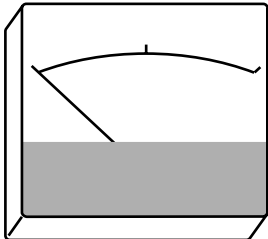






Electrical Tester Operator's Manual for the Minute Mount® Snowplow

	PLOW	VEHICLE	
PARKING LIGHTS	<input type="radio"/>	<input type="radio"/>	
RIGHT DIRECTIONAL	<input type="radio"/>	<input type="radio"/>	
LEFT DIRECTIONAL	<input type="radio"/>	<input type="radio"/>	
HIGH BEAM	<input type="radio"/>	<input type="radio"/>	
LOW BEAM 9/12P RT	<input type="radio"/>	<input type="radio"/>	
LOW BEAM 12P LT	<input type="radio"/>	<input type="radio"/>	CAB
GND LOW BEAM 12P RT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> +12VDC
GND LOW BEAM 12P LT	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> MOTOR RELAY
VALVE 2W	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> VALVE 2W
VALVE 3W	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> VALVE 3W
VALVE 4W	<input type="radio"/>	<input type="radio"/>	<input type="radio"/> VALVE 4W
GROUND	<input type="radio"/>		



⚠ CAUTION

Read this Electrical Tester Operator's Manual before testing any FISHER® snowplow.

Safety Information

WARNING

Indicates a potentially hazardous situation that may result in death or serious injury if not avoided.

CAUTION

Indicates a potentially hazardous situation that may result in minor or moderate injury and/or property damage if not avoided.

NOTE: Identifies tips, helpful hints and information the tester 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.

Minute Mount® Snowplow Electrical Test Procedure

GENERAL INFORMATION

⚠ CAUTION

Read the Electrical Tester Operator's Manual before testing any FISHER® snowplow.

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

CURRENT DRAW TEST (9- or 12-Pin Systems)

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 9- or 12-pin connector to the vehicle harness.
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.

Lights - Current Draw

6. Operate the lights. Refer to the chart below and verify the current draw.

LIGHTS - CURRENT DRAW (AMPS)

PARKING LIGHTS	2.0
PLOW HIGH BEAM	11.0
PLOW LOW BEAM	8.0
RIGHT/LEFT DIRECTIONALS	3.0 - 4.0

Control - Current Draw

7. Plug the cab 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 Solenoid Control: Turn the control power switch on. The control indicator LED is ON.

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

CONTROL - CURRENT DRAW (AMPS)

RAISE	1.5
LOWER	1.5
ANGLE RIGHT	3.0
ANGLE LEFT	1.5

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

9. If required, repair or replace components, and retest.
10. The test is complete. Turn off the ignition and disconnect the tester.

For further information refer to the Electrical Tester Operator's Manual or the Mechanic's Guide.

* Early Fish-Stik Control models do not have logo or FLOAT LEDs.

Minute Mount® Snowplow Electrical Test Procedure

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 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 LEDs come on. Cancel float after the LOWER function by activating the RAISE function. For further float information refer to the Electrical Tester Operator's Manual.

4. **For Fish-Stik™ Control:** Verify the control timeouts. For all except the LOWER function, if you press and hold the buttons, the tester's Motor Relay and Valve LEDs time out automatically. For the LEFT and RIGHT buttons the timeout is approximately 4.25 seconds. The timeout 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 Electrical Tester Operator's Manual or the Mechanic's Guide.

* Early Fish-Stik Control models do not have logo or FLOAT LEDs.

RAISE	LOWER	ANGLE RIGHT	ANGLE LEFT
CAB <input checked="" type="radio"/> +12VDC <input checked="" type="radio"/> MOTOR RELAY <input type="radio"/> VALVE 2W <input type="radio"/> VALVE 3W <input checked="" type="radio"/> VALVE 4W	CAB <input checked="" type="radio"/> +12VDC <input type="radio"/> MOTOR RELAY <input checked="" type="radio"/> VALVE 2W <input type="radio"/> VALVE 3W <input type="radio"/> VALVE 4W	CAB <input checked="" type="radio"/> +12VDC <input checked="" type="radio"/> MOTOR RELAY <input type="radio"/> VALVE 2W <input checked="" type="radio"/> VALVE 3W <input type="radio"/> VALVE 4W	CAB <input checked="" type="radio"/> +12VDC <input checked="" type="radio"/> MOTOR RELAY <input type="radio"/> VALVE 2W <input checked="" type="radio"/> VALVE 3W <input checked="" type="radio"/> VALVE 4W

Minute Mount® Snowplow Electrical Test Procedure

PLOW HARNESS TEST

This procedure tests continuity in the plow harness.

1. Connect the tester 12-pin connector to the plow harness.
2. Connect the tester 2-pin connector to the plow battery cable.
3. Connect the tester leads to the vehicle battery.
 - the tester +12VDC LED is ON

4. Refer to the appropriate chart below and verify that the indicated Plow LEDs 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 Electrical Tester Operator's Manual or the Mechanic's Guide.

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

7-Pin Plow Harness			9-Pin Plow Harness			12-Pin Plow Harness		
	PLOW	VEHICLE		PLOW	VEHICLE		PLOW	VEHICLE
PARKING LIGHTS	●	○	PARKING LIGHTS	●	○	PARKING LIGHTS	●	○
RIGHT DIRECTIONAL	●	○	RIGHT DIRECTIONAL	●	○	RIGHT DIRECTIONAL	●	○
LEFT DIRECTIONAL	●	○	LEFT DIRECTIONAL	●	○	LEFT DIRECTIONAL	●	○
HIGH BEAM	●	○	HIGH BEAM	●	○	HIGH BEAM	●	○
LOW BEAM 9/12P RT	●	○	LOW BEAM 9/12P RT	●	○	LOW BEAM 9/12P RT	●	○
LOW BEAM 12P LT	○	○	LOW BEAM 12P LT	○	○	LOW BEAM 12P LT	●	○
GND LOW BEAM 12P RT	○	○	GND LOW BEAM 12P RT	○	○	GND LOW BEAM 12P RT	●	○
GND LOW BEAM 12P LT	●	○	GND LOW BEAM 12P LT	○	○	GND LOW BEAM 12P LT	●	○
VALVE 2W	○	○	VALVE 2W	●	○	VALVE 2W	●	○
VALVE 3W	○	○	VALVE 3W	●	○	VALVE 3W	●	○
VALVE 4W	○	○	VALVE 4W	●	○	VALVE 4W	●	○
GROUND	●		GROUND	●		GROUND	●	

Minute Mount® Snowplow Electrical Test Procedure

VEHICLE HARNESS TEST

This procedure tests continuity in the vehicle harness.

1. Disconnect both plow electrical connectors from the vehicle.
2. Connect the tester 12-pin connector to the vehicle harness.
3. Connect the tester leads to the vehicle battery.
 - the tester +12VDC LED is ON
4. Turn the ignition to RUN. Do not start the engine.

Vehicle Harness – Lights

5. Refer to the appropriate Lights chart below and operate the lights. Verify that the indicated Vehicle LEDs come on.

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

Vehicle Harness – Cab Control Functions

6. Plug the cab 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 Solenoid Control: Turn the control power on. The control indicator LED is ON.

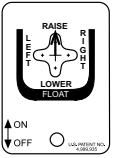
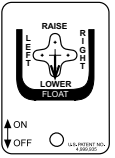
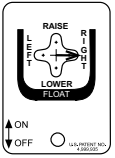
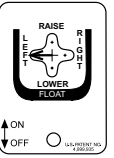
7. Refer to the Control Functions chart below and operate the cab controls. Verify that the indicated Vehicle LEDs come on. For all but the LOWER function, listen for the click as the motor relay energizes. Cancel float after the LOWER function by activating the RAISE function.
8. If any LED does not come on or the motor relay does not energize, 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 Electrical Tester Operator's Manual or the Mechanic's Guide.

* Early Fish-Stik Control models do not have logo or FLOAT LEDs.

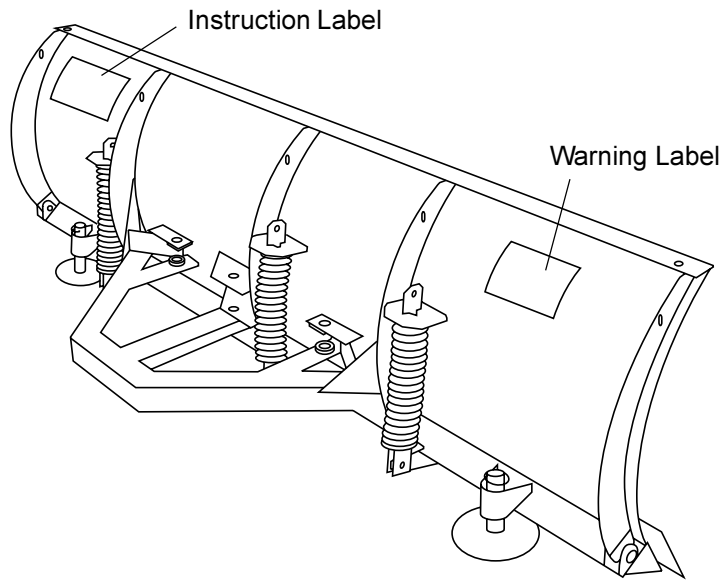
LIGHTS					
7-,9-Pin Vehicle Harnesses			12-Pin Vehicle Harness		
PLOW VEHICLE			PLOW VEHICLE		
PARKING LIGHTS	<input type="radio"/>	<input checked="" type="radio"/>	PARKING LIGHTS	<input type="radio"/>	<input checked="" type="radio"/>
RIGHT DIRECTIONAL	<input type="radio"/>	<input checked="" type="radio"/>	RIGHT DIRECTIONAL	<input type="radio"/>	<input checked="" type="radio"/>
LEFT DIRECTIONAL	<input type="radio"/>	<input checked="" type="radio"/>	LEFT DIRECTIONAL	<input type="radio"/>	<input checked="" type="radio"/>
HIGH BEAM	<input type="radio"/>	<input checked="" type="radio"/>	HIGH BEAM	<input type="radio"/>	<input checked="" type="radio"/>
LOW BEAM 9/12P RT	<input type="radio"/>	<input checked="" type="radio"/>	LOW BEAM 9/12P RT	<input type="radio"/>	<input checked="" type="radio"/>
LOW BEAM 12P LT	<input type="radio"/>	<input type="radio"/>	LOW BEAM 12P LT	<input type="radio"/>	<input checked="" type="radio"/>
GND LOW BEAM 12P RT	<input type="radio"/>	<input type="radio"/>	GND LOW BEAM 12P RT	<input type="radio"/>	<input checked="" type="radio"/>
GND LOW BEAM 12P LT	<input type="radio"/>	<input checked="" type="radio"/> **	GND LOW BEAM 12P LT	<input type="radio"/>	<input checked="" type="radio"/>
VALVE 2W	<input type="radio"/>	<input type="radio"/>	VALVE 2W	<input type="radio"/>	<input type="radio"/>
VALVE 3W	<input type="radio"/>	<input type="radio"/>	VALVE 3W	<input type="radio"/>	<input type="radio"/>
VALVE 4W	<input type="radio"/>	<input type="radio"/>	VALVE 4W	<input type="radio"/>	<input type="radio"/>
GROUND	<input type="radio"/>	<input type="radio"/>	GROUND	<input type="radio"/>	<input type="radio"/>

**7-pin vehicle harness only.

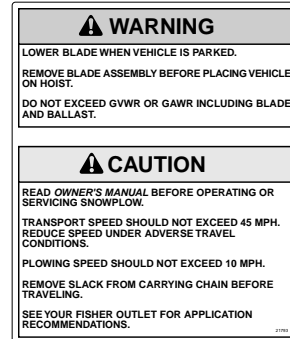
CAB CONTROL							
RAISE		LOWER		ANGLE RIGHT		ANGLE LEFT	
							
PLOW VEHICLE		PLOW VEHICLE		PLOW VEHICLE		PLOW VEHICLE	
VALVE 2W	<input type="radio"/>	VALVE 2W	<input checked="" type="radio"/>	VALVE 2W	<input type="radio"/>	VALVE 2W	<input type="radio"/>
VALVE 3W	<input type="radio"/>	VALVE 3W	<input type="radio"/>	VALVE 3W	<input checked="" type="radio"/>	VALVE 3W	<input checked="" type="radio"/>
VALVE 4W	<input type="radio"/>	VALVE 4W	<input type="radio"/>	VALVE 4W	<input type="radio"/>	VALVE 4W	<input checked="" type="radio"/>
GROUND	<input type="radio"/>	GROUND	<input type="radio"/>	GROUND	<input type="radio"/>	GROUND	<input type="radio"/>

Safety Information

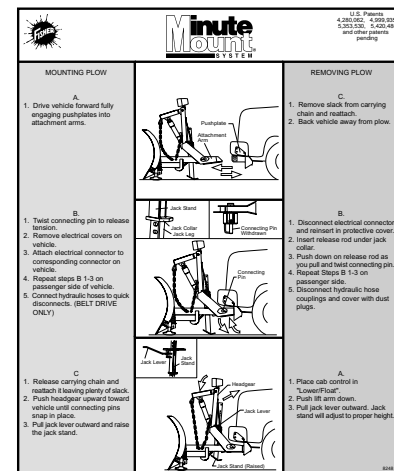
Please become familiar with and make testers knowledgeable of the Warning and Instruction labels on the back of the blade!



Warning Label



Instruction Label



ADDITIONAL INFORMATION

- Connect the Electrical Tester's red clip to the positive battery terminal and the black clip 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.
- **For Fish-Stik™ 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 the button in.
- There are no user-serviceable parts inside the Electrical Tester. For repair, return the Electrical Tester to your Fisher Engineering outlet.

CIRCUIT / WIRE COLOR CHART

CIRCUIT SHOWN ON TESTER	CORRESPONDING WIRE COLOR			PIN #
	7-PIN	9-PIN	12-PIN	
PARKING LIGHTS	Brown	Brown	Brown	11
RIGHT DIRECTIONAL	Purple	Purple	Purple	10
LEFT DIRECTIONAL	Gray	Gray	Gray	9
HIGH BEAM	White	White	White	6
LOW BEAM 9/12P RT	Black ^a	Black ^a	Black ^b	2
LOW BEAM 12P LT	—	—	Black/White	7
GND LOW BEAM 12P RT	—	—	Dk Blue/Orange	8
GND LOW BEAM 12P LT	Orange/Black ^c	—	Lt Blue/Orange	12
VALVE 2W	—	White/Yellow	White/Yellow	1
VALVE 3W	—	Lt Green	Lt Green	3
VALVE 4W	—	Lt Blue	Lt Blue	4
GROUND	Black/Orange ^d	Black/Orange ^{d,e}	Black/Orange ^{d,e}	5

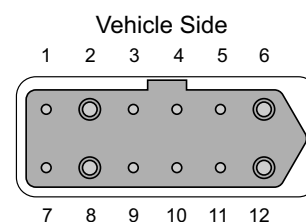
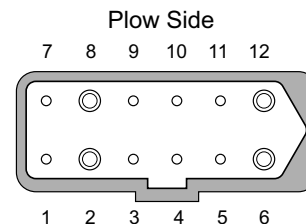
^a LEFT AND RIGHT SIDES.

^b RIGHT SIDE ONLY.

^c 7-PIN SYSTEM — MAIN GROUND.

^d GROUND FOR HEADLIGHT RELAYS ONLY.

^e ON EARLY REVISION HARNESSSES, BLACK/ORANGE WIRE IS GROUND FOR MOTOR RELAY, CONTROL AND HEADLIGHT RELAYS.



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