

PRODUCT DATASHEETS



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Air Bearing Solutions

Air Bearing Solutions



Company Introduction

Loadpoint is a UK-based pioneer in air-bearing spindle technology with over 60 years of expertise. As one of the earliest developers of air-bearing solutions worldwide, we design, manufacture and assemble all products here in the UK. Our portfolio includes high-performance air spindles, rotary tables, aerostatic spindles, linear guides and servo drives - all renowned for ultra-high precision, exceptional rotational speed and outstanding stiffness.

Our technology is trusted by leading equipment manufacturers across a wide range of industries: in optics for ultra-precision machining such as contact lens and IOL turning; in semiconductors for wafer dicing, back-grinding and inspection; in diamond tool grinding; and in automotive paint lines. With proven performance in both ultra-precision and high-speed environments, Loadpoint remains committed to helping our customers achieve greater accuracy, higher efficiency and enhanced performance.

2025

Air Bearing Solutions

PRODUCT DATASHEETS

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Air Bearing Dicing Spindles

This series of spindles is designed to meet the requirements of all types of dicing machines. Mounting options include flange type, gantry type, and cylindrical cantilever type, and they can also be customised to suit specific customer needs.

This spindle series supports blades from Ø50 mm (2") to Ø101 mm (4"), reaching up to 60,000 rpm / 1.8 kW or 40,000 rpm / 2.5 kW. Equipped with a permanent magnet synchronous motor, it delivers high torque across a wide speed range.

This spindle can be used for cutting a wide range of materials from silicon to quartz. An AC motor can be integrated into the spindle upon customer request.

The spindle is water-cooled to minimise heat rise, with proven durability under demanding dicing conditions. Loadpoint provides balanced wheel mounts, brackets, matching AC/DC drives, as well as maintenance and refurbishment services.



Diamond Tools Turning Spindle

This spindle series is widely used in contact lens turning, rapid cutting of optical components, tool grinding and ultra-precision surface skiving. The design is continuously refined, with ongoing innovation in advanced technologies.

All spindles are built to the highest precision standards, with low-noise motors, <math><0.05\ \mu\text{m}</math> motion error, and optimised bearings for maximum axial and radial stiffness.

Spindles can be mounted via taper or flat face, with workpiece and tool holding (pneumatic chuck, vacuum chuck or fixture) configurable to customer requirements.

Small spindles reach 15,000 rpm with air cooling and 25,000 rpm with water cooling. High-speed models use AC induction motors, low-speed models use brushless DC motors, and encoders are fitted where precise speed and angular control are required.

Ultra-precision spindles with integrated air-bearing guides are suited for applications requiring extremely high positional accuracy.



Grinding / milling spindle

Standard spindle series with diverse configurations, powered by air turbine, AC or brushless DC motors (300 W-15 kW), speed range 100-120,000 rpm. Workpiece/tool holding options include manual/automatic chucks, air or vacuum clamping.

High-power milling spindle, newly added series, optimised by dynamic stability simulation, delivering 1.2 kW at 120,000 rpm.

Loadpoint's design and R&D expertise positions us at the forefront, developing new air-bearing products for specific fields and driving their application in emerging markets.



Wafer Back Grinding Spindle

Loadpoint offers a diverse range of grinding spindles featuring advanced air-bearing technology, driven by AC or brushless DC motors for superior performance. Power ranges from 300 W to 15 kW, with speeds from 100 to 120,000 rpm, and sizes supporting wafer grinding up to 12". Suitable for cylindrical and other high-precision grinding applications.

Grinding spindles feature high-rigidity design for maximum stability and ultra-low vibration for improved accuracy and surface finish.

Comprehensive technical support for drive selection and setup.



Paint Spraying Spindle

Since introducing paint spindles in 1983, Loadpoint has continually developed this range to meet the evolving needs of the automotive industry. All models use axial air turbines for high paint flow and rapid recovery, with fast acceleration and braking to reduce changeover time. Designed for robustness, they feature a unique bearing suspension system for stable running under imbalance, durable materials for impact resistance, and proven reliability in automated applications. The series offers speeds up to 100,000 rpm and spray head diameters up to 70 mm, with spindle servicing, cup manufacture and balancing also available.



Rotary Table

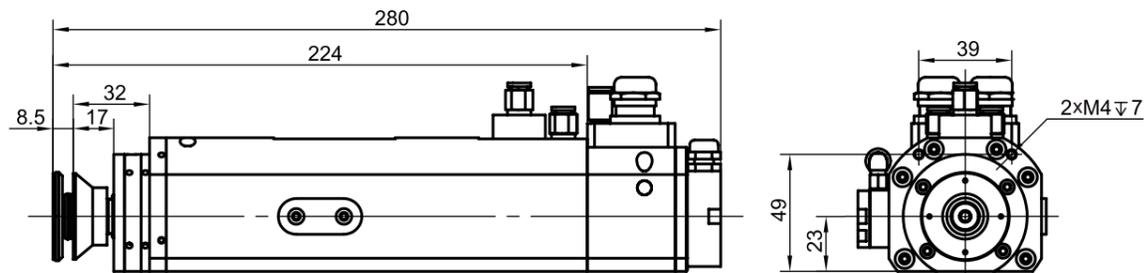
Loadpoint manufactures high-precision air bearing rotary tables for the optical and semiconductor industries, with diameters from 50 mm (2") to 400 mm (16"). Advanced processes ensure minimal axial and radial run-out with high stiffness under load. Tables can be belt, worm, gear or combination driven, or use direct-drive DC torque motors with high-resolution encoders for angular resolution better than 0.1 arcsec. Options include large through-bores for coolant and rotary vacuum unions, with full technical support on drive selection and setup.



ADS11300

DICING SPINDLE

- + 60,000 min⁻¹ PMSM, 80,000min⁻¹ available
- + CW/CCW rotation available
- + Flexible motor type: 1.2/1.6 KW
- + Supports hubbed/hubless blades
- + Supports 50–76.2 mm Blade Dia
- + For 12" dicing machine



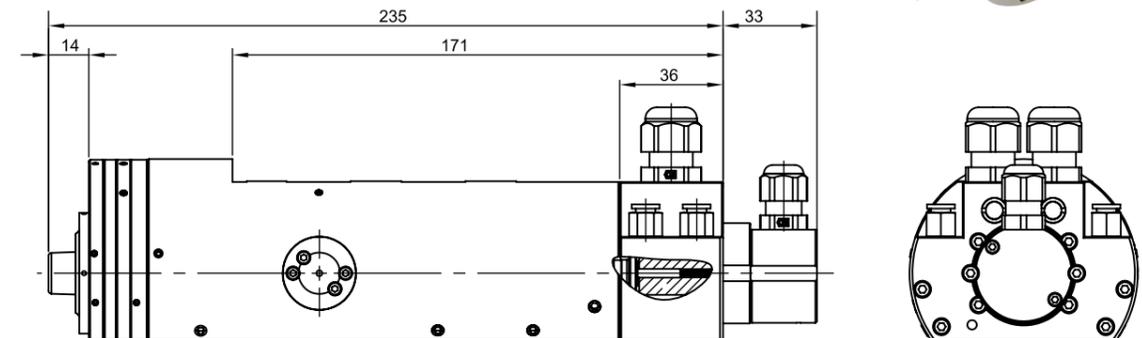
Specification

Maximum Speed	60,000 rpm
Motor Output Power	1.2/1.6 kW
Air Supply Pressure	0.55 MPa
Air Consumption	60 L/min
Cooling Water Flow	2.0 L/min
Axial Stiffness	≥10 N/μm
Axial Load Capacity	≥120 N
Radial Stiffness	≥5 N/μm
Wheelmount Axial Runout	≤2 μm
Wheelmount Radial Runout	≤2 μm
Continuous Stall Torque	0.33 N.m
Vibration with wheelmount	<0.2 mm/s
Direction of Rotation	C.W or C.C.W

11300

DICING SPINDLE

- + 60,000 min⁻¹ PMSM, 80,000 min⁻¹ available
- + CW/CCW rotation available
- + Flexible motor type: 1.2/1.6/1.9 KW
- + Supports hubbed/hubless blades
- + Supports 50–76.2 mm Blade Dia
- + For 12" dicing machine



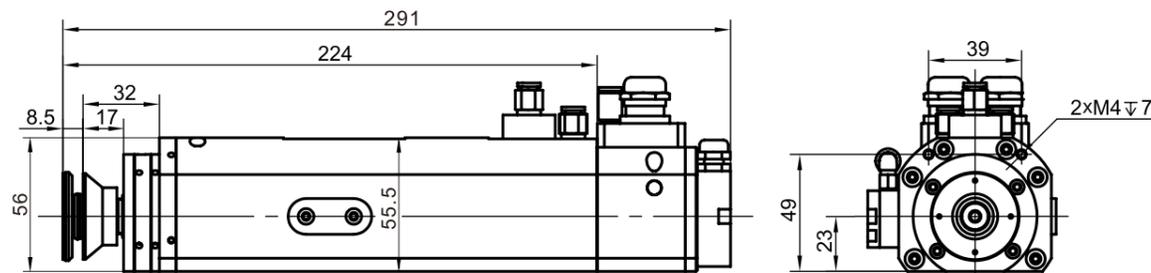
Specification

Maximum Speed	60,000 rpm
Motor Output Power	1.2/1.6/1.9 kW
Air Supply Pressure	0.55 MPa
Air Consumption	80 L/min
Cooling Water Flow	2.0 L/min
Axial Stiffness	≥10 N/μm
Axial Load Capacity	≥160 N
Radial Stiffness	≥7 N/μm
Wheelmount Axial Runout	≤2 μm
Wheelmount Radial Runout	≤2 μm
Continuous Stall Torque	0.33 N.m
Vibration with wheelmount	<0.2 mm/s
Direction of Rotation	C.W or C.C.W

ADS11400

DICING SPINDLE

- + 60,000 min⁻¹ PMSM, 80,000 min⁻¹ available
- + CW/CCW rotation available
- + Motor type: 2.2 KW
- + Supports hubbed/hubless blades
- + Supports 50–76.2 mm Blade Dia
- + For 12" dicing machine



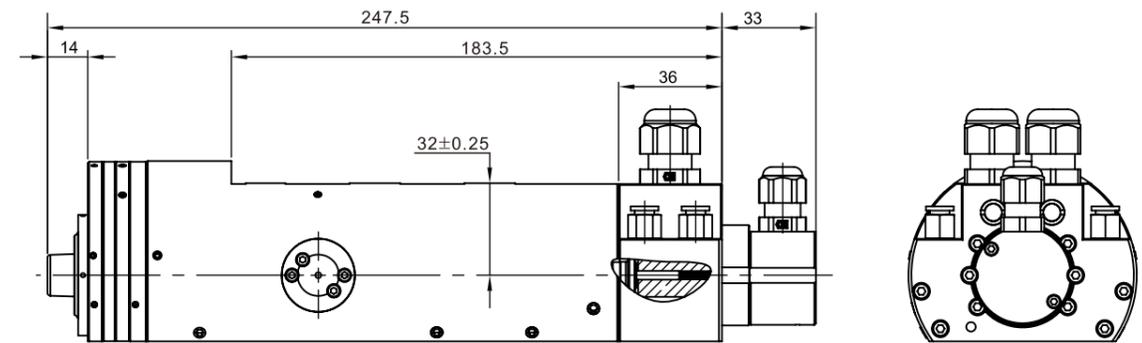
Specification

Maximum Speed	60,000 rpm
Motor Output Power	2.2 kW
Air Supply Pressure	0.55 MPa
Air Consumption	60 L/min
Cooling Water Flow	2.0 L/min
Axial Stiffness	≥10 N/μm
Axial Load Capacity	≥120 N
Radial Stiffness	≥5 N/μm
Wheelmount Axial Runout	≤2 μm
Wheelmount Radial Runout	≤2 μm
Continuous Stall Torque	0.4 N.m
Vibration with wheelmount	<0.2 mm/s
Direction of Rotation	C.W or C.C.W

11400

DICING SPINDLE

- + 60,000 min⁻¹ PMSM, 80,000 min⁻¹ available
- + CW/CCW rotation available
- + Motor type: 2.2 KW
- + Supports hubbed/hubless blades
- + Supports 50–76.2 mm Blade Dia
- + For 12" dicing machine



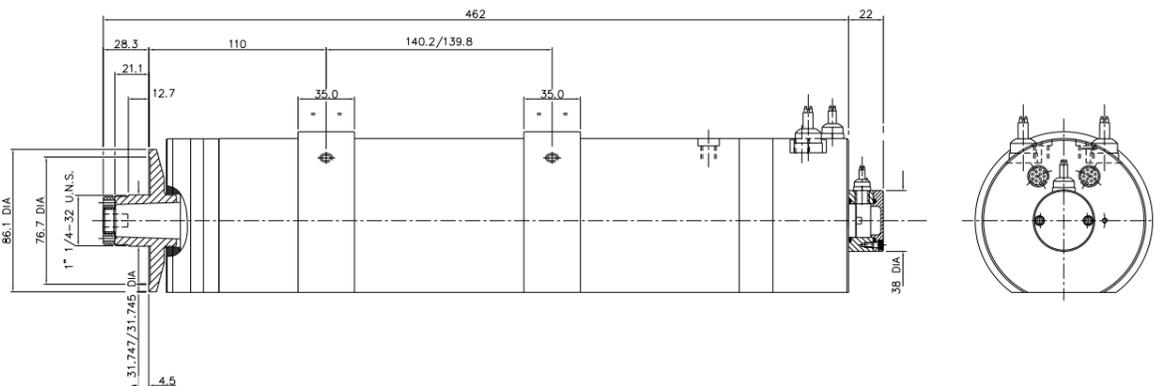
Specification

Maximum Speed	60,000 rpm
Motor Output Power	2.2 kW
Air Supply Pressure	0.55 MPa
Air Consumption	80 L/min
Cooling Water Flow	2.0 L/min
Axial Stiffness	≥10 N/μm
Axial Load Capacity	≥160 N
Radial Stiffness	≥7 N/μm
Wheelmount Axial Runout	≤2 μm
Wheelmount Radial Runout	≤2 μm
Continuous Stall Torque	0.4 N.m
Vibration with wheelmount	<0.2 mm/s
Direction of Rotation	C.W or C.C.W

D03541

4" DICING SPINDLE

- + Supports up to 4" blades
- + 30,000 min⁻¹
- + 2.5 KW
- + 125–150 Blade Dia



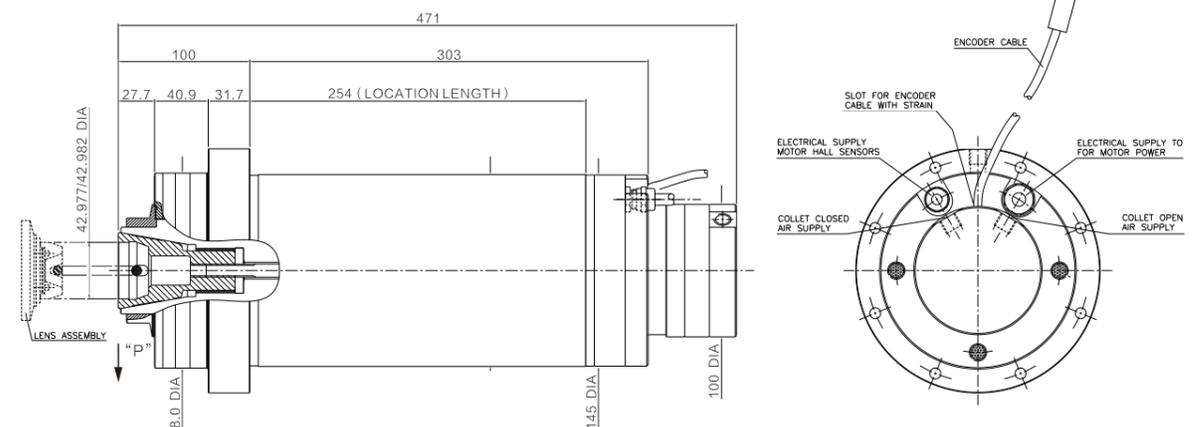
Specification

Air supply Pressure	0.55 MPa
Air Consumption	70 L/min
Radial Failure Load at 'P' Static	18 kg
Maximum Speed	30,000 rpm
Cooling Water Flow	1.0 L/min
Motor type	Brushless DC
Radial Stiffness	1.8 kg/μm
Axial Failure Load	22 kg
Axial Stiffness	3.0 kg/μm

D07260

LENS TURNING SPINDLE

- + High-torque spindle for optical lens machining
- + 6,000 min⁻¹
- + High-torque for Glass and Metal Machining
- + PMSM / Encoder
- + Auto-collet
- + Dynamic radial runout < 20 nm



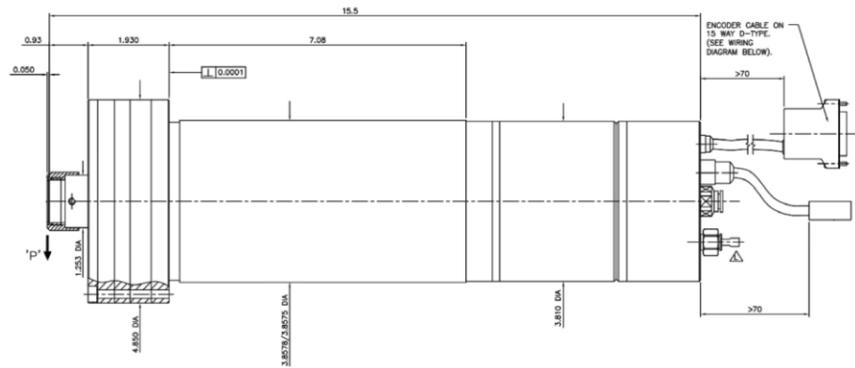
Specification

Air supply Pressure	0.55 MPa
Air Consumption	85 L/min
Radial Failure Load at 'P' Static	35 kg
Maximum Speed	6,000 rpm
Air Cooling	Air Cooling
Electrical Supply	Brushless DC 300 Volts
Motor Power	3.2kW
Collet	A.T.C
Spindle Weight	36 kg
Radial Stiffness	4.0 kg/μm
Axial Failure Load	55 kg
Axial Stiffness	7.0 kg/μm

10540

LENS TURNING SPINDLE

- + 10,000 min⁻¹ PMSM
- + With encoder
- + Optional manual or automatic collet
- + Dynamic radial runout < 20 nm



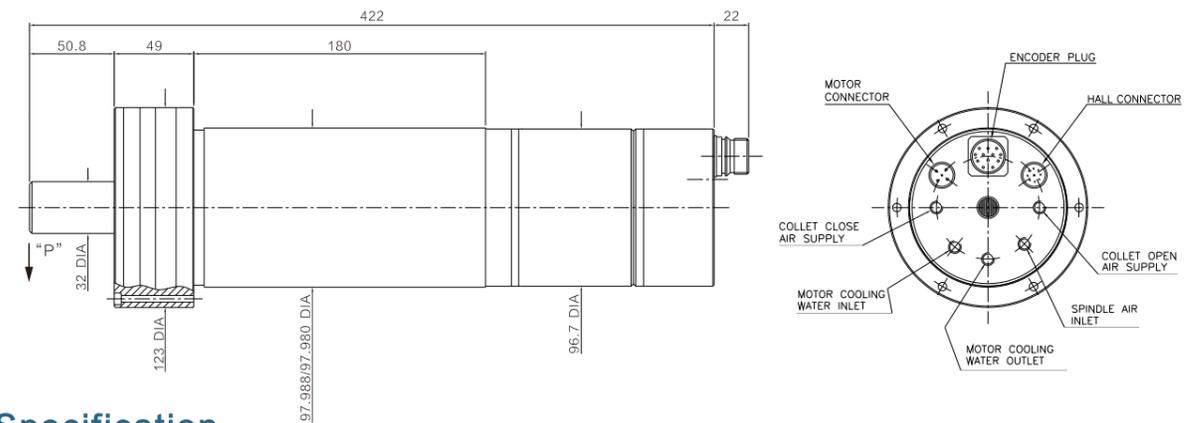
Specification

Speed Range	1000 ~ 10,000 rpm
Motor Type	450 W
Continuous Torque	0.45 Nm
Axial Stiffness	≥6 kg/μm
Radial Stiffness	≥1.3 kg/μm
Axial Load Capacity	≥45 kg
Radial Load Capacity	≥19.8 kg
Synchronous Error Motion(Axial)	≤20 nm
Asynchronous Error Motion(Axial)	≤20 nm
Feedback	Direct-coupled rotary encoder
Encoder Line Count	1024/1800 Lines
Velocity Ripple	< 0.1% @ 10000 rpm
Air Supply Pressure	0.55 MPa
Air Consumption	80 L/min
Cooling Water Flow	2 L/min
Weight	20 kg

09421

LENS TURNING SPINDLE

- + 10,000 min⁻¹ PMSM
- + With encoder
- + Optional manual or automatic collet
- + Dynamic radial runout < 20 nm



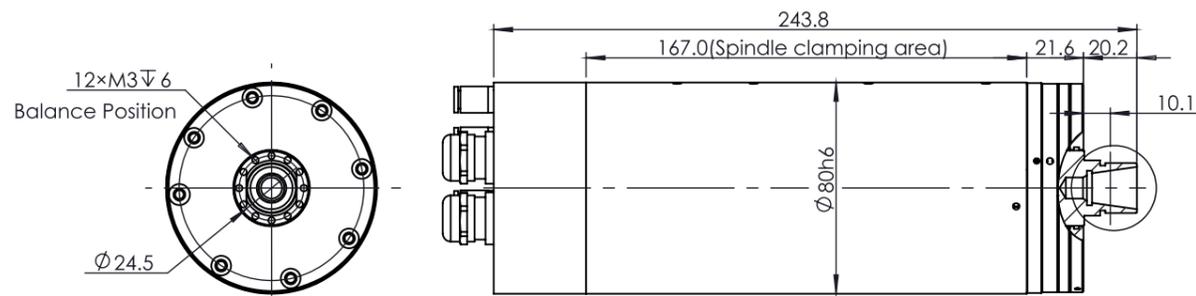
Specification

Speed Range	1000 ~ 10,000 rpm
Motor Power	450 W
Continuous Torque	0.45 Nm
Axial Stiffness	≥6 kg/μm
Radial Stiffness	≥1.3 kg/μm
Axial Load Capacity	≥45 kg
Radial Load Capacity	≥19.8 kg
Synchronous Error Motion(Axial)	≤20 nm
Asynchronous Error Motion(Axial)	≤20 nm
Feedback	Direct-coupled rotary encoder
Encoder Line Count	1024/1800 Lines
Velocity Ripple	< 0.1% @ 10000 rpm
Air Supply Pressure	0.55 MPa
Air Consumption	80 L/min
Cooling Water Flow	2 L/min
Weight(Approx)	20 kg

AGS-6022-01

MICROMACHINING, GRINDING SPINDLE

- + Suitable for ultra-precision optical grinding and micro/nano machining
- + 60,000 min⁻¹ PMSM
- + Ultra-high precision with dynamic error better than 30 nm
- + High stiffness design



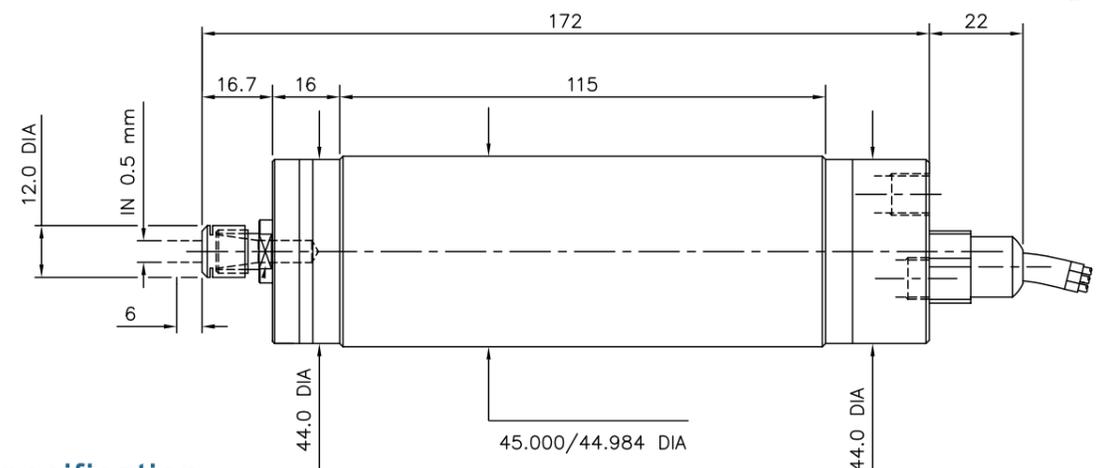
Specification

Maximum Speed	60,000 rpm
Motor Output Power	2.2 kW
Air Supply Pressure	0.55 MPa
Air Consumption	60 L/min
Cooling Water Flow	2.0 L/min
Axial Stiffness	≥16.5 N/μm
Axial Load Capacity	≥80 N
Radial Stiffness	≥9 N/μm
Radial Load Capacity	≥100 N
Taper Runout	≤2 μm
Asynchronous Error Motion(Axial)	≤0.03 μm
Asynchronous Error Motion(Radial)	≤0.05 μm
Continuous Stall Torque	0.3 N.m
Vibration	<0.2 mm/s
Direction of Rotation	C.W or C.C.W
Weight(Approx)	8.5 kg

06526

MICROMACHINING, GRINDING AND MILLING SPINDLE

- + Grinding/Milling Spindle
- + 60,000 min⁻¹
- + Manual collet ER-8, 1~5 mm
- + Radial runout < 5 μm (optional < 1 μm)
- + Water cooling available



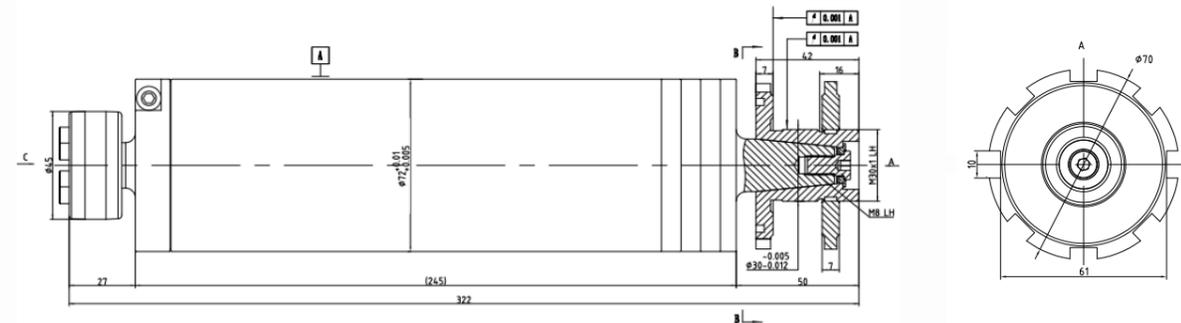
Specification

Maximum Speed	60,000 rpm
Motor Power	120kW
Collet Bore Sizes	1mm ~ 5mm
Air Supply Pressure	0.55 MPa
Air Consumption	50 L/min
Axial Load Capacity	≥75 N
Collet Torque(Max)	6 Nm
Dynamic Runout at Tool	≤5 μm
Weight(Approx)	1.5 kg

WEGA1000

WAFER EDGE GRINDING SPINDLE

- + External belt drive design; built-in motor option available upon request
- + Fits 202 mm aluminium-based grinding wheel
- + Long service life and low maintenance
- + Low vibration and high precision



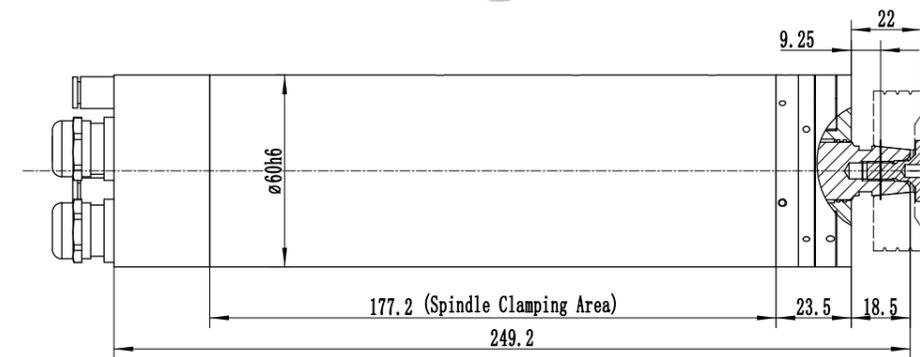
Specification

Maximum Speed	12,000 rpm
Air Supply Pressure	0.55 MPa
Air Consumption	120 L/min
Axial Load Capacity	≥ 10 kg
Radial Load Capacity	≥ 15 kg
Taper Runout	≤ 1 μm
Vibration	< 0.2 mm/s
Driven Type	External pulley
Installation Type	Vertical mounting
Weight(Approx)	8.7 kg

WEGA2000

WAFER EDGE GRINDING SPINDLE

- + Long service life and low maintenance
- + Low vibration and high precision
- + 60,000 min⁻¹ PMSM
- + CW/CCW rotation available



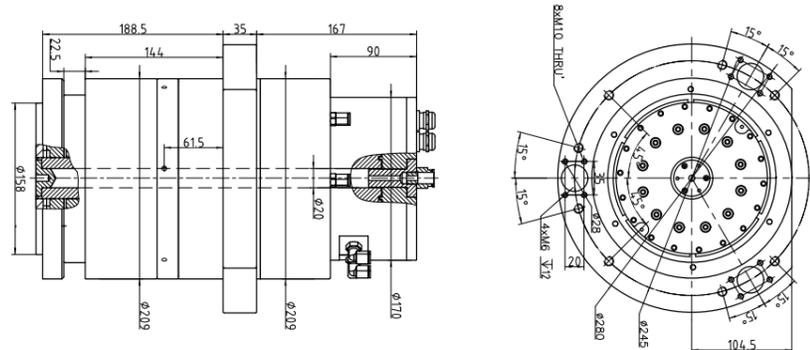
Specification

Maximum Speed	60,000 rpm
Motor Output Power	2.2 kW
Air Supply Pressure	0.55 MPa
Air Consumption	80 L/min
Cooling Water Flow	2.0 L/min
Axial Stiffness	≥ 13 N/μm
Axial Load Capacity	≥ 80 N
Radial Stiffness	≥ 6 N/μm
Radial Load Capacity	≥ 40 N
Taper Runout	≤ 1 μm
Continuous Stall Torque	0.35 N.m
Vibration	< 0.2 mm/s
Direction of Rotation	C.W or C.C.W
Weight(Approx)	4.8 kg

AGS-1663-01

GRINDING SPINDLE

- + For Grinding Semiconductor and Optical Materials
- + 200 mm Cup Wheel Grinding Spindle
- + Through Shaft Coolant
- + Bi-directional Rotation



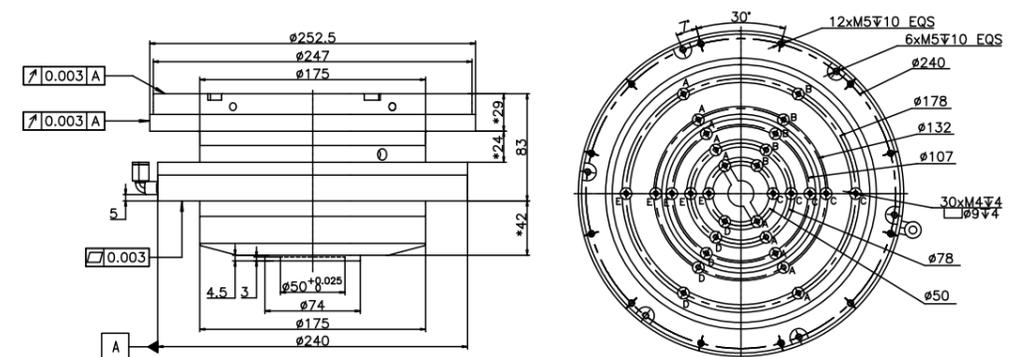
Specification

Speed Range	1000 ~ 6000 rpm
Motor Output Power	6.3 kW
Air Supply Pressure	0.55 MPa
Air Consumption	80 L/min
Axial Stiffness	≥550 N/μm
Axial Load Capacity	≥2400 N
Radial Stiffness	≥100 N/μm
Radial Load Capacity	≥900 N
Asynchronous Error Motion(Axial)	≤0.1 μm
Asynchronous Error Motion(Radial)	≤0.1 μm
Flange Runout	≤3 μm
Direction of Rotation	C.W or C.C.W
Vibration	<0.1 mm/s
Weight (Approx)	95 kg

ART-252129M-01

ROTARY TABLE

- + For Grinding Semiconductor and Optical Materials
- + Axial dynamic error better than 30 nm
- + Ultra-low vibration and ultra-high precision
- + Customisable overall dimensions; multiple interface options available



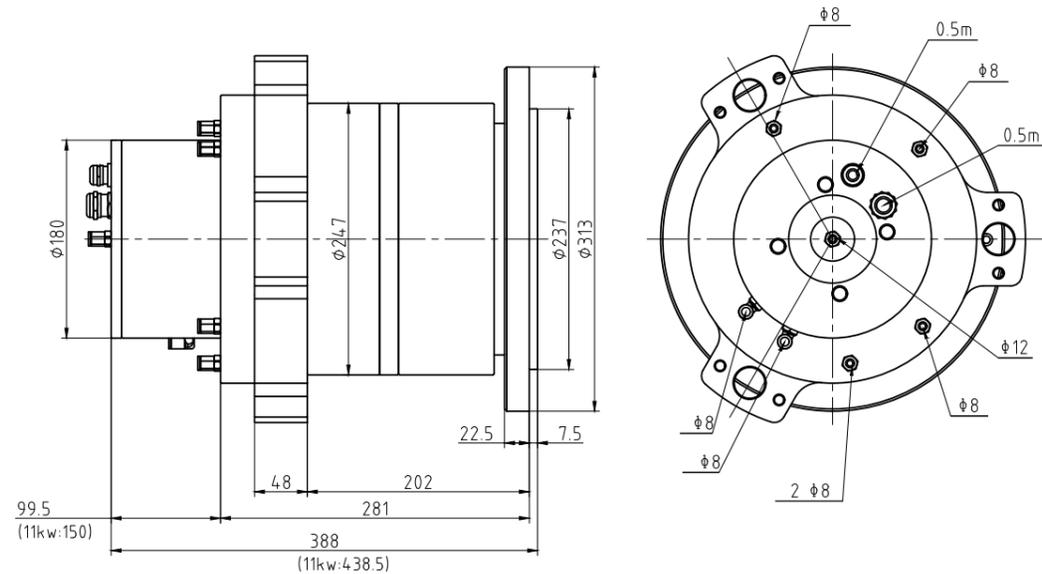
Specification

Maximum Speed	500 rpm
Air Supply Pressure	0.55 MPa
Air Consumption	80 L/min
Axial Stiffness	≥450 N/μm
Axial Load Capacity	≥1500 N
Radial Stiffness	≥100 N/μm
Radial Load Capacity	≥300 N
Asynchronous Error Motion(Axial)	≤0.03 μm
Asynchronous Error Motion(Radial)	≤0.05 μm
Flange Runout	≤3 μm
Weight (Approx)	35 kg

11082

GRINDING SPINDLE

- + For Grinding Semiconductor and Optical Materials
- + 300 mm Cup Wheel Grinding Spindle
- + Through Shaft Coolant
- + Bi-directional Rotation



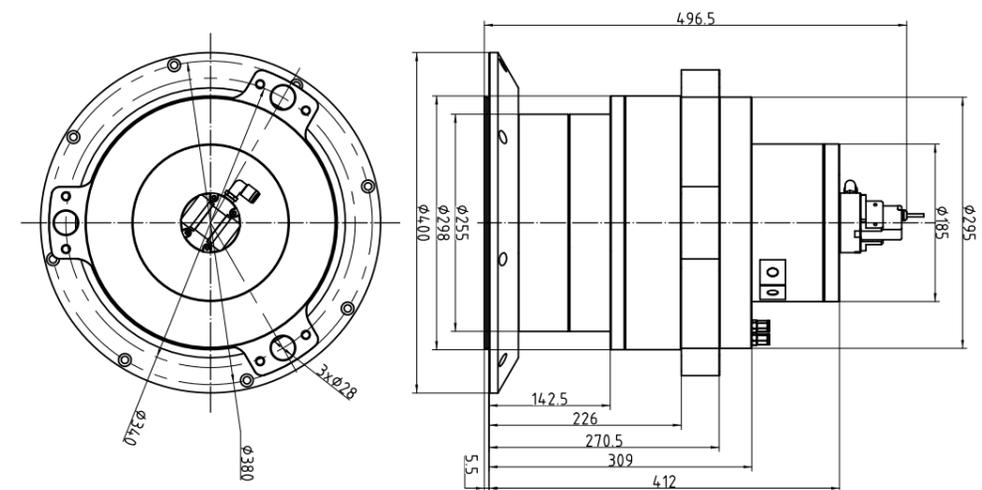
Specification

Speed Range	1000 ~ 4000 rpm
Motor Output Power	6.3 kW, 11 kW
Air Supply Pressure	0.55 MPa
Air Consumption	60 L/min
Axial Stiffness	≥1000 N/μm
Axial Load Capacity	≥2400 N
Radial Stiffness(Vertical)	≥200 N/μm
Radial Load Capacity	≥900 N
Asynchronous Error Motion(Radial)	≤0.2 μm
Asynchronous Error Motion(Axial)	≤0.1 μm
Vibration	≤0.1 mm/s
Direction of Rotation	C.W or C.C.W
Weight (Approx)	165 kg

AGS-0363-01

POLISHING SPINDLE

- + For wafer back grinding (polishing)
- + 300mm Cup Wheel Grinding Spindle
- + Through Shaft Coolant
- + Bi-directional Rotation



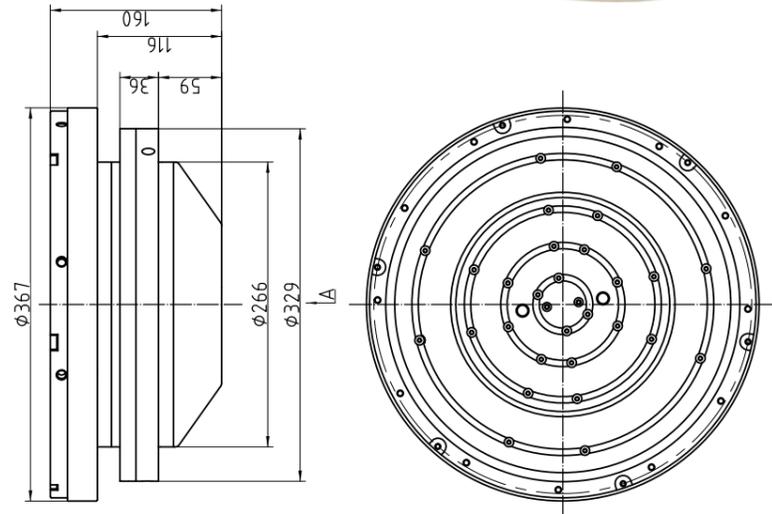
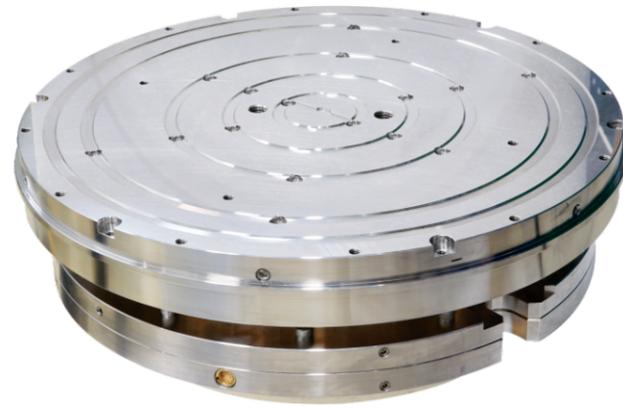
Specification

Speed Range	1000 ~ 3000 rpm
Motor Output Power	6.3 kW, 11 kW
Air Supply Pressure	0.55 MPa
Air Consumption	60 L/min
Axial Stiffness	≥1000 N/μm
Axial Load Capacity	≥2400 N
Radial Stiffness (Vertical)	≥200 N/μm
Radial Load Capacity	≥900 N
Flange Static Runout	≤3 μm
Axial Vibration	≤0.1 mm/s
Radial Vibration	≤0.1 mm/s
Direction of Rotation	C.W or C.C.W
Weight (Approx)	165 kg

ART-367160M-01

ROTARY TABLE

- + High stiffness design
- + Axial synchronisation error $\leq 0.25 \mu\text{m}$
- + Axial Runout $\leq 1 \mu\text{m}$
- + Customisable overall dimensions; multiple interface options available



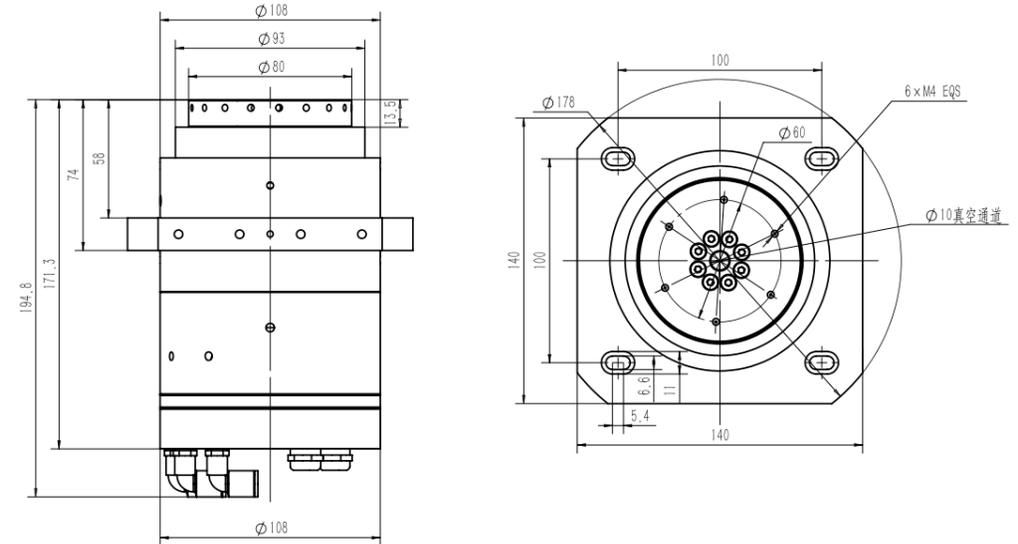
Specification

Maximum Speed	500 rpm
Axial Stiffness	$\geq 1000 \text{ N}/\mu\text{m}$
Radial Stiffness	$\geq 150 \text{ N}/\mu\text{m}$
Axial Load Capacity	$\geq 2400 \text{ N}$
Radial Load Capacity	$\geq 900 \text{ N}$
Flange Static Runout	$\leq 3 \mu\text{m}$
Asynchronous Error Motion(Radial)	$\leq 0.05 \mu\text{m}$
Asynchronous Error Motion(Axial)	$\leq 0.03 \mu\text{m}$
Air Supply Pressure	0.55 MPa
Air Consumption	$\leq 80 \text{ L/min}$
Weight (Approx)	60 kg

650301

ROTARY TABLE

- + Suitable for semiconductor wafer inspection, optical inspection and related applications
- + 5500 min^{-1} PMSM
- + Lightweight and compact design
- + Excellent speed stability and high reliability
- + Configurable with vacuum chuck



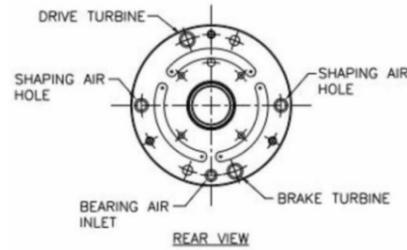
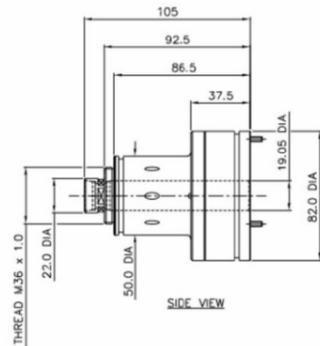
Specification

Maximum Speed	6000 rpm
Air Supply Pressure	120 psi
Axial Stiffness	$\geq 150 \text{ N}/\mu\text{m}$
Radial Stiffness	$\geq 50 \text{ N}/\mu\text{m}$
Axial Load Capacity	$\geq 180 \text{ N}$
Radial Load Capacity	$\geq 50 \text{ N}$
Synchronous Error Motion(Axial)	$\leq 0.1 \mu\text{m}$
Asynchronous Error Motion(Axial)	$\leq 0.02 \mu\text{m}$
Synchronous Error Motion(Radial)	$\leq 0.1 \mu\text{m}$
Asynchronous Error Motion(Radial)	$\leq 0.02 \mu\text{m}$
Velocity Ripple	$\leq 0.1\%$
Feedback	Rotary grating scale
Axial Runout	$1 \mu\text{m}$
Radial Runout	$1 \mu\text{m}$
Weight(Approx)	10 kg

05334

PAINT SPRAYING SPINDLE

- + For automotive paint production lines
- + 60,000 min⁻¹ operation speed
- + Enables high-speed paint flow and delivers exceptional spraying performance
- + Anti-collision shaft design
- + Proven robustness and durability



PRECISION PARTS

- + Custom design of non-standard precision components
- + Spindle repair and dynamic balancing services
- + Full technical support for spindle drive selection and setup



Ceramic chuck



metal chuck



Chuck Table



Hubless blade wheelmount



Hubbed blade wheelmount

Specification

Bearing Air Supply Pressure	0.55 MPa
Air Consumption	80 L/min
Speed Range (unloaded)	80,000rpm
Speed Range with 60000 cc/min of paint	60,000rpm
Turbine Air Flow	325 L/min
Taper Runout at Tool	≤1 μm
Weight (Approx)	1 kg
Body Diameter	82 mm
Spindle Length	105 mm

