Electrical Tester Operator's Manual for Straight-Blade Snowplows with Isolation Module Electrical System

CAUTION
Read this document before testing any FISHER® snowplows.

CAUTION
See your FISHER® outlet for application recommendations. The Kit Selection Guide has specific vehicle and snowplow requirements.
SAFETY DEFINITIONS

**WARNING**
Indicates a potentially hazardous situation, that if not avoided, could result in death or serious personal injury.

**CAUTION**
Indicates a situation that, if not avoided, could result in damage to product or property.

NOTE: Identifies tips, helpful hints, and maintenance information the owner/operator should know.

BEFORE YOU BEGIN

**WARNING**
Lower blade when vehicle is parked. Temperature changes could change hydraulic pressure, causing the blade to drop unexpectedly or damaging hydraulic components. Failure to do this can result in serious personal injury.

**CAUTION**
Before starting any test, the snowplow must be properly attached to the vehicle.

**WARNING**
The tester shall keep bystanders clear of the blade during this test. Do not stand between the vehicle and the blade. A moving or falling blade could cause personal injury.

**CAUTION**
Pick up any spilled gasoline immediately.

**WARNING**
Gasoline is highly flammable and gasoline vapor is explosive. Never smoke while working on vehicle. Keep all open flames away from gasoline tank and lines.

**CAUTION**
Batteries normally produce explosive gases which can cause personal injury. Therefore, do not allow flames, sparks or lit tobacco to come near the battery. When charging or working near a battery, always cover your face and protect your eyes, and also provide ventilation.

- Park the vehicle on a level surface, place shift lever in PARK or NEUTRAL and set parking brake.

PERSONAL SAFETY

- Wear only snug-fitting clothing while working on your vehicle or snowplow.
- Do not wear jewelry or a necktie, and secure long hair.
- Wear safety goggles to protect your eyes from battery acid, gasoline, dirt and dust.
- Avoid touching hot surfaces such as the engine, radiator, hoses and exhaust pipes.
- Always have a fire extinguisher rated BC handy, for flammable liquids and electrical fires.

FIRE AND EXPLOSION

Be careful when using gasoline. Do not use gasoline to clean parts. Store only in approved containers away from sources of heat or flame.

BATTERY SAFETY

**WARNING**
Batteries contain sulfuric acid which burns skin, eyes and clothing. Disconnect the battery before removing or replacing any electrical components.

FUSES

The vehicle control harness contains two automotive-style fuses. One fuse is for the snowplow park/turn lamp power and the other is for the snowplow control power. If a problem should occur and fuse replacement is necessary, the replacement fuse should be of the same value as the original. Installing a fuse of a larger value could damage the system.
WARNING/CAUTION & INSTRUCTION LABELS

Become familiar with and inform users about the warning labels on the back of the blade, and the instruction label located either on the headgear or back of the blade.

Minute Mount® 2 System with Straight Blades

Warning/ Caution Label

**WARNING**

LOWER BLADE WHEN VEHICLE IS PARKED.

REMOVE BLADE ASSEMBLY BEFORE PLACING VEHICLE ON HOIST.

DO NOT EXCEED GVWR OR GAWR INCLUDING BLADE AND BALLAST.

**CAUTION**

READ OWNER'S MANUAL BEFORE OPERATING OR SERVICING SNOWPLOW.

TRANSPORT SPEED SHOULD NOT EXCEED 45 MPH. REDUCE SPEED UNDER ADVERSE TRAVEL CONDITIONS.

PLOWING SPEED SHOULD NOT EXCEED 10 MPH.

SEE YOUR SALES OUTLET FOR APPLICATION RECOMMENDATIONS.

Original Minute Mount® System with Straight Blades

Instruction Label

1. Push Pin Release Handle down to pull out Connecting Pins.
2. Drive vehicle slowly to engage Pushplates into Attachment Arms.
4. Push Headgear toward vehicle to allow Connecting Pins to fully engage Pushplates.
7. Attach all electrical connectors.

ATTACH & DETACH

1. Place control in Lower/Float to put blade down.
3. Stand in front of blade. While pushing Headgear toward vehicle with left hand, push Pin Release Handle down to disengage Connecting Pins. Make sure Connecting Pins are fully retracted.
4. Detach all electrical connectors.

Instruction Label
Homesteader™ Personal Plow

Warning/Caution Label

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LOWER BLADE WHEN VEHICLE IS PARKED.
REMOVE BLADE ASSEMBLY BEFORE PLACING VEHICLE ON HOIST.
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**CAUTION**
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TRANSPORT SPEED SHOULD NOT EXCEED 45 MPH.
REDUCE SPEED UNDER ADVERSE TRAVEL CONDITIONS.
PLOWING SPEED SHOULD NOT EXCEED 10 MPH.
SEE YOUR SALES OUTLET FOR APPLICATION RECOMMENDATIONS.

Instruction Label

This snowplow is for personal/homeowner use only.

ATTACH INSTRUCTIONS
1. Make certain both connecting pins are fully retracted.
2. Drive vehicle slowly to completely insert attachment arms into receiver assembly slots.
3. Twist both connecting pins to release spring tension, then push plow gear toward vehicle so connecting pins fully engage holes in attachment arms.
4. Loosen one jack handle and slide jack sleeve down below jack retainer. Remove jack and retighten jack handle. Repeat for other jack and store them.
5. Connect all electrical cables from vehicle to snowplow.

DETACH INSTRUCTIONS
1. Put blade on ground using LOWER/FLOAT on snowplow control. Leave control ON and in FLOAT.
2. Attach jacks. Loosen jack handle, put jack on ground, and raise jack sleeve until fully engaging jack retainer. Tighten jack handle. Repeat for other jack.
3. While pushing plow gear toward vehicle to release connecting pin tension, pull connecting pin out on one side and twist pin handle to keep pin retracted. Repeat procedure for other connecting pin.
4. Disconnect all electrical cables.
5. Back vehicle away from snowplow.

Read Owner’s Manual for Complete Instructions
TEST PREPARATION

- Connect the Electrical Tester's red clip to the positive battery terminal and the black clip to the negative terminal. Connect the black clip last. When disconnecting, disconnect it first.

- If a tester LED does not come on, the fault could be an open lamp element, an open circuit, or both.

- The tester cannot verify that lamp elements wired in parallel are good.

- All vehicle lamps must be operational. An open lamp may cause false test results.

- **For Fish-Stik® Control:** Automatically cancels float in angle right or left.

  **For Joystick Solenoid Control:** After activating the LOWER function, valve 2W will remain activated until float is canceled. Before you test the ANGLE LEFT or the ANGLE RIGHT function, cancel float (and deactivate valve 2W) by momentarily activating the RAISE function.

- The Electrical Tester is protected by a circuit breaker. A tripped breaker indicates a direct short. Reset by pushing in the button located on the front panel.

- There are no user-serviceable parts inside the Electrical Tester. For repair, return the Electrical Tester to your sales outlet.

3. Use the amp meter adjusting screw to adjust the meter to zero.

4. Connect the tester leads to the vehicle battery.

  - The tester +12VDC LED is ON.

5. Turn the ignition to RUN. Do not start the engine.

6. Plug the cab control into the vehicle control harness.

  **For Fish-Stik Control:** The LED* under the control logo is on. Press the power button.

  **For Joystick Solenoid Control:** Turn the control power switch on. The control indicator LED is on.

7. Operate the cab controls. Refer to the chart below and verify the current draw. For all but the LOWER function, listen for a click as the motor relay energizes.

8. If required, repair or replace components, and retest.

9. The test is complete. Turn off the ignition and disconnect the tester.

For further information refer to the Straight Blade Mechanic's Guide featuring the Isolation Module Electrical System.

* Early hand-held control models do not have logo or FLOAT LED's.

**CURRENT DRAW TEST**

A zero (0) reading indicates an open circuit. A low or high reading indicates a poor connection, a burned out bulb, a bad cartridge coil, or corrosion. The currents listed are approximate.

1. Connect the tester 2-pin connector to the plow battery cable.

2. Connect the plow control harness (3-pin) to the vehicle control harness. Connect the plow lighting harness (11-pin) to the vehicle lighting harness.

3. Connect the tester 2-pin connector to the plow battery cable.

4. Connect the tester leads to the vehicle battery.

   - The tester +12VDC LED is ON.

5. Turn the ignition to RUN. Do not start the engine.

6. Plug the cab control into the vehicle control harness.

   **For Fish-Stik Control:** The LED* under the control logo is on. Press the power button.

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**CONTROL – CURRENT DRAW (AMPS)**

<table>
<thead>
<tr>
<th>CONTROL</th>
<th>CURRENT DRAW (AMPS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAISE</td>
<td>1.5</td>
</tr>
<tr>
<td>LOWER*</td>
<td>1.5</td>
</tr>
<tr>
<td>ANGLE RIGHT</td>
<td>1.5</td>
</tr>
<tr>
<td>ANGLE LEFT</td>
<td>3.0</td>
</tr>
</tbody>
</table>

* After activating the LOWER function, cancel FLOAT by activating the RAISE function.
CAB CONTROL TEST

This procedure tests the cab control functions only.

1. Connect the tester leads to the vehicle battery.
   • The tester +12VDC LED is ON.

2. Plug the cab control into the tester.

   For Fish-Stik® Control: The LED* under the control logo is ON. Press the power button. The POWER LED is ON.

   For Joystick Solenoid Control: Turn the control power switch on. The control indicator LED is ON.

3. Operate the control, and refer to the charts below. Verify that the indicated Cab LED's come on. Cancel float after the LOWER function by activating the RAISE function.

4. For Fish-Stik Control: Verify the control time-outs. For all except the LOWER function, if you press and hold the buttons, the tester's Motor Relay and Valve LED's time out automatically. For the LEFT and RIGHT buttons the time-out is approximately 4.25 seconds. The time-out for the RAISE button is 2.5 seconds.

   Press and hold the LOWER button – after .75 seconds the FLOAT LED* comes on. Cancel float by pressing the RAISE button.

5. If any LED does not come on, repair or replace components, and retest.

6. The test is complete. Disconnect the tester.

For further information refer to the Straight Blade Mechanic's Guide featuring the Isolation Module Electrical System.

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### CAB CONTROL TEST CHARTS

<table>
<thead>
<tr>
<th>RAISE</th>
<th>LOWER</th>
<th>ANGLE RIGHT</th>
<th>ANGLE LEFT</th>
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<tbody>
<tr>
<td><img src="#" alt="RAISE Diagram" /></td>
<td><img src="#" alt="LOWER Diagram" /></td>
<td><img src="#" alt="ANGLE RIGHT Diagram" /></td>
<td><img src="#" alt="ANGLE LEFT Diagram" /></td>
</tr>
</tbody>
</table>

- **CAB**
  - +12VDC MOTOR RELAY
  - VALVE 2W
  - VALVE 3W
  - VALVE 4W

- **CAB**
  - +12VDC MOTOR RELAY
  - VALVE 2W
  - VALVE 3W
  - VALVE 4W

- **CAB**
  - +12VDC MOTOR RELAY
  - VALVE 2W
  - VALVE 3W
  - VALVE 4W

- **CAB**
  - +12VDC MOTOR RELAY
  - VALVE 2W
  - VALVE 3W
  - VALVE 4W
SNOWPLOW HARNESS TEST

This procedure tests continuity in the snowplow harnesses.

1. Connect the tester 12-pin connector to the "Y" Adapter Cable (part number 26482) 12-pin connector. Connect the "Y" Adapter Cable's 7 and 11-pin connectors to the snowplow harnesses.

2. Connect the "Y" Adapter Cable ORANGE/BK wire to a good vehicle ground. Connect the tester 2-pin connector to the snowplow battery cable.

3. Connect the tester leads to the vehicle battery.

   • The tester +12VDC LED is ON.

   NOTE: The tester 2-pin connection is not used for systems with a 7-pin plow harness.

4. Refer to the chart at right and verify the indicated snowplow LED's are ON.

5. If any LED is not ON, repair or replace components, and retest.

6. The test is complete. Disconnect the tester.

For further information refer to the Straight Blade Mechanic's Guide featuring the Isolation Module Electrical System.

<table>
<thead>
<tr>
<th></th>
<th>SNOWPLOW LED</th>
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<tbody>
<tr>
<td>PARKING LIGHTS</td>
<td></td>
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<tr>
<td>RIGHT DIRECTIONAL</td>
<td></td>
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<tr>
<td>LEFT DIRECTIONAL</td>
<td></td>
</tr>
<tr>
<td>HIGH BEAM</td>
<td></td>
</tr>
<tr>
<td>LOW BEAM 9/12P RT</td>
<td></td>
</tr>
<tr>
<td>LOW BEAM 12P LT</td>
<td></td>
</tr>
<tr>
<td>GND LOW BEAM 12P RT</td>
<td></td>
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<tr>
<td>GND LOW BEAM 12P LT</td>
<td></td>
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<tr>
<td>VALVE 2W</td>
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<tr>
<td>VALVE 3W</td>
<td></td>
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<tr>
<td>VALVE 4W</td>
<td></td>
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<tr>
<td>GROUND</td>
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</tbody>
</table>
VEHICLE CONTROL HARNESS TEST

This procedure tests continuity in the vehicle control harness only.

1. Disconnect the snowplow electrical connectors from the vehicle.

2. Connect the tester 12-pin connector to the "straight" Adapter Cable (part number 26483) 12-pin connector. Connect the "straight" Adapter Cable 7-pin connector to the vehicle control harness.

3. Connect the snowplow lighting harness to the vehicle lighting harness.

4. Connect the tester leads to the vehicle battery.
   - The tester +12VDC LED is ON.

5. Turn the ignition to RUN. Do not start the engine.

6. Plug the control into the vehicle.
   - For Fish-Stik® Control: The LED* under the control logo is on. Press the power button. The POWER LED is ON.
   - For Joystick Solenoid Control: Turn the control power switch on. The control indicator LED is ON.

7. Refer to the control function charts and verify that the indicated vehicle LED's come on. For all but the LOWER function, listen for the click as the motor relay energizes.

8. If indicated LED does not come on or the motor relay does not energize (do not hear the click), repair or replace components, and retest.

9. The test is complete. Turn off the ignition and disconnect the tester.

For further information refer to the Straight Blade Mechanic's Guide featuring the Isolation Module Electrical System.

* Early hand-held control models do not have logo or FLOAT LED's.

<table>
<thead>
<tr>
<th>CAB CONTROL</th>
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<tbody>
<tr>
<td>RAISE</td>
</tr>
<tr>
<td>PLOW VEHICLE</td>
</tr>
<tr>
<td>VALVE 2W</td>
</tr>
<tr>
<td>VALVE 3W</td>
</tr>
<tr>
<td>VALVE 4W</td>
</tr>
<tr>
<td>GROUND</td>
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</table>

** After activating the LOWER function, cancel float by activating the RAISE function.