Geared to individual solutions

ROTAN®

DESMI pumps

integrate

integrate

knowledge & technology

DESMI A/S

DESMI A/S

A Quality-conscious International Partner

DESMI A/S, formerly known as A/S De Smithske, was founded in 1834.

Main office and factory in Aalborg, Denmark

Over the years the product range has developed concurrently with the market requirements. From foundry products such as stoves and church bells to steam engines and pumping plants and over to steel constructions like bridges, tank installations, and cranes.

Today DESMI's activities are concentrated on pumps, pumping systems, environmental products and service within these areas. The many years of experience within the iron industry has resulted in a strong foundation and a well-established position on the global market.

DESMI A/S is owned by a group of visionary investors, viz. pension funds administered by PKA A/S and a group of DESMI executives.

Pumps are marketed worldwide

DESMI pumps are marketed and distributed by subsidiaries, sales agencies, and distributors in more than 40 countries. For more detailed information, please visit our website: www.desmi.com.





DESMI ROTAN, one of the world's leading manufacturers of internal gear pumps

The internal gear pump principle was developed in 1915 by a Danish American.

In 1921, he licensed a Danish company to manufacture the pumps, which have been continuously marketed worldwide under the ROTAN name. The unique, modular concept of ROTAN pumps is generally recognized as the most advanced internal gear pump design available today.

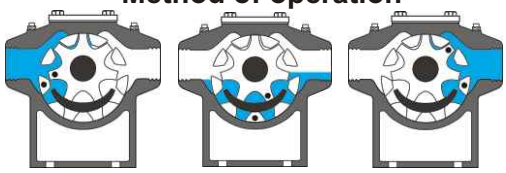




The ROTAN internal gear pump provides favourable flow conditions, as the direction of the liquid flow is only changed slightly through the pump.

This means that ***superior self-priming capability*** and ***gentle liquid handling*** are achieved, and also that ***highly viscous liquids*** can be pumped.

Method of operation



Liquid inlet | Passage of liquid | Liquid outlet

ROTAN pumps offer the following additional advantages:

- Pumping in either direction
- Easy maintenance and inspection based on the modular design
- Sturdy and uncomplicated construction with only two rotating parts and one shaft seal
- Comprehensive choice of configurations available as standard
- Genuine back pull-out design
- End clearance axial adjustment

All ROTAN pumps are hydrostatically and performance tested and receive their own certificate before leaving the factory.

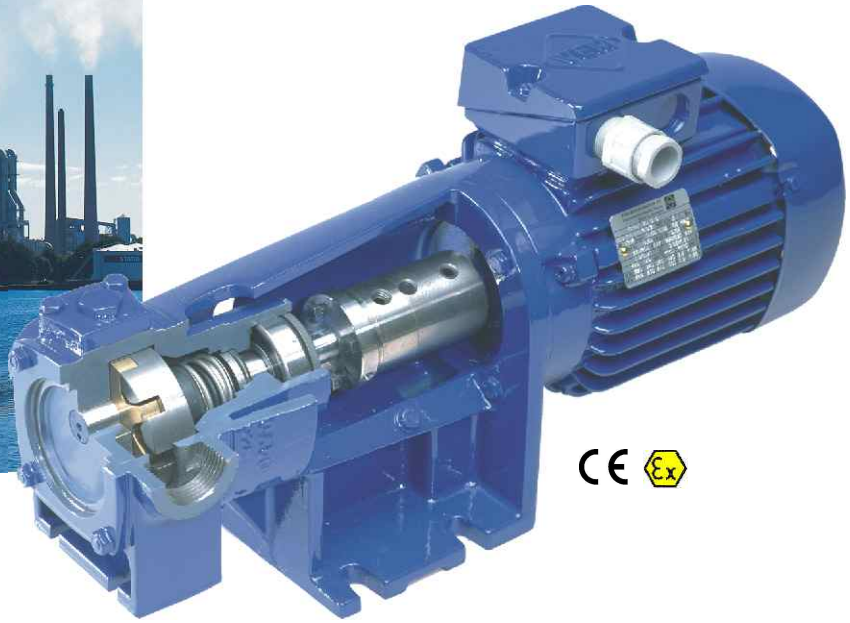
ROTAN pumps can be supplied in accordance with the ATEX Directive, for use in potentially explosive environments. The ROTAN pumps are certified by Physikalisch-Technische Bundesanstalt PTB, Postfach 33 45, 38023 Braunschweig, registration number 03 ATEX D052.

It is DESMI's policy to offer customized solutions developed in co-operation with worldwide leading companies and to follow-up by first class after-sales service.

GP

ROTAN®

General Purpose Pumps



Typical Applications:

Pumping of:

- Clean oil
- Glycol
- Vegetable oil
- Solvents
- Lube oil
- Waste oil
- Fish oil

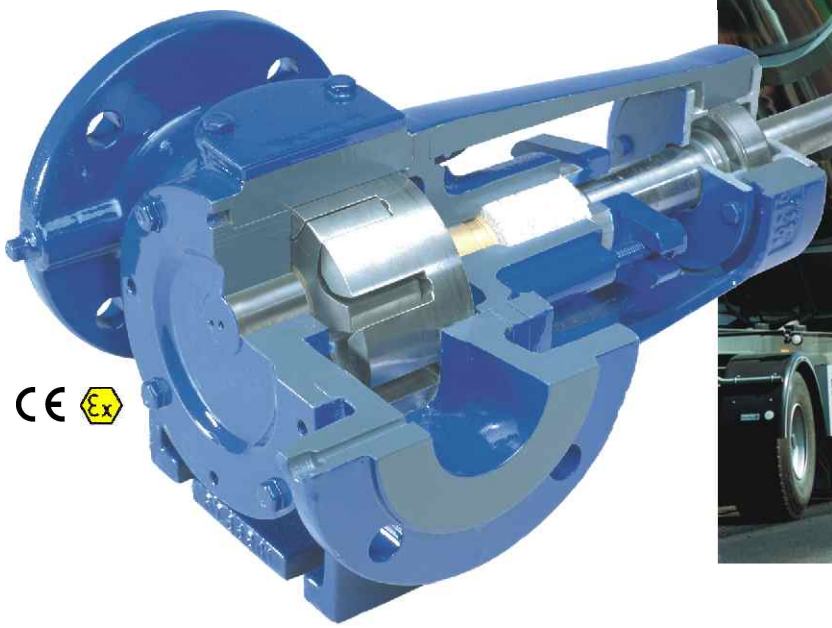
Pumps in cast iron, for clean, non-abrasive liquids.
The simple and compact construction makes it a low-cost pump, often used in modified versions by OEM customers.

A close-coupled OEM model is also available (see picture below).
GP pumps are designed for use with IEC or NEMA flange motors.

Available with 90° angular configuration.

Capacity Range:	Up to 50 m^3/h
Speed:	Up to 1750 rpm
Differential Pressure:	Up to 16 bar
Suction Lift:	Up to 0.5 bar vacuum while priming
	Up to 0.8 bar vacuum while pumping
Viscosity Range:	Up to 7500 cSt
Temperature:	Up to 150°C

Heavy Duty Pumps



Pumps in cast iron, for a wide range of viscous, non-corrosive liquids. HD pumps are specifically designed for difficult applications and those involving high viscosity liquids.

HD pumps are known by their sturdy and simple construction.

Available with 90° angular configuration.

Capacity Range:	Up to 170 m^3/h
Speed:	Up to 1750 rpm
Differential Pressure:	Up to 16 bar
Suction Lift:	Up to 0.5 bar vacuum while priming Up to 0.8 bar vacuum while pumping
Viscosity Range:	Up to 250,000 cSt
Temperature:	Up to 250°C

Typical Applications:

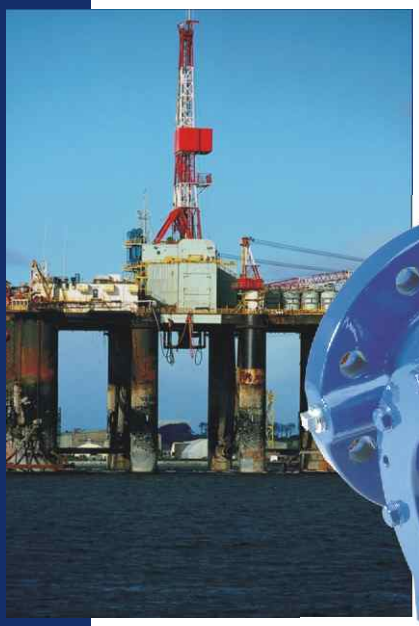
Pumping of:

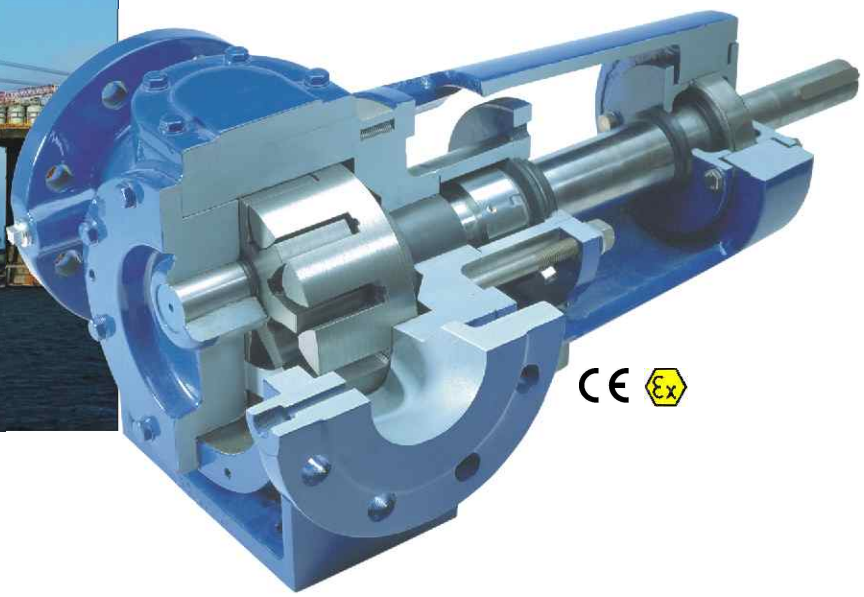
- Oil
- Asphalt
- Chocolate
- Paint
- Lacquer
- Molasses
- Soap
- Other industrial viscous liquids
- Additives
- Polyol
- Viscose
- Sulphate soap
- Maltose
- Grease
- Pitch
- Base oil
- Bitumen
- Polyester

PD

ROTAN®

Petrochemical Duty Pumps





Typical Applications:

Pumping of:

- Fuel
- Oil
- Gasoline
- Lube oil
- Grease
- Other hydrocarbon based fluids
- Additives
- Bitumen
- Polystyrene
- Wax

PD pumps are designed for refinery and petrochemical applications, all pressure-containing components are carbon steel. Design pressure according to ANSI 300 Lbs or Pn40.

PD pumps are available to meet API 676 standards with exceptions.

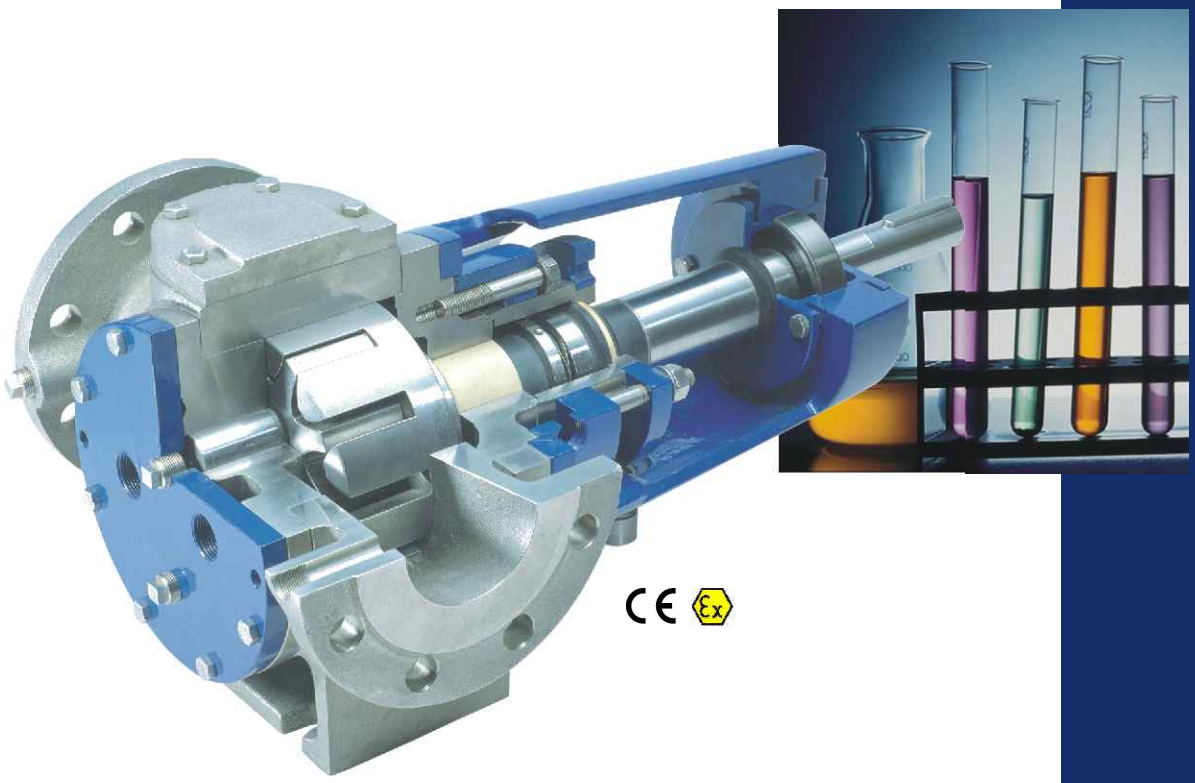
Available with 90° angular configuration.

Capacity Range:	Up to 170 m^3/h
Speed:	Up to 1750 rpm
Differential Pressure:	Up to 16 bar
Suction Lift:	Up to 0.5 bar vacuum while priming Up to 0.8 bar vacuum while pumping
Viscosity Range:	Up to 250,000 cSt
Temperature:	Up to 250°C

ROTAN®

CD

Chemical Duty Pumps



Pumps in stainless steel, designed to handle corrosive liquids.

CD pumps are designed for handling corrosive liquids, primarily found in the chemical processing, food and pharmaceutical industries.

Available with 90° angular configuration.

Capacity Range:	Up to 170 m^3/h
Speed:	Up to 1750 rpm
Differential Pressure:	Up to 16 bar
Suction Lift:	Up to 0.5 bar vacuum while priming Up to 0.8 bar vacuum while pumping
Viscosity Range:	Up to 250,000 cSt
Temperature:	Up to 250°C

Typical Applications:

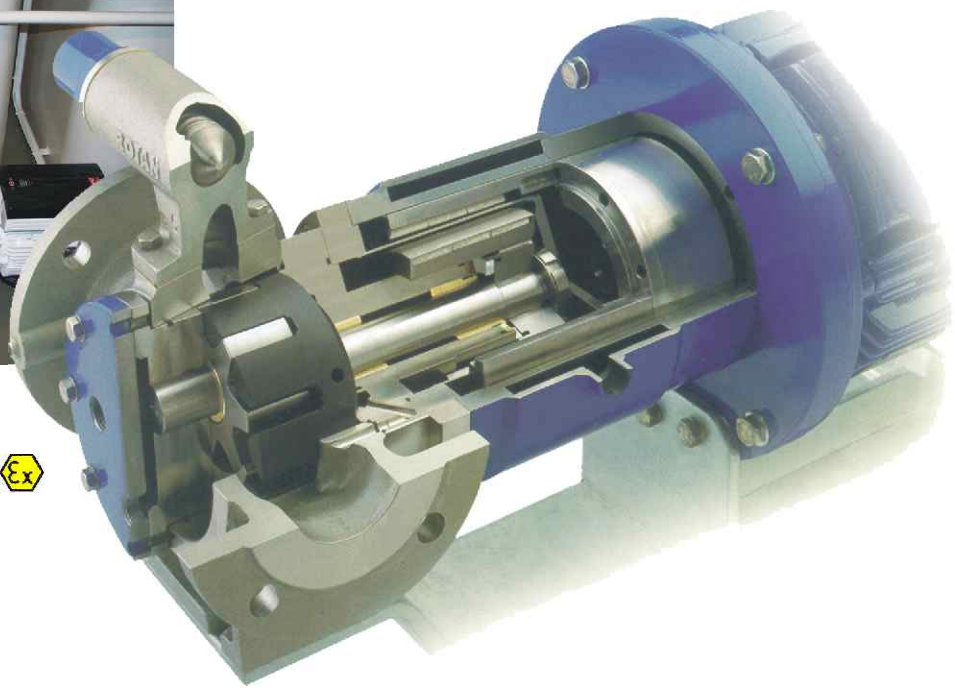
Pumping of:

- Organic acid
- Fatty acid
- Alkali
- Caustic soda
- Polymer solutions
- Soap
- Shampoo
- Animal fat
- Vegetable fat
- Chocolate
- Other special fluids
- Resin
- Paint
- Rosin

ED

ROTAN®

Environmental Duty Pumps



Typical Applications:

Where no leakage, liquid or gaseous, is allowed.

Pumping of:

- Isocyanate
- Solvents
- Hazardous organic liquids
- Printing ink
- Resin
- Pitch
- Alkyd resin
- Soyabean oil
- Linseed oil
- Monomers
- Polyol
- Corn syrup

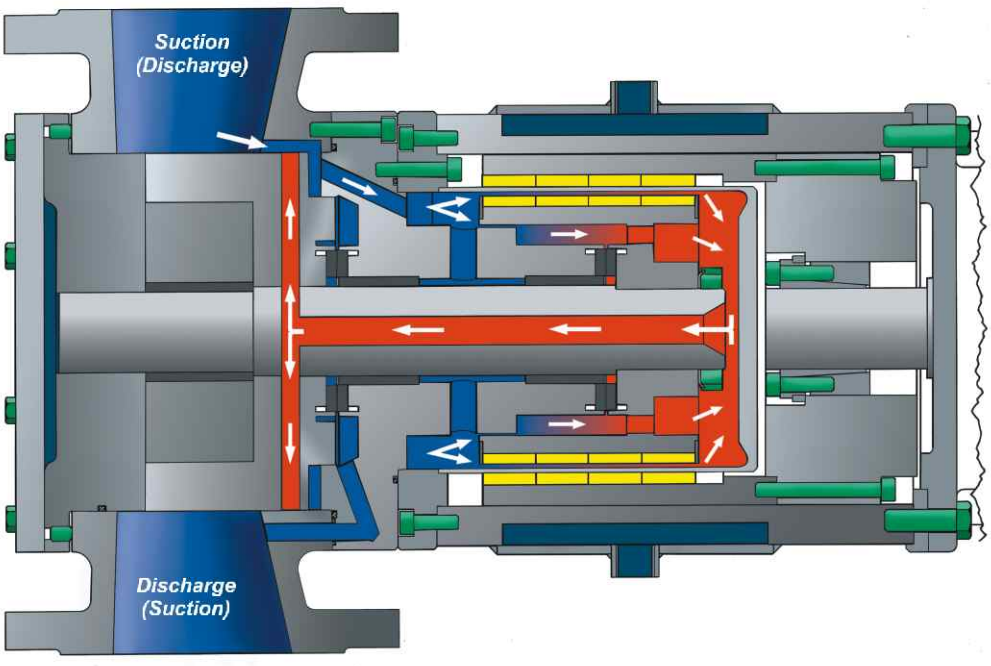
Magnetically coupled pumps for ultimate protection against leakage.

As only minimal maintenance is necessary, ED pumps will be a very economical solution compared with traditionally sealed pumps, especially where the application requires the use of double mechanical shaft seals. Often these applications are very arduous resulting in the seals and support system requiring regular attention and/or replacement. Thus, the life cycle costs for ED pumps are generally much lower than for pumps using two seals.

Available with 90° angular configuration.

Materials:	Cast iron, carbon steel or stainless steel
Capacity Range:	Up to 90 m^3/h
Speed:	Up to 1750 rpm
Differential Pressure:	Up to 16 bar
Suction Lift:	Up to 0.5 bar vacuum while priming Up to 0.8 bar vacuum while pumping
Viscosity Range:	Up to 10,000 cSt
Temperature:	Up to 250°C

- Dynamic axial balancing system, minimizing axial loads, saving energy and increasing life (see picture below)
- Patented cooling system, based on an integral pump, eliminating the need for external cooling (see picture below)
- Maximum protection against leakage by increased safety, provided by a completely enclosed magnetic coupling housing
- Optimal for outdoor installation, the completely enclosed magnetic coupling housing protects the external magnets from contact with the surrounding atmosphere
- Large choice of slide bearing materials available as standard, e.g. cast iron, bronze, carbon and, tungsten carbide
- Standard magnet material is neodymium-iron-boron. Optional samarium cobalt permanent magnets permit operating temperatures up to 250°C
- Pumping in either direction
- External heating jackets for both front cover and magnetic coupling housing available as standard optional features
- Genuine back-pullout design
- Standard as close-coupled, optional with bare shaft end
- Both internal and external canister protection



Benefits:

- Long life time
- No leakage
- Environmental safety
- Lower operating costs
- Easy servicing

ROTAN®

Special Features

DESMI VERTICAL GEAR PUMP

To comply with increasing requirements for pumps in areas where there is no space for usual horizontal configuration, a new vertical design has been developed. Vertical design advantages:

- Easier servicing - dismounting the whole rear end incl. bracket, rear cover rotor and shaft without moving neither pump casing nor motor/gear.
- Enough space for dismounting the rear cover, idler and idler pin, which makes it possible to disassemble the pump completely without removing the pump casing from the pipe system.
- GP/HD/CD/PD pumps are available in vertical design.

CE Ex

COOLING INDUSTRY

To meet the increasing demands the pumps have been developed over the years in close co-operation with various important customers within the refrigerator industry, to whom DESMI ROTAN has been a supplier of pumps since 1979. The demand to phase out the use of chlorine-containing refrigerants causing damage to the ozone layer has lead to new refrigerants and lubricating oils which make special calls on the pumps, such as:

- The materials in the refrigerating installation, particularly the elastomers, must be compatible with the new refrigerants and lubes.
- Mechanical seals and static sealings must be able to stand up to vacuum suction as more of the new refrigerants are hygroscopic, i.e. absorbing water from the air. This makes it necessary to evacuate aqueous vapour, if any, from the installation before filling up with oil.
- New refrigerants often demand higher design pressure.

Special Features

CHOCOLATE PUMP

A speciality within the ROTAN range is the ROTAN chocolate pump for pumping cocoa mass and chocolate. This special configuration has been utilized in the HD and CD programme with all its advantages:

- Configuration with large clearances (T=2) between the fixed and the rotating parts to protect the chocolate from excessive temperatures.
- Casing available as inline (standard) or 90° angular configuration (BCHD).
- Specially designed externally lubricated main bearing.
- Front and rear jackets standard on chocolate pumps (CHD).
- Pump is reversible, which allows emptying pipes and tanks.

ELECTRICAL HEATING

ROTAN has for many years supplied pumps to the asphalt industry, and being a pump manufacturer we are too experienced to claim it is easy to pump asphalt.

We do however claim to have the best solution for most applications within this industry, as our experience as well as feedback from customers have been used for improvement and development.

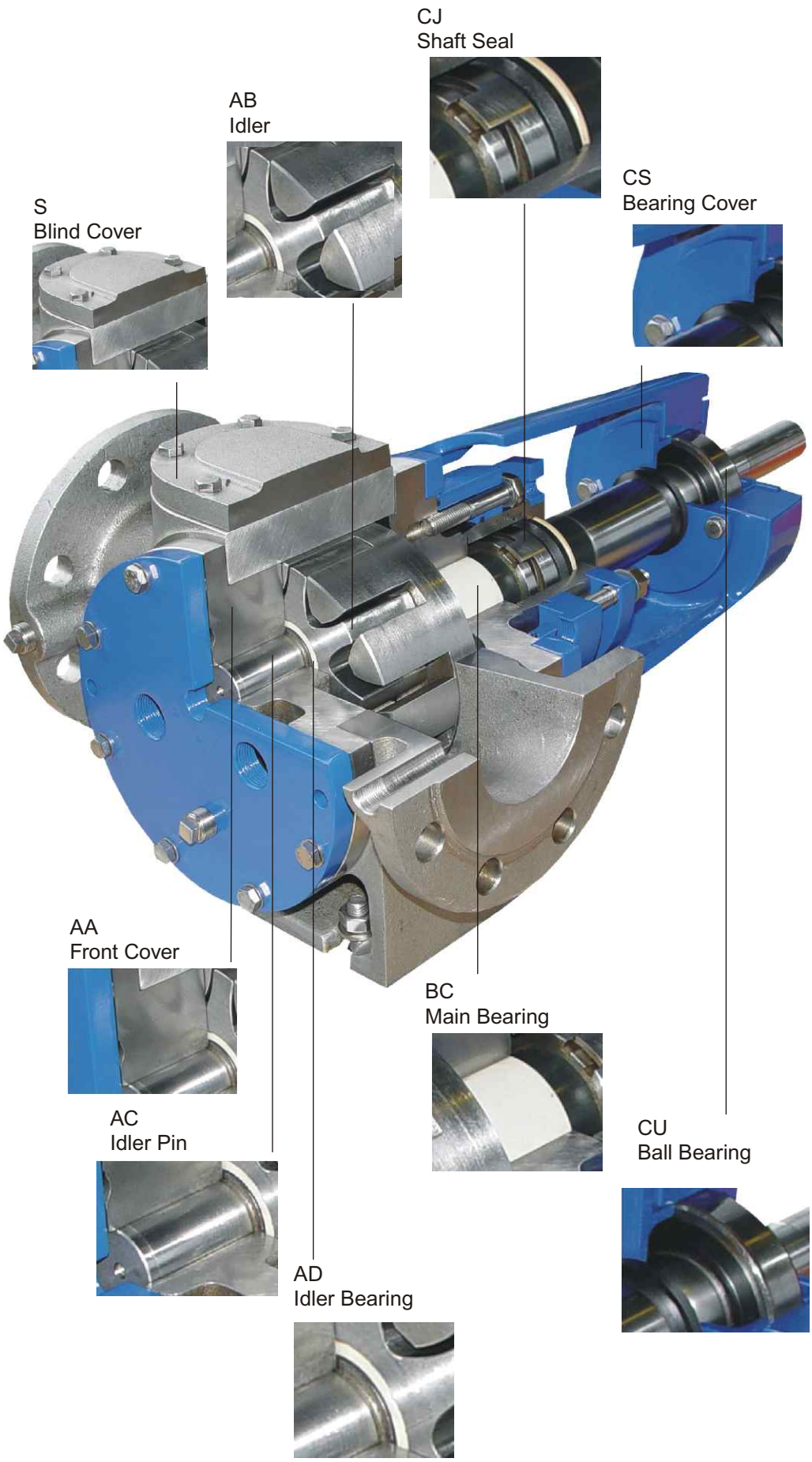
Electrical heating as an alternative to heating by liquid/steam, is the most recent result of this. The heating source is a temperature probe, mounted in a hole drilled in the idler pin of the pump.

As the idler pin is placed in the middle of the pump/liquid, the heating is concentrated where it is best used. For this reason it is often sufficient with heating at the front end, but heating of the rear end is of course also a possibility.

Having in mind the piping, sealing and insulation seen on pump units heated by liquid/steam, the picture to the right of this page shows some of the benefits from electrical heating.

Especially road tankers/plants will benefit from this way of heating, as the electrical probe is easily connected to the vehicle's electrical system.

Item references and descriptions



BC/AD/AC:
Main bearing, idler bearing and idler pin.

CU:
Ball bearing as support bearing - bolts for locking the shaft and adjustment of the axial clearance.

AA/BA:
Heating at front cover and heating/cooling at rear cover available.

CJ:
Shaft sealing with packing cord, mech. seal or double mech. seal (please also see ED-configurations).

CU:
Available with external lubrication for higher temperature.

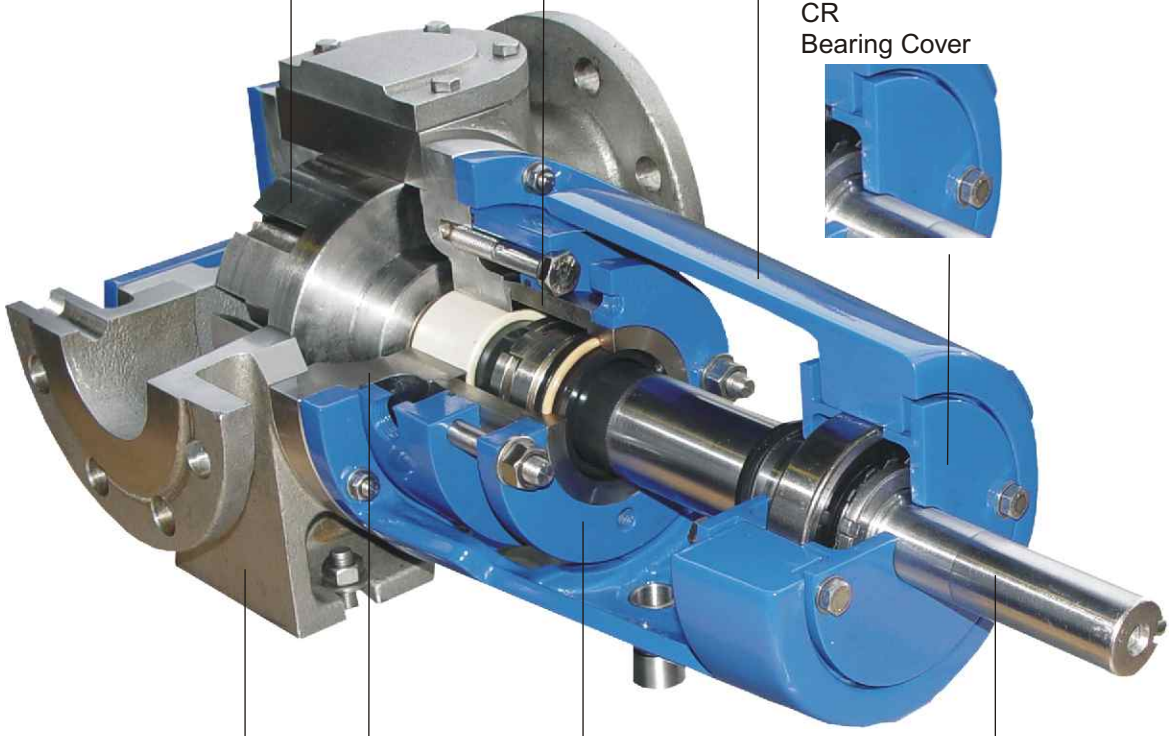
Item references and descriptions

BU
Rotor

BN
Shaft Seal Housing

CQ
Bearing Bracket

CR
Bearing Cover



BV
Shaft

CY
Flange

A
Pump Casing

BA
Rear Cover

CS/CR:
Used for adjustment of axial clearances.

BP/CY:
Gives access to the shaft seal.

S:
Mounted with bypass valve or blind plate - the pumps are also available in 90° angular conf. with bypass valve mounted on the front cover.

AB/BU/BV:
Special surface treatment for internal parts on request.

A:
Pump casing with flanges or threaded connection - all flanges have connection for flush or pressure/vacuum gauge.

By indicating the options in the order below, the complete pump can be identified

1) Pump series

GP	General Purpose, monobloc pump in cast iron
HD	Heavy Duty pump in cast iron
PD	Petrochemical Duty pump in carbon steel
CD	Chemical Duty pump in stainless steel
ED	Environmental Duty pump, magnetically coupled, cast iron, carbon steel or stainless steel

2) Pump sizes **

26	DN 25 - 1”
33	DN 32 - 1¼ ”
41	DN 40 - 1½”
51	DN 50 - 2”
66	DN 65 - 2½”
81	DN 80 - 3”
101	DN100 - 4”
126	DN125 - 5”
151	DN150 - 6”
152	DN150 - 6”*
201	DN200 - 8”* * In development

Available with flanges** or female connections, dependent on size and material. GP pumps are available up to and including size 101, PD is not available in size 152. ED pumps are available up to size 151.
** Flange connections according to:
ISO 2084 DIN 2501 BS 4504 1969 ANSI B 16.1/B 16.5

3) Configurations

E	Suction/discharge connections in-line
B	Suction/discharge connections at 90° angle (not standard)
F	Flanges
	Additional options, see page 15

4)

-	Hyphen

5) Material codes for main parts

Code	Type	Casing/Covers	Rotor/Idler	Shaft
1	GP/HD	GG-25	GG-25	St.60.2
3	CD	G-X 6 CrNiMo 18 10	X 8 CrNiMo 27 5	X 8 CrNiMo 27 5
4	PD	GS-52.3	GG-25	St.60.2

For ED pumps, all material codes may be used.

6) Lubrication

U	Idler bearing and main bearing lubricated by pump medium
M	Externally lubricated idler bearing and main bearing

7) Material codes for idler bearing

Code	Idler Bush	Idler Pin: GP-HD-PD	Idler Pin: CD
1	Cast iron	Hardened 16 MnCr 5	X 8 CrNiMo 27 5
2	Bronze	Hardened 16 MnCr 5	X 8 CrNiMo 27 5
3	Carbon	Hardened 16 MnCr 5	X 8 CrNiMo 27 5
4	Al.oxide	Coated 16 MnCr 5	Coated X 8 CrNiMo 27 5
5	Carbon	Al.oxide, polished	Al.oxide, polished
8	Tungsten carbide	Tungsten carbide	Tungsten carbide

For sizes 26/33 the complete idler is made of cast iron or bronze

8) Material codes for main bearing

Code	Bearing Bush	Shaft: GP-HD-PD	Shaft: CD
1	Cast iron	St.60.2	X 8 CrNiMo 27 5
2	Bronze	St.60.2	X 8 CrNiMo 27 5
3	Carbon	St.60.2	X 8 CrNiMo 27 5
4	Al.oxide	Coated St.60.2	Coated X 8 CrNiMo 27 5
8	Tungsten carbide	Coated St.60.2	Al.oxide, polished
B	Ball bearing	St.60.2	Not applicable

9) Shaft seals

B	Teflon-impregnated, non-asbestos packing
2	Single mechanical shaft seal, DIN 24960/EN12756 - KU, bellows type or O-ring type
22	Double mechanical shaft seal, DIN 24960/EN12756 - KU, O-ring type

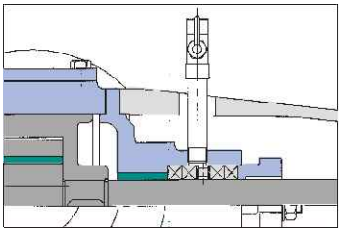
For ED pumps only

/xx	Magnet length: xx cm
N	Magnet material: Neodymium-iron-boron
C	Magnet material: Samarium cobalt

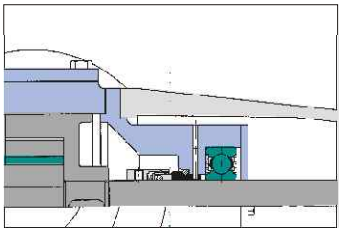
10) Special configurations

S	All special configurations are marked with: S

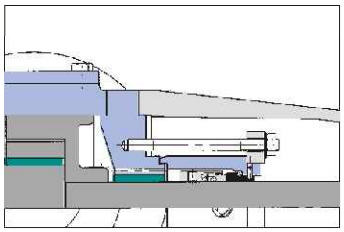
Configurations



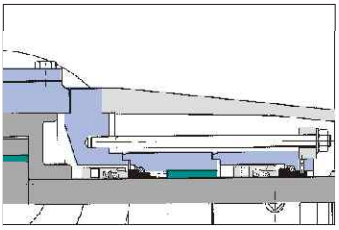
Sealing with stuffing box, with or without lantern ring, for use of external lubrication. Used for high viscosities and where some leakage is allowed.



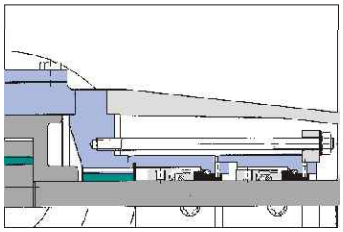
M - GP/HD
Sealing with single mechanical shaft seal, DIN 24960 /EN 1275 - KU, combined with a ball bearing as main bearing. Used where only minor leakage is allowed.



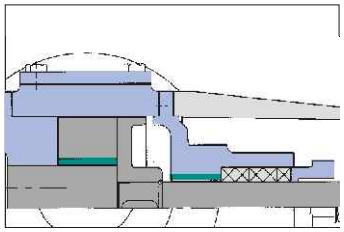
M - PD/CD
Sealing with single mechanical shaft seal, DIN 24960 /EN 12756 - KU, combined with a product-lubricated sleeve bearing as the bearing. Used where only minor leakage is allowed.



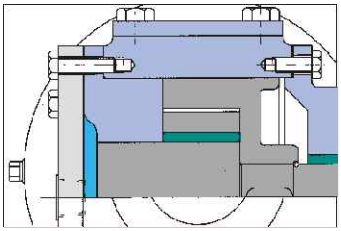
MM (tandem) - MMP (back-to-back)
Double mechanical shaft seals, DIN 24960/EN 12756 - KU, in tandem or back-to-back, with main bearing in the barrier fluid. Used where no leakage is allowed. Up to 6 bar differential pressure.



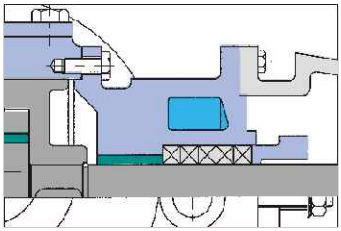
MMW (tandem) - MMPW (back-to-back)
Double mechanical shaft seals, DIN 24960/EN 12756 - KU, in tandem or back-to-back, with product-lubricated main bearing. Used where no leakage is allowed. Up to 16 bar differential pressure.



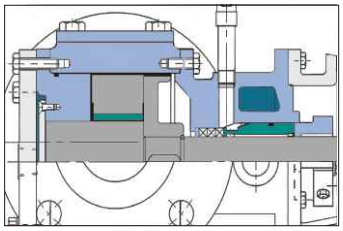
T
Special clearances. Increase of tolerances used for liquids with viscosities above 7,500 cSt. or temperatures above 150ºC.



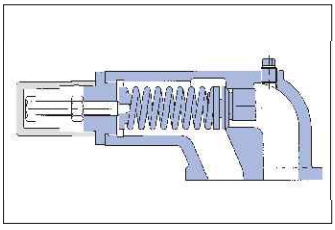
D
Heating jacket on the front cover, often required prior to start-up when pumping high viscosity liquids and liquids which tend to solidify.



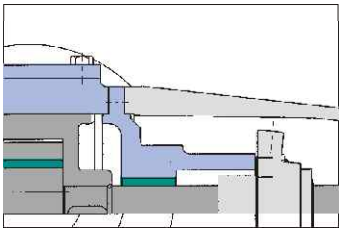
K
Heating jacket on the rear cover, often required prior to start-up when pumping high viscosity liquids and liquids which tend to solidify. This jacket is also used as a seal cooling jacket.



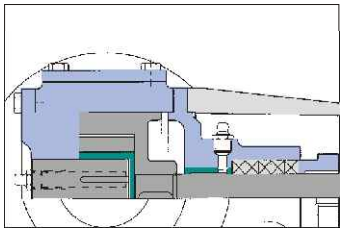
CHD
Combination of special clearances and heating jackets together with external lubrication of the main bearing, used in the chocolate industry.



R
Relief valve, single acting (one direction), used to protect the pump against excess pressures.



Special configurations
Example: Customer-specified or provided cartridge seal or component.



Lubrication
Idler and main bearing externally lubricated. Used when pumping non-lubricating or very viscous fluids.

The DESMI Group

DESMI A/S

Address: Tagholm 1
P.O. Box 226
DK-9400 Nørresundby
Denmark
Phone: +45 96 32 81 11
Fax: +45 98 17 54 99
Managing dir.: Henrik Sørensen

Subsidiaries

DESMI Ltd.

Shareholder: DESMI A/S
Address: "Norman House"
Rosevale Business Park
Parkhouse Industrial Estate (West)
Newcastle, Staffordshire ST5 7UB
UK
Phone: +44 1782 566900
Fax: +44 1782 563666
Managing dir.: Roger Flegg

DESMI GmbH Rotan Pumpengesellschaft

Shareholder: DESMI A/S
Address: Neuhöfer Strasse 23
D-21084 Hamburg
Germany
Phone: +49 407 519847
Fax: +49 407 522040
Managing dir.: Axel Küpper

DESMI Inc.

Shareholder: DESMI A/S
Address: 2551 Eltham Avenue
Suite G
Norfolk, Virginia 23513
USA
Phone: +1 757 857 7041
Fax: +1 757 857 6989
Managing dir.: Henrik Sørensen

DESMI Contracting A/S

Shareholder: DESMI A/S
Address: Tagholm 1
DK- 9400 Nørresundby
Denmark
Phone: +45 96 32 81 11
Fax: +45 98 17 54 99
Managing dir.: Per Søtang Lauridsen

DESMI K&R Pompen B.V.

Shareholder: DESMI A/S
Address: P.O. Box 9684
NL-3506 GR Utrecht
Holland
Phone: +31 30 261 00 24
Fax: +31 30 262 33 14
Managing dir.: Andries van Bruggen

DESMI Norge AS

Shareholder: DESMI A/S
Address: Vigeveien 46
N-4633 Kristiansand S
Norway
Phone: +47 38 12 21 80
Fax: +47 38 12 21 81
Managing dir.: Ove Mårtensson

RO-CLEAN DESMI A/S

Shareholder: DESMI A/S
Address: Hestehaven 21B
DK-5260 Odense S
Denmark
Phone: +45 65 91 02 01
Fax: +45 65 90 88 77
Managing dir.: Dennis W. Larsen

DESMI Pumping Technology (Suzhou) Co., Ltd.

Shareholder: DESMI China Holding
Address: No. 90 Loujiang Road
Kuatang Sub-District
Suzhou Industrial Park
215122 Suzhou, P.R. China
Phone: +86 512 6274 0400
Fax: +86 512 6274 0418
Managing dir.: Henrik Sørensen

Further information:

- Contact us regarding specific product brochures or visit our website: www.desmi.com

DESMI is a dynamic company with many years of experience and a product range, recognized by businesses all over the world. DESMI has subsidiaries in a number of countries and a world wide distributor network. DESMI develops, manufactures and sells centrifugal pumps, internal gear pumps, sewage pumps, and environmental equipment for the recovery of oil spills.
Our customers rely on the quality of our products, and our quality system is in accordance with the requirements of ISO 9001:2000.

DESMI

DESMI A/S
Tagholm 1
DK-9400 Nørresundby
Denmark

Phone: + 45 96 32 81 11
Fax: + 45 98 17 54 99
Internet: www.desmi.com
E-mail: desmi@desmi.com

ISO 9001

Q3002UK-Feb. 2006