
Magnetron Sputtering Sources

Torus® HV Circular Sputter Sources (Cathodes) **(2" and 3" diameter)**

FEATURES:

- **RF/DC compatible without modification**
- **Accepts variable target thickness**
- **Excellent sputtering rates and uniformity**
- **Magnets isolated from the cooling water and vacuum**
- **High efficiency cooling well, no thermal paste required**
- **Type-N (male) power connector**
- **Axial, Right Angle and Flex mount designs**



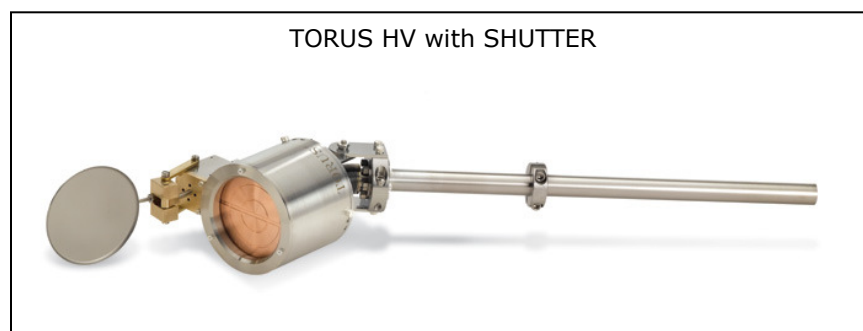
Most standard magnetron sources have a single central magnet. The magnetic flux loops through the target and lies perpendicular to the electric field over only a small area of the target surface.

The Torus® design significantly enhances the magnetron concept by manipulating the magnetic fields with multiple, concentric magnetic rings. This strengthens and flattens the field lines while increasing the perpendicular area where the magnetic and electrical fields meet. This broadens and intensifies the plasma volume just above the target surface, optimizing cathode performance.

The Torus design offers many significant advantages over standard magnetrons:

- For targets of equal size, the Torus allows higher power dissipation. This yields higher deposition rates.
- For the same power input, the Torus target sputters over a larger surface area. This results in a larger zone of uniform deposition on the substrate.
- The broadened plasma volume produced by the Torus source increases the target erosion zone -- in some cases by more than 40%.
- The 'quick-target-change' feature on each Torus gun, means less downtime for target replacement.

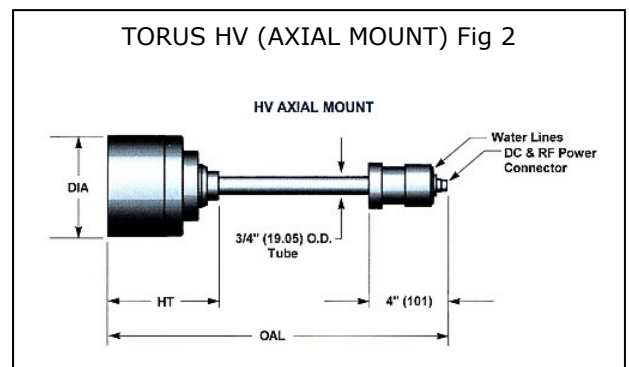
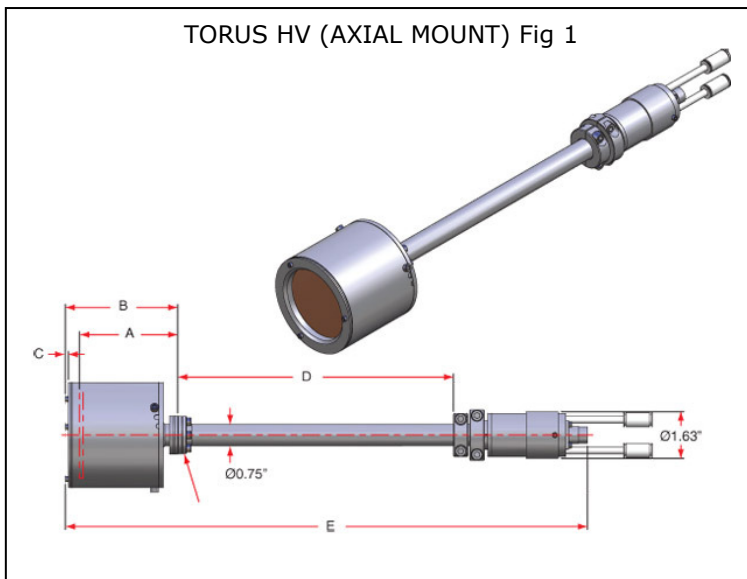
The diverse Torus product line provides high deposition rates, excellent film uniformity, and outstanding target utilization for the widest range of sputtering applications. Torus models are available for HV as well as UHV applications.



Specifications	Torus 2"	Torus 3"
Sputter Power DC	1.0 kW max	2.0 kW max
Sputter Power RF	0.6 kW max	1.25 kW max
Cathode Voltage	200 V to 900V	200 V to 1000V
Working Pressure (Material and process dependent)	5 to 200 mTorr	5 to 200 mTorr
Water @ 25 deg C	0.5 gpm min	1 gpm min
Cooling method	Indirect	Indirect
Bakeout Temperature	100 deg C	100 deg C
Target Diameter	2"	3"
Target Thickness	1/8" to 1/4" *	1/8" to 1/4" *
Target Fixture	Clamped	Clamped
Target Geometry	Circular	Circular
Internal mounting, 3/4" feedthru	(a1) axial Non-magnetic (a2) axial Magnetic (b1) 90 deg Non-magnetic (b2) 90 deg Magnetic (c1) flex Non-magnetic (c2) flex Magnetic	(a1) axial Non-magnetic (a2) axial Magnetic (b1) 90 deg Non-magnetic (b2) 90 deg Magnetic (c1) flex Non-magnetic (c2) flex Magnetic
* 1/8" thick target only for magnetic targets. Torus is a trademark of KJ Lesker		

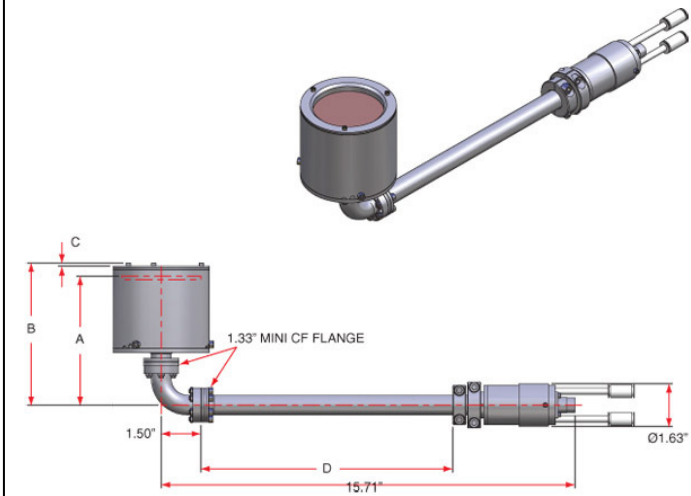
Torus® sources are available in three standard mountings for easy retrofit into existing vacuum systems.

1. **Axial mount** - allows axial adjustment of the target-to-substrate distance.
2. **90° mount** - allows horizontal adjustment of the target in chambers or feedthru collars with side entry ports.
3. **'Flex' mount** - provides ± 30° tilt of the target from the axial direction, and provides axial position adjustment.

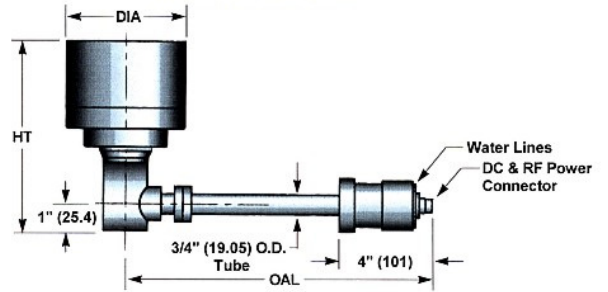


A	B	C	D	E
4.08"	4.38"	0.11"	9.56"	18.58"

TORUS HV (RIGHT ANGLE MOUNT) Fig 1

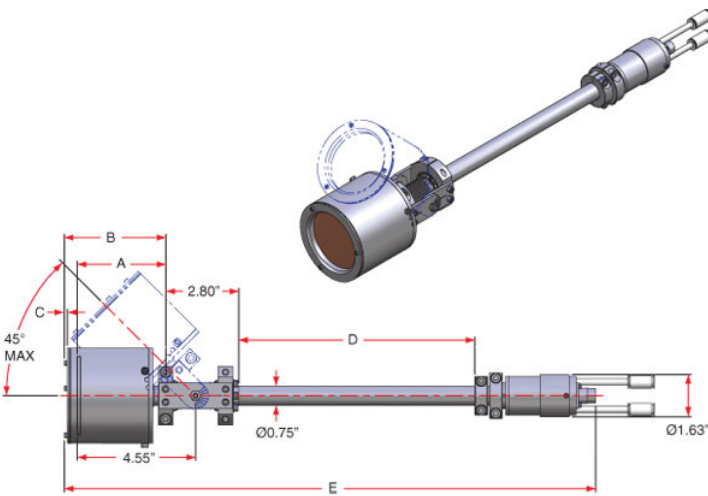


TORUS HV (RIGHT ANGLE MOUNT) Fig 2
HV RIGHT ANGLE MOUNT

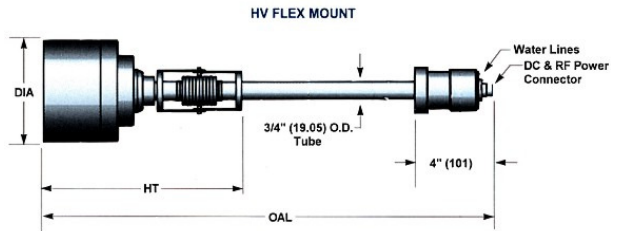


A	B	C	D	E
4.08"	4.38"	0.11"	9.56"	20.88"

TORUS HV (FLEX MOUNT) Fig 1



TORUS HV (FLEX MOUNT) Fig 2
HV FLEX MOUNT



A	B	C	D	E
5.58"	5.88"	0.11"	9.56"	N/A

Various Options

Flange Size (6" CF, 8" CF and 10" CF)
Gas Injection Ring
Deposition Chimney

Pneumatic Actuation Flip-Style Shutter
Pneumatic Actuation Swing-Style Shutter



VIN KAROLA INSTRUMENTS

P.O. Box 922273
Norcross, GA 30010-2273
Tel: 770/409-1499
Fax: 770/447-8045
e-mail: info@vinkarola.com