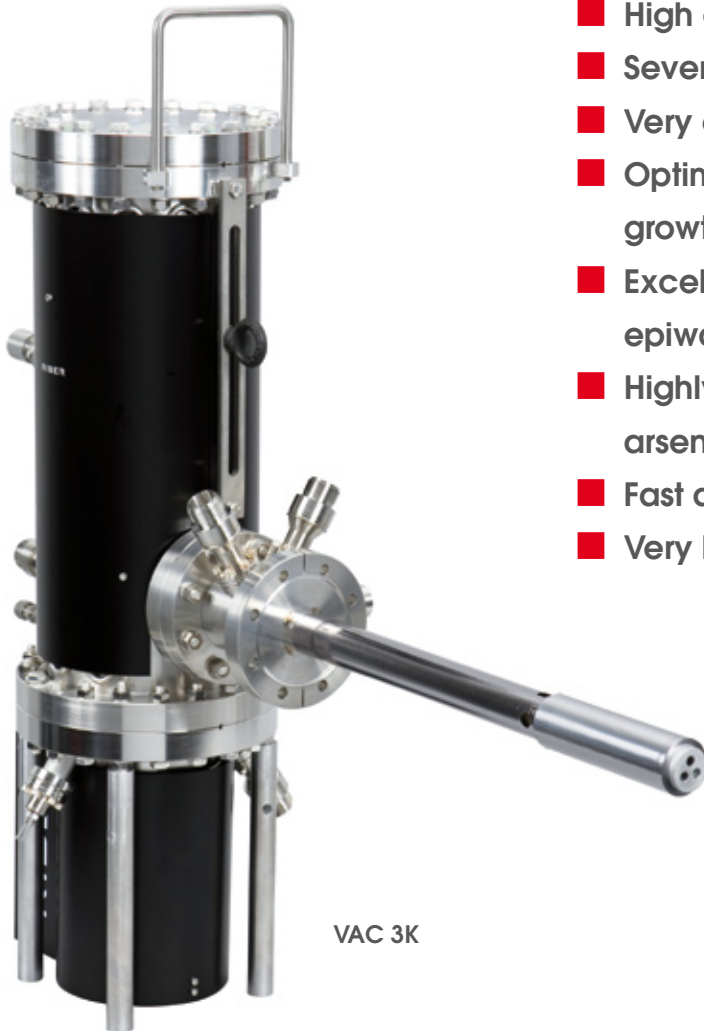


VALVED CRACKER SOURCE FOR ARSENIC : VAC SERIES



VAC 3K

- High quality and reliable field-proven design
- Several hundred units in operation worldwide
- Very easy refilling and maintenance operations
- Optimized As consumption leading to longer growth campaigns
- Excellent flux uniformity leading to superior epiwafer quality
- Highly reproducible and precise control of arsenic flux
- Fast and automatic control of Arsenic flux
- Very large range of loading capacity

The Riber valve cracker consists of **three main parts** : the reservoir, the isolation valve and the cracker stage.

Solid arsenic is loaded through a CF port into the reservoir crucible. **The reservoir is externally water cooled** for efficient heat dissipation. **The metering valve** is located downstream from the crucible, allowing exact control of the amount of As₄ entering the feeding tube. This design allows the valve to operate at low temperatures, and since it is thermally isolated from the cracker section, immediate start up and long term flux stability is achieved even if the cracker temperature is cycled. **This valve is operated with either a manual micrometer or an automated** position controller. The evaporant enters a feeding tube and the cracking zone whe-

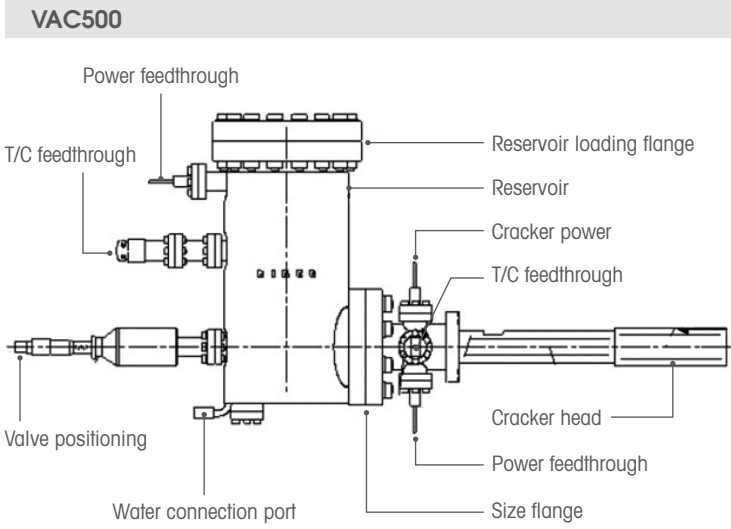
re tantalum filaments resistively heat both assemblies. The cracker stage generates beams of cracked or uncracked materials. The geometry of the diffuser has been optimized to provide a uniform flux on the substrate.

In addition to providing users with a large capacity arsenic source for increased system uptime, the valve cracker cell permits precise control over small or large variations in BEP with rapid shut off capability.

As well as easily isolating the bulk material from the epitaxial chamber, it also permits the growth of advanced stacked structures, previously impossible to obtain using conventional MBE sources.

SPECIFICATIONS

REQUIREMENTS



A valve controller is strongly recommended :

MULTI-VALVE CONTROLLER



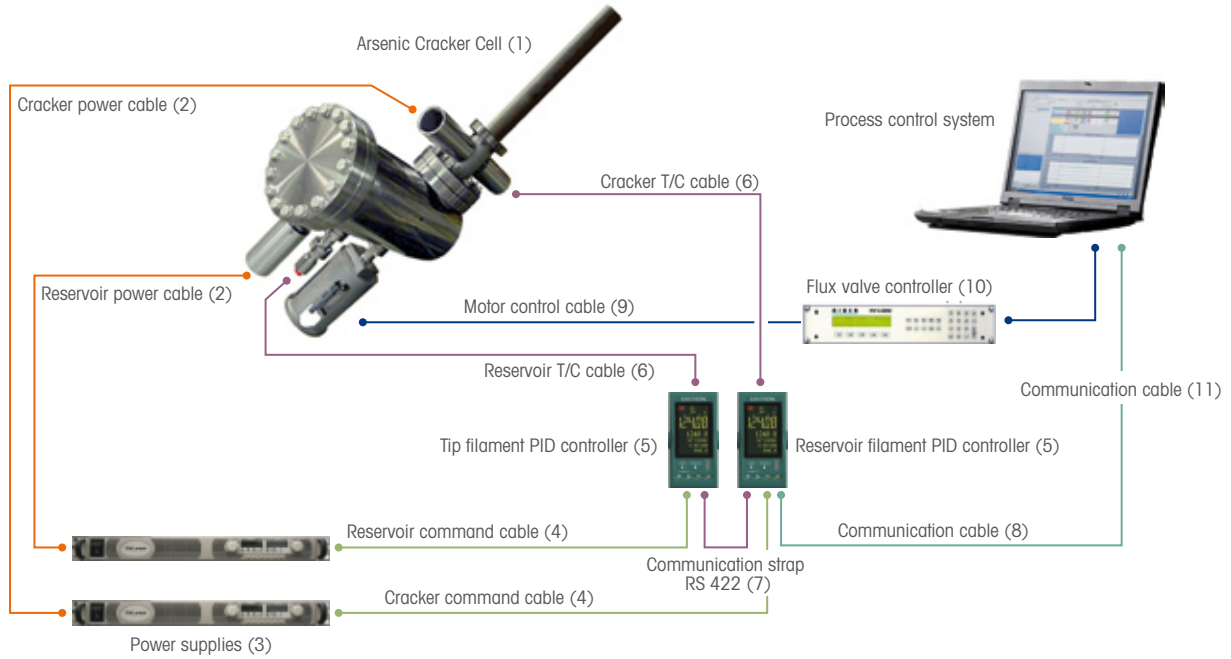
SINGLE-VALVE CONTROLLER



CHARACTERISTICS

SOURCE MODEL CHARACTERISTICS	S40 VAC500	S63 VAC3K	S100 VAC6K
Filament	Two		
Heating filaments	Wire	Flat + Wire	
Thermocouple	Double C-type		
Crucible / valve material	Titanium / Titanium Mo gaskets		
Usefull capacity (Max load dimensions cc)	500	2900	6000
Mounting Flange (min)	CF 40 (2" ^{3/4})	CF 63 (4" ^{1/2})	CF 100 (6")
Reservoir typical operating temperature	400°C		
Tip typical temperature	650°C - 950°C		
Temperature stability	+/- 0.2°C		
VALVE CHARACTERISTICS			
Valve actuator	Micrometer	Micrometer	Micrometer
Stem Stroke	1.5 mm (3 turns)	10 mm	2 mm (4 turns)
TIP CHARACTERISTICS			
Max outgassing temperature	1300°C		
Power consumption	300W max	400W max	1200W max
Power Supply recommended	12.5A-60V	19A-80V	30A-80V
Power output connector	Uniplug 3mm ²	SPC	Uniplug 3mm ²
Thermocouple connector	Omega NMP C-Type		
RESERVOIR CHARACTERISTICS			
Fill port diameter	68	120	160
Max outgassing temperature	550°C		
Power consumption	300W max	570W max	640W max
Power Supply recommended	12.5A-60V	19A-80V	10A-100V
Power output connector	2x(uniplug 3mm ²)	SPC	SPC
Thermocouple connector	Omega NMP C-type		
Water connection	Swagelok fitting Ø6 female		
Water flow	Min. flow 0.5l/mn - 7 Bar max		
RECOMMENDED			
Automatic Valved Controller	AVP504 / NVC6000		

OPERATING THE SOURCE

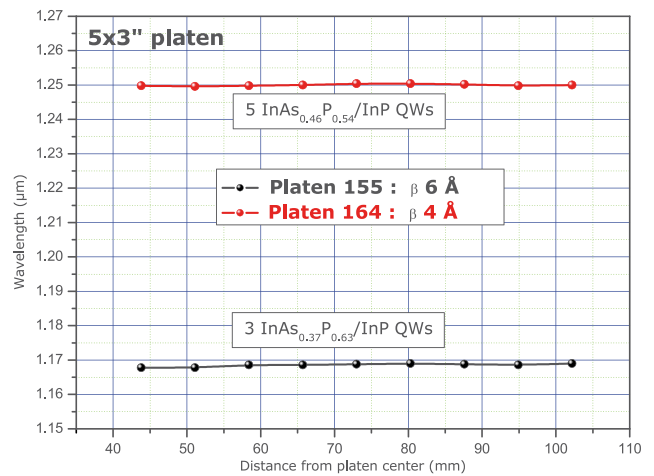


RESULTS

Excellent uniformity of composition InAsP (R49)

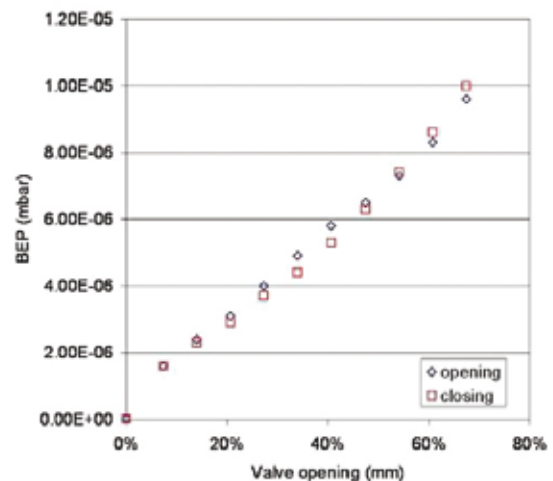
Photoluminescence spectra of InAsP/InP multi quantum wells are highly dependent on the As/P flux ratio and on the substrate temperature over the platen.

$\pm 4\text{\AA}$ for the optimal V/III ratio, corresponding to a As/P composition variation of $\pm 0.05\%$



Low hysteresis between opening and closing (VAC3K)

Repeatable flux levels regardless of whether the valve is opened or closed.



ORDERING INFORMATION

SOURCE

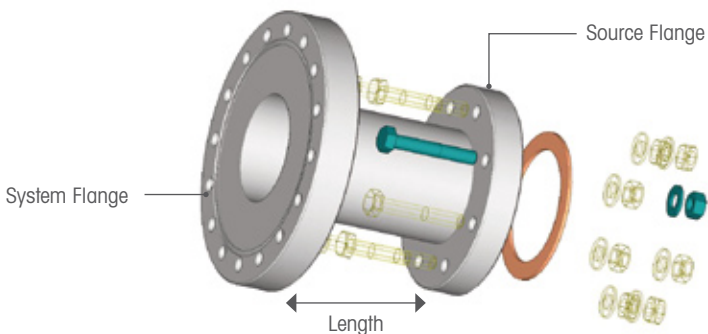


VAC500

PRODUCT GUIDE		
Gauge		Volume cc
S40	VAC	500
	Technology	

SOURCE MODEL	P.N.	FLANGE	I.V.L.	O.L.	O.D.
S40 VAC 500	R240 666 6	CF 40 (2" 3/4)		Please contact Riber	
S40 VAC 500	R240 916 6	CF 40 (2" 3/4)			
S63 VAC 3K	R235 099 1	CF 63 (4" 1/2)			
S100 VAC 6K	R240 945 9	CF 100 (6")			

CONNECTIONS



PRODUCT GUIDE			
Source model	System connection flange	Source connection flange	Length
S40 VAC 500	DN63CF	DN40CF	80

Riber CF flanges and fittings are compatible with other Conflat® style flanges used by the other suppliers of the vacuum industry.

SOURCE MODEL	I.V.L.	CONNECTION / LENGTH	P.N.	SYSTEM
S40 VAC 500	326	DN63CF-DN40CF 80	R241 215 5	V80H / V90
S40 VAC 500	266	DN63CF-DN40CF 18	R302 576 8	C21-CF63 flange

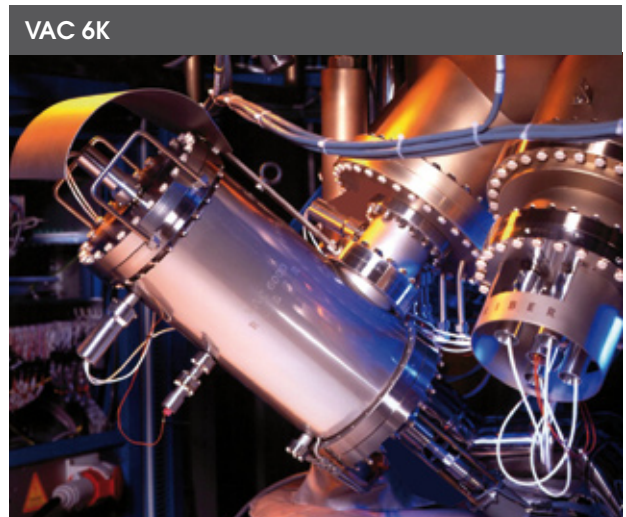
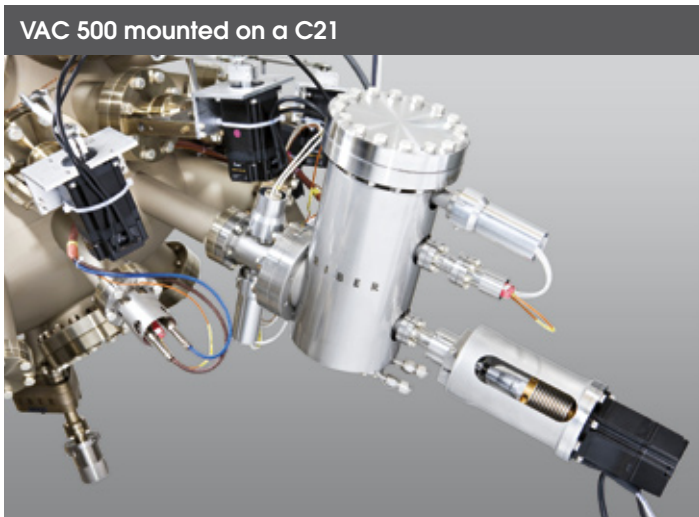
Included with the nipple kit gasket for the source and the screws kit.

®Registered trade mark of Varian Inc., Palo Alto, California, USA. Nominal diameter DN 40 CF corresponds to ISO 3669 standard (Pneurop 6606).

SOURCE SELECTION GUIDE

SYSTEMS	SOURCE MODEL	S40 VAC500	S63 VAC3K	S100 VAC6K
RIBER	MBE 32	RECOMMENDED	INAPPROPRIATE	INAPPROPRIATE
	Compact 12	RECOMMENDED	INAPPROPRIATE	INAPPROPRIATE
	Compact 21	RECOMMENDED	RECOMMENDED	INAPPROPRIATE
	EPINEAT	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED	INAPPROPRIATE
	MBE 412 (4"/6")	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED	INAPPROPRIATE
	MBE 49	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED	RECOMMENDED
	MBE 6000	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED	RECOMMENDED
	MBE 7000	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS
VEECO / VARIAN	GEN II	RECOMMENDED	INAPPROPRIATE	INAPPROPRIATE
	MOD GEN II	RECOMMENDED	INAPPROPRIATE	INAPPROPRIATE
	GEN 930	RECOMMENDED	INAPPROPRIATE	INAPPROPRIATE
	GEN 10	RECOMMENDED	INAPPROPRIATE	INAPPROPRIATE
	GEN 20	INAPPROPRIATE	RECOMMENDED	RECOMMENDED
	GEN 200	INAPPROPRIATE	RECOMMENDED	RECOMMENDED
	GEN 2000	INAPPROPRIATE	INAPPROPRIATE	RECOMMENDED
VG	V80	RECOMMENDED	CONTACT RIBER FOR MORE DETAILS	INAPPROPRIATE
	V90	RECOMMENDED	CONTACT RIBER FOR MORE DETAILS	INAPPROPRIATE
	V100	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED	RECOMMENDED
	V150	CONTACT RIBER FOR MORE DETAILS	CONTACT RIBER FOR MORE DETAILS	RECOMMENDED
OTHER SYSTEMS		Riber sources are also available for use on systems from Eiko, Anelva, Ulvac, SVTA and DCA, as well as customs chambers. Contact Riber for details.		

RECOMMENDED
 INAPPROPRIATE
 CONTACT RIBER FOR MORE DETAILS



TECHNOLOGICAL LEADERSHIP

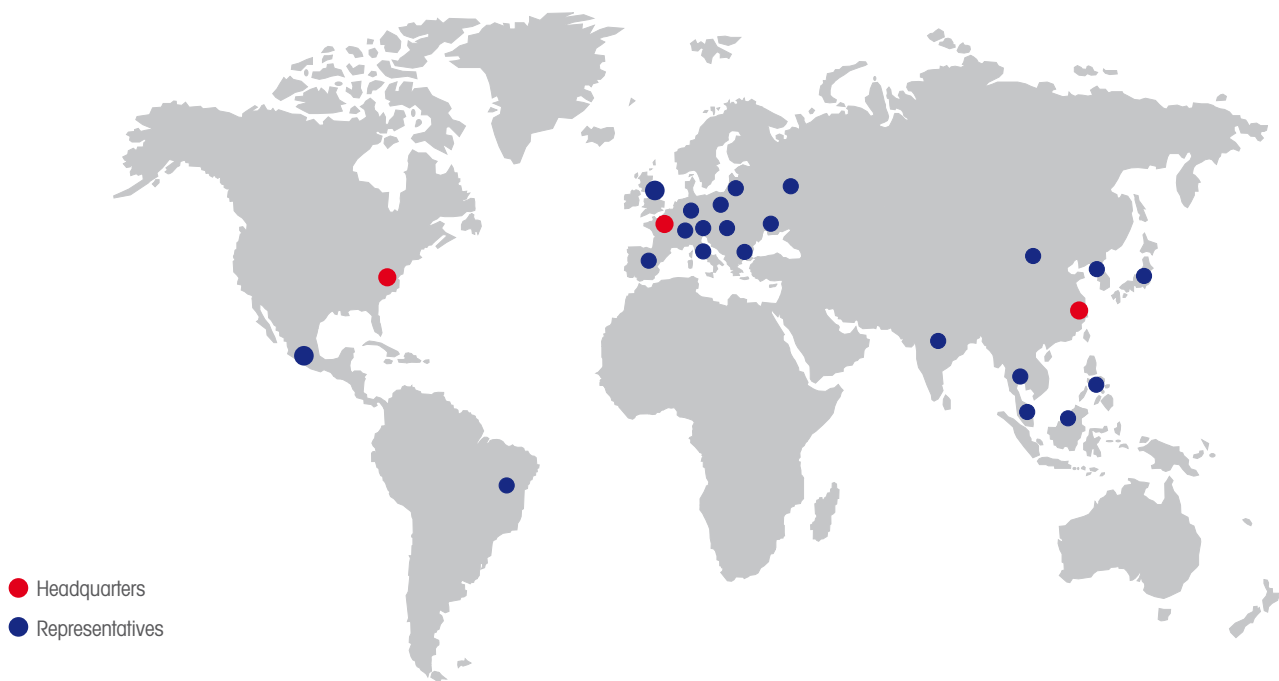
Riber is the world leading supplier of MBE processing equipment and related services.

In total, 750 of our MBE systems have been installed with at least one system in each of the 35 countries with which MBE is involved. This represents 75% of the global market.

Capitalizing on its 30 years of experience, the company's core philosophy is to design systems in close association with customers. Riber has invented and designed major features which are now found in all MBE systems.

Riber plays a key role in the development of MBE technology, providing customers with solutions from equipment to epitaxial growth.

WORLDWIDE PRESENCE



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