

Mobile Spray Systems Sure Lane Series



De-Icing Control System Parts, Installation, Warranty, and Operator Manual

Updated 11 March 02

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Sure Lane



Accurate application at any speed from 0 to 60.

Anti-icing and deicing is not a hit or miss issue. If too much chemical is used, the roads can be more hazardous than when left alone. If too little is used, a dangerous false sense of security could be experienced.

Accurate application is essential.

Mobile Spray Systems **Sure Lane Series**, has been designed to do just that. Accurate application at any speed between 0 & 60 m.p.h. It is an amazingly simple and very functional truck / skid mounted system.

The **Sure Lane Series** allows up to three lanes of precise liquid applications. The on-board computer automatically monitors the chemical flow and vehicle speed, allowing the unique variable orifice nozzle to open-and-close to meet your application needs.

Conventional Nozzle Limitations

The pressures at which the conventional nozzles operate, to apply product at 25 gal./lane mile are **not** practical at higher or lower speeds. At 50 gal./lane mile, the numbers are even less practical. When you double the flow through a

conventional fixed-orifice nozzle . . . the pressure must increase **four times**.

The **Variable Orifice Nozzle** gives a sprayer the ability to apply product, without large pressure changes, continually operating at pressures between 18 and 25 psi, and at any speed between 0 m.p.h. and 60 m.p.h.

Easy Operation.

Everything is controlled from inside the cab. The control console is easy to learn and operate.

You may use any combination of one, two or all three lanes, with a flip of a switch. Automatic sensors calculate speed and adjust your flow rate on the go. The in cab console provides digital information. It displays the accumulated of total gallons applied. Allowing the driver to know when to head back for more material. It also displays other pertinent information.

Accurate Application

If you set an application rate of 30 gal./lane mile, at a full stop, the system is putting out zero gal. per lane mile, with no drip. At 1 m.p.h., the system is putting out 30 gal./lane mile. At 35 m.p.h., the system is putting out 30 gal./lane mile. At 50 m.p.h., the system is still applying 30 gal./lane mile, which is a precise application of your own preset rate -- up to 60 m.p.h.

The **Sure Lane Series** lets you spray, at any rate, from 20 to 60 gal./lane mile. You can slow down or speed up with the flow of traffic, while accurately applying the product.

When you stop-and-start the vehicle at intersections, the system will automatically stop-or-start spraying at the preset rate.

Working Reliability .

The simplicity of the system is one of its most valued traits. The chemical carrier system is completely constructed of non-corrosive materials. The variable orifice nozzle naturally discourages clogging.



Sure Lane

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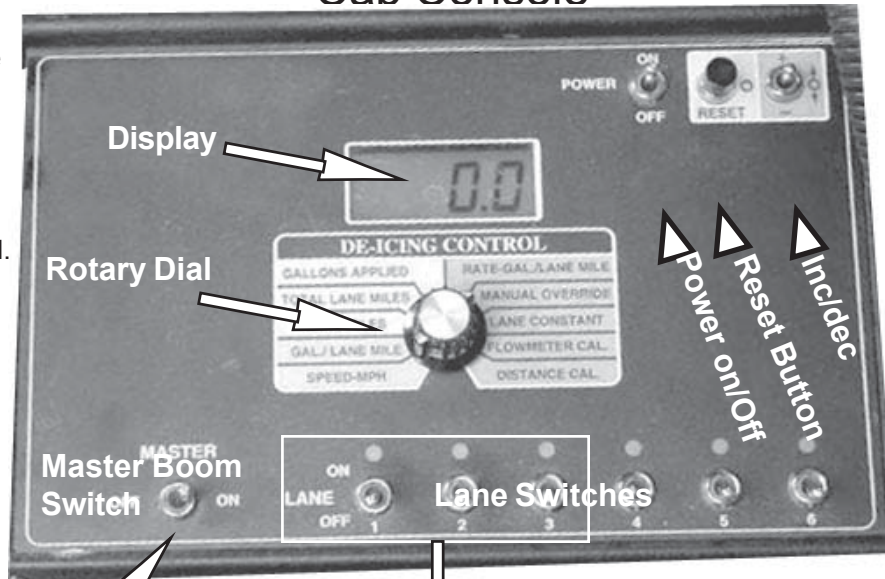
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Sure Lane De-Icing Control System

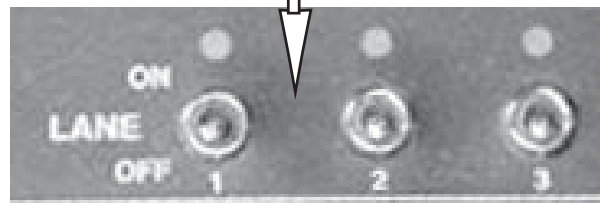
introduction to the console

Cab Console

Display: The information displayed is controlled by the position selected with the rotary dial.



The master on off switch, controls all lane valves



Left Lane Center Lane Right Lane
Normal configuration

Only the first 3 Lane On/off switches are used to operate the spray booms. The lane controls switches can be set up in whatever order that makes logical sense to the operator, simply by changing the plug-in connectors at the lane valves. Red indicator light turns on when Lane switch is activated while the master is in the on position.

With the Master switch on, the lane switches control individual lane valves. With the Master switch off and all lane valves are closed.

Automatic Shutdown: The console will automatically shut down if there have been no switch changes for a period of ten minutes, and there is no ground speed detected. This guards against running the battery down because the console was not turned off at the end of the day. There is no loss of memory during the automatic shut down.

Accumulator Displays (Color Coded Yellow)

Monitoring Displays (Color Coded Green)



Accumulator Displays

Gallons Applied: Reads in whole gallons, to a maximum of 9999 gallons (rolls over to 0000 gallons after 9999).

Most operators run the system with the control switch in the GALLON APPLIED position. This allows you to know how much material you have applied and when to head back to the shop for more material.

Total Lane Miles: Reads in miles to the nearest tenth, to a maximum of 999.9 miles (rolls over to 000.0 miles after 999.9).

Lane Miles: Reads in miles to the nearest hundredth, to a maximum of 99.99 miles (rolls over to 00.00 miles after 99.99).

Monitoring Displays

Gal./Lane Mile: Select “**Gal./Lane Mile**”, While spraying, this indicates the actual application rate in gallons per lane mile, at that instant, to the nearest tenth of a gallon per mile.

Speed MPH: Select “**Speed MPH**”. While moving, this indicates the actual ground speed to the nearest tenth of a mile per hour.

Ground Speed Override: A ground speed override feature is available and must only be used when the sprayer is “stationary and you need to perform an operational system check, stationary testing or adjusting nozzle spray pattern location. With the Master switch “**OFF**” and the vehicle stopped, select “**Speed MPH**” and push the reset button. A “**t**” will appear at the left side of the display, indicating the ground speed override feature is turned “**ON**”. Pushing the reset button again will deactivate this feature. With ground speed override active, hold the +/- switch up or down to set the display to the desired ground speed override speed. A small “**c**” appears to the left on the display while this speed is being entered. When spraying with the ground speed override function active, the sprayer will spray at the ground speed selected, and the console will “**Beep**” periodically to alert you that you are in a non-control mode.



Calibration and Setup (Color Coded Blue)

Rate – Gal./Lane Mile: Two different application rates can be programmed into the console. The operator can then switch between the two rates by depressing the “Reset” button. To enter the desired rates, turn the Master switch “OFF”. Select **Rate-Gal./Lane Mile**, and use the +/- switch to select the first application rate to the nearest tenth. Depress the “Reset” button to select the second rate display. Repeat the previous step to enter the second rate. To switch between the two rates (on the go) the operator need only switch to the **Rate-Gal./Lane Mile** position and depress the “Reset” switch. Switching back to the **Gal./Lane Mile** position allows monitoring of the current rate.

Manual Override: Select “**Manual Override**”, wait three seconds for the function to become active: Now the valve will respond only to manually directed open (+) and close (-) commands using the +/- switch. The display reads gallons per lane mile actually being applied when you are spraying (based on actual ground speed, spray width, and flow meter counts). This manual override function can only be activated when the Master switch is “ON”. Set this to “0” value.

Flow Meter Cal: Be sure the Master switch is “OFF”. Select **Flow meter Cal.** Use the +/- switch to set the flow meter calibration number to “160” for 1 1/2” flow meter and “630” for 1” flow meter.

Lane Constant: Be sure the Master switch is “ON”. Select “**Lane Constant**” with rotary switch. When the lane(s) switch(s) are “ON”, the display shows the accumulated lane constants. Select each “ON” by itself, and set the desire lane constant, using the +/- switch. The constant for each lane is 99. **Do Not Use Any Other Number!**

Distance Cal: It is very important that you perform a calibration test for the ground speed sensor. See page 7. This de-icing system uses a speedometer sensor unit for ground speed input to the cab console.

Performing the distance calibration

Before the console computer is speed and distance calibrated, it might think, “100 turns of the drive shaft is a mile”. We are going to tell the computer...No...this many turns of the drive shaft is a mile. Then we enter the calibration number that we will develop by the following steps.

On a straight, level, low traffic road, measure a known distance of at least 400 feet. Mark a starting and end point.

The farther the distance used to calibrate, the more accurate the console will be. You can use a known distance of 500, 600 and so on, as long as you enter the **actual** distance driven in the calibrations procedures shown below.

The console will need a temporary starting calibration number to have a general idea of the range it will be working in.

Perform the following steps:

With the console Power and the Master switch “**OFF**”.

Select **Distance Cal.** With the rotary switch.

Hold the **reset button** in while powering “**ON**” the console (hold the reset button in until the numbers on the display stop changing).

When the reset button is released, the number displayed is the current distance calibration number. This number can be changed using the +/- switch.

If there is already calibration number in the console, proceed with calibration test.

If there is no calibration number in the console, enter (using the +/- switch) a starting calibration number of 250. This is an arbitrary number, used only to let the computer know the range that it should be working in.

Calibrating the console

Turn the control console power switch “**OFF**” and hold the power switch down for a minimum of 3 seconds. Now turn the rotary function switch to “**Speed-mph**”. Turn the Master switch to “**OFF**”. Turn “**ON**” console Power. Select “**Dist. Cal.**”, and hold reset button in to zero the display. Continue to hold the reset button in until the display flashes “**0**” (about 3 seconds). **Do not release the reset button until another 3 seconds have passed.** This established the distance calibration mode.

Now drive at a slow speed of 2 – 5 mph along the measured distance. When the vehicle passes the mark at the start of the measured distance, turn “**ON**” the Master switch. The display will show the distance flashing as it accrues in feet. As the vehicle passes the mark at the end of the measured distance, turn “**OFF**” the Master switch. The display will show the distance that the console computer thinks the vehicle went. This distance reading may be higher or lower than the measured distance. Use the +/- switch to set the display to the measured distance **actually** traversed. Once this is completed the console computer knows that this many turns of the driveshaft equals this much distance. Turn the control console power switch “**OFF**” and hold the power switch down for 3 seconds. Now turn the rotary switch to any other function and then turn the console power “**ON**”. Calibration is complete and will not change unless the process is repeated. Turn the Power and the Master

switch **“OFF”**. Select Distance Cal. With the rotary switch. Hold the reset button in while powering **“ON”** the console (hold the reset button in until the numbers on the display stop changing). When the reset button is released, the number displayed is new distance calibration number. Write the new calibration number here for future reference. _____.

The control console is factory pre-set to a particular internal configuration. It is possible to accidentally program the console to a “non-standard” mode. When this happens, the unit will not operate properly even though correct constants have been installed previously or your console will not accept the entry of constants asked for in Calibration and Set-up. To return the console to standard mode do the following.

6.1.1. Standard Mode Set-up

- A. Turn Console power switch **“OFF”**
- B. Turn the master switch and all lane sections switches **“OFF”**
- C. Rotate the dial to **“Gallons Applied”**.
- D. Hold down the (-) toggle switch and keep this switch down as you also turn on the console power switch. **Do Not** release the (-) switch until the word **“stand”** appears in the console window.

You have now placed the console in the **“Standard”** mode.

6.1.2. Hold/Close Mode Set-Up

- A. Turn the master switch and all lane section switches **“OFF”**.
- B. Turn console power switch **“ON”**.
- C. Rotate the dial to **“Lane Constant”**.
- D. Hold the **“+”** switch **“up”** and continue to hold the switch **“up”** until the word **“close”** appears in the console window. This may require 5 – 10 seconds. When the word **“close”** appears, release the (+) switch.

Setting Sprayer Centrifugal Pump Operating Pressure

Note: Do not run the pump dry or you damage the pump seals causing leaks.

Note: Do not operate the centrifugal pump “without” fluid in the product tank, and make sure the 2” ball valve from tank to pump inlet is open.

Note: Any time you are not spraying, disengage the hydraulic system or reduce gas engine to idle.

It is recommended to use the minimum product pump pressure required to meet the desired application rate. However in certain situations where high speeds or high application rates are required it may be necessary to increase the pump pressure to meet the demand especially when using a fixed orifice nozzle. Do not exceed 2,000 psi hydraulic pressure.

Use the pressure gauge on the centrifugal pump to read operating pressure. Operating pressure required is listed for hydraulic or gas engine powered centrifugal pumps. For initial operational testing, we recommend testing with water. Load 200 – 300 gallons of water in product tank.

Set Master switch on control console to “**OFF**”.

For truck **hydraulic powered** centrifugal pumps, set engine throttle to 70% of maximum engine rpm.

Turn on spreader hydraulic bank valve.

Set spreader (or in-line) hydraulic valve to produce 40 psi for 1 Lane Unit, 50 psi for 2 Lane Unit, & 60 psi for 3 Lane Unit centrifugal pump pressure. Record hydraulic valve settings.

For **auxiliary gas engine powered** centrifugal pumps, increase gas engine rpm to produce required pressure.

Adjust engine “throttle ” so it will produce maximum of 40 psi for 1 Lane, Unit, 50 psi for 2 Lane Unit, & 60 psi for 3 Lane Unit.

Note: Different products will give different operating pump pressures, so readjustment may be required.

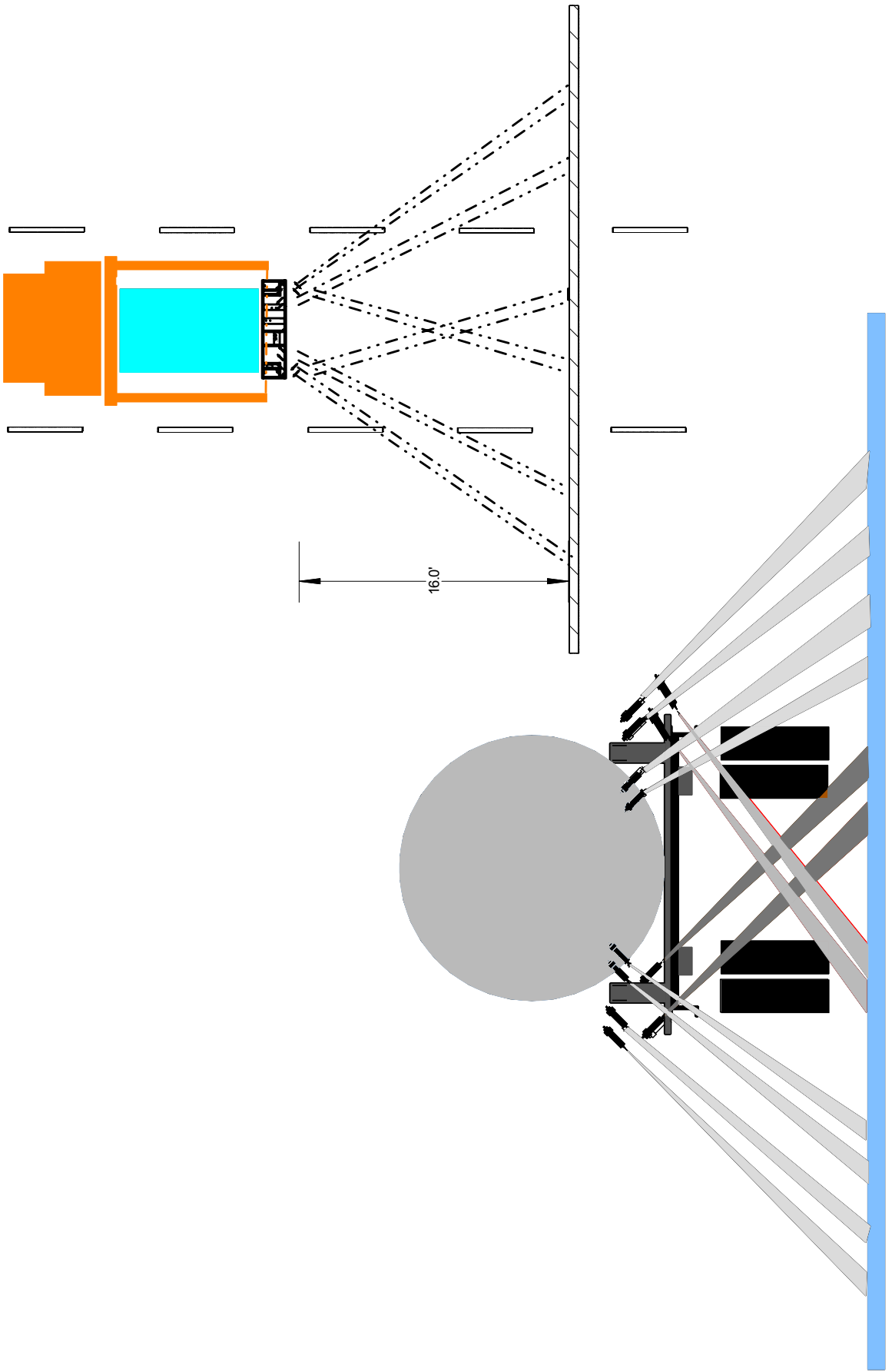


Adjusting the Spray Pattern

Center Lane should be crossed with out contacting the spray from one side of the lane to the other. Spraying rearward at a down angle to 16 feet behind the vehicle. This give the spray a zero velocity effect. The two left center lane nozzles should be pointed toward the estimated tire track of the right side of the center lane, and the right nozzles toward the left. Elevate one pair of nozzles above the other pair so that they do not touch.

Left and right Lanes: Point the nozzles rearward as far as possible while still giving coverage to the estimated tire tracks. Making sure that the spray patterns do not cross.

Accurate application
is essential.



Daily Maintenance

It is mandatory to perform the following checks and make adjustments as necessary for the items listed below. Failure to comply could result in the loss of warranty consideration and the potential danger resulting in personal injury or loss of life if these items are not checked and adjusted as listed below. These checks must be made before leaving the shop and starting de-icing operations.

Daily

- 1 Check all tank-mounting devices for tightness of tank to skid. Tighten tank band nuts and re-align tank to skid if necessary.
- 2 Check all tightening devices holding from end of tank to truck body for tightness. Be sure to examine clevis bolts for tightness, weak and/or bent chain links, and loose turnbuckles. If turnbuckles are used and loose, be sure to tighten turnbuckle locknuts after tightening the turnbuckle.
- 3 Check to be sure the “tailgate clamp hooks” are in the closed position and that skid round steel bars, located at the rear of the skid, are clamped “inside” of the tailgate hooks.
- 4 Check the filter screens inside the filters for cleanliness. Wash out any clogged impurities, check “O” ring rubber gasket seal, and hand tighten only enough to prevent leakage. Do not use a wrench to tighten filter cartridge!
- 5 Check all hydraulic fittings for leakage. Re-tighten as necessary to prevent leaks.
- 6 Check all of the calibration and rate constants in the control console. Re-input correct rates or perform the calibration procedures as required.
- 7 **Note: All “quick disconnect” knurled nuts must be hand tightened only. Tightening with a wrench will damage disconnect.**
- 8 Check hydraulic quick disconnects for cleanliness before connecting.

Setup & Operation

The console is easy to use. The rotary dial selects the information displayed in the window. A power switch turns the console off and on. Holding the reset button in will reset the accumulator displays to zero (color coded for convenience). The +/- switch is used to change the numbers in the calibration and setup displays (also color coded). Individual lane switches and a console master switch are located along the bottom of the console.

Before using the system, check all of the calibration and rate constants in the control console. Re-input correct rates or perform the calibration procedures as required.

Most operators run the system with the control switch in the GALLON APPLIED position. This allows you to know how much material you have applied and when to head back to the shop for more material.

The master switch controls all the lane switches. You can control individual lane coverage with the Left, Center, or Right lane switches.

The **Sure Lane Series** lets you spray, at any rate, from 20 to 60 gal./lane mile. You can slow down or speed up with the flow of traffic, while accurately applying the product.

When you stop-and-start the vehicle at intersections, the system will automatically stop-or-start spraying at the preset rate.

Increase or decrease the application rate by pressing the reset button. It will automatically apply the chemical at your preset rate.

Changing The Application Rate On-The-Go: There are two different ways that the operator can vary the application rate while the sprayer is operating:

With the “**Display Selector**” in the **Rate – Gal./Lane Mile** position, the operator can switch between the two pre-programmed rates by depressing the “**Reset**” button.

Note: After changing your rate, turn the “Display Selector” dial to the Gal./Lane Mile position. This allows you to view and confirm the actual new rate you will now be spraying.

OR

With the “**Display Selector**” in the **Gal./Lane Mile** position. This allows the operator to change the application rate, in 10% increments, while spraying, using the **INC/DEC** switch.

Pre-programming application rates:

Power on and the master switch off with the display selector in the Gal/lane mile position, inc/dec switch up or down to desired rate. To set an alternate rate depress the reset button and inc/dec up or down to the desired alternate rate.

Operational Notes:

Ground speed override must be de-activated by pressing the “reset” button before the console rotary switch is rotated to any other function (position) and before the operator performs any road spraying operations.

Before starting you actual spraying operation, you must “zero” out the gallons applied total in your console. Hold “reset” button in for “3” or more seconds

When doing on-the-road spraying, set your rotary dial to gallons applied and stop spraying when the gallons applied total is within 50 – 100 gallons of the total gallons of actual liquid you started with in the tank, so that the system pump does not run dry.

Note: The use of this control system does not release the owner and/or operator from product label rates and guidelines.

Mobile Spray Systems, assumes no liability for damages caused by the misuse of this equipment and/or failure to follow labeled rates and procedures properly.

Mobile Spray Systems, recommends that the application rates and cleanup procedures be followed as specified by the chemical manufacturer on the label of the product being used.

The clean out procedure on the product label should be used to clean out the product tanks, pumps, and lines out through the nozzles.

Alarms

- 1. “too Fast”** When this message appears on the display, and the console beeps, it is an indication that the Servo control valve is fully open and is no longer responding to an open command from the control console. Slowing down will usually clear this error message, or shift to a lower gear to supply more hydraulic pump flows.
- 2. “no Flo”:** When this message appears on the display, and the console beeps, it is an indication that there are no signals being received from the flow meter. This may be a result of lane **ON/OFF** valves not re-

sponding or a faulty flow meter.

3. **“Flo Hi”**: When this message appears on the display, and the console beeps, it is an indication that the system is over-applying by 15% or greater, and the flow Servo control valve is not responding to a close signal from the console. This may be the result of a stuck Servo control valve, a power loss to the Servo control valve, a faulty motor on the Servo control valve or a fault in the wiring harness.
4. **“Lo bATT”**: Whenever the vehicle electrical system voltage drops too low, the **Mobile Spray Systems** console will display an alarm. The console will beep and display the message **“Lo”, “bATT”** every six seconds. Look for loose or corroded battery connections, a faulty vehicle battery or problems with the Vehicle alternator.
5. **“ErrE”, “ErrC”, or “ErrR”**: When any of these messages appear, contact **Mobile Spray Systems** directly. These could indicate an internal problem with the console computer.

1.0 System Drain Procedure

You must completely drain your system, using the procedure described below, any time you have used or tested the system using water.

Note: It is only necessary to do this if you expect freezing temperatures before you refill your sprayer with anti-icing/de-icing liquid.

Failure to properly drain the sprayer could result in valve and other damage!

Nozzle Skid Procedure

- 1 Disconnect all hose quick disconnect fittings from the lance nozzle assemblies. These are located on the back side of each assembly.
- 2 Disconnect the cap quick disconnect from the end of the 2” manifold tee. The valve(s) are located on the right side of the nozzle skid.
- 3 Remove the 2” pressure filter cover and screen. This filter is attached on the left side of the Servo valve.
Note: Clean screen if necessary.
- 4 Open the pet cock on the bottom of the centrifugal pump.

- 5 Remove the 2" Y-strainer cover and screen on the tank/fill drain line.
Note: Clean screen if necessary.
- 6 Remove the lever action drain cap located on end of tank fill/drain line.
- 7 Open both 2" ball valves. (Pump suction line and tank fill/drain line.)

Control Console Procedure

- 1 Turn console power "**ON**".
- 2 Install a simulated ground speed of 10 mph in the console.
- 3 Turn on all applicable lane switches.
- 4 Turn on "**Master**" switch.
- 5 Leave all switches on until system stops draining from all of the areas mentioned in procedure A1-A7.
When you are satisfied all draining has stopped, turn off the "**Master**" switch and wait again for system to stop draining.
- 6 Repeat steps 4 & 5 two more times. It is necessary to do this to insure all water has drained out of the flow meter, and the water that is normally trapped between the electric ball valves and the valve covers.
- 7 Turn "**OFF**" console power and reinstall all filter screens, filter covers, and re-connect all hose quick disconnects.

Installation

Hydraulics.

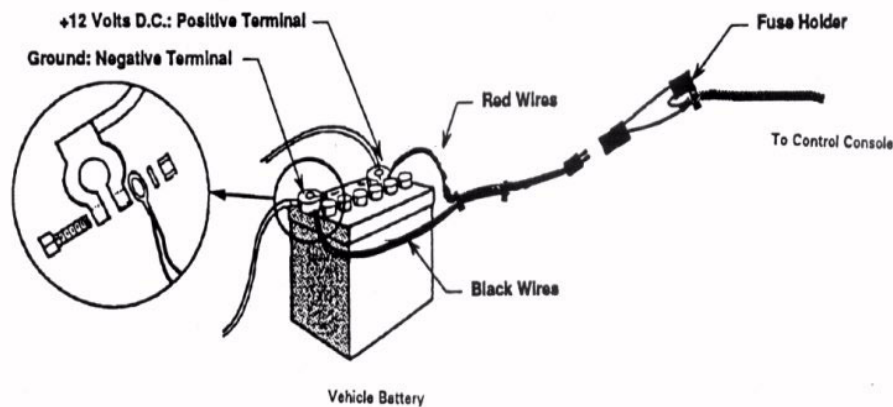
Two hydraulic lines are needed to supply the appropriate amount of flow to the hydraulic Motor. Utilize both hydraulic outlets from the vehicle hydraulic system. Tee the two lines off to one line connected to the single inlet on the hydraulic motor. Only one return line to the vehicle hydraulic system is necessary. Use the both spreader and sander controls to adjust to the pressures shown below.

Electrical

The main sprayer harness must be connected, as shown on the diagram, directly to the vehicle battery. Route the cabling so that it is secured and protected from physical damage. Be sure the implement status jumper plug is installed (if equipped.)

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY DAMAGE THE SYSTEM AND VOID THE WARRANTY.

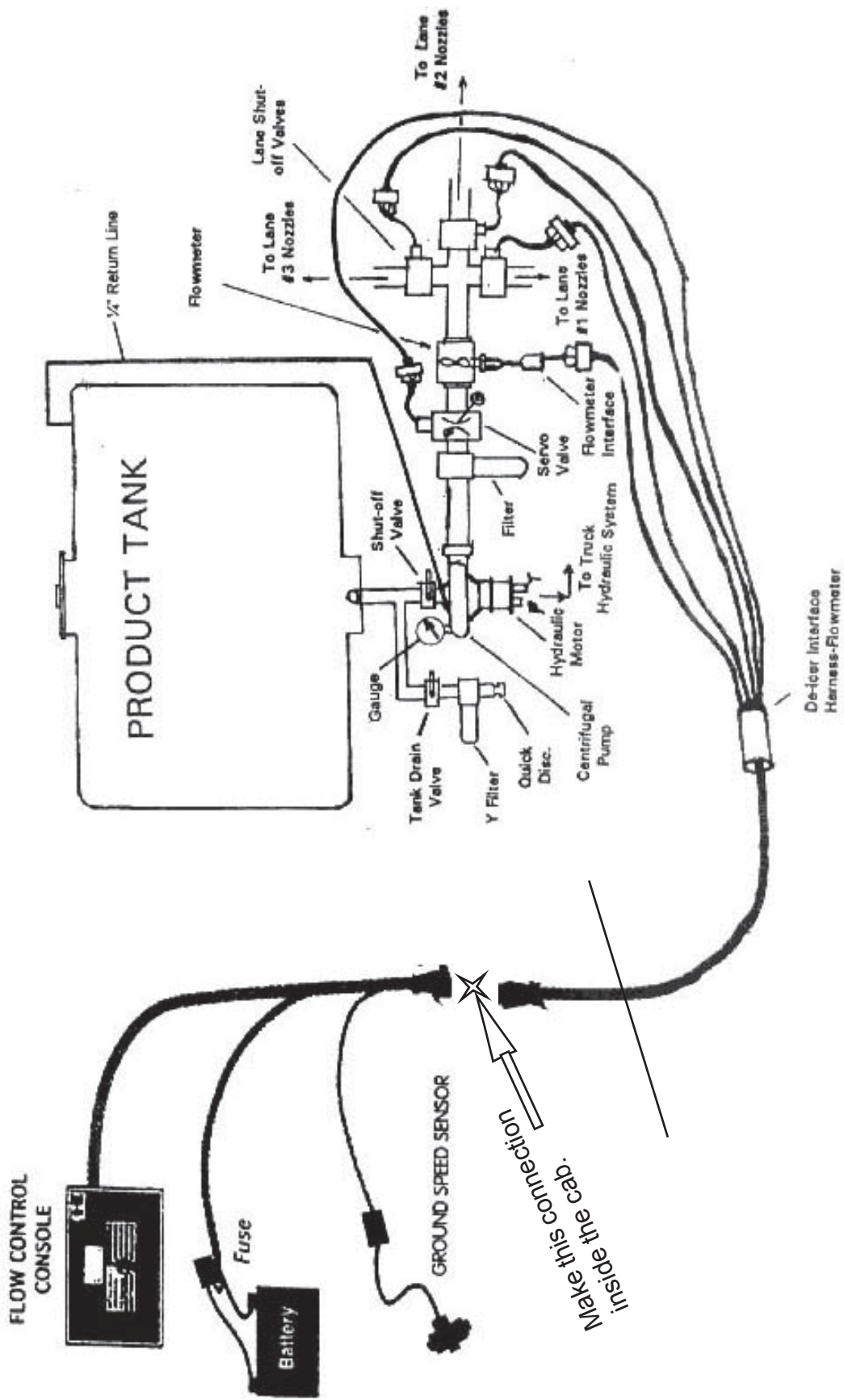
CONNECT ALL POWER LEADS DIRECTLY TO THE VEHICLE BATTERY!

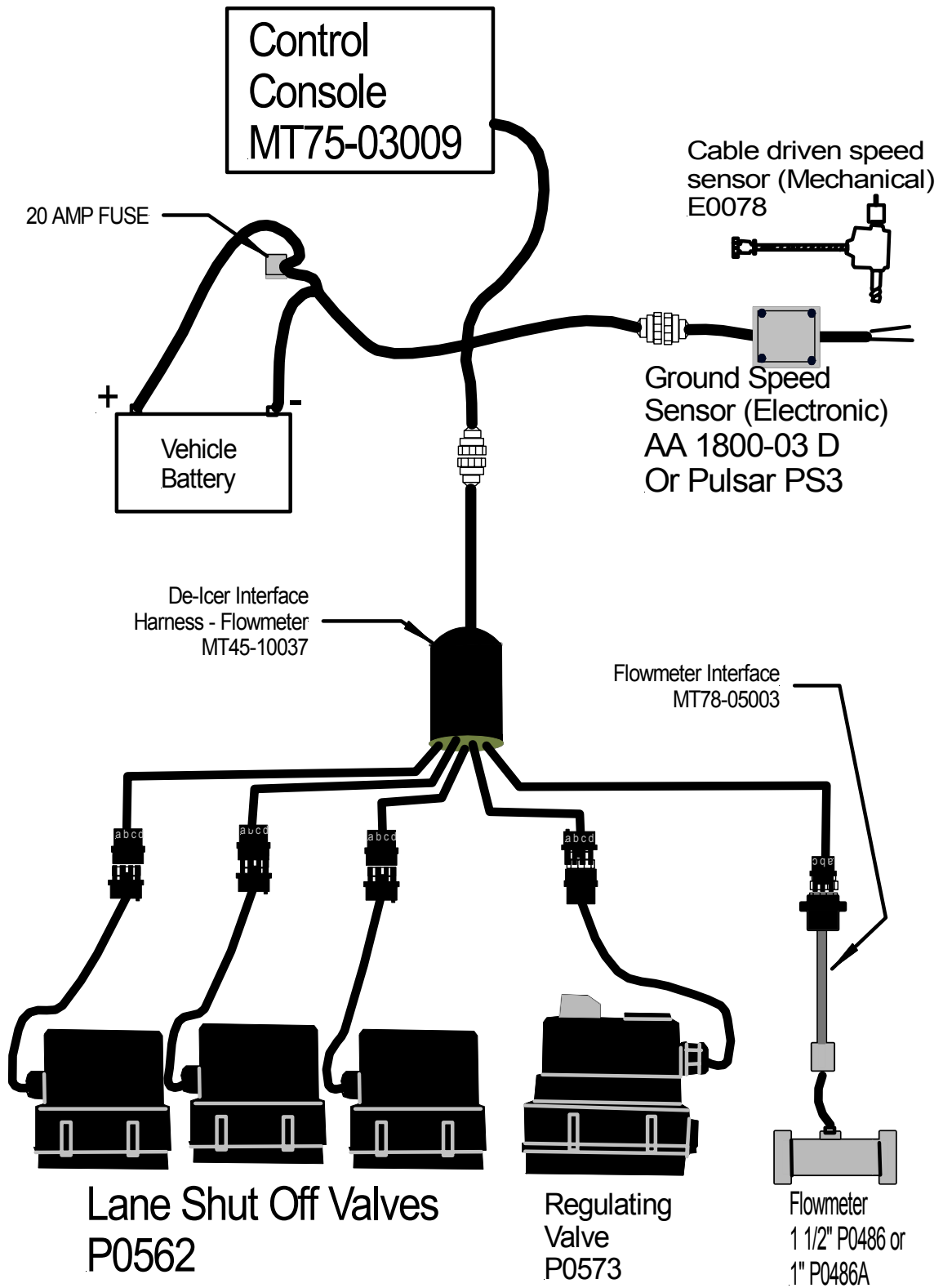


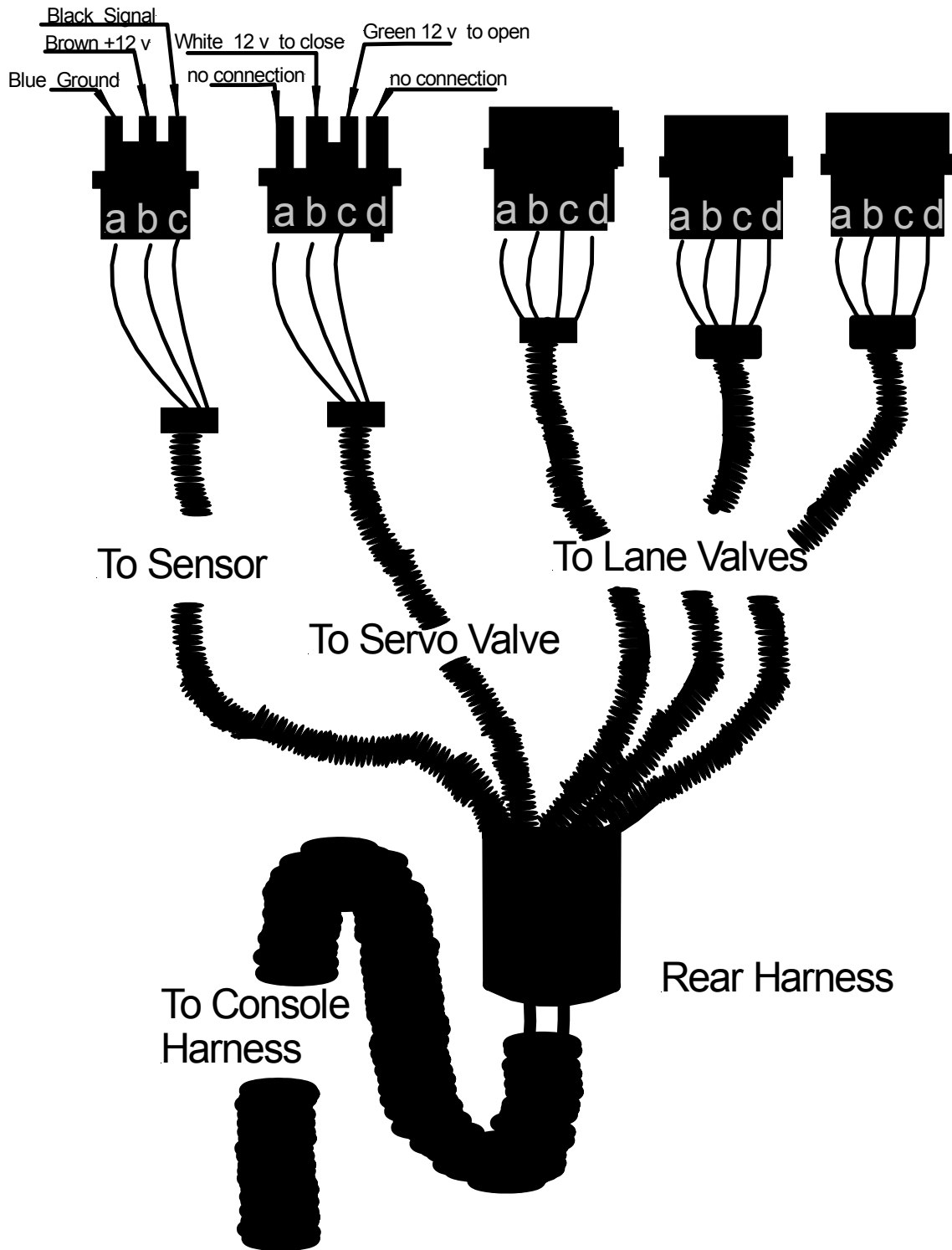
DO NOT SUBSTITUTE HIGHER AMPERAGE FUSES
THIS SYSTEM HAS BEEN DESIGNED TO GIVE OPTIMUM PERFORMANCE
WHEN CONNECTED AS SHOWN. POWER CONNECTIONS OTHER THAN
DIRECTLY TO THE VEHICLE BATTERY AND/OR THE USAGE OF HIGHER
AMPERAGE FUSES MAY DAMAGE THE SYSTEM AND VOID THE WARRANTY.

Leave sufficient length at the cab connector so that it will reach the mating connector from the cab harness. When the cab connector is disconnected, both ends must have the dust cover installed to protect the contacts.

Be sure the white "O" ring seal is in place inside the main cable disconnects where it is connected. This is important in order to protect the contacts from corrosion.







E0077A Speed Sensor

Most vehicles built since the early nineties are quipped with a factory installed speed sensor, The speed sensor is commonly referred to as the VSS. Most VSS units are located on the transmission of the vehicle and the speedometer signal wire is plugged directly into it.

The Sensor has come equipped with a four pin AMP connector and one single yellow lead.

Connect the Amp connector to the speed input line of the console.

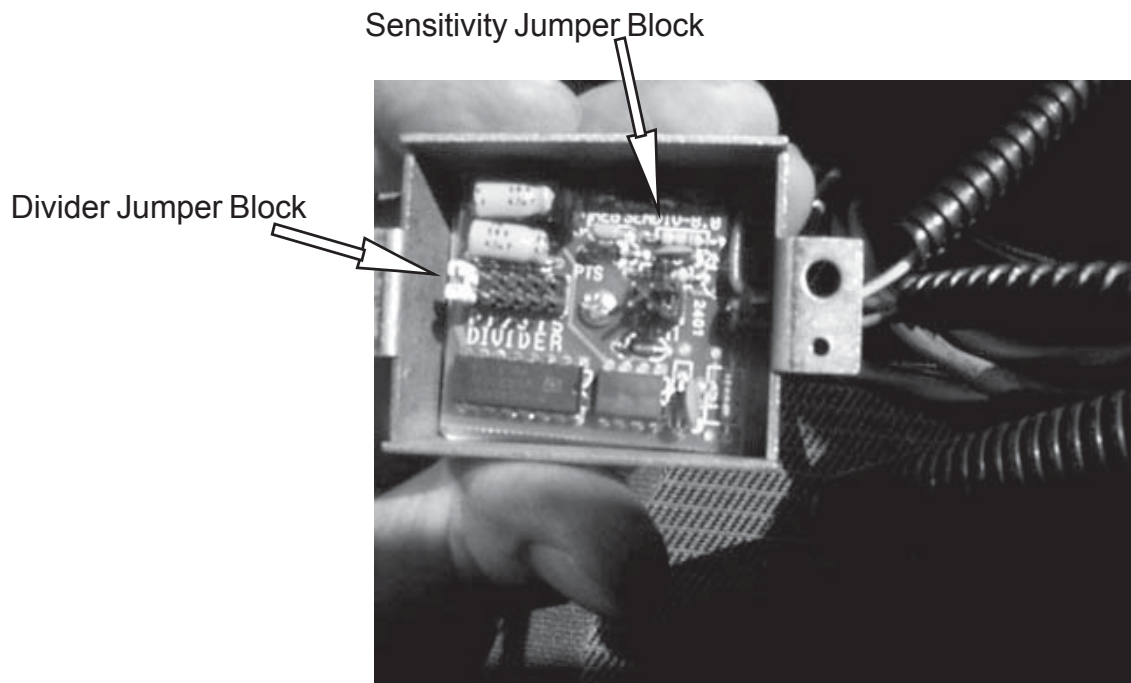
Connect the yellow wire to the vehicle speed sensor VSS. The VSS generally has two wires. Check operation by driving on the road, and read ground speed on the cab control console. If unit does not operate properly, reverse lead and re-test.

The DIVIDER pin block has 6 different pin positions Always keep the jumper in the far left position. This jumper setting will give your sprays system the quickest response time and the most accurate application.

Sensitivity is controlled by the three pin block. The center jumper setting is most sensitive, the right pin is less sensitive.

The sensitivity pin jumper has been factory set to the far right position.

If you are not receiving pulse signals at low speeds, move the sensitivity jumper pin left to the center position.



For Chassis Manufactured Prior to September 1997

Speedometer and Tachometer Outputs

Interfaces conforming to TMC RP 123 are provided for Speedometer and Tachometer signals. Speedometer output is calibrated to 30,000 pulses per mile. Tachometer output is 12 pulses per engine revolution. Access to these signals is typically provided by two Deutsch DT series connectors. Aftermarket access is provided through connector 436. Connector 436 is a 6-way Deutsch DT series connector located behind the vehicle dash. Connector 435 is a 12-way Deutsch DT series connector collocated with connector 436. The VPM signal sources, connectors and circuits are shown in the table below.

Cavity 5 of connector 436 provides speedometer pulses and cavity 6 of connector 436 provides tachometer pulses. VPM pins 20 (connector 436, cavity 1) and 5 (connector 435, cavity 11) are used for the instrument cluster. Use terminal part number 1680206C1 insert circuits into connector 436. Use 16 or 18 gauge wire with GXL insulation. Remove the cavity plug and connector lock and insert the terminal into the connector cavity. Then replace the connector lock. Use terminal 2005483C1 to insert circuits into the VPM connector. Insert circuits into the VPM, only when the VPM is directly wired into the main harness.

The sink and source currents for the available interfaces are shown below. All the interfaces source 5 milliamps. Two enhanced interfaces are provided that sink 5 milliamps, instead of 50 micro amps. These interfaces are noted in the table below. The signal waveform provided is the same both the standard and enhanced interfaces. See TMC RP 123 for more information about the signal waveform.

Speedometer Signal Locations

Speedometer Interfaces		
VPM Connector,		
Pin	Cavity, Circuit	Signal
18	47B	Speedo ¹
19	N.C.	Speedo
20	436, 1, 47C	Speedo

Signal Interface Parameters

Parameter	Potential	Parameter	Current
V_o low	0 to 0.5 volts	$I_{\text{sink}} (V_o \text{ low})^1$	50 micro amps
V_o high	4 V to V_{battery}	$I_{\text{source}} (V_o \text{ high})$	5 milliamps

¹Designates enhanced interfaces that sink 5 milliamps of current instead of 50 micro amps

Allison Transmission World Transmission –WTEC III Controls

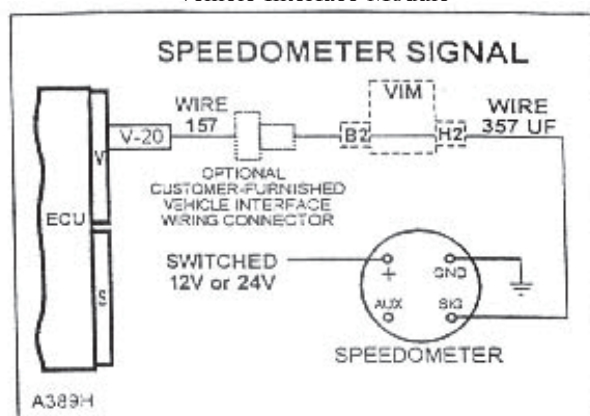
4.2 Speedometer Signal (Wire 157)

This signal provides a zero to $(V_{bat} - 2)$ volt pulse signal from the ECU to drive an electronic speedometer.

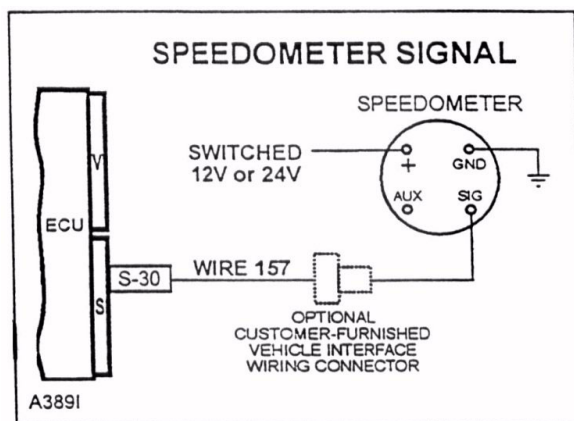
This signal conforms to a 50% duty cycle square wave as defined on the Controls Specifications installation drawing. The number of pulses per output shaft revolution may vary by model. Refer to the Controls Specification Drawing AS07-001 for detail definition.

The Speedometer signal is available from two sources; on output Wire 357 from the VIM, and on output Wire 157 through the VIW-S wiring connector.

— Wire 157 (as VIM output)
Vehicle Interface Module



— Wire 157 (as VTW #2 output)
Vehicle Interface Wiring



Either of these signals may be used for any vehicle system, which requires a speed signal. This signal may be used directly by the speedometer (or other device) or, if a signal type other than a non-zero-crossing is needed, it may be used as input to a signal converter. Signal converters are used to convert the ECU output signal into either zero-crossing or non-zero-crossing format.

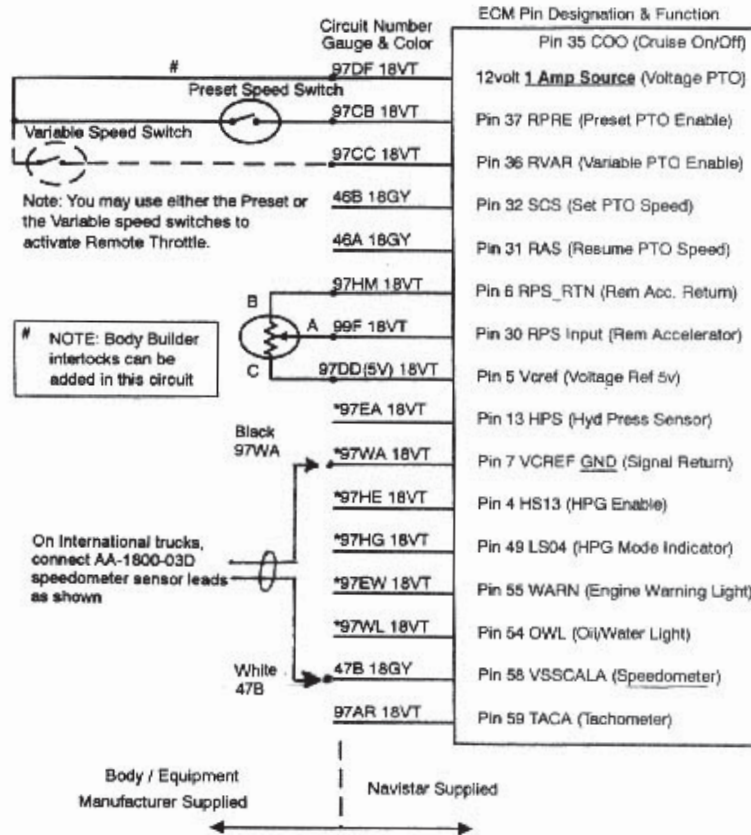
OEM Model	Electronic Control Unit	DDR Connector Diagnostic Data Reader	VIM Vehicle Interface Model	VIW Vehicle Interface Wiring	Harness Vendor	OEM Phone Number
Crane Carrier						918-836-1651
Ford Louisville	Under cab access plate in floor	Under dash @ LF door pillar	Under cab with ECU	Under cab with ECU & VIM		
Freightliner American LaFrance FL60/70/80/100 FLD120/112	Under cab above right side headlight In design In design	In cab, driver side below right knee	Consult OEM	Consult OEM	Packard in Mexico	800-FTL-HELP 800-385-4357
GMC/Chevrolet Topkick/Kodiak	Inside left frame rail behind front wheel	Beneath steering wheel column	Next to ECU inside left frame rail	Inside engine compartment	Packard	800-875-4742
Kenworth	TBD					
KME						717-669-9461
Mack LE MR RD	Under left drivers seal Under PB shift selector Under right center dash panel	Left driver side lower dash Left driver side lower dash Left driver side lower dash	ATD VIM not used Top rear engine tunnel cover Under right center dash panel	Under left drivers seal Top rear engine funnel cover Under top center dash panel	AFL & some St. Clair	610-709-2483
Navistar Most truck models	Back of cab interior	Under dash on driver's side	Not Used	Back of Cab I anterior	Alphabet	800-448-7825
Peterbilt 320 330 357 other conventionals	Behind driver's seat Center of dash under access cover TBD	Center of dash under access cover Left of steering column	Behind driver's seat next to ECU ATD VIM not used Steering column support brace ATD VIM not used	Input/output functions: PTO/Auto N behind driver's seat Others under steering column Engine Compartment firewall on driver's side.	AFL AFL	
Volvo WX WXR WXLL (stand up) WXLL (sit down)/WX95 WG	Under drivers seat Front firewall cab side Under drivers seat Under drivers seat Shift tower	Engine tunnel right hand side Engine tunnel right hand side RH Side of drivers seat Engine tunnel left hand side Back side of shifter housing	ATD VIM not used ATD VIM not used ATD VIM not used ATD VIM not used ATD VIM not used		All models Chassis wiring uses St. Clair Cab wiring uses Alphabet	910-393-3292 or 910-393-4731

NAVPAK™ ENGINE CONTROL ENGINE SPEED CONTROL FEATURES

Speedometer Outputs

Interfaces conforming to TMC RP 123 are provided for speedometer signals. Speedometer output is calibrated to 30,000 pulses per mile. Access to these signals is provided by the electrical wire connections located at the bulkhead. The speedometer output signals are provided by circuits 47B.

Figure 4.1 — Remote Throttle Interface Example



The 12 volt supply is strictly for remote engine speed control use. It should not be used as a power feed for other systems.

Mobile Spray Systems Parts Listings

Anti/De-Icing Electronic Control System Parts

Part Number	Description
MT75-03009	Spratronics control console
MT45-10037	Control system wiring harness
MT78-05003	Flowmeter interface cable
MT401-0016	System power cable
E0077	Vehicle Speed Sensor, electronic
E0078	Vehicle Speed Sensor, mechanical
P0486	1 1/2" Flowmeter w/ barbs
P0562	1" lane shut-off valve(s) manifold style
P0508	2" regulating valve manifold style

Anti/De-Icing System Plumbing Parts

Part Number	Description
P0495	Centrifugal pump w/ hydraulic motor
P0265	1/8" Drain Petcock
P0511	Pressure gauge 0-160 psi (bottom stem)
P0397	2" Ball valve
P0591	2" T-strainer 20 mesh manifold style
P0614	2" manifold tee
P0612	2" manifold 90°
P0613	2" manifold X 1 1/2" hb 90°
P0611	2" manifold cap
P0616	1" manifold tee
P0615	1" manifold 90°
P0617	1" manifold X 1 1/4" hb 90°
P0618	1" manifold X 1 1/4" hb
P0470	2" Y-strainer, 80 mesh
P0514	2" x 2" Hose Saver disconnect 90°
P0437	2" x 2" Hose Saver disconnect
P0262	2" valve w/ male camlock disconnect
P0282	1" street ell 90°
P0149	1 1/4" street ell 90°
P0279	1" x 3/4" reducing nipple
P0611	1 1/4" X 1" reducing bushing
P0147	1 1/4" X 4" poly nipple
P0027	1 1/4" poly tee
P0223	1 1/4" x 1 1/4" 90° Hose Saver disconnect
S0026	Variable Orifice Nozzle

Mobile Spray Systems Equipment Warranty

Warranty

Green Pros West dba MOBILE SPRAY SYSTEMS., (herein called Seller) warrants to the original purchaser that, if any part of the Mobile Spray Systems equipment proved to be defective in material or workmanship, upon inspection and examination by Seller, within one year of the date of manufacture, and is returned to Seller, transportation prepaid, within thirty days after such defect is discovered, Seller will (at its option) either replace or repair said product, except that the warranty for expendable parts such as light bulbs and batteries is limited to thirty (30) days. The MOBILE SPRAY SYSTEMS equipment will not be considered defective if it substantially fulfills the performance specifications. Purchaser shall be responsible for all maintenance services, if any, all in accordance with procedures outlined in Seller's maintenance literature.

Extended Warranty

MOBILE SPRAY SYSTEMS provides one year minimum parts and factory warranty on all MOBILE SPRAY SYSTEMS sprayers. Any components with a longer manufacturer's warranty will be honored. Warranty identification documents will be provided at the time of delivery. **(Warranty provided for Mobile Spray Systems computer console is 2-1/2 years.)**

Warranty Limitation and Exclusion

Seller will have no further warranty obligation hereunder if the Mobile Spray Systems equipment is subjected to abuse, misuse, improper or abnormal usage, faulty installation, improper maintenance as provided in Seller's maintenance literature, or any repairs other than those provided by the Seller and/or its authorized representatives or if damages or failure is caused by or attributable to acts of God. Seller neither assumes nor authorizes anyone to assume for it any other obligation or liability in connection with the MOBILE SPRAY SYSTEMS equipment.

Disclaimer of Unstated Warranties

The warranty printed above is the only warranty applicable to this purchase. All other warranties expressed or implied including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose are disclaimed.

Customer Service Policy

MOBILE SPRAY SYSTEMS., customer service policy is to ship all replacement components within 48 regular scheduled working hours by standard delivery.

Limitation of Liability

It is understood and agreed that seller's liability, whether in contract, in tort, under any warranty, in negligence or otherwise, shall not exceed the return of the amount of the purchase price paid by purchaser and under no circumstances shall seller be liable for special, indirect, or consequential damages. The price stated for the Mobile Spray Systems equipment is a consideration in limiting seller's liability. No action, regardless of form, arising out of the transactions under this agreement may be brought by purchaser more than one year after the cause of action has occurred.

Purchaser accepts these terms and warranty limitation unless MOBILE SPRAY SYSTEMS equipment is returned within fifteen (15) days for full refund of purchase price.

