The Curtis Snowplow family of products are built and tested for lasting performance. All snowplows are fully tested for electrical, hydraulic and lighting malfunctions prior to shipping. Any malfunction is corrected immediately at our facility to ensure that our customers receive a quality product that will last for years to come. As with any piece of equipment, rough service and harsh environments can lead to poor performance, necessitating repairs.

When diagnosing snowplow malfunctions, it is important to methodically separate and test the different systems that are utilized on the Curtis Sno-Pro series snowplows. The approach detailed below will greatly reduce diagnostic time and take the guess work out of troubleshooting. What this means is lower associated labor, fewer unnecessary parts and more satisfied customers.

The following pages contain the hydraulic circuit as well as the electrical system. Each diagram shows a specific function, and what actually happens when a function is activated. The information will be useful in helping to understand what to look for when troubleshooting a snowplow malfunction. Each page, both electrical and hydraulic, has a "What Happens" heading at the top of the page. This will offer a step by step sequence of what takes place internally in the snowplow system once the controller is activated. This will act as a guide to what to look for as a possible cause of a malfunction.
# TABLE OF CONTENTS

Reference Section
- Hydraulic Manifold Symbols: Page 1
- Electrical System Symbols: Page 2
- Sno-Pro 3000/Home-Pro Hydraulic Manifold Circuit: Page 3
- Sno-Pro 2000/Trip Edge/Mach 1 Hydraulic Manifold Circuit: Page 4
- Sno-Pro V-Plow W/SA Cylinders Hydraulic Manifold Circuit: Page 5
- Electrical Plug Pin-Outs: Page 6
- Electrical Plug Pin-Outs Continued: Page 7
- Hydraulic Manifold Parts Breakdown: Page 8
- Electric/Hydraulic Power Unit Parts Breakdown: Page 9
- Notice & Warnings: Page 10
- Diagnostic Method: Page 11-13
- Sno-Pro V-Plow with Single Acting Cylinders:
  - Angle Left Electrical: Page 35
  - Angle Left Hydraulic: Page 36
  - Angle Right Electrical: Page 37
  - Angle Right Hydraulic: Page 38
  - Left Wing Extend Electrical: Page 39
  - Left Wing Extend Hydraulic: Page 40
  - Right Wing Extend Electrical: Page 41
  - Right Wing Extend Hydraulic: Page 42
  - Left Wing Retract Electrical: Page 43
  - Left Wing Retract Hydraulic: Page 44
  - Right Wing Retract Electrical: Page 45
  - Right Wing Retract Hydraulic: Page 46
  - Plow Lift Electrical: Page 47
  - Plow Lift Hydraulic: Page 48
  - Plow Float Electrical: Page 49
  - Plow Float Hydraulic: Page 50

Function Guide Section: Sno-Pro 3000/Home-Pro
- Angle Left Electrical: Page 14
- Angle Left Hydraulic: Page 15
- Angle Right Electrical: Page 16
- Angle Right Hydraulic: Page 17
- Plow Lift Electrical: Page 18
- Plow Lift Hydraulic: Page 19
- Plow Float Electrical: Page 20
- Plow Float Hydraulic: Page 21
- Jack Extend Electrical: Page 22
- Jack Extend Hydraulic: Page 23
- Jack Retract Electrical: Page 24
- Jack Retract Hydraulic: Page 25
- 2010 Sno-Pro 3000 Elec/Hyd Overview: Page 26

Function Guide Section: Sno-Pro 2000/Trip-Edge/Commercial
- Angle Left Electrical: Page 27
- Angle Left Hydraulic: Page 28
- Angle Right Electrical: Page 29
- Angle Right Hydraulic: Page 30
- Plow Lift Electrical: Page 31
- Plow Lift Hydraulic: Page 32
- Plow Float Electrical: Page 33
- Plow Float Hydraulic: Page 34

Sno-Pro Poly Trip-Edge V-Plow
- 2010 Poly Trip-Edge V-Plow Elec/Hyd Overview: Page 51
- Vehicle Side Schematic: Page 52
- Plow Side Schematic: Page 53
- Vehicle Side Harness Schematic: Page 54
- Plow Side Harness Schematic: Page 55
- Plow Side Straight Blade Adapter: Page 56
- Plow Side V-Blade Blade Adapter: Page 57
- Vehicle Side Relay Connector Plugging: Page 58

Troubleshooting Index
- Troubleshooting Index by Problem: Pages 59-72
- Curtis Warranty Forms: Page 73 - 74
CURTIS SNOWPLOWS: MANIFOLD SYMBOLS

Cross-Over Relief Valve
Usage: Angle Circuits

Flow Restrictor
Usage: Lift & Jack Circuit

Check Valve
Usage: Lift Circuit

2/2 Way Solenoid Valve
Usage: 1TBM2 Plow Float
1TBM2a Jack Retract

Filter Screen
Usage: All Circuits

Pressure Supply
From Power Unit

3/4 Way Solenoid Valve
W/Tandem Center
Usage: 1TBM1 Angle Valve

3/4 Way Solenoid Valve
W/Open Center
Usage: 1TBM7
Plow Lift/Jack Extend Valve

Fluid Return to Reservoir

2/2 Way Solenoid Valve
W/Adjustable Rate
Usage: 1TBM2V V-Plow Float

3/4 Way Solenoid Valve
Usage: 1TBM1V
V-Plow Wing Extend/Retract Valve

2/2 Way Solenoid Valve
Usage: 1TBM3
Trip Edge Lift Valve

Filter Screen
Usage: All Circuits

Flow Restrictor
Usage: Lift & Jack Circuit
Note: Lift/Float Switch, Angle Switch & A-Frame Jack Switch all have bridged center terminals conducting power to both poles of the switch.

Chassis Ground

Diode

15a Fuse

VEHICLE BATTERY

Pump Motor Solenoid
Curtis Part #: 1TBP61A

Plow Light Switch
Curtis Part #: 1TBP48A

Jack Switch
Curtis Part #: 1TBP100

Switch Panel Control Kit
Curtis Part #: 1TBP60A

Electric/Hydraulic Power Unit
With Manifold Block

Ground Stud

Power Stud

Plow Float

Plow Lift

Jack Retract

Angle Right

Angle Left

Jack Extend

Angle Switch

Lift/Float Switch

Headlight Switch

Diode 15a Fuse
SNO-PRO / HOME-PRO / TRIP-EDGE w/HYD.JACK: MANIFOLD CIRCUIT - HYDRAULIC

- **"A" Port** Right Cylinder
- **"B" Port** Left Cylinder
- **"X" Port** Jack Cylinder
- **"H" Port** Lift Cylinder

Cross-Over Relief For Left Cylinder

Cross-Over Relief For Right Cylinder

Angle Valve: 1TBM1

Jack Retract Valve: 1TBM2A

Plow Float Valve: 1TBM2

Plow Lift/Jack Extend Valve: 1TBM7

Pressure Supply From Power Unit

Fluid Return to Reservoir
SNO-PRO TRIP EDGE w/GAS SPRING JACK & SNO-PRO 2000 MANIFOLD CIRCUIT - HYDRAULIC

Pressure Supply From Power Unit

Fluid Return to Reservoir

"A" Port
Right Cylinder

"B" Port
Left Cylinder

"H" Port
Lift Cylinder

Cross-Over Relief
For Right Cylinder

Cross-Over Relief
For Left Cylinder

Angle Valve: 1TBM1

Check Valve: 1TBM5

Float Valve: 1TBM2

Lift Valve: 1TBM3
SNO-PRO/V-PLOW w/SINGLE ACTING CYLINDERS & SPRING RETURN: MANIFOLD CIRCUIT - HYDRAULIC

Cross-Over Relief For Left Wing
Extend/Retract Valve For Left Wing P/N: 1TBM1V
Extend/Retract Valve For Right Wing P/N: 1TBM1V
Lift Valve P/N: 1TBM3
Adjustable Float Valve P/N: 1TBM2V
SNO-PRO / HOME-PRO / TRIP-EDGE w/HYD. JACK:
ELECTRICAL PLUG PIN-OUTS

Single Plug Harness
Vehicle Side Harness

<table>
<thead>
<tr>
<th>PIN #</th>
<th>COLOR</th>
<th>FUNCTION</th>
<th>AWG</th>
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<tbody>
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<td>GROUND</td>
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<td>(1)</td>
<td>ORANGE</td>
<td>GROUND</td>
<td>16</td>
</tr>
<tr>
<td>2</td>
<td>RED</td>
<td>12 VDC (+)</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>GREEN</td>
<td>FLOAT</td>
<td>18</td>
</tr>
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<td>4</td>
<td>RED</td>
<td>LIFT</td>
<td>18</td>
</tr>
<tr>
<td>5</td>
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<td>6</td>
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<tr>
<td>7</td>
<td>BROWN</td>
<td>PUMP SOLENOID</td>
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</tr>
<tr>
<td>8</td>
<td>WHITE/RED</td>
<td>LIGHT COMMON</td>
<td>16</td>
</tr>
<tr>
<td>9</td>
<td>LG/B</td>
<td>LOW BEAM</td>
<td>16</td>
</tr>
<tr>
<td>10</td>
<td>Y/B</td>
<td>HIGH BEAM</td>
<td>16</td>
</tr>
<tr>
<td>11</td>
<td>GRAY</td>
<td>PARK / RUN</td>
<td>16</td>
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<td>12</td>
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Single Plug Harness
Plow Side Harness

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</tr>
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<td>2</td>
<td>RED</td>
<td>12 VDC (+)</td>
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<td>3</td>
<td>GREEN</td>
<td>FLOAT</td>
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</tr>
<tr>
<td>4</td>
<td>RED</td>
<td>LIFT</td>
<td>18</td>
</tr>
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<td>BROWN</td>
<td>PUMP SOLENOID</td>
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<td>WHITE/RED</td>
<td>LIGHT COMMON</td>
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<td>11</td>
<td>GRAY</td>
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<td>12</td>
<td>VIOLET</td>
<td>LEFT TURN</td>
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<td>PINK</td>
<td>RIGHT TURN</td>
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Double Plug Harness
Control Plug

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<td>FLOAT</td>
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<tr>
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<td>RED</td>
<td>LIFT</td>
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</tr>
<tr>
<td>4</td>
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<td>LEFT SOLENOID</td>
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<td>5</td>
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<tr>
<td>6</td>
<td>WHITE</td>
<td>RIGHT SOLENOID</td>
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<tr>
<td>7</td>
<td>BROWN</td>
<td>PUMP SOLENOID</td>
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<tr>
<td>8</td>
<td>WHITE/RED</td>
<td>LIGHT COMMON</td>
<td>16</td>
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<tr>
<td>9</td>
<td>GRN/BLK</td>
<td>LOW BEAM</td>
<td>16</td>
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<tr>
<td>10</td>
<td>NONE</td>
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</tr>
<tr>
<td>11</td>
<td>YEL/BLK</td>
<td>HIGH BEAM</td>
<td>16</td>
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<td>12</td>
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</tr>
<tr>
<td>15</td>
<td>NONE</td>
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Plow Side  Vehicle Side
**In-Cab Control Plug**

"MOLEX" FREE HANGING RECEPTACLE
.093 (9) PIN POWER CONNECTOR
P/N 03-09-1094
WITH "MOLEX" FEMALE TERMINAL
P/N 02-09-1117

<table>
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<th>FUNCTION</th>
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<tr>
<td>1</td>
<td>BLACK</td>
<td>12v +</td>
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<tr>
<td>2</td>
<td>BLUE</td>
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</tr>
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<td>3</td>
<td>WHITE</td>
<td>RIGHT</td>
</tr>
<tr>
<td>4</td>
<td>RED</td>
<td>LIFT</td>
</tr>
<tr>
<td>5</td>
<td>GREEN</td>
<td>FLOAT</td>
</tr>
<tr>
<td>6</td>
<td>BROWN</td>
<td>PUMP SOLENOID</td>
</tr>
<tr>
<td>7</td>
<td>ORANGE</td>
<td>GROUND ~</td>
</tr>
<tr>
<td>8</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>9</td>
<td>NA</td>
<td>NA</td>
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</tbody>
</table>

**Vehicle Side Harness Headlight Adapter Connectors**

A = WHT/RED COMMON
B = YEL HIGH BEAM FEED
C = LT GRN LOW BEAM FEED
D = YEL/RED HIGH BEAM
E = GRN/RED LOW BEAM

**In-Cab Headlight Switch Connections**

COLOR | FUNCTION
-------|----------
GREEN  | LOW BEAM FEED
YELLOW | HIGH BEAM FEED
GREEN/BLACK | LOW BEAM PLOW
YELLOW/BLACK | HIGH BEAM PLOW
GREEN/RED | LOW BEAM VEHICLE
YELLOW/RED | HIGH BEAM VEHICLE

**Plow Side Harness Headlight Connector**

END VIEW
LOOKING AT CONNECTOR

COLOR | FUNCTION
-------|----------
A = COMMON (WHITE/RED)
B = NOT USED
C = TURN (PINK) OR (VIOLET)
D = RUN (GRAY)
E = LOW BEAM (L GREEN/BLACK)
F = HIGH BEAM (YELLOW/BLACK)
SNO-PRO / HOME-PRO / TRIP-EDGE w/HYD. JACK:
HYDRAULIC MANIFOLD

Schem. Ref #  Item Part #  Recommend Dealer Stock  Description                                      Qty/ Unit
1    1TBP59AP2     *                       Manifold Block Complete With Valves & Coils  1
2    1TBM1        *                       3/4 WAY SOLENOID VALVE (ANGLE LEFT/RIGHT)  1
3    1TBM7        *                       2/2 WAY SOLENOID VALVE (PLOW LIFT)         1
4    1TBM2        *                       2/2 WAY SOLENOID VALVE (PLOW FLOAT)        1
5    1TBM4        *                       12 VDC COIL                                6
6    1TBM2A       *                       2/2 WAY SOLENOID VALVE (JACK RETRACT)      1
# SNO-PRO / HOME-PRO / TRIP-EDGE w/HYD. JACK:
## HYDRAULIC POWER UNIT

### Schem. Ref # | Item | Part # | Recommend Dealer Stock | Description | Qty/Unit
--- | --- | --- | --- | --- | ---
N/S | 1TBP59AP1 | N/S | ELEC/HD POWER UNIT W/O MANIFOLD | 1
1 | 1TBM8 | * | DC MOTOR 12V | 1
2 | 1TBM9 | * | VALVE PLUG | 1
3 | 1TBM10 | * | VALVE PLUMBING PLUG | 1
4 | 1TBM11 | * | RESERVOIR O-RING | 1
5 | 1TBM12 | * | COUPLING | 1
6 | 1TBM13 | * | PUMP ASSEMBLY | 1
7 | 1TBM14 | * | PUMP O-RING KIT | 1
8 | 1TBM15 | * | WASHER FLAT | 1
9 | 1TBM16 | * | PUMP MOUNTING BOLT | 2
10 | 1TBM17 | * | BOLT - SUCTION COVER 5/16" | 1
11 | 1TBM18 | * | SCREW TAP/TITE M6 X 12mm | 1
12 | 1TBM19 | * | PLUMBING ASSEMBLY INLET | 1
13 | 1TBM20 | * | FILTER | 1
14 | 1TBM21 | * | COLLECTOR MAGNET | 1
15 | 1TBM22 | * | RESERVOIR SCREW | 4
16 | 1TBM23V | * | RESERVOIR | 1
17 | 1TBP63A | * | EXTERNAL RESERVOIR BREATHER CAP | 1
N/S | 1TBP63B | N/S | INTERNAL RESERVOIR BREATHER CAP | 1
18 | 1TBM25 | * | FIXED RELIEF VALVE ASSEMBLY | 1
19 | 1TBM26 | * | RETURN TUBE | 1
20 | 1TBM27 | * | COMPRESSION NUT | 1
21 | 1TBM28 | * | COMPRESSION SLEEVE | 1
22 | 1TBM29 | * | SUCTION COVER | 1

### Diagram
- **Attach Tubing Here:**
- **Sno-Pro / Pro / Trip-Edge w/Hyd. Jack:**

---

**KTI Hydraulic Power Unit Parts Breakdown**

<table>
<thead>
<tr>
<th>Ref #</th>
<th>Item</th>
<th>Part #</th>
<th>Describe</th>
<th>Qty/Unit</th>
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<tbody>
<tr>
<td>N/S</td>
<td>1TBP59AP1V</td>
<td>N/S</td>
<td>ELEC/HD POWER UNIT W/O MANIFOLD</td>
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<tr>
<td>1</td>
<td>1TBM8</td>
<td>*</td>
<td>DC MOTOR 12V</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1TBM9</td>
<td>*</td>
<td>Gear Pump</td>
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</tr>
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<td>3</td>
<td>1TBM12A</td>
<td>Motor to Pump Coupling</td>
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<tr>
<td>4</td>
<td>1TBM35</td>
<td>5/16&quot; x 3&quot; Pump Mounting Bolts</td>
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<td>5</td>
<td>1TBM36</td>
<td>3/8&quot; NPT Plastic Elbow</td>
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</tr>
<tr>
<td>6</td>
<td>1TBM20</td>
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<td>3/8&quot; NPT Inlet Strainer</td>
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<td>7</td>
<td>1TBM37</td>
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<td>Cartridge Relief Valve</td>
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<td>1TBM11A</td>
<td>*</td>
<td>Reservoir O-Ring</td>
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<td>10</td>
<td>1TBM21</td>
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<td>Collector Magnet</td>
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<td>11</td>
<td>1TBM38</td>
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<td>12</td>
<td>1TBM39</td>
<td>1/2&quot; ID Clear Plastic Tubing</td>
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</table>
Know your own abilities and mechanical skills. Some procedures in the following Troubleshooting Guide require a considerable mechanical aptitude. Use discretion and refer to an Authorized Curtis Dealer when needed.

The following Guide has been developed to provide a step-by-step approach to Troubleshooting operational problems with your Sno-Pro/Home-Pro 3000 Snow Plow.

Many functional problems may be solved by first following this General Checklist.

- Remove the Filler Cap on the Pump and verify the Reservoir is full of oil.
- Check for external leaking and tighten any loose Hoses, Fittings, or Plugs. Damaged Hoses must be replaced immediately.
- Check the condition of the Fuse, replace if necessary.
- Check the Harness Plug Connector at the front of the vehicle and verify a good connection.
- Check the Battery and Solenoid connections under the hood of the vehicle and verify a good connection and ground.
- Remove the A-Frame Cover and verify a good ground connection.

If functional problems persist after following the General Checklist, locate the description of the problem you are experiencing in the Troubleshooting Guide Glossary and follow the course of action detailed under the specific problem.

Suggested Test Equipment:

An Analog 8-Range Multimeter, which can measure DC voltage up to 20 Volts, is preferred for any of the tests described in this Guide.

Most tests can be performed using a 12vdc-Test Light and/or Continuity Tester.

A 3000-PSI Oil Filled Pressure Gauge will be needed for some of the Hydraulic test procedures.
DIAGNOSTIC METHOD - FIND THE PROBLEM....FAST!

System #1: Vehicle Electrical System:
Related Components: Vehicle Side Wiring Harness
Battery Lead #4 Gauge
Motor Solenoid
In-Cab Control
Headlight Switch
Headlight Adapter

The starting point for this method is the Vehicle Side Electrical System. The chart below details all of the Plug Pinouts for the Vehicle Side Harness.

The very first step in this process is to verify a PROPER INSTALLATION i.e. In-Cab Control plugged in and turned on, all wires connected correctly, good ground connections, etc...

Testing Plow Functions:
Using the diagram below and a test light, activate each function and test the corresponding pin in the Harness Plug for power. For Lift, Left Angle & Right Angle functions, the Pin for each function AND the Pin for the Pump Solenoid should be powered at the same time. Activating the Pump Solenoid will also power the 12vdc Hi-Amp Pin (#2). When testing the float function, only that Pin will be powered. For testing Headlight and Directional functions, it will be necessary to turn each function on inside the cab. If all Pins test correctly, the Vehicle Harness System has been eliminated as the cause of the malfunction. If one or more Pins do not test correctly, determine which device is connected at the other end of the Harness.

For function problems, test the In-Cab Controls. To do this, attach the test light alligator clip to ground and insert the probe of the test light into the colored wire on the in-cab control that corresponds with the function that is being tested. Activate the function and test for power. Through the process of elimination, the In-Cab Control will be determined faulty or in good working order.
If all functions test correctly but no power is being sent to the 12vdc Hi-Amp (Pin #2), test the Brown Wire at the Pump Solenoid. To do this, activate each function (Lift, Left, Right) and test the Brown Wire connection at the Solenoid with the Test Light. If no power is present, the Harness may be faulty.

If power is present but the Solenoid is not operating, double check the Battery Cable connections as well as the mounting surface. The Pump Solenoid grounds through the Mounting Bracket and must have a rust-free, metallic surface to mount to. If the above has been checked, the Solenoid is faulty. If the Solenoid is transferring voltage from one terminal to the other when activated, the Solenoid is working properly and there may be an internal malfunction in the Harness.

**Testing Plow Light System:** For lighting problems, test the Plow Light Switch first. Turn the vehicle headlights on. Locate the Plow Headlight Switch and test each wire for power depending on the position of the Switch. If the Switch toggles between vehicle and plow lights properly, disconnect the Headlight Adapters one side at a time and test the Gray Packard Connectors for power. See the diagram below for details. If all of the functions test properly, the Vehicle Harness is in proper working order. Otherwise, there is an internal malfunction in the Harness.

If, after performing the above test procedures, the Vehicle Harness is working properly, remove the A-Frame Cover from the Plow and plug the Plow Harness into the Vehicle Harness. It is not necessary to re-attach the Plow to the vehicle as this reduces the work area. It may be necessary, however, to remove the Harness P-Clamp from the Lift Frame Upright and remove the Wire Ties holding the Headlight pigtails. This will increase the Harness length.

**System #2: Plow Electrical System:**

**Related Components:** Plow Side Wiring Harness, 12vdc Valve Coils, Plow Lights, 12vdc Pump Motor

The next step in the testing procedure is to determine if the Plow Side Harness is working properly.

**Testing Plow Functions:**

**WARNING:** DISCONNECT THE POSITIVE BATTERY CABLE FROM THE BATTERY SIDE OF THE PUMP MOTOR SOLENOID BEFORE TESTING THE PLOW SIDE HARNESS. IF THIS IS NOT DONE, THE PLOW MAY MOVE ERRATICALLY DURING THIS TEST. FAILURE TO DO SO MAY RESULT IN SERIOUS INJURY OR DEATH.
**DIAGNOSTIC METHOD - FIND THE PROBLEM....FAST!**

**Testing Plow Functions:** Disconnect the Packard Connector for the function to be tested. The Table below indicates the Color Code for each function. Connect the alligator clip of the test light to a ground source (the stud on the back of the Pump Assembly). Insert the test probe into the colored side of the Packard Connector (the Orange Wire side is used for a ground connection) and activate the function. Remember, Lift, Left Angle & Right Angle functions also activate the Pump Motor (Brown Wire) simultaneously. If the Packard Controller is receiving power when the function is activated, the Plow Side Harness is working properly.

**Testing Plow Light System:** For Headlight testing on the Plow, disconnect the Plow Light pigtail from the Harness and, using the Table below, test for Light functions, i.e. Hi-Beam, Lo-Beam, Common, Parking Lights and Directional Lights. If the functions are receiving voltage, the Plow Harness is working properly and there may be a malfunction within the Plow Headlight Assembly. If the functions are not receiving voltage, there may be an internal malfunction in the Plow Side Harness.

**Testing 12vdc Valve Coils:** Leave the Battery side of the Pump Motor Solenoid disconnected from the Battery. Remove the 12vdc Coil from the Valve for the function to be tested. Insert the probe of the test light through the hole in the Coil. Activate the function using the In-Cab Control. A magnetic draw from the Coil should pull the test probe when energized. If no draw is present, the Coil may be faulty. If the 12vdc Valve Coils are working properly, the function problem is most likely a Hydraulic problem.

**System #3: Snowplow Hydraulic System:**

**Related Components:** Electric/Hydraulic Power Unit  
Hydraulic Manifold

After it has been determined that both the Vehicle Side and Plow Side Harnesses are in proper working order, the next step will be to troubleshoot the Hydraulic System, with particular attention to the Manifold. The main function of the Hydraulic Manifold is to direct fluid to the appropriate Cylinder to perform a task. For Example: When the In-Cab Control is moved to the 'Plow Lift' function, the Pump Motor spins the Pump developing pressure. This pressure enters the Manifold. The Manifold’s internal plumbing is configured in such a way that if no Valve is opened, the fluid will return to the Reservoir on the Electric/Hydraulic Power Unit. Activating the 'Plow Lift' function not only engages the Pump, but also shifts the 'Plow Lift/Jack Extend' Valve to the 'Plow Lift' position. The pressurized fluid will follow the path of least resistance, in this case, the opened 'Plow Lift' passageway. The fluid then exits the Manifold through the 'Lift' Hose attached to the 'H' Port on the Manifold and the 7-1/2" Lift Cylinder at the other end. Pressurized fluid extends the Lift Cylinder raising the Plow. Read through the following pages for detailed Hydraulic and Electrical Circuit information.
**SNO-PRO / HOME-PRO / TRIP-EDGE w/HYD. JACK:**
**ANGLE LEFT FUNCTION - ELECTRICAL**

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.
B.) Moving the Controller to 'Angle Left' position energizes the Blue 'Angle Left' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The Blue 'Angle Left' Wire sends 12vdc power to the Angle Left Valve Coil.
E.) See next page for Hydraulic Flow Chart.
SNO-PRO / HOME-PRO / TRIP-EDGE w/HYD. JACK: ANGLE LEFT FUNCTION - HYDRAULIC

What Happens:
A.) Left Angle Function is Activated with Controller.
C.) 12vdc Motor spins Pump developing pressure.
D.) Blue Wire shifts 'Angle Valve' to Angle Left position.
E.) Pump pressure is supplied to 'A' Port extending Right Angle Cylinder.
F.) As Plow angles to the left, fluid from the Left Angle Cylinder returns to the Reservoir.
What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.
B.) Moving the Controller to 'Angle Right' position energizes the White 'Angle Right' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The White 'Angle Right' Wire sends 12vdc power to the Angle Right Valve Coil.
E.) See next page for Hydraulic Flow Chart.
What Happens:
A.) Right Angle Function is Activated with Controller.
C.) 12vdc Motor spins Pump developing pressure.
D.) White Wire shifts 'Angle Valve' to Angle Right position.
E.) Pump pressure is supplied to 'B' Port extending Left Angle Cylinder.
F.) As Plow angles to the right, fluid from the Right Angle Cylinder returns to the Reservoir.
SNO-PRO / HOME-PRO / TRIP-EDGE w/HYD. JACK: AUTOMATIC JACK RETRACT FUNCTION - ELECTRICAL

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.
B.) Moving the Controller to 'Plow Lift' position energizes the Red 'Plow Lift' Wire, the Brown 'Solenoid' Wire, and the Pink/Black 'Jack Retract' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The Red 'Plow Lift' Wire sends 12vdc power to the Plow Lift Valve Coil.
E.) The Pink/Black 'Jack Retract' Wire sends 12vdc power to the Jack Retract Valve Coil.
F.) Note: A Diode is installed between the connection of the Red 'Plow Lift' Wire and the Pink/Black 'Jack Retract' Wire. This prevents the Plow Lift Circuit from being activated when the A-Frame Jack Switch is used for the Jack Retract function.

What Happens:
A.) Lift Function is Activated with Controller.
C.) 12vdc Motor spins Pump developing pressure.
D.) Red Wire shifts 'Plow Lift/Jack Extend' Valve to Lift function.
F.) Pump pressure is supplied to 'H' Port extending Lift Cylinder.
G.) Jack Cylinder drains fluid through 'X' Port to Reservoir retracting Jack Leg.

Angle Valve: 1TBM1

"A" Port Right Cylinder
"B" Port Left Cylinder
"X" Port Jack Cylinder
"H" Port Lift Cylinder

Fluid Restrictor For Jack Circuit
Fluid Restrictor For Lift Circuit
Check Valve For Lift Circuit
Plow Float Valve

Cross-Over Relief For Left Cylinder
Cross-Over Relief For Right Cylinder

"A" Port Pressure
"B" Port Pressure
"H" Port Pressure
"X" Port Pressure

"X" Port Fluid Return to Reservoir
"H" Port Fluid Return to Reservoir

P Pressure Side Fluid Supply
T Fluid Return To Reservoir

C.) Pressure Supply From Power Unit
D.) Plow Lift/Jack Extend Valve: 1TBM7
E.) Jack Retract Valve
F.) Lift Cylinder
G.) Fluid Return to Reservoir

Fluid Supply Fluid Return
SNO-PRO / HOME-PRO / TRIP-EDGE w/HYD. JACK:
PLOW FLOAT FUNCTION - ELECTRICAL

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.
B.) Moving the Controller to 'Plow Float' position energizes the Green 'Float' Wire.
C.) The Green 'Float' Wire sends 12vdc power to the Float Valve Coil.
D.) The A-Frame Jack Switch is energized any time 'Float' is activated.
E.) See Next Page for Hydraulic Flow Chart.

A.) 12vdc Source Black Wire
    15a Fuse
    Must Be Ignition Switched

B.) Switch Panel Control Viewed From Behind

C.) Solenoid Control Brown Wire
   Headlight Switch
   Angle Switch
   Lift/Float Switch

D.) A-Frame Jack Switch

C.) Plow Float Green Wire

Ground Stud
Power Stud
Ground Connection Internal in Plow Side Harness
What Happens:
A.) Lift Function is activated with Controller.
B.) Green Wire shifts 'Float' Valve to Open position.
C.) Fluid from Lift Cylinder returns to Reservoir through Flow Restrictor slowing retraction.

Angle Valve: 1TBM1

"A" Port Right Cylinder
"B" Port Left Cylinder
"X" Port Jack Cylinder
"H" Port Lift Cylinder

Pressure Supply From Power Unit

Cross-Over Relief For Left Cylinder
Cross-Over Relief For Right Cylinder

Plow Lift/Jack Extend Valve: 1TBM7

Jack Retract Valve

Fluid Return to Reservoir

Plow Float Valve

Pressure Side Fluid Supply
Fluid Return To Reservoir
What Happens:

A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.

B.) Moving the Controller to 'Plow Float' position energizes the Green 'Plow Float' Wire which, in turn, sends power to the A-Frame Jack Switch.

C.) Moving the A-Frame Jack Switch to the 'Jack Extend' position energizes the Blue/Black 'Jack Extend' Wire and the Brown 'Solenoid' Wire.

D.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.

E.) The Blue/Black 'Jack Extend' Wire sends 12vdc power to the Jack Extend Valve Coil.

E.) See Next Page for Hydraulic Flow Chart.
What Happens:

A.) Lift Function is activated with Controller.

B.) Green Wire shifts 'Float' Valve to Open position and powers A-Frame Jack Switch.

C.) Fluid from Lift Cylinder returns to Reservoir.

D.) Jack Extend function is activated using A-Frame Jack Switch.

E.) Blue/Black Wire shifts 'Plow Lift/Jack Extend' Valve to Jack Extend position.

F.) Brown Wire activates Motor Solenoid sending power to 12vdc Motor.

G.) 12vdc Motor spins Pump developing pressure.

H.) Pump pressure is supplied to 'X' Port extending Jack Leg from bottom of A-Frame.

Angle Valve: 1TBM1

"A" Port Right Cylinder

"B" Port Left Cylinder

Cross-Over Relief For Left Cylinder

Cross-Over Relief For Right Cylinder

"X" Port Jack Cylinder

"H" Port Lift Cylinder

Jack Retract Valve

Plow Float Valve

Plow Lift/Jack Extend Valve: 1TBM7

Pressure Supply

From Power Unit

Fluid Return to Reservoir

Pressure Side Fluid Supply

Fluid Return To Reservoir
**SNO-PRO / HOME-PRO / TRIP-EDGE w/HYD. JACK: JACK RETRACT FUNCTION - ELECTRICAL USING A-FRAME JACK SWITCH**

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.
B.) Moving the Controller to 'Plow Float' position energizes the Green 'Plow Float' Wire which, in turn, sends power to the A-Frame Jack Switch.
C.) Moving the A-Frame Jack Switch to the 'Jack Retract' position energizes the Pink/Black 'Jack Retract' Wire.
D.) The Pink/Black 'Jack Retract' Wire sends 12vdc power to the Jack Retract Valve Coil.
E.) See Next Page for Hydraulic Flow Chart.

A.) 12vdc Source
Black Wire
Must Be Ignition Switched

B.) Switch Panel Control Viewed From Behind

C.) A-Frame Jack Switch

D.) Ground Connection Internal in Plow Side Harness

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**VEHICLE BATTERY**

**Chassis Ground**
Continuous Connection

**12vdc Switched By Solenoid**

**Solenoid Control Brown Wire**

**Ground Stud**

**Power Stud**

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**A-Frame Jack Switch**

**Solenoid Control**

**Headlight Switch**

**Angle Switch**

**Lift/Float Switch**

**15a Fuse**

---

**What Happens:**
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.
B.) Moving the Controller to 'Plow Float' position energizes the Green 'Plow Float' Wire which, in turn, sends power to the A-Frame Jack Switch.
C.) Moving the A-Frame Jack Switch to the 'Jack Retract' position energizes the Pink/Black 'Jack Retract' Wire.
D.) The Pink/Black 'Jack Retract' Wire sends 12vdc power to the Jack Retract Valve Coil.
E.) See Next Page for Hydraulic Flow Chart.
What Happens:
A.) Lift Function is activated with Controller.
B.) Green Wire shifts 'Float' Valve to Open position and powers A-Frame Jack Switch.
C.) Fluid from Lift Cylinder returns to Reservoir through the 'H' Port.
D.) Jack Retract function is activated using A-Frame Jack Switch.
E.) Pink/Black Wire shifts 'Jack Retract' Valve to Jack Extend position.
F.) Fluid from Jack Cylinder returns to Reservoir through 'X' Port retracting Jack Leg.

Angle Valve: 1TBM1

"A" Port Right Cylinder

"B" Port Left Cylinder

Cross-Over Relief For Left Cylinder

Cross-Over Relief For Right Cylinder

"X" Port Jack Cylinder

E.) Jack Retract Valve

"H" Port Lift Cylinder

C.)

B.) Plow Float Valve

P

G.) Pressure Supply From Power Unit

T

C., F.) Fluid Return to Reservoir

Fluid Return To Reservoir

Pressure Side Fluid Supply
SNO-PRO / HOME-PRO / TRIP-EDGE w/HYD. JACK: ELECTRICAL/HYDRAULIC POWER UNIT W/MANIFOLD

MANIFOLD END VIEW

- Coil
- Lift Hose
- Jack Hose
- Crossover Relief
- Left Angle Hose
- Right Angle Hose
- Ground
- Positive
- Float
- Motor (12VDC)
- Reservoir
- Lift
- Jack Extend
- Jack Retract
- Angle Right
- Angle Left

LIFT HOSE (ITBP98B)
JACK HOSE (ITBP98A)
RT. ANGLE HOSE (ITBP98C)
L. ANGLE HOSE (ITBP98B)
SNO-PRO / HOME-PRO / TRIP-EDGE w/GAS SPRING JACK:
ANGLE LEFT FUNCTION - ELECTRICAL

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.
B.) Moving the Controller to 'Angle Left' position energizes the Blue 'Angle Left' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The Blue 'Angle Left' Wire sends 12vdc power to the Angle Left Valve Coil.
E.) See Next Page for Hydraulic Flow Chart.

A.) 12vdc Source
Black Wire
15a Fuse
Must Be Ignition Switched

B.) Switch Panel Control
Viewed From Behind

C.) Chassis Ground
Continuous Connection

D.) Angle Left
Blue Wire

Ground Stud

Power Stud

Solenoid Control
Brown Wire

12vdc Switched
By Solenoid

Ground Connection
Internal in Plow Side Harness
SNO-PRO / HOME-PRO / TRIP-EDGE w/GAS SPRING JACK:
ANGLE LEFT FUNCTION - HYDRAULIC

What Happens:
A.) Left Angle Function is activated with Controller.
C.) 12vdc Motor spins Pump developing pressure.
D.) Blue Wire shifts 'Angle Valve' to Angle Left position.
E.) Pump pressure is supplied to 'A' Port extending Right Angle Cylinder.
F.) As Plow angles to the left, fluid from the Left Angle Cylinder returns to the Reservoir.

D.) Angle Valve: 1TBM1
C.) Pressure Supply From Power Unit
E.) "A" Port Right Cylinder
F.) "B" Port Left Cylinder

"H" Port Lift Cylinder

Cross-Over Relief For Right Cylinder
Cross-Over Relief For Left Cylinder

Check Valve: 1TBM5
Float Valve: 1TBM2
Lift Valve: 1TBM3

Fluid Return to Reservoir
Pressure Supply Fluid Supply
Fluid Return To Reservoir

Pressure Side T P
SNO-PRO / HOME-PRO / TRIP-EDGE w/GAS SPRING JACK:
ANGLE RIGHT FUNCTION - ELECTRICAL

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.
B.) Moving the Controller to 'Angle Right' position energizes the White 'Angle Right' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The White 'Angle Right' Wire sends 12vdc power to the Angle Right Valve Coil.
E.) See Next Page for Hydraulic Flow Chart.

A.) 12vdc Source
Black Wire
15a Fuse
Must Be Ignition Switched

B.) Switch Panel Control
Viewed From Behind

C.) Solenoid Control
Brown Wire

D.) Angle Right
White Wire

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.
B.) Moving the Controller to 'Angle Right' position energizes the White 'Angle Right' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The White 'Angle Right' Wire sends 12vdc power to the Angle Right Valve Coil.
E.) See Next Page for Hydraulic Flow Chart.
**SNO-PRO / HOME-PRO / TRIP-EDGE w/GAS SPRING JACK:**
**ANGLE RIGHT FUNCTION - HYDRAULIC**

What Happens:
A.) Right Angle Function is activated with Controller.
C.) 12vdc Motor spins Pump developing pressure.
D.) White Wire shifts 'Angle Valve' to Angle Right position.
E.) Pump pressure is supplied to 'B' Port extending Left Angle Cylinder.
F.) As Plow angles to the right, fluid from the Right Angle Cylinder returns to the Reservoir.

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**Diagram Details:**
- **"A" Port Right Cylinder**
- **"B" Port Left Cylinder**
- **"H" Port Lift Cylinder**
- **Cross-Over Relief For Right Cylinder**
- **Cross-Over Relief For Left Cylinder**
- **Check Valve: 1TBM5**
- **Float Valve: 1TBM2**
- **Lift Valve: 1TBM3**
- **C.) Pressure Supply From Power Unit**
- **F.) Fluid Return to Reservoir**

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**Legend:**
- P: Pressure Side
- T: Fluid Supply Side
- Fluid Return To Reservoir
**SNO-PRO / HOME-PRO / TRIP-EDGE w/GAS SPRING JACK:**
**PLOW LIFT FUNCTION - ELECTRICAL**

What happens:

A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.

B.) Moving the Controller to 'Plow Lift' position energizes the Red 'Lift' Wire and the Brown 'Solenoid' Wire.

C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.

D.) The Red 'Lift' Wire sends 12vdc power to the Lift Valve Coil.

E.) See Next Page for Hydraulic Flow Chart.

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**Diagram Details:**

- **A.)** 12vdc Source
  - Black Wire
  - 15a Fuse
  - Must Be Ignition Switched

- **B.)**
  - Switch Panel Control
  - Viewed From Behind

- **C.)**
  - Chassis Ground
  - Continuous Connection

- **C.)**
  - 12vdc Switched
  - By Solenoid

- **D.)**
  - Plow Lift
  - Red Wire

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**Note:**

See Next Page for Hydraulic Flow Chart.
SNO-PRO / HOME-PRO / TRIP-EDGE w/GAS SPRING JACK: PLOW LIFT FUNCTION - HYDRAULIC

What Happens:
A.) Lift Function is activated with Controller.
C.) 12vdc Motor spins Pump developing pressure.
D.) Red Wire shifts 'Plow Lift' Valve from static position.
E.) Pump pressure is supplied to 'H' Port extending Lift Cylinder.

"A" Port Right Cylinder
"B" Port Left Cylinder
"H" Port Lift Cylinder

Angle Valve: 1TBM1

Cross-Over Relief For Right Cylinder
Cross-Over Relief For Left Cylinder

Check Valve: 1TBM5
Float Valve: 1TBM2
Lift Valve: 1TBM3

C.) Pressure Supply From Power Unit
Fluid Return to Reservoir

Pressure Side Fluid Supply
Fluid Return To Reservoir
SNO-PRO / HOME-PRO / TRIP-EDGE w/ GAS SPRING JACK:
PLOW FLOAT FUNCTION - ELECTRICAL

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. If equipped with a Joystick or Touch Pad, the Controller Power Switch must be in the 'On' position.
B.) Moving the Controller to 'Plow Float' position energizes the Green 'Float' Wire.
C.) The Green 'Float' Wire sends power to the Float Valve Coil.
D.) See Next Page for Hydraulic Flow Chart.

A.)
12vdc Source
Black Wire
Must Be Ignition Switched

B.)
Switch Panel Control
Viewed From Behind

C.)
Plow Float
Green Wire

VEHICLE BATTERY

12vdc Switched
By Solenoid

Ground Stud

Power Stud

Chassis Ground
Continuous Connection

Solenoid Control
Brown Wire

Ground Connection
Internal in Plow Side Harness
What Happens:
A.) Lift Function is activated with Controller.
B.) Green Wire shifts 'Float' Valve to Open position.
C.) Fluid from Lift Cylinder returns to Reservoir.

A Port
Right Cylinder

B Port
Left Cylinder

C.) Lift Cylinder

Check Valve: 1TBM5

Cross-Over Relief For Right Cylinder

Cross-Over Relief For Left Cylinder

Angle Valve: 1TBM1

Pressure Side
Fluid Supply

Fluid Return
To Reservoir

Pressure Supply
From Power Unit

C.) Fluid Return to Reservoir

Lift Valve: 1TBM3

Float Valve: 1TBM2

Fluid Return to Reservoir

Pressure Side
Fluid Supply
What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. Touch Pad Power Switch must be in the 'On' position.
B.) Pushing the 'Left Angle' button energizes the White 'W2 Extend' Wire, Blue/Black 'W1 Retract' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The White 'W2 Extend' Wire sends 12vdc power to the W2 Extend Valve Coil.
E.) The Blue/Black 'W1 Retract' Wire sends 12vdc power to the W1 Retract Valve Coil. See Next Page for Hydraulic Flow Chart.
What Happens:
A.) Left Angle Function is activated with Controller.
C.) 12vdc Motor spins Pump developing pressure.
D.) White Wire shifts 'W2 Angle Valve' to Wing Extend Position.
E.) Pump pressure is supplied to 'W1' Port extending Right Angle Cylinder.
F.) Blue/Black Wire shifts 'W1 Angle Valve' to Wing Retract Position, collapsing Left Angle Cylinder and returning fluid to Reservoir.
What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. Touch Pad Power Switch must be in the 'On' position.
B.) Pushing the 'Right Angle' button energizes the Blue 'W1 Extend' Wire, White/Black 'W2 Retract' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The Blue 'W1 Extend' Wire sends 12vdc power to the W1 Extend Valve Coil.
**SNO-PRO V-PLOW w/SINGLE ACTING CYLINDERS & SPRING RETURN: RIGHT ANGLE FUNCTION - HYDRAULIC**

**What Happens:**
- **A.** Right Angle Function is activated with Controller.
- **B.** Brown Wire activates Motor Solenoid.
- **C.** 12vdc Motor spins Pump developing pressure.
- **D.** Blue Wire shifts 'W1 Angle Valve' to Wing Extend Position.
- **E.** Pump pressure is supplied to 'W1' Port extending Right Angle Cylinder.
- **F.** Blue/Black Wire shifts 'W2 Angle Valve' to Wing Retract Position, collapsing Right Angle Cylinder and returning fluid to Reservoir.
What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. Touch Pad Power Switch must be in the 'On' position.
B.) Pushing the 'Left Extend' button energizes the Blue 'W1 Extend' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The Blue 'W1 Extend' Wire sends 12vdc power to the W1 Extend Valve Coil.
E.) See Next Page for Hydraulic Flow Chart.
What Happens:
A.) Left Wing Extend Function is activated with Controller.
C.) 12vdc Motor spins Pump developing pressure.
D.) Blue Wire shifts 'W1 Angle Valve' to Wing Extend Position.
E.) Pump pressure is supplied to 'W1' Port extending Left Angle Cylinder.
SNO-PRO V-PLOW w/SINGLE ACTING CYLINDERS & SPRING RETURN: RIGHT WING EXTEND FUNCTION - ELECTRICAL

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. Touch Pad Power Switch must be in the 'On' position.
B.) Pushing the 'Right Extend' button energizes the White 'W2 Extend' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The White 'W2 Extend' Wire sends 12vdc power to the W2 Extend Valve Coil.
E.) See Next Page for Hydraulic Flow Chart.

A.) 12vdc Source
Black Wire
Must Be Ignition Switched

B.)
V-Plow Touch Pad

C.)
12vdc Switched
By Solenoid

D.)
Ground Connection
Internal in Plow Side Harness

White Wire/W2 Extend

VEHICLE
BATTERY

Ground Stud

Power Stud

Chassis Ground
Continuous Connection

Solenoid Control
Brown Wire

Ground Connection
Internal in Plow Side Harness

15a Fuse

White Wire/W2 Extend

V-Plow Touch Pad

BROWN
RED
GREEN
BLUE
WHITE
BLUEBLACK
WHITEBLACK

Black Wire

Black

Chassis Ground
Continuous Connection

12vdc Source
Black Wire

15a Fuse

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. Touch Pad Power Switch must be in the 'On' position.
B.) Pushing the 'Right Extend' button energizes the White 'W2 Extend' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The White 'W2 Extend' Wire sends 12vdc power to the W2 Extend Valve Coil.
E.) See Next Page for Hydraulic Flow Chart.
SNO-PRO V-PLow w/SINGLE ACTING CYLINDERS & SPRING RETURN:
RIGHT WING EXTEND FUNCTION - HYDRAULIC

What Happens:
A.) Right Wing Extend Function is activated with Controller.
C.) 12vdc Motor spins Pump developing pressure.
D.) White Wire shifts 'W2 Angle Valve' to Wing Extend Position.
E.) Pump pressure is supplied to 'W2' Port extending Right Angle Cylinder.
SNO-PRO V-PLOW w/SINGLE ACTING CYLINDERS & SPRING RETURN: LEFT WING RETRACT FUNCTION - ELECTRICAL

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. Touch Pad Power Switch must be in the 'On' position.
B.) Pushing the 'Left Retract' button energizes the Blue/Black 'W1 Retract' Wire.
C.) The Blue/Black 'W1 Retract' Wire sends 12vdc power to the W1 Retract Valve Coil.
D.) See Next Page for Hydraulic Flow Chart.

A.) 12vdc Source
Black Wire
Must Be Ignition Switched

B.) V-Plow Touch Pad

C.) Ground Stud

Ground Connection
Internal in Plow Side Harness
What Happens:
A.) Left Wing Retract Function is activated with Controller.
B.) Blue/Black Wire shifts ‘W1 Angle Valve’ to Wing Retract Position.
C.) Fluid is returned from ‘W1 Port’ to Reservoir.
SNO-PRO V-PLOW w/SINGLE ACTING CYLINDERS & SPRING RETURN: 
RIGHT WING RETRACT FUNCTION - ELECTRICAL

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. Touch Pad Power Switch must be in the 'On' position.
B.) Pushing the 'Right Retract' button energizes the White/Black 'W2 Retract' Wire.
C.) The White/Black 'W2 Retract' Wire sends 12vdc power to the Retract Valve Coil.
D.) See Next Page for Hydraulic Flow Chart.

A.) 12vdc Source
Black Wire
15a Fuse
Must Be Ignition Switched

B.) V-Plow Touch Pad
BROWN RED GREEN BLUE WHITE BLUE/BLACK WHITE/BLACK

C.) Ground Stud
Ground Connection
Internal in Plow Side Harness

Chassis Ground
Continuous Connection

12vdc Switched
By Solenoid

Power Stud
What Happens:
A.) Right Wing Retract Function is activated with Controller.
B.) White/Black Wire shifts 'W2 Angle Valve' to Wing Retract Position.
C.) Fluid is returned from 'W2' Port to Reservoir.
What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. Touch Pad Power Switch must be in the 'On' position.
B.) Pushing the 'Plow Lift' Button energizes the Red 'Lift' Wire and the Brown 'Solenoid' Wire.
C.) The Brown 'Solenoid' Wire closes the Solenoid Contacts and sends 12vdc power to the Pump Motor.
D.) The Red 'Lift' Wire sends 12vdc power to the Plow Lift Valve Coil.
E.) See Next Page for Hydraulic Flow Chart.
What Happens:
A.) Plow Lift Function is activated with Controller.
C.) 12vdc Motor spins Pump developing pressure.
D.) Red Wire shifts 'Lift' Valve to 'Open' position.
E.) Pump pressure is supplied to 'L' Port extending Lift Cylinder and raising Plow.
SNO-PRO V-PLow w/ SINGLE ACTING CYLINDERS & SPRING RETURN: PLOW FLOAT FUNCTION - ELECTRICAL

What Happens:
A.) Ignition 'On' energizes the Controller Power source sending 12vdc into the Controller. Touch Pad Power Switch must be in the 'On' position.
B.) Pushing the 'Plow Float' Button energizes the Green 'Float' Wire.
C.) The Green 'Plow Float' Wire sends 12vdc power to the Plow Float Valve Coil.
D.) See Next Page for Hydraulic Flow Chart.
SNO-PRO V-PLow w/Single Acting Cylinders & Spring Return: PLOW FLOAT FUNCTION - HYDRAULIC

What Happens:
A.) Plow Float Function is activated with Controller.
B.) Green Wire shifts Float Valve to 'Open' position.
C.) Fluid returns from 'L' Port back to Reservoir.
POLY TRIP EDGE V-PLow
ELECTRIC/HYDRAULIC POWER UNIT WITH MANIFOLD

MANIFOLD END VIEW

- **Driver's Side Extend** ITBP98K (60”)
- **Passenger's Side Extend** ITBP98M (45”)
- **Driver's Side Retract** ITBP98IV (50”)
- **Passenger's Side Retract** ITBP98L (63”)
- **Adjustable Float Valve** ITBM2V
- **Coil** ITBM4
- **Crossover Relief**
- **Lift Hose** ITBP980 (19”)
- **Angle Valve** ITBMIV

Motor ITBM8
Ground
Coil (5 Places) ITBM4A
ITBM3
Reservoir Tank ITBM36
Reservoir Cap
3.1 GPM Pump ITBM35
Hose Adapter (5 Places) ITBP200
Coil (5 Places) ITBM4A
CURTIS PLOW SIDE HARNESS JACK ADAPTER
FOR HYDRAULIC JACK EQUIPPED SNOWPLOWS P/N: 1UHJA

NOTE:
CRIMP AND SOLDER BOTH SPLICES

LEGEND:

= Insul. FEMALE COUPLERS .250 FASTON (Single)

(PINK / BLACK WIRE) JUNCTION
6 AMP DIODE

(RED WIRE) JUNCTION

PACKARD GT 280 CONNECTOR P/N 15326655
TERMINAL 15304731 (M) SEAL P/N 12191223
CAVITY PLUG 15305170

<table>
<thead>
<tr>
<th>PIN #</th>
<th>COLOR</th>
<th>FUNCTION</th>
<th>AWG</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Cavity Plug</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>B</td>
<td>Cavity Plug</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>C</td>
<td>RED</td>
<td>LIFT</td>
<td>18</td>
</tr>
<tr>
<td>D</td>
<td>GREEN</td>
<td>LOWER</td>
<td>18</td>
</tr>
<tr>
<td>E</td>
<td>BROWN</td>
<td>PUMP</td>
<td>18</td>
</tr>
<tr>
<td>F</td>
<td>PINK/BLACK</td>
<td>Hitch Retract</td>
<td>18</td>
</tr>
<tr>
<td>G</td>
<td>BLUE/BLACK</td>
<td>Hitch Lift</td>
<td>18</td>
</tr>
<tr>
<td>H</td>
<td>Cavity Plug</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

JACKET MATERIAL
BLACK NYLON SNAPE

1) ALL WIRE GPT
2) ALL LENGTHS ARE MEASURED BETWEEN BREAKOUTS OR BETWEEN BREAKOUTS AND REAR OF CONNECTOR/TERMINALS
3) ± .500" TOLERANCE UNLESS OTHERWISE SPECIFIED
4) ALL SPECIFIED MATERIAL CAN BE SUBSTITUTED WITH CURTIS APPROVED EQUIVALENTS.
CURTIS PLOW SIDE HARNESS V-PLOW ADAPTER P/N: 1UHVA

<table>
<thead>
<tr>
<th>PIN #</th>
<th>COLOR</th>
<th>FUNCTION</th>
<th>AWG</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>BLUE/WHITE</td>
<td>L Retract</td>
<td>18</td>
</tr>
<tr>
<td>B</td>
<td>WHITE/BLACK</td>
<td>R Retract</td>
<td>16</td>
</tr>
<tr>
<td>C</td>
<td>Cavity Plug</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>D</td>
<td>Cavity Plug</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>E</td>
<td>Cavity Plug</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>F</td>
<td>WHITE/BLACK</td>
<td>R Retract</td>
<td>16</td>
</tr>
<tr>
<td>G</td>
<td>BLUE/WHITE</td>
<td>L Retract</td>
<td>18</td>
</tr>
<tr>
<td>H</td>
<td>Cavity Plug</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

1) ALL WIRE GPT
2) ALL LENGTHS ARE MEASURED BETWEEN BREAKOUTS OR BETWEEN BREAKOUTS AND REAR OF CONNECTOR/Terminals
3) ±0.500” TOLERANCE UNLESS OTHERWISE SPECIFIED
4) ALL SPECIFIED MATERIAL CAN BE SUBSTITUTED WITH CURTIS APPROVED EQUIVALENTS.
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 functions 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.
### Section A. Plow Hydraulic System

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Motor runs but no Plow function(s).</td>
<td>Solenoid Coils not receiving voltage</td>
<td>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</td>
</tr>
<tr>
<td>2. Motor runs but all functions are slow.</td>
<td>Inadequate Pump pressure</td>
<td>Perform test procedure described above.</td>
</tr>
<tr>
<td></td>
<td>Inadequate Pump flow</td>
<td>Inspect filter cartridge in end head and pick-up screen in reservoir for clogging. Clean filter or replace.</td>
</tr>
<tr>
<td></td>
<td>Insufficient voltage output from vehicle</td>
<td>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.</td>
</tr>
<tr>
<td>3. Motor runs but Blade raises slowly or does not raise.</td>
<td>Inadequate Pump pressure</td>
<td>Perform pressure test as described in Section A. #1</td>
</tr>
<tr>
<td></td>
<td>Lift solenoid valve contaminated</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Loose or damaged lift hose</td>
<td>Inspect hose for leaks or signs of wear. Replace lift hose if necessary.</td>
</tr>
</tbody>
</table>
## Section A. Plow Hydraulic System

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. Motor runs but Blade raises slowly or does not raise (continued).</td>
<td>Lower solenoid valve contaminated</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Orifice plug blocked</td>
<td>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.</td>
</tr>
<tr>
<td>4. Blade will not lower.</td>
<td>Lower solenoid valve contaminated</td>
<td>Perform test procedure described in Section A, #3.</td>
</tr>
<tr>
<td></td>
<td>Orifice plug blocked</td>
<td>Perform test procedure described in Section A, #3.</td>
</tr>
<tr>
<td>5. Blade lowers in neutral.</td>
<td>Lower solenoid valve contaminated</td>
<td>Perform test procedure described in Section A, #3.</td>
</tr>
<tr>
<td></td>
<td>Angle solenoid valve contaminated</td>
<td>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.</td>
</tr>
<tr>
<td>6. Blade will not angle in one or both directions, lift and lower functions are ok.</td>
<td>Solenoid coils are not receiving voltage.</td>
<td>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.</td>
</tr>
</tbody>
</table>
## Section A. Plow Hydraulic System

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Blade will not remain angled.</td>
<td>Cross port relief valve(s) contaminated or damaged.</td>
<td>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.</td>
</tr>
<tr>
<td>8. Motor runs but Jack Leg will not extend.</td>
<td>Jack extend coil is not receiving sufficient voltage.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Jack retract solenoid valve contaminated</td>
<td>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. Un螺丝 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.</td>
</tr>
<tr>
<td></td>
<td>Orifice plug contaminated</td>
<td>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.</td>
</tr>
<tr>
<td>9. No jack functions, motor does not run.</td>
<td>Poor harness connection at front of vehicle.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>In-cab controls not in the float position.</td>
<td>Select 'float' position on in-cab controls and re-try jack function.</td>
</tr>
<tr>
<td>10. Jack does not retract.</td>
<td>Low or no voltage to 'Jack Retract' solenoid coil.</td>
<td>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.</td>
</tr>
</tbody>
</table>
**Section A. Plow Hydraulic System**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Jack does not retract (continued).</td>
<td>Low or no voltage to 'Lift' solenoid coil.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Jack Retract Return Spring does not have enough tension.</td>
<td>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&quot; increments and check function.</td>
</tr>
<tr>
<td></td>
<td>Orifice plug contaminated</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Section B. Plow Electrical System**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pump motor will not run.</td>
<td>Check that Main Power Connector is connected properly.</td>
<td>Plug in Connector.</td>
</tr>
</tbody>
</table>
## Section B. Plow Electrical System

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pump motor will not run (continued).</td>
<td>Check for voltage at Main Power Connector pins 1 and 2 with ignition switch ON and LIFT, RIGHT or LEFT function is activated.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Check for voltage at solenoid by testing for voltage at both large terminals and ground.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Check that Black wire for voltage at the White 9-pin connector in cab with the ignition switch on.</td>
<td>If no voltage is present, power is disconnected from fuse box or fuse has been tripped. If voltage is present go to next test.</td>
</tr>
<tr>
<td></td>
<td>Check wiring in control. Check for voltage to control switches with ignition switch on and control switch ON test all Black wires for voltage.</td>
<td>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.</td>
</tr>
</tbody>
</table>
# CURTIS SNO-PRO 3000 / HOME-PRO / TRIP-EDGE w/HYD. JACK TROUBLESHOOTING GUIDE

## Section B. Plow Electrical System

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Pump motor will not run (continued).</td>
<td>Check for voltage to Brown wire at control switches with ignition switch ON and a LIFT, RIGHT or LEFT function is activated.</td>
<td>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.</td>
</tr>
<tr>
<td>2. Pump motor runs continually.</td>
<td>Disconnect switch control or joystick control at the white 9-pin connector in cab.</td>
<td>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.</td>
</tr>
<tr>
<td>3. Plow will not raise.</td>
<td>Check that Main Power Connector is connected properly. With ignition switch on and Lift function activated check for voltage between the Red and Orange ground wire on valve body connector.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>With ignition switch on and Lift function activated check for voltage between terminal 4 and terminal 1 (ground) on vehicle Main Power Connector.</td>
<td>If no voltage is present, check for broken wires or broken or corroded terminals on vehicle harness. If voltage is present, check for broken of corroded wires or terminals on the Plow harness.</td>
</tr>
<tr>
<td>4. Plow will not lower.</td>
<td>Check that Main Power Connector is connected properly.</td>
<td>Plug in Connector.</td>
</tr>
</tbody>
</table>
### Section B. Plow Electrical System

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Plow will not lower</td>
<td>With ignition switch On and Float function activated check for voltage between the Green and Orange ground wire on valve body power connector.</td>
<td>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.</td>
</tr>
<tr>
<td>(continued)</td>
<td>With ignition switch On and Lift function activated check for voltage between terminal 3 and terminal 1 (ground) on vehicle Main Power Connector.</td>
<td>If no voltage is present, check for broken wires or broken or corroded terminals on vehicle harness. If voltage is present, check for broken of corroded wires or terminals on the Plow harness.</td>
</tr>
<tr>
<td></td>
<td>Check that Main Power Connector is connected properly.</td>
<td>Plug in Connector.</td>
</tr>
<tr>
<td></td>
<td>With ignition switch On and Right function activated check for voltage between the White and Orange ground wire on valve body power connector.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>With ignition switch On and Lift function activated check for voltage between terminal 6 and terminal 1 (ground) on vehicle Main Power Connector.</td>
<td>If no voltage is present, check for broken wires or broken or corroded terminals on vehicle harness. If voltage is present, check for broken of corroded wires or terminals on the Plow harness.</td>
</tr>
<tr>
<td>5. Plow will not Angle</td>
<td>Check that Main Power Connector is connected properly.</td>
<td>Plug in Connector.</td>
</tr>
<tr>
<td>Right</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Plow will not Angle</td>
<td>Check that Main Power Connector is connected properly.</td>
<td>Plug in Connector.</td>
</tr>
<tr>
<td>Left</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Section B. Plow Electrical System

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Plow will not angle Left (continued).</td>
<td>With ignition switch ON and Left function activated check for voltage between Blue and Orange ground wire on valve body power connector.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>With ignition switch On and Lift function activated check for voltage between terminal 5 and terminal 1 (ground) on vehicle Main Power Connector.</td>
<td>If no voltage is present, check for broken wires or broken or corroded terminals on vehicle harness. If voltage is present, check for broken of corroded wires or terminals on the Plow harness.</td>
</tr>
<tr>
<td>7. Left &amp; Right functions reversed.</td>
<td>Verify the correct wire placement of the White and Blue wires by referring to the Curtis SNO-PRO 3000 Harness Layout.</td>
<td>Plug connectors in the correct location.</td>
</tr>
<tr>
<td></td>
<td>With the switch panel verify the correct wire placement at the switch.</td>
<td>Switch the Blue and White wires at the back of the switch panel.</td>
</tr>
<tr>
<td></td>
<td>With the switch panel verify the correct wire placement at the switch.</td>
<td>Switch the Red and Green wires at the back of the switch panel.</td>
</tr>
</tbody>
</table>
## Section B. Plow Electrical System

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Possible Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Plow will not remain in Float.</td>
<td>Check Raise and Lower Switch for worn out Detent position by testing for maintained voltage between the Green and Orange ground wires.</td>
<td>Replace Switch.</td>
</tr>
<tr>
<td></td>
<td>Check Joystick control for worn out Detent position or bent switch actuator by testing for maintained voltage between the Green and Orange ground wires.</td>
<td>Bend Switch actuator to compensate for worn out detent. Replace detent assembly or Joystick Control.</td>
</tr>
<tr>
<td></td>
<td>Verify a good ground to Joystick Control.</td>
<td>Ground Orange Wire.</td>
</tr>
<tr>
<td>10. Plow Jack will not Extend.</td>
<td>With ignition switch On and Float function activated check Green wire on Jack Switch for voltage.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>With ignition switch On and Control in Float, push the Jack switch down (Jack extend) and verify that Pump motor runs.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>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.</td>
</tr>
</tbody>
</table>
## Section B. Plow Electrical System

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<tr>
<td>11. Plow Jack will not Retract.</td>
<td>With ignition switch On and Float function activated check Green wire on Jack Switch for voltage.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>12. Plow Jack will not Retract when Plow is raised.</td>
<td>With ignition switch On and Lift function activated check voltage between the Pink/Black and Orange ground wire on valve body power connector.</td>
<td>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.</td>
</tr>
<tr>
<td>13. Plow raises when Jack retracting.</td>
<td>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.</td>
<td>If voltage is present, Jack Retract Diode has failed. Replace Diode.</td>
</tr>
</tbody>
</table>
### Section B. Plow Electrical System

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<tr>
<td>14. Battery goes dead when vehicle is OFF.</td>
<td>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.</td>
<td>If voltage is present, move black wire to a switched circuit that turns off with the vehicle’s ignition.</td>
</tr>
<tr>
<td>15. Battery goes dead when vehicle is running.</td>
<td>Test condition of Vehicle’s battery. Test condition of vehicles charging system. Check for electrical shorts.</td>
<td>Charge battery and retest or replace battery. Repair charging system. Repair electrical shorts in electrical system.</td>
</tr>
</tbody>
</table>

### Section C. Plow Lighting Electrical System

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

<table>
<thead>
<tr>
<th>Symptom</th>
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</tr>
</thead>
<tbody>
<tr>
<td>1. No lights on vehicle or Plow (continued).</td>
<td>(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.</td>
<td>If voltage is not present, check for disconnected wires or broken wires.</td>
</tr>
<tr>
<td>3. Plow lights function but Vehicle lights will not come On.</td>
<td>Incorrect Headlight Adapter Kit</td>
<td>Verify headlight adapter kit number and wiring connections. Verify light switch is wired correctly.</td>
</tr>
<tr>
<td></td>
<td>Check electrical connections at headlight and headlight adapters.</td>
<td>Verify connections at headlight adapters and Plow headlight connectors. Refer to Curtis Harness layout sheet.</td>
</tr>
</tbody>
</table>
## Section C. Plow Lighting Electrical System

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<tbody>
<tr>
<td>6. Headlight fuse blows after installing new Plow Lights.</td>
<td>Remove Plow headlight bulb and check that there is NO wire from 3 prong head light connector to ground.</td>
<td>Replace with original Curtis Snow Plow lights.</td>
</tr>
<tr>
<td>7. Plow parking &amp; directional lights are dim and/or flicker.</td>
<td>Check Plow lights for good ground.</td>
<td>Remove paint under headlight mounts and retighten mounting bolts.</td>
</tr>
<tr>
<td></td>
<td>Check electrical connections for corroded or damaged terminals.</td>
<td>Repair or replace damaged terminals.</td>
</tr>
<tr>
<td>8. Turn signals will not function.</td>
<td>Check electrical connections to vehicle wiring. See Harness Layout for proper connections.</td>
<td>Repair any damaged connections.</td>
</tr>
<tr>
<td></td>
<td>Check Flasher</td>
<td>Replace original vehicle flasher with heavy-duty flasher.</td>
</tr>
</tbody>
</table>
Warranty Claim Processing

Eligibility Requirements To Qualify For Warranty Consideration

1. Repair condition occurred within 12 months of the original purchase date.
2. A copy of the original sales receipt is submitted to Curtis with the Warranty Claim form.
3. The Owner Registration Form is on file at Curtis.
4. The Vehicle Condition Inspection & Snowplow Installation/Delivery Checklist was completed and is on file at Curtis.
5. Repair must be completed by an authorized Curtis dealer within 30 days of failure.

Completing The Warranty Repairs and The Warranty Claim Form

2. Diagnose problem, determine corrective action to be taken and complete Section 2.
3. Complete Section 3 detailing parts to be submitted for warranty consideration.
   Parts required to complete the repair must come from dealer inventory.
   If you need parts to complete the repair, order them within the normal ordering process.
   Parts will be shipped and charged to your account with a credit issued when the claim is approved.
4. Complete Section 4 detailing labor to be submitted for warranty consideration.
   For repair codes, see reverse side for Flat Rate Schedule and allowances.
   If repairs are not listed in the Flat Rate Schedule, contact Curtis Warranty Department at 1-800-343-7676 for approval prior to making repairs.
5. Parts replaced for the repair must be kept at the dealer/distributor location for a period of 90 days, identified by the equipment serial number and Warranty Claim Form number.
   Curtis may, within a 90 day period, request any and all parts be returned for examination before approval of the warranty claim.
   Parts returned should be returned transportation prepaid.
   Do not return parts unless requested to do so by Curtis.

Submitting Warranty Claim For Consideration

Once the repairs have been completed, review the Claim Form for accuracy and completeness
and submit the top two copies (white & canary) to Curtis Warranty Department at the address
listed on the claim form with a copy of the original sales receipt. Retain the pink copy of the Claim
Form for your records. **Missing or inaccurate information will delay the processing and
crediting of your account for parts and labor.**