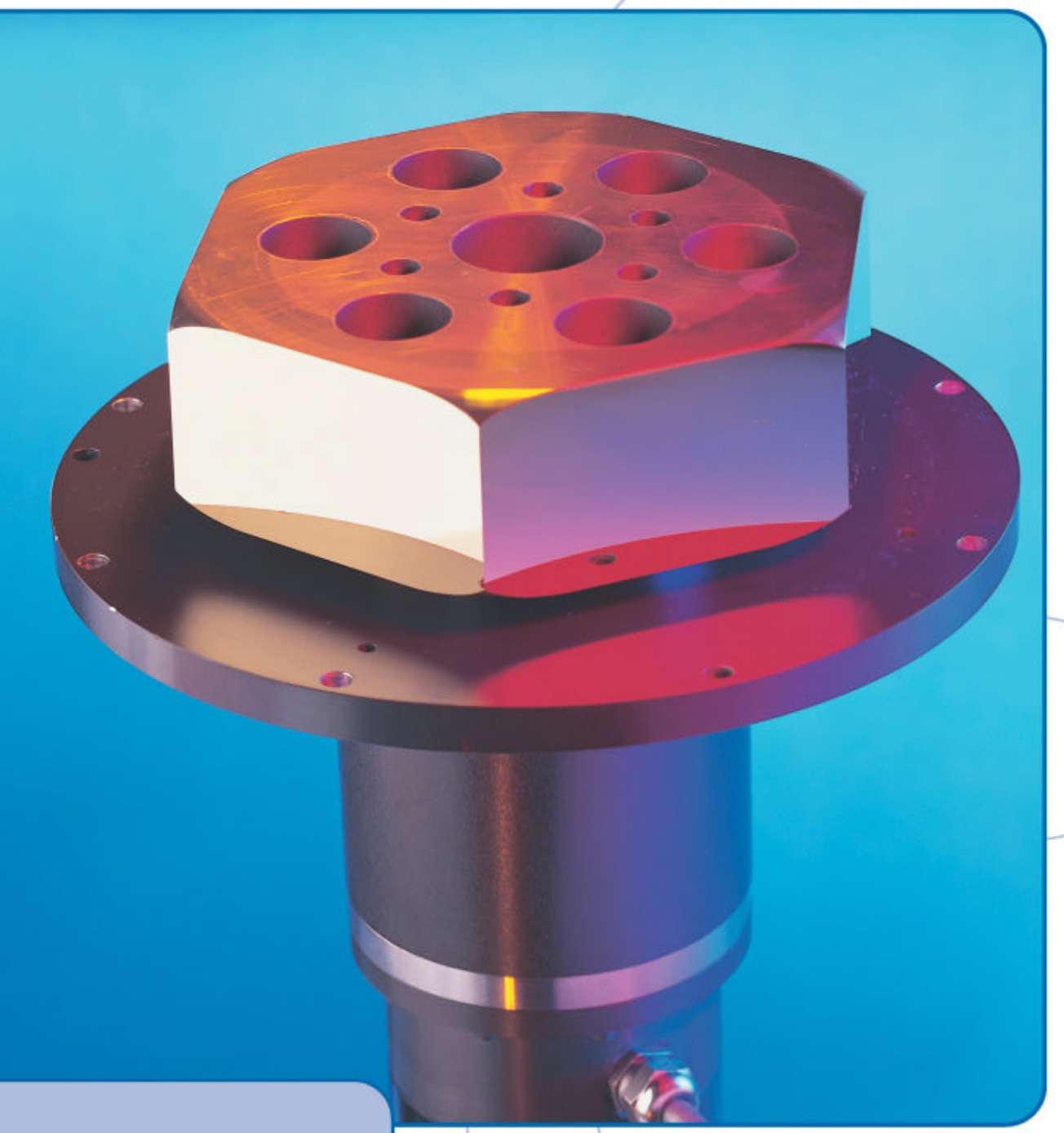
WESTWIND

Revolutionary Technology

Polygon Scanners



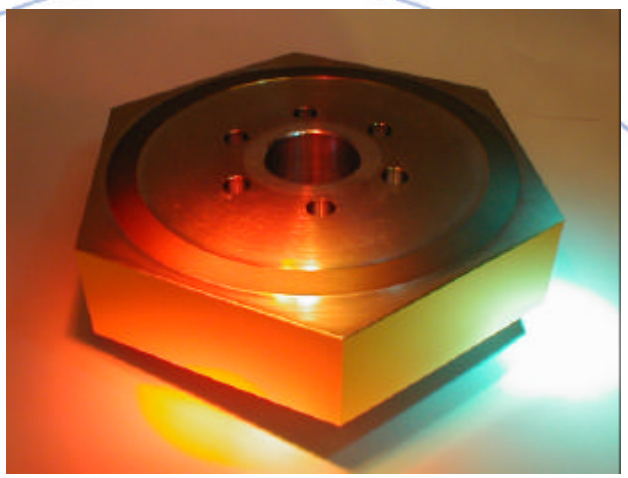
Air Bearing Benefits

- Long life
- Low friction
- Reduced vibration
- No contacting parts
- No contamination
- High accuracy
- High speed

Westwind's range of superior scanning spindles guarantees increased productivity and cost reductions and has been successfully applied across a number of applications including pre-press, PCB imaging and inspection equipment.

Outstanding spot positioning performance and high speed potential come as standard with Westwind scanning spindles. Air bearings have no contacting parts, resulting in low vibration and friction, minimising in-scan and cross-scan errors and increasing spindle life. Minimal levels of disturbances and frequencies generated within the bearing give the controlled performance required for excellent speed stability. No lubrication is necessary, so there is no source of contamination - essential in an optical application.

Westwind's collection of standard spindles suitable for polygon optics use pressurised air bearings so an external air supply is required. Westwind also manufacture a range of spindles with self-generating bearings suitable for monogon optics and small polygon optics.



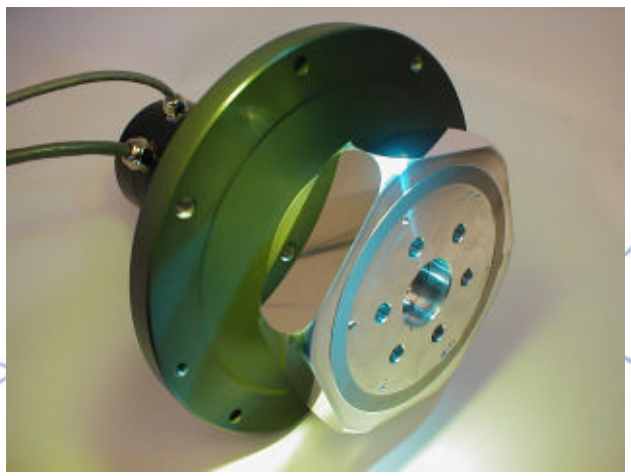
Polygon scanners offer many benefits compared to galvanometer scanners, including:

- Higher scan frequency
- Enhanced scan efficiency
- No backlash or repeatability problems
- Better optical quality

All spindles are fitted with an optical encoder. The standard option is 1000 lines, with other line counts available on request. Drives are available for all Westwind spindles and standard speed stability performance with a Westwind matched drive is <5ppm over a single revolution.

Westwind offer three standard polygon bearing designs and polygon mirrors can be sourced to customers' exact requirements. The size and shape of a polygon affect the power required to rotate it, due to the rotational drag force known as windage. By giving careful consideration to the polygon shape, windage effects can be significantly reduced. Further reductions can be achieved with specially designed shrouds that affect the airflow around the polygon, which can also lead to improvements in scan line position accuracy.

Model	***Poly625***	***Poly1000***	***Poly1250***
Polygon weight	~300g	~600g	~1000g
Bearing speed	<40,000 rpm	<25,000 rpm	<15,000rpm



Scan line position accuracy is the cumulative result of many factors such as the quality of the polygon cut, the perpendicularity of the polygon mounting and the quality of the bearing to which the polygon is mounted. As a measure of cross-scan accuracy, Westwind specify the dynamic track of polygon spindles, where the total angular error on the reflected beam (optical) is measured. The specification is broken into two parts – the maximum error between adjacent facets and the maximum error within a revolution. Dependent on configuration, dynamic track ranges from 4 to 10 arc seconds.

Air supply pressure is normally 5.5 bar, with a flow rate of ~20 litres per minute. Good air quality is essential for optimum spindle performance, so air should be filtered to 1µm, oil vapour carryover <0.01mgm^{-3} at 20°C, and dew point <7.5°C.

Westwind Air Bearings Limited

Westwind Air Bearings is universally recognised as a world leader in the design and manufacture of air bearing spindle systems. Service and sales support is available worldwide through a network of offices, distributors and approved repair centres.

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