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all things flow

**seepex Progressive Cavity Pumps  
in the Food and Beverage Industry**



# seepex Progressive Cavity Pumps in the Food and Beverage Industry

Today's food and beverage industry offers a variety of pump applications. **seepex** has developed solutions optimized technically and economically for the industry's requirements. Recently, standards for hygiene, sterilization, cleaning of food processing machinery and regulations governing worker safety have become increasingly stringent. Meeting standards that protect both the consumer and food processing personnel are a high priority for **seepex**. Simpler, more cost-effective and less labor-intensive maintenance is also increasingly important in today's economy. **seepex** progressive cavity pumps with CIP and SIP capabilities fulfill these simple maintenance and strict

hygiene requisites. They have been constructed to meet the FDA and 3-A sanitary standards in the United States as well as the EHEDG regulations.

**seepex** pumps gently convey thin and high viscosity products, with or without solids, as well as cold or high temperature products, without pulsation and with minimal shear. Furthermore, these pumps can convey materials with large and soft solids such as yogurt with whole or chopped fruit with virtually no product damage. **seepex** offers custom designed pumps for fruit and vegetable preparation, for breweries, for wineries, as well as other applications.

## seepex progressive cavity pumps in the food and beverage industry

### 1. Dairy industry

- convey
- cream cheese
- condensed milk
- cream
- yogurt
- butter
- cheese

### 2. Fruit & vegetable processing

- chop and convey
- potatoes
- carrots
- onions
- apples
- berries
- cherries
- pears

### 3. Beer industry

- convey
- yeast
- grain-water mixture
- spent grain
- hops extract
- wort
- diatomaceous earth

### 4. Wine industry

- convey
- grapes
- wine
- must
- pomace



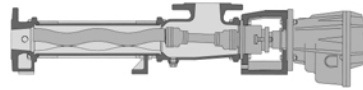
**seepex pump NS 35-24,**  
Product: fruit juice,  
Pressure: 24 bar (350 psi),  
Temperature: 65°C (150°F),  
Capacity: 6-13.5m<sup>3</sup>/h (26.4-59.4gpm)



**seepex pumps BCSB 52-6L**  
Product: cream,  
Pressure: 4 bar (60 psi),  
Temperature: 5-20°C (40°-70°F),  
Capacity: 10-40m<sup>3</sup>/h (44-176gpm)

# The products

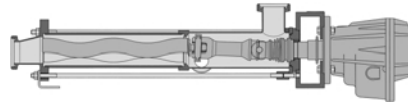
Range BN



Range **BN** pumps in stainless steel can be used in almost all areas of industry to convey thin to high viscosity materials with and without solids. They present cost effective alternatives especially in the waste management market.

Capacity: 0,05 - 500 m<sup>3</sup>/h (0,22 - 2,200 gpm)  
Pressure: up to 48 bar (700 psi)

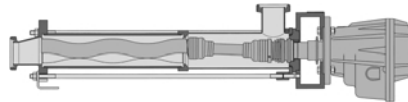
Range BCSO



**seepex** range **BCSO** pumps meet the highest standards for gentle handling, sanitation, cleaning and sterilization with their sanitary open joints and their dead-zone-free casing parts. These pumps have been built to conform to the 3-A sanitary standard in the U.S. and the EHEDG regulations.

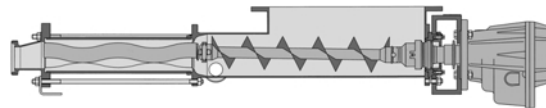
Range **BCSB** pumps are furnished with cost efficient pin joints and are especially suited to highly abrasive products and high operating pressures.

Range BCSB



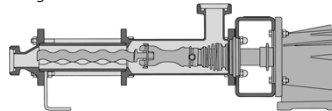
Like the **BCSO** pumps, range **BTCS** pumps are equipped with maintenance friendly sanitary joints. These pumps are offered with an auger feed screw and an open inlet hopper with cylindrical compression zone suited for conveying highly viscous products.

Range BTCS



Capacities: 30 l/h - 130 m<sup>3</sup>/h (0.13 - 572 gpm)  
Pressures: up to 24 bar (348 psi)

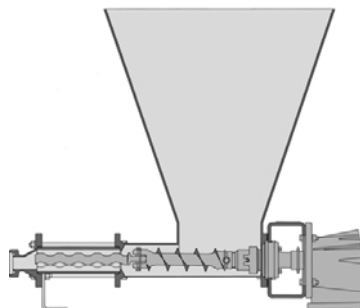
Range MDC



The **MDC** range provides the same characteristics as the **BCSO** range but is more suited to low flow applications with metering precision for tolerances of ≤1 %.

The **MDTC** range is equipped with maintenance friendly sanitary joints and an open inlet hopper with a cylindrical compression zone suited for conveying highly viscous products.

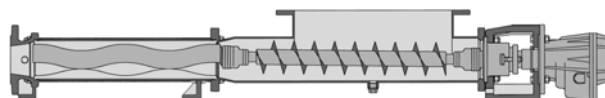
Range MDTC



Pumps of ranges **MDC** and **MDTC** are built to meet the 3A sanitary standards in the U.S. and EHEDG regulations.

Capacities: 0 - 1,000 l/h (4 gpm)  
Pressures: up to 24 bar (350 psi)

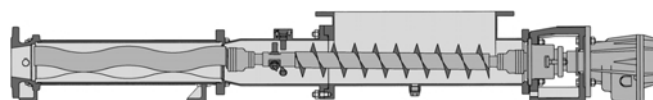
Range BT



**seepex** range **BT** pumps have a rectangular inlet hopper with a cylindrical compression zone and auger feed screw. The length of the hopper inlet is customized according to customer needs. These pumps are used to convey highly viscous products.

Capacity: 0,1 - 200m<sup>3</sup>/h (0.44 - 880 gpm)  
Pressure: up to 48 bar (700 psi)

Range BTM



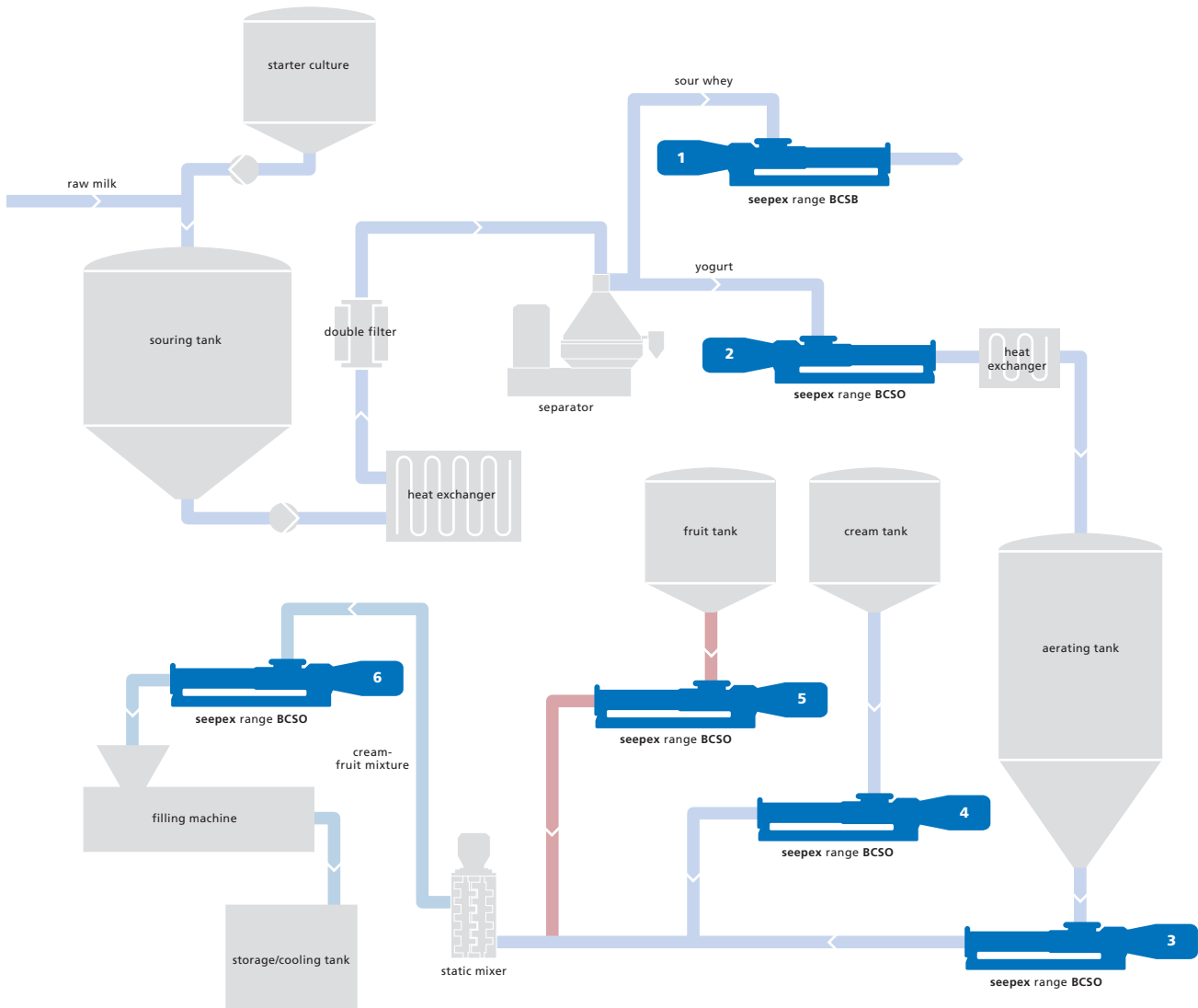
A special characteristic of the range **BTM** pump is a patented system of knives integrated in the compression housing. Rotating knives, symmetrically arranged on the feed screw, in conjunction with stationary knives fixed to the compression zone, chop and crush the pumped product.

This closed system permits oxidation-free chopping of whole fruits and vegetables while simultaneously transporting the product directly to the next processing stage.

The most important areas of application are preparation of fruits and handling waste vegetables for the production of juice, starch, or ethanol.

Capacity: 2 - 50m<sup>3</sup>/h (8.8 - 220 gpm)  
Pressure: up to 24 bar (350 psi)

# Dairy industry



## Process of fruit yogurt



**seepex pumps BCSO 5-12,**  
 Product: fruit from fruit tank to the mixer,  
 Temperature: 5-10°C (40-80°F),  
 Pressure: 10 bar (150 psi),  
 CIP cleaning: 1% sodium hydroxide solution at 80°C (175°F), 0.8% nitric acid at 60°C (140°F), 0.15% H<sub>2</sub>O<sub>2</sub> at 60°C (140°F) and water,  
 Capacity: 1-3m<sup>3</sup>/h (4.4-13.2gpm)



**seepex pumps BCSO 17-6L,**  
 Product: yogurt cheese and yogurt,  
 Temperature: 5-20°C (40-70°F),  
 Pressure: 4 bar (60psi),  
 CIP cleaning: 2.5% caustic soda and 1.5% nitric acid at 90°C (195°F),  
 SIP cleaning: sterilization at 130°C (265°F),  
 Capacity: 3.5-16m<sup>3</sup>/h (15.4-70.4gpm)

Gentle handling of conveyed products is very important in the dairy industry. **seepex** progressive cavity pumps are especially suited for this market because they pump pulsation free and gently, with low shear. Progressive cavity pumps are ideal for handling high viscous materials. They deliver consistently even with materials up to 3,000,000 cPs. They can also pump whole fruit, which will be added into yogurt, with minimal degradation.

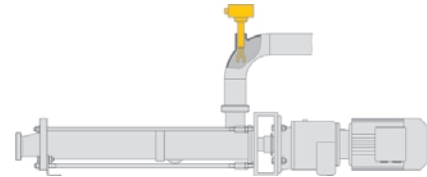
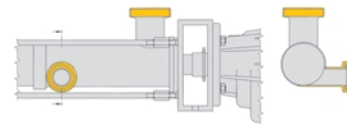
Since hygienic conditions are of paramount importance in the food processing industry, **seepex** progressive cavity pumps must meet the highest quality standards. The dead-zone-free suction housing, flushable mechanical seals and the special surface finish guarantee residual free cleaning of the complete pump. **CS** range pumps conform to 3-A sanitary standards in the United States and EHEDG regulations.

**Applications for seepex pumps in fruit yogurt production**

- **seepex** range **BCSB** pumps conveying whey to further processing (1)
- **seepex** range **BCSO** pumps conveying low fat yogurt from separator through the cooler to the aeration tank (2)
- **seepex** range **BCSO** pumps conveying yogurt from the aeration tank to mixer (3)
- **seepex** range **BCSO** pumps conveying cream (4) and fruit (5) from tanks to be mixed with yogurt
- **seepex** range **BCSO** pumps conveying yogurt and fruit to filling machine and to the cooler (6)

**Typical accessories**

- suction and pressure connections according to DIN 11851 (standard), other connections such as TriClamp, SMS, etc. can be provided
- CIP connection for the residue free cleaning of pump without disassembly
- TSE dry running protection device



**seepex pump BCSO 17-12**,  
*Product: pudding and desserts,*  
*Temperature: 25°C (80°F),*  
*Pressure: 12 bar (175 psi),*  
*CIP cleaning 3% caustic soda and 2% nitric acid at 70-95°C (160-200°F) for about an hour,*  
*Capacity: 5-10m<sup>3</sup>/h (22-44gpm)*

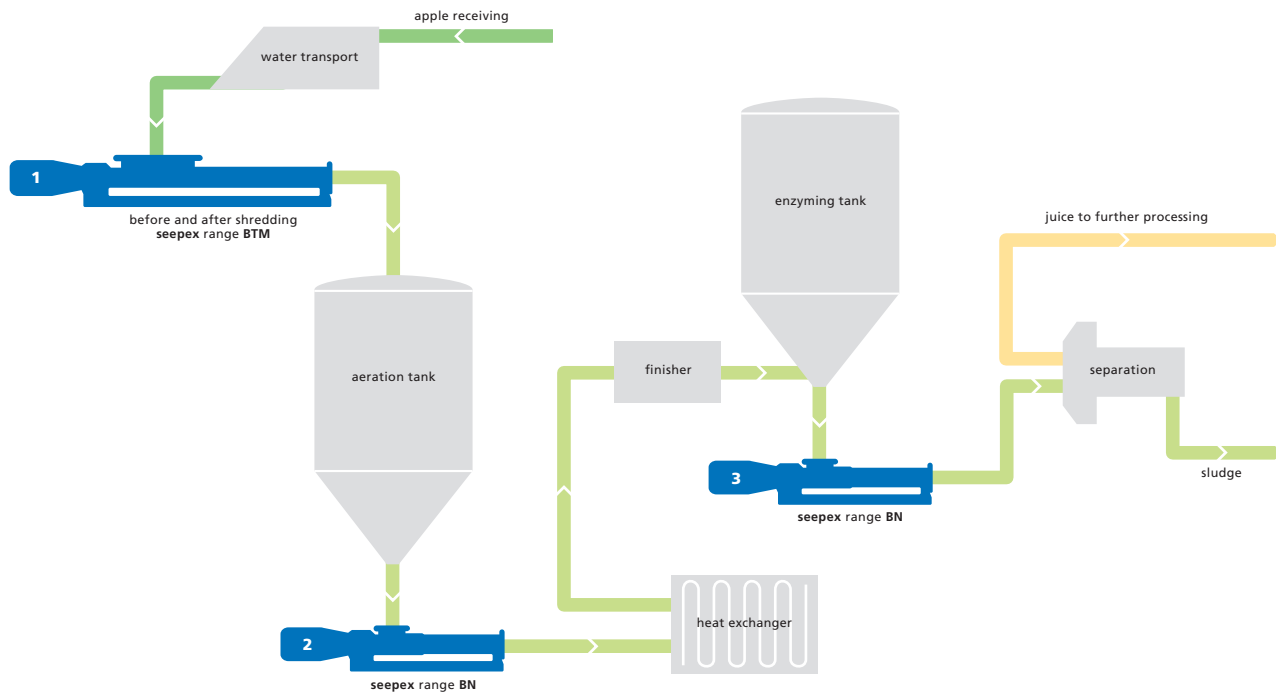


**seepex pump BTCI 10-12** for mashing and conveying soft cheese,  
*Viscosity: non flowable,*  
*Temperature: -1.3-2.0°C (30-35°F),*  
*Pressure: 7 bar (105 psi),*  
*Capacity: 2,3m<sup>3</sup>/h (10.12gpm)*

*Pump hopper fitted with bridge breaker paddles with teeth for grabbing solid dairy foods such as cream cheese, butter and comparable products.*



# Fruit and vegetable processing



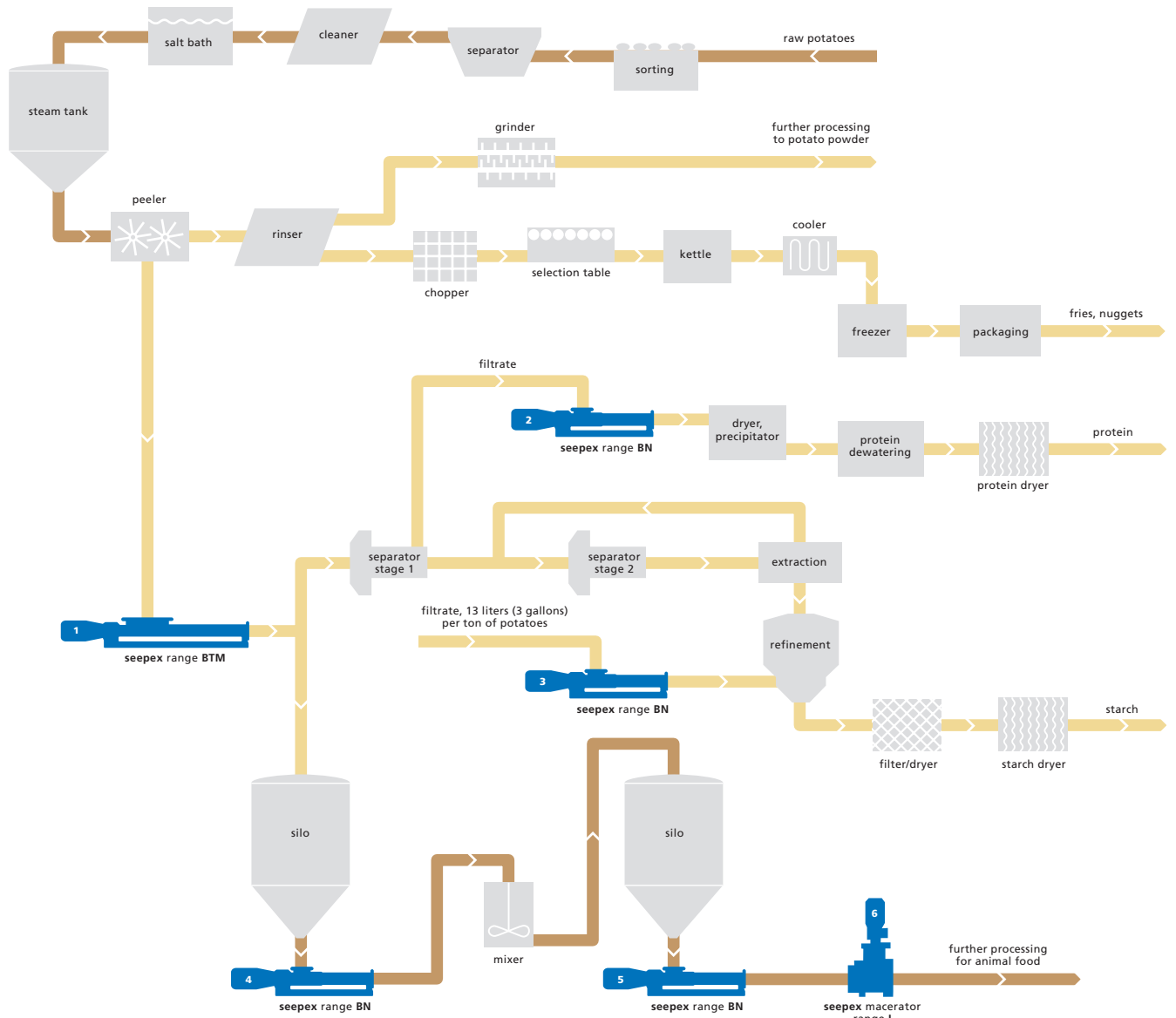
## Process of fruit



**seepex pump BTM 10-12** with stainless steel hopper and mobile cart,  
 Product: cherries,  
 Pressure: 12 bar (175 psi),  
 Capacity: up to 7 m<sup>3</sup>/h (30 gpm)



**seepex pump BTM 70-12** for chopping and simultaneous transporting of apples,  
 Pressure: 6-12 bar (90-175 psi),  
 Temperature: 20-30°C (70-90°F),  
 Capacity: 15-20m<sup>3</sup>/h



Process of potatoes



seepex pump BTM 17-12, installed at the end of an inspection conveyor belt, for chopping and conveying of onion waste, Capacity: 8m<sup>3</sup>/h (35.2gpm)



seepex pump BTM 17-12 and inspection conveyor belt

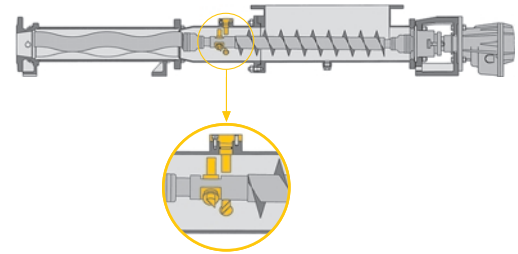
The conventional methods used to convey waste vegetables as well as fish and meat waste are compressed air, water flushing, or various containers connected either to disposal units or to re-routing for further processing, such as animal feed production. These methods, however, are time-consuming and costly. The most cost-effective and efficient solution for transportation of waste is a **seepex** open hopper range **BTM** pump.

Because the **BTM** pump can shred conveyed waste so effectively, the waste volume is reduced by as much as one-third of the initial volume. This, plus the smaller pieces generated by the open hopper chopper pump, enable the waste to be conveyed by the shortest possible route through a closed system of piping for further processing. This volume reduction is the key success in regarding waste disposal costs.

**Applications for seepex pumps in potato processing**

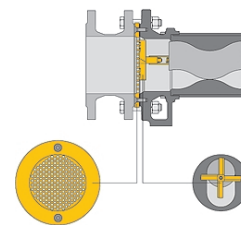
- seepex range **BTM** pumps chopping and transporting potato waste from the peeler to the separator/silo (1)
- seepex range **BN** pumps conveying filtrate from the separator to the precipitator and to protein reclamation (2)
- seepex range **BN** pumps conveying fruit water to refinery and to final starch production (3)
- seepex range **BN** pumps conveying shredded potatoes from silo to mixer (4)
- seepex range **BN** pumps conveying the already-mixed potato waste from silo to eventual processing into pig feed (5)
- seepex macerator range **I** for reducing potato particle size for pig feed (6)

— The cutting unit of **BTM** range serves to shred material. The connector between compression housing and hopper allows simpler rotor replacement as well as easy maintenance of cutting knives.



**Typical accessories**

- seepex regrinder  
By using different cutting plates, various degrees of shredding may be accomplished.



**seepex pump BTM 70-12**,  
Product: potato waste from peeler to be shredded and transported to separator or mash silo,  
Pressure: up to 12 bar (175 psi),  
Capacity: 40m<sup>3</sup>/h (176gpm)



**seepex pump BT 35-24**, Product: carrot mash from the degassing tank to the heater,  
Temperature: 70°C (160°F),  
Pressure: 20 bar (300 psi),  
Capacity: 5-10m<sup>3</sup>/h (22-44gpm)



seepex progressive cavity pumps are used in fruit and vegetable processing, in the production of juices, in the disposal of waste vegetables and fruits as well as waste trimmings.

When producing fruit and vegetable juices, the shredding and conveying process plays an important role at several stages of the process. High quality demands technology that does not add to the air content of the processed product and produces a narrow range of solids sizes.

seepex range BTM pumps also have a patented process for shredding and transporting fruits and vegetables. These pumps have a rectangular

inlet hopper as well as devices for product feeding and shredding. Patented cutting knives integrated in the compression housing are a unique feature of the BTM.

seepex range BTM pumps shred products like apples, pears, cherries, carrots, berries, and transport them within an enclosed system a short distance for further processing. Continuous and fast juice reclamation is achieved while minimizing oxidation. Aeration tanks and inefficient mills are eliminated. Life cycle costs will be reduced. The compact design requires less space.

**Applications for seepex pumps in the fruit processing**

seepex range BTM pumps for pre- and post-shredding of whole apples and transport to aeration tank (1)

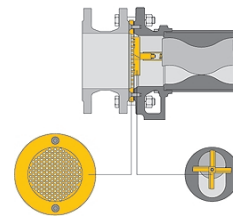
seepex range BN pumps for transport of apple mash from aeration tank through pasteurization into the enzyme tank (2)

seepex range BN pumps transporting apple mash from enzyme tank to separator (3)

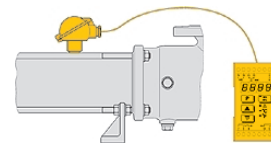
**Typical accessories**

seepex regrinder

seepex TSE dry running protection device



carrot mash after being processed in regrinder

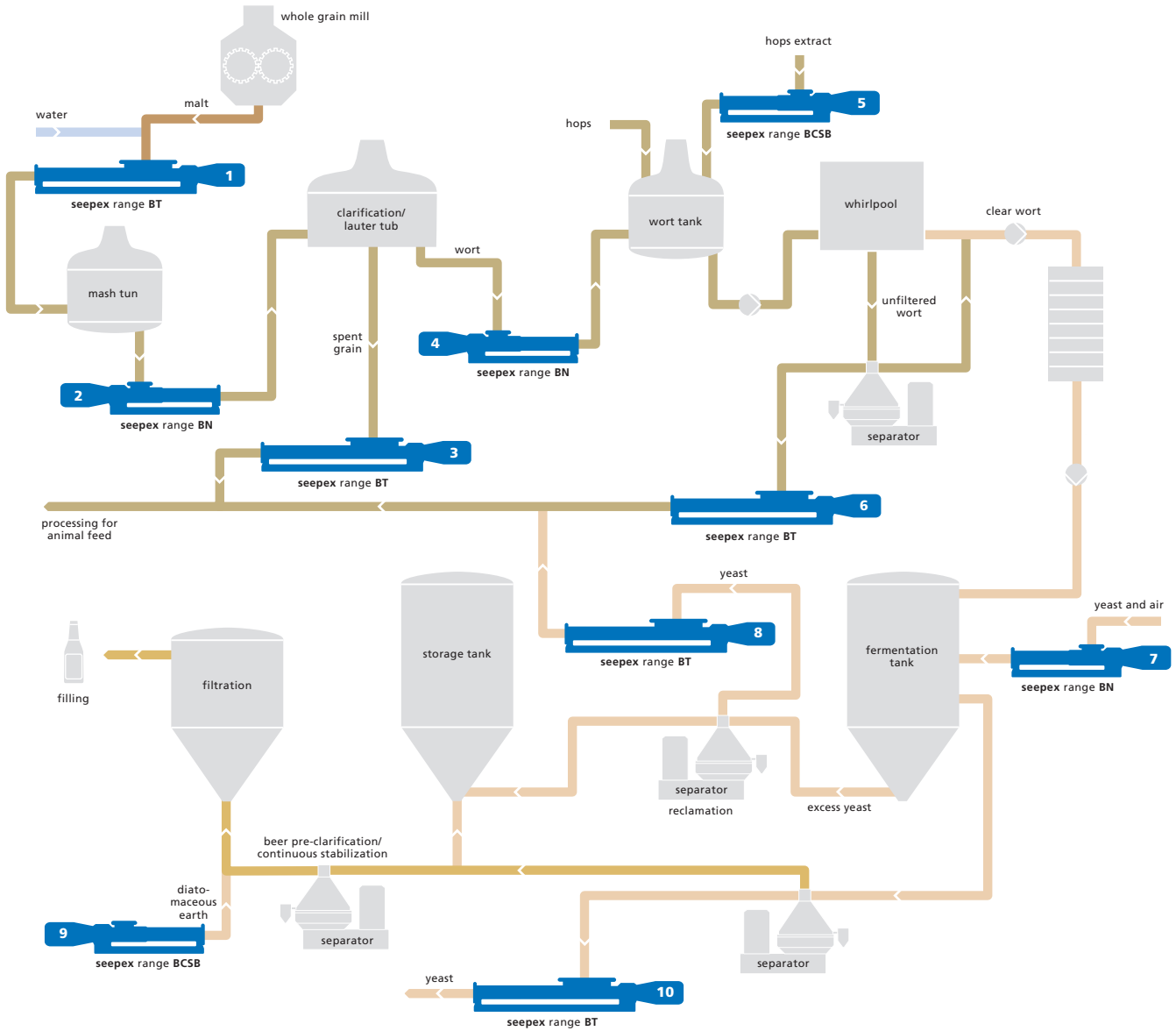


seepex pump BTM 10-12 shredding and simultaneously conveying berries, Capacity: 1-3m<sup>3</sup>/h (4.4-13.2gpm)



view into hopper of seepex pump BTM 10-12 while shredding and conveying berries

# Beer industry



Process for beer



**seepex pump BT 17-12,**  
*Product: wheat-water mixture from mill to the mash tank*  
*Pressure: 2 bar (30 psi),*  
*Temperature: 65°C (150°F),*  
*Capacity: 5-12m<sup>3</sup>/h (22-52.8gpm)*



**seepex pump BCSB 10-12,**  
*Product: diatomaceous earth for filtration,*  
*Pressure: 3 bar (45 psi),*  
*Temperature: 20-40°C (70-105°F),*  
*Capacity: 3m<sup>3</sup>/h (13.2gpm)*

**seepex** has delivered optimal solutions for almost all applications in the beer industry with our modularly built systems consisting of eight groups, 26 ranges, and a multitude of available materials.

Open hopper pumps are ideal for handling highly viscous products such as spent grain, yeast or spent hops. An auger feed screw assists

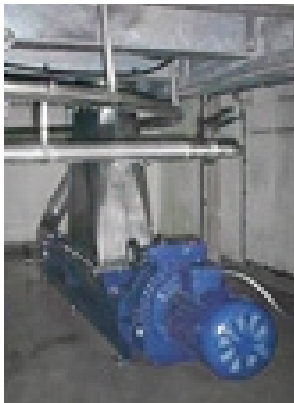
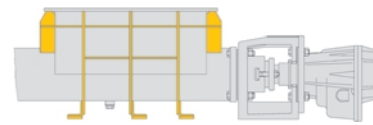
the non flowable product into the pumping elements - rotor and stator. Additionally these pumps can be used where physical constraints meant that the grist case had to be below the mash tun and complex conveyor systems are used. Dry milled grain/wheat and hot water are effectively mixed within the pump and then transported safely into the mash tun.

**Applications for seepex pumps in the beer industry**

- **seepex** range **BT** pumps pumping malt from the grain mill and water into the mash tun (1)
- **seepex** range **BN** pumps conveying mash from the mash tun into a clarification tub (2)
- **seepex** range **BT** pumps conveying spent grain from clarification tub to further processing as animal feed (3)
- **seepex** range **BN** pumps conveying wort from the clarification tub into wort tank (4)
- **seepex** range **BCSB** pumps conveying hops extract into the wort tank (5)
- **seepex** range **BT** pumps conveying cloudy wort by-product from separator to further processing for animal feed (6)
- **seepex** range **BN** pumps conveying yeast-air mixture into fermentation tank (7)
- **seepex** range **BT** pumps conveying yeast from separator to further processing for animal feed or yeast (8)
- **seepex** range **BCSB** pumps conveying diatomaceous earth into filtration and to final filtering of bottle washing solution (9)
- **seepex** range **BT** pumps conveying yeast from separator (10)

**Typical accessories**

- When conveying yeast from the separators, a short-term pressure surge occurs. **seepex** provides special construction of inlet hoppers with reinforcements.



**seepex** pump **BT 17-12**,  
*Product: mash from mash tun into the clarification tub,*  
*Pressure: 2 bar (30 psi),*  
*Capacity: 5m<sup>3</sup>/h (22gpm)*



**seepex** pump **BT 17-12**, *Product: spent grain from clarification tub to further processing as animal feed,*  
*Pressure: 4 to 10 bar (60-150 psi),*  
*Viscosity: up to 15,000 cPs,*  
*Temperature: 70-80°C (160-175°F),*  
*Capacity: 8m<sup>3</sup>/h (35.2gpm)*

# Wine industry

**seepex** provides a comprehensive variety of progressive cavity pumps for stationary and mobile applications in the wine industry. Particularly suited for the gentle and low pulsation conveyance of must are the **seepex** ranges **BCSB** and **BT**.

Compact design, easy maintenance, block form, and the tested **seepex** pin joints distinguish the range **BCSB** pumps. The dead-zone-free pump

suction casing is smooth and can be cleaned residual free, thus satisfying the rigid sanitary requirements of the wine industry.

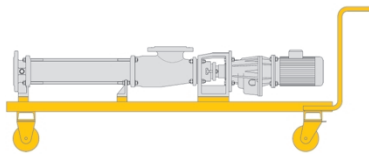
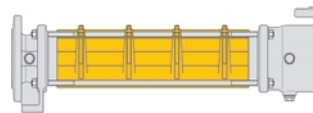
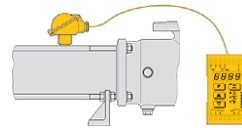
**seepex** range **BT** pumps are furnished with an inlet hopper that can be adjusted to fit the operating conditions, and with an auger feed screw to facilitate transport of viscous materials with high solids contents. The **seepex** range **BT** pumps meet FDA standards.

## Typical accessories

— **seepex** TSE dry running protection device

— stator retensioning device which increases the life of rotor and stator

— mobile carts with 2, 3 or 4 wheels as needed



**seepex pump BT 130-6L,**  
Product: grape must,  
Pressure: 4 bar (60 psi),  
Capacity: 75m<sup>3</sup>/h (330gpm)



**seepex pump BT 130-6L,**  
Product: grape must,  
Pressure: 3 bar (45 psi),  
Capacity: 80m<sup>3</sup>/h (352gpm)



**seepex pump BCSB 10-6L,**  
Product: grape mash,  
Pressure: 2 bar (30 psi),  
Capacity: 5-7m<sup>3</sup>/h (22-30.8gpm)



**seepex pump BN 5-24,**  
Product: sediment,  
Pressure: 4-6 bar (60-90 psi),  
Capacity: 2m<sup>3</sup>/h (8.8gpm)

## Further applications

With customized designs, **seepex** progressive cavity pumps are used in many additional areas of the food industry. They have been successfully used in manufacturing applications as well as waste management. They have proven valuable in offering solutions for difficult, unusual conveying tasks. Our food application experts have had years of experience, advising customers in planning and customizing pumps with low life cycle costs in mind. Based on the

**seepex** classification system and a multitude of material combinations, a technically and economically efficient pump can be individually designed for each customer and application.

Please contact **seepex** with your specific application requirements.

[www.seepex.com](http://www.seepex.com)  
[food@seepex.com](mailto:food@seepex.com)



**seepex pumps**  
**BN 130-12,**  
*Product: distillery mash, 10%DS,*  
*Viscosity: 2000 cPs,*  
*Temperature: 65°C (150°F),*  
*Pressure: 8-12 bar (120-175 psi),*  
*Capacity: 40m<sup>3</sup>/h (175gpm)*



**seepex pump**  
**BTCS 10-12,**  
*Product: tomato paste from containers,*  
*Temperature: 20°C (70°F),*  
*Pressure: 3 bar (45 psi),*  
*Viscosity: non flowable,*  
*Capacity: 0.5-1.3m<sup>3</sup>/h (2.2-5.72gpm)*



**seepex pump**  
**BT 70-6L,**  
*Product: fish concentrate, conveyed into separator,*  
*Temperature: 90°C (195°F),*  
*Pressure: 2 bar (30 psi),*  
*Capacity: 12-22m<sup>3</sup>/h (52.8-96.8gpm)*



**seepex pump**  
**BTM 35-6,**  
*Product: DOA chickens and chicken waste,*  
*Viscosity: <50,000 cPs,*  
*Pressure: 3 bar (45 psi),*  
*Capacity: 5m<sup>3</sup>/h (22gpm)*



**seepex pump**  
**BCSO 5-6L, Product:**  
*cream cheese with vegetable pieces,*  
*Viscosity: 8000 cPs,*  
*Temperature: 60°C (140°F),*  
*Pressure: 4 bar (60 psi),*  
*CIP cleaning: at 80°C (175°F) with 2% NaOH solution, at 65°C (150°F) with 1% HNO<sub>3</sub> solution,*  
*Capacity: 0.1-1.5m<sup>3</sup>/h (0.44-6.6gpm)*



**seepex pumps**  
**BCSB 52-6L,**  
*Product: jam with whole fruit,*  
*Pressure: 4 bar (60 psi),*  
*Capacity: 10-20m<sup>3</sup>/h (44-88gpm)*

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And what can we get flowing for you? Your nearest contact:

Or visit [www.seepex.com](http://www.seepex.com)