



## TROUBLE-SHOOTING

SITUATION / SYMPTOM	PROBABLE CAUSE or INDICATOR	SOLUTION
The system cannot be turned on.	The power is not connected properly.	Reseat the power cable and check circuit breaker.
	The laser system circuit breaker is in the "off" position.	Switch the circuit breaker to the "on" position.
	The keylock switch was not fully engaged.	Turn the keylock switch fully clockwise to the "⬇" position and release.
	The external interlock is defeated.	Check the remote interlock connection. If connected to a door, make sure the door is closed.
Laser pulses, no cryogen is delivered	The DCD Pre and Post spray settings are set to zero "0".	Select the DCD Pre or Post spray and use the "up arrow" to increase the spray setting.

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Cryogen leak.	Tubing breaks in the delivery system.	Remove the cryogen canister or disconnect the handpiece assembly from the laser. Call Service.
Warm-up time has exceeded 60 minutes.	The water temperature control circuitry failed.	Call Service.
Ineffective fluence response.	System or Fiber is degraded.	Perform a calibration procedure per Section 5. Call Service if problem persists.
Replace Canister Message Appears	There is insufficient cryogen in the canister.	Replace the cryogen canister with a new canister supplied by Candela; Depress the Canister Count switch for 3 seconds to reset the canister count.

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Purge Required	Bubbles have been detected in the cryogen line.	Press the purge switch until problem resolves. This must be done with the handpiece outside of the calibration port. If problem persists, call Service
Laser will not enter the READY state	Triggerswitch is depressed.	De-activate Triggerswitch
Aiming beam missing in the READY state	<ul style="list-style-type: none"> <li>• Damaged or broken fiber</li> <li>• Bad aiming laser or driver circuit</li> </ul>	<ul style="list-style-type: none"> <li>• Replace delivery system</li> <li>• Otherwise call for service.</li> </ul>

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Aiming beam appears dim	<ul style="list-style-type: none"> <li>• Intensity set too low</li> <li>• Dirty distance gauge and/or slider windows</li> <li>• Dirty or damaged slider optics</li> <li>• Failing aiming laser</li> </ul>	<ul style="list-style-type: none"> <li>• Set aiming beam intensity using button provided on "NEXT" screen</li> <li>• Clean or replace windows</li> </ul> <p>Otherwise call for service.</p>
Aiming beam appears non-uniform	<ul style="list-style-type: none"> <li>• Dirty distance gauge and/or slider windows</li> <li>• Dirty or damaged slider optics</li> <li>• 1.5 mm distance gauge not installed properly on end of slider</li> </ul>	<ul style="list-style-type: none"> <li>• Clean or replace windows</li> <li>• Replace delivery system</li> </ul>

## FAULT / WARNING MESSAGES

A fault message typically occurs due to a system malfunction. Sometimes clearing the fault and retrying the previous operation can be successfully accomplished without further faults occurring. If the fault message persists, call Candela Service and report the Fault Number. Fault processing automatically places the system into the Standby state. The following conditions are considered outside of 'normal' system operation and will display a warning or fault message

FAULT	#	DESCRIPTION
1 – BUBBLE DETECT CIRCUIT FAULT	1.1	HP Bubble Circuit Test didn't detect a change in the signal (with DCD-enabled HP).
	1.2	Canister Bubble Circuit Test didn't detect a change in the signal (with DCD-enabled HP).
2 – ROM CHECKSUM	2	Calculation of checksum at power-up does not match checksum value in memory.
3 – ROTARY SOLENOID FAULT	3.1	Shutter isn't in correct state when checked. Does not respond to actuation to correct state.
	3.2	Aperture isn't in correct state when checked. Does not respond to actuation to correct state.
4 – HVPS FAULT	4.1	HVPS reported a fault (Watch dog time-out)
	4.2	HVPS Communications Time-out

5 – HV TOLERANCE FAULT	5.1	CAL completion HV sample to Ready entry HV smp not within +-3% at End of Charge (EOC) OR HV Reference and HV sample not within +-5% at End of Charge
	5.2	No EOC signal present within 3 secs after HV setting
	5.3	No EOC signal present after DCD pre-spray already occurred.
6 – CALIBRATION FAULT	6.2	Expected Head Energy (xHD) is calculated > Max CAL HD Energy of 100 J.
	6.3	Laser failed to CAL to desired Fluence within 20 pulses.
	6.4	CAL required a HV > 1200V for desired Fluence.
7 – DI WATER SYSTEM FAULT	7.1	DI temp < 60degC when not in warm-up.
	7.2	DI temp > 70degC while in Ready state.
	7.3	DI pressure switch does not change when power turned on. OR DI pump is not ON or DI pressure switch not actuated.
	7.4	DI temp < Thermistor Open Temperature (5) OR DI temp > Thermistor Shorted Temp (98) while in Ready state
8 – DCD SYSTEM FAULT	8.1	DCD pressure < 105 psi while in READY & INT_DCD & HP w/DCD & spray setting is non-zero.
	8.2	DCD Pressure > 135 psi & INT_DCD
	8.3	DCD Valve Current was not detected while spraying

9 – WARM-UP TIMEOUT	9.1	DI temperature < 62degC after 60 minute warm-up
	9.2	DCD pressure < 105psi after 60 minute warm-up (Only when DCD enabled)
10 – DELIVERY SYSTEM FAULT	10.1	HP type changed or unrecognized while in Ready
	10.4	Fiber not detected while in Ready
	10.5	Slider button pressed while in Ready State. Cannot change spot-size while in Ready.
12 – ENERGY OUT OF RANGE FAULT	12.1	On last treatment pulse, the head energy (HD) was 14% lower than expected head energy (xHD).
	12.2	On last treatment pulse, the head energy (HD) was 14% higher than expected head energy (xHD).
	12.3	The head energy (HD) of the last pulse > Max Treatment HD Energy of 105J.
	12.4	The HD total energy is not evenly balanced between each subpulse (+-20%)
13 – TRIGGER SWITCH FAULT	13	The redundant trigger switches were in two different states for > 1 second while in ready.
14 – SIMMER FAULT	14	The simmer did not start or dropped out while in ready.

15 TRANSMISSION FAULT	15.1	Transmission (Tx) is < 70% w/HD or CP energy >1.5J (Aper < 30% w/HD>6J or CP energy>2.5)
	15.2	Transmission (Tx) is > 100% w/HD or CP energy >1.5J (Aper >50% w/HD>6J or CP energy>2.5)
18 CIRCUIT CAL FAULT	18.1	HD CktCal Test Energy incorrect or chksum corrupt.
	18.2	DI Factor chksum corrupt
	18.3	DCD Factor chksum corrupt
19-MODULATOR FAULT	19.1	IGBT Trigger Fault
	19.2	7875uf capacitor charge status incorrect
	19.3	Lasing Timer Fault
	19.4	Lasing Power Fault
	19.5	HV Dump Fault



## Warning Messages

Replace Can (Only with DCD Option)	Canister pulse count reaches zero "0", or when air detected at the canister.	Replace DCD canister & reset canister counter when ever this message appears.
Purge (Only with DCD Option)	Air was detected in the cryogen lines. Bubble percentage is outside of tolerable range (~15% bubbles)	With handpiece removed from the calibration port, depress the purge button until the message clears.
Exit to Clean Window	Delivery System Transmission is low. Transmission is < 75% - Delivery system degrading -	Examine HP Slider window. If necessary, clean or replace window.

Candela will make available on request circuit diagrams, component part lists, descriptions, calibration instructions, or other necessary information which will assist the customer's appropriately qualified technical personnel to repair those parts of equipment which are designated by Candela as repairable.