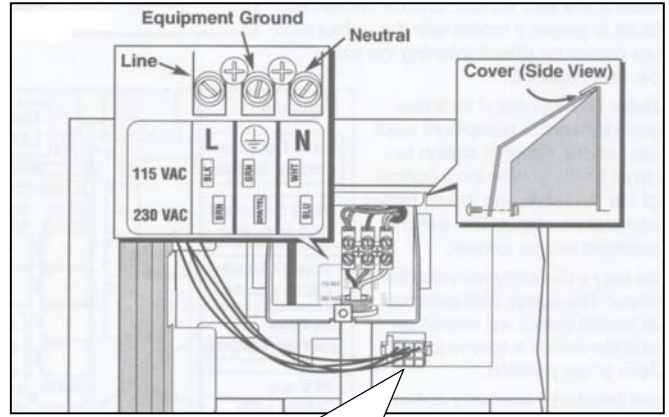
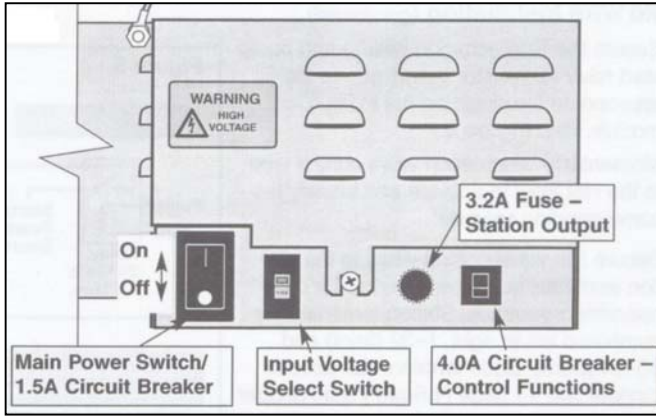

TORO

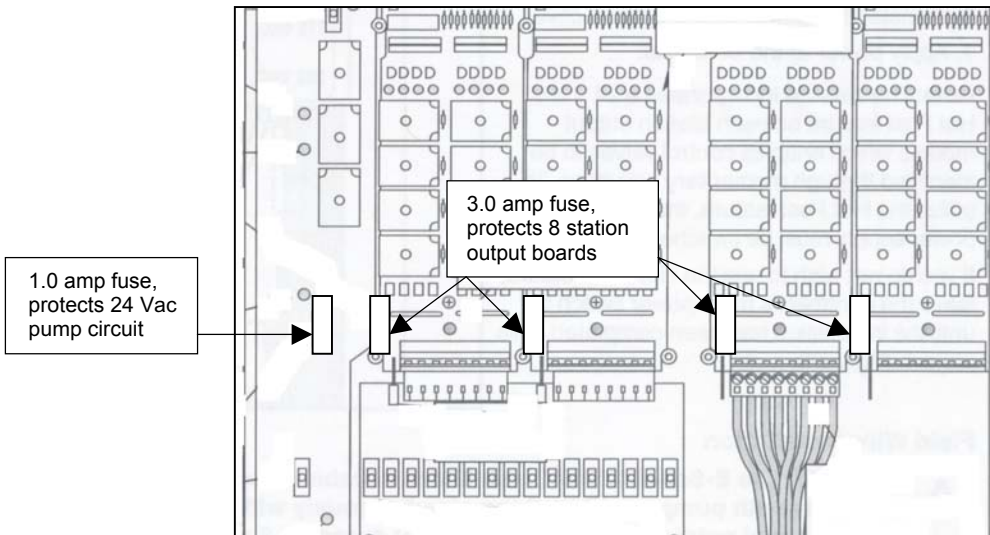
Network VP

Troubleshooting Guide



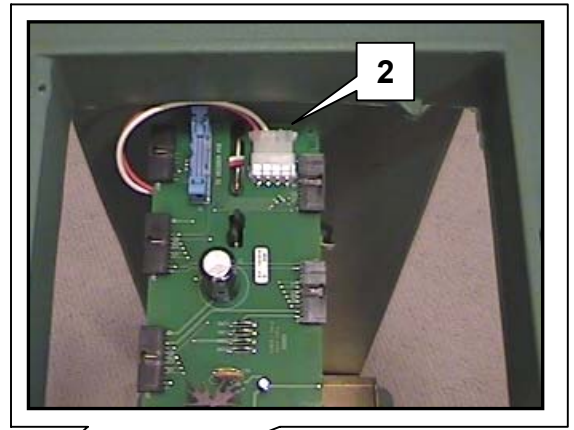
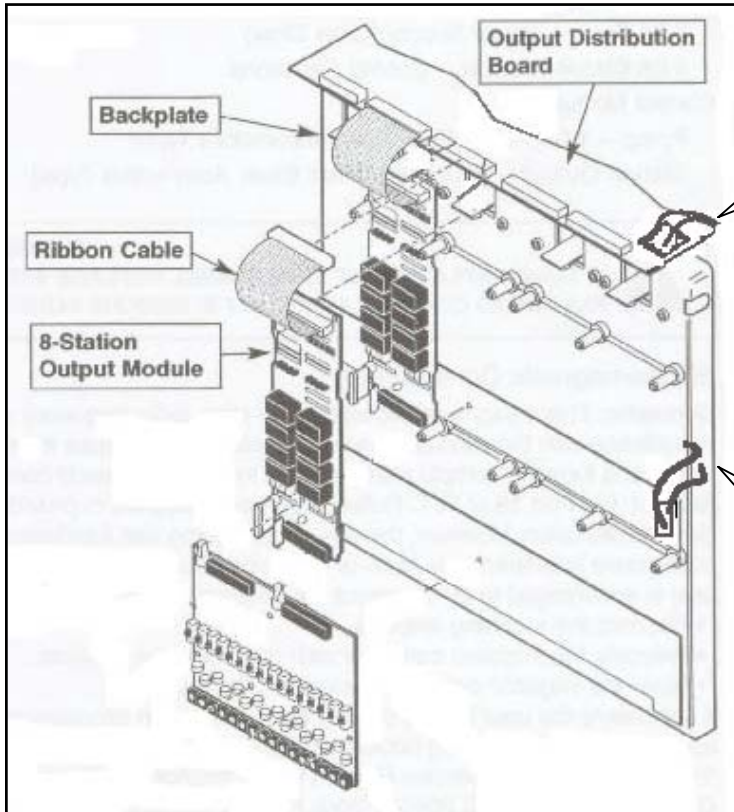


Connection from transformer to power cable which feeds Distribution Board and 24 Vac Buss Bar



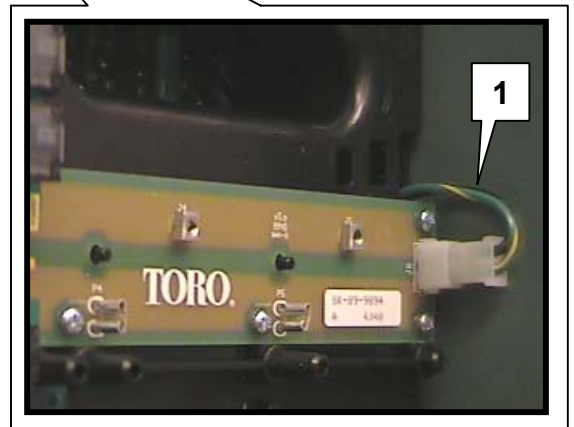
Electrical Protection:

- 1.5A Circuit Breaker: Protects the controller from a short circuit on the incoming power wire.
- 4.0A Circuit Breaker: Protects the controller from a short circuit on boards dealing with controller logic, such as the Timing Mechanism or Distribution Board.
- 3.2A Slow Blow Fuse: Protects the controller from a short on the 24 Vac field common wire or too many stations running at one time.
- 3.0A Fast Blow Fuse: Protects individual 8-station output boards from a short on the 24 Vac field wiring, a shorted solenoid or too many stations running at one time.



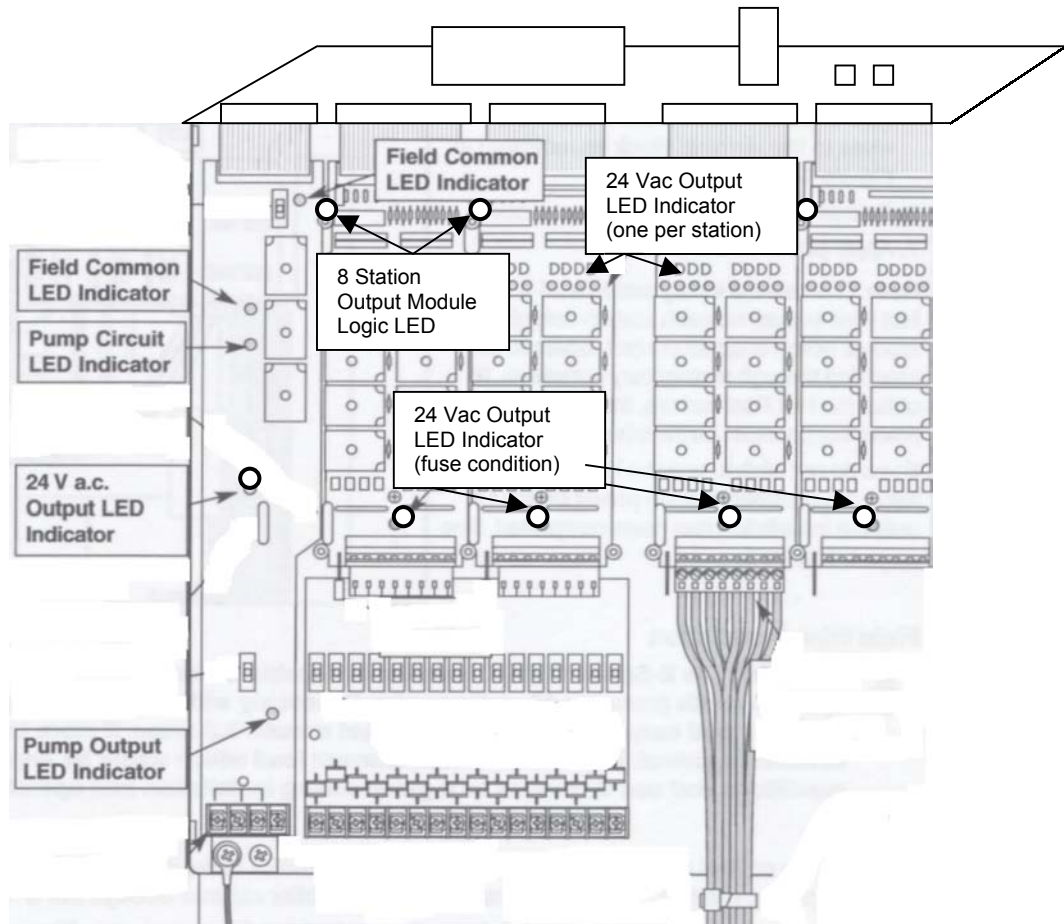
Distribution Board

24 Vac Buss Board



Voltage Checks:

- | | | | |
|---|------------------------------------|-------------|----------------------------|
| 1 | Green and Black from Power Supply: | 24 – 26 Vac | protected by 3.2A fuse. |
| 2 | White and Red from Power Supply: | 14 – 16Vac | protected by 4.0A breaker. |



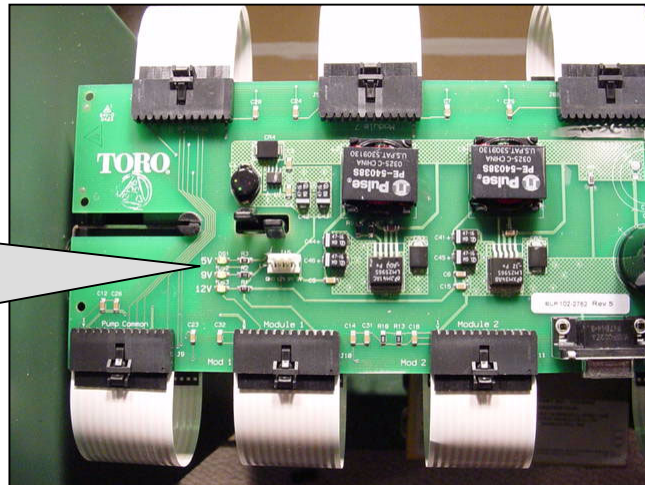
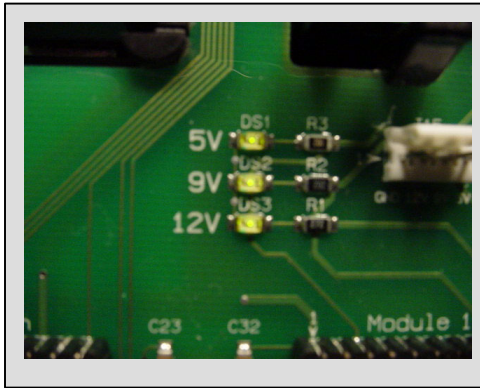
Lights:

The yellow LED on the 8-station Output Module when illuminated indicates communication between the Distribution Bd. and the module. If one is out, check the ribbon cable or connection. If all are out check for (1) a tripped 4.0A breaker (2) loss of 115/230 VAC power (3) a bad transformer. If the breaker is tripped the Distribution Bd. or Timing Mechanism likely contains a short circuit, replace as needed.

The Green Station LED will illuminate when a signal is received by the 8 Station Output Module, either by an automatic command or a Handheld command to start that station. It will not illuminate by using the manual switches. It only indicates that the Output Module received a signal. It does not indicate that the station actually came on, but only that the relay activated.

The Red LED on the 8 Station Output Module and the Pump/Common Module when illuminated indicates 24-26 Vac on the Green and Black wires coming from the Power Supply across the 24 Vac Buss Bar. When one Red LED is not illuminated check the individual (automotive) fuse for that module. If the fuse is blown check for a short on the 24 Vac field wire or a shorted solenoid. If all Red LED's are out check for (1) a blown 3.2A fuse (2) a loose Green and Black wire connection on the Buss Bar or (3) broken solder joints where the fuse holder connects to the Buss Bar. If the 3.2A fuse is blown check for too many solenoids operating at one time.

Lights continued.....



5 Volt LED

Indicates the presence of 5 VDC and is used on the following boards:

- **Modem Board**
Powers up ICs
- **Output Module**
Powers up latch driver chip (associated with relays)
- **Pump Module**
Via manual switches, turns on transistors which turn on relays
- **TM**
Powers up ICs

9 Volt LED

Indicates the presence of 9 VDC and is used on the following boards:

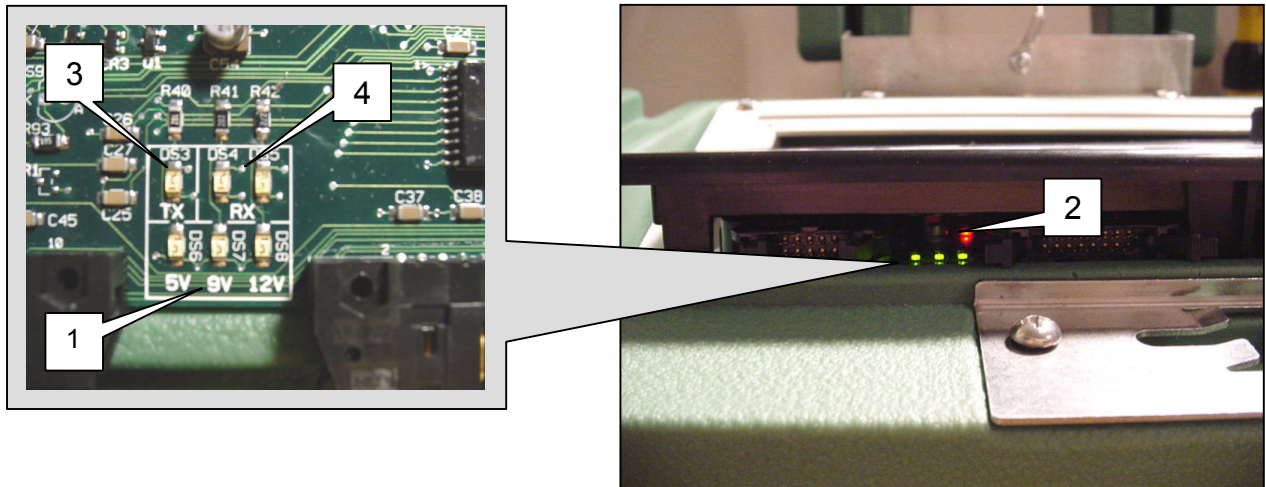
- **Output Module**
Powers up LEDs and relays
- **Pump module**
Powers up LEDs and relays
- **TM**
Powers up speaker
The chirp will be heard under three conditions (1) upon power up (2) when the last item of any menu is reached and (3) when a station experiences an over or under current condition, (will only chirp when the station is active).

12 Volt LED

Indicates the presence of 12 VDC and is used on the following board:

- **Modem board**
Powers up ICs and relays

Lights continued.....



- 1 The 5V, 9V and 12V indicator LEDs when illuminated indicate the presence of these voltages at the TM, just as the previous page illustrated the same voltages on the Distribution Board. The ribbon cable connected to the J10 connector provides the path for these voltages.
- 2 The blinking red light can be considered the heartbeat of the TM. When blinking, it indicates a healthy microprocessor. If the light is off the TM is not receiving proper voltages, signals, etc.
- 3 The green Tx light flashes during communication transmission, the same as the modem light.
- 4 The right Rx light (red) will flash while receiving communication data, the same as the modem light. The left Rx light will remain off for now. Its function is yet to be determined. **Note:** *Beta TM's will have a different configuration. The left Rx light (green) will flash while receiving communication data and the right Rx light (red) would illuminate to indicate something is wrong. The change will be made to correspond with the action of the modem lights.*

Diagnostic Menu

Menu: Link Monitor
Sat # 001 – 001

Naks : 000 Msg# : 000

Link Monitor enables a satellite communicating with the Central to review its communication status. *Naks* stands for *non-acknowledgement* and indicates the number of times the Central has received unrecognizable or timed out messages from the Sat.

Scroll Down to view.

Menu: System Monitor
Sat # 000 - 000

System Monitor enables any satellite communicating to the Central to review the communication status of the entire system.

Menu: Revision
Revision: P3.00
Rev date: 11/12/07

Current version of Firmware installed in the Timing Mechanism. This # will change as updates are installed by Toro representatives.

Menu: Power Up Detect

Detect : 64 sta , 00 Sen
PD 01/01/07 19 : 03 : 55

PU 01/15/07 10 : 56 : 34

Indicates the number of stations and sensors the TM can detect in the satellite. Also, informs you of the last Power Down and Power Up time and date

Scroll down to view.

Menu: Seq Stations

On each for: .5 sec
Press START to start

Allows the end user to sequence through all stations for preset run time increments.

Diagnostics Menu continued....

Menu: Station Test
Sta : Pump 0.00 Amps

Press START to start

Allows the user to manually start and cycle through stations and monitor station amperage.

Menu : Station Amps
Sta 01 : 0.000 Amp
Nominal : 0.000 Amp
Tot +/- : No check

No alarm events
Pump Nomn : 0.000 Amp
Disable : No

Monitors and compares the amperage being used by each station at present vs what has been recorded and considered appropriate (Nominal). Reports an alarm condition and indicates whether the station is enabled or disabled.

Scroll down to view.

Menu : Send Ctrl Code

Code : --
Press START to Send

Allows the user to manually start any pre-defined Control Code in SitePro from any satellite in the field.

Menu : Sensor Monitor

Not available yet

Monitors inputs on the Sensor Board. Not available at this time.

Menu : VA Monitor
Amp : 1.2 AD : 001
12V : 12.2 BV : 3.2
17V : 18.0 9V : 8.9

LCD : 22 C VL : -2.7

Monitors current and volts in the satellite. **BV** = battery voltage and **LCD** indicates the temperature at the LCD. **AD** and **VL** will not be meaningful to the end user.

Scroll down to view.

Diagnostics Menu continued....

Menu: Event Codes
Clear log : No

Reports unusual firmware events and records them as a number. The number will only be useful to the Program Engineers at this time.

Menu : Link Settings
Lead (On) : 020ms
Lead (Off) : 010ms
Baud Rate : 1200

Lead On and Lead Off deal with radio settings programmed into the satellite and the baud rate indicates communication speed between the Central and Satellite modem.