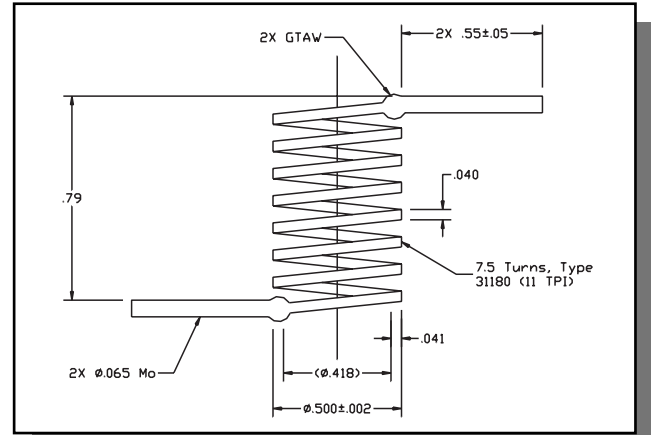
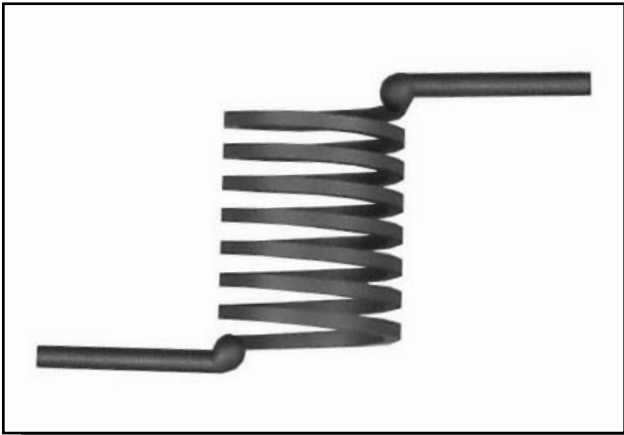


### Directly Heated Dispenser Cathodes

Long a standard emitter for high power plasma applications, the Directly Heated Tungsten Dispenser Cathode is often the choice for plasma electron and ion beam applications. The low cost, high emission current capability and ruggedness along with the ability to reactivate make this type of emitter well suited for industrial and production applications. Electron emission of 3-5 A/cm<sup>2</sup> is typical for long life applications. A typical 1/2" diameter, 7 turn coil can operate at 40 amps CW for tens of thousands of hours. Current density of 10 A/cm<sup>2</sup> and much higher is possible at higher operating temperatures and reduced lifetimes.



HeatWave Labs Part #101033, 40 Amp Cathode

Consider the following features:

- Low work function (1.7 eV) allows operation between 950 and 1200 degrees C.
- Reactivation is possible after exposure to air or other reactive gases.
- >40,000 Hours of lifetime under ideal conditions.
- No outgassing and not a source of contamination.
- Standard machined coil diameters and leg configurations result in low cost and availability from stock.

Standard sizes include:

- |        |        |              |
|--------|--------|--------------|
| • 1/4" | 20A CW | 40A pulsed*  |
| • 3/8" | 30A CW | 60A pulsed*  |
| • 1/2" | 40A CW | 80A pulsed*  |
| • 5/8" | 70A CW | 140A pulsed* |

\*depending on pulse width and duty

- Typically heated from a transformer center tap to balance lead current.
- Made from 80-82% dense porous Tungsten impregnated with a Barium Calcium Aluminate emission mix.
- Emission enhancing Scandium Oxide emission mix (X Type) is an option.
- Argon, Krypton, Xenon and mixed gas operation is common.
- Hollow cathode devices using this technology are also available.
- Can be used in a coaxial or offset geometry.
- Coil diameters above 8" are possible.
- Also used in Ion laser applications. Consult Spectra-Mat, Inc., at [www.spectramat.com](http://www.spectramat.com), for additional information.



Typical Pancake Emitter



Model 101188 1/4" Dia. Cathode On Typical Flange Mount



Model 101936, 16 1/2 Turn, 0.5" Dia., Type 31180 Emitter

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