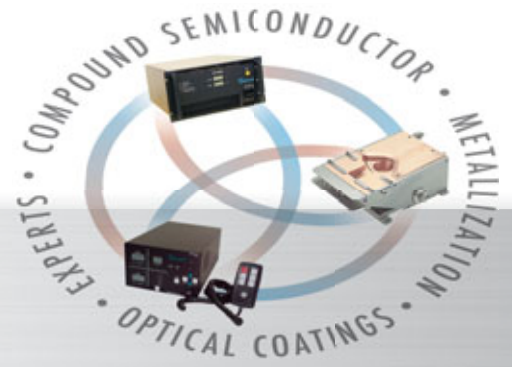


Temescal



TEMESCAL MODEL 2PT AND 3PT 'POPTOP' SUPERSOURCES

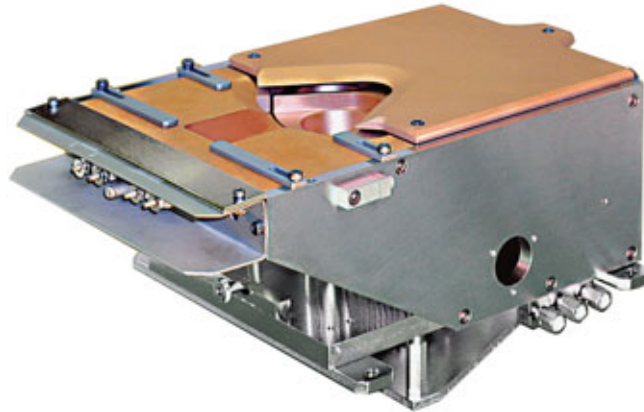
Temescal's patented PopTop e-beam sources offer enhanced convenience, reliability, and throughput in applications ranging from optical and microelectronic production to specialized R & D coating. The key to these performance enhancements is Temescal's pneumatically actuated 'PopTop' crucible cover, which lifts automatically before turret rotation. The net benefit is the virtual elimination of cross-contamination.



PopTop Crucible Cover
in Evaporation Position



Crucible Cover Raised
For Turret Rotation



FEATURES & BENEFITS

- Movable crucible cover, which rises before the crucible rotates
- Pneumatically driven, low-impact cover motion
- Lip of cover recessed around exposed pocket
- Raised structures on underside of cover interlock with crucible web walls
- Virtual elimination of cross-contamination
- Minimal deposition on web walls and on cover margins around exposed pocket
- Reduced risk of damage to source and turret indexer
- Removable/replaceable cover and crucible enable easy source convertibility
- Enhanced crucible cooling improves thermal stability during evaporation
- Adjustable internal and external pole piece extensions optimize beam spot control, regardless of beam position
- Ultra-stable magnetics eliminate the need to regauss magnetic parts following source disassembly
- Power rating: 8-10 kW

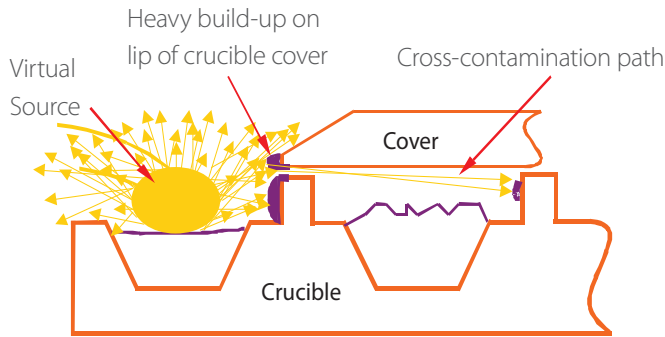
FerroTec

TEMESCAL MODEL 2PT AND 3PT 'POPTOP' SUPERSOURCES

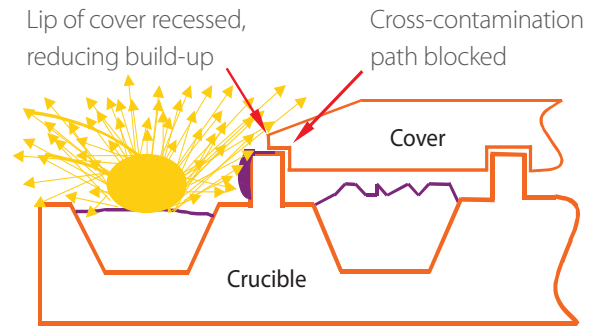
BENEFITS OF POPTOP CRUCIBLE COVER DESIGN

The diagrams below illustrate how the design of the PopTop cover eliminates cross-contamination and reduces deposition on the lip of the cover around the exposed pocket.

Cross-Contamination Path in Conventional Turret Source



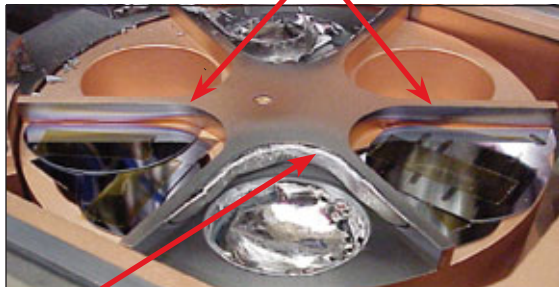
Temescal PopTop Source: Interlocking Cover Blocks Cross-Contamination Path



In the photos below, the conventional turret sources show clear evidence of cross-contamination, while the turret in the PopTop source shows none.

Conventional Turret Source

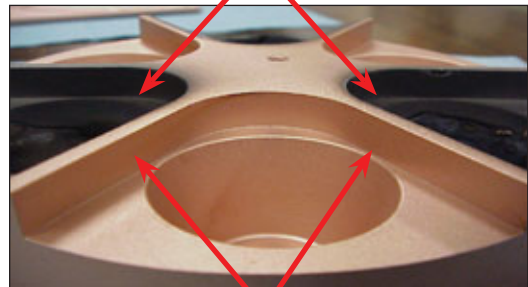
Shadows indicating cross-contamination on walls of adjacent pockets



Heavy build-up on wall of pocket from which material was evaporated

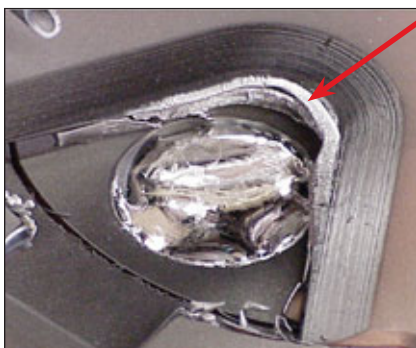
Temescal PopTop Source

Pockets from which material was evaporated



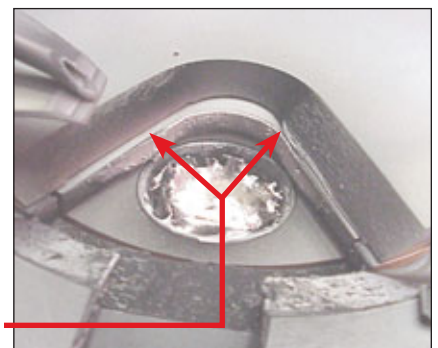
No evidence of cross-contamination on walls of adjacent pocket

As the following photographs show, the design of the PopTop gun's cover also reduces deposition along the lip of the cover around the exposed pocket.



Conventional turret source. Heavy build-up of material deposited on lip of cover is fused with build-up on crucible web wall. Result: High risk of turret jamming.

Temescal PopTop source. Build-up on lip of crucible cover greatly reduced. Risk of jamming eliminated.

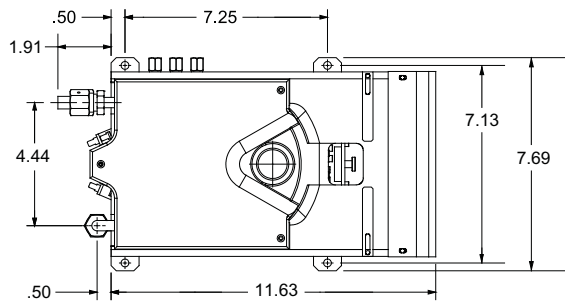


TEMESCAL MODEL 2PT AND 3PT 'POPTOP' SUPERSOURCES

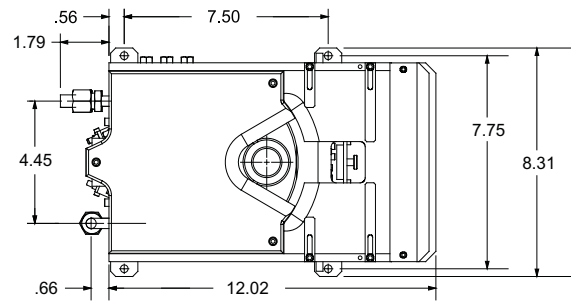
SPECIFICATIONS

Weight	Model 2PT: 44.2 lbs. (20 kg) Model 3PT: 50.3 lbs. (22.8 kg)	Deposition rate	See chart below
Rotation torque	10 in. • lbs. (11.5 kg • cm)	Installation power requirements	
Max. bakeout temp.	302° F (150° C)	Filament current	70 A at 12 VAC
Max. power	Model 2PT: 10 kW Model 3PT: 12 kW	Emission current	0–1.5 A at 4–10 kVDC (10 kW max.)
Acceleration voltage	4–10 kV	Cooling water	
Operating pressure		Max. temperature	68° F (20° C)
Maximum	5×10^{-4} torr (6.7×10^{-4} mbar)	Flow rate	3.0 gpm (0.19 l/sec.)
Minimum	1×10^{-8} torr (1.33×10^{-8} mbar)	Max. inlet pressure	100 psi (6.89 bar)
Beam deflection	270°	Min. delta pressure	50 psi (3.45 bar)
Beam spot size/shape	From tight oval to diffuse oblong	Feedthroughs (all included in optional feedthrough kits)	
Sweep capability	Longitudinal and lateral	• Two HV feedthroughs rated for 12 kV at 70 A	
		• One octal feedthrough rated for 110 V at 3 A per lead	
		• One air/water feedthrough	
		• One rotary-motion feedthrough with 1/4-in. (6.4-mm) dia. shaft	

Model 2PT Dimensions



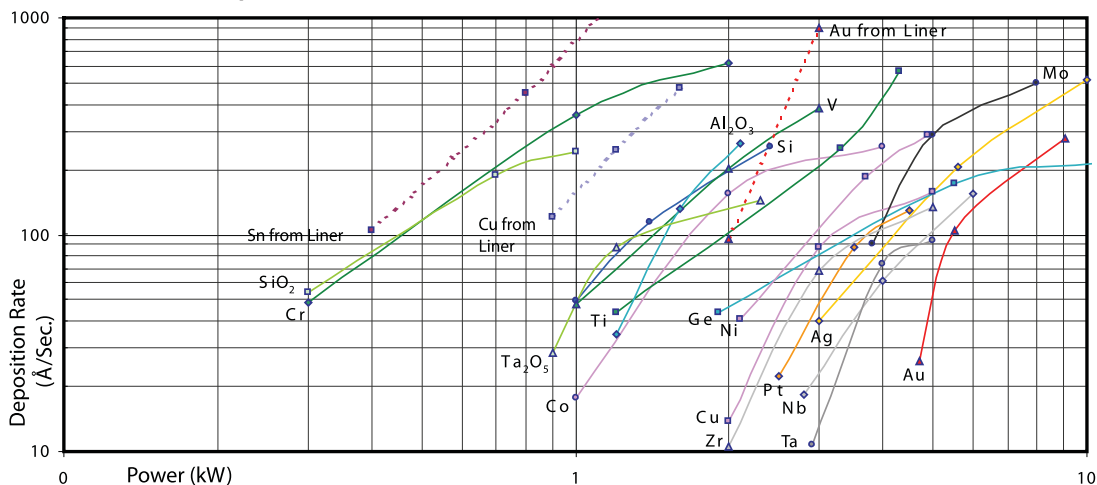
Model 3PT Dimensions



Representative Deposition Rates

The chart below shows deposition rates obtained using Temescal sources such as the 2PT and the 3PT. Consult Temescal for detailed information about how deposition rate and uniformity are affected by source operating voltage, beam sweep and density, and other fundamental process variables.

Deposition Rates of Various Materials from Temescal Sources*



*25-cc pockets used in all tests. Source-to-substrate distance: 250 mm

TEMESCAL MODEL 2PT AND 3PT 'POPTOP' SUPERSOURCES

ORDERING INFORMATION

For each source you wish to order, specify part numbers for a base unit, an emitter, and a spare parts kit. Also specify by part number which crucible(s) and crucible cover(s) you wish to order for each source.

2PT PopTop Source

Base Unit/Emitter/Spare Parts Kit	
DESCRIPTION	PART NUMBER
Base unit	0626-4365-0
High-performance emitter	0916-8294-0
Spare parts kit	0916-8300-0

Crucible	
DESCRIPTION	PART NUMBER
4 x 15-cc pockets	0715-8444-0
4 x 25-cc pockets	0715-8454-0
2 x 7-cc + 2 x 15-cc pockets	0715-8464-0
2 x 15-cc + 2 x 25-cc pockets	0715-8494-0
1 x 7-cc + 1 x 15-cc + 2 x 25-cc pockets	0715-8474-0
6 x 7-cc pockets	0715-8514-0
6 x 15-cc pockets	0715-8504-0

Crucible Cover	
DESCRIPTION	PART NUMBER
Cover for 4-pocket crucibles	0627-8144-1
Cover for 6-pocket crucibles	0627-4854-1

3PT PopTop Source

Base Unit/Emitter/Spare Parts Kit	
DESCRIPTION	PART NUMBER
Base unit	0627-2805-0
High-performance emitter	0916-8294-0
Spare parts kit	0916-8300-0

Crucible	
DESCRIPTION	PART NUMBER
4 x 60-cc pockets	0626-1214-0
4 x 40-cc pockets	0626-1204-0
6 x 25-cc pockets	0626-1224-0
4 x 25-cc + 2 x 15-cc pockets	0627-5644-0
5 x 25-cc + 1 x 15-cc pockets	0627-4764-0

Crucible Cover	
DESCRIPTION	PART NUMBER
Cover for 4-pocket crucibles	0627-2764-1
Cover for 6-pocket crucibles	0627-2694-1

Model 2PT and 3PT sources are covered by one or more of the following U.S. patents: 3,177,535; 3,483,417; 3,710,072

Optional Accessories

DESCRIPTION	PART NUMBER
PopTop air installation kit	0733-0524-0
PopTop electrical installation kit	0620-9720-0
PopTop feedthrough kit for 2PT gun	0503-1201-7
PopTop feedthrough kit for 3PT gun	0503-1201-8
Feedthrough kit with flex lines for air/water feedthrough	0503-1201-6
SuperSweep64 beam sweep controller	0611-8570-0
TRC-3460 turret source indexer	0040-9380-3

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