

# Millennia V.

Manufacturer: Spectra-Physics.

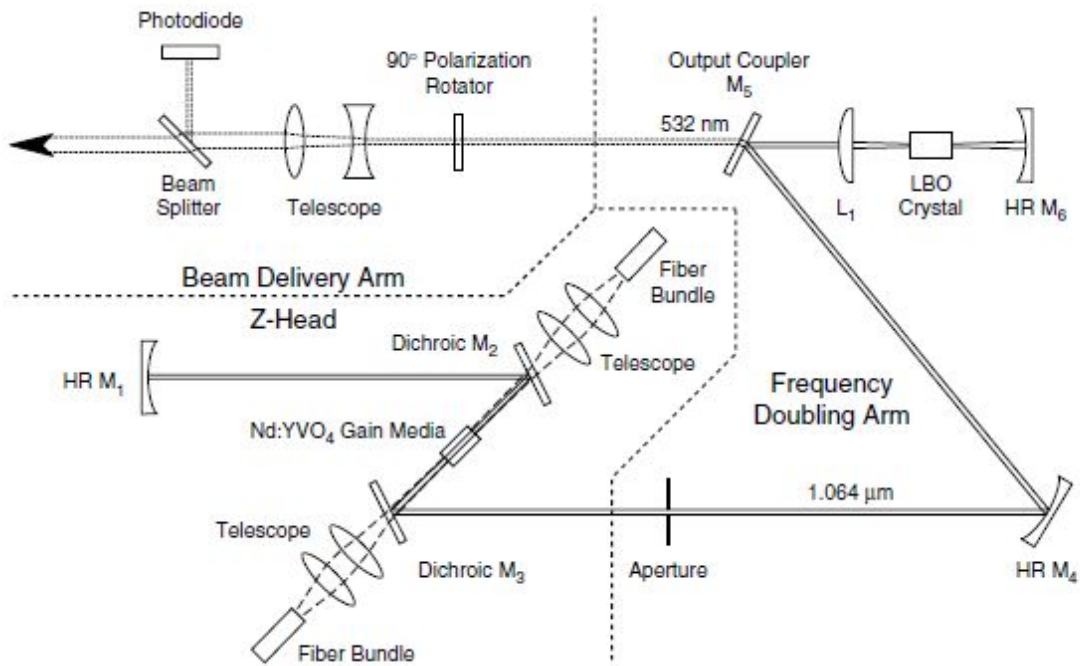
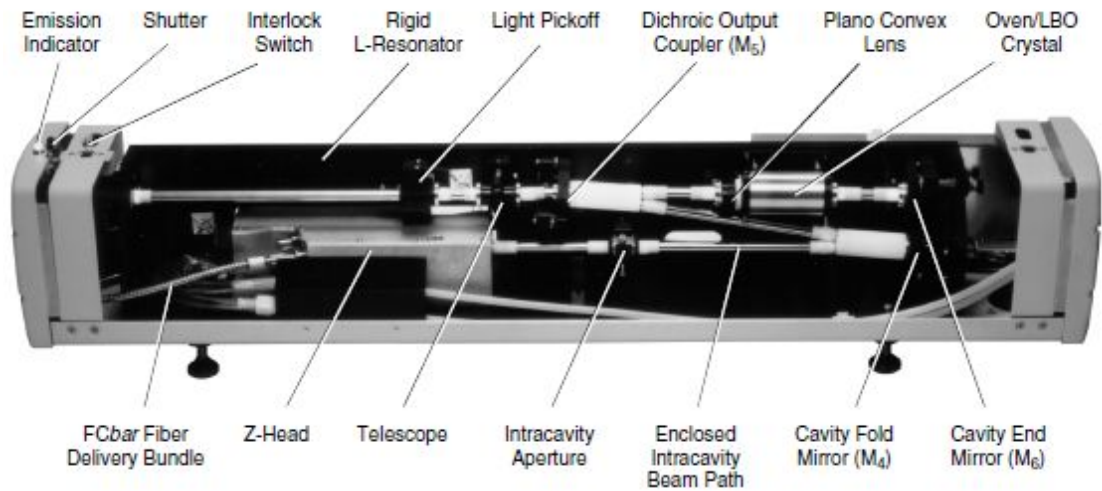
Manufactured: April 1999.

Model: Millennia.

Serial Number: 1798.

CW output. @ 532nm. doubled Nd:YAG.

## Millennia Diagram

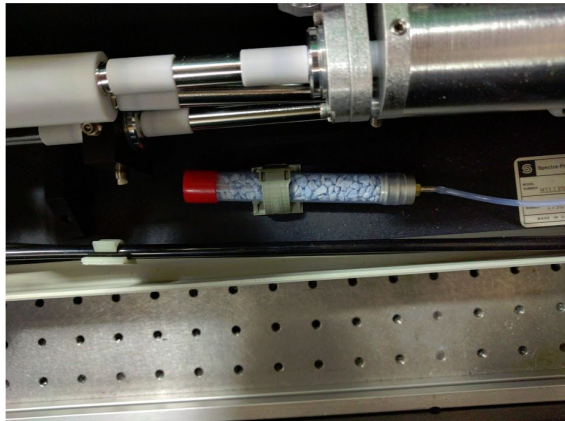


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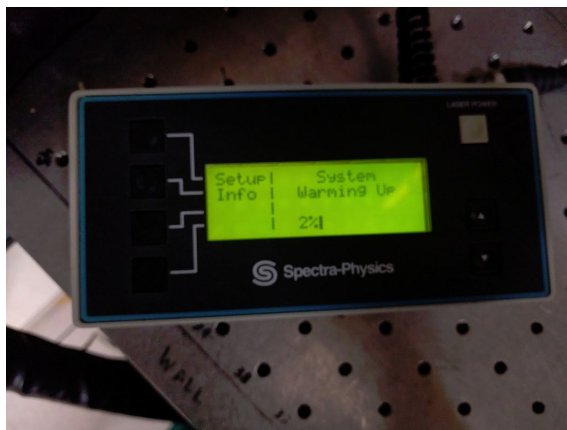
### How to start up the Millennia V.

Note: The Millennia has problems with 'thermal runaway' upon startup if a user naively sends the laser to 4.0 W in power mode (thermal runaway causes the infamous FAULT 146 system shut off, power adjust timeout error). The following procedure wakes the Millennia up gently enough to prevent thermal runaway.

1. Check desiccant inside Millennia (blue = good, pink = bad).
  - a. If desiccant has gone bad, replace. Note: it is the regular drierite brand.



2. Ensure that the Millennia shutter is closed so that no light is getting downstream during startup.
3. Flip orange power switch on diode box.
4. Flip Laser Enable key on diode box
5. Wait for system to warm up (~30 minutes).
  - a. 'System Warming Up' message should be present on control box.
  - b. System is warmed up when "percentage complete" indicator on control box reaches 100% ,



6. The Millennia will start in **SP Current** mode
7. Measure diode hours (Info, scroll down)

8. Turn Millennia to 1.0 W in “power mode”, wait for it to equilibrate. This entails the diode temperature and current being stable (within 0.1) over 5 minutes.
9. Turn Millennia to “current mode”.
10. Slowly ramp current until you have ~4 W (or more) (~70%)
11. Allow the diode temperature to stabilize while remaining in “current mode” (check every 5 minutes until it doesn't change by more than 0.1)
12. Turn Millennia to 4.0 W “power mode”.
13. Wait 10 minutes for extra assurance of equilibration.
14. Ensure again that temperature and current are not changing (over ~5 minute timescale).
15. Measure and record actual Millennia output power, currents, temperatures.
  - a. These data should be recorded in the [GoogleSheet](#) document for Millennia.

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**Record of known damage. (please sign and date)**

- No known damage.
  - March 12, 2016. Blaise Thompson.
- Possible speck of dust or burn inside Millennia cavity. We will not address it at this time for fear of making things worst. Dave recommends carrying on.
  - July 20, 2017. Jonathan Handali

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**Records / Notes****2016/04/11**

Millenia display unit replaced

Old	Model TREM-C2-08	Serial 21594
New	Model TREM-C2-08	Serial 20789

**2017-07-18**

Jonathan, Darien, and Dan found the coolant lines to the diode box to be iced over.

Accomplished the following things:

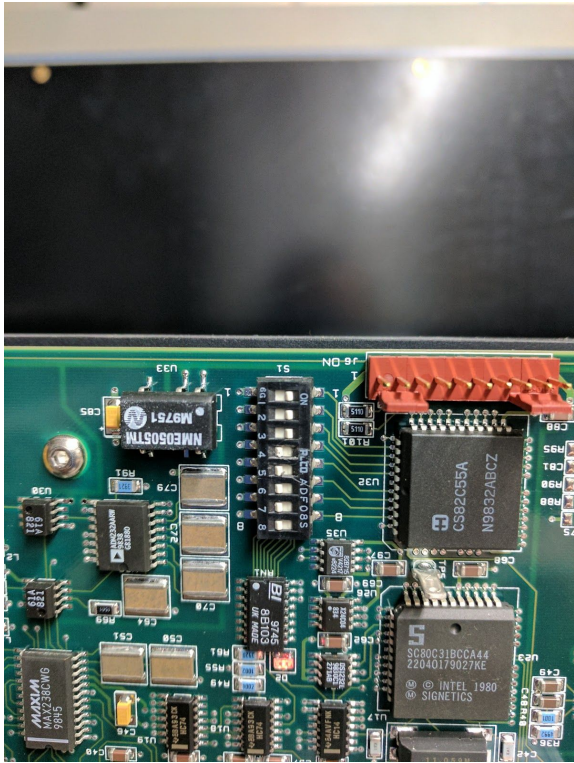
- De-iced and dried out tubing wrap
- Cut out top tubing wrap
- Wrapped with new adhesive wrap
- Plan to monitor situation to see if it comes back again

We also fixed a problem in which the internal diode was reporting a different power than our 407A. We adjusted the trimpot on the PCB as per Dave's instructions.

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**Putting the Millennia in and out of Service Mode**

On the control board inside the laser, DIP switch #4 toggles service mode.



Here DIP #4 is OFF (normal mode)

Service mode unlocks special **SP** modes. These modes allow us to record things like Diode hours. It's fine to switch into these modes sometimes, but they are buggy/crashy so best to leave the Millenia in normal **Power** mode for normal operation.



