

BOTTLE CONTAINER MANUFACTURING SYSTEM



BCMS

Meeting the Demand

FOR OVER THIRTY YEARS BELVAC has set Production Standards in the metal container industry Worldwide with state of the art can forming machinery.

As the world's Global Brands continue to drive increased volume and competitive costs for differentiated metal containers for the beverage, aerosol, and food industries, the demand for high-speed production machinery that produces cost effective branded containers is also growing.

Belvac Production Machinery meets this demand with machinery and complete process solutions capable of producing branded metal containers at high speeds, with high throughput, and reduced metal consumption.



Complete Solutions For Bottle Containers

THE BELVAC BCMS IS THE SOLUTION for high speed, high volume, lower cost production of branded metal bottles or aerosol containers. The Belvac BCMS will produce a metal bottle with either a Crown or ROPP closure or an aerosol container from either a straight wall or shaped wall preform.

- The Belvac BCMS, forms containers with a body size range of 45mm up to 83.8 mm and a height range of 127mm up to 254mm. In addition to a Crown closure, ROPP closures in 28mm and 38mm diameters are also available.
- The BCMS, will create a container with a maximum neck length of 69.85mm with a maximum shoulder dimension of 75.95mm. When the container is preshaped on the Belvac Shaper the maximum forming capability will extend up to 200mm from the top edge. The minimum neck length is 5.8mm.



How the BCMS Works

THE BCMS IS RATED AS SPEEDS UP TO 600 containers per minute running through an alternate pocket recirculation system. After entering the machine through a dual infeed, the preform containers are lubricated then fed into the even pockets on each turret. The preforms enter a series of progressive necking operations, which may include trimming stages until they reach the dual discharge. The partially shaped preforms are then recirculated back through the dual infeed. They are lubricated a second time and then proceed through the even pockets of each turret to complete the bottle forming process.



The bottles then enter the dual discharge for a second time and then proceed to the finishing stages to receive a Crown or threaded ROPP closure or are curled to form an aerosol container. Other finishing stages can include necking, trimming, and curling.

The BCMS has pocket-to-pocket integrity with ten pockets for each working and transfer turret in the forming processes and five pockets in the turrets of the finishing stages. The turret cam is matched velocity with a 180 degree working arc. The effective push cam stroke is 114.3mm and a maximum knock out cam stroke of 72.9mm. The BCMS has quick-change capabilities for both height and diameter changes.

Full Range of Services

IN ADDITION TO THE BCMS AND SHAPER MACHINERY, BELVAC SUPPORTS a full range of services to provide a total manufacturing solution. Belvac can provide container-engineering services including complete container design and development. Belvac also provides the design and configuration of the Necker process tooling as well as the design of the cupper die set and body maker tooling necessary to manufacture the correct dimensioned preform.

With the completion of the preform manufacturing on the customers front end line, Belvac can also provide a complete machinery and support solution for turn key manufacturing cell to form the preform into a bottle or aerosol container. This process equipment may include a depalletizer, if required, a Belvac Shaper and BCMS,



a recirculation accumulation conveyor, a logic control panel, complete vision and inspection systems, a bottle rinser, a bottle drier, a strapper, a stretch wrapper, a palletizer with full pallet conveyance, the conveying within the cell, and a can line control system with line awareness hardware.

Additional support equipment may include chip collection systems, low pressure air compressor and low pressure compressed air dryer, vacuum pump, waste water pump and holding tank, rinser filtration pump, and support structure.

Belvac can also provide project management and start up support including: Project tasks and schedules, equipment pre-shipment inspections, complete coordination on the container on-site project reviews, factory start-up support and training.

Technical Specifications

BCMS

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Can Body Size Range	1.771" (45 mm) to 307 (83.8 mm)				Machine Overall Dimensions	Length	[31" (787.4 mm) +27" (685.8 mm) x / # Modules]
Can Neck Size Range	307 to 28 mm (83.8 to 28 mm)					Width (Non-Cradle Mount)	130" (3302 mm)
Maximum Can Height	10" (254 mm)					Width (Cradle Mount)	155" (3937 mm)
Minimum Can Height	5" (127 mm)					Height	107" (2718 mm)
Number of Pockets per Working Turret	10-Pocket Pre-Threader, 5 Pocket Post Treader					Maximum Neck Shoulder Dimension	Approx. 2.99" (75.95 mm)
Number of Pockets per Transfer Turret	10-Pocket Pre-Threader, 5 Pocket Post Treader				Maximum Neck Length	2.75" (69.85 mm)	
Pocket-to-Pocket Integrity	Yes				Minimum Neck Length	0.23" (5.8 mm)	
"Active" Pockets (Linear)	Not Applicable				Effective Push Cam Stroke (Less BIS) Max	4.500" (114.3 mm) < New RDC Profile	
Shaped Can Option Capable	Yes				KO Cam Stroke Max	2.870" (72.9 mm) < New RDC Profile	
"Active" Pockets (Recirculation)	5				Cam Dynamics	Reduced Dynamics Cam (RDC)	
Rated Speed (CPM) : Recirculating Machine & Staged Infeed Specific	Shaped cans: 500 CPM (100 RPM)		Unshaped Cans: 600 CPM (120 RPM)		Cam Style	Matched Velocity	
	Pressure Requirements		Flow Requirements		Cam Working Arc	180°	
Required Utilities: Dual Compressor Setup	50 psig (3.4 BAR) Process Air		115 SCFM (55 SLPS) per Necking Turret		Diameter Change Capability	One QC parts kit per can diameter	
	80 psig (5.5 BAR) Brake Circuit		50 SCFM (24 SLPS) per Flanger, Trimmer & Light Tester Unit		Height Change Capability	"Quick Change"	
Required Utilities: Single Compressor Setup	80 psig (5.5 BAR)		115 SCFM (55 SLPS) per Necking Turret		Ram Assembly Style	Precision linear bearing (Pre-Threader with dual cam followers, Cast Iron Bushing (Post Threader) with dual cam followers)	
	80 psig (5.5 BAR)		50 SCFM (24 SLPS) per Flanger, Trimmer & Light Tester Unit				
Required Utilities: Inspection Blow-Off (Lt/V)	80 psig (5.5 BAR) minimum		100 SCFM (24 L/s) Per Blow-Off		Main Shaft Style	Horizontal	
Trimmer Scrap Vacuum Utilities (Minimum)	15" WG @ 5000 Ft/Min (381 mm VG @ 1524 M/min) < Per Trimmer Scrap Exit				Guard Style	Aluminum Extruded Modular Bi-Fold	
Required Utilities: Vacuum	SHAPED CANS: 25 In / HG @ 25 ACFM / Active Process Ram (635 mm HG @ (9.4 ALPS) / Active Process Ram <i>Example:</i> 10-Pocket Starwheel Module with 180° Cam Working Arc Yields; $10 \times (180 / 360) \times 25 = 125$ ACFM / Module		UN-SHAPED CANS: 25 In / HG @ 25 ACFM / Active Process Ram (635 mm HG @ 11.8 ALPS) / Active Process Ram <i>Example:</i> 10-Pocket Starwheel Module with 180° Cam Working Arc Yields; $10 \times (180 / 360) \times 25 = 125$ ACEFM / Module		Main Drive Motor and Gearbox	Single or Multiple Drive: Configuration Dependent	
	50 psig (3.4 BAR) Process Air		115 SCFM (55 SLPS) per Necking Turret		Gearbox	Helical Bevel	
	80 psig (5.5 BAR) Brake Circuit		50 SCFM (24 SLPS) per Flanger, Trimmer & Light Tester Unit		Drive Gearing	Spur Gear, Inline Steel Oil Bath Lubed	
					Transfer Shaft Assembly	Quick Change Modular	
					Blowers	Floor Standing	
					Infeed Star Wheel	5 pocket (recirculating)	
					Waxer	Standard Rollerless hot wax or oil	
					Transfer Starwheel	Quick Change Modular: 10-Pocket Pre-Threader, 5 Pocket Post-Threader	
					Discharge Starwheel	Quick Change Modular 5-Pocket	
					Face Seal Manifold	Modular FSM with HyComp Lining	
					Main Drive Side Bearing	Tapered Roller Bearing	
					Pusher Side Bearing	Radial Roller Bearing	

ABOUT BELVAC

Belvac is the clear choice for sustainable competitive advantage and the best option for new and innovative manufacturing processes.

BELVAC IS THE PREFERRED CHOICE OF THE world's two piece can makers and the most trusted source for canmaking technology world-wide. Belvac leads the industry with its design and production of continuous motion rotary technology. Belvac provides beverage canmakers with high-speed trimming, necking, base reprofiling and reforming, bottom rim coating, flanging and inspection technology. Belvac has enabled their customers to steadily increase line speeds and improve quality and productivity, while significantly reducing materials costs. Belvac customers have a sustainable competitive advantage in their market.

With nearly half a century of experience developing cutting edge machinery and almost 100% of its machines still in use, Belvac is the best option for new and innovative manufacturing processes. A testament to Belvac's dedication to quality, defect free products and precision engineering is that nearly all their machines are still in service — the oldest was made in the 1970s. Belvac engineers design their machines with industry leading precision. This technology is backed by Belvac's highly trained engineers who have installed and serviced machines in 49 countries.



Belvac...*the* choice for all your can making needs.

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