

DYNA-TRAX™

2



GPS

CURTIS DYNA-FOG® Ltd.

"Innovators of Spraying and Fogging Technology Since 1947"

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User Information

Dyna-Trax II User Information

INTRODUCTION

The Dyna-Trax II is a microcomputer-based device that merges data from a GPS with dispensed chemical flow and volume data from the Dyna-Fog chemical pump, and with status information from the Fogger switch into one data stream for recording or reporting. The Dyna-trax II has built-in capabilities to communicate with different types of GPS receivers and different types of data recorders and/or host computers and therefore has additional connectors and option jumpers that may or may not all be used on any one installation.

The Dyna-Trax II consists of an electronic circuit board that is mounted in an outdoor enclosure. Located on the Dyna-Trax II circuit board are connectors for the GPS receiver, the recording device or host computer, and for DC power, flow signal, and switch input signal wiring. The device also has two option jumpers and four status LEDs. The two option jumpers are for use by Dyna-Fog technical personnel only. Installing or moving these jumpers will result in a malfunction of the device and could result in permanent damage to the device. The Dyna-Trax II circuit board has four status LEDs that report the basic operational status of the device. The function of each of these status LEDs are as follows:

CALIBRATE (red)

This LED is normally OFF. When the user activates the CALIBRATE switch, this LED will flash briefly to indicate that the CALIBRATE function has been activated. Afterward, if the calibration procedure is successful, this LED will be turned ON for 1 seconds and then turned OFF.

UNIT OK(green)

This LED normally flashes once every second. This once per second flash indicates that the device is functioning and that merged data is being sent to the recording device or host computer.

LED1 (yellow)

This LED is normally OFF and is intended for use by Dyna-Fog service personnel. This LED flashes briefly each time that data is read from or written into the permanent memory of the Dyna-Trax II. This occurs immediately after the device is turned ON, any time a configuration change is made to the unit, or after a user calibration procedure.

LED2 (red)

This LED is normally OFF and is intended for use by Dyna-Fog service personnel. This LED flashes briefly immediately after the Dyna-Trax II is turned ON while the device waits for the DC input power to stabilize.

The Dyna-Trax II has electronic inputs for the pump flow signal, and the Fogger output switch. The device converts the electronic signal from the pump into an equivalent chemical flow rate and calculates and accumulates dispensed volume any time that the Fogger switch input is active.

BASIC OPERATION

The Dyna-Trax II operates automatically without any direct user action. Normal operation of the device requires that a proper GPS unit, pump, control switches, and 12VDC power be connected to the Dyna-Trax II. Provided that these basic requirements are met, the Dyna-Trax II will automatically begin normal operation shortly after power is applied to the unit. (Machine “on”)

User Calibration Of Chemical Flow

The Dyna-Trax II provides a mechanism for the user to perform a periodic field calibration of the calculated chemical flow value and to generate a record of the calibration. This calibration mechanism assumes that the user will establish a predefined flow rate through the dispensing equipment of 400 mL/Min as confirmed by a flow rate measurement into a graduated cylinder before activating this calibration via the “Pump Calibrate” pushbutton located inside the Dyna-trax II enclosure. When this calibration is activated, the firmware will compare the current chemical flow rate to the predefined flow calibration setpoint value of 400 mL/Min. Following a successful calibration, the Dyna-Trax II will store the required calibration adjustments in permanent memory for later retrieval and use after the unit has been turned OFF and ON again. These calibration adjustments will remain in the Dyna-Trax II until the next calibration procedure is performed.

User feedback of the calibration process is provided through the CALIBRATE LED (red) located on the circuit board inside the enclosure. Normally, this LED is OFF. When the Dyna-Trax II senses that the Calibrate switch has been activated, it will cause the CALIBRATE LED to flash for 1 second as an acknowledgment to the user. In order for this to happen, the user must activate and hold the Calibrate switch ON for at least one second and then release the switch. After flashing the CALIBRATE LED, the Dyna-Trax II will attempt to perform the user calibration as described above. If the calibration is successful, the Calibration LED will stop flashing and will be turned ON for 1 second and then turned OFF. Summarizing, the user calibration procedure is as follows:

1. Establish a steady dispensing flow of **400 mL/Min** through the system as measured with a graduated cylinder.
2. Activate and hold the Calibrate Switch for 1 second then release the switch and observe that the CALIBRATE LED located on the circuit board flashes.
3. Observe whether or not the CALIBRATE LED goes OFF after 1 second. If the CALIBRATE LED goes OFF after 1 second, the Dyna-Trax II has been successfully calibrated.
4. If the CALIBRATE button is pushed while the pump is OFF or at 0 ml flow it will record this as an “infinite” calibration factor, and this error will result in no flow being reported when in operation. If this occurs or if the CALIBRATE button has been pressed inadvertently at any other time while the unit is powered up, simply set the pump flow output to 400ml/MIN and repeat the Calibration procedure outlined above in steps 1 thru 3 above to restore proper operation and correct reporting of flow data.
5. The lockable enclosure of the Dyna-Trax II provides a method to help prevent and protect against inadvertent operation of the Calibration button and procedures by untrained or unauthorized personnel, maintaining accurate recording and operation.

Garmin GPS Receiver

The GPS receiver provided with the Dyna-Trax II provides the geographical coordinates as well as speed, direction, and time and date data for the Dyna-Trax system only.

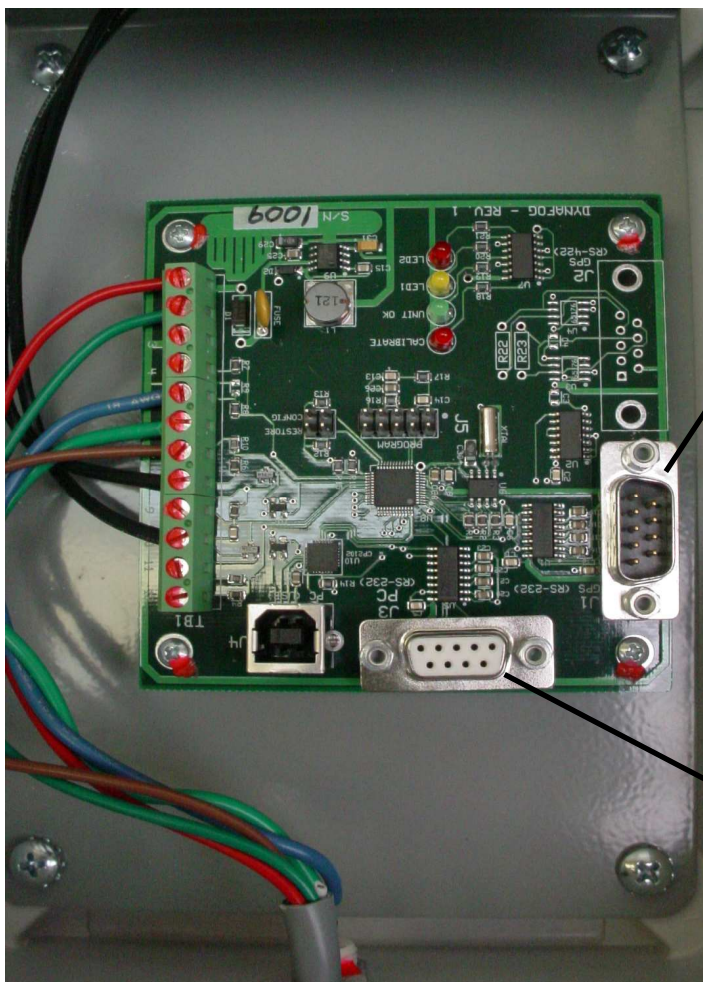
The unit has a built-in magnetic mount as well as provision for a single metric M3 screw attachment (do not overtighten) if needed for mounting.

The mounting location chosen should be ferrous metal for the highest gain possible, and should have a **clear unobstructed view of the sky** during normal operation.

Initial signal acquisition (cold start) is approx 45 seconds. Reacquisition time following is usually less than 2 seconds. Fogger and flow data will be transmitted regardless of any missing valid GPS data.

Do not connect the GPS receiver to any equipment other than the Dyna-trax II to avoid damage as the wiring and programming are unique and proprietary to Dyna-Trax II.

Inside Dyna-Trax II Enclosure:



GPS Receiver Connector

(For use **only** with the GPS receiver provided with Dyna-Trax II unit)

RS232 Serial Cable Connector

(Provides data to handheld, laptop, or other recording device)

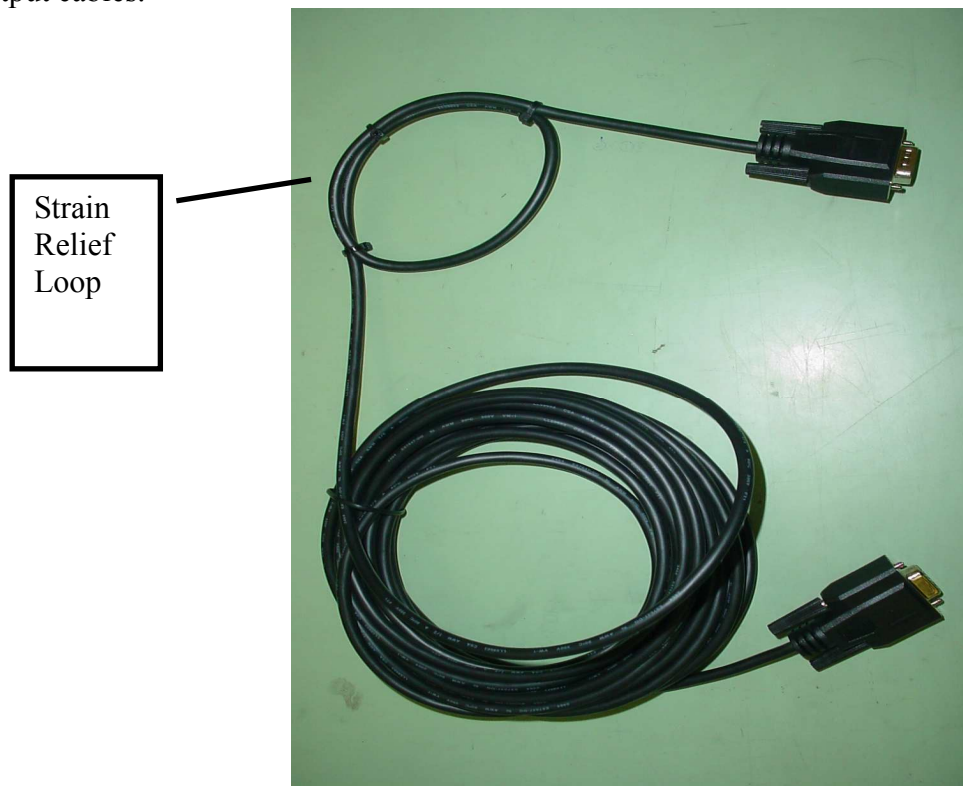
Installation

The Dyna-Trax II unit comes with a weather resistant enclosure that is designed to be securely mounted on an upright post on your fogger using the specially designed bracket and clamps provided.

The unit should be mounted as close to the pumping system enclosure as possible to avoid damage to the connecting cables.

There is a slot located in the bottom of the enclosure to allow easy installation and removal of the GPS receiver cable and RS232 cable as needed for maintenance, moving, and storage of the machine. Once the cables have been securely attached to the corresponding connectors inside the enclosure, the cables may be slid into this slot and the enclosure door may be closed (and locked if desired).

Please take note of the strain relief loops formed on the ends of the GPS receiver cable and serial output cables.



The strain relief loops must be maintained and should be located inside the enclosure when the cables are attached to the unit. These loops prevent force from being applied to the connectors on the circuit board when the cables are moved or pulled. They will rest against the inside wall of the enclosure at the slot where the cables exit. These are very important to prevent inadvertent stresses that may cause damage to the circuit board, while the slot allows for easy installation and removal of these cables as needed.

Once the enclosure has been mounted in position, locate the desired location of the GPS receiver antenna and route both it and the data output cable to be connected to the recording device as needed depending on your particular installation.

The gray cable coming from the bottom of the Dyna-Trax II unit has 3 wires that are connected inside the pump enclosure:

Green = Electrical DC Ground

Red = +12 volt Machine “on” (switched power when machine is “on”)

Brown = +12 volt Spray “on” (switched power to pump power or spray solenoid, etc.)

FLOW SIGNAL BNC CABLE:



The cable included is a shielded cable intended to carry the flow rate signal from the pump to the Dyna-Trax II for processing and inclusion in the data sentence. Once the enclosure is mounted and secured, the cable should be attached to the BNC jacks located on the outside of both the bottom of the Dyna-trax II and the back of the pump enclosure as pictured below. Route the cable out of harms way and simply rotate the knurled connector ring on the cable end while gently pushing and the connectors on the cable will lock in place.



Check:

Confirm that the enclosure is securely mounted.

GPS receiver/antenna is mounted and has a clear view of the sky.

Make certain you have the GPS receiver and all other cables attached to the Dyna-Trax unit and pumping system before attempting operation and/or the calibration procedure of the Dyna-trax II system. Failure to do so may result in errors or permanent damage to the system or components.

It is not necessary to have the recording device attached to the output cable of the Dyna-Trax unit in operation or during calibration, however always make certain to **power the unit down** (Machine OFF) before attaching or removing the recording device to prevent damage and or data loss to either.

There is a “Pump Calibration” pushbutton located at the top of the enclosure and its function is described in the User Information section. Be certain to read and understand the instructions completely before attempting the procedure. Calibration is only required on initial set up and when there is an inaccuracy noted between the actual flow rate and recorded flow rates. The enclosure is also equipped with a lockable latch to prevent access by unauthorized personnel, and its use is recommended once the system has been properly calibrated.

NOTES: