ABS DRY INSTALLED SEWAGE PUMP FR.

DN 50 - DN 800

abs
We know how water works

FR - A COMPLETE RANGE OF HIGH EFFICIENCY WATER AND WASTE WATER PUMPS.

Range of Applications

Series FR pumps have been designed for reliable and cost-effective pumping of waste water and sewage in municipal works and industrial plants. They can also be used for sludge and liquids containing solids and fibres as well as for clear water. Both horizontal and vertical installations are possible. Belt drive units are available for pumps with connections of 50mm dia. and above.

Due to the favourable NPSH values - lower than 5 m - an FR pump can be placed above the sump. Automatic priming equipment can be supplied as an option.

Large solids passage

The FR pumps have the largest possible free passages due to advanced hydraulic design aiming at both high efficiency and minimum risk of clogging. The minimum ball passage of pumps with connections of 100mm dia. and above is 100mm.

Recessed vortex impellers are fitted in the small pumps, while the medium-sized and large pumps have single-, two- or three-channel impellers. Medium-sized types feature the well-known Contra Block system.

High Reliability

The construction is rigid and has few parts. Generous wall thicknesses mean good wear resistance.

With the lubricated double mechanical seal, the pumps can be run dry. The seal arrangement is independent of the direction of rotation.

Close-coupled pumps are supplied with IEC standard electric motors of well-known make. Long-life bearings in combination with short shaft overhang mean low vibration level - a condition for long life of both the pump and its seals.

The life of the seals are also positively affected by the favourable operation conditions in the seal chamber.

Low Energy Consumption

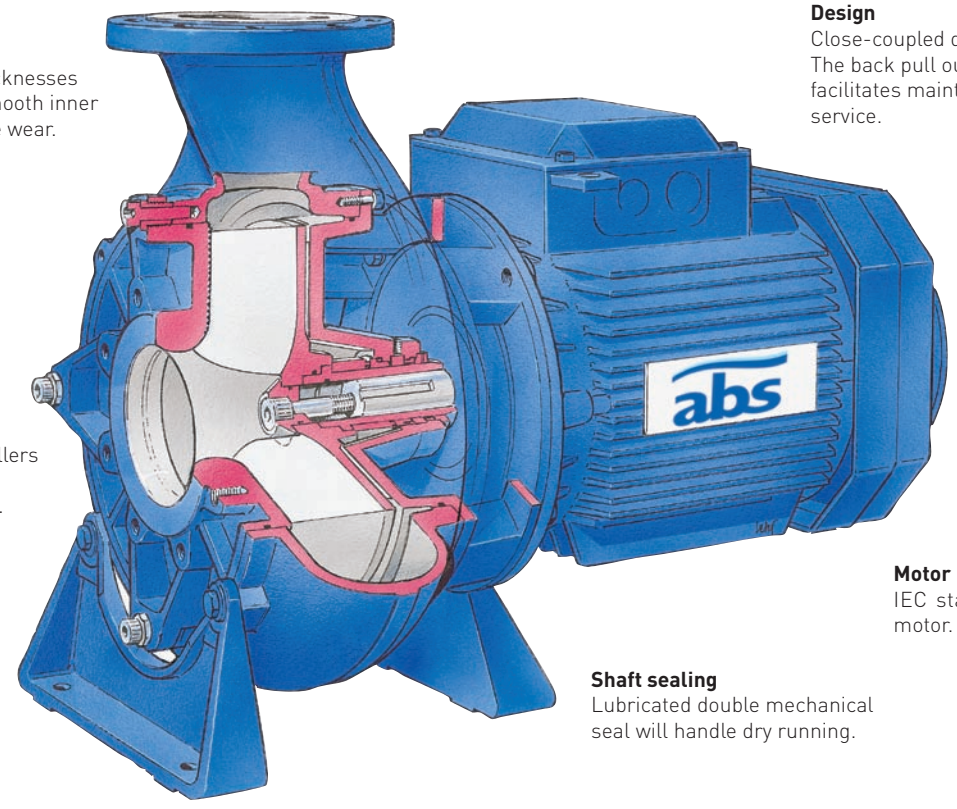
Each impeller has been hydraulically designed to achieve the highest possible efficiency. Together with high efficiency electric motors this ensures low energy costs.

Low-cost Maintenance

With the back pull-out design, the pump can be dismantled without affec-ting the pipework. The ABS lifting arm is also useful when servicing the pumps. Normally, one man can service a FR pump station.

Clean Environment for Servicing

Low vibration levels mean quiet pump operation. The risk of leakage is minimal because of the long-life shaft sealing, which when combined with dry pit installed pumps gives a clean working environment, which is not affected by the sealing liquid.



Pump casing
Generous wall thicknesses mean long life. Smooth inner contours minimise wear.

Impeller
Vortex, single- or two-channel impellers for minimum clogless operation.

Design
Close-coupled design. The back pull out design facilitates maintenance and service.

Motor
IEC standard electric motor.

Shaft sealing
Lubricated double mechanical seal will handle dry running.

DESIGN

Pump casing

Smooth inner contours minimise erosion and generous wall thicknesses give long operating life.

If an open channel impeller is fitted, the pump is provided with an adjustable wear disc in the inlet.

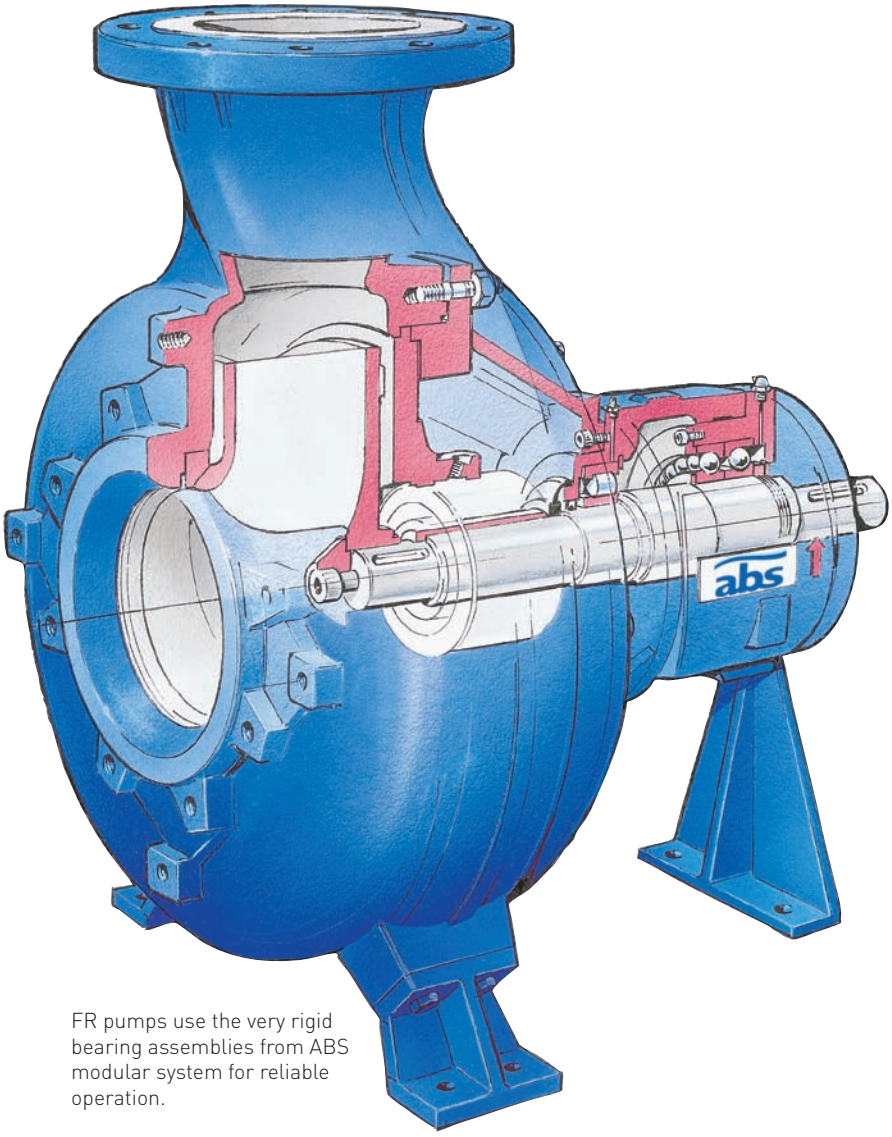
Impeller

Thanks to a special vane design, the impellers achieve both large free passages and high efficiencies. In the smaller pumps recessed vortex impellers are fitted for pumping all kinds of contaminated liquids - especially those containing long solids.

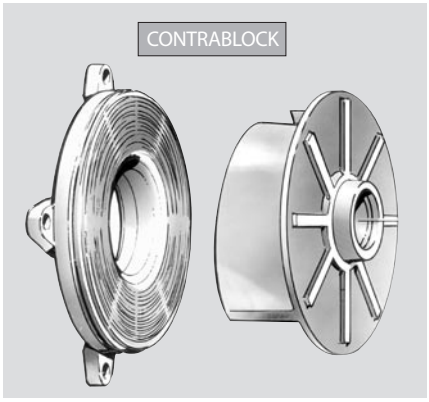
Medium-sized pumps having open two-channel impellers feature the Contra Block. This system consists of a wear disc with grooves forming a spiral and an open channel impeller. The wear disc can be adjusted to compensate for wear, making it possbile to maintain the efficiency during the whole period of operation. The spiral groove minimises blockaging.

Closed channel impellers have large free passages - in some cases the ball passage is 150mm dia.

Mixed flow semi-open impellers are used in the larger pumps, which are equipped with a grooved, self-cleaning wear disc.



FR pumps use the very rigid bearing assemblies from ABS modular system for reliable operation.



Shaft extension

The stainless steel shaft extension on the close-coupled versions has an extremely short overhang. This minimises the shaft deflection, giving long life to the shaft seal.

A hexagonal flange on the shaft extension transmits the torque to a recess in the impeller. The impeller screw connects the impeller directly to the motor shaft end.

Shaft Sealing

Double mechanical seals are fitted in the small pumps. The primary seal has silicium carbide against silicium carbide in its sealing faces, whereas the secondary seal has carbon against silicon carbide. The seal arrangement is independent of the direction of rotation. Lubricant is continually supplied to the seal from a reservoir attached to the lantern.

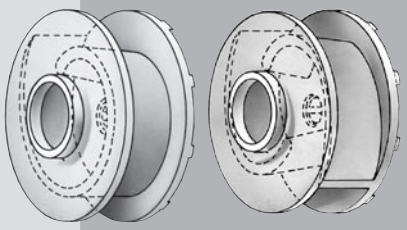
Larger pump sizes equipped with the ABS rigid bearing assembly can be fitted with a number of different seals as gland packing, single or double mechanical seals, thanks to the ABS seal cartridge system.

The seal cavity is designed to achieve the best possible operating conditions for the seal. Any gases and/or solids are instantly ejected.

Picture shows two horizontally installed FR pumps with a priming unit. Alternatively the FR pumps can be installed vertically.

DESCRIPTION

Various impeller

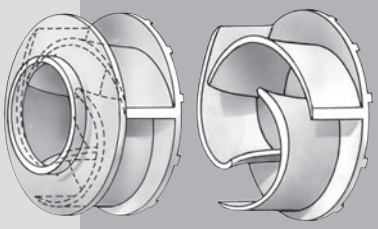


Closed single- and two-channel impellers with ball passages of 125-130mm dia. are fitted in the sizes FR 200/200-32 and FR 250/250-38.

Closed channel impellers

Open two-channel impellers have the well-known ABS Contra Block system, which has proved itself for years also in difficult operation conditions.

Open two-channel impeller



The impellers are used in larger pumps and have wide flow channels and can be used for liquids containing comparatively large solids.

Three-channel impellers

A recessed vortex impeller will give a completely free passage through the pump.

Vortex impeller - NiceFlo

Motor

The close-coupled pumps are connected to high efficiency IEC standard electric motors with long life ball bearings.

Installation

The pumps can be installed either horizontally or vertically. Vertically installed pumps can be delivered with or without a suction bend.

Belt drive

Larger pumps can be supplied with Belt Drive Unit (BDU). The ABS Belt Drive Unit is a rigid, compact construction, making it possible to adjust the speed in steps and thus adapt the pump to new operation data.

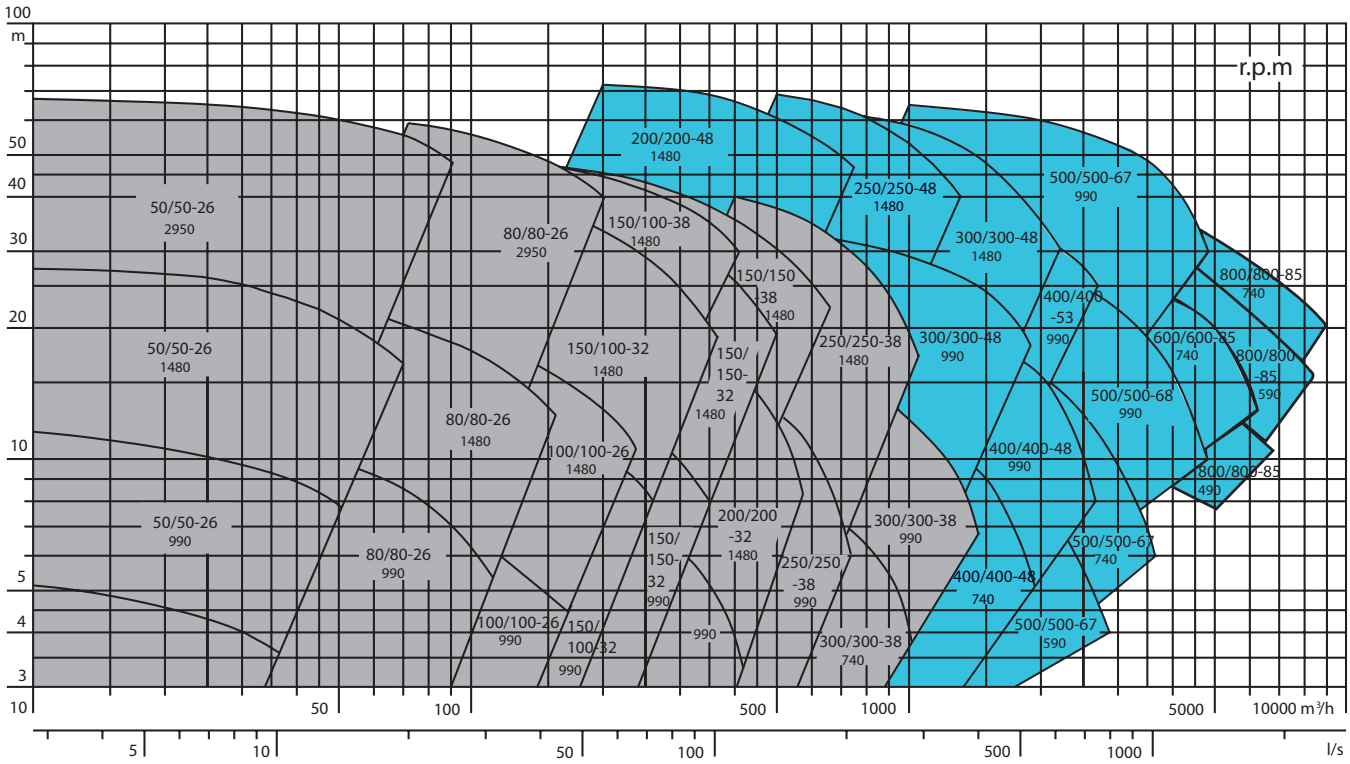
TECHNICAL DATA

Capacity	1-9000 m³/h
Head	2-80 m
Temperature	Max. 80°C
Pressure	PN 4, PN 6 och PN 10
Flanges	ISO 7005 PN 10
Seal lubrication	Environment friendly liquid

Type designations

Small FR pumps
Close-coupled pumps or pumps with bearing assembly

Large FR pumps
Pumps with bearing assembly



Materials

Code	01	03*
Pump casing	Cast iron 0120	Cast iron 0120
Impeller	Cast iron 0120	Stainl.steel 2324
Wear disc/wear ring	Cast iron 0120	Cast iron 0120
Lantern/cover	Cast iron 0120	Cast iron 0120
Shaft extension 3R, 4R	Stainl. steel 2321	-
Shaft sleeve 5R, 5F and 6F	Stainl.steel 2324	Stainl.steel 2324
Shaft for bear. assy. sizes 3R, 4R, 5R	Steel 1672	Steel 1672
Shaft for bear. assy sizes 5F and 6F	Stainl.steel 2324	Stainl.steel 2324

*) For sizes -48 and larger, i.e. large pump. Also available in code 05 (stainless wear disc/ring).

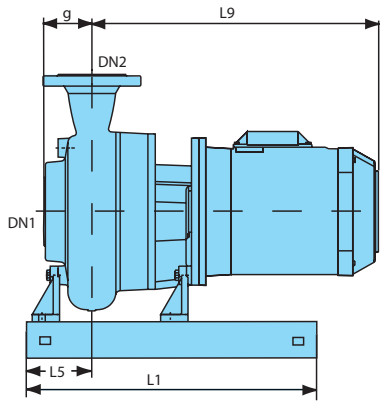
Close-coupled motors

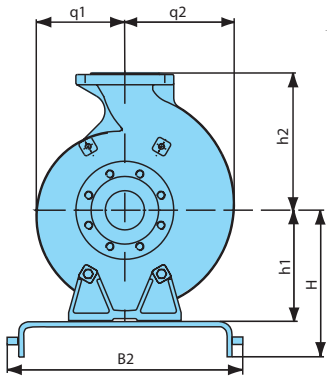
Totally enclosed squirrel-cage three-phase AC motor, to IEC standard

Design:	B5 Flange mounted/ B35 Foot and flange mounted
Enclosure:	IP 55
Voltage:	230-600 V
Frequency:	50 Hz
Motor output:	3-55 kW
Pole:	2, 4, 6 and 8 poles

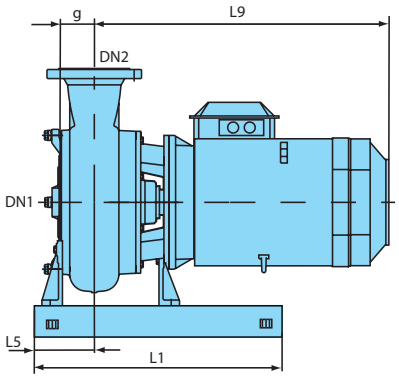
ABS material	Equivalent grades Germany	USA	UK	France	Chemical composition
0120	GG20	A48-30	1452-G220	Ft 20D	Cast iron
1672	C45E	1045	080 M46	C45E	0.8Mn 0.46C 0.25Si
2321	1.4057	AISI 431	431 S29	Z15 CN 16-2	17Cr 1Ni 0.2C
2324	1.4460	AISI 329	-	-	24Cr 5Ni 1.5Mo 0.10C

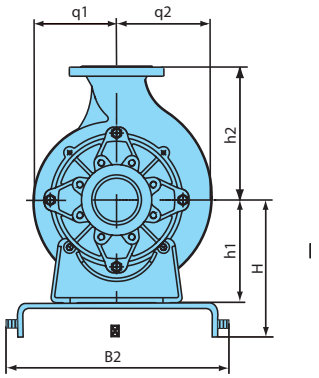
DIMENSIONS - CLOSE-COUPLED PUMPS





Pump type/Motor	DN1	DN2	h1	h2	g	L9	L5	L1	B2	q1	q2	H	Weight(kg)*
FR 50/50-26 IEC 132	50	50	225	250	78	605	127	600	472	174	201	325	160
FR 50/50-26 IEC 160	50	50	225	250	78	696	127	600	472	174	201	325	200
FR 50/50-26 IEC 180	50	50	225	250	78	794	127	600	472	174	201	325	250
FR 50/50-26 IEC 200	50	50	225	250	78	866	127	900	812	174	201	325	295
FR 80/80-26 IEC 132	80	80	225	280	98	620	142	600	472	184	224	325	170
FR 80/80-26 IEC 160	80	80	225	280	98	711	142	600	472	184	224	325	210
FR 80/80-26 IEC 180	80	80	225	280	98	809	142	600	472	184	224	325	260
FR 80/80-26 IEC 200	80	80	225	280	98	882	142	900	812	184	224	325	305
FR 100/100-26 IEC 132	100	100	225	300	105	630	152	600	472	192	236	325	175
FR 100/100-26 IEC 160	100	100	225	300	105	721	152	600	472	192	236	325	215
FR 100/100-32 IEC 180	100	100	225	300	105	819	152	600	472	192	236	325	265



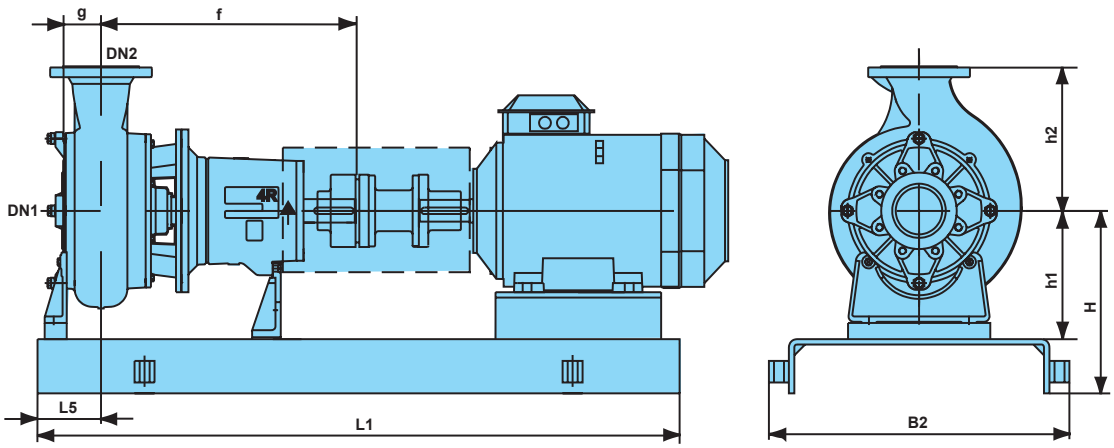


Pump type/Motor	DN1	DN2	h1	h2	g	L9	L5	L1	B2	q1	q2	H	Weight (kg)*
FR 150/100-32 IEC 132	150	100	310	315	101	603	191	750	662	212	252	410	240
FR 150/100-32 IEC 160	150	100	310	315	101	694	191	750	662	212	252	410	280
FR 150/100-32 IEC 180	150	100	310	315	101	791	191	750	662	212	252	410	330
FR 150/150-32 IEC 132	150	150	310	335	103	601	201	750	662	220	278	410	255
FR 150/150-32 IEC 160	150	150	310	335	103	692	201	750	662	220	278	410	295
FR 150/150-32 IEC 180	150	150	310	335	103	789	201	750	662	220	278	410	345
FR 200/200-32 IEC 132	200	200	310	400	140	620	241	900	812	241	328	410	270
FR 200/200-32 IEC 160	200	200	310	400	140	711	241	900	812	241	328	410	310
FR 200/200-32 IEC 180	200	200	310	400	140	808	241	900	812	241	328	410	365

Pump type/Motor	DN1	DN2	h1	h2	g	L9	L5	L1	B2	q1	q2	H	Weight (kg)*
FR 150/100-38 IEC 160	150	100	310	400	98	708	157	750	662	246	280	410	285
FR 150/100-38 IEC 180	150	100	310	400	98	805	157	750	662	246	280	410	350
FR 150/100-38 IEC 200	150	100	310	400	98	878	157	750	662	246	280	410	390
FR 150/100-38 IEC 225	150	100	310	400	98	940	157	750	662	246	280	410	435
FR 150/150-38 IEC 160	150	150	310	400	110	718	178	750	662	252	288	410	305
FR 150/150-38 IEC 180	150	150	310	400	110	816	178	750	662	252	288	410	370
FR 150/150-38 IEC 200	150	150	310	400	110	888	178	750	662	252	288	410	415
FR 150/150-38 IEC 225	150	150	310	400	110	950	178	750	662	252	288	410	460
FR 250/250-38 IEC 160	250	250	350	480	150	734	219	900	812	287	367	450	390
FR 250/250-38 IEC 180	250	250	350	480	150	832	219	900	812	287	367	450	455
FR 250/250-38 IEC 200	250	250	350	480	150	904	219	900	812	287	367	450	495
FR 250/250-38 IEC 225	250	250	350	480	150	966	219	900	812	287	367	450	540
FR 300/300-38 IEC 160	300	300	450	580	171	789	263	900	812	339	468	550	530
FR 300/300-38 IEC 180	300	300	450	580	171	846	263	900	812	339	468	550	595
FR 300/300-38 IEC 200	300	300	450	580	171	918	263	900	812	339	468	550	635
FR 300/300-38 IEC 225	300	300	450	580	171	980	263	900	812	339	468	550	680

 *) Pump, motor and baseplate.

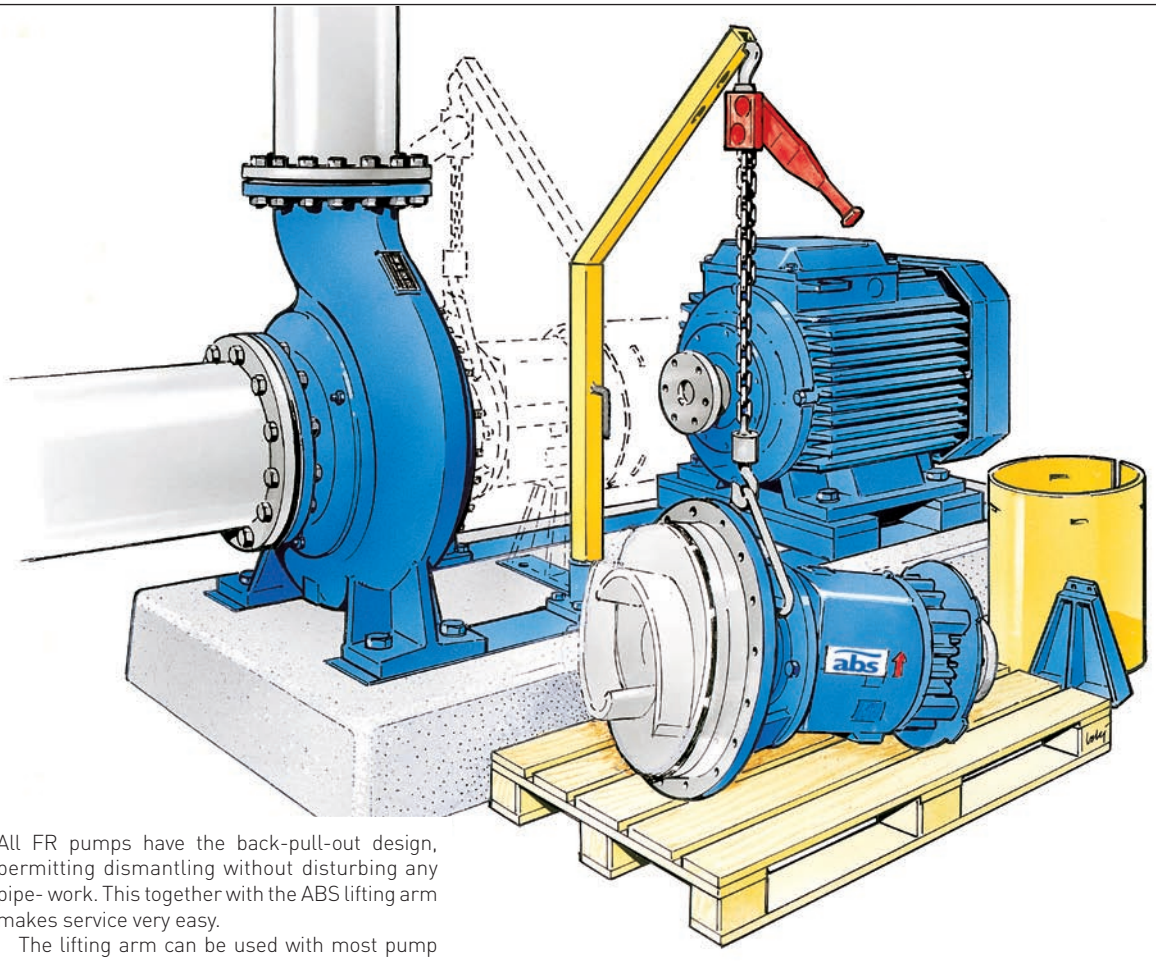
PUMPS WITH BEARING ASSEMBLY



Pump type	Bearing-assy. size	DN1	DN2	h1	h2	H	g	f	L5	L1max	B2max	Weightt* kg
FR 50/50-26	3R	50	50	225	250	375	78	545	127	1600	642	140
FR 80/80-26	3R	80	80	225	280	375	98	560	142	1600	642	150
FR 100/100-26	3R	100	100	225	300	375	105	570	152	1600	642	160
FR 150/100-32	3R	150	100	315	315	465	101	542	191	1600	642	190
FR 150/150-32	3R	150	150	315	335	465	103	540	201	1600	642	205
FR 200/200-32	3R	200	200	315	400	465	140	559	241	1600	642	225
FR 150/100-38	4R	150	100	315	400	465	98	703	157	2200	912	260
FR 150/150-38	4R	150	150	315	400	465	110	713	178	2200	912	285
FR 250/250-38	4R	250	250	355	480	505	150	729	219	2200	912	340
FR 300/300-38	4R	300	300	450	580	600	171	743	263	2200	912	475
FR 200/200-48	5R	200	200	355	550	605	180	887	-	3000	1010	600
FR 250/250-48	5R	250	250	450	600	700	165	893	-	3000	1010	680
FR 300/300-48	5R	300	300	500	625	750	170	917	-	3000	1010	720
FR 400/400-48	5R	400	400	630	800	880	200	928	-	3000	1010	1010
FR 400/400-53	5F	400	400	630	870	-	225	978	-	-	-	1350
FR 500/500-67	6F	500	500	750	1000	-	275	1160	-	-	-	1700
FR 500/500-68	5F	500	500	850	1050	-	275	970	-	-	-	1700
FR 600/600-85	5F	600	600	1000	1250	-	350	959	-	-	-	3200
FR 800/800-65	6F	800	800	910	1300	-	400	1055	-	-	-	3550

*) Bare shaft pump.

LOW COST MAINTENANCE



All FR pumps have the back-pull-out design, permitting dismantling without disturbing any pipe- work. This together with the ABS lifting arm makes service very easy.

The lifting arm can be used with most pump types within the ABS wide programme.

abs
We know how water works

I ABS Group I Tel. +46 40 35 04 70 I Fax +46 40 35 50 45 I info@absgroup.com I www.absgroup.com I