Conical Power Probe

Product Information

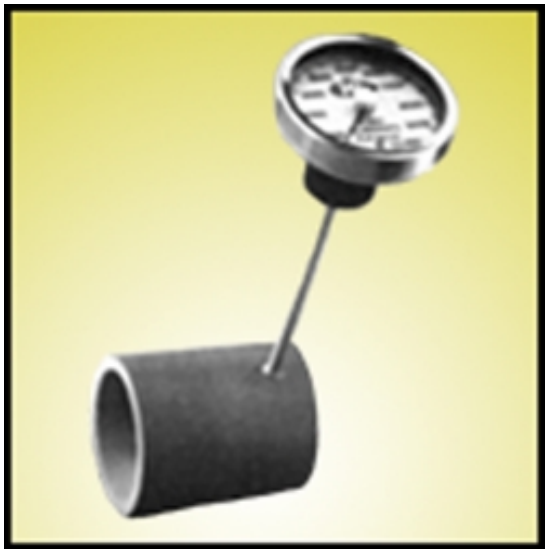

Figure 1: *Conical Power Probe*

Conical Head Power Probes are used to measure high power density CO_2 laser beams which may damage the standard flat surfaced Power Probes. The conical absorbing cavity exhibits a high heat dissipation. There are two models of Conical Power Probes: C2K and C10K. Table 1 (on back) gives specifications for these models. Table 2 gives approximate damage threshold for both the flat surface and conical power probes.

Explanation of Damage Threshold

High power lasers that can cut metal can also damage the absorbing head of a power probe if the beam is too concentrated. It has been found that it is not possible to quote a single number for the power density that will damage a power probe. The damage threshold is also a function of the total power in the beam and whether the absorbing head is moved during the exposure.

For a CO_2 laser, there is no loss in absorptivity (no damage) when the coating is heated to the point where it exhibits a visible bleached spot but no other change. There is damage when metallic areas can be seen on the surface. In operation, power densities should be kept substantially below the indicated damage threshold.

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Table 1: Conical Power Probe Specifications

	Model C2K	Model C10K
Primary Power Range - watts (1)	0-2,000 (20 sec)	0-10,000 (10 sec)
Alternative Power Range - watts	0-4,000 (10 sec)	0-5,000 (20 sec)
Absorbing Head	Dia: 6.15cm (2.4") Cone: 5.08cm (2")	Dia: 7.6cm (3") Cone: 6.35cm (2.5")
Weight - gm	1160	530
Accuracy	+/- 5%	+/- 5%
Repeatability	+/- 1.5%	+/- 1.5%

Table 2: Approximate Damage Threshold For Stationary Probes*

Power (1) (watts)	Time (2) (sec)	Flat Probes (3) (w/cm2)	Conical Probes (4) (w/cm2)
100	20	10,000	15,000
200	20	7,000	11,000
500	20	4,000	8,000
1,000	20	2,500	5,000
2,000	20	1,500	3,000
5,000	20	1,100	2,200
10,000	10	900	1,800

* Moving the probe during exposure will increase (up to double) the damage threshold compared to the numbers shown for a stationary probe. To achieve this increase, the head must be moved in a circular motion so that the laser beam does not strike any one area continuously for more than 1.5 seconds.

(1) Power (watts) in a CO_2 laser beam.
(2) Exposure time of the laser beam on a power probe head which is rated to accept the indicated power level.
(3) Approximate damage threshold for P500C, P1000C, P2000C, P10KC, H3C, and H4C.
(4) Approximate damage threshold for C2K and C10K conical power probes.

Contact Cascade Laser Corporation for ordering information or to request a quotation on any of these products.

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