



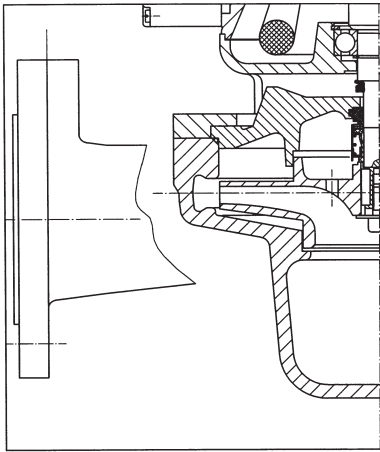
KOLMEKS
EFFICIENT RELIABILITY



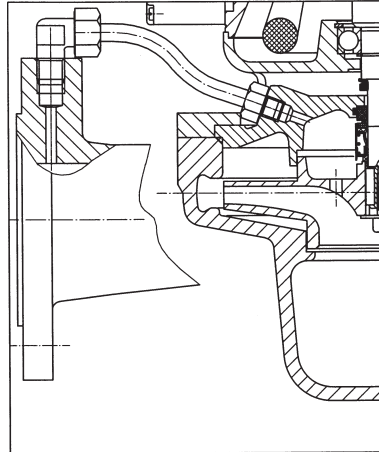
PUMP ACCESSORIES, SPECIAL
SURFACE TREATMENTS AND
DOCUMENTATION

Seal constructions and materials

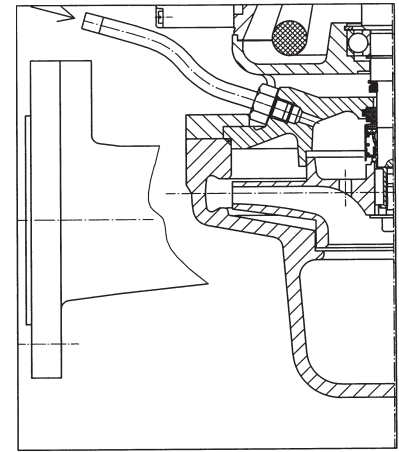
1. Single mechanical seals



Standard construction



Internal flushing



External flushing

Standard materials for single mechanical seal (Series No 7)

Rotating ring	Carbon
Stationary ring	Silicon carbide or ceramic (depending on seal size / pump type)
Elastomers	EPDM or Viton (depending on seal size / pump type)
Metal parts	Stainless steel AISI 304 (10–12mm seals) Stainless steel AISI 316 (over 12mm seals)

Material suitability for different liquids

Rotating ring/Stationary ring Liquid

Carbon/Ceramic	Water	max. +120°C, standard construction
Carbon/Silicon carbide	Water	0 ... +120°C, standard construction
	Water	0 ... +150°C, with internal flushing
	Freezium (refrigeration system)	-15 ... +40°C, standard construction
	Glycol (refrigeration system)	-15 ... +40°C, standard construction

Liquid temperature range

Rotating ring/Stationary ring Liquid to be pumped

Silicon carbide/Silicon carbide	Erosive liquids	-15 ... +120°C, standard construction
	Calcium chloride (saline solution)	-15 ... +150°C, internal flushing -15 ... +30°C, standard construction
Antimony carbon/Silicon carbide	Demineralised water	0 ... +120°C, standard construction

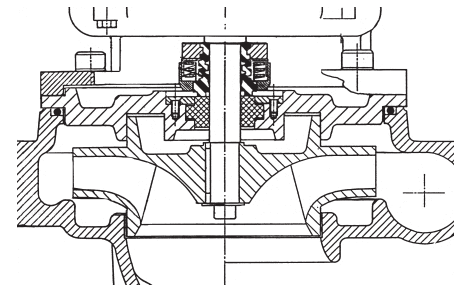
Temperature range of liquid

Rubber materials: suitability for different liquids

Rubber	EPDM	- mostly used - -40°C-+150°C (+180°C double mech. seal) - water, freezium, glycol, calciumchloride - note! not oil resistant!
	NITRIL	- -40°C-+90°C - oil resistant
	VITON	- -20°C-+200°C - note. water max. +100°C - heat transfer oils, dissolvents, special cases - used as standard in pumps with thread connection

2. Single external mechanical seal

- Single mechanical Teflon seal which is installed outside the pump
- Available DN65-300 acid-proof pumps
- Used for acids and other aggressive liquids (e.g. sulphuric acid 98%)
- Note! The maximum operating pressure is 10 bar (if the maximum operating pressure is exceeded, the seal will open)
- Liquid temperature -15 ... +120°C
- Marking 'T' e.g. ALS-1065/4T



Materials

Rotating ring Teflon PTFE

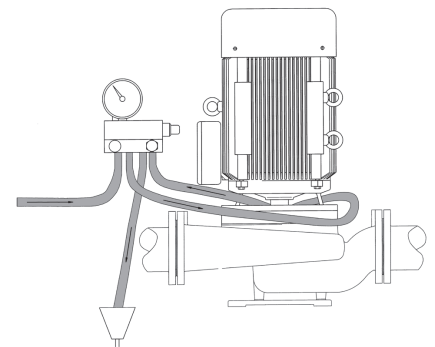
Stationary ring Ceramic

All parts which come into contact with liquid are made of Teflon.

3. Double mechanical seal

Two opposing seals with outside sealing liquid brought from outside (circulation), the pressure of which can be lower or higher than that of the liquid being pumped. If it is desired that no seal water enters the process, the pressure of the seal water is then set lower than that of the liquid being pumped. If the seal water is allowed to enter the process, the pressure of seal water can be higher than that of the liquid being pumped.

- Available for DN 65-300 pumps
- Operating temperature with water max. +180°C (other liquids defined separately)
- Requires a separate seal water monitoring unit, see above (Kolmeks can deliver)
- Marking 'KT' e.g. ALS-1154/4KT
- Hot, crystallising and accumulative liquids
- Momentary dry running of the pump is allowed



Standard materials

Seal size	Liquid side	Atmosphere side	Metal parts
18mm	SiC / SiC / EPDM	Carbon / SiC / EPDM	AISI 316 / 329
25-65mm	SiC / SiC / PTFE	Carbon / SiC / EPDM	AISI 316 / 329

Special materials

18mm	SiC / SiC / VITON	Carbon / SiC / VITON	AISI 316 / 329
32-65mm	SiC / SiC / PTFE	Carbon / SiC / EPDM	254 SMO

Other sizes and materials available by request.

Available colours and special surface treatments

Standard surface treatment:

In Finland, the pumps are delivered in red, colour RAL3020. The painting is carried out according to SFS-EN ISO 12944-5 which includes both primer and finishing. Marking AY100/1-FeSa2½.

The following Kolmeks colours are also available at no extra cost: Grey RAL7030, Black RAL9017 and Blue RAL5010. The painting is carried out according to SFS-EN ISO 12944-5 which includes both primer and finishing. Marking AY100/1-FeSa2½.

Special surface treatments and special colours:

1. Epoxy paint

Epoxy paint job with required paint thickness, e.g. 160, 240, 280 or 300µm. The painting carried out according to Standard SFS5873 which includes one or more coats of primer and one coat of finishing. Marking EP 240/3FeSt2 (primer 2x80µm + finishing 1x80µm).

Epoxy painting can be carried out on both on the inside and outside of the pump housing. The motor can also be painted from the outside.

2. Customized colour

Standard painting can also be carried out in custom colours. In such cases the painting is carried out according to Standard SFS-EN ISO 12944-5 which includes both primer and finishing. Marking AY100/1-FeSa2½.

Painting system markings:

Painting system markings are described in Standard SFS-EN ISO 12944-5.

Paint type, e.g. AY = Acrylic paint, EP = Epoxy paints, EPZn (R) = Zinc epoxy paint etc.

For example __EP 240/3FeSa 2½ 02

ABBREVIATIONS:

__ = Paint manufacturer code

EP = Epoxy paint

240/3 = Nominal coat thickness / number of paint coats

Fe = Foundation (steel or cast iron surface)

Sa 2½ = Preparation (here spray cleaning)

02 = Quality of mechanical treatment

Accessories, special voltages and non-standard enclosure classes of electric motor

PTC thermistors

Installed 3 pieces/motor (one for each phase). Standard in 75–160kW motors. Operates like a switch, closed below the limiting temperature and open above the limiting temperature.

Can only be connected to a protection system, relay or frequency converter input designed for a PTC thermistor. May not be connected to a 230 V control circuit because its voltage tolerance is only a couple of volts. Quick and accurate indication of limiting temperature, resets once the temperature is slightly below the limiting temperature. Colours indicate the limiting temperature (stock temperatures +130 ... +140°C.) Several temperature alternatives (e.g. 110, 120, 140, 155°C etc.) can be ordered by request. A demanding target requires thermistors for two temperatures in the same motor e.g. 3 pieces for 140°C alarm and 3 pieces for 150°C stoppage.

Thermal protector (thermal contactor)

Coil's internal thermal protector bi-metal switch +140°C. Can be installed 1 piece/motor or 3 pieces/motor (one for each phase).

A small mechanical switch is opened by temperature. Most commonly used for small motors, 1 piece/motor, and for 3 pieces/motor in large motors. The switches are wired to the terminal box where series connections are connected. When a connection malfunctions, the faulty one can be bypassed and the protection is still sufficient. Can also be connected directly to a 230 V control circuit. Can be connected to most PTC thermistor circuits. Reasonably large temperature difference in between switch on and off and therefore not usually used in place of a thermistor. Available for other temperatures by request.

PT100 (PT-1000) or KTY sensors

The pump motors can be delivered either with KTY or PT100 temperature sensors.

Motor anticondesation heater

One-phase resistor/230V. If required, the heating element can be installed on the motor windings if condensation water occurs during their operation. Heating is usually on only when the pump is stopped. Typical applications are pumps in refrigeration systems, pumps installed outdoors and other pumps which occasionally run in conditions where condensation water is formed. The operating voltage is usually 230 V, but other voltages are also available to order. Heating power is determined by motor size. In exceptional circumstances, heating power according to conditions at the site. In some cases, at about -30 °C, solution pumps might require larger power and additional heating, including when the motor is running.

Thermocouple TC

Thermocouples TC i.e. thermoelement. Usually K type. A pair of thermoelements used for temperature measurement, the voltage of which indicates the temperature or, more accurately, the temperature difference between the connection and free ends. Note! The term thermocouple (or thermoelement) must not be confused with the term thermistor and other temperature measuring sensors.

Tropical protection

Includes a rain cap and a protective oil film inside the motor

Curve plate

Quick connection plug R

EMC cable inlets (frequency converter operations)

Drain connection G3/8"

Used if the housing needs to be drained after the pumping session.

Temp Coat - pump external coating

Used in c refrigeration systems when the temperature is below 0°C. Can be applied to the external surfaces of the sealing flange and the pump housing.

Ceramic N-end bearing for frequency converter operations of over 90 kW (standard over 110 kW motors)

Vibration measurement nipples SPM

Standard voltages

1x230V, 50Hz 0,05–1,5kW 3x400/230 V, 50 Hz 0,03–3 kW 3x690/400 V, 50 Hz 4–160 kW

Special voltages

According to request by customer. Maximum 690V. Example 42V, 110V, 120V, 380V, 500V etc. Available as 1-phase and 3-phase.

Standard enclosure classes

IP 54	0,03–3 kW	1000, 1500r/min	0,25–4 kW	3000r/min
IP55	4–160 kW	1000, 1500r/min	5,5–55 kW	3000r/min

Special enclosure classes

IP 55 also available for small pumps

IP 65

Pressure measurement connections in flanges size 1/4" (standard in inline pumps)

Belzona coating

Used when pumping particularly erosive liquids. The maximum operating temperature is +90°C. If the temperature of the liquid being pumped is higher than +60°C, a double coating is applied. Can be applied inside the pump housing and to the internal surfaces of the sealing flange.

Urethane insulation of sealing flange

Used in refrigeration systems when the temperature is below 0°C. Can only be applied to the outer surfaces of the sealing flange.

Non-standard flanges

If required, the pumps can be delivered with ANSI, NP6 and PN16 borings. PN10 flanges are standard. (DN32-150 flanges are the same PN10 and PN16.)

Pumping without a foot valve when the liquid level is below the pump

- The pump is equipped with an automatic aspirator which fills the suction pipe before the pump starts, making pumping possible without a foot valve.
- After the pumping has stopped, the suction pipe empties. As pumping starts again, the aspirator fills the suction pipe before the pump starts.
- An advantage is smaller energy consumption, because there is no suction loss caused by the foot valve. As the suction pipe empties after the pumping has stopped, there is no risk of freezing in winter. The aspirator can therefore be used in various outdoor applications. The device is commonly used in water supply plants, decking washing water pumps, bilge pumps and various industrial applications.
- The device requires compressed air to operate.
- Several sizes are available. The device size is dependent on the pumping capacity of the system. The device is delivered separately with the pump and the delivery includes all connections and pipes required for installation.



Packaging and documentation

1. Packaging

- As a standard, the pump is delivered in a reinforced cardboard box. If there are several pumps, the packages are fastened onto disposable pallets in order to avoid possible freight damages.
- By request, the pumps can be delivered in export packages or sea export packages.

2. Documentation

Documents delivered free of charge

- Installation and operating instructions are included with the pumps.
- At the order stage and if needed, one set of documentation which includes installation and operating instructions, a datasheet and a product specification is included free of charge.
- Certificate of Compliance '2.1' SFS-EN 10204
- Copies of the ISO 9001 quality certificate, an ISO 14001 environmental certificate, and a Russian TR certificate with Kolmeks stamp can be delivered free-of-charge,
- A spare part list/spare part recommendation for delivered pumps

Documents delivered at extra cost:

- Detailed datasheet
- Detailed assembly drawing + parts list
- Testing record, see Test runs
- Classification Society Certificate (start costs + testing costs + rating institution costs)
- Notarised Russian TR product certificate
- Copy witnessed by certifier of Russian TR product certificate
- Material Certificate '2.2' SFS-EN 10204
- Material certificate of specific casting batch. NOTE! Material certificate must be ordered in good time.
- Copies: 1 set free of charge, extra sets are charged separately.
- Inspection Certificate '3.1' SFS-EN 10204 i.e. pump-specific test run (start costs + testing costs) specific data sheet
 - > Contents of material certificate:
Statement on conformity of the order and results of delivery-specific inspection.
 - > Certifier of material certificate:
Representative authorised by the manufacturer independent of production department.
- Acknowledgement of receipt '3.2' SFS-EN 10204 i.e. pump-specific test run
 - > Contents of material certificate:
Statement on conformity of the order and results of delivery-specific inspection.
 - > Certifier of material certificate
Representative authorised by the manufacturer independent of production department and representative authorised by the purchaser or inspector as specified in regulations issued by public authorities.

Note! Documentation must be requested at the order stage, not after the delivery.

3. Test runs and pressure tests

- Test run without pressure test (start costs + cost per test)
- Pressure test (cost per test is charged)