



**DIAGNOSTIC
TROUBLESHOOTING
INDEX**

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TROUBLESHOOTING INDEX - BY PROBLEM

Section A: Hydraulic System

- 1 Motor runs, but no Plow functions.
- 2 Motor runs, but all functions are slow.
- 3 Motor runs, but Blade raises slowly or not at all.
- 4 Motor runs, but Blade does not lower.
- 5 Blade lowers in neutral position.
- 6 Blade will not angle in one or both directions, lift and lower functions are Ok.
- 7 Blade will not remain angled.
- 8 Motor runs, but Jack Leg will not extend.
- 9 No Jack functions, Motor does not run.
- 10 Jack does not retract.

Section B: Electrical System

- 1 Pump Motor will not run.
- 2 Pump Motor runs continually.
- 3 Plow will not raise.
- 4 Plow will not lower.
- 5 Plow will not angle right.
- 6 Plow will not angle left.
- 7 Left & right fuctions are reversed.
- 8 Raise & lower functions are reversed.
- 9 Plow will not remain in 'Float' position.
- 10 Plow Jack Leg will not extend.
- 11 Plow Jack Leg will not retract.
- 12 Plow Jack Leg will not retract when Plow is raised.
- 13 Plow raises when Jack Leg is retracting.
- 14 Battery goes dead when vehicle is off.
- 15 Battery goes dead when vehicle is running.

Section C: Lighting Electrical System

- 1 No Lights on vehicle or Plow.
- 2 Plow Lights will not come on.
- 3 Plow Lights function, but vehicle lights will not come on.
- 4 High and Low beam reversed on Plow.
- 5 High beam indicator not functioning properly.
- 6 Headlight fuse blows after installing new Plow lights.
- 7 Plow lights are dim or flicker.
- 8 Turn signals will not function.
- 9 Turn signals flash rapidly.
- 10 No running lights on Plow.

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Section A. Plow Hydraulic System		
Symptom	Possible Cause	Remedy
1. Motor runs but no Plow function(s).	Solenoid Coils not receiving voltage	Test voltage to coils with meter or test light to verify that coils are receiving power. If coils are not receiving power, check ground connection and verify that all coils are connected properly.
	Inadequate Pump pressure	Remove lift hose from lift cylinder and attach 3000 psi pressure gauge to lift hose. Activate Plow lift function and read pressure gauge. Gauge should read 2000 psi. If not enough pressure or no pressure, remove relief valve and inspect for damaged spring or ball. If no damage is apparent, clean using mineral spirits and re-install. Perform pressure test again.
2. Motor runs but all functions are slow.	Inadequate Pump pressure	Perform test procedure described above.
	Inadequate Pump flow	Inspect filter cartridge in end head and pick-up screen in reservoir for clogging. Clean filter or replace.
	Insufficient voltage output from vehicle	Check alternator output wire with vehicle running at idle, with multimeter for 12-14vdc. If alternator output is less than 12vdc, repair or replace alternator.
3. Motor runs but Blade raises slowly or does not raise.	Inadequate Pump pressure	Perform pressure test as described in Section A. #1
	Lift solenoid valve contaminated	Remove A-Frame Cover and locate lift valve. Remove coil retaining nut from valve and slide the two coils off of the valve stem. Unscrew valve from manifold block and inspect for contamination. Clean valve with mineral spirits and blow dry with compressed air. Re-Install valve, coils, and nut. Check Plow function. If blade does not raise, go to next test.
	Loose or damaged lift hose	Inspect hose for leaks or signs of wear. Replace lift hose if necessary.

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Section A. Plow Hydraulic System		
Symptom	Possible Cause	Remedy
3. Motor runs but Blade raises slowly or does not raise (continued).	Lower solenoid valve contaminated	Remove A-Frame cover and locate Lower valve. Remove coil retaining nut from valve and slide the coil off of the valve stem. Unscrew valve from manifold block and inspect for contamination. Clean valve with mineral spirits and blow dry with compressed air. Re-install valve, coil, and nut. Check plow function.
4. Blade will not lower.	Lower solenoid valve contaminated	Perform test procedure described in Section A, #3.
	Orifice plug blocked	Remove hose from port 'H' on the manifold. Use a thin wire to remove orifice from within the 'H' port. Blow out orifice with compressed air. Re-install in reverse order. Check plow function.
5. Blade lowers in neutral.	Lower solenoid valve contaminated	Perform test procedure described in Section A, #3.
6. Blade will not angle in one or both directions, lift and lower functions are ok.	Solenoid coils are not receiving voltage.	Check voltage to coils with 12v test light or multimeter. With plow attached to the truck, remove A-Frame cover and locate angle solenoid valve. Ground test light or meter to main plow ground wire. Unplug outer (left) solenoid coil plug and insert probe into harness end of coil plug (NOTE: the orange wire on all solenoid coils is a ground wire, 12v+ wire color varies). Activate plow angle function and check for voltage. If voltage is present, reattach coil plug to outer solenoid coil and insert probe into 12v+ coil wire. Activate plow angle function. If voltage is not present, replace solenoid coil. If voltage is present, repeat procedure for inner coil.
	Angle solenoid valve contaminated	With A-Frame Cover removed, locate angle solenoid valve. It may be necessary to remove the pump unit from the A-Frame cavity for this step. Once pump is removed, remove coil retaining nut and slide the two coils off of the valve stem.

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Section A. Plow Hydraulic System		
Symptom	Possible Cause	Remedy
7. Blade will not remain angled.	Cross port relief valve(s) contaminated or damaged.	Use an allen key to remove the cross port relief plugs. Remove ball and spring from within cavity and inspect for any damage or wear, replace if necessary. Inspect bottom of cavity surface and remove any contamination, clean with mineral spirits and re-assemble.
8. Motor runs but Jack Leg will not extend.	Jack extend coil is not receiving sufficient voltage.	Remove A-Frame cover. Locate jack extend solenoid coil. Perform procedure described in Section A, #6 on jack extend coil, replace solenoid coil if necessary.
	Jack retract solenoid valve contaminated	With A-Frame cover removed, locate jack extend solenoid valve (pp. 12,16 for detail) Remove coil retaining nut and slide two solenoid coils off of valve stem. Unscrew valve from manifold. Clean valve with mineral spirits and blow dry with compressed air. Re-install valve and coils in reverse order and check jack function.
	Orifice plug contaminated	Remove A-Frame cover. It is necessary to remove the pump from the A-Frame cavity for this step. Remove the hose and adapter from 'X' port on manifold. Use a 3mm allen key and remove the orifice plug located at the bottom of the 'X' port. Clean orifice with mineral spirits and blow dry with compressed air. Re-install in reverse order and check jack function.
9. No jack functions, motor does not run.	Poor harness connection at front of vehicle.	Check harness plug connection at plug mount and verify good contact. Plug must be coated with di-electric grease periodically to prolong the life of the pin connectors.
	In-cab controls not in the float position.	Select 'float' position on in-cab controls and re-try jack function.
10. Jack does not retract.	Low or no voltage to 'Jack Retract' solenoid coil.	Check for voltage at retract coil with 12v test light or multimeter using procedure described in Section A, #6. If voltage is present, see next step.

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Section A. Plow Hydraulic System		
Symptom	Possible Cause	Remedy
10. Jack does not retract (continued).	Low or no voltage to 'Lift' solenoid coil.	Check for voltage at lift coil with 12v test light or multimeter using procedure described in Section A, #6. If voltage is present, see next step.
	Jack Retract solenoid valve contaminated.	Remove A-Frame cover. Locate 'Jack Retract' solenoid coil (pp. 12,16 for detail). Remove coil retaining nut, solenoid coil, and valve from manifold. Clean valve with mineral spirits and blow dry with compressed air. Re-install and check function.
	Jack Retract Return Spring does not have enough tension.	Remove bottom A-Frame cover and locate 'Jack Return Spring'. Locate adjuster nut on spring guide rod. Tighten adjuster nut against return spring to increase tension. Do this step in 1/4" increments and check function.
	Orifice plug contaminated	Remove A-Frame cover. It is necessary to remove the pump from the A-Frame cavity for this step. Remove the hose and adapter from 'X' port on manifold. Use a 3mm allen key and remove the orifice plug located at the bottom of the 'X' port. Clean orifice with mineral spirits and blow dry with compressed air. Re-install in reverse order and check jack function.
Section B. Plow Electrical System		
Symptom	Possible Cause	Remedy
1. Pump motor will not run.	Check that Main Power Connector is connected properly.	Plug in Connector.

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Section B. Plow Electrical System		
Symptom	Possible Cause	Remedy
1. Pump motor will not run (continued).	Check for voltage at Main Power Connector pins 1 and 2 with ignition switch ON and LIFT, RIGHT or LEFT function is activated.	If voltage is present, remove pump cover and check for voltage at pump with ignition switch on and LIFT, RIGHT or LEFT function is activated, if voltage is present, pump has failed or pump has seized. If voltage is not present go to next test.
	Check for voltage at solenoid by testing for voltage at both large terminals and ground.	If voltage is not present between one large terminal and ground, check the cable from the solenoid to the battery for disconnected cable or broken cable. If voltage is present go to next test.
	Check for voltage at other large terminal on solenoid by testing for voltage between terminal and ground while applying power to the small terminal with the Brown wire.	If no voltage is present, solenoid has failed. If solenoid is not grounded, ground solenoid bracket and retest. If voltage is present go to next test.
	Check that Black wire for voltage at the White 9-pin connector in cab with the ignition switch on.	If no voltage is present, power is disconnected from fuse box or fuse has been tripped. If voltage is present go to next test.
	Check wiring in control. Check for voltage to control switches with ignition switch on and control switch ON test all Black wires for voltage.	If voltage is not present on all black wire terminals and ground, check for disconnected wires or broken wires. If voltage is present go to next test.

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Section B. Plow Electrical System		
Symptom	Possible Cause	Remedy
1. Pump motor will not run (continued).	Check for voltage to Brown wire at control switches with ignition switch ON and a LIFT, RIGHT or LEFT function is activated.	If voltage is not present on Brown wire terminal and ground with a function activated. Check for disconnected wires or broken wires, or failed switch.
2. Pump motor runs continually.	Disconnect switch control or joystick control at the white 9-pin connector in cab.	If pump continues to run, pump solenoid has failed in a locked on position. Remove power to pump by disconnecting Main Power connector. Replace solenoid.
		If pump stops running, check control for stuck switches or a short between black and brown wires.
3. Plow will not raise.	Check that Main Power Connector is connected properly.	Plug in Connector.
	With ignition switch on and Lift function activated check for voltage between the Red and Orange ground wire on valve body connector.	If voltage is present, valve coil or solenoid valve has failed or Battery is weak or defective. If voltage is not present go on to next test.
	With ignition switch on and Lift function activated check for voltage between terminal 4 and terminal 1 (ground) on vehicle Main Power Connector.	If no voltage is present, check for broken wires or broken or corroded terminals on vehicle harness. If voltage is present, check for broken or corroded wires or terminals on the Plow harness.
4. Plow will not lower.	Check that Main Power Connector is connected properly.	Plug in Connector.



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Section B. Plow Electrical System		
Symptom	Possible Cause	Remedy
4. Plow will not lower (continued).	With ignition switch On and Float function activated check for voltage between the Green and Orange ground wire on valve body power connector.	If voltage is present, valve coil or solenoid valve has failed or Battery is weak or defective. If voltage is not present go to next test.
	With ignition switch On and Lift function activated check for voltage between terminal 3 and terminal 1 (ground) on vehicle Main Power Connector.	If no voltage is present, check for broken wires or broken or corroded terminals on vehicle harness. If voltage is present, check for broken or corroded wires or terminals on the Plow harness.
5. Plow will not Angle Right.	Check that Main Power Connector is connected properly.	Plug in Connector.
	With ignition switch On and Right function activated check for voltage between the White and Orange ground wire on valve body power connector.	If voltage is present, valve coil or solenoid valve has failed or Battery is weak or defective. If voltage is not present go to next test.
	With ignition switch On and Lift function activated check for voltage between terminal 6 and terminal 1 (ground) on vehicle Main Power Connector.	If no voltage is present, check for broken wires or broken or corroded terminals on vehicle harness. If voltage is present, check for broken or corroded wires or terminals on the Plow harness.
6. Plow will not Angle Left.	Check that Main Power Connector is connected properly.	Plug in Connector.

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Section B. Plow Electrical System		
Symptom	Possible Cause	Remedy
6. Plow will not angle Left (continued).	With ignition switch ON and Left function activated check for voltage between Blue and Orange ground wire on valve body power connector.	If voltage is present, valve coil or solenoid valve has failed or Battery is weak or defective. If voltage is not present go to next test.
	With ignition switch On and Lift function activated check for voltage between terminal 5 and terminal 1 (ground) on vehicle Main Power Connector.	If no voltage is present, check for broken wires or broken or corroded terminals on vehicle harness. If voltage is present, check for broken or corroded wires or terminals on the Plow harness.
7. Left & Right functions reversed.	Verify the correct wire placement of the White and Blue wires by referring to the Curtis SNO-PRO 3000 Harness Layout.	Plug connectors in the correct location.
	With the switch panel verify the correct wire placement at the switch.	Switch the Blue and White wires at the back of the switch panel.
8. Raise & Lower functions reversed.	Verify the correct wire placement of the Red and Green wires by referring to the Curtis SNO-PRO 3000 Harness Layout.	Plug connectors in the correct location.
	With the switch panel verify the correct wire placement at the switch.	Switch the Red and Green wires at the back of the switch panel.

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Section B. Plow Electrical System		
Symptom	Possible Cause	Remedy
9. Plow will not remain in Float.	Check Raise and Lower Switch for worn out Detent position by testing for maintained voltage between the Green and Orange ground wires.	Replace Switch.
	Check Joystick control for worn out Detent position or bent switch actuator by testing for maintained voltage between the Green and Orange ground wires.	Bend Switch actuator to compensate for worn out detent. Replace detent assembly or Joystick Control.
	Verify a good ground to Joystick Control.	Ground Orange Wire.
10. Plow Jack will not Extend.	With ignition switch On and Float function activated check Green wire on Jack Switch for voltage.	If voltage is present go to next test. If voltage is not present, check for voltage between the Green and Orange ground wire on valve body power connector. Verify that control is in Float, check for broken wires.
	With ignition switch On and Control in Float, push the Jack switch down (Jack extend) and verify that Pump motor runs.	If pump motor runs go to next test. Check for voltage on Brown wire terminal and ground with a function activated. Check for correct wire placement at the switch, disconnected wires or broken wires or failed switch.
	With ignition switch On and Control in Float, push the Jack switch down (Jack extend) and check for voltage between the Light Blue/Black and Orange ground wire on valve body power connector.	If voltage is present , valve coil or solenoid has failed or Battery is weak or defective. If voltage is not present, check for correct wire placement at the switch, disconnected wires or failed switch.

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Section B. Plow Electrical System		
Symptom	Possible Cause	Remedy
11. Plow Jack will not Retract.	With ignition switch On and Float function activated check Green wire on Jack Switch for voltage.	If voltage is present go to next test. If voltage is not present, check for voltage between the Green and Orange ground wire on valve body power connector. Verify that control is in Float check for broken wires.
	With ignition switch On and Control in Float, lift the Jack switch Up (Jack retract) and check for voltage between the Pink/Black and Orange ground wire on valve body power connector.	If voltage is present , valve coil or solenoid has failed or Battery is weak or defective. If voltage is not present, check for correct wire placement at the switch, disconnected wires or failed switch.
12. Plow Jack will not Retract when Plow is raised.	With ignition switch On and Lift function activated check for voltage between the Pink/ Black and Orange ground wire on valve body power connector.	If voltage is present , valve coil or solenoid has failed or Battery is weak or defective. If voltage is not present, check for broken wires or failed Jack Retract Diode.
13. Plow raises when Jack retracting.	With ignition switch On and Control in Float, lift the Jack switch Up (Jack retract) and check for voltage between the Pink/Black and Orange ground wire on valve body power connector.	If voltage is present , Jack Retract Diode has failed. Replace Diode.

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Section B. Plow Electrical System

Symptom	Possible Cause	Remedy
14. Battery goes dead when vehicle is OFF.	Disconnect switch control or joystick control at the White 9-pin connector in cab with ignition switch Off check for voltage between the Black and Orange ground.	If voltage is present, move black wire to a switched circuit that turns off with the vehicles ignition.
15. Battery goes dead when vehicle is running.	Test condition of Vehicles battery.	Charge battery and retest or replace battery.
	Test condition of vehicles charging system.	Repair charging system.
	Check for electrical shorts.	Repair electrical shorts in electrical system.

Section C. Plow Lighting Electrical System

Symptom	Possible Cause	Remedy
1. No lights on vehicle or Plow.	Check electrical connections.	Verify connections at toggle switch, headlight adapters and Plow headlight connectors. Refer to Curtis Harness layout sheet.
	Check headlight adapters.	Insure that proper headlight adapters are being used.
Note: Some new vehicles use a (floating ground) or (hot ground) system. Check with vehicle manufacturer for test procedure.	(Ground test) with Headlight switch On check for voltage to Light Green and ground for Low beam and Yellow and ground for High beam.	If voltage is not present, check for disconnected wires or broken wires. Repair or replace as necessary.

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Section C. Plow Lighting Electrical System		
Symptom	Possible Cause	Remedy
1. No lights on vehicle or Plow (continued).	(Floating ground or Hot ground) With headlight switch On check for voltage to Light Green and (12 Volt +) for Low beam and Yellow and (12 Volt +) for High beam.	If voltage is not present, check for disconnected wires or broken wires.
2. Plow lights will not come On.	Check electrical connections.	Verify connections at toggle switch and Plow headlight connectors. Refer to Curtis Harness layout sheet.
	With Headlight Switch On and Headlight toggle switch set to Plow check for voltage between terminals 8 and 9 for Low beam and terminals 8 and 10 for High beam on Vehicle Main power connector.	
3. Plow lights function but Vehicle lights will not come On.	Incorrect Headlight Adapter Kit	Verify headlight adapter kit number and wiring connections. Verify light switch is wired correctly.
4. High and Low beam reversed on Plow.	Check electrical connections on toggle switch.	Verify connections at toggle switch, headlight adapters and Plow headlight connectors. Refer to Curtis Harness layout sheet.
	Check headlight adapters	Insure that proper headlight adapters are being used.
5. High beam indicator not functioning properly.	Check electrical connections on toggle switch.	Verify connections at toggle switch, headlight adapters and Plow headlight connectors. Refer to Curtis Harness layout sheet.
	Check electrical connections at headlight and headlight adapters.	Verify connections at headlight adapters and Plow headlight connectors. Refer to Curtis Harness layout sheet.

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Section C. Plow Lighting Electrical System		
Symptom	Possible Cause	Remedy
6. Headlight fuse blows after installing new Plow Lights.	Remove Plow headlight bulb and check that there is NO wire from 3 prong head light connector to ground.	Replace with original Curtis Snow Plow lights.
7. Plow parking & directional lights are dim and/or flicker.	Check Plow lights for good ground.	Remove paint under headlight mounts and retighten mounting bolts.
	Check electrical connections for corroded or damaged terminals.	Repair or replace damaged terminals.
8. Turn signals will not function.	Check electrical connections to vehicle wiring. See Harness Layout for proper connections.	Repair any damaged connections.
9. Turn signals flash rapidly.	Check for burned out bulb filaments.	Replace bulbs.
	Check Flasher	Replace original vehicle flasher with heavy-duty flasher.
10. No running lights on Plow.	Check electrical connections to vehicle wiring. See Harness Layout for proper connections.	Repair any damaged connections.



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