always caused by an unsecured sensor cable. Use a black cable tie to secure the sensor cable to the mirror mount.</p> <p>On vehicles that wipe from the center out (e.g. recent Chrysler vans) having the sensor too close to the edge of the wipe pattern will make the system wipe too much. Center-out wipers are more prone to the wipers making more follow-up wipes; it is more important to keep the blades clean.</p> <p>If the vehicle engine is not running, the wipers can run so slowly as to cause the wiper blades to fool the sensor. Try the test with the engine running.</p> <p>Follow up wiping can be excessive under conditions just about the freezing. These conditions are rare, and the Rain Tracker still should not cause smearing.</p>
Wipers never completely stop wiping-- very long intermittent	<p>If the wipers never completely stop, replace the wiper blades (they were due for it, weren't they?). Clean the area just over the Rain Tracker sensor, and polish the glass with a soft cloth.</p> <p>Check each of the conditions listed above.</p>
Rain Tracker does not respond fast enough	<p>Note that it is normal for the wipers to speed up and slow down over several seconds. Real rain storms do not start or stop instantly. The Rain Tracker should respond appropriately to a real rain storm. With a spray bottle demonstration, it will appear to respond too slowly.</p>
Sensitivity too low	<p>Rain-X or car waxes can make the sensor too insensitive. You can use Rain-X or any other hydrophobic coating, but clean the area just over the Rain Tracker sensor, and polish the glass with a soft cloth.</p> <p>Be sure the Rain Tracker coupler installation is reasonably free of air bubbles. (No more than a few, each a few mm in diameter. If you use our supplied anhydrous alcohol pad to install, you will get a permanent, high-quality bond.)</p> <p>If the sensitivity is not to the driver's liking, you may shift it up or down using DIP switch positions 1, 2, and 3. See the user manual for the proper settings.</p>
Sensor appears to actually <u>slow down</u> with more water	<p>This can happen in installations with external resistors. (Usually not HSS or GSS applications!) Check to make sure that the external component values are correct. This condition can be tricky to diagnose because it looks like a sensor problem. Use an ohmmeter to check the value of the external resistors.</p>
Sensitivity too high	<p>If the sensitivity is not to the driver's liking, you may shift it up or down using DIP switch positions 1, 2, and 3. See the user manual for the proper settings. Note that the Sensitivity code from the LED will not change with DIP switch settings.</p> <p>On vehicles that wipe from the center out (e.g. recent Chrysler vans) having the sensor too close to the edge of the wipe pattern will make the system wipe too much.</p> <p>Could you have wired the activation switch to ground instead of to B+? If you make this mistake, it will put the system on in maximum, not default, sensitivity, and give LED code 1-9 or 2-9.</p>
No amount of water will make the system run fast	<p>Note that the Rain Tracker will not run the wipers fast when in bright sunlight. The Rain Tracker is intentionally less sensitive in very bright conditions, which are often due to road spray. This is to prevent smearing.</p> <p>Check the wiring around the FAST terminals—the PNK and ORN wires from the Rain Tracker.</p> <p>Check to see that you properly cut the SLOW motor winding—you do not just Tee into it. If you just Tee into SLOW, the Rain Tracker shorts the SLOW and FAST windings together when it tries to make the wipers run fast. This slows the wipers down enough so it can look like it</p>

	<p>cannot run the system fast.</p> <p>Could you have chosen the wrong wire for FAST?</p> <ul style="list-style-type: none"> • For Hot-Side Switching systems: check that the FAST wire goes to +12V for manual fast mode, ground for off mode. • For Ground-Side Switching systems: check that the FAST wire goes to 0 for manual fast mode, +12V for off mode. • For external-component applications, see if the behavior of the FAST wire is appropriate for the switch.
Responds to water, but Fast speed is slower than it should be	There is probably some wiring error that is shorting the wiper motor slow and fast windings together. For example, if the power diode (YEL & WHT) from Rain Tracker not wired in place. Be sure to correct this, as it wears the wiper motor out.
Sensor wipes for no reason	<p>False wipes should be rare.</p> <p>Sometimes the Rain Tracker will see the first droplets of water before the driver notices.</p> <p>On very hot, humid days, water can drip down from the air conditioning units of the vehicles ahead. This can cause enough tiny drops to trigger the Rain Tracker. Also, there can simply be tiny droplets of water in the air in extreme humidity—the Rain Tracker detects water droplets as small as about two one-hundredths of an inch. Simply turn the Rain Tracker off under such conditions.</p>
Wipers wiper when I drive over bumps	<p>Check to be sure that the sensor is securely snapped into the Rain Tracker coupler.</p> <p>This can happen if the sensor cable has a long way to go to reach the headliner, and is not secured. Solution: secure the sensor cable to the mirror mount base with a black cable tie.</p>
Wipers wipe when I tap the sensor	Stop tapping the sensor. Properly installed, the sensor is immune to normal vehicle vibration.
Late First Wipe	As with all rain sensors (including those sold on new cars), there will be times when enough water has hit the windshield that you would like the wiper to wipe, but none has yet hit the sensor. These cases should be infrequent enough that they are easily ignored. The Rain Tracker is better in this respect than most rain sensors in the new-car market.