

TROUBLESHOOTING THE 8494 ELECTRIC SIDEWINDER

Refer to wiring schematics 98184010 (12v system) or 98184510 (24v system) and replacement part number guide 98184025.

All three are available for download from our website at www.elkhartbrass.com

First verify good power and ground:

- Voltage at the monitor control module should be 11-14 VDC for a 12v system (22-27 VDC for a 24v system) when measured under load. Make sure polarity is correct and there is a good ground connection. Chassis grounds are not recommended.

Problem; monitor will move up but not down, or down but not up, or it will not move vertically at all.

1. Disconnect vertical position sensor connectors J06 & P06.
 - a) Passed;** if monitor will now go both directions replace the vertical sensor and retest.
 - b) Failed;** if there is no change move on to step 1c.
 - c)** Use the manual override nut to place the monitor discharge in the center of its vertical travel range. Disconnect the motor power connection at J05 & P05 and on connector J05 apply (+) positive system power to male terminal and (-) negative to female terminal (**Caution;** be sure to use the correct voltage for your system), the monitor discharge should go down. Reversing the polarity should make it go up. (The electronic stops will not work so do not maintain power to the motor past +/- 30 degrees from the vertical center of travel.) If there is no travel in one or both directions repair or replace the motor assembly and retest system. If there is travel in both directions move on to step 10.

Problem; monitor will move left but not right, right but not left, or it will not move horizontally at all.

2. Disconnect horizontal position sensor connectors J08 & P08.
 - a) **Passed;** if monitor will now go both directions replace the horizontal sensor and retest.

b) Failed; no change move on to step 2c.

c) Use the manual override nut to place the monitor in the center of its horizontal travel range. Disconnect the motor power connection at J07 & P07 and on connector J07 apply (+) positive system power to the male terminal and (-) negative to female terminal (**Caution;** be sure to use the correct voltage for your system), the monitor should go left. Reversing the polarity should make it go right. (The electronic stops will not work so do not maintain power to the motor past +/- 45 degrees from the horizontal center of travel.) If there is no travel in one or both directions repair or replace the motor assembly and retest system. If there is travel in both directions move on to step 10.

Problem; nozzle will go into fog but not stream or stream but not fog or will not move at all.

3. Disconnect fog/stream motor power connectors J09 & P09 and on connector J09 apply (+) positive system voltage to male terminal and (-) negative to female terminal (**Caution;** be sure to use the correct voltage for your system). The nozzle tip should pull back for fog. Reverse polarity to push the nozzle tip forward for straight stream. The override nut on the nozzle actuator should free spin at both ends of travel.

a) Passed; if nozzle actuator will move the tip in both directions smoothly move on to step 10.

b) Failed; if nozzle actuator will not move the tip in both directions or the movement is not smooth and the nozzle binds preventing full travel in either direction, repair or replace the nozzle and retest the system.

Problem; monitor or nozzle moves without operating any switches on the Joystick or Switch box control.

4. Disconnect the Joystick or Switch box control connector at J01 & P01.

a) If movement ceases repair or replace controller, if not move to step 4b.

b) Disconnect control harness at J02 & P02. If movement ceases replace the control harness, if not replace the monitor control module.

Problem; monitor will not stop at intended horizontal travel limits.

5. Disconnect horizontal position sensor connectors J08 & P08. In connector P08 check for hall sensor power (+7.5 to 12 VDC) at terminal 3 (red wire), left/right sensor signal voltage (+4.5 to 7.5 VDC) at terminal 2 (white wire), and ground at terminal 1 (black wire).

a) **Passed;** if all values were within specifications. Move on to step 9b.

b) **Failed;** one or more values did not meet specifications. Move on to step 6.

6. Move to the next connector in the harness towards the monitor control module and check for hall sensor power (+7.5 to 12 VDC) at terminal position C, left/right sensor signal voltage (+4.5 to 7.5 VDC) at terminal position H, and ground at terminal position K. (There may be an extension harness or harnesses between connectors P4 and J4.)

a) **Passed;** if all values were within specifications replace monitor harness and retest system.

b) **Failed;** if all values were not within specifications;

1. If this connector was on the output pigtail from the monitor control module then replace the monitor control module, reconnect harnesses, and go back and repeat step 5.

2. If this connector was on an extension harness move to next connector in the harness towards the monitor control module and check for hall sensor power (+7.5 to 12 VDC) at terminal position C, left/right sensor signal voltage (+4.5 to 7.5 VDC) at terminal position H, and ground at terminal position K. If all values were not within specifications move to next connector in the harness towards the monitor control module and continue testing until you get the correct values in which case you replace the previous harness extension or until you reach the control module and still do not get the correct values in which case you replace the control module. In either case reconnect harnesses, and go back and repeat step 5.

Problem: monitor will not stop at intended vertical travel limits.

7. Disconnect vertical position sensor connectors J06 & P06. In connector P06 check for hall sensor power (+7.5 to 12 VDC) at terminal 3 (red wire), left/right sensor signal voltage (+4.5 to 7.5 VDC) at terminal 2 (white wire), and ground at terminal 1 (black wire).
 - a) **Passed;** if all values were within specifications. Move on to step 9a.
 - b) **Failed;** one or more values did not meet specifications. Move on to step 8.
8. Move to the next connector in the harness towards the monitor control module and check for hall sensor power (+7.5 to 12 VDC) at terminal position C, up/down sensor signal voltage (+4.5 to 7.5 VDC) at terminal position J, and ground at terminal position K. (There may be an extension harness or harnesses between connectors P4 and J4.)
 - If this connector was on an extension harness move to next connector in the harness towards the monitor control module and check for hall sensor power (+7.5 to 12 VDC) at terminal position C, left/right sensor signal voltage (+4.5 to 7.5 VDC) at terminal position J, and ground at terminal position K. If all values were not within specifications move to next connector in the harness towards the monitor control module and continue testing until you get the correct values (in which case you replace the previous harness extension) or until you reach the control module and still do not get the correct values (in which case you replace the control module). In either case reconnect harnesses, and go back and repeat step 7.
9. **Checking the monitor control modules travel limit function using a jumper.**
 - a) **Testing the vertical limits;** While moving the monitor up electrically place the jumper between terminal positions 1 & 2 in connector P06. The monitor should stop and only allow downward travel until the jumper is removed. Remove the jumper and repeat the test while going down and the monitor should stop and only allow upward travel until the jumper is removed.
 - b) **Testing the horizontal limits;** While moving the monitor left electrically place the jumper between terminal positions 1 & 2 in connector P08. The monitor should stop and only allow travel to the right until the jumper is removed. Remove the jumper and repeat the test while going right and the monitor should stop and only allow travel to the left until the jumper is removed.

Passed; if all testing was within specifications replace the corresponding travel limit sensor and retest system.

Failed; if all tests were not within specifications move to the connector J04 on the output pigtail from the monitor control module and retest using a meter attached to the up/down or left/right motor power terminals. See if placing a jumper between terminals H and K for left/right or J and K for up/down while corresponding motor output power is present will terminate power for that direction and only allow power in the opposite direction. If motor power is not terminated as described replace the monitor control module. Reconnect harnesses and sensor and retest to see if travel limits are now working.

10. Find the wire for the function that is not working (left, right, up, down, fog, or stream) in connector P02. Placing a jumper between that terminal and the ground terminal in position C should result in the desired output on the terminals for motor power in connector J04. (Example; monitor won't go left, a jumper between terminals in positions G (left) and C (ground) in connector P02 should result in Positive (+) motor power on terminal D and Negative (-) power on terminal C in connector J04.)

a) **Passed;** if the correct motor power outputs are present on the correct terminals in connector J04 remove jumper and go on to step 11.

b) **Failed;** if the correct motor power outputs are **not** present replace the monitor control module and, reconnect all harnesses, & retest system.

11. Reconnect the harnesses one at a time on the monitor side of the control module and check for correct motor power at the end terminals when using a jumper between the same terminals as in step 11. If correct motor power is not present replace the harness and repeat the test. Keep going until correct power is present at the appropriate motor power connector (P05, P07, or P09). Leave the meter connected to the motor power leads and go on to step 12.

12. Move to the control side of the monitor control module and plug in connectors J02 & P02. Go to connector P01 and inspect the connector to be sure the terminal sockets for the ground and function you are testing are in place correctly. Use a jumper between the terminal sockets for the same function you have been testing
 - a) **Passed:** if the correct motor power outputs are present on the appropriate motor power connector go on to step 13.
 - b) **Failed:** if the correct motor power outputs are **not** present replace the monitor control harness and repeat step 12.

13. Inspect the contact pins in the J01 connector on the joystick or switch box that correspond to the common ground and function that you are testing for damage.
 - a) **Passed:** no visible damage to the contact pins. Go to step 14.
 - b) **Failed:** damaged pin or pins found. Repair or replace the joystick or switch box controller, reconnect all harnesses and retest system.

14. Test the joystick or switch box by checking for continuity between the common ground contact pin and the function contact pin while the switch is being activated for that function. Power to the joystick or switch box is not required.
 - a) **Passed:** continuity was found between the common ground contact pin and the function contact pin while the switch was activated for that function. Move on to step 15.
 - b) **Failed:** continuity was not found between the common ground contact pin and the function contact pin for the function being tested while the switch is being activated for that function. Repair or replace the joystick or switch box controller, reconnect all harnesses and test system.

15. If everything has passed the testing in steps 12, 13, & 14 look for a problem with the P01 connector fitting loosely in the mating connector J01 on the controller or a loose or broken wire in the P01 connection. Make sure the connectors are connected properly and that the lock ring on connector P01 is secured onto connector J01. Gently move the P01 connector around up and down and side to side while activating the function switch.

a) **Passed:** function was not interrupted by movement of the connector. Go to step 16.

b) **Failed:** function control is interrupted or comes and goes. Replace the control harness, reconnect system harnesses and test system.

16. Gently move the wires going into the P01 connector around up and down and side to side while activating the function switch. If function control is interrupted or comes and goes. Replace the control harness, reconnect system harnesses and test system.

Summary:

We have tried to cover the most likely problems that can occur with the 8494 electric Sidewinder system. The monitor control module is the heart of the system. Power and ground are fed into the module. Wires for each function come from the control side of the module and carry signal voltage. Switching one of these function wires to the common ground from control side of the module results in motor power being sent out from the monitor side of the module to the appropriate motor in the polarity needed for the chosen function. This troubleshooting guide is going to help diagnose whether the problem is on the monitor side of the control module, the controller side of the module, or with the module itself.

If you have any questions contact Technical Service at (800) 346-0250.