TENNANT INSTRUCTION BULLETIN

No. 340707 Machine: Sentinel Published: 08-2004 Rev. 00

NOTE: DO NOT DISCARD the Parts List from the Instruction Bulletin. Place the Parts List in the appropriate place in the machine manual for future reference. Retaining the Parts List will make it easier to reorder individual parts and will save the cost of ordering an entire kit.

NOTE: Numbers in parenthesis () are reference numbers for parts listed in Bill of Materials.

Installation instructions for kit number 9000452

SYNOPSIS / PROBLEM:

This kit contains the parts needed to install a new Micro Controller in the Sentinel model sweeper control panel assembly.

The processor controls high water temperature and low oil pressure shut down. When the machine reaches 600 RPM the processor will also lift the main brush, side brushes, and conveyor to ensure they are not down. Sweeping speed is set at 2000 RPM before the processor will shut down the sweeping system.

Please follow step-by-step instructions.

SPECIAL TOOLS / CONSIDERATIONS: terminal crimper, soldering iron, and solder. Set aside all hardware for use in reassembly.

(Estimated time to complete: 2 hours)

PREPARATION:

FOR SAFETY: Before leaving or servicing machine, stop on level surface and set parking brake. Turn off machine and remove key.

1. Disconnect battery cables from machine.

WARNING: Always disconnect battery cables from machine before working on electrical components.

INSTALLATION:

(Refer to FIG. 1 and 4)

NOTE: The hourmeter and odometer will be at zero after the new Micro Controller is installed. Record the current numbers before disconnecting the control panel assembly.

- 1. Remove the eight screws along the sides and top of the instrument shroud, and pull out the instrument case bezel. Set the screws aside for reassembly. (Refer to FIG. 1)
- 2. Disconnect the flat ribbon cable from the back of the touch panel.

NOTE: Observe and record the orientation of the red strip on the ribbon cable for proper installation.

- 3. Remove the two wire connector (1 green, 1 black) from the power supply circuit board. (Refer to FIG. 2)
- 4. Disconnect the machine wire harness from the control panel assembly. There are two connectors, each held in place with a 1/4" hex head screw.
- 5. Remove the instrument case bezel to a workbench and place it face down on a smooth padded surface that is free of any debris that may damage the face of the control panel.
- 6. Remove the control panel fiber optic wire from the power supply circuit board. (Refer to FIG. 2)
- NOTE: To remove this wire, first clip the tie strap that holds it to the circuit board. When the wire is reinstalled, the longer end goes to the left (A side) and the shorter end goes to the right (C side). The letters A and C are located on the back side of the circuit board. Secure it with a cable tie (2). To remove the power supply circuit board for access, depress the locking tabs on the three stand-offs; be sure to reinstall with the same orientation.
 - 7. Remove the four M-4 nyloc nuts (two on the left and two on the right) that hold the L brackets on.
- NOTE: At this point, the L brackets will be free and the control panel may drop out of the housing. Use caution to avoid damage to the control panel and fiber optic cables.
 - 8. Pull the control panel assembly through the front of the instrument case bezel and place it face down on a smooth padded surface that is free of any debris that may damage the face of the control panel.
 - 9. Attach the static strap (4) to wrist and ground connection.
- NOTE: Put on the wrist strap (4) before unpacking or working on components. It is provided to control static electricity. Failure to use it properly can result in damage to electronic devices and assemblies.
 - 10. Disconnect the 20-conductor ribbon cable from the front panel.
- NOTE: Observe and record orientation of the red strip on the ribbon cable for proper reinstallation.
 - 11. Lay the instrument box on its back, exposing the micro controller on the circuit board.
- 12. Orient the box so the micro controller is on the left.
- 13. Remove the LED block immediately to the left of the micro controller. This will make room for the chip removal tool. (Refer to FIG. 3)
- NOTE: One side of the micro controller has a top edge that is beveled at a 45 °angle. The beveled edge has a small indentation, or dot, in the center. This indentation represents pin 1 on the micro controller. Record the orientation of this dot before removing the micro controller. (Refer to FIG. 4)
- 14. Insert the end of the chip removal tool (3) into the corner socket notch of the micro controller. (Refer to FIG. 3)
- 15. Remove the micro controller by gently prying up on the corners of the chip. **Do not discard micro controller**.
- 16. Carefully align the dot on the beveled edge of the new micro controller (1) with the arrow in the chip socket (similar orientation as the chip that was removed).
- 17. Verify the proper alignment of all the pins on the Micro Controller with the socket contacts.

- 18. Seat the micro controller firmly into the socket by forcing it down with your thumb.
- 19. Reinstall the LED block.
- 20. Reconnect the 20-conductor ribbon cable to the front panel. NOTE ORIENTATION.
- 21. Reassemble the control panel. Ensure O-ring and instrument box gasket are properly aligned.
- NOTE: Torque the M-4 nyloc nuts to 45-68 Ncm (4-6 in/lb). Over torquing can pull the studs from the circuitboard.
- 22. Reinstall the control panel in reverse order of disassembly (steps 1-9).



CONTROL PANEL FIBER OPTIC LONGER WIRE ON THE LEFT SIDE



GREEN/BLACK CONNECTOR -

FIG. 2 - POWER SUPPLY CIRCUIT BOARD



FIG. 3 - Pry Chip Up With Chip Removal Tool



FIG. 4 - Shaved 45° Edge and Pin #1 Indentation

Bill of Materials for Controller Kit, Micro, Replmt [Sentinel] 9000452

	Tennant			
	Ref.	Part No.	Description	Qty.
Δ		9000452	Controller Kit, Micro, Replmt, [Sentinel]	1
	1	767651	Controller, Micro [Sentinel]	1
	2	763115	Tie, Cable, 6.0L, 1.25D Max	1
	3	1009521	Tool, Micro Removal	1
	4	27964	Strap, Static Ground, Disposable	1

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