

### Ion Beam Assist Source Selection Guide

The purpose of this guide is to aid in the selection of an Assist Ion Source for any given evaporation production coater. The front describes graphically the meaning of the dimensions in the chart. The back shows the chart itself. Dimensions given represent a range of approximate values for which the source and grid combination is optimal. Coverage diameter is calculated from “throw distance” (dimension B) and will therefore vary slightly within the dimensional window. Optimal source-grid selection assumes a standard >50% coverage of the substrate fixture by the ion beam. For fixtures without planetary motion the optimum focal point and/or source size may vary.

Data on the chart was calculated assuming standard source conditions for Assist applications of ~300eV beam voltage, 500V accelerator voltage, and the maximum stable beam current (~250mA for 12cm, ~400mA for 16cm).

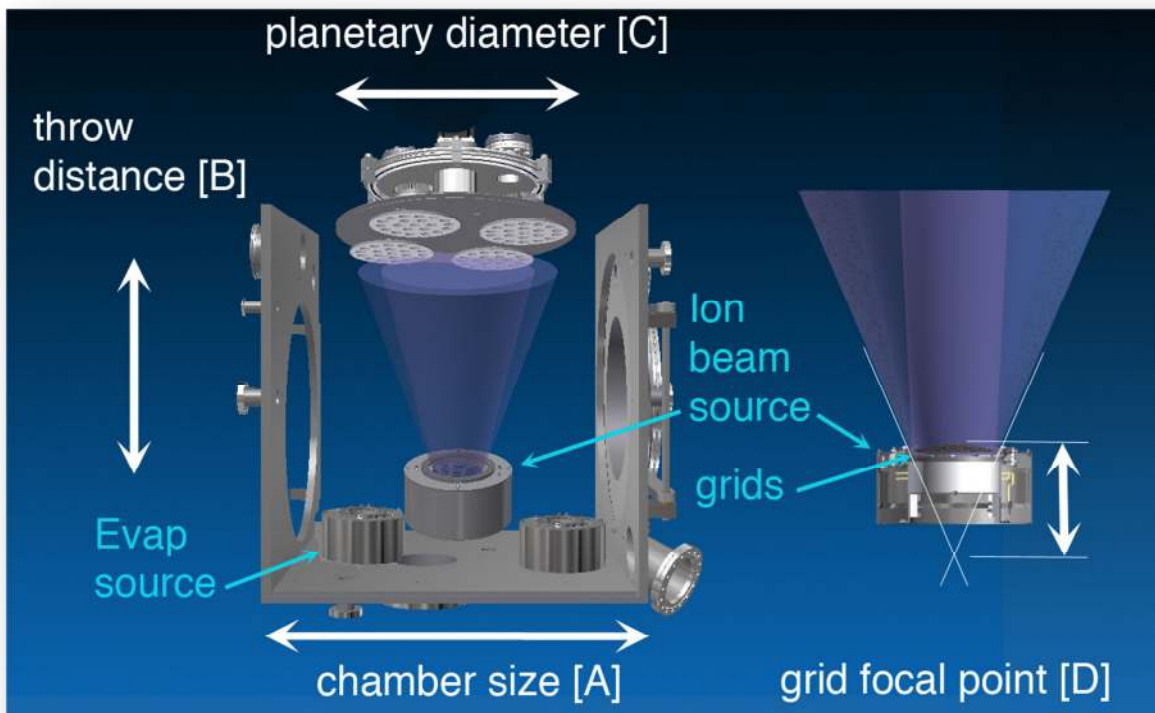


Figure 1. Ion Beam Assisted Deposition Setup

## Assist Sources for your Production Coater

Chamber Size [A]	Throw Distance [B]	Planetary Fixture Diameter [C]	Recommended Assist Ion Source		Coverage diameter at Substrates	Avg. Beam Current Density (mA/cm <sup>2</sup> )
			Source Size	Grid focal point [D]		
<b>0.5m</b>	<b>20cm</b>	<b>25cm</b>	12cm	25cm Divergent	22cm	0.79
	<b>20cm</b>	<b>40cm</b>	12cm	25cm Divergent	22cm	0.79
			16cm	33cm Divergent	26cm	0.85
	<b>40cm</b>	<b>25cm</b>	6cm	25cm Divergent	16cm	0.75
	<b>40cm</b>	<b>40cm</b>	12cm	25cm Divergent	31cm	0.40
<b>1m</b>	<b>40cm</b>	<b>50cm</b>	12cm	25cm Divergent	31cm	0.33
			16cm	33cm Divergent	35cm	0.42
	<b>40cm</b>	<b>90cm</b>	6x22cm Linear Ion Source, aligned radially		57cm	0.28
	<b>60cm</b>	<b>50cm</b>	12cm	25cm Divergent	41cm	0.23
			16cm	66cm Divergent	31cm	0.60
	<b>60cm</b>	<b>90cm</b>	16cm	33cm Divergent	45cm	0.28
	<b>80cm</b>	<b>50cm</b>	12cm	46cm Divergent	33cm	0.29
	<b>80cm</b>	<b>90cm</b>	16cm	33cm Divergent	55cm	0.17
23cm			66cm Divergent	51cm	0.29	
<b>1.5m</b>	<b>40cm</b>	<b>90cm</b>	23cm	30cm Divergent	51cm	0.29
	<b>40cm</b>	<b>140cm</b>	6x22cm Linear Ion Sources, paired, aligned radially		104cm	0.18
	<b>80cm</b>	<b>90cm</b>	16cm	33cm Divergent	55cm	0.19
			23cm	66cm Divergent	51cm	0.29
	<b>80cm</b>	<b>140cm</b>	23cm	30cm Divergent	79cm	0.12
	<b>120cm</b>	<b>90cm</b>	16cm	33cm Divergent	74cm	0.10
			23cm	66cm Divergent	65cm	0.18
<b>120cm</b>	<b>140cm</b>	23cm	30cm Divergent	107cm	0.07	