WESTERN PRODUCTS, P.O. BOX 245038, MILWAUKEE, WI 53224-9538

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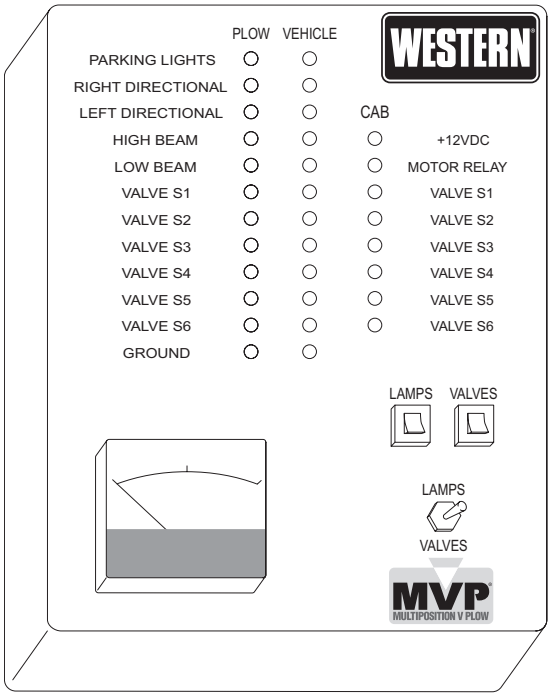
Electrical Tester Operator's Manual for MVP® Snowplows with Isolation Module Electrical System



⚠ CAUTION

Read this document before testing any WESTERN® snowplows.

⚠ CAUTION

See your WESTERN® outlet for application recommendations. The Selection List has specific vehicle and snowplow requirements.

A DIVISION OF DOUGLAS DYNAMICS, L.L.C.

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.

⚠ 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

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

- 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

⚠ 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. Wipe up any spilled gasoline immediately.

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

⚠ 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.

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 and instruction labels on the back of the blade.

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

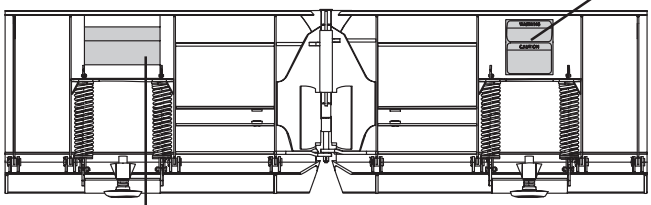
READ *OWNER'S MANUAL* BEFORE OPERATING OR SERVICING SNOWPLOW.

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.

UltraMount® System



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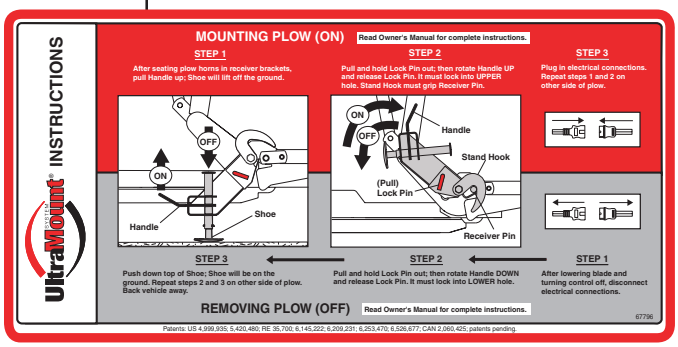
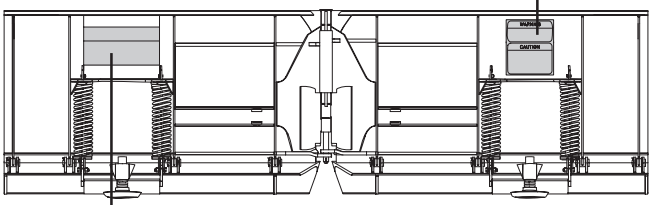


UniMount® System



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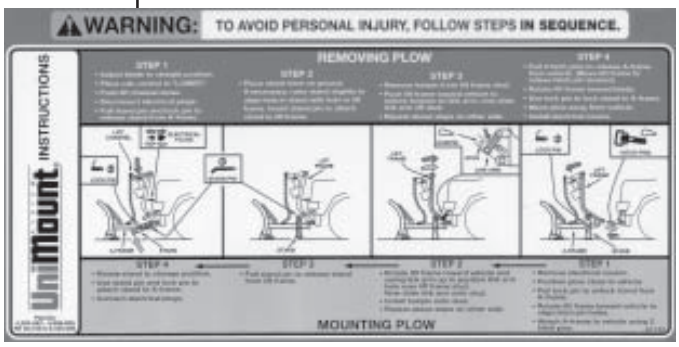


MVP® ELECTRICAL TEST PROCEDURE

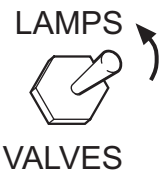
TEST PREPARATION

- 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.
- All vehicle lamps must be operational. An open lamp may cause false test results.
- The tester cannot verify that lamp elements wired in parallel are good.
- The Electrical Tester is protected by circuit breakers. 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.

SNOWPLOW HARNESS TEST

This procedure tests continuity in the snowplow harness.

1. Move the tester toggle switch to LAMPS.
2. 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.
3. Connect the **"Y" Adapter Cable** orange/black wire to a good vehicle ground.
4. Connect the adapter cable red wire to the red receptacle on the tester.
5. Connect tester leads to the vehicle battery.
6. Check the snowplow circuit continuity. Verify that all snowplow tester LED's are ON.
7. If any LED is not ON, repair or replace components, and retest.
8. The test is complete. Disconnect the tester.



SNOWPLOW HARNESS TEST

	PLOW	VEHICLE
PARKING LIGHTS	●	○
RIGHT DIRECTIONAL	●	○
LEFT DIRECTIONAL	●	○
HIGH BEAM	●	○
LOW BEAM	●	○
VALVE 1S	●	○
VALVE 2S	●	○
VALVE 3S	●	○
VALVE 4S	●	○
VALVE 5S	●	○
VALVE 6S	●	○
GROUND	●	

CURRENT DRAW TEST – CARTRIDGE COILS

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 snowplow and vehicle control harnesses.

2. Connect the snowplow and vehicle lighting harnesses.

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

4. Find and remove the 10A control fuse, part of the vehicle control harness and located near position #1 of the Isolation Module.

5. Install the jumper wire blade terminal into position B of the fuse holder.

6. Connect the banana plug end to the red receptacle on the tester.

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

8. Move the tester toggle switch to VALVES.

9. Plug the cab control into the vehicle. Turn the iginition switch to run, but do not start the engine.
   - The LED under the control logo is ON.

   Press the power button.
   - The PWR (power) LED is ON.

10. Operate the control buttons. Refer to the chart below and verify the current draw. For all but the LOWER button, listen for the click as the motor relay energizes.

    After pressing the LOWER button, cancel float by pressing the RAISE button.

    Straight Blade mode: Initially, the control MODE LED is off – this indicates the default Straight Blade mode.

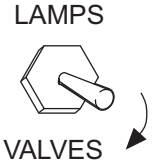
    Vee/Scoop mode: Press and release the MODE button. The MODE LED is now ON (steady light), indicating the VEE/SCOOP mode.

    Wing mode: Press the MODE button for approximately 2 seconds. The MODE LED flashes, indicating the WING mode.

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

12. The test is complete. Turn off the ignition and disconnect the tester and jumper lead.

13. Reinstall the 10A fuse and fuse holder cover.



CONTROL - CURRENT DRAW (AMPS)

	STRAIGHT BLADE	VEE / SCOOP	WING
RAISE	3.0	3.0	3.0
LOWER	3.0	3.0	3.0
R/VEE (first press)	1.5	1.5	0.1*
R/VEE (second press)	N/A	N/A	1.5
L/SCP (first press)	3.0	4.5	1.5
L/SCP (second press)	N/A	N/A	3.0

*may appear to be (0)

CAB CONTROL TEST

This procedure tests the CabCommand Control functions only.

1. Move the tester toggle switch to the center position.
2. Connect the tester leads to the vehicle battery.
   - The tester +12VDC LED is ON.
3. Plug the control into the tester.
   - The LED under the control logo is ON.
4. Press the power button.
   - the PWR (power) LED is ON
5. Refer to the chart below and operate the control. For each control button:
   - Verify that the indicated tester Cab LED's come on.
   - 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.

     The Motor Relay LED times out in approximately 4.25 seconds (2.5 seconds for the RAISE function), and the Valve LED's time out approximately 1 second later**.**

     Press and hold the LOWER button – after .75 second the control FLT (float) LED comes on. Cancel float by pressing the RAISE button.

     Straight Blade mode: Initially, the control MODE LED is off – this indicates the default Straight Blade mode.

     Vee/Scoop mode: Press and release the MODE button. The MODE LED is now ON (steady light), indicating the Vee/Scoop mode.

     Wing mode: Press the MODE button for approximately 2 seconds. The MODE LED flashes, indicating the Wing mode.
6. If any LED does not come on, repair or replace components, and retest.
7. The test is complete. Disconnect the tester.

CAB LEDs

LAMPS

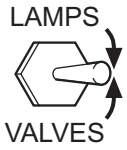
VALVES

CONTROL MODE	ALL	ALL	STRAIGHT BLADE(default)		VEE / SCOOP		WING			
BUTTON	RAISE	LOWER	R/VEE	L/SCP	R/VEE	L/SCP	R/VEE (first press)	R/VEE (second press)	L/SCP (first press)	L/SCP (second press)
+12VDC	●	●	●	●	●	●	●	●	●	●
MOTOR RELAY	●	○	●	●	●	●	●	●	●	●
VALVE S1	○	●	○	○	○	○	○	○	○	○
VALVE S2	●	○	○	●	○	○	○	○	●	●
VALVE S3	●	●	○	○	●	●	○	○	○	○
VALVE S4	○	○	○	○	○	●	○	○	○	●
VALVE S5	○	○	●	●	○	○	○	○	○	○
VALVE S6	○	○	○	○	○	●	○	●	○	○

VEHICLE CONTROL HARNESS TEST

This procedure tests continuity in the vehicle control harness.

1. Move the tester toggle switch to the center position.



2. Disconnect all snowplow electrical connectors from the vehicle except the lighting harness.

3. 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.

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 CabCommand Control into the vehicle.
   - The LED under the control logo is ON.

7. Press the power button.
   - The PWR (power) LED is ON.

   Straight Blade mode: Initially, the control MODE LED is off – this indicates the default Straight Blade mode.

   Vee/Scoop mode: Press and release the MODE button. The MODE LED is now ON (steady light), indicating the Vee/Scoop mode.

   Wing mode: Press the MODE button for approximately 2 seconds. The MODE LED flashes, indicating the Wing mode.

8. Refer to the cab control chart below, and operate the control. For each control function verify that the indicated tester vehicle LED's come on. For all but the LOWER function, listen for the click as the motor relay energizes. To cancel LOWER/FLOAT, depress the RAISE button.

9. If any LED does not come on, or the motor relay does not energize, repair or replace components, and retest.

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

CAB CONTROL										
CONTROL MODE	ALL	ALL	STRAIGHT BLADE(default)		VEE / SCOOP		WING			
CONTROL BUTTON	RAISE	LOWER	R/VEE	L/SCP	R/VEE	L/SCP	R/VEE (first press)	R/VEE (second press)	L/SCP (first press)	L/SCP (second press)
Motor Relay	CLICKS		CLICKS	CLICKS	CLICKS	CLICKS	CLICKS	CLICKS	CLICKS	CLICKS
VALVE S1	○	●	○	○	○	○	○	○	○	○
VALVE S2	●	○	○	●	○	○	○	○	●	●
VALVE S3	●	●	○	○	●	●	○	○	○	○
VALVE S4	○	○	○	○	○	●	○	○	○	●
VALVE S5	○	○	●	●	○	○	○	○	○	○
VALVE S6	○	○	○	○	○	●	○	●	○	○

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