

ABL manufactures air bearing spindles and related products that are used in a variety of applications including the machining of materials such as glass, silicon, plastics, ceramics and metals. ABL spindles are ideally suited to applications that require very high levels of accuracy or exceptional surface finish. Examples of specific applications are:

ABOUT ABL

ABL has been offering affordable and reliable air bearing solutions for over 25 years. Working from a purpose built factory in the UK, ABL's team of dedicated engineers and skilled machinists design, manufacture and build quality products for customers throughout the world. With a highly experienced workforce and sales centres in China, Taiwan, Japan and South Korea ABL offer unparalleled service in a competitive market.

ABL is a Global company and are owned by Via Mechanics in Japan.



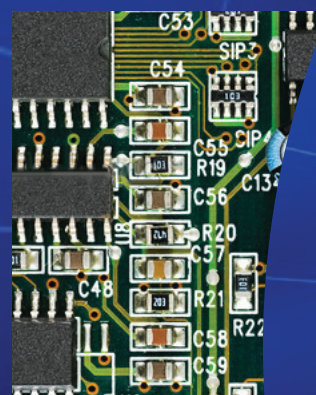
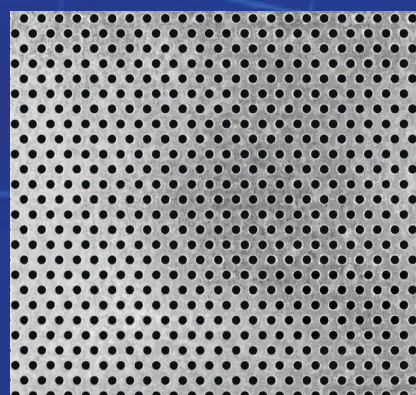
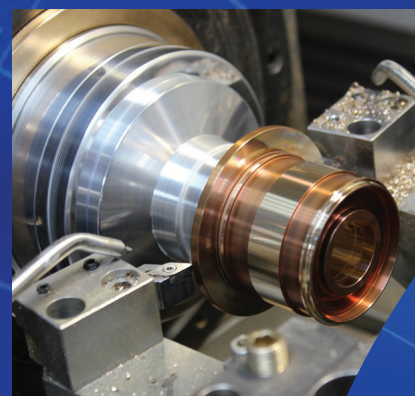
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AIR BEARING SPINDLES

APPLICATIONS

- **DRILLING AND ROUTING OF SUBSTRATES SUCH AS LAMINATES**
- **DICING OF SEMICONDUCTORS FOR MICRO ELECTRONICS INDUSTRY**
- **DENTURE MANUFACTURE**
- **MOBILE PHONE CASES, BUTTONS AND SCREENS**
- **MANUFACTURE OF INTRAOCULAR LENSES**



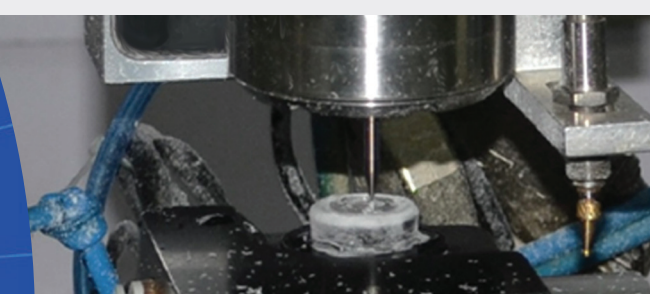
QUALITY ASSURED

Quality has always been at the heart of ABL's manufacturing process. Working to sub-micron accuracy demands an attention to detail throughout the production cycle. ABL has heavily invested in both metrology and form measurement equipment and also in our staff to ensure our customers always receive the quality products they deserve. Temperature control, clean environments and detailed operational processes all contribute to making products of the highest specification.

PRODUCT BROCHURE

- **Minimal Friction**
- **High Energy Transfer Efficiency**
- **High Precision**
- **High Rotational Speed**
- **Micro drilling and routing**
- **Precision drilling**
- **Micro milling and grinding**
- **Optic finishing**

25 years
experience



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MICRO-MACHINING

Measurement	MM080A	MM080B	MM125A	MM125B	MM160B
Speed Range (RPM)	0 - 80,000		15,000 - 125,000		15,000 - 160,000
Motor Power	Peak 1.6kW Continuous 1.0kW		Peak 1.8kW Continuous 1.0 kW		500 W
Air Pressure	5.5 - 6.0 kgf/cm²		5.5 - 6.0 kgf/cm²		5.5 - 6.0 kgf/cm²
Air Flow Rate	50 - 55 NI/min		65 - 70 NI/min		32 - 38 NI/min
Coolant	Water/Oil		Water/Oil		Water/Oil
Coolant Flow	>1 l/min (W) >2 l/min (O)		>1 l/min (W) >2 l/min (O)		>1 l/min (W) >2 l/min (O)
Coolant Inlet Temp.	15 - 20°C		15 - 19°C		15 - 20°C
Radial Load Capacity	170 N		80 N		70 N
Axial Load Capacity	300 N		250 N		250 N
Collet Clamping Torque	>180Ncm	-	>180Ncm	-	>180 Ncm
Run Out (Dynamic)	<3-5 µm	<5 µm	<3-5 µm	<5 µm	<3-5 µm
Shaft Taper Run-out	-	<1 µm	-	<1 µm	-
Vibration	<1.0mm/s		<3.5mm/s		<1.5mm/s
Mass	6.2 kg	5.8 kg	4.0 kg	3.6 kg	3.2 kg
Collet Size (Ø)	1/8 inch, 3mm, 4mm, 6mm	ER11 0.5 - 7.0mm	1/8 inch, 2mm, 3mm, 4mm, 6mm	ER11 0.5 - 7.0mm	1/8 inch, 3mm, 4mm
Outside Diameter (Ø)	75mm		62mm		62mm

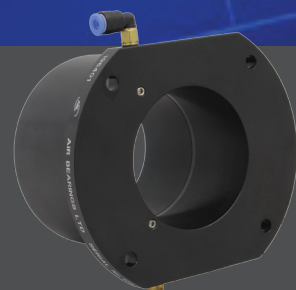


OUR PRODUCTS

ABL's range of spindles has been developed using experience gained from over 25 years supplying quality air bearing systems.

Specialised bearing design allows these spindles to achieve high stiffness and load capacity in a very compact structure that may be customised to meet individual requirements. The use of common components and design throughout the range also enable cost effective solutions to be developed, even for small batch sizes.

ABL has developed a new air bearing spindle guide to replace the current spindle clamping mechanism commonly used. The Z-Bush provides frictionless z-axis movement with higher repeatability and reduced spindle changeover time making it a must for all machine builders.



DRILLING AND ROUTING

Measurement	AW080A	AW080B	AW125A	AW125B	AW160D	AW200B	AW300A	AW350A
Speed Range (RPM)	0 - 80,000		15,000 - 125,000		15,000 - 160,000	20,000 - 200,000	20,000 - 300,000	30,000 - 350,000
Motor Power	Peak 1.6 kW Continuous 1.0 kW		Peak 1.0 kW Continuous 0.5 kW		500W	600W	470W	330W
Air Pressure	5.5 - 6.0 kgf/cm²		5.5 - 6.0 kgf/cm²		5.5 kgf/cm²	6.0 kgf/cm²	7.0 kgf/cm²	6.5 kgf/cm²
Air Flow Rate	50 - 55 NI/min		65 - 70 NI/min		30 - 45 NI/min	40 - 60 NI/min	39 - 45 NI/min	33 - 37 NI/min
Coolant	Water/Oil		Water/Oil		Water/Oil	Water/Oil	Water/Oil	Water/Oil
Coolant Flow	>1 l/min (W) >2 l/min (O)		>1 l/min (W) >2 l/min (O)		>1 l/min (W) >2 l/min (O)	>1 l/min (W) >2 l/min (O)	>1 l/min (W) >2 l/min (O)	>1 l/min (W) >2 l/min (O)
Coolant Input Temp	15 - 20°C		15 - 20°C		15 - 20°C	15 - 20°C	15 - 20°C	15 - 20°C
Radial Load Capacity	170 N		60 N		70 N	90 N	38 N	22 N
Axial Load Capacity	300 N		240 N		250 N	250 N	124 N	74 N
Collet Clamping Torque	>180Ncm	-	>180Ncm	-	>180Ncm	>180Ncm	>180Ncm	>40Ncm
Run Out (Dynamic)	<7 µm	<7 µm	<7-8 µm	<7 µm	<5µm	<7µm	<7µm	<5µm
Shaft Taper Run-out	-	<1µm	-	<1µm	-	-	-	-
Vibration	<1.0 mm/s		<3.5 mm/s		<2 mm/s	<2 mm/s	<2.5 mm/s	<2.5 mm/s
Max Drill Size	-		-		ø6.35mm	ø6.35mm	ø3.2mm	-
Mass	6.5 kg		4 kg	3.5 kg	3.2 kg	3 kg	2.9 kg	3.2 kg
Collet Size (Ø)	1/8 inch, 3mm, 4mm, 6mm	ER11 0.5 - 7.0mm	1/8 inch, 2mm, 3mm, 4mm	ER11 0.5 - 7.0mm	1/8 inch	1/8 inch	1/8 inch	2.0mm
Outside Diameter (Ø)	75mm	75mm	62mm	62mm	62mm	62mm	62mm	55mm



DESIGN CAPABILITY

Making use of advanced 3D modelling and analysis tools, ABL's team of highly skilled engineers create cost effective and innovative solutions tailored to meet the individual requirements of our customers.

SPARES AND REPAIRS

ABL offer a full repair service for all spindles supplied by us including the option of a detailed failure assessment. A full quotation of cost is provided prior to undertaking any work. All repaired spindles are tested to the same exacting standards as originally supplied. We also supply genuine approved ABL manufactured components to our repair Agencies in Taiwan, China, Korea and America.



DICING HIGH PRECISION HEAVY DUTY

Measurement	DS060E	LGS10A	MM125C	MM125D
Speed Range (RPM)	0 - 60,000	0 - 12,000	0 - 125,000	0 - 125,000
Motor Power	1.8 kW Continuous	550 W	3.0 kW Peak 1.5 kW Continuous DC	
Air Pressure	5.5 - 6.0 kgf/cm²	5.5 - 6.5 kgf/cm²	5.5 - 6.0 kgf/cm²	
Air Flow Rate	60 - 70 NI/min	70 - 80 NI/min	65 - 70 NI/min	
Coolant	Water	Water	Water	
Coolant Flow	>2.0 l/min	0.5 - 1.0 l/min	>1.0 l/min	
Coolant Inlet Temp.	15 - 25°C	15 - 19°C	15 - 19°C	
Radial Load Capacity	140 N	150 N	80 N	
Radial Stiffness	10 N/µm	30 N/µm	-	-
Radial & Axial Error Motion	-	Sync<50 nm Async <50 nm	-	-
Axial Load Capacity	150 N	450 N	250 N	
Axial Stiffness	9 N/µm	40 N/µm	-	-
Collet Clamping Torque	-	Adjustable	>180 Ncm	-
Run Out (Dynamic)	<1 µm	<1 µm	<5 µm	<5 µm
Nominal Blade Size	50mm (2 inch)	-	-	-
Mass	5.5 kg	8.8 kg	4.2 kg	3.6 kg
Collet Size (Ø)	-	3/8 inch, 1/2 inch	2,3,4,6mm, 1/8 inch	ER11 0.5 - 7.0 mm
Outside Diameter (Ø)	-	76mm	62mm	62mm



PRODUCTION CAPABILITY

Extensive use of CNC and advanced CAD\CAM techniques ensures quality is maintained throughout the production cycle.

Continual investment in training and new equipment ensures that ABL maintains its reputation as a leading provider of innovative air bearing solutions.

