

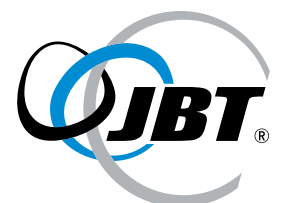
JBT's Filling technology for sweet spreads into glass jars

High-quality sweet spreads
Deserve the perfect packaging

Capable of filling almost any kind of glass jar, the JBT Unifiller is a piece of technology engineered to provide you with the best quality in filling a broad range of products. The JBT Unifiller further distinguishes by fast and efficient product and jar format change-over, fast totally automated Clean-In-Place procedure, no disassembly, no manual cleaning.

The Unifiller's heavy-duty, highly robust design and unique filling concept results in superior filling accuracy and trouble-free use, even after many years of operation.

Take a deeper look inside the JBT Unifiller. Get to know what makes the Unifiller unique, and how it satisfies quality conscious spread consumers while keeping your operational costs down.



Sweet spreads in glass jars Put your product in the spotlight



Sweet spreads, comprising jams, jellies, marmalades, honey, chocolate spreads or nut-based spreads are an important part of the daily diet for the majority of the global population. They are usually consumed along with baked wheat products such as various types of breads, toasts, doughnuts, or bagels. As such, they comprise an important part of the traditional breakfast or snack menu in primarily the Western countries.

The sweet spreads market has risen at a steady rate in the recent past. The longstanding popularity of many sweet spreads in Europe and North America as a part of their traditional breakfast has sustained the global sweet spreads market for a long time. But we also observe an increased use of sweet spreads in the preparation of food and dishes through the development of spreads with new innovative flavors such as figs, ginger, exotic fruits and fruit/vegetable combination. Sweet spreads and particularly honey are increasingly used as natural and healthier sweeteners.

The Asia Pacific market for sweet spreads has witnessed slower growth. The lack of longstanding traditions regarding sweet spreads in Asia Pacific countries has held back the sweet spreads market in the region. However, with increasing urbanization of the region, sweet spreads have slowly but surely become a part of the daily diet of APAC consumers. The large consumer pool available to players operating in the sweet spreads market in Asia Pacific has also made this regional segment highly lucrative.

A major avenue for processors of sweet spreads is product and taste innovation to match the regional taste preferences of consumers on the six continents. An increasing number



of individuals are growing health-conscious and reducing their consumption of sweet spreads, looking for low sugar/low fat alternatives in the form of natural/organic spreads with functional attributes. A decline in traditional forms of spreads has paved the way for increased developments in nut-based/chocolate or fruit-based spreads. To address the growing consumer trend towards healthy spreads, manufacturers are introducing new product lines, with healthy attributes in attractive (glass) containers.

In glass jars, consumers can see your product: its color and texture, the size of the particles and its viscosity. It also allows processors in the most transparent way to showcase the food to the greatest degree possible. For all these reasons, consumers associate glass jars with quality, safety and freshness. Consumers associate glass jars with high quality food products. Sweet spreads such as jams, marmalades, honey, chocolate and nuts spreads get an extra touch of quality when sold in glass jars.

Glass is one of the safest, purest containers to preserve the integrity of the food post thermal treatment for extended periods of time. If the product needs to be pasteurized, glass withstands the temperature providing good protection to the food product. Glass jars offers processors of high moisture foods great flexibility in formats and design in lower quantities than other container types. An ideal packaging that obliges your marketing staff to make your products stand out on the shelf.

The product-specific challenges that come with sweet spreads require gentle and precise hot filling. It goes without saying that the filling process must guarantee complete hygiene and an easy-to-use, easy-to-clean and easy-to-maintain environment to meet the high 'Critical to Quality' characteristics demanded by today's customer. Moreover, the filling line requires fast and cost-efficient format and product change-over, and maximum product flexibility.

Meet the JBT Unifiller. Ideal for high value-added sweet spreads where hygiene, filling accuracy and gentle particle handling is key. Liquid or jelly; silky smooth or chunky; in small or big jars; in simple round-shaped jars or jars with complicated shapes; filled boiling hot or ice cold – anything is possible.



JBT Unifiller The perfect fit for sweet spreads



Every spread has its own specific features and requirements when it comes to filling. Some are liquid, making it harder to fill at high speed without spilling and thus wasting your precious product. Others have a viscous texture, forming headstrong droplets and threads, making it difficult to keep the filling line going when product waste could pile up in different parts of the machine. And then there are jams and marmelades with sensitive particles, requiring the most gentle handling.

To ensure perfect filling of all these products, JBT customizes every Unifiller to meet your particular needs. It is the perfect solution for high value-added spreads where filling accuracy, filling flexibility and gentle particle handling is key.

Every Unifiller is as individual as your product, like a perfectly tailored suit.



The design, number and size of valves, nozzles, CIP and other parts are custom-fit to suit your needs and the speed you would like to run it. In doing so, the Unifiller fits perfectly in your processing chain. A customized machine results in optimized accuracy and minimized product drip, meaning a cleaner machine, cleaner glass jars, and minimum risk of contamination of the glass rim leading to higher quality and a more consistent seal.

The Unifiller is designed for easy maintenance and a long life. The centralization of lubrication points allows for (automatic) lubrication when the filler is running. No precious production time is lost.

The Unifiller can be seamlessly integrated into different line layouts and block concepts. Its compact design and flexible layout options permit the machine in-feed and discharge to be individually configured with up- and downstream devices, such as rinsers and cappers.

JBT experts offer technical assistance and project management to achieve smooth integration with (inline or rotary) capper or rinser units.

Want to see how the JBT Unifiller is customized to your needs?

JBT filling experts are at your service at hello@jbt.com

Understanding the Unifiller

The Filling Principle: Filled in 3 steps



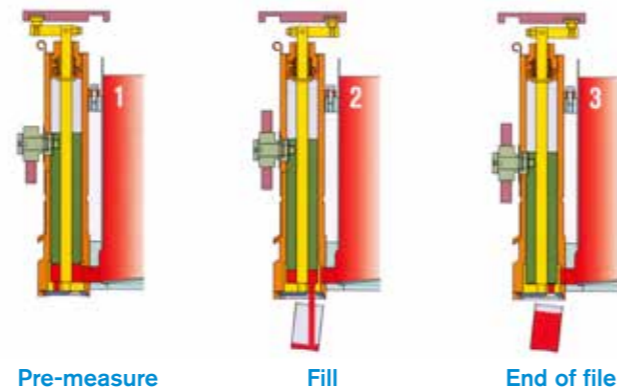
Accuracy
Perfect filling
every time



The product path is kept to a minimum to optimize filling speed and accuracy. The large product ports and short product path, allow filling of highly viscous spreads, with or without particulates. Unifiller fill nozzles are especially designed for their application and can easily be exchanged. The Unifiller filling operation consists of three specific phases:

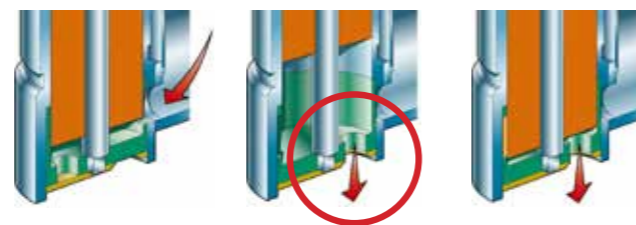
PHASE 1: PRE-DOSING

The valve port is open to the product bowl and the piston moves upwards bringing a pre-defined volume of the product into the cylinder.



PHASE 2: FILL

In a rotary movement of the valve, the fillings station is closed from the product bowl, immediately followed by the opening of the nozzle to the glass jar. The piston moves downward and the product enters the jar.



PHASE 3: END OF FILL

The piston is at the bottom of the stroke and the jar is filled. The nozzle is closed at the end of fill. The valve port is then opened to the product bowl and phase 1 is repeated.



A broad range of fill stations, from 100 cc to 1500 cc, allows for selecting the optimum filling station for each application. Application-specific, quick-change filling nozzles allow optimum filling quality and accuracy for each product.

The Unifiller is a volumetric piston filler. But to understand why the Unifiller is so much better than a classical piston filler we need to look more closely at the interior of the valves.

If we compare the product paths at the bowl port, you can see that the traditional piston filler requires the product to turn almost 180 degrees, and upwards, to enter the cylinder as it flows through the valve plug.

In comparison the Unifiller bowl port opens up directly into the cylinder and the path length is just the thickness of the bowl wall. The unique Unifiller valve, vertically actuated,

makes it possible to create a very large wide and tall bowl port. The key to being able to pump large particulates is in the relative size of the bowl port versus the particulate size to be filled. Adding a simple plow in the bowl keeps the particulates in a homogenous suspension and pushes the particulates into the cylinder.

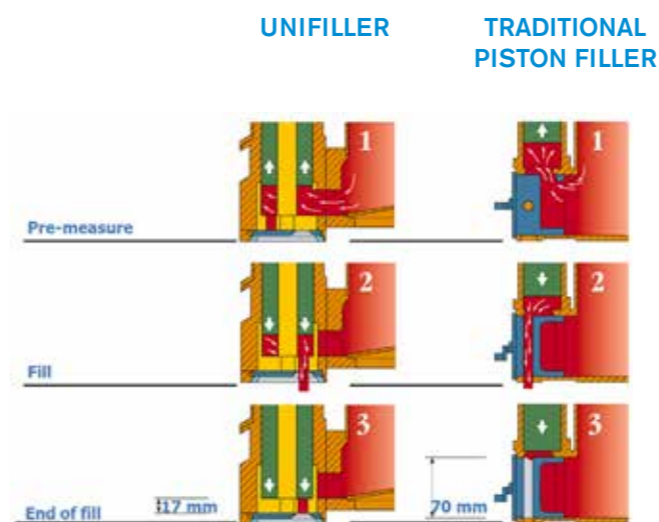
All your glass jars, filled exactly as much as you want it to be. To the drop. Jar after jar, run after run. It requires accurate machine parts and a robust construction, together with an efficient filling mechanism. The JBT Unifiller is just that. Probably the only filling machine on the market that perfectly fills up every kind of glass jar, without a spill. Besides minimum product give-away, superior filling accuracy guarantees consistent head space.

The Unifiller's working principle is unique. The rotary, volumetric filler — with accurately machined filling stations and large bowl ports — guarantees gentle yet fast and accurate filling. Banking of the jars eliminates spillage and optimizes filling speed.

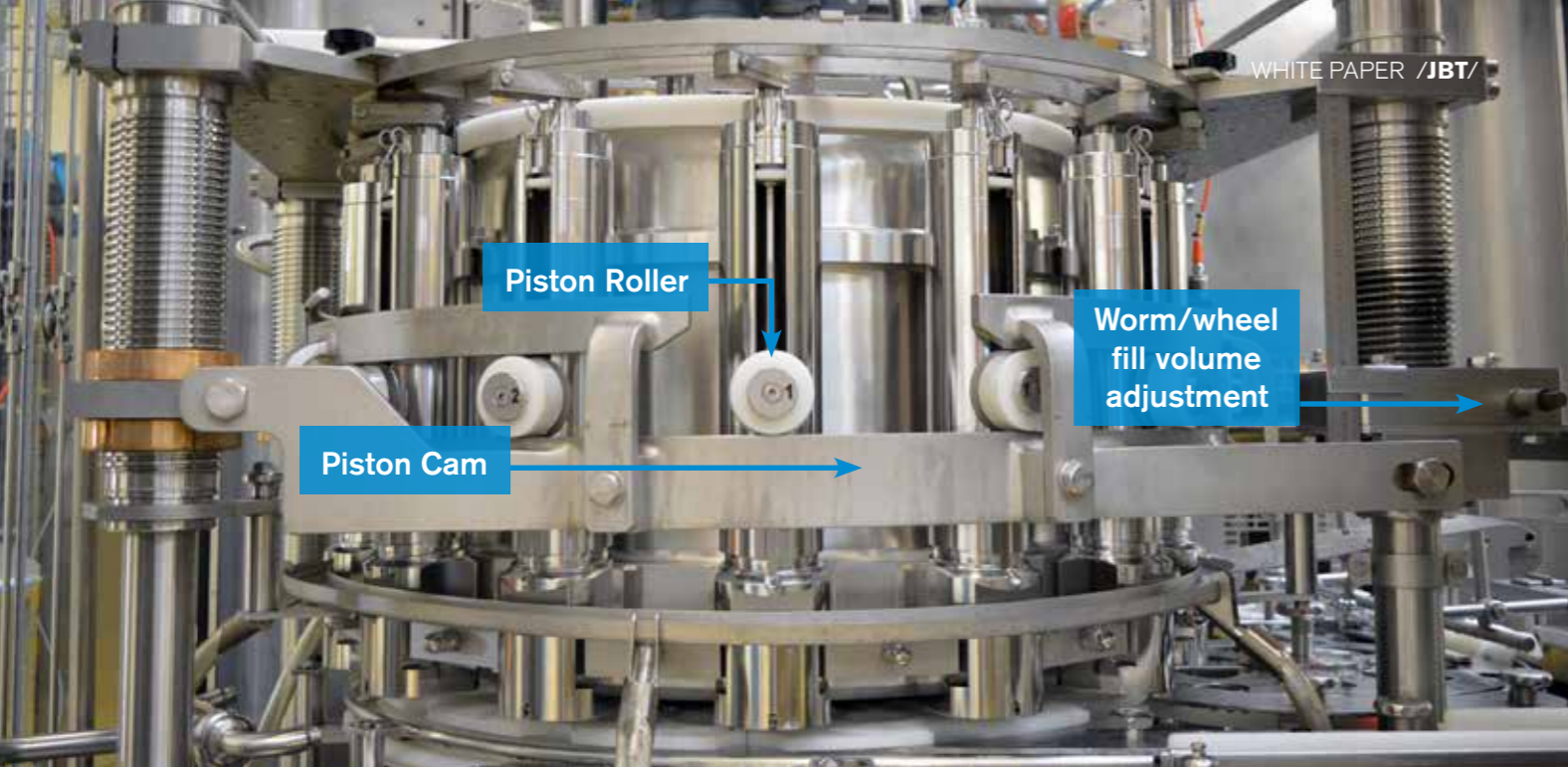
Gentle jar movements on the conveyor after filling without any sharp turns avoid product spilling.

Of course, all parts are made using premium materials. Surfaces that come into contact with the product are of stainless steel or another high, food-grade quality, non-corrosive material.

In short: your sweet spread gets on shelf faster, cleaner and perfectly filled.



Product Versatility



Many of today's applications require a wide range of products to be filled on a single filler. The Unifiller can do this. Were in the past, two different filling machines, with two totally different filling concepts was needed, today's Unifiller can handle the entire product range.

Unifiller fill nozzles are designed especially for their application and can be exchanged easily.

The Unifiller offers unmatched product versatility: from low viscous products without particles, to high viscous products with particles; both cold and hot fill. The large product ports and short product path allow filling of high viscous spreads, with or without particles, and high solid content (50%+) with ease.

The custom-fit nozzles increase accuracy and minimize product drip for even the most complex products. The result is a cleaner machine, cleaner glass jars and minimum risk of contamination of the glass rim for a more consistent seal.

Besides minimum product give-away, superior filling accuracy assures consistent headspace for trouble-free in-container thermal processing.

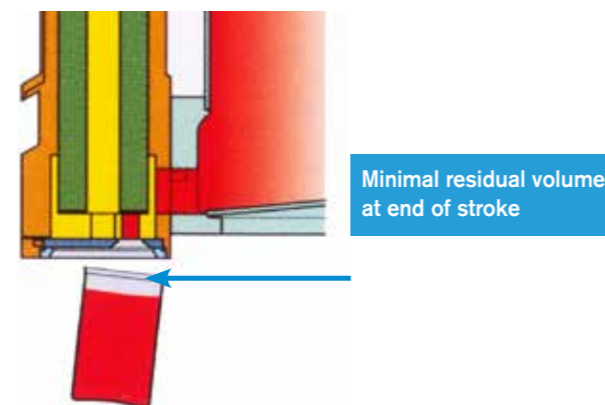
Besides accurately machined parts, the Unifiller has an extremely large main bearing that holds the product bowl and filling stations firmly in place. No rocking. The heavy duty main bearing can easily last 10 years with proper lubrication. Grouped greasing points on the corner of the machine is standard, automatic lubrication is a nice option to eliminate any potential human error factor.

At the end of the stroke when the piston is at its lowest position and the millisecond before the valve closes...will the product drop or stay in the valve? Residual volume in the nozzle path is minimal in the unifiller product path. The piston actually enters the valve cup and positively displaces all product. Pushing all product out of the nozzle. The Unifiller nozzle path is short with very small residual volume making it easier to control the product flow. Therefore accuracy is tremendous between fills.

The volume cam is the largest and most rigid in its class. Minimizing deflection under high loads, even when very thick products are being pumped at high line speeds. The large center column, main bearing, and heavy duty fill cam contribute to maintaining the valve strokes within hundreds of a millimeter, making every stroke equal, so that identical fill volumes are pumped every revolution.

Unifiller machine range

FILLING STATION SIZE [ml]	TYPICAL BOWL PORT DIMENSIONS [mm]	TYPICAL NOZZLE PORT DIMENSIONS [mm]	FILLING SPEED (Up to # jars per hour) [JPH]
100	Ø 24	Ø 9 - Ø 10	66.000
300	Ø 30	Ø 16 - Ø 19	60.000
350	Ø 30	Ø 16 - Ø 19	57.000
420	Ø 30	Ø 19 - Ø 21.5	51.000
500	Ø 40	Ø 22 - Ø 26	30.000
850	Ø 40	Ø 26 - Ø 28	27.000
1000	Ø 45	Ø 28 - Ø 32	21.000
1500	Ø 45	Ø 28 - Ø 32	18.000



Examples of applications and target filling accuracies

PRODUCT	FILLING VOLUME [ML]	TYPICAL FILLING ACCURACY (1 STANDARD DEVIATION) [GRAM]
HONEY	170	0,11 ± 0,05
GELEE	177	0,30 ± 0,10
JAM WITH 25X25X25 MM FRUIT PIECES	177	1,20 ± 0,30
GELEE	230	0,07 ± 0,03

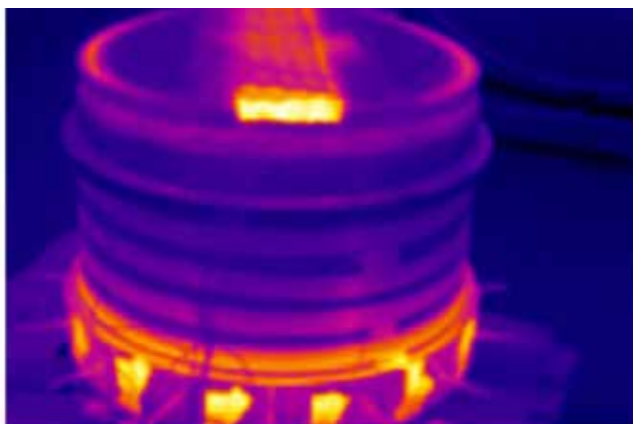


An example of versatility: chocolate spread

A renowned producer of jams and chocolate spread gave JBT the technical challenge of keeping the product bowl at the exact same temperature during filling.

JBT's engineers adapted the product bowl to allow a heated lower surface and insulated wall and cover, to keep the spread at a preset temperature, even when the filler is not running. A watercircuit cools or heats the bowl with the push of a button. The middle console contains all the items like product inlet and temperature and level probes. This way, more space remains for two hinged access doors, allowing easy access to the bowl for inspection and cleaning.

The doors are manufactured from a food grade engineering polymer, known for its insulating properties and low weight. The covers can be secured both in open and closed position.



Insulated bowl during heat transfer test

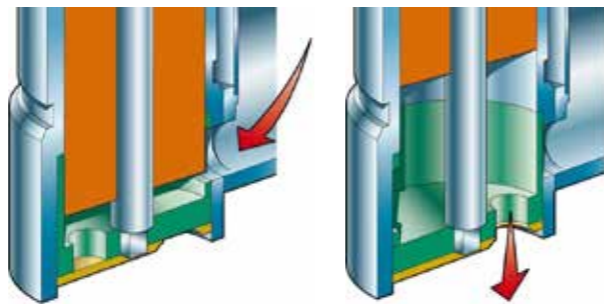
Product Integrity

Product damage is always a concern when running particulates and here the Unifiller outshines the traditional piston filler as well with only two (2) shear points: one at the bowl port, and one at the nozzle port. In comparison the traditional piston filler has three (3) shear points as the product flows through the valve plug: one at the bowl port, but two when filling through the plug towards the opening of the container.

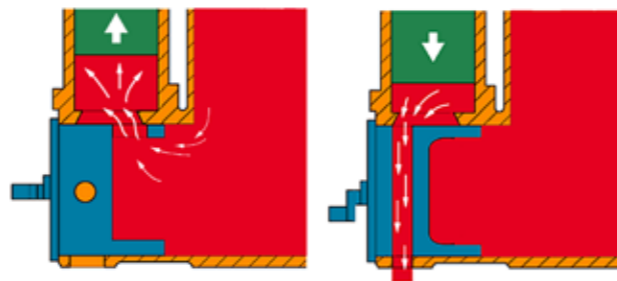
Over time there is a huge difference in product integrity, being able to reduce potential damage to product-pieces by one third, or 33%. Even if a piece is caught at the shear point, the surface is perfectly cut by the Unifiller porting so that the piece integrity is maintained, no smashed product.

With this in mind, why would you want to use a traditional piston filler at all when running particulates?

Unifiller – 2 shear points



Piston Filler – 3 shear points



Sanitary design and Clean-In-Place without disassembly

The JBT Unifiller is the only volumetric filler with Clean-In-Place capacity that does not require disassembly of the fill stations. Unique, as confirmed among others by the independent Dutch Dairy Research Institute NIZO.

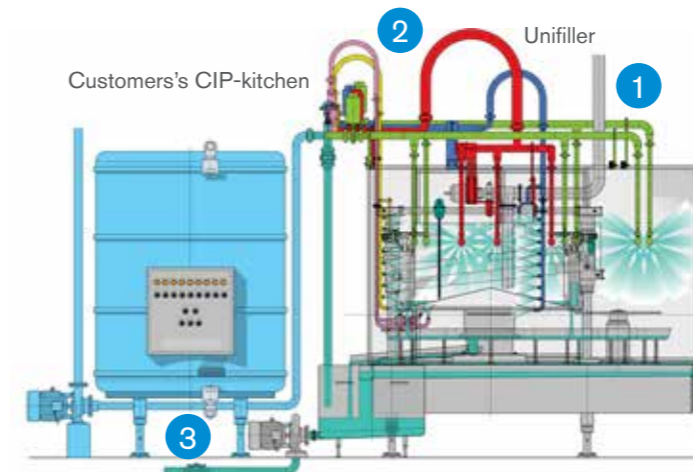
The Clean-In-Place (CIP) is the result of the Unifiller's unique sanitary design. Because of the unique self-draining design and absence of seals in the filling stations the Unifiller does not need to be (partly) disassembled for cleaning. Safe. Hygienic. Effective.

Optional guarding with safety glass adds to the sanitary aspect of the machine, with every single part that comes into contact with your product made either of stainless steel or another, noncorrosive material.

The self-draining filling station design allows full CIP without disassembly. No need for labour-intensive manual disassembly or complex and maintenance-intensive motorized disassembly of the filling stations.

Automatic CIP without disassembly results in:

- ✓ Less downtime for cleaning and product change-over
- ✓ Consistent, recurrent cleaning, independent from the operator
- ✓ No damage and soiling of technical components



1. Piping with sprays for direct and/or indirect cleaning of food contact surfaces
2. Main manifold with sanitary valves and filter
3. Return tank with pump to customer's CIP kitchen



- ▲ Optional guarding with safety glass
- ▼ Multiple spray balls are positioned within the guarding for cleaning of food contact surfaces



- ▲ CIP Control valves and piping
- ▼ Main manifold with sanitary valves and filter



Product & Format Change-over in 20 minutes

No jar? No fill problem

With its No-Container-No-Fill system, the Unifiller knows if there is no jar under the filling station. It simply waits for the next jar to arrive to execute the three-phase filling cycle. No product loss, no mess.

Moreover, the sensor for NJ/NF (no-jar-no-fill) detection is equipped with an air blowing unit on top. This keeps the sensor clean from CIP liquids and dust, providing more reliable detection of the jars over many years of operation.



Self-Cleaning Jar Detection



Glass breakage prevention

The Unifiller is fitted with an in-feed system, especially designed for gentle and controlled handling of glass jars. Any glass jar, even those with the most irregular shape. The system operates flawlessly and reliably, thanks to its robust design, making it low in maintenance

Ready for another round? With a few basic readjustments, your Unifiller will reset itself to handle another product, another volume, and another glass jar.

No engineers, no tools required. Simple, colour-coded change parts guarantee a very fast change-over from one glass format to another. The change parts are attached for correct mounting. Optimal automatic height and single point, step-less volume adjustment get the job done without manual intervention. The volume can even be adjusted while the filler is running.

When fitted with the optional automatic, recipe driven glass format change-over, the operator simply selects the glass format and the Unifiller adjusts itself automatically to the correct height and filling volume.

Thanks to the intermediate rinsing cycle, your whole filler is reset and cleaned within 20 minutes. Just in time to get back from your coffee break and watch the next product taking off.

For maximum reliability and minimum maintenance costs, all electrical parts for automatic volume and height adjustment are mounted under the filler base plate, outside the CIP area.

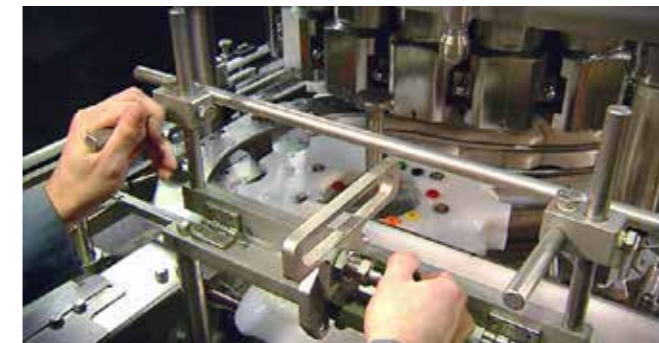
Typical change-over times (volume, height, diameter/shape)

Change-over times [minutes]	(1) Jar height	(2) Filling volume	(3) Jar diameter or shape
Manual	20 - 30	10 - 15	10-15
Automatic	5	5	NA

Change-over times [minutes]	(1)+(2)+(3) Complete change-over
Manual	< 60
Automatic	< 25



Machine display. 10 pre-set product-format combinations. Also change part colour codes are shown.



Colour-marked quick-change parts with locating pins for quick and correct positioning.

Automatic height and volume adjustment



The JBT Process Technology Centre comes to you

Having sold over 2 000 machines, our engineers and technicians have faced and solved some of the toughest filling problems for processors within the food industry.

Put us to the test. Invite JBT over to your plant and witness the Unifiller Pilot customize itself to your product and specific needs.

The single station, highly flexible pilot machine that conducts filling tests is a smaller version of the Unifiller. By testing your own products, you can see the accuracy, determine valve configuration, optimize filling speed range and see filled product integrity.

If you already have a Unifiller running at your facility, the Pilot is still at your service. Whether it is to perfect your processes or experimenting with new product recipes. Because we understand that the decision to market a new food product often depends whether it can be integrated into existing operations or will need new equipment capable of handling the new formulations.

The option to perform filling tests provides you with the insurance the Unifiller can handle your difficult-to-fill product with increased accuracy, optimal product quality and consistency, prior to making a key capital purchasing decision.

hello@jbt.com



Food processing expertise at your service, around the globe

Our mission: providing you with maximum uptime and smooth operation. Therefore, you can count on JBT for technological support, installation supervision, training and after-sales support anywhere in the world.

JBT has a long history of food processing equipment. Having sold over 40,000 machines worldwide our service technicians have faced and solved some of the toughest problems for processors within the food industry. JBT offers OEM parts for repairs and maintenance. Over 6,000 parts can be shipped within 24 hours to all continents. Other examples of JBT customer service include the standard exchange assemblies and preassembled kit to reduce downtime due to maintenance and repair. Our range of service packages make sure your equipment keeps running as profitably as possible, for as long as possible. With minimum downtime.

More than 50% of the world's shelf-stable foods are filled, seamed or sterilized on JBT equipment. With several thousands of canning lines in operation worldwide, JBT is the world's leading supplier of integrated processing solutions for metal, glass and plastic containers. From single machines to complete processing lines, we enhance product value and safety. JBT equipment captures the quality, nutrition and taste of your product while producing them at the lowest cost per unit.



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