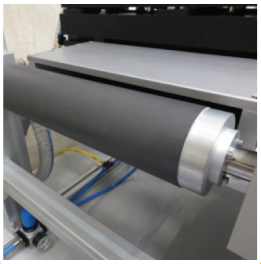
IBS
Precision Engineering

Understanding the true meaning of **precision**



AirTurns

Contactless web handling, flattening and stabilisation

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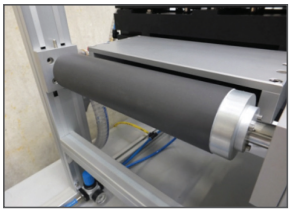
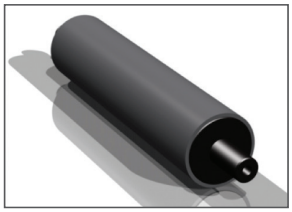
In roll-to-roll processes, avoiding web contact is critical in many applications to reduce damage and contamination. Cylindrical air bearings, or 'air turns', support webs on a stiff < 0.1 mm air layer, providing contactless handling and improved precision.

IBS are experts in the application of air bearings technologies; supporting precision motion and positioning applications in manufacturing fields from R2R to CMM machines to satellite development. For the ultimate in performance we work with NewWay porous media air bearings. This technology allows us to deliver the unique advantages of a stable web, critical for printing, drying and inspection processes, and low flow requirements.

Key Features

- Full contactless web conveyance front or backside
- Micron level surface stability
- Contamination free
- Static free
- No rotating components
- Stress free guidance





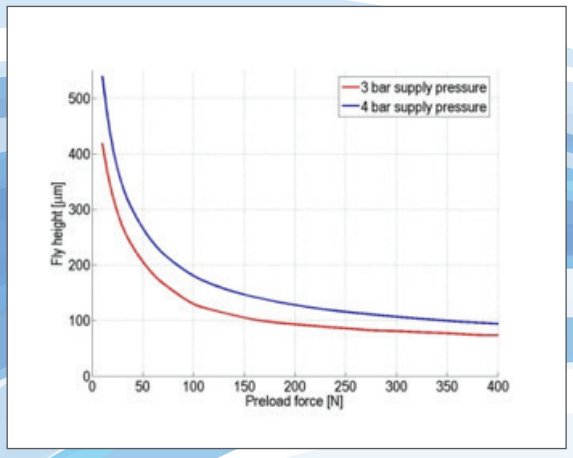
Standard Sizes

Diameters: 80, 100, 125, 150mm
Length: up to 1500mm

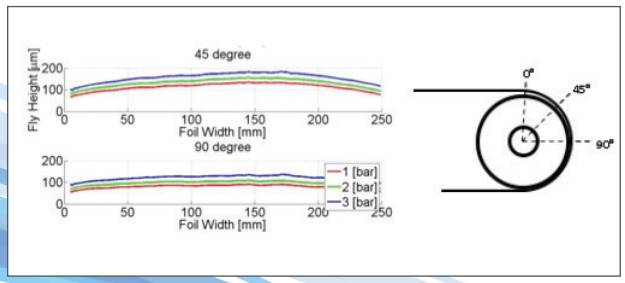
Specifications:

Housing material	Aluminium			
Bearing surface material	Carbon			
Typical supply pressure (above atm)	2,0 - 4,0 bar			
Substrate turn angle	Up to 180°			
Air consumption	**Example values:**			
	Length (mm)	Surface active area (degrees)	Pressure above atm.(bar)	Flow (slm)
	600	110	2	28
	600	200	2	37
	1100	110	2	47
Air layer thickness	50-550 µm (Typical 100µm)			

Sample Test Data



Fly height versus applied preload force (2x foil tension) 100 µm thick, 250 mm wide stainless steel foil.



Fly height of PET foil (150 µm thick, 300 mm wide) over air turn at several positions and varying supply pressure. Measured foil stiffness 1e6 N/m at 150 N foil tension and 4 bar supply pressure.

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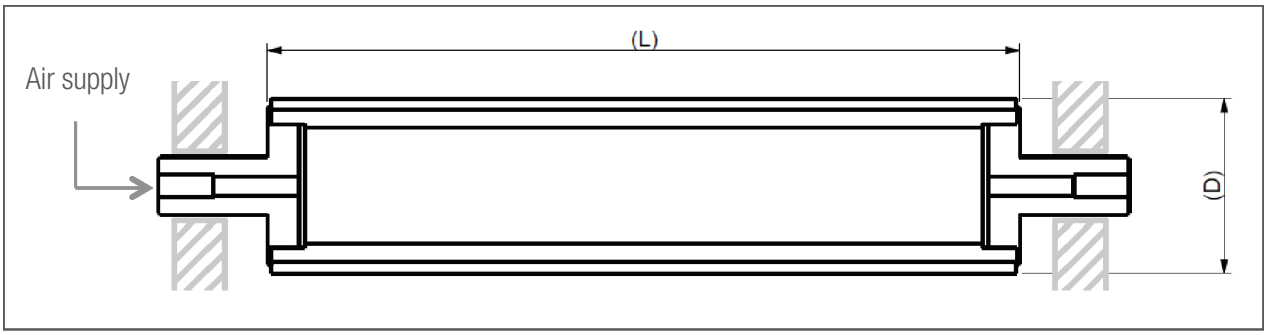
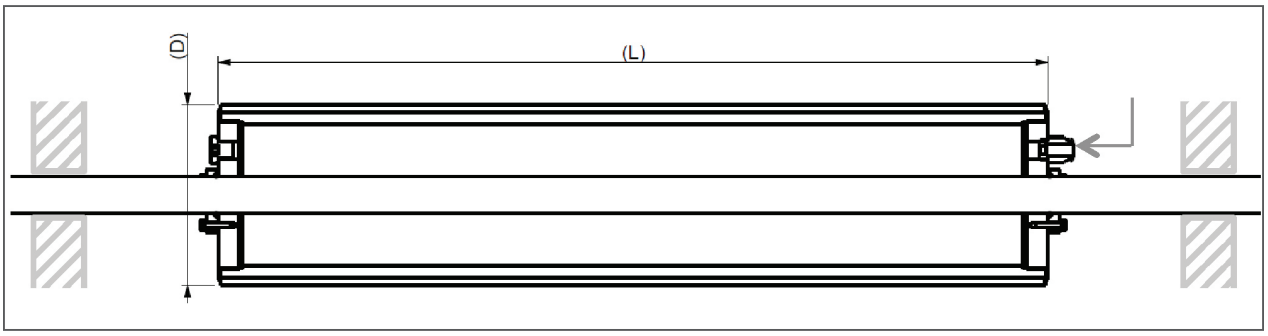
Mechanical Details

Air Turns can be made with custom diameter, length and interface design. A few application examples are shown below.

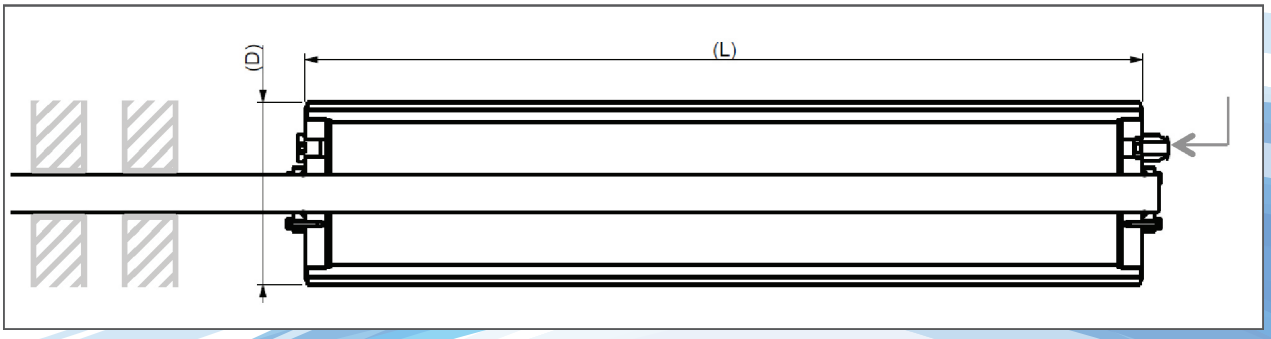
Example 1: supported on end journals at both sides



Example 2: supported on central shaft at both sides



Example 3: supported on central shaft at single side



NEWWAY® air bearings

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