Magnetically Coupled Internal Gear Pump
ED series








DESMI Pumps
integrate
integrate
knowledge & technology

ROTAN®

DESMI

Method of operation

Inlet | Passage of liquid | Outlet

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 wordwide under the ROTAN® name. The unique, modular concept of ROTAN® pumps is generally recognized as the most advanced internal gear pump design available today.

Magnetically Coupled Internal Gear Pump - ED range

One of the distinguished features of the ROTAN® ED range is that the pumped medium is hermetically contained in the system since the magnetic coupling eliminates the need for a shaft and mechanical seal, which could allow gaseous exchange between the pumped medium and the atmosphere.

Unlike centrifugal pumps, the ROTAN® ED pump offers gentle liquid handling and a high priming vacuum as well as the pumping of highly viscous liquids.

ROTAN® ED pumps offer the following additional advantages:

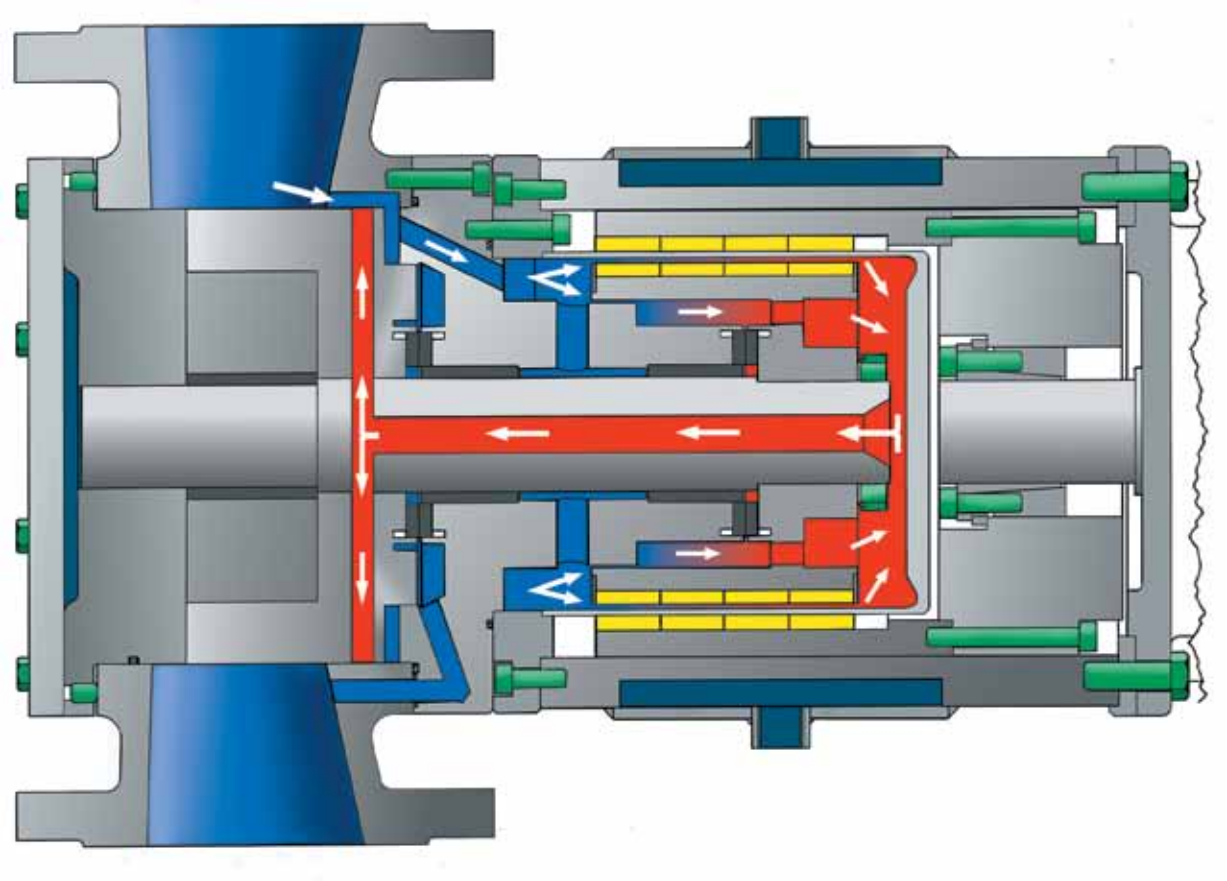
- Dynamic axial balancing system, minimizing axial loads, saving energy and increasing life.
- Patented cooling system, based on an integral pump, eliminating the need of external cooling.
- Maximum protection against leakage by increased safety, provided by a completely enclosed magnetic coupling housing.
- Optimal for outdoor installation, the completely enclosed magnetic coupling housing protects the external magnets from contact with the surrounding atmosphere.
- Wide 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

The ROTAN® ED pump can be used where leakage would be costly, e.g. highly refined, expensive chemicals, or where long overhaul intervals are required. This reduces maintanance labour costs and loss of process time, where atmospheric air would harm the pumped medium.

Typical construction materials of the ED pump are cast iron, stainless steel or carbon steel. For standard applications the ED pump is usually delivered with slide bearings in bronze/steel. As alternative the pump can be delivered with bearings in cast iron/steel for light applications, in carbon/steel for media with poor lubricating properties or in tungsten carbide/tungsten carbide for abrasive media, particularly with low wear rate.

Typical Applications:

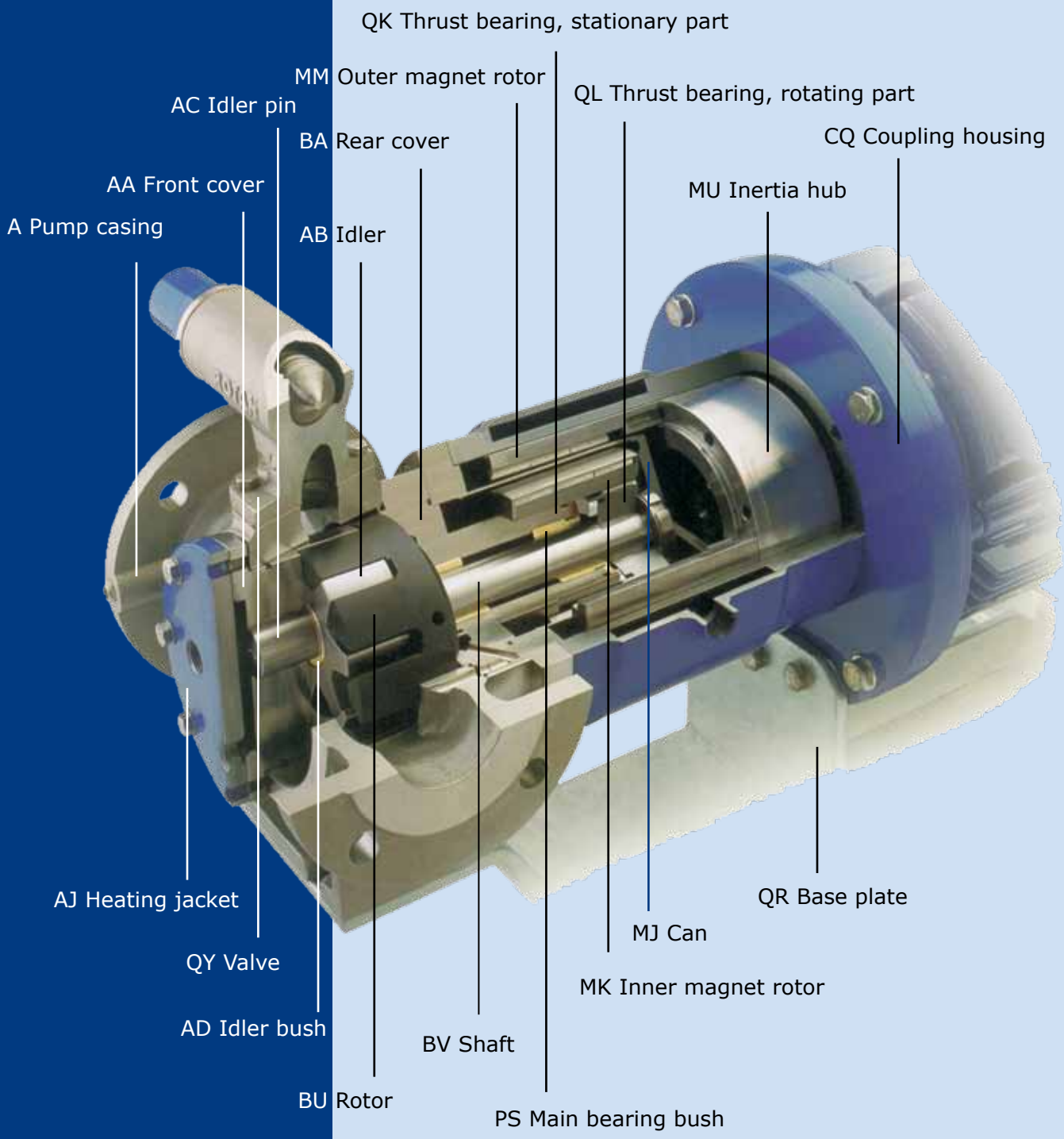
- Isocyanate
- Solvents
- Hazardous organic liquids
- Printing ink
- Resin
- Pitch
- Alkyd resin
- Soyabean oil
- Linseed oil
- Monomers
- Polyol
- Corn syrup



The magnetic coupling is provided with the number of magnets required for the power to be transmitted. The mateiral is neodymium-iron-boron for operating temperatures up to 150°C or samarium-cobalt for operating temperatures higher than 150°C. Both magnetic materials are rare earth types which can be magnetized approx. 10 times more than iron.

The ROTAN® pump is provided with a patented principle of circulation of the pump medium around the magnetic coupling. Simple "centrifugal pump" shaped channels in shaft/rotor ensure continual replacement of the liquid in the magnetic coupling which has been heated by friction and re-circulation. This also ensures efficient lubrication and heat transfer from the slide bearings.

ROTAN ED® part names



Benefits:

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

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 whle priming
Viscosity range:	Up to 10,000 cSt
Temperature:	Up to 250°C

Technical information, pump codes and materials

By choosing the options in order from 1-10, and adding the codes found, the complete ED pump specification is determined.

1) Pump series

ED Environmental Duty pump, magnetically coupled, cast iron, carbon steel or stainless steel

2) Pump sizes**

26	DN 25 - 1”	**101**	DN 100 - 4”
33	DN 32 - 1 1/4”	**126**	DN 125 - 5”
41	DN 40 - 1 1/2”	**151**	DN 150 - 6”
51	DN 50 - 2”		
66	DN 65 - 2 1/2		
81	DN 80 - 3”		

Available with flanges** or female connections, dependent on size and material.
** 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 connentions at 90° angle (not standard)
R	Relief valve
D	Heating jacket on the front cover
K	Heating jacket on the rear cover
T	Special clearances
F	Flanges

4) -

Hyphen

5) Material codes for main parts

Code	Casing/Covers	Rotor/Idler	Shaft
1	GG-25	GG-25	St.60.2
3	G-X 6 CrNiMo 18 10	X 8 CrNiMo 27 5	X 8 CrNiMo 27 5
4	GS-52.3	GG-25	St.60

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	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
8	Tungsten carbide	Tungsten carbide	Tungsten carbide

8) Material codes for main bearing

Code	Bearing Bush	Shaft	Shaft: CD
1	Cast iron	St.60.2	X 8 CrNiMo 27
2	Bronze	St.60.2	X 8 CrNiMo 27 5
3	Carbon	St.60.2	X 8 CrNiMo 27 5
8	Tungsten carbide	Tungsten carbide	Coated X 8 CrNiMo 27 5

9) Magnet coupling

/xx	Magnet length: xx cm
N	Magnet material: NdFeB
C	Magnet material: SmCo

10) Special configurations

S All special configurations are marked with S

The ROTAN® ED pump is disigned as a monobloc unit, i.e. directly coupled with an IEC-motor, gearmotor or gearbox with an IEC-motor. As an alternative, a free shaft end unit can be assemled with a drive unit by means of a flexible coupling.

Reversible pumping capability allows changing flow direction of the pump simply by reversing the motor direction. The ED pump is increasingly cost effective in the most severe operation conditions including high pressures, high viscosities, high temperatures, corrosive and high flow applications.

Abrasion resistant shafts, bearings, and thrust washers are available when abrasive materials are to be pumped. The ROTAN® ED pump is proven in most difficult applications including coal tar slurries and filled polyols. Other magnetically driven pumps with balanced rotor designs allow the rotor to make contact with balance plates and are not designed for abrasive service.

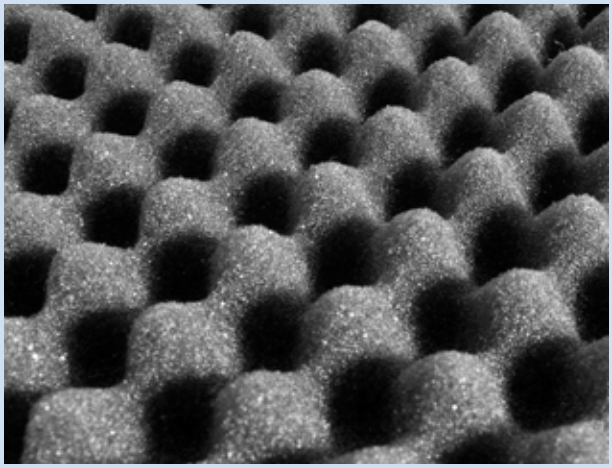
External jacketing of the pump head and magnet area are standard options when material in the pump and magnet area requires heat transfer.

Foam/polyurethane isosyanate

Isocyanate is one of the components in broadly all foam products such as foam mattresses, inner linings in cars, cushioning in car seats, chairs and sofas. The hard qualities are used for insulation of houses, machines, tubes, etc.

There are various types of isocyanate, but common to all of them is that they react to the humidity of the air by forming very hard crystals, which wear out the pumps and mechanical seals, if any. Therefore the systems pumping isocyanate should be provided with a filter or a strainer so as to avoid crystals to circulate in the system constantly. To avoid humidity of the air ultra-dry air can be used instead of nitrogen. Air-dryers that remove the humidity totally are also an option.

As to bearings, the first selection should be bronze. However, some isosyanates contain additives, which do not go well with bronze. In that case carbon bearings should used.



If there are crystals in the isocyanate, carbon bearings cannot be used. Here tungsten carbide bearings would be the only safe solution.

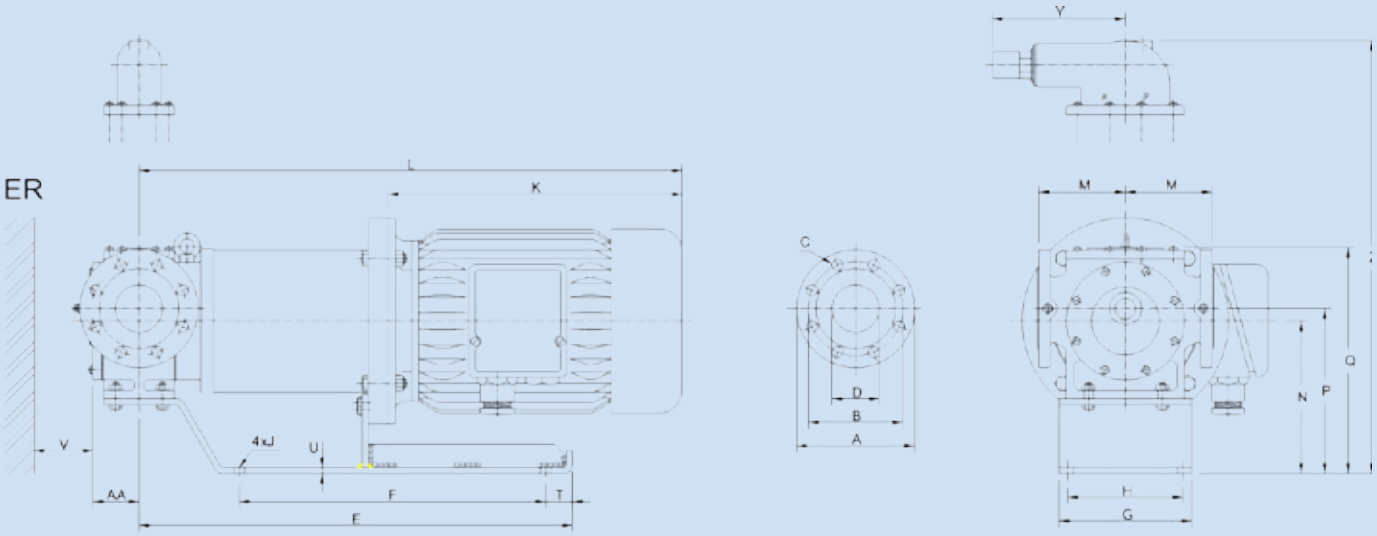
All isocyanates are hazardous and the vapours should not be inhaled. Contact with skin and prolonged contact may result in allergic reactions. Here a magnetically coupled pump is the only solution as this pump is leak and vapour free.

Tar/pitch

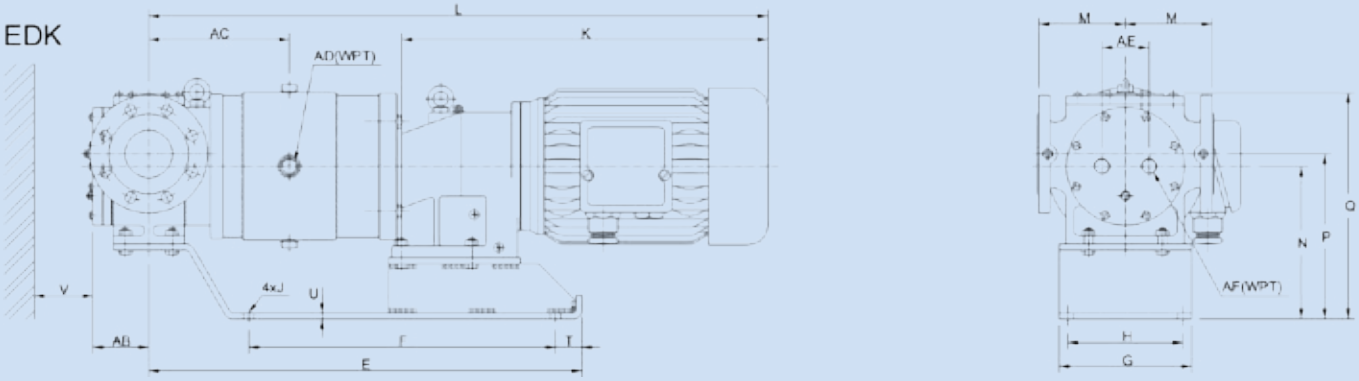
ROTAN® pumps for pitch are used several places in the production of electrodes in the aluminium industry. Tar is often transported in ships. The pumps are pumping from the harbour to the storage tanks if the factory is not placed so close to the harbour that the ship can pump the pitch directly to the storage tank in the factory. The pumps are normally 5 or 6" mag-driven pumps with bearings in tungsten carbide. In the mass factory the pumps are normally 2½ or 3". Here the pumps are used to circulate in a ringmain and dose through a mass flow meter into the mixers (these pumps are frequency converter controlled).

All pumps running in pitch are with tungsten carbide bearings and heating jackets on front and rear covers. The pumps should be equipped with max. number of samarium cobalt magnets (just to allow some small errors in the pipe system). The heating connections should be flanged as it is impossible to make a tight thread.
The advantage of the mag-driven ROTAN® pumps is the long time between overhaul and the fact that a leaking mechanical seal has a huge leak. Furthermore the vapour from pitch is considered to be cancer-causing and in some countries the users have to check how many ppm there is in the air close to the seal. A mag-driven ROTAN® pump is leak and vapour free.

ER



EDK



IEC- / DIN Motors	
IEC 100/112	Large B14
All other motors	B5

Type Typ	Manometertilslutning Pressure gauge connection Manometeranschlüsse
26-66	1/4" RG 1/4" WPT 1/4" Rohrgewinde
81-201	3/8" RG 3/8" WPT 3/8" Rohrgewinde

Flanger / Flanges / Flanschen				
Type Typ	ISO	DIN	BS	ANSI
26-101	2084-NP16	2501-ND16	4504-1969 NP16	B 16,5 Class 150
126-201	2084-NP10	2501-ND10	4504-1969 NP10	B 16,5 Class 150

Type	Motor Gear	Alle udførelser / All configurations / Alle Ausführungen																	ER		E	EDK					Weight Kg	
		A	B**	C	D	E	F	G	H	J	K*	L*	M	N	P	Q	T	U	V	Y	Z	AA	AB	AC	AD	AE	AF	pump	valve
ED 26	IEC 80/90	1" WPT female or				434	300	140	110	Ø14	209..248	459..498	60 83	152	160	209	36	8	50	115	254 284	35	43	162	3/8"	38	3/8"	29	2
	IEC 100/112										272..333	522..583																
	Gearmotor	115	85	4-Ø14	25						358..512	619..775																
ED 33	IEC 80/90	1 1/4" WPT female or				438					209..248	463..502	60 83						60		254 284	39	47	166				30	
	IEC 100/112										272..333	526..587																
	Gearmotor	140	100	4-Ø18	32						358..512	623..779																
ED 41	IEC 90	1 1/2" WPT female or				446					248	510	90 100	170	180	244			65	156	309	45	56	174		50		40	
	IEC 100/112										272..333	534..595																
	Gearmotor	150	110	4-Ø18	40						403..552	680..829																
ED 51	IEC 100/112	2" WPT female or				595	400	160	130	Ø18	172..333	513..674	125	236	250	335	45	10	70	199	413	56	70	186	1/2"	70	1/2"	90	6
	IEC 132										401	742																
	IEC 160										499	848																
	Gearmotor	165	125	4-Ø19	50						468..722	812..1071																
ED 66	IEC 100/112	2 1/2" WPT female or				600					172..333	518..679							80			61	75	191				95	
	IEC 132										401	747																
	IEC 160										499	853																
	Gearmotor	185	145	4-Ø19	65						468..722	817..1076																
ED 81	IEC 132	200	160	8-Ø19	80	735	520	225	195		401	824	150	259	280	384			100	226	490	78	95	239		80		180	10
	IEC 160/180										449..570	872..993																
	Gearmotor										567..855	997..1303																
ED 101	IEC 132	220	180	8-Ø19	100	740					401	829	180	273	300	420			115		526	88	105	244		90	3/4"	200	
	IEC 160/180										449..570	877..998																
	Gearmotor										567..855	997..1303																
ED 126	IEC 200	250	210	8-Ø19	125	851	600	300	260	Ø22	617	1121	200	284	315	451	70	12	140	326	607	101	118	339	3/4"	112		350	20
	Gearmotor										585..855	1144..1416																
ED 151	IEC 200	285	240	8-Ø24	150	866		350	310		617	1136	225	278		470			165		628	119	140	358		130		400	
	Gearmotor										640..855	1216..1431																

*Precise measures on request

**Andre dimensioner ved ANSI / Other dimensions by ANSI / Andere Dimensionen bei ANSI

Denmark (Head Office)
DESMI A/S
Tagholm 1
DK-9400 Nørresundby
Tel.: +45 96 32 81 11
Fax: +45 98 17 54 99
Web: www.desmi.com
E-mail: desmi@desmi.com

DESMI Danmark A/S
Tel.: +45 72 44 02 50
Fax: +45 98 17 54 99
Web: www.desmi.dk /
www.pumpeservice.dk
E-mail: desmidanmark@desmi.com

DESMI Contracting A/S
Tel.: +45 96 32 81 11
Fax: +45 98 17 54 99
Web: www.desmi.com
E-mail: desmicontracting@desmi.com

RO-CLEAN DESMI A/S
Tel.: +45 65 91 02 01
Fax: +45 65 48 16 15
Web: www.ro-cleandesmi.com
E-mail: Denmark.ro-clean@desmi.com

U.K.
DESMI Ltd.
Tel.: +44 1782 566900
Fax: +44 1782 563666
Web: www.desmi.com/ltd
E-mail: desmi_ltd@desmi.com

DESMI FHS Ltd.
Tel.: +44 1782 566900
Fax: +44 1782 563666
Web: www.desmi.com/ltd
E-mail: desmi_ltd@desmi.com

RO-CLEAN DESMI Ltd.
Tel.: +44 2380 829751
Fax: +44 2380 339190
Web: www.ro-cleandesmi.com
E-mail: uk_ro-clean@desmi.com

Ecuador
RO-CLEAN DESMI LATINOAMERICA S.A.
Tel.: +593 2 326 1939
Fax: +593 2 326 4844
Web: www.ro-cleandesmi.com
E-mail: Latinoamerica.ro-clean@desmi.com

Holland
DESMI K&R Pompen B.V.
Tel.: +31 30 261 00 24
Fax: +31 30 262 33 14
Web: www.desmi.com/desmikrpompen
E-mail: desmi_kr@desmi.com

Indonesia
RO-CLEAN DESMI ASIA
Tel.: +62 21 2358 4468
Fax: +62 21 2358 4401
Web: www.ro-cleandesmi.com
E-mail: asia.ro-clean@desmi.com

China
DESMI Pumping Technology (Suzhou) Co., Ltd.
Tel.: +86 512 6274 0400
Fax: +86 512 6274 0418
Web: www.desmi.com
E-mail: desmi_suzhou@desmi.com

Korea
DESMI Korea
Tel.: +82 31 931 5701
Fax: +82 31 931 5702
Web: www.desmi.com
E-mail: desmikorea@desmi.com

Norway
DESMI Norge AS
Tel.: +47 38 12 21 80
Fax: +47 38 12 21 81
Web: www.desmi.no
E-mail: desminorge@desmi.com

Germany
DESMI GmbH Rotan Pumpengesellschaft
Tel.: +49 407 519847
Fax: +49 407 522040
Web: www.desmi.de
E-mail: desmi_gmbh@desmi.com

USA
DESMI Inc.
Tel.: +1 757 857 7041
Fax: +1 757 857 6989
Web: www.desmiusa.com.
E-mail: info@desmiusa.com

Applied Fabric Technologies, Inc.
Tel.: +1 716 662 0632
Fax: +1 716 662 0636
Web: www.afti.com
E-mail: BestBoom@afti.com

Singapore
DESMI Singapore
Tel.: +65 6748 2481
Fax: +65 6747 6172
Web: www.desmi.com
E-mail: desmi_sing@desmi.com

DESMI is a dynamic company with many years of experience and a product range, recognized by businesses all over the world.
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