

INTERTRON INDUSTRIES, INC.

**SINGLE PHASE RESISTANCE WELDER
MICROPROCESSOR CONTROLLER
MODEL 100B
OPERATING MANUAL**

REFERENCE MANUAL

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INTERTRON INDUSTRIES INCORPORATED WARRANTY

The Single Phase Resistance Welder Controller Model 100B has a limited warranty of one year parts and labor, FOB, Santa Ana, California, from the date of purchase. During that period, upon prepaid return to the distributor or the factory, equipment proving to be defective will be repaired (or at our option, replaced) without charge for either material or labor. No responsibility will be assumed for damage to equipment through improper installation, or through attempts to operate it above its rated capacity, intentional or otherwise.

The SCR's used in the ignitron firing module or SCR contactors are warranted for 90 days, if correct installation procedures are used.

***WARRANTY EXTENSION, as of May 01, 2001 the limited warranty of one year parts and labor has been extended to THREE years. Any items purchased prior to May 01, 2001 retains the limited warranty of one year parts and labor. In addition, the warranty for the SCR's used in the ignitron firing module or SCR contactors has been extended from 90 days to ONE year, if correct installation procedures are used.**

In addition, the warranty does not cover any customer equipment to which the Model 100B is installed.

INTRODUCTION

INTERTRON INDUSTRIES Incorporated Resistance Welding Controller Model 100B is an upgrade of the Model 100 Microprocessor Welding Control. The sophistication of today's electronics is used to simplify the welder's operating procedures and logistic of operations. The 100B controller has a built in ability to check the operational integrity of the thumbwheel switches. It also provides additional features the Model 100 controller does not have. In the following pages we will attempt to give the user a working knowledge of the control system and its parameters.

CAUTION: Please read the installation instructions carefully prior to installation.

FRONT PANEL PROGRAM SETTING

| MODE A | MODE B |
|----------------------------|----------------------------|
| SQUEEZE TIME | SQUEEZE TIME |
| HEAT TIME #1 | HEAT TIME #1 |
| HEAT % #1 | HEAT % #2 |
| HOLD TIME | HOLD TIME |
| weld start by FS1 & FS2 | weld start by FS1 & FS3 |

Run Switch On:

Weld Switch On:

Enables Foot Switch FS1 & FS2

Activates contactor during weld sequence

SWITCHABLE FUNCTIONS

- 1.) SPOT exclusive operation.
- 2.) INTERTRON SCANNER enabled by dip switch SW8-4 in ON position.
- 3.) POWER FACTOR ADJUST enabled by dip switch SW8-1 in ON position.
(Not used except in rare occasions)
- 4.) ANTI TIE DOWN MOMENTARY PUSH MODE enabled by dip switch SW8-2 in ON position. It locks on at start of SQUEEZE TIME.
- 5.) ANTI TIE DOWN PUSH & HOLD MODE enabled by dip switch SW8-3 in ON position. Must be held ON through the entire weld schedule.
- 6.) THUMBWHEEL SWITCHES OPERATIONAL INTEGRITY TEST enabled by dip switches SW8-2 & SW8-3 in ON position.

PROGRAMMING SEQUENTIAL FUNCTIONS

1. **SQUEEZE TIME** must be set to a minimum time required to insure that the welding tips are under the appropriate pressure prior to welding.
2. **HEAT TIME** is the length of time the heat is being applied.
3. **HEAT %** is the amount of heat applied.
4. **HOLD TIME** is the length of time the welding electrodes stay under pressure prior to their separation.

INTERTRON SCANNER I.O.

The Model 100B controller will interface directly with the 10 station INTERTRON SCANNER MODEL 375. When enabled by the minidip switch SW8-4 it will wait at the end of SQUEEZE TIME for an enabled signal from the model 375 SCANNER to start welding, then at the END of HEAT TIME it will send a signal back to enable the next controller in line to start welding.

See drawing No. 155-033B-01

ANTI-TIE DOWN MODES

Foot switch inputs FS1/FS2, and FS1/FS3 may be used as a two palm button switches to be activated at the same time within .75 seconds. The minidip switch SW8-2 enables the MOMENTARY PUSH action. In this mode, a momentary push of both switches will lock in the start sequence at the beginning of SQUEEZE TIME. If palm buttons are released prior to the beginning of SQUEEZE TIME, the welding head will retract to its non weld position.

The minidip switch SW8-3 enables the PUSH AND HOLD action. In this mode, both palm buttons must be held until the end of the weld sequence. Premature palm button release will reset the controller sequence to the beginning.

PRESSURE and TEMPERATURE SWITCH INPUT

Terminal strip J1-13 and J1-14 are to be connected to a N.O. pressure switch. The controller will stay in SQUEEZE TIME until the pressure switch is closed. Then the controller will start executing the sequence without regard to the status of the pressure switch.

Terminal strip J1-15 and J1-16 are connected to the N.C. position of the contactor thermostat switch. This switch will open when a contactor OVER TEMPERATURE conditions is detected. The controller will stay in SQUEEZE TIME until the switch is closed. Then the controller will start executing the sequence without regard to the status of the thermostat switch.

See installation diagram No. 155-033B-01

EMERGENCY STOP SWITCH

Terminal strip J1-3 and J1-4 are connected to an optional N.C. push to open EMERGENCY STOP SWITCH. When the switch is pushed open, the weld controller will disconnect from its power source and reset to its normal power on condition when the EMERGENCY STOP SWITCH is pulled back to its normal operating position.

See installation diagram No. 155-033B-01.

UNDER VOLTAGE POWER LINE VOLTAGE MONITOR

The controller checks continuously the operating power line voltage. If the line voltage drops below the operating safe limit, the controller will halt the weld sequence.

THUMBWHEEL SWITCHES OPERATIONAL INTEGRITY TEST

Thumbwheel switches are rotary mechanical devices which convert the decimal number 0 to 9 and 10 to 90 to binary mechanical positions read electronically by a counter or a microprocessor. Do to wear over time, and some times early mechanical failure, they will cause a predetermined cycle count to change from its initially preset value tested when an initial weld schedule was qualified. To do periodic tests, was unthinkable years back, do to the requirement of sophisticated test equipment and very expensive technical assistance. The simplicity of thumbwheel switch operator interface, is now aided by the operating sophistication of a microprocessor. It allows the operator when in doubt, with the aid of a simple visual feedback to check and verify with absolute certainty the operational integrity of all thumbwheel switches.

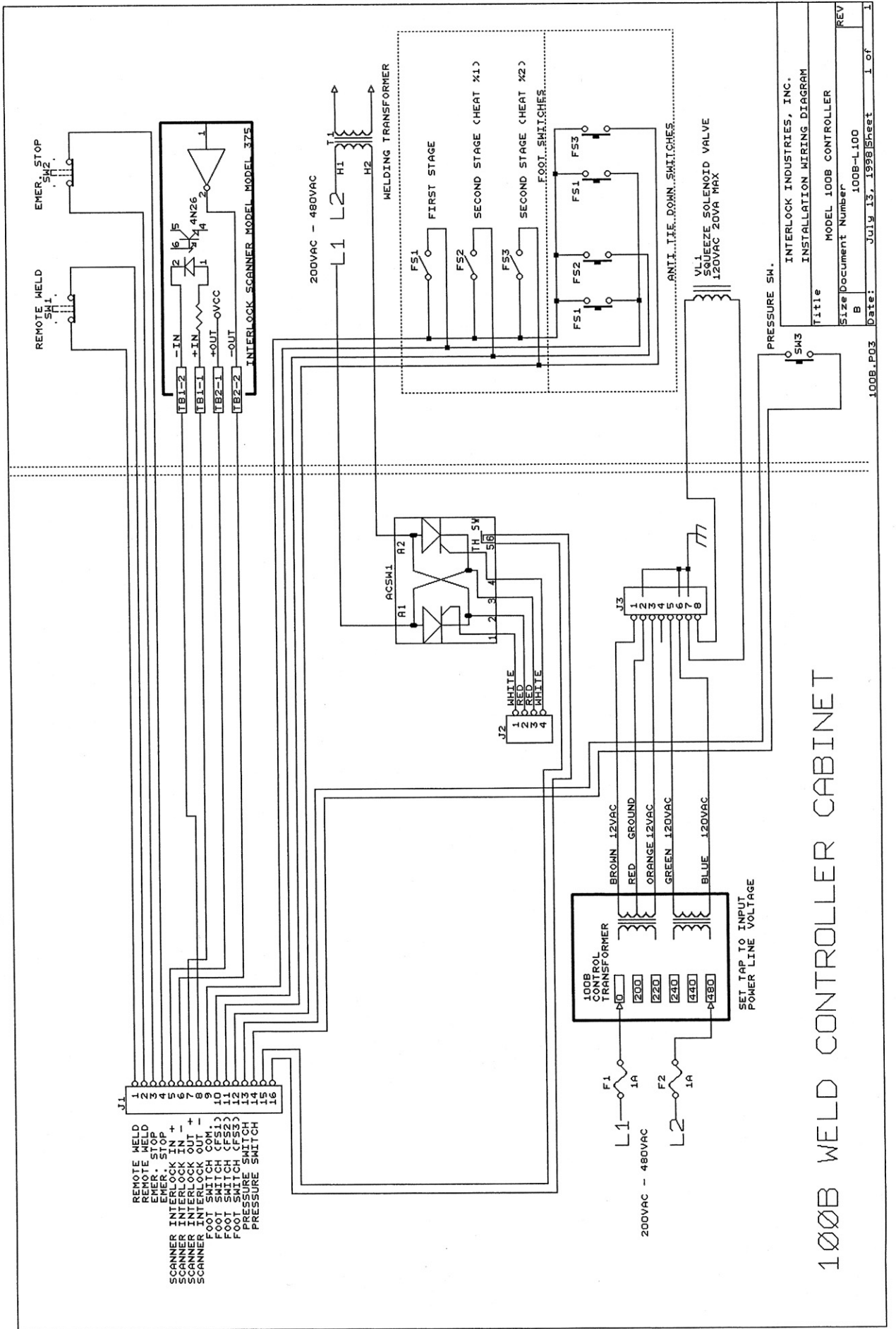
TEST PROCEDURE

1. Set minidip switches SW8-2 & SW8-3 to position ON.
2. Set all thumbwheel switches to position 00.
3. Set all front panel switches to position OFF.
4. Set SQUEEZE thumbwheel switch to position 01.
5. Turn on and off the FS1 foot switch and observe that the RED LED "HEAT TIME" on LM1.
6. Repeat test 4 and 5 with the thumbwheel switch number set to positions:
 7. 01 = 1 LED flash 10 = 1 LED flash
 8. 02 = 2 LED flashes 20 = 2 LED flashes
 9. 03 = 3 LED flashes 30 = 3 LED flashes
 10. 04 = 4 LED flashes 40 = 4 LED flashes
 11. 05 = 5 LED flashes 50 = 5 LED flashes
 12. 06 = 6 LED flashes 60 = 6 LED flashes
 13. 07 = 7 LED flashes 70 = 7 LED flashes
 14. 08 = 8 LED flashes 80 = 8 LED flashes
 15. 09 = 9 LED flashes 90 = 9 LED flashes
16. Set thumbwheel switch back to 00.
17. Repeat test 4 through 16 with all thumbwheel switches one at a time, or only operational switches in doubt.
18. If none found defective, set all switches to their appropriate position, then return the switches SW8-2 & SW8-3 to their selected operating position.
19. Operational Integrity Test is complete.

PERIPHERAL DIAGNOSTICS BRAIN PANEL

On the model 100B brain panel there is a row of red lamps L.E.D.'s in a rectangular package labeled LM1. When the LED segments are lit, they have.

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|-------------|--|
| 1. PS/TS | Pressure and Thermal switches are closed. |
| 2. FS1 | Foot switch first stage is closed. |
| 3. FS2 | Foot switch second stage in operating mode A is closed. |
| 4. FS3 | Foot switch second stage in operating mode B is closed. |
| 5. SQ.VL | SQUEEZE (UPSET) VALVE RELAY is turned on. |
| 6. S.O. (-) | SCANNER INTERLOCK OUTPUT is turned on. |
| 7. S.I. (-) | The model 375 Interlock Scanner set the WELD SEQUENCE enable signal to the controller scanner interlock input. |
| 8. F.M. + | The controller is generating pulses to energize the Firing Module which turns on the SCR's contactor. |



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|-----------------|---|
| Title | INTERLOCK INDUSTRIES, INC. INSTALLATION WIRING DIAGRAM |
| Size | MODEL 100B CONTROLLER |
| Document Number | 100B-L100 |
| REV | B |
| Date: | July 13, 1998 |
| Sheet | 1 of 1 |