

# Fristam Rotary Lobe Pumps FL

The Fristam FL design allows efficient pumping of high flows with gentle product handling.

## Pump performance

### High efficiency:

The contra-rotating non-contacting rotary lobes combine, on account of their geometry, the excellent characteristics of the area seal between the housing and that of the cover with the line seal between the pistons. The pumps are suitable for discharge pressures of up to 12 bar.

### Viscosities up to 100,000 mPa s:

Pumping homogeneous products with viscosities up to 100,000 mPa s is no problem.

### Gentle product handling:

In Fristam Series FL pumps a modern lobe design is used which minimises squeezing of the product and therefore the risk of damage.

### Backflow:

Modern methods of manufacture permit very small internal gaps which only allow extremely low backflows.

## Quality

### Robust design:

Highly resistant stainless steel alloys and solid components provide ideal conditions for reliable operation with minimum down time and a long service life.

### Optimum hygiene:

Owing to the use of appropriate materials and a design which is devoid of dead zones Fristam rotary lobe pumps are entirely suitable for CIP and SIP.

## Economy

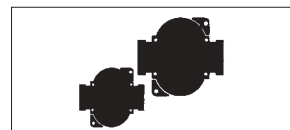
### Tailor made solutions:

The diversity of models allows optimum selection for the particular application, different products, processes and systems. The rotary lobe pumps have numerous versions, e.g. heating and cooling jackets or a relief device in the cover.

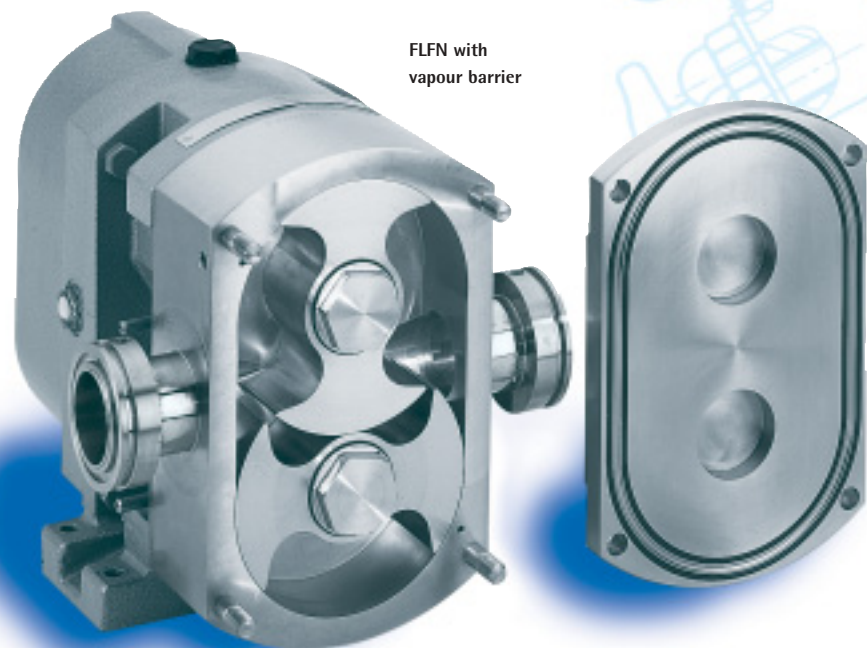
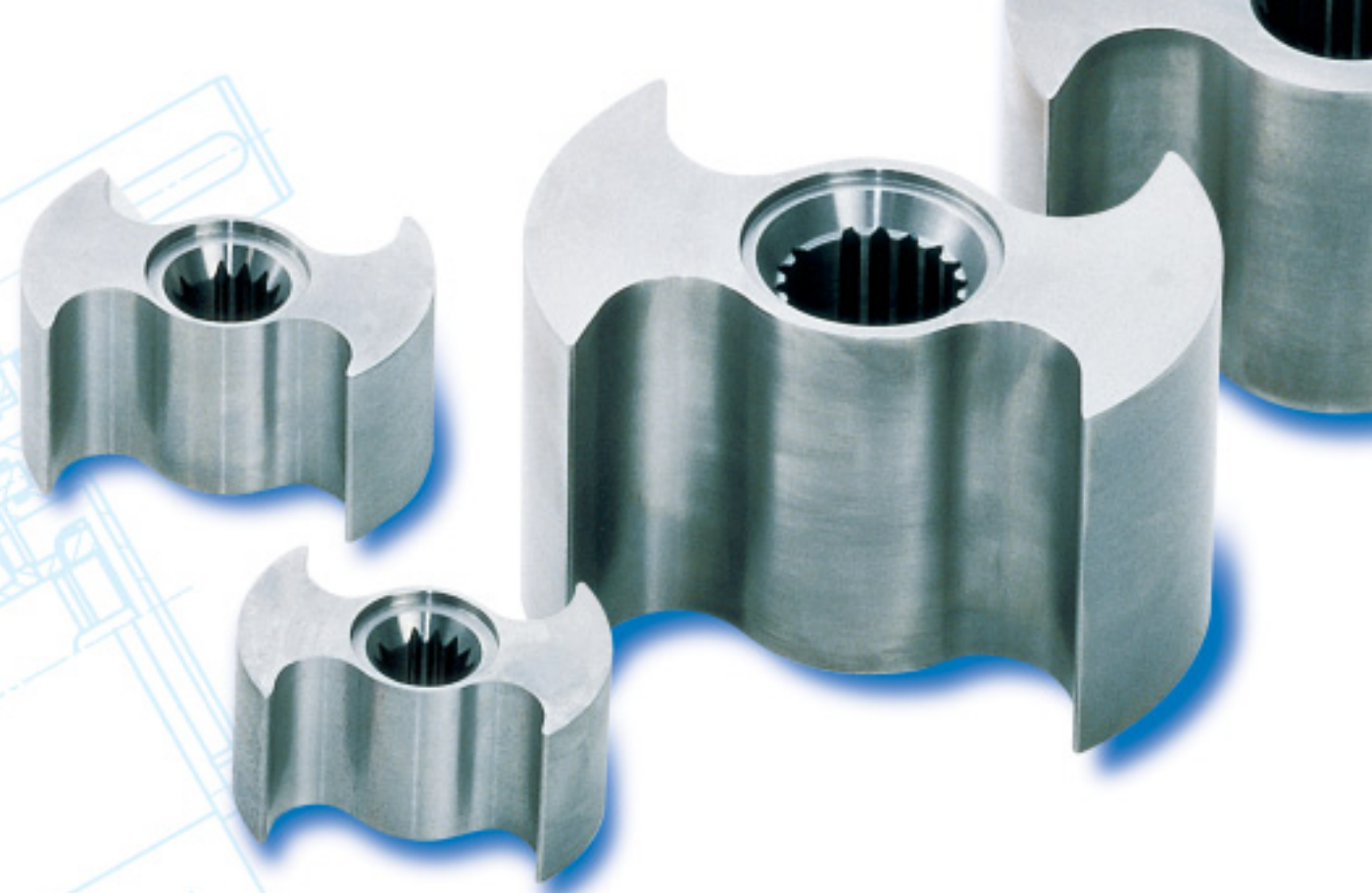
### Easy maintenance:

The interior of the pump is quick to access so the pump can be serviced optimally and wearing parts can be changed with minimum time and labour.

## Sizes of FL

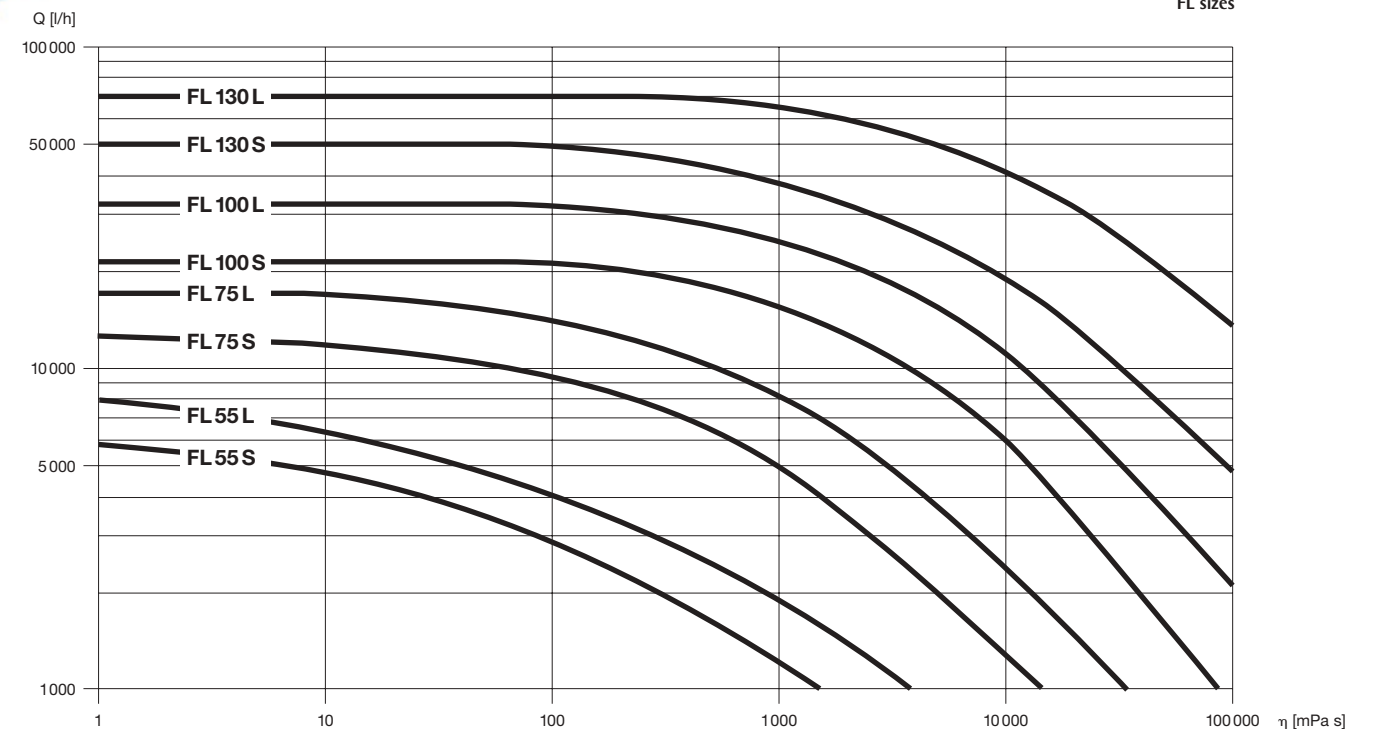


- 8 sizes
- Discharge pressures up to 12 bar
- Flow rates up to 70 m<sup>3</sup>/h



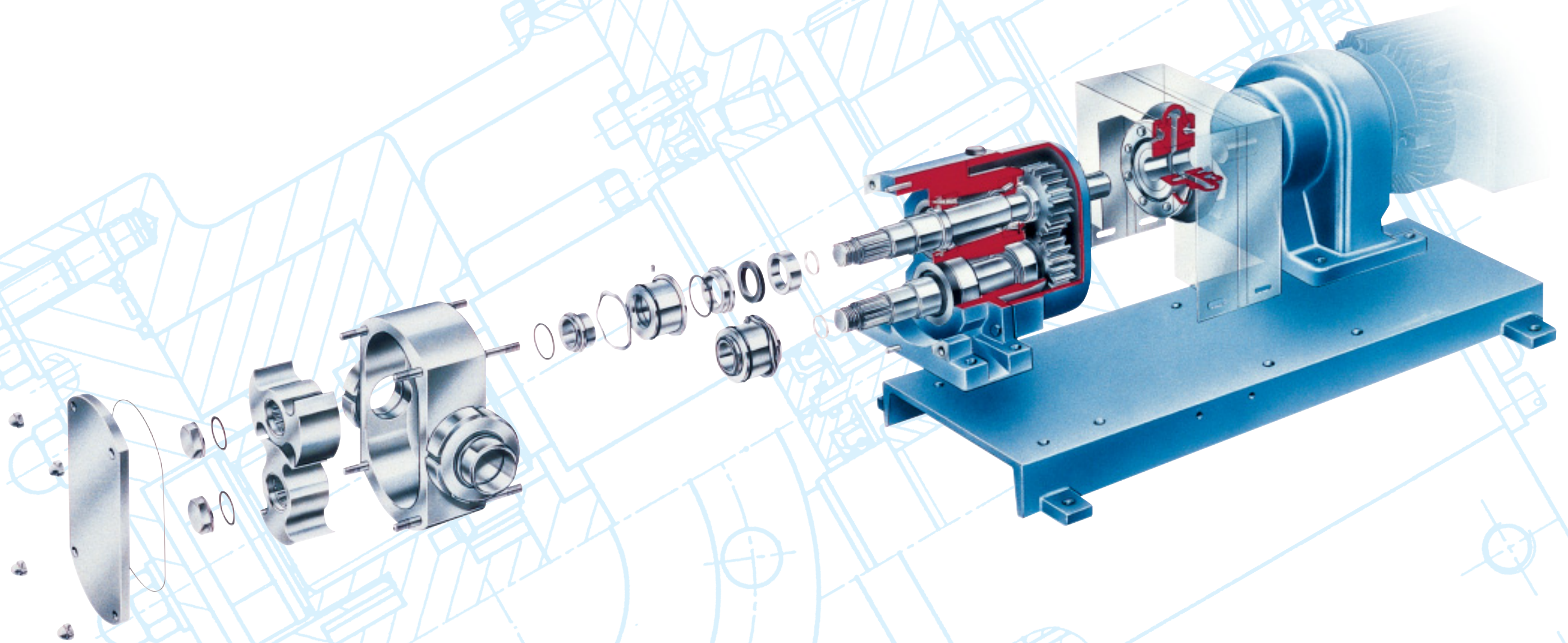
FLN with vapour barrier

Selection diagramm  
FL sizes



# ***FL compact design for universal application***

The design of Series FL pumps ensures that automatic cleaning processes (CIP) and service-friendly maintenance can be carried out optimally.



# Fristam FK, FL, FKL design options

With a Fristam circumferential piston pump or rotary lobe pump you are always sure of a customised solution because the individual components are tailored to the specific application in your company.

## Materials

- Casing, cover and rotors are cast or forged
- Materials Standard:
  - Other precision-cast materials
  - Materials with less than 0.5 % delta ferrite
- Surfaces in contact with the product:
  - Shotblasted
  - Superfinish turning
  - Ground
  - Polished
  - Electropolished
  - Hardened or coated
  - Special surface finish requirements can be met

## Drives

- Geared motor with fixed speed
- Variators with manual, pneumatical or electrical adjustment
- Options:
  - Explosionproof
  - Flameproof
  - Suitable for frequency control
  - Special voltages and special frequencies
  - Hydraulic motors
  - other variable speed gear

## Rotor types:

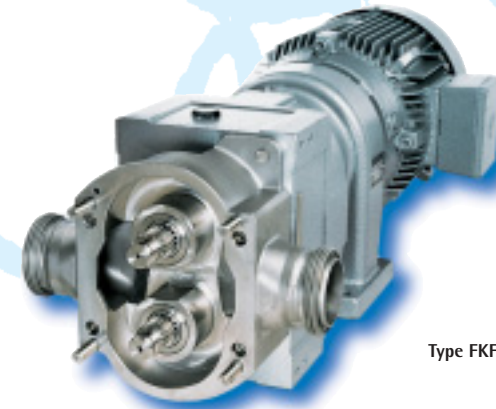
- FK Standard
  - twinlobe
- Options:
  - singlelobe
  - high temperature design
  - spiral grooves
  - straight grooves
- FL Standard:
  - twinlobe
- Options:
  - singlelobe
  - high temperature design

- FKL Standard:
  - twinlobe
- Option:
  - high temperature design
- Types of connection:**
- Threads:
  - DIN 11851, RJT, SMS, ISS, DS, ACME, and others
- Flanges:
  - DIN, ANSI, and others
- Clamps:
  - Tri-clamp, ISO-clamp
- Special connections possible

## Special options:

- Heating/cooling jacket
- Pressure relief valve integrated in cover, spring-loaded or pneumatic
- Housing with drain
- Vertical port configuration
- Rectangular inlet port
- Trolleys
- Electronical speed counter
- Digital speed indicator

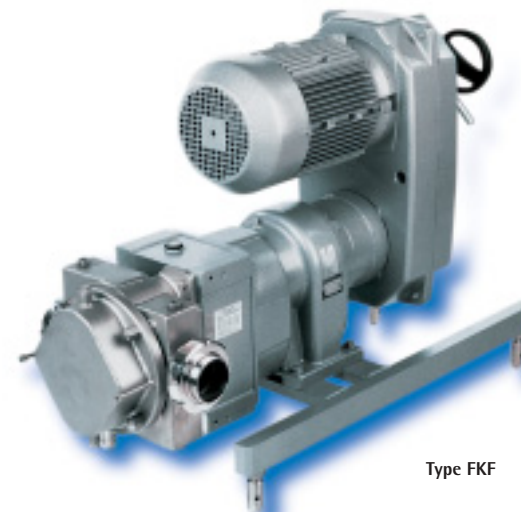
## Further types



Type FKF



Type FLFN



Type FKF

- FKFN, FKN, FLFN, FKL
  - pump with bare shaft or coupling, coupling guard and drive unit mounted on common base frame.

- FKF
  - Monobloc design with directly flanged drive unit

- Option:
  - adjustable legs
  - stainless steel shroud

# FK, FL, FKL-Mechanical shaft seal options

## Mechanical shaft seals

- Standard:

- single and double-acting
- bi-directional

- Options:

- DIN 24960
- with external sealing/flushing liquid
- pressureless (quench)
- pressurised (back to back)
- auxiliary systems, e.g. pipes, fittings and pressure gauge, funnels, thermosiphon tank for sterile operation etc. are possible

- Internal seal faces:

- Carbon
  - dry-running performance
  - high temperature resistance
- Tungsten carbide
  - extreme hardness and wear resistance
- Special stainless steel
  - good chemical resistance

- Silicon carbide

- exceptionally high chemical resistance
- good thermal conductivity
- PTFE (fibre-glass reinforced)

- Secondary seal materials:

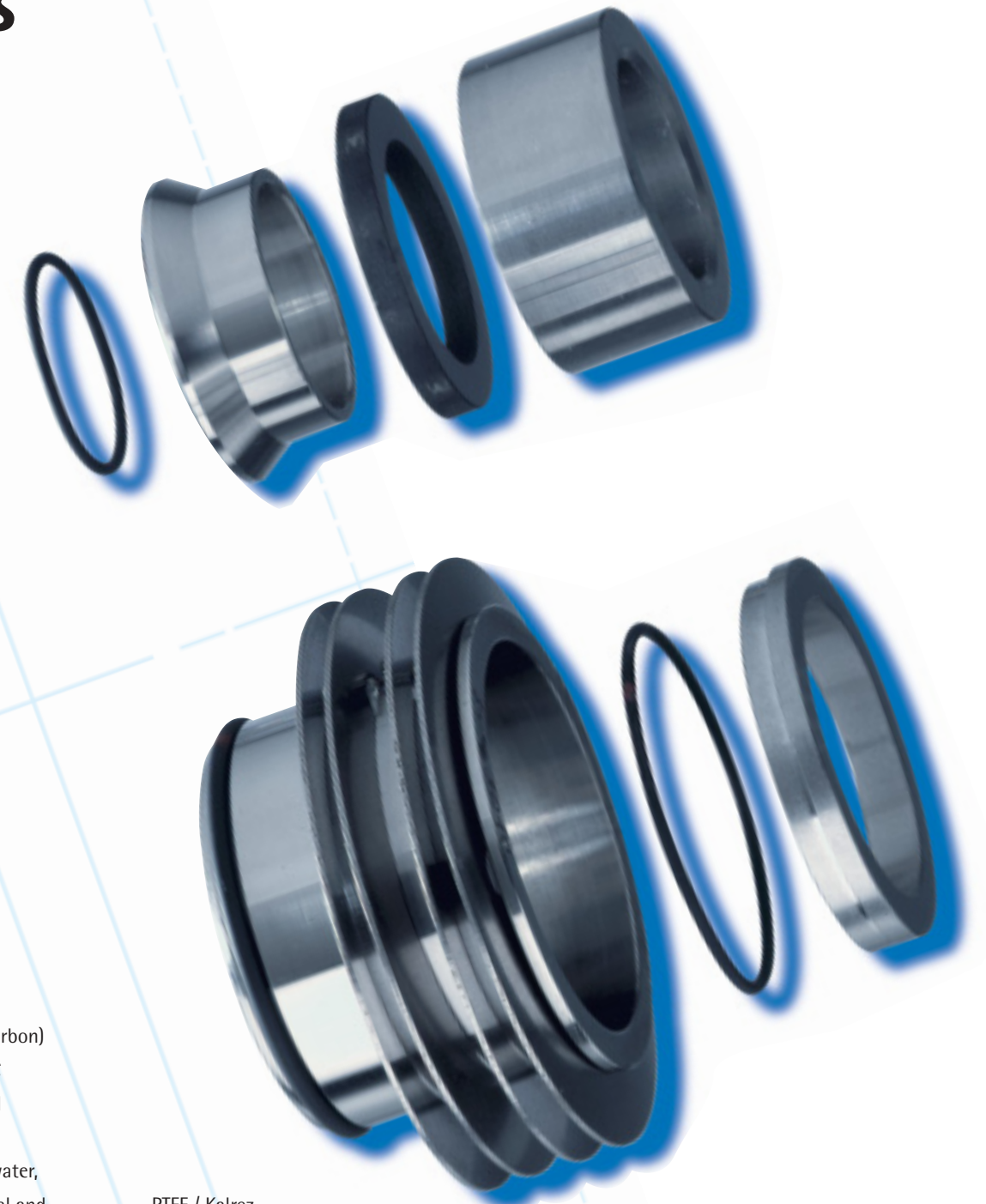
- Perbunan (NBR)
  - up to +100°C
  - resistant to water, steam, mineral and vegetable fats and oils, alcohol, saline solutions
- EPDM
  - up to +150°C
  - good thermal properties
  - suitable for use with alcoholic solutions, dilute acids and concentrated acids

- Viton (fluorocarbon)

- up to +180°C
- good thermal resistance
- resistant to water, steam, mineral and vegetable fats and oils, alcohol, acids and alkaline solutions

- PTFE / Kalrez

- up to +200°C
- optimum chemical and thermal resistance against all aggressive liquids
- elasticity provided by the use of Viton rubber or EPDM material
- and other materials



# The best pump for the best product

Fristam FK, FL and FKL stainless steel pumps are used in leading food and drinks industry companies throughout the world as well as in many companies in the pharmaceutical and chemical industries, Fristam pumps are also the best solution for pumping your products:

## Applications

### Dairy products

Cream, yoghurt, curds, blanchmange, butter, milk, skimmed milk and whey concentrates, desserts, cheese curd, melted cheese

### Foods

Animal and vegetable oils and fats, sauces, soups, egg products, ready-to-serve meals, salads, cake dough, jam, tomato ketchup, infant food, honey, apple sauce, animal blood, aspic, meat emulsion, caviar, meat and fish salads

### Sugar/ Confectionery

Liquid sugar, molasses, starch solution, chocolate, sweet compounds, toffee, liquorice, chocolate fillings, fondant

### Brewing

Malt extract, yeast

### Alcoholic beverages

Egg liqueur, sparkling wine

### Non-alcohol beverages

Syrup, fruit concentrates

### Chemicals

Photographic emulsion, adhesives, synthetic resin solutions, gelatine, polymer dispersions

### Pharmaceuticals/ cosmetics

Lotions, plant extracts, ointments, bath foam, shampoo, cosmetic creams, toothpaste

### Biotechnology

Cell suspensions, nutrient solutions, enzymes



# Systems and Processes

Owing to their diversity the innovative, powerful Fristam piston pumps can be used in numerous industrial processes. The Fristam FK, FL and FKL ranges of pumps include the following applications:

## Applications

- discharge pumps from apparatus such as boilers, separators, mixers, tanks etc.
- suction pumps for concentrates from low-pressure areas
- booster pumps up-line of heaters, coolers, sterilisers, atomising towers etc.
- feed pumps for mixing systems, processing and filling machines
- metering pumps and filling pumps for large units

- Crystallisation
- Concentrating
- Metering
- Drying
- Thickening
- Filtering
- Extraction
- Separation
- Boosting
- Fermentation
- Emulsifying
- Homogenising
- Filling/emptying
- Bottling
- Degasification
- Transfer



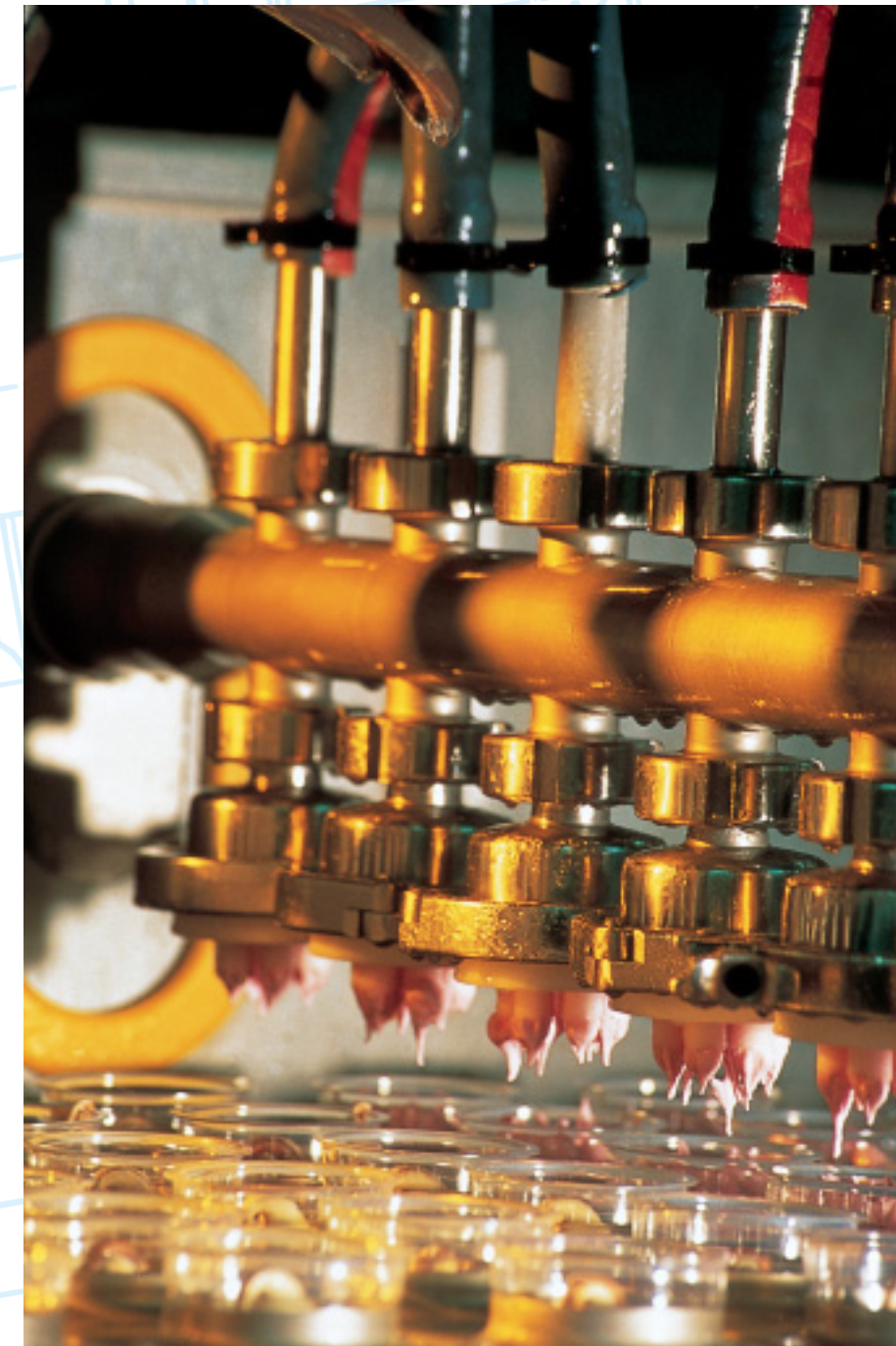
FK for transfer of sauces meat.



FKL for transfer of paint and glue dispersion at Hoechst, Frankfurt.



FL pump at Coca Cola, Stockholm.



# Worldwide Contacts

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