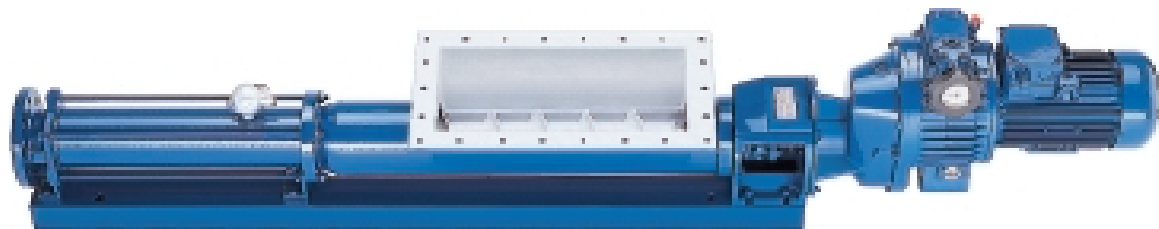
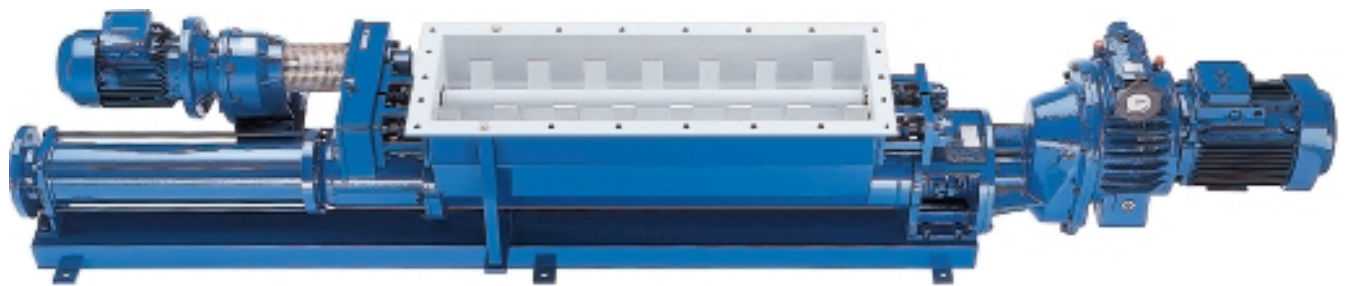




Progressive Cavity Pumps

Group T

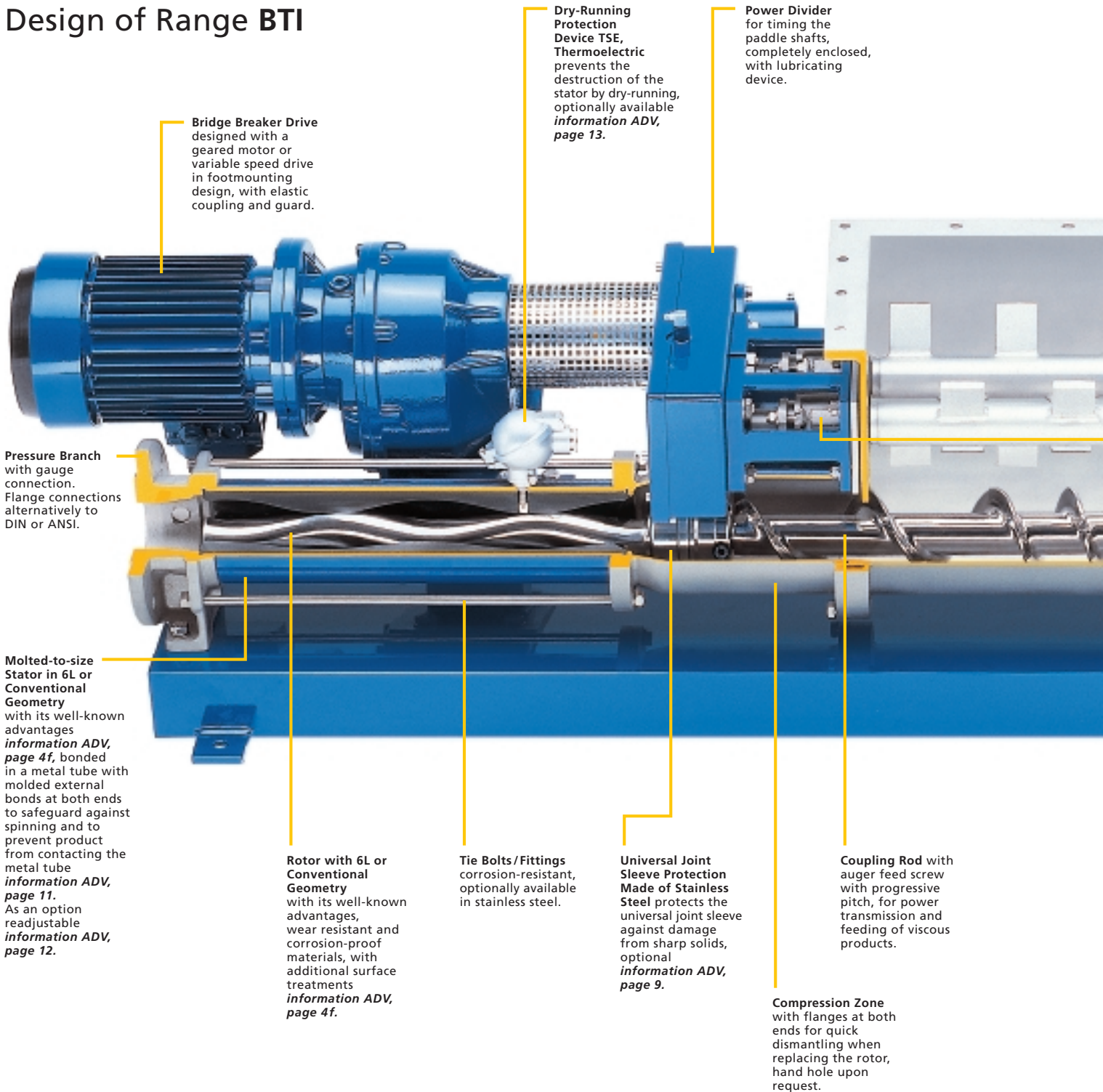


Group T

seepex pumps of group T are designed to handle very viscous or non-flowing products. These liquids usually cannot be transported by standard pumps because they do not flow into the pumping elements – rotor and stator. Consequently, these pumps incorporate a feed

hopper and other devices to enhance product feeding. Group T pumps have been used successfully in all industrial areas to transport viscous and de-watered products. Group T is composed of 8 ranges respectively

Design of Range BTI



Bridge Breaker Drive designed with a geared motor or variable speed drive in footmounting design, with elastic coupling and guard.

Dry-Running Protection Device TSE, Thermoelectric prevents the destruction of the stator by dry-running, optionally available *information ADV, page 13.*

Power Divider for timing the paddle shafts, completely enclosed, with lubricating device.

Pressure Branch with gauge connection. Flange connections alternatively to DIN or ANSI.

Molded-to-size Stator in 6L or Conventional Geometry with its well-known advantages *information ADV, page 4f.*, bonded in a metal tube with molded external bonds at both ends to safeguard against spinning and to prevent product from contacting the metal tube *information ADV, page 11.* As an option readjustable *information ADV, page 12.*

Rotor with 6L or Conventional Geometry with its well-known advantages, wear resistant and corrosion-proof materials, with additional surface treatments *information ADV, page 4f.*

Tie Bolts / Fittings corrosion-resistant, optionally available in stainless steel.

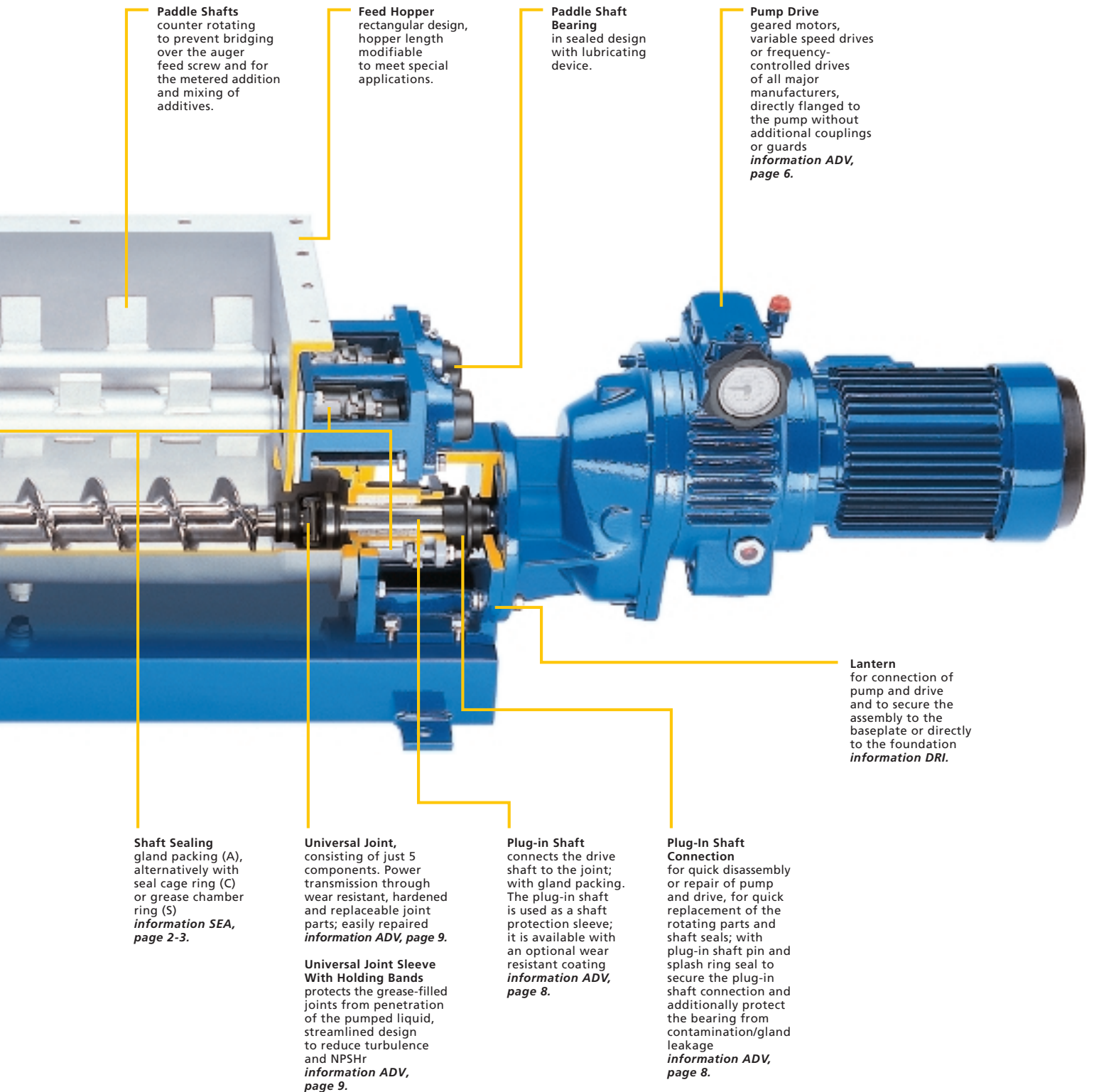
Universal Joint Sleeve Protection Made of Stainless Steel protects the universal joint sleeve against damage from sharp solids, optional *information ADV, page 9.*

Coupling Rod with auger feed screw with progressive pitch, for power transmission and feeding of viscous products.

Compression Zone with flanges at both ends for quick dismantling when replacing the rotor, hand hole upon request.

in block pump design or with free bareshaft.
Refer to the table on pages 4 and 5.

The transportation of products which tend to bridge or require a metered additive is done by pumps of range BTI/TINS. The construction features are described below.



Paddle Shafts
counter rotating to prevent bridging over the auger feed screw and for the metered addition and mixing of additives.

Feed Hopper
rectangular design, hopper length modifiable to meet special applications.

Paddle Shaft Bearing
in sealed design with lubricating device.

Pump Drive
geared motors, variable speed drives or frequency-controlled drives of all major manufacturers, directly flanged to the pump without additional couplings or guards
information ADV, page 6.

Shaft Sealing
gland packing (A), alternatively with seal cage ring (C) or grease chamber ring (S)
information SEA, page 2-3.

Universal Joint, consisting of just 5 components. Power transmission through wear resistant, hardened and replaceable joint parts; easily repaired
information ADV, page 9.


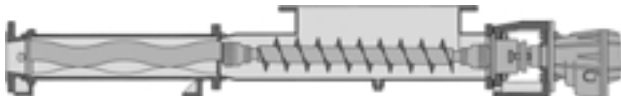

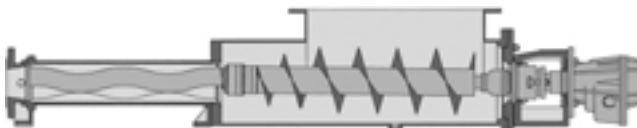
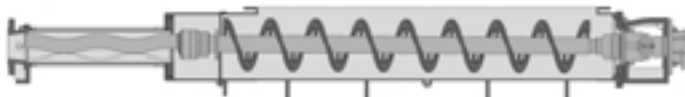
Universal Joint Sleeve With Holding Bands
protects the grease-filled joints from penetration of the pumped liquid, streamlined design to reduce turbulence and NPSHr
information ADV, page 9.

Plug-in Shaft
connects the drive shaft to the joint; with gland packing. The plug-in shaft is used as a shaft protection sleeve; it is available with an optional wear resistant coating
information ADV, page 8.

Plug-In Shaft Connection
for quick disassembly or repair of pump and drive, for quick replacement of the rotating parts and shaft seals; with plug-in shaft pin and splash ring seal to secure the plug-in shaft connection and additionally protect the bearing from contamination/gland leakage
information ADV, page 8.

Lantern
for connection of pump and drive and to secure the assembly to the baseplate or directly to the foundation
information DRI.

Group T Table of Ranges

Typical Applications	Function Principle Technical Features	Feed Hopper	Auger Feed Screw
<p>BTQ TQNS</p> <p>medium to highly viscous products with poor flowability</p> <p>Examples: thickened sludges 6-12% DS, spent grains, mash, scum</p>	 <p>length identical to pump of group N (suction casing/feed hopper exchangeable)</p> <p>optional available accessories see <i>info OPT</i></p>	<p>square</p> <p>inspection covers on both sides</p>	<p>coupling rod in standard design, with short screw for easier feed</p>
<p>BT TNS</p> <p>highly viscous products without/with poor flowability</p> <p>Examples: dewatered sludges 12-18% DS, paper stock 8-10% DS, mash, pastes, meat (large pieces), doughs, spent grains</p>	 <p>optimum filling of conveying elements through cylindrical/conical compression zone</p> <p>optional available accessories see <i>info OPT</i></p>	<p>rectangular</p> <p>length variable to suite application</p> <p>removable compression housing for service work (option)</p>	<p>pitch and diameter adapted to the operating conditions, for optimum product feeding</p>
<p>BTM TMNS</p> <p>fruit and vegetable processing, juice production starch production</p> <p>Examples: potatoes, apples, pears, onions, carrots, fish</p>	 <p>maceration and pumping of whole fruits and vegetables (partially in lumps) seepex patent 3833515.8-23</p> <p>closed system, oxidation/discolouring of the conveying product is prevented</p> <p>optional available accessories see <i>info OPT</i></p>	<p>rectangular</p> <p>length variable to suite application</p> <p>extended compression housing with stationary cutting elements, easily repaired</p>	<p>extended, with rotary knives in the area of the cylindrical compression zone</p>
<p>BTE TENS</p> <p>highly viscous/non flowable products which do not tend to bridge</p> <p>Examples: dewatered sludges 18-32% DS, paper stock 10-12% DS</p>	 <p>optimum filling of conveying elements through cylindrical compression zone with enlarged diameter</p> <p>optional available accessories see <i>info OPT</i> and page 6/7</p>	<p>rectangular</p> <p>enlarged diameter</p> <p>length variable to suite application</p> <p>removable compression housing for service work (option)</p>	<p>increased pitch and diameter for optimum product feeding</p> <p>ribbon screw for high DS content and sticky products (option)</p>
<p>BTES</p> <p>highly viscous/non flowable products from silo systems</p> <p>Example: dewatered sludges 18-45% DS</p>	 <p>shut-off system for easy and quick replacement of conveying elements without disconnecting from silo</p> <p>disassembly of conveying elements without requirement of additional space</p> <p>optimum filling of conveying elements through cylindrical compression zone with enlarged diameter</p> <p>optional available accessories see <i>info OPT</i></p>	<p>rectangular</p> <p>optimum adaption to different silo systems</p> <p>minimized overall height to avoid bridge building</p> <p>removable compression housing for service work</p>	<p>increased pitch and diameter adapted to the operating conditions</p> <p>ribbon screw</p>

Typical Applications	Function Principle Technical Features	Feed Hopper	Auger Feed Screw
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BTI TINS



highly viscous/non flowable products which tend to bridge

metered addition of additives

Examples: dewatered sludges with or without lime addition 18-45% DS, paper stock 10-15% DS, mash, paste and meat (large pieces)

bridge breaker/mixer with two counter rotating timed paddle shafts and dedicated drive

optimum filling of conveying elements through cylindrical/conical compression zone

universal joint sleeve protection

optional available accessories see *info OPT* and *page 6/7*

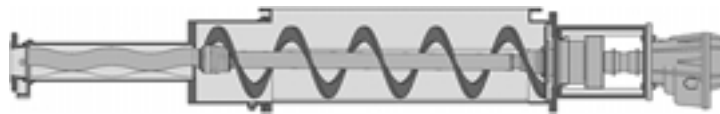
rectangular

length variable to suite application

removable compression housing for service work

pitch and diameter adapted to the operating conditions for optimum product feeding

BTH



highly viscous/non flowable products which tend to bridge

Example: dewatered sludges up to 45% DS

separately driven, concentric rotating ribbon auger, running directly on the liner, control of the screw speed by own drive

optimum filling of conveying elements through cylindrical/conical compression zone

universal joint sleeve protection

optional available accessories see *info OPT* and *BTH*

rectangular

length variable to suite application

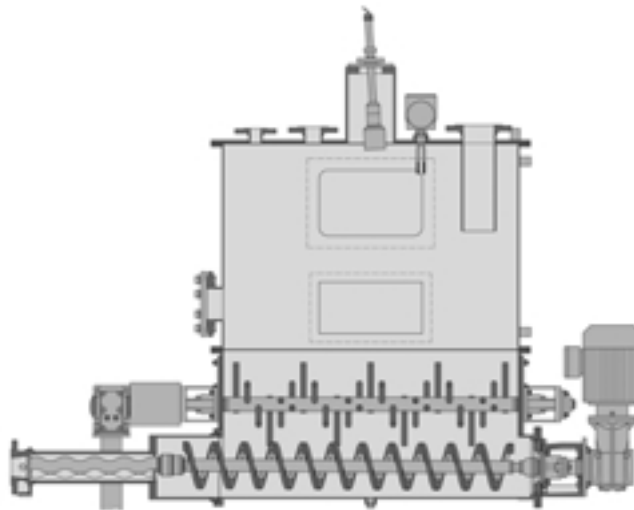
removable compression housing for service work

pitch and diameter adapted to the operating conditions for optimum product feeding

maximized diameter and long pitch

ribbon screw

BTEI



highly viscous / non flowable paste like products which tend to bridge

Examples: dewatered sludge 18-45% DS

bridge breaker/mixer with rotating paddle shaft and dedicated drive

optimum filling of pumping elements due to the cylindrical/conical compression zone

universal joint sleeve protection

optional available accessories see *info OPT* and *BTEI*

storage hopper for temporary storing of product

rectangular

length and height variable to suite application

removable compression housing for service work

ribbon screw for optimum product feeding

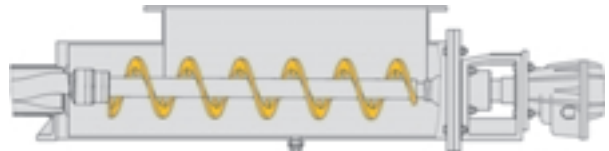
Options and Accessories

In general, **seepex** pumps are designed for specific applications. Besides the various ranges and materials available, there is a wide selection of accessories. These options are described in detail in the **Information OPT**.

Additional design variants and further options have been developed for the pumps of group **T**, leading to increased operating safety and optimized pump operation. These options are described below.

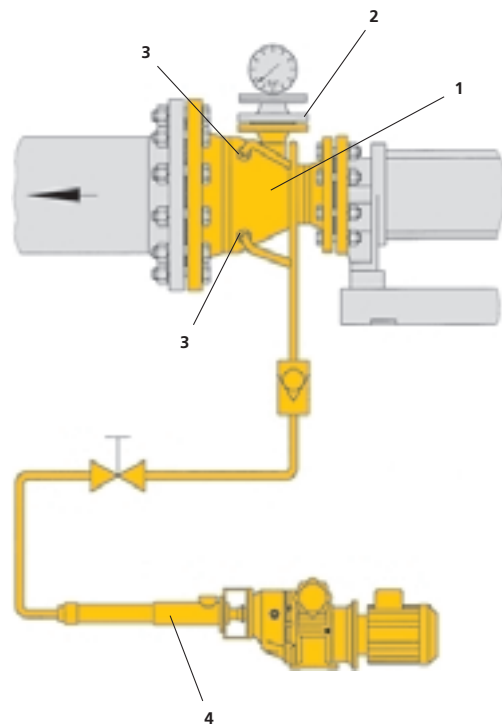
Ribbon screw

The application of the **BTE/TENS** pump range is extended by this special feed screw. Bridging over the screw is prevented by the open design and sludges with higher DS contents can be transported.



Discharge pipe adapter

To enlarge the pump pressure flange to the larger nominal width of the discharge pipe, an adapter **(1)** can also be supplied. A flange DN 50 (2") **(2)** is provided to connect a pressure transmitter or a diaphragm contact pressure gauge. A lubricant can be injected through the four threaded connections **(3)**.



Boundary layer injection system

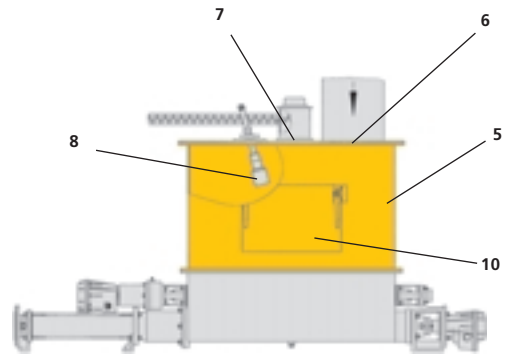
Metering a lubricant into the discharge pipe reduces the friction between the conveying product and the pipe wall. This considerably reduces the operating pressure of the **seepex** pump. Applications with higher solids contents, longer pipe runs and higher flows can be realized.

A relatively low amount of lubricant is fed to several areas of the discharge pipe adapter **(1)**. Some testing may be required to determine the proper lubricant concentration for the pumped material. Even metering of the lubricant, independent of the pressure, is realized by 4- or 8-stage **seepex** high pressure pumps of the range **MD (4)** or **BN**.

Reduced pipe friction and pressures by boundary layer injection results in a considerable cost saving. Lower investment costs for pumps and piping, reduced energy demand/lower power supply costs as well as longer life expectancy of rotor and stator make the use of the boundary layer injection system an economical option.

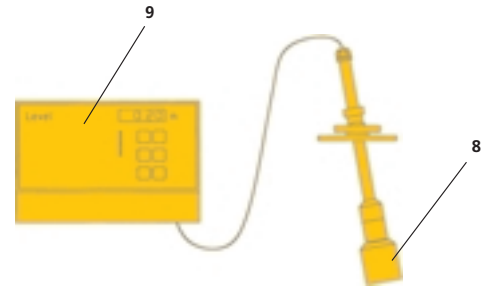
Extension hopper

When using the pumps of range BTI/TINS for sludge conditioning with lime or other additives, an extension hopper (5) can be attached on top of the pump. Connections for sludge feed (6) and the metering of additives (7) are included in the installation. A mounting flange for ultrasonic sensor attachment (8) is available for level measuring. A large inspection port (10) with quick release locks allows easy inspection and cleaning of the inside area.



Ultrasonic level measuring

A constant level of the liquid in the pump feed hopper must be maintained for the optimum mixing of lime or other additives. The actual level can be measured by an ultrasonic probe mounted in the extension hopper (8) and transmitted to a control through a measuring transmitter (9).



SLCO control

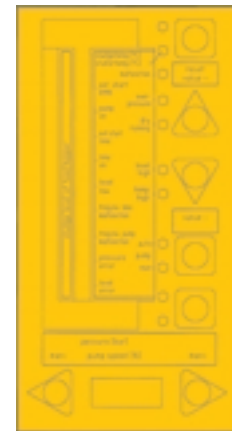
Regarding the procedure for processing of sewage sludge lime is directly fed to the feed hopper of the pump range BTI/TINS and mixed by the paddle shafts of the integral bridge breaker. The conditioned sludge is transported through piping with a max. length of 200 m to the container, silo or storage area by the multistage pump.

To ensure efficient and trouble-free operation of the entire plant, important parameters have to be monitored and controlled.

A PLC control system for panel mounting with all appropriate functions is available as an option. Its functions are:

- sludge level in the pump hopper is kept constant through control of pump speed via a frequency inverter
- Connection/Disconnection of pump, bridge breaker, lime metering and boundary layer injection under safety regulation aspects (e.g. if the pump is operated only with lime the system will shut down)
- lime metering proportionally to sludge capacity
- dry-running protection
- overpressure protection
- temperature monitoring in the discharge pipe (exothermal reaction)

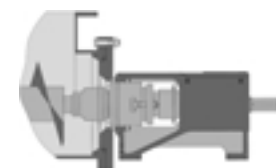
Expert start-up assistance on site is, of course, available.



Pumps with free bareshaft

The pump wet-end of the ranges TINS, TENS, TNS, TMNS, TQNS are identical to the ranges BTI, BTE, BT, BTM, BTQ illustrated on page 4.

These ranges have their own bearing casing with free bareshaft and are used when the customer attaches or provides a separate foot-mounted drive.





Your **seepex** agent