



MS2  
SETUP AND CALIBRATION  
MANUAL

PART NUMBER: SG07230007  
REV: C

**Component Technology**  
A DIVISION OF  
 **Certified Power Inc.**

## MS200 Spreader Controller



- ❑ **Field adjustable**  
*... easy to adjust,  
works with most valves*
- ❑ **Low cost**  
*... fast, economical  
solution*
- ❑ **Reliable design**  
*... efficient, cool  
operation*
  
- ❑ **Easy to install**

The MS2 is the most basic of the spreader control products offered by Ditco Inc. The MS2 is easy to operate with two independent electro-hydraulic outputs, one for driving the auger (or conveyor) valve and the other for driving the spinner valve. Each output drive is current control with adjustable minimum and maximum trim settings. The operator can directly select the output level for each hydraulic function from a corresponding nine-position switch. The MS2 allows for an input signal from a ground speed sensor so that the valve drives will turn on and off at zero ground speed. The operator has a Blast feature to give 100% auger drive for a preset time.

### Features:

- ◆ Power on/off switch
- ◆ Direct auger (conveyor) output via a nine position rotary switch
- ◆ Direct spinner output via a nine position rotary switch
- ◆ Blast pushbutton with timer
- ◆ Unload feature to allows operator to empty any remaining sand or salt
- ◆ Automatic zero mph on / off, allows the operator hands free operation
- ◆ Remote Pass option
- ◆ Current controlled electro-hydraulic valve drive
- ◆ Automatic short circuit shut off
- ◆ Adjustable minimum and maximum valve trims
- ◆ Adjustable PWM frequency

### Specification:

- ◆ Operating voltage: 11-16 VDC, internal 5 amp fuse, reverse polarity protection
- ◆ Valve drive: 0 to 2.5 amps, current controlled, short circuit protected
- ◆ PWM: adjustable from 50 hz. to 180 hz.
- ◆ Ground speed sensor type: DC Hall and electronic transmission type, AC VRM type
- ◆ EMI and RFI: low noise design, tested for marine band radios
- ◆ Operating temperature range: -10 to 50° C

## MS2 Calibration Procedure

The MS2 has been re-designed to include current control. This will improve voltage and temperature variations from effecting the fluid regulation. The valve adjustment consists of setting the output current for each valve to a specific level which the installer confirms by observing the hydraulic motor rotation. No special equipment should be necessary. The minimum trims fix the low end of the valve drive (minimum RPM) and the maximum trims fix the upper end (maximum RPM). Most valves operate within a current range which is less than the full available range of a standard 12 vdc electrical system.

### **Step One**

Remove the four phillips screws from the front panel, pull the panel out and away from the plastic box. Locate each of the trim adjustments on the back of the printed circuit board. Refer to the sketch on the reverse side of this sheet. Note, each trim pot is labeled on the printed circuit board. To set the required valve trims the hydraulics need to be active and you'll need to view the motor rotations of the auger and spinner. After the valve trims are adjusted replace the front panel and secure it with the four screws. **USE CARE WHEN WORKING WITH LIVE HYDRAULICS !!**

The valve trim settings may need to be changed occasionally. From season to season the valves will mechanically wear. Oil temperature is also a factor, always adjust the valve trims with the hydraulic system warmed up to normal operating temperatures. 120 to 140 Deg. F. The engine speed should be set to approx. 1000 RPM.

### **Step two [ conveyor or auger valve adjustment ]**

Set the feed rate knob to the first position (#1). With a small flat-tipped screwdriver slowly adjust the auger minimum trim so that the auger shaft is rotating at a slow speed. Next turn the feed rate knob up to its full on position (#9). Adjust the maximum trim so that the auger shaft just reaches its highest speed. The max. trim should be adjusted no higher than the point where the maximum RPM is reached. To test what you have done, simply move the feed rate knob from its minimum setting to the maximum setting and the auger RPM should increment in nine even steps from minimum RPM to maximum RPM.

### **Step three [ spinner valve adjustment ]**

The spinner valve adjustment is nearly the same as the auger adjustment. First set the lane width knob to its lowest setting (#1). Next, adjust the spinner minimum trim so that the spinner is turning at the desired minimum speed.

It is important to note that spinners have no gear box and most often have over-sized flow rates, so they tend to rotate too fast. Adjust the spinner maximum to a setting which typifies your maximum needs (for most applications this is 2 lanes in width). With this in mind set the lane width knob to its full on position (#9) and adjust the spinner maximum trim pot so that the spinner is at a high (but usable) setting -- remember not too fast.

On some vehicles there may be hydraulic interaction between the spinner and auger. Check for interaction by setting the lane width knob to position # 2 and move the feed rate knob from #1 thru #9 and back while watching the spinner RPM. The spinner's RPM should remain constant. If interaction exists consult your hydraulic dealer.

#### **Step four [ Blast timer ]**

The Blast timer trim adjusts the blast time from 0 seconds (full CCW) to 13 seconds (full CW). The Blast timer is an off-delay type. The time duration begins when the Blast button switch is moved to the Timer position and released. If the Blast switch is moved to the Unload (maintained) position, the timing function is bypassed and the auger will continue to operate at the maximum rate until the switch is returned to its center position.

#### **Step five [ zero MPH shut-off ] (optional feature, not required for normal operation)**

The MS2 can receive input pulses from a transmission ground speed sensor. When the vehicle starts moving, the spinner and auger outputs will come on to their selected levels. Once the vehicle stops, the spinner and auger will also stop. The front panel lamp will glow red when the vehicle is stopped and then green when the speed is greater than one mph. Note, the auger output does not modulate in proportion to the ground speed. This feature is intended to free up the hands of the operator. This MS2 can be set (internal switch) to read VRM (electronic) sensors or the newer computer controlled transmissions (ie. "world" type). Locate the internal switch on the edge of the board and set it for **vrn-off-hall**. The hall switch position is used for world type. **If no mph sensor is used, set the switch to off.**

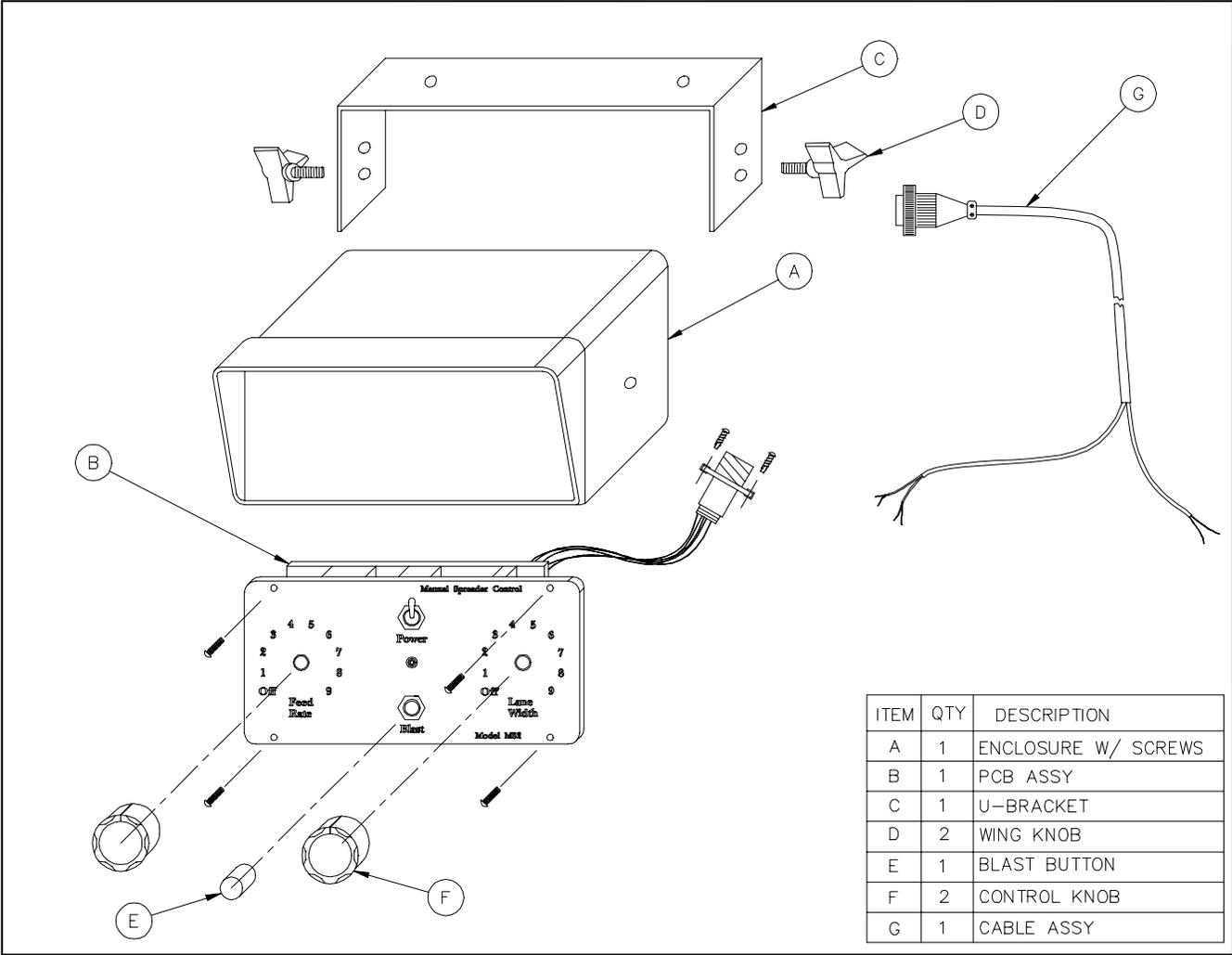
The MS2 is not equipped to read the older hall-effect signal generators. If such a sensor is used, set the selector switch = hall and add an external pull-up resistor, between pin 8 and pin 6. Resistor value = 2.7K to 5.1K ohms, 1/4W.

#### **Step six [ pwm frequency ]**

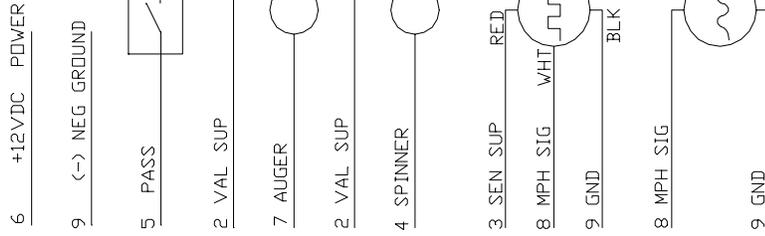
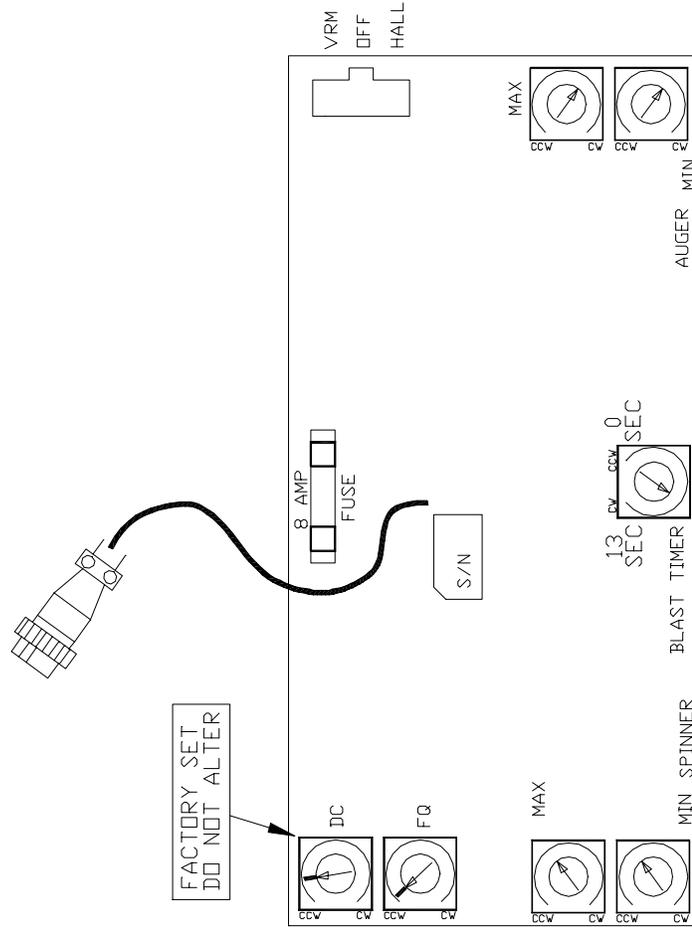
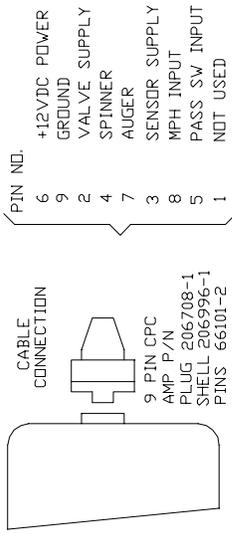
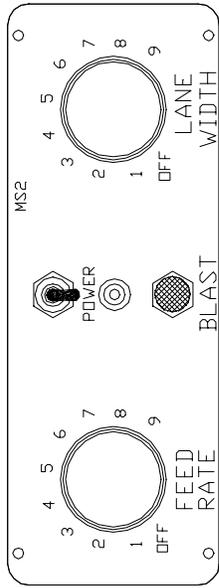
The current controlled version requires that the PWM freq. for most valves be set by the factory or dealer. The MS2 is shipped preset for valves that operate at 180 hz. trimmed at 900ma to 1600ma. Try the spreader control using the factory settings first and if the performance is not correct contact your dealer for assistance.

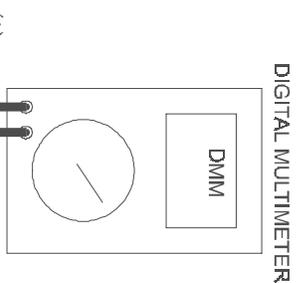
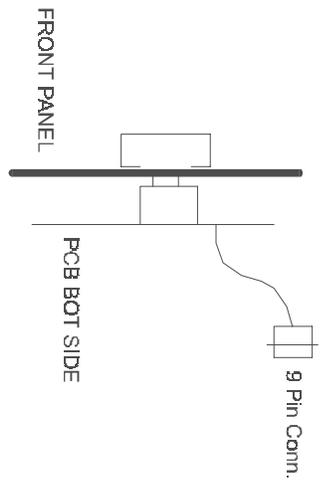
#### **Step seven [ Pass ]**

The MS2 allows the installer to add a remote Pass switch. Connect the switch between pin 5 and ground. When the switch contacts close the MS2 will turn off both valve outputs. This allow the operator to instantly pause the MS2 spreading.



ITEM	QTY	DESCRIPTION
A	1	ENCLOSURE W/ SCREWS
B	1	PCB ASSY
C	1	U-BRACKET
D	2	WING KNOB
E	1	BLAST BUTTON
F	2	CONTROL KNOB
G	1	CABLE ASSY



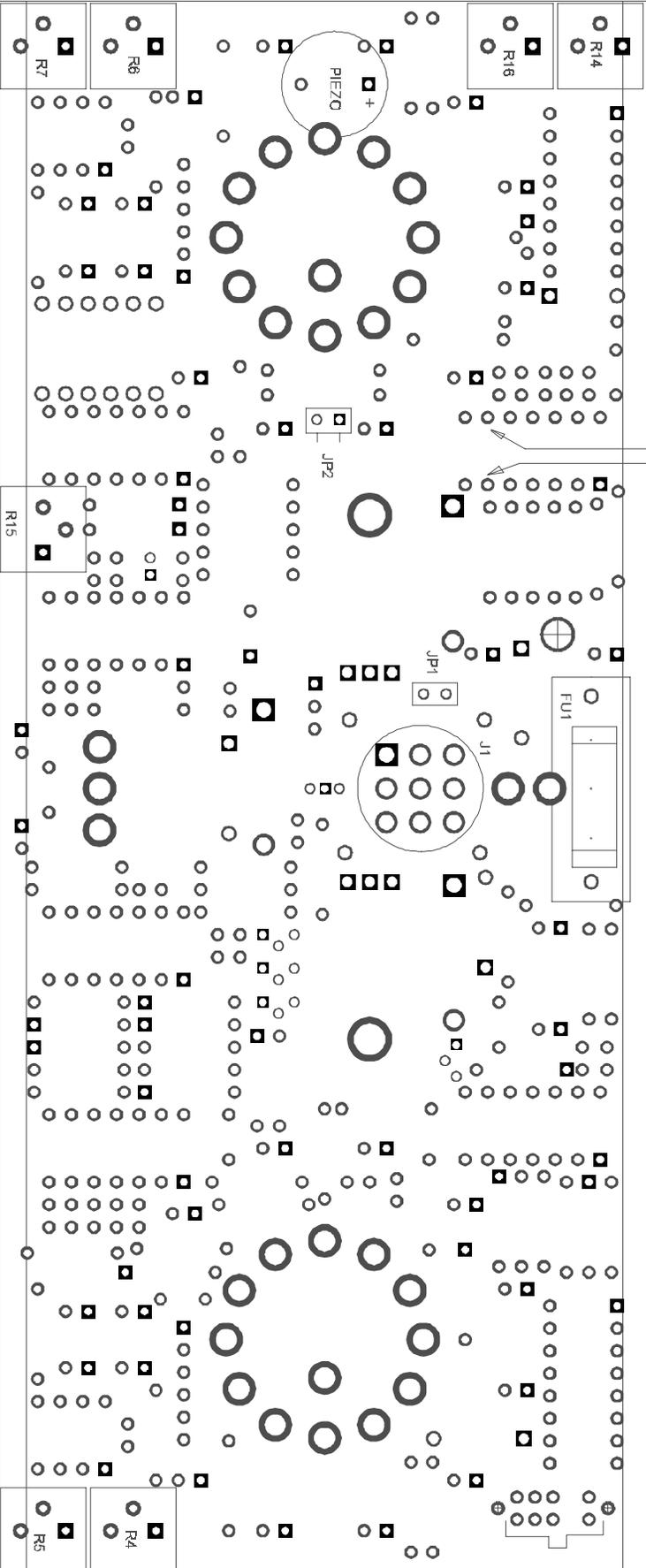


NOTE: SOME DMM'S READ FREQUENCY BETTER ON VAC

MANUF	FQ	DC	U1-9
MP18	150HZ	80%	5.9 vdc
HYDRA FORCE	120HZ	80%	5.9 vdc
PC25	100HZ	80%	5.9 vdc
GRIESEN VQM	50HZ	80%	5.9 vdc

LEAVE DMM CONNECTED TO U1-7&9 FOR BOTH FQ AND DC ADJUSTMENTS

- 1) ADJ R16 TO SET PWM FREQ (FQ)pt1. USE DMM FREQ
- 2) ADJ R14 TO SET DUTY CYCLE (DC)pt1. USE DMM VOLTS
- 3) RESET MIN AND MAX TRIMS TO DESIRED LEVELS



BACKSIDE VIEW OF PRINTED CIRCUIT BOARD

MPH Select Sw

JP1 BACKLIGHT OPTION  
JP2 BLAST SPINNER OPTION