

THE BELVAC

The Next Generation Necker

T H E
BELVAC



 **Belvac
Production
Machinery, Inc.**
A  **DOVER** COMPANY

THE BELVAC Necker

For over thirty years Belvac has supplied the Metal Container Industry and Brands Worldwide with State of the Art container shaping technology. The Introduction of THE BELVAC Necker marks a new generation of smart machinery.

Designed to optimize production throughput, container quality, and operational expenses, while reducing associated maintenance and downtime, this state of the art necker knows no parallel.

The intelligent manufacturing system and the high speed selective sorter on THE BELVAC Necker is capable of performing dynamic quality control and sampling, intelligent troubleshooting of upstream problems, and developing predictive maintenance programs.

THE BELVAC will set a new standard for speed reaching 3600 containers per minute [CPM]. The increase in speed as well as the increase in container quality is the result of precision design incorporating full piloted tooling and a larger working arc. The cantilever design also provides unprecedented ease of access.

The new turret is fully piloted with a 50.2 millimeter die stroke and a 270 degree working duration allowing for lower ram accelerations and the reduction of necking stages from 14 to 12 for 211 / 202 neck reductions.



A Revolutionary Design Concept

THE BELVAC

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Marks a new generation of Necking — smart machinery design that will increase energy savings on a per can basis and will create the highest return on your investment.

Features of THE BELVAC are:

- All air passages are internal-no exposed air lines
- High speed dual ram assemblies with linear slides and high performance bushings
- Quick change height and diameter adjustment
- Significant grease reduction
- The advantage of PC based electrical controls
- And an enhanced face seal manifold for reduced air consumption
- Pocket to Pocket Correlation
- Operator side manual rotation feature that can be located at any turret
- Create the best quality can
- Produce a lower cost can
- Produce higher output with a lower cost of maintenance
- Improve machinery uptime
- Create better access for service and provide longer component life
- Improved turret visibility thru clear panels
- Less than half the weight of 595-SK steel guards

The revolutionary design concept of THE BELVAC has a common modular base. All modules are the same. Any module can have the drive motor gearbox on it.

THE BELVAC has a main drive with a flange mounted gear reducer that eliminates pulleys belts, and guards. The cooling fan is integrated and gear ratios are optimized for a wide speed range.

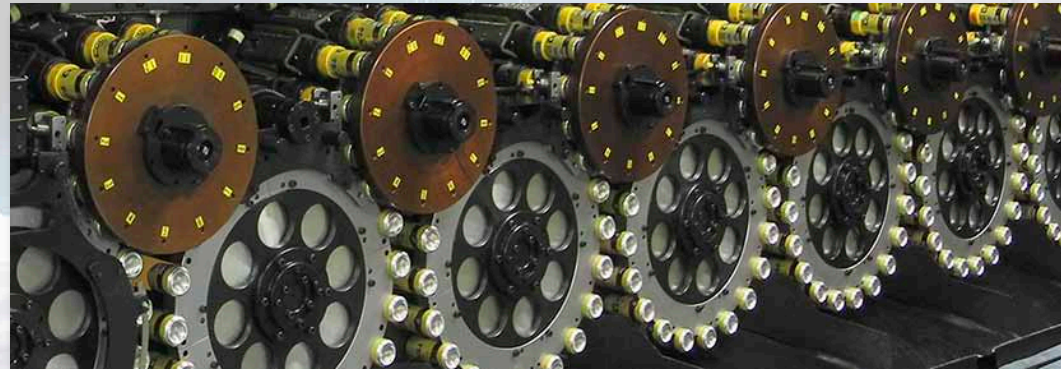
The steel gear drive train has a reliable proven oil bath.

Infeed is through a multi-feed starwheel with a vertical infeed chute. The vertical infeed provides staging for high connec-

tions while conserving space. Quick change features provide for ease of operation. The infeed also incorporates a reverse can reject system prohibiting cans from entering the necker that are not oriented properly.

The new integral can neck lubricator has a recessed open end guide that insures no lube will get into can. The lubricator is maintenance free with no moving parts:

- Air bearings generate the can rotation
- Reduced change parts costs
- Very precise lube application
- Segmented wick



A Revolutionary Design Concept

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Multi-Feed Starwheel

- Multiple vacuum speed process
- Pitch change at primary and secondary starwheels
- Vertical infeed chute to air track starwheels create staging for high connections and conserve space
- Quick change height and diameter chute
- Pneumatic can stop



Integral Can Neck Lubricator

The new integral quick change can neck lubricator has a recessed open end guide that insures no lube will get into can. The lubricator is maintenance free with no moving parts:

- No moving parts – air bearing generates rotation of can
- Maintenance free operation

- Segmented wick
- Quick change height and diameter
- Precision lube application
- Drip containment feature
- Reduced change parts cost
- Can lube is applied in the first transfer starwheel
- The vacuum is replaced by low air pressure thus causing the can to rotate via contact with the outer guide rail
- A recessed open end guide insures no lube in can
- Excess lube is channeled to the drip containment tank



Modular Base

The revolutionary design concept of THE BELVAC has a common modular base. All modules are the same. Any module can have the drive motor gearbox on it.



Gear Reducer

THE BELVAC has a main drive with a flange mounted gear reducer that eliminates pulleys belts, and guards. The cooling fan is integrated and gear ratios are optimized for a wide speed range.



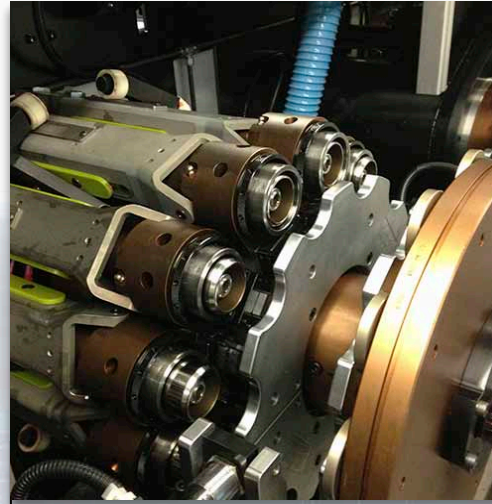
Steel Drive Gear Train

The steel gear drive train has a reliable proven oil bath.



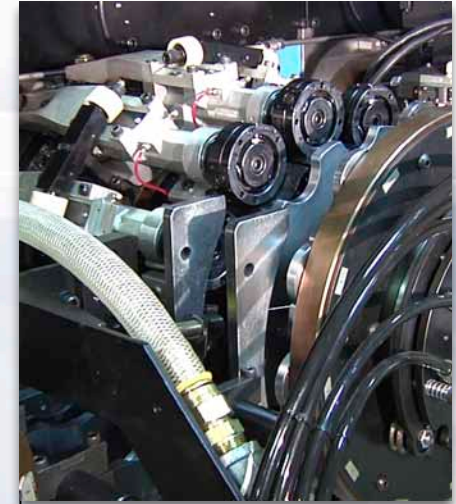
Operator Side Manual Rotation

An operator side manual rotation feature has been added to assist with tooling and size changes — this feature can be added in multiples and at most any location on the machine.



Necker Turret

- Cantilevered design for ease of access
- Full piloted die necking with 50.2 mm (1.977") Die Stroke
- 270 degree working duration for lower ram accelerations
- Internal air passages — no exposed air lines
- Quick change height and diameter adjustment
- Enhanced air face seal manifold for reduced air consumption



Flanger Turret

- High speed spindle ram assemblies with linear ball slides
- Internal air passages — no air lines
- Permanently lubricated sealed spindle bearings
- Lube free plastic spindle gears with steel bull gear
- Adjustable vacuum manifold with easy access
- Quick change height and diameter adjustment



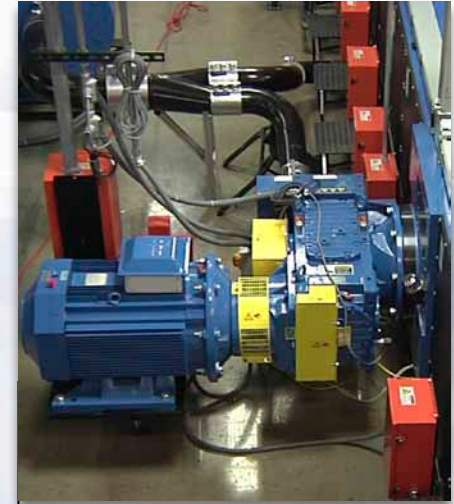
Vacuum Transfer

- Four segment vacuum starwheel
- Quick change height and diameter
- Spring loaded — self positioning vacuum manifold



Light Tester

- LED light array
- Quick change height and diameter
- Sencon LT25 logic system
- Strobe light to activate for “no can in pocket”
- Automatic Pin Hole Calibration



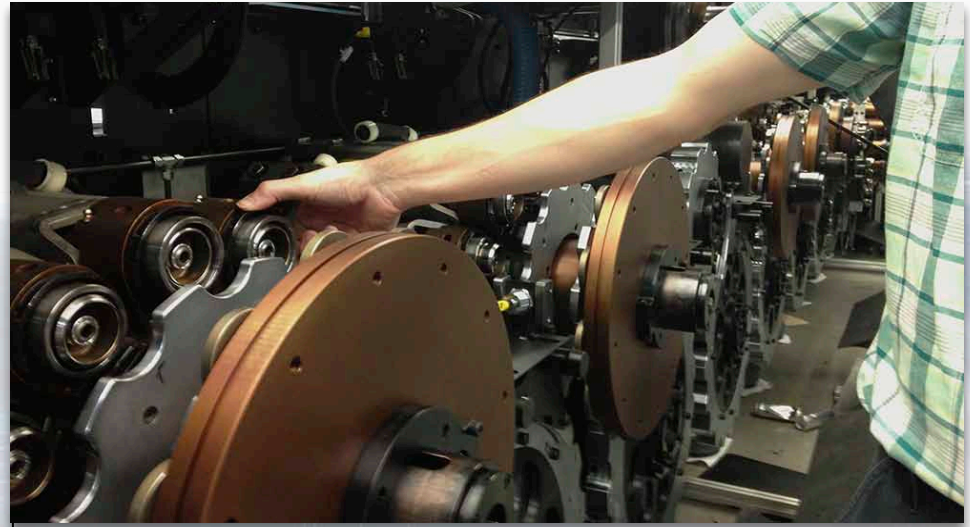
Main Drive Arrangement

- Flange mounted gear reducer and motor eliminates pulleys, belt, and guard
- Optimum gear ratio for wide speed range Integrated cooling fan
- Integrated cooling fan



New Style Guard

THE BELVAC has a new style guarding. Clear panels provide Increased visibility. The guarding weighs less than half of traditional steel guards. The guarding houses control panels that provide easy access operation.



Cantilevered Design

Cantilevered design provides unprecedented ease of maintenance access.

Benefits of THE BELVAC

*THE BELVAC is the right choice for your future can making needs with its new generation in necking. How? By being designed to create the best quality can, produced at a lower cost can. It offers a lower maintenance costs through improved machine up-time. Easy floor level maintenance access for service can increasing savings and provide longer component life. This produces energy savings on a per-can basis. Bottom line — **THE BELVAC** will create the highest return on your investment. More specifically, here are benefits unique to **THE BELVAC**:*



The Intelligent Manufacturing Systems

What is the Intelligent Manufacturing System (IMS)?

It is a combination of hardware and software in tandem with the Necking Process designed to optimize can plant profitability through a high tech production Monitoring System and Maintenance Program.

The value of the IMS to you is that it offers:

- Reduced downtime through automatic troubleshooting
- Reduced spoilage of average incident of major defect
- Reduced costs related to major defects Incident (sorting, resampling)
- Reduced maintenance downtime, increase in production
- High speed sampling, reduced downtime est. (High Speed Selective Sorter)

Technical Specifications

THE BELVAC

Technical Specifications		THE BELVAC (Quick Change)		Technical Specifications		THE BELVAC (Quick Change)	
Can Body Size Range		202 (52.8mm) to 211 (66.2mm)		Machine Overall Dimensions	Length	[43" (1092mm) + 29.2" (741.7mm) x # Modules]	
Can Neck Size Range		200 to 209			Width	126.6" (3216mm)	
Maximum Can Height		7.51" (190mm)			Height	104.3" (2649mm)	
Minimum Can Height		3.30" (84mm)		Maximum Neck Shoulder Dimension	Approx. 0.81" (20.6mm)		
Number of Pockets per Working Turret		12		Maximum Neck Length	0.750" (19.05mm)		
Number of Pockets per Transfer Turret		20		Minimum Neck Length	0.23" (5.8mm)		
Pocket-to-Pocket Integrity		Yes		Effective Push Cam Stroke (Less BIS) Max	1.977" (50.2mm) « New RDC Profile		
"Active" Pockets (Linear)		12		KO Cam Stroke Max	1.26" (32mm) « New RDC Profile		
Shaped Can Option Capable		Not Applicable		Cam Dynamics	Reduced Dynamics Cam (RDC)		
"Active" Pockets (Recirculation)		Not Applicable		Cam Style	Matched Velocity		
Rated Speed (CPM) (Linear Machine)		3600 CPM (300 RPM Max Turret Speed)		Cam Working Arc	270 degrees		
Required Utilities: Dual Compressor Setup	Pressure Requirements	Flow Requirements		Diameter Change Capability	One QC parts kit per can diameter		
	50 psig (3.4 BAR) Process Air 80 psig (5.5 BAR) Brake Circuit	<ul style="list-style-type: none"> • 100 SCFM (48 SLPS) per Necking Turret • 40 SCFM (19 SLPS) per Flanger or Light Tester Turret • 50 SCFM (24 SLPS) per Reformer or Reprofiler Turret 		Height Change Capability	"Quick Change"		
Required Utilities: Single Compressor Setup	80 psig (5.5 BAR)	<ul style="list-style-type: none"> • 100 SCFM (48 SLPS) per Necking Turret • 40 SCFM (19 SLPS) per Flanger or Light Tester Turret • 50 SCFM (24 SLPS) per Reformer or Reprofiler Turret 		Ram Assembly Style	Precision Linear Bearings with Dual Cam Followers		
				Main Shaft Style	Horizontal, Cantilevered		
Required Utilities: Inspection Blow-Off (Lt/V)	80 psig (5.5 BAR) minimum	100 SCFM (24 L/s) per Blow-Off		Guard Style	Aluminum Extruded Modular Bi-Fold		
Required Utilities: Vacuum	8-10 In/HG @ 45 ACFM (203mm-254mm HG @21.3 ALPS)			Main Drive Motor and Gearbox	Single or Multiple Drive: Configuration Dependent		
				Gearbox	Horizontal Parallel Shaft, Helical Gear		
				Drive Gearing	Spur Gear, Inline Steel Oil Bath Lubed		
				Transfer Shaft Assembly	Quick Change Modular		
				Blowers	Floor Standing		
				Infeed Star Wheel	Quick Change Modular		
				Waxer	Standard Rollerless hot wax or oil		
				Transfer Starwheel	Quick Change Modular		
				Discharge Starwheel	Quick Change Modular		
				Face Seal Manifold	Modular FSM HyComp Lining		
				Main Drive Side Bearing	Fixed Tapered Roller Bearing		
				Pusher Side Bearing	N/A		

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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