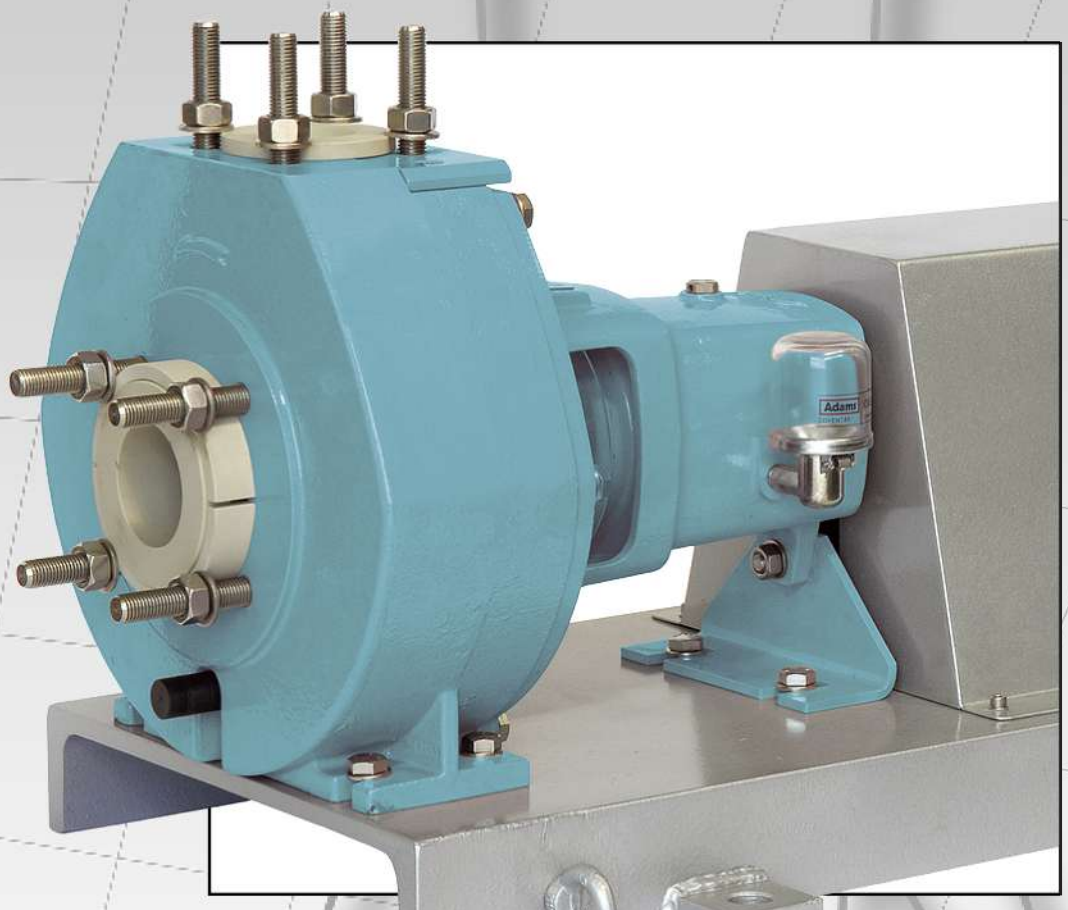
ARGAL

CHEMICAL PUMPS

ZGE solid non-metallic centrifugal pumps



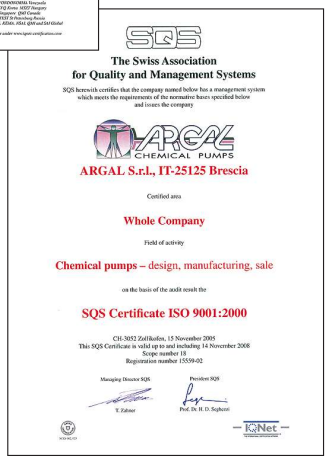
IN COMPLIANT TO ISO 2858

ARGAL chemical pumps
Quality, Experience, Innovation.

THE COMPANY

Established as supplier of the galvanic industry the Company ARGAL has been designing and manufacturing pumps in thermoplastic polymers for more than 30 years.
The products turned out to be the best solution for universal resistance of plastic material against chemical aggressive agents without using special alloys that are very expensive.
The Company offers a wide range of pumps in many executions for industrial applications where temperature from -40 °C to 120 °C with flow up to 1000 mc/h and head more than 100 m are required.
The Company's strategy, concerning the project and the process of production, is closely oriented to research and rigorous quality in order to achieve absolute confidence in the products reliability.
The ISO 9001:2000 certificate, obtained in 2002, shows the validity of organizational procedures, the suitability of operative instruments either from design level (using parametric CAD, mechanical analysis GEM and CFD for fluid-dynamic evaluation) and from productive level (numerical control machines, well-equipped assemblying department, modern test room).
The whole process is run by professionals.


IQNet
THE INTERNATIONAL CERTIFICATION NETWORK
CERTIFICATE
IQNet and SQS
hereby certify that the organization
ARGAL S.r.l.
IT-25125 Brescia
Certified area
Whole Company
Field of activity
Chemical pumps – design, manufacturing, sale
has implemented and maintains a
Management System
which fulfills the requirements of the following standard
ISO 9001:2000
Scope No: 18
Issued on: 2002-11-15
Validity date: 2005-11-14
Registration Number: CH-15559-02
Dr. Fabio Roversi
President of IQNet
Theodor Zehner
Managing Director SQS

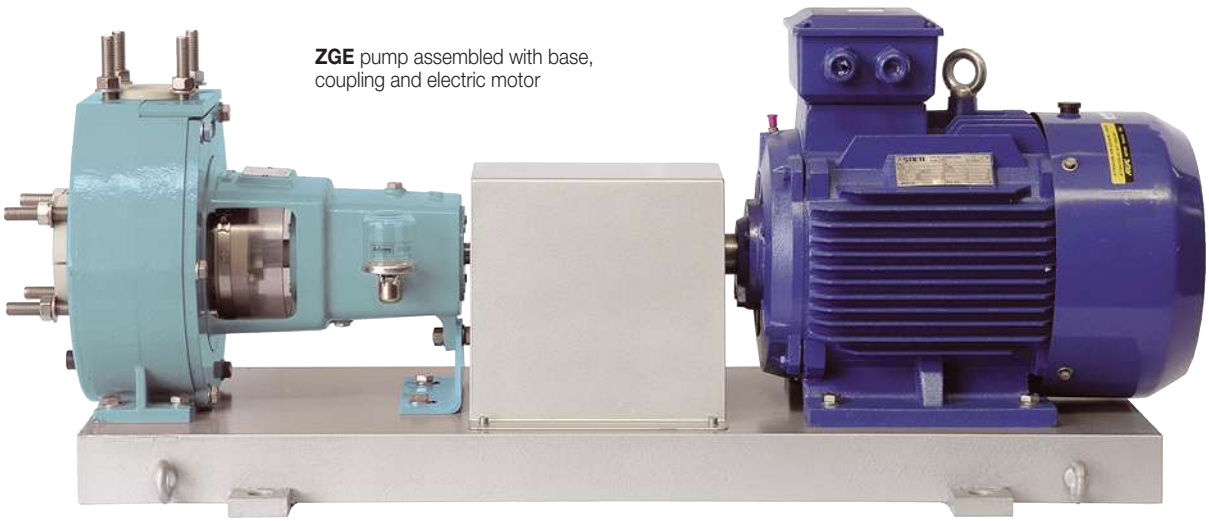

SQS
The Swiss Association
for Quality and Management Systems
SQS herewith certifies that the company named below has a management system which meets the requirements of the normative bases specified below and issues the company
ARGAL CHEMICAL PUMPS
ARGAL S.r.l., IT-25125 Brescia
Certified area
Whole Company
Field of activity
Chemical pumps – design, manufacturing, sale
on the basis of the audit result the
SQS Certificate ISO 9001:2000
CH-3052 Zollikofen, 15 November 2005
This SQS Certificate is valid up to and including 14 November 2008
Scope number 18
Registration number 15559-02
Managing Director SQS
Y. Falmer
President SQS
Prof. Dr. H. D. Seghezzi
IQNet

THE SERVICES

Regarding the services a new impulse to the expansion comes from the facilities in Brescia where the headquarter's wide spaces – 4000 sqm. plus other 500 sqm. are devoted to all the activities.
The web site www.argal.it has been set up with all the necessary informations. One can download graphics, infos, data. With a password is possible to download many technical details, too.
The system INTRASET allows the clients to make their choice on line, helping them find the right pump.
In order to meet our customer's needs we offer the following services:

- pre-sale assistance defining the application details
- post-sale technical assistance service run by experts
- kit-service assistance to supply all spare parts available in stock.

ARGAL CHEMICAL PUMPS (DALIAN) Co. Ltd.
In the process of internationalization ARGAL has established, in march 2004, a subsidiary Company in Dalian - China, to better support the chinese market.



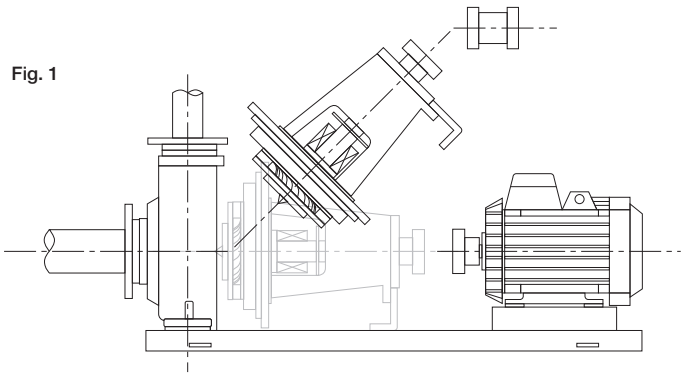
ZGE pump assembled with base, coupling and electric motor

ASSOPOMPE
ASSOCIAZIONE ITALIANA PRODUTTORI POMPE
member of
Europump

MAIN FEATURES
ZGE pumps are a complete range of centrifugal chemical process pumps, built in compliance with ISO2858 (Din 24256 - BS5257 - NFE 44121).
Standardisation of performance points and above all, the main constructional dimensions of the pumps, bases, couplings and shaft seals offers great advantages in total interchangeability of pumps and their component parts.

CONSTRUCTION
Centrifugal single impellers, with horizontal end suction and central top discharge. For maximum integrity pump bodies are machined from solid, with piping loads absorbed by the metal flanges of the volute casing. As "process" pumps they are designed to accept commercially available standardised mechanical seals. External, single or internal double with interseal flush can be installed (see choosing the right mechanical seal). The pump shaft is independently mounted in rolling element bearings designed to accept all dynamic loading from all operating conditions. The pumps are oil lubricated and are provided with a constant level oiler to ensure optimum performance.
Pumps and drivers are mounted on a common base with drive via flexible spacer couplings (Din 740) use of a spacer enables service of the pump without disconnecting pipework or removing motors (Fig. 1).

Fig. 1



MATERIALS
The materials that come into direct contact with the chemicals are extremely resistant to them.The FC, WR, WF, ER and QR versions of the pump and the many different types of seal are different combinations of the materials that can be used for the pump parts coming into direct contact with the pumped fluid. A selection of the correct combination of materials (by consulting the compatility tables supplied by our customer service) involves rapidly examining the chemical composition of the liquid, its concentration and its temperature: doing this ensures that the most suitable pump will be chosen for a given application and that it will be operate within the required safety margins.

MOTOR
Standard specification for motor is : IP55 enclosure, class F insulation, suitable - phase, suitable for 400V +/-5%, 50Hz (440V +/- 5% 60Hz). Other specifications are available on request to meet specific customer requirements.

PAINTWORK
External metal surfaces are protected by an epoxy coating over an appropriate primer undercoat.

QUALITY
The used materials are certified in the origin and in the composition. Upon request is available a final test according ISO 2548 Class C.
Spare parts undergo the same stringent inspection procedures to ensure complete inter-changeabilty (Fig. 2).

Fig. 2

APPLICATIONS
THE RIGHT PUMP FOR THE RIGHT PROCESS.
ARGAL pumps are suitable for acid, hydroxide and salt solutions in varying concentrations and at various temperatures; mixture of strong acids; electrolytic baths; aromatic hydrocarbons; chlorides and alchool.

APPLICATION EXAMPLES
- Chemical and pharmaceutical processes.
- Petrochemical, chemical and agricultural engineering.
- Textile industries, dye treatments.
- Transfer, loading and distribution of chemical products.
- Surface treatments (coils and wire pickling and the dregreasing).
- Electro-plating treatments.
- Circulating pumps for heat exchangers in anodising industries.
- Waste water treatments.
- Scrubbing tower, antipollution plants.
- Fish farm water circulation.
- Thermal and sea water.
- Water purification.

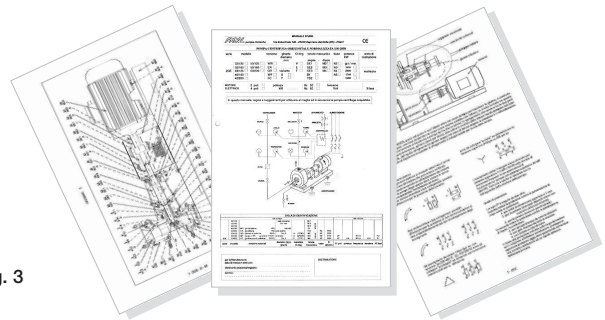
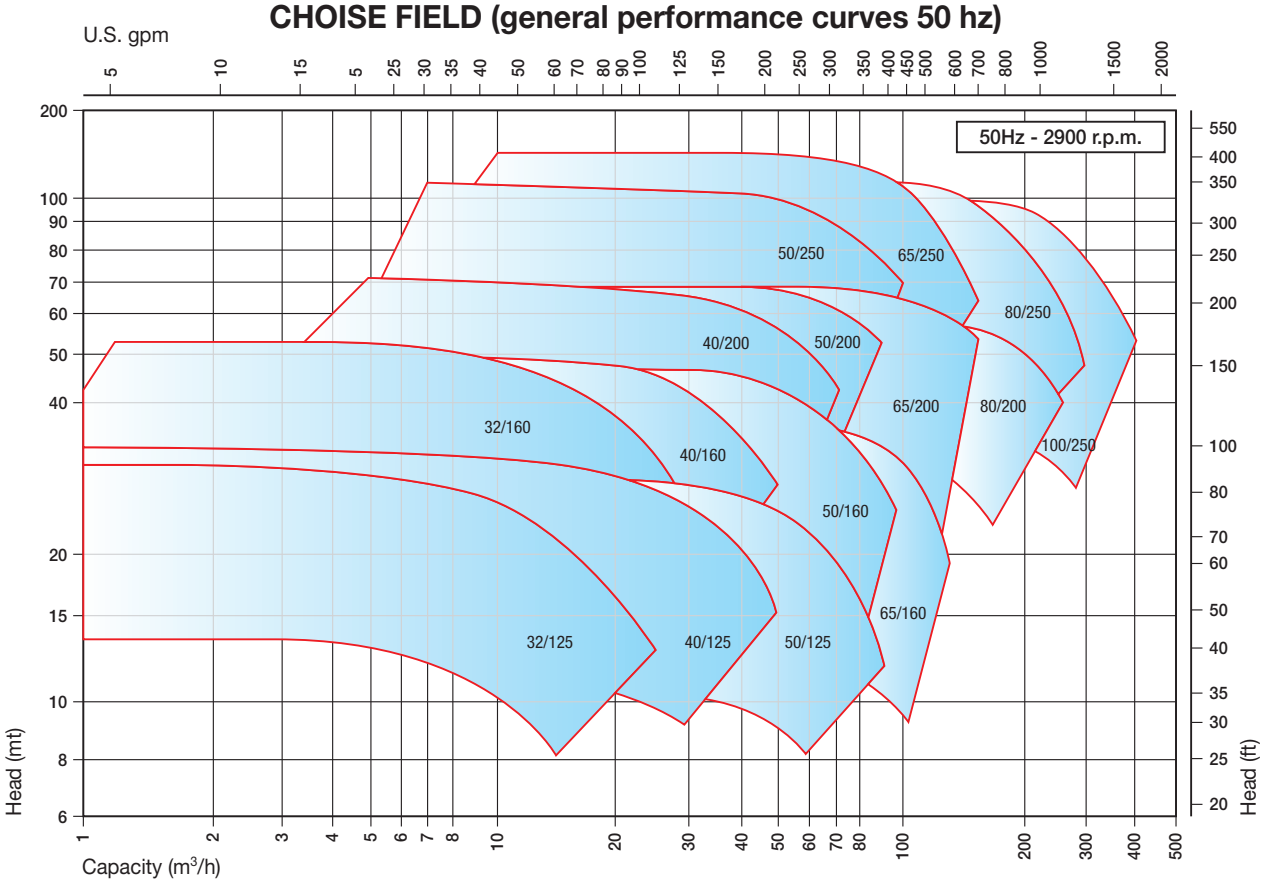
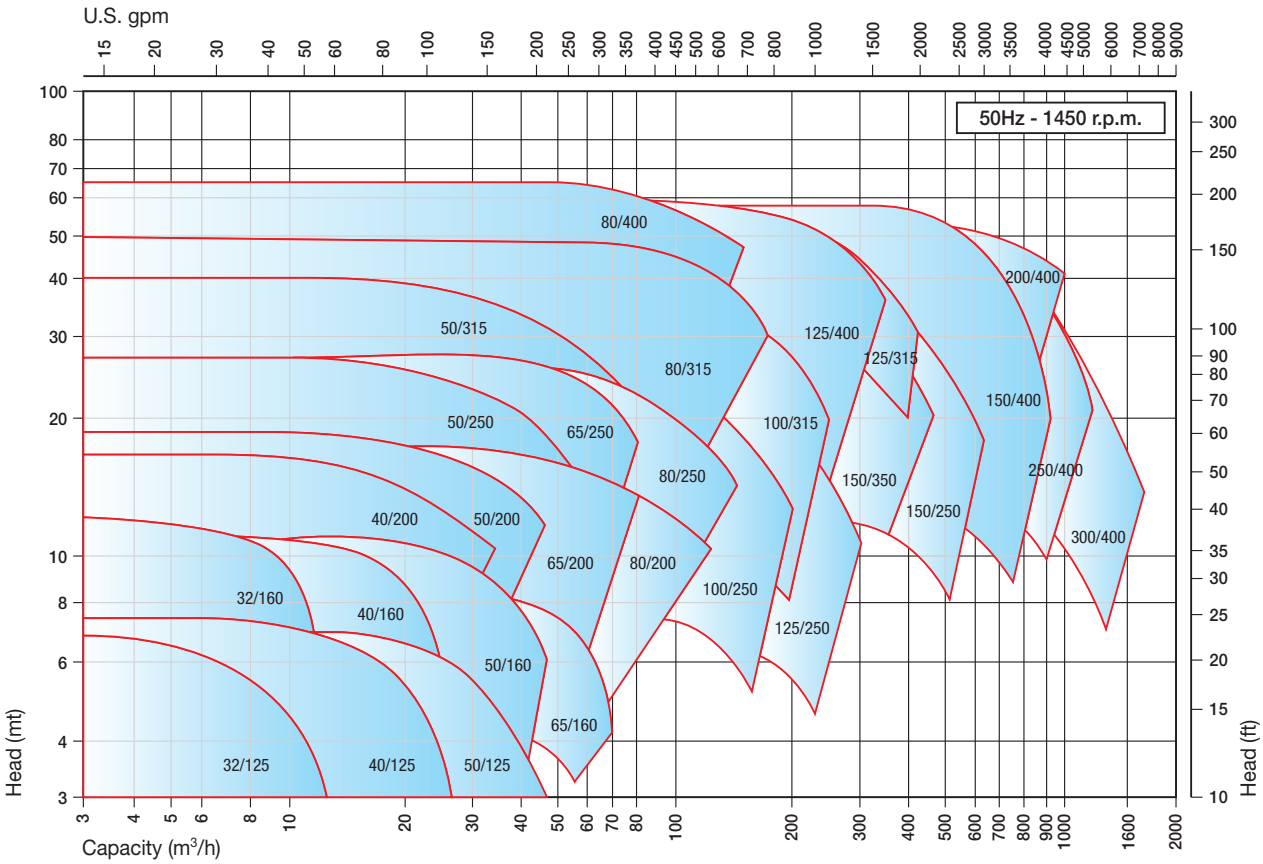


Fig. 3

WARNING
ZGE pumps comply with EC standards on machine safety and are supplied complete with all the relevant documentation. The installation, operation and maintenance manual must be carefully read and scrupulously followed by the user (Fig. 3).

CHOISE FIELD (general performance curves 50 hz)





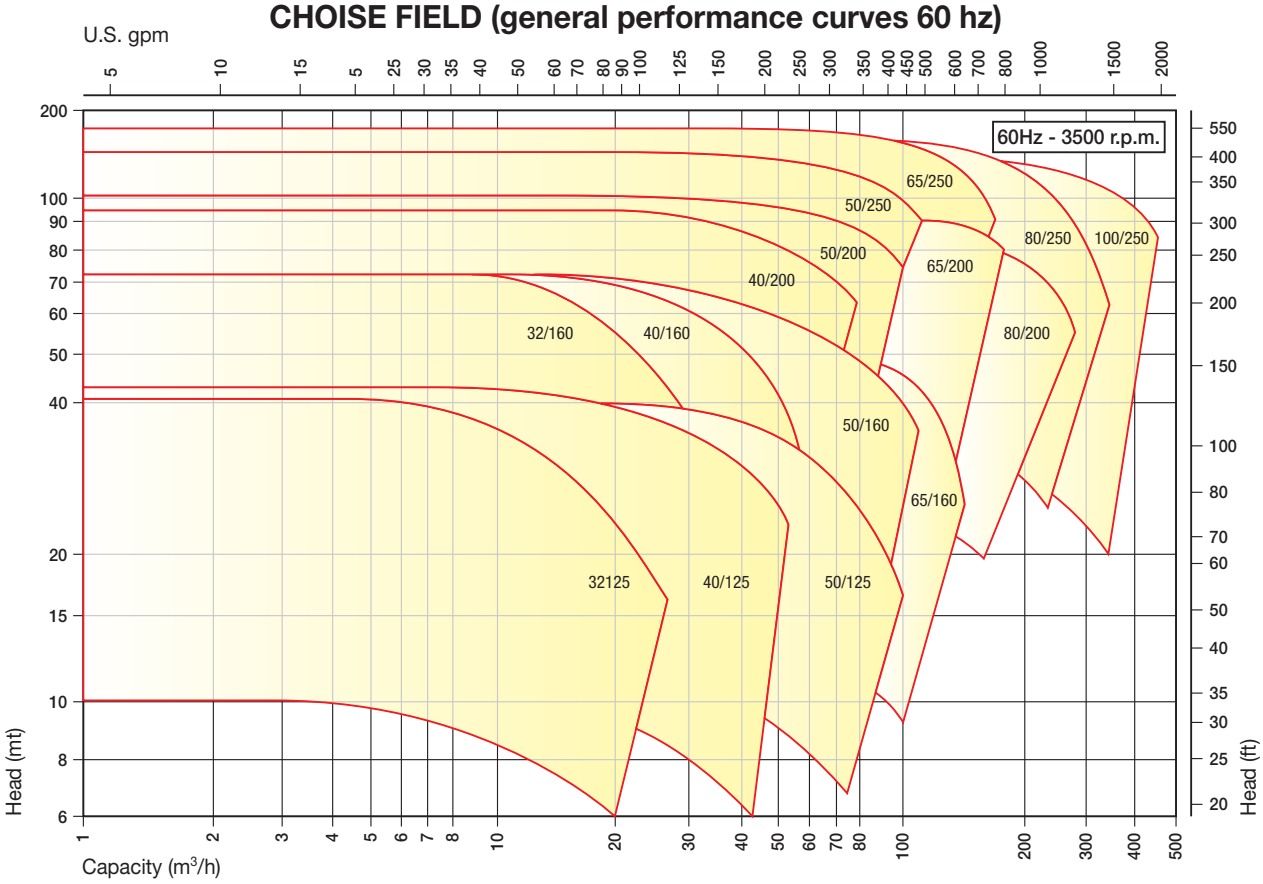
NOTES:

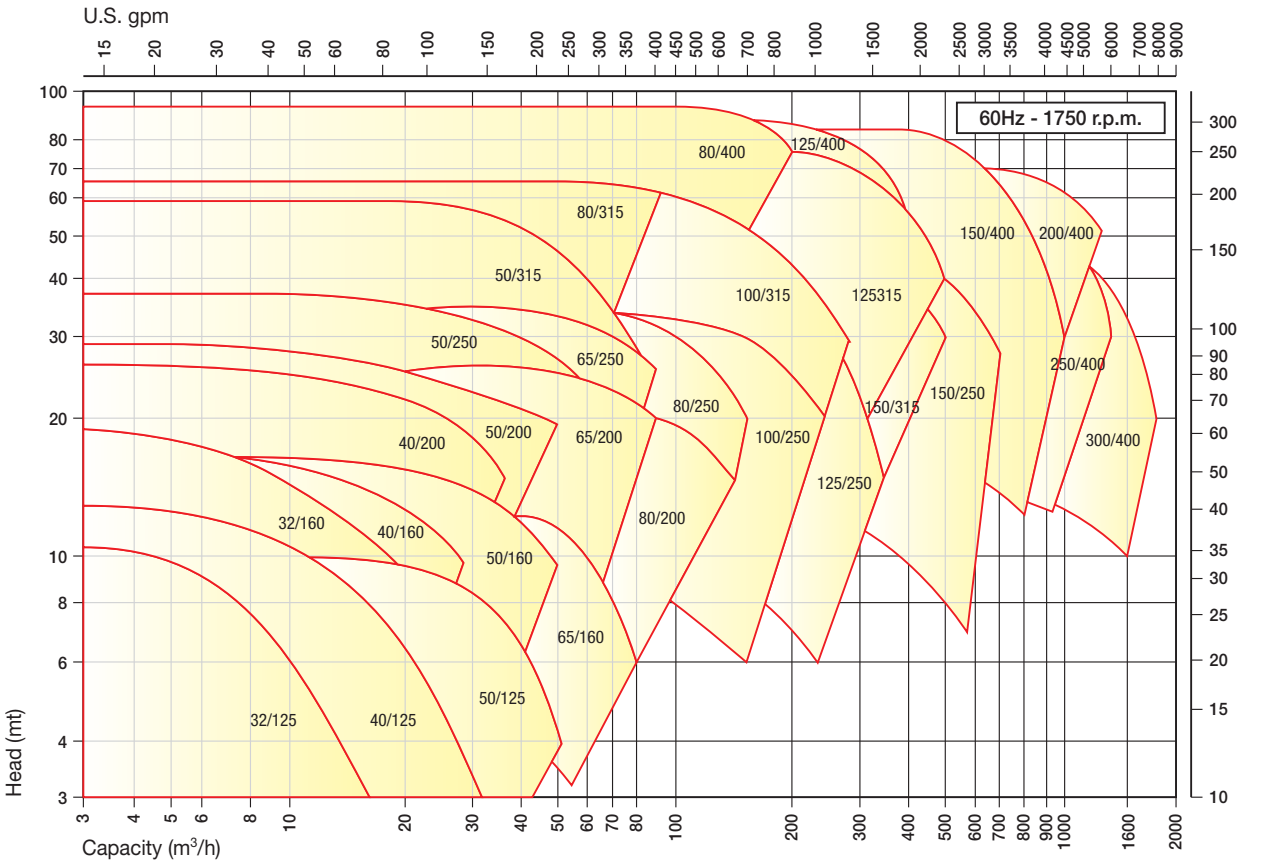
ARGAL performance curves are based upon water at 20° C. General performance curves for both 1450 and 2900 rpm are shown. These are based upon the maximum size of impeller available for each model.

More detailed curves for both 1450 and 2900 rpm (see specific curves) give the performance curves for each available impeller diameter. These also give NPSHr, Efficiency, and absorbed motor power.

Liquid viscosities up to 40 cSt will not adversely affect pump performance.

CHOISE FIELD (general performance curves 60 hz)





Pumps can operate on viscous liquids up to 120 cSt however impeller and pump modifications will be required.
For hot liquids especially the NPSH (Net Positive Suction Head) must be considered.
Suction pipework should be kept to a minimum, with as few bends/restrictions as possible. The pipe diameter should be at least that of the pump inlet, with the fluid velocity as low as is pratical.
If you have any problems ARGAL Customer Services will be plesed to advise.

THE MATERIALS

table 1

VERSION	FC	WR	WF	ER	QR
PUMP CASING	PVDF	PP	PP	PEHMW	PVC
IMPELLER	PVDF	PP	PVDF	PEHMW	PVC
PLATE	PVDF	PP	PP	PEHMW	PVC
SLEEVEN	PVDF	PP	PP	PEHMW	PVC
METAL FLANGES	CAST IRON				
SUPPORT	CAST IRON				
BASE	STEEL				
GASCHET	FKM				

• FC:
The base resin is PVDF (polyvinilidene fluoride): This is a fluorinated plastomer that is highly resistant to abrasion and has a high degree of mechanical resistance. If used in centrifugal pumps, it can withstand peaks of temperature of 120° C and can operate continuously at 100° C. It is extremely resistant to strong concentrated acids and has good resistance to organic solvents (except for Ketones, esters and acetone), extremely resistant to hot solutions of inorganic salts.

• WR:
The base resin is PP (polypropylene): very good mechanical resistance, good resistance to heat deformation. If used in centrifugal pumps, it withstands peak temperature up to 90° C; it operates continuously at 70° C. It is extremely resistant to high concentrations of weak acids and high alkaline concentrations. Good resistance to cold concentrations of strong acids, excellent resistance to solutions of inorganic salts.

• WF:
The base resin is PP (polypropylene): the parts that are subjected to particularly heavy duty are of PVDF in order to increase the pump resistance to wear and abrasion. It can operate continuously at temperatures of up to 85° C.

• ER:
The base resin is PeHMW (polyethylene high molecular weight): it has as high chemical resistance as PP and is also resistant to many organic solvents. It is more suitable for use at low temperatures (down to - 30° C) with an upper limit of +50° C for continuous use.

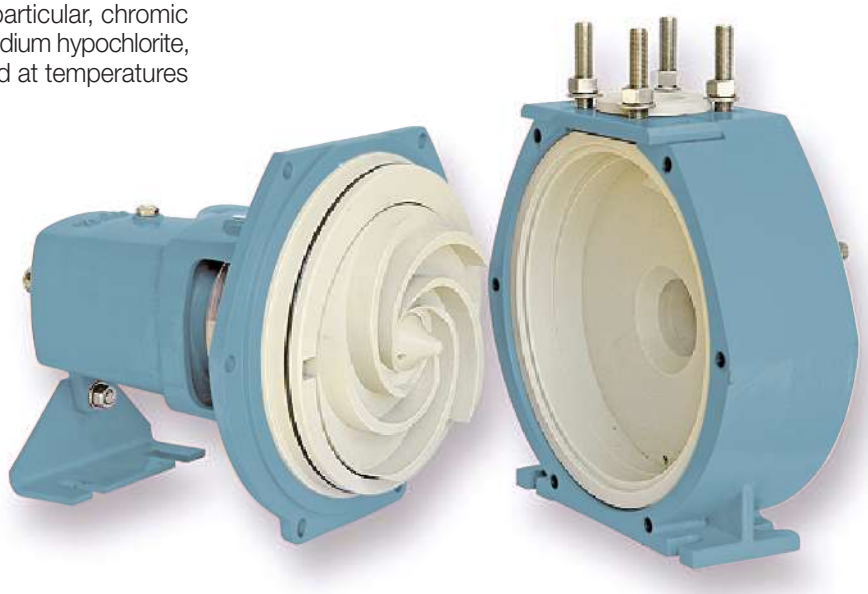
• QR:
The base resin is PVC (polyvinyl chloride): it has excellent resistance to alkaline solutions and acids (in particular, chromic acid, sulphur-nitrate mixtures, sulphuric acid, sodium hypochlorite, turpentine and ozone). The pump can be used at temperatures of up to 40° C.

Elastomers used:

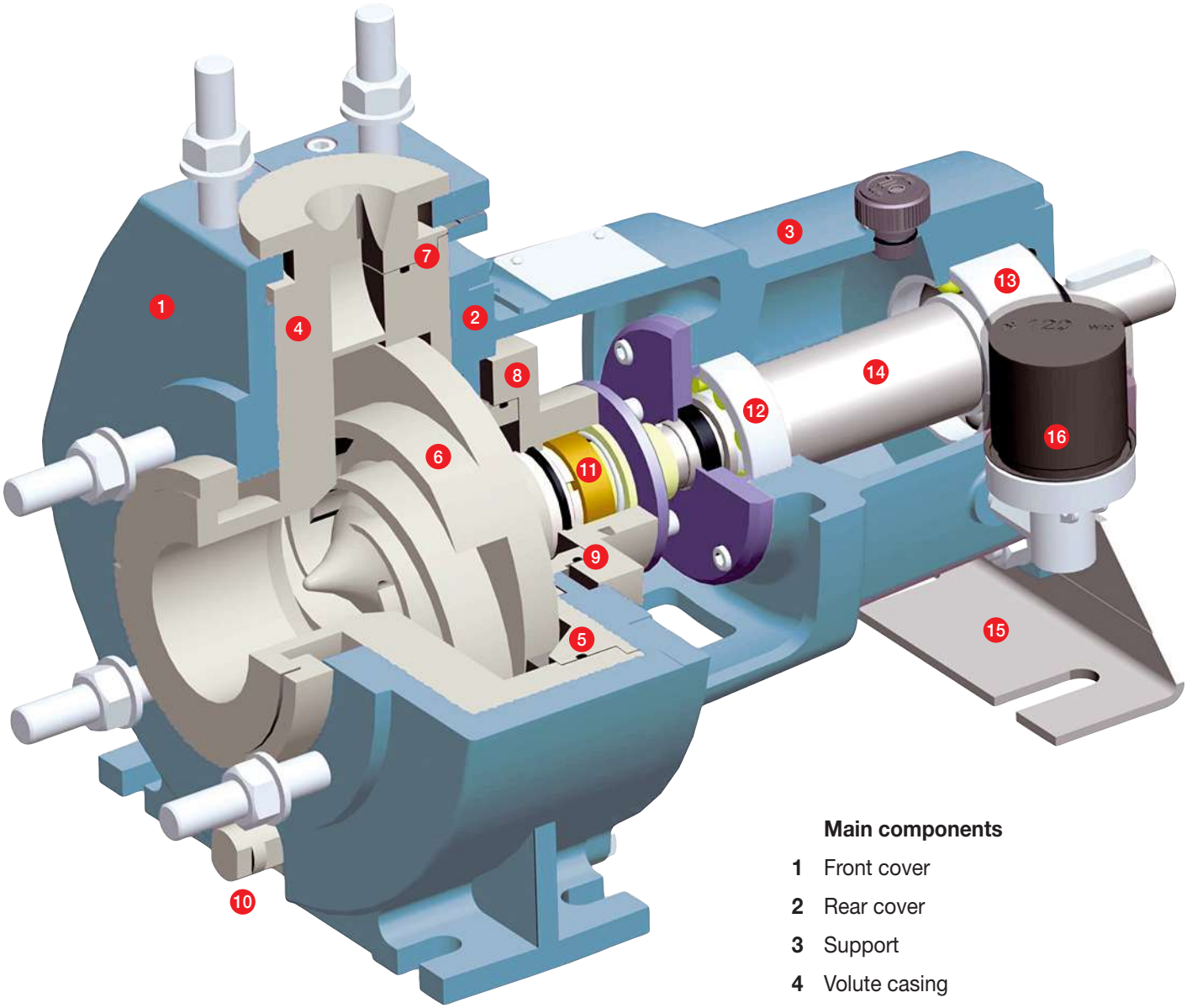
• E: EPDM
ethylene-propylene rubber; high chemical resistance, not suitable for oils.

• V: FKM
fluorine based compound; high chemical resistance, including many solvents.

• K: FFKM
perfluoroelastomer, very high compatibility with many chemicals and excellent resistance to ageing.



SECTION VIEW



Main components

1	Front cover
2	Rear cover
3	Support
4	Volute casing
5	Intermediate plate
6	Impeller
7	O-ring
8	Seal chamber
9	O-ring
10	Drain plug
11	Mechanical seal
12	Bearing
13	Bearing
14	Shaft
15	Support foot
16	Bulb lubricator

MECHANICAL SEALS

table 2

EXECUTION	SE1	SE3	B1	B3	TS2	TS3	M3	M4	M5	M9	M10
ROTATING PART	GFR-PTFE		SiC		Carbon	SiC	Carbon		SiC	SiC	SiC
FIXED RING	Al_2O_3		SiC		Al_2O_3				SiC	Al_2O_3	SiC
GASKET (Std)	/		FKM								

• SE1
Single,balanced external mechanical seal, with PTFE bellows. Rotating head: reinforced PTFE. Fixed ring: Ceramic (Al_2O_3). Manufacturer: ARGAL.

• SE3
Single, balanced external mechanical seal, with PTFE bellows. Rotating head: reinforced PTFE. Fixed ring: Ceramic (Al_2O_3). Manufacturer: CRANE (model 10T).

• B1
Single, balanced external mechanical seal, with O-ring seal. Rotating head and fixed ring: Silicon carbide (SIC); Manufacturer: PACIFIC (model Allpac 481).

• B3
Single, balanced external mechanical seal, with O-ring seal. Rotating head and fixed ring: Silicon carbide (SIC); Manufacturer: ARGAL.

• TS2
Single, balanced external mechanical seal, with elastomer bellows. Rotating head: Carbon. Fixed ring: Ceramic (Al_2O_3). Manufacturer: HUHNSEAL (model HNT).

• TS3
Single, balanced external mechanical seal, with elastomer bellows. Rotating head: Silicon carbide (SIC). Fixed head: (Al_2O_3). Manufacturer: HUHNSEAL (model HNT).

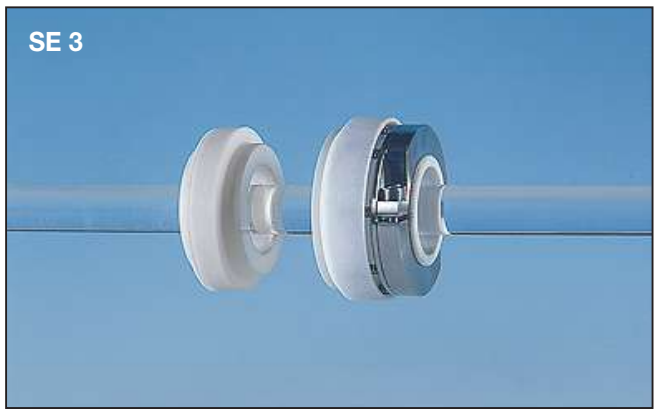
• M3
Double external mechanical seal, with PTFE sealing wedges,for external flush with compatible fluid. Rotating head: Carbon. Fixed rings: Ceramic (Al_2O_3). Manufacturer: CRANE (model 9T/9T).

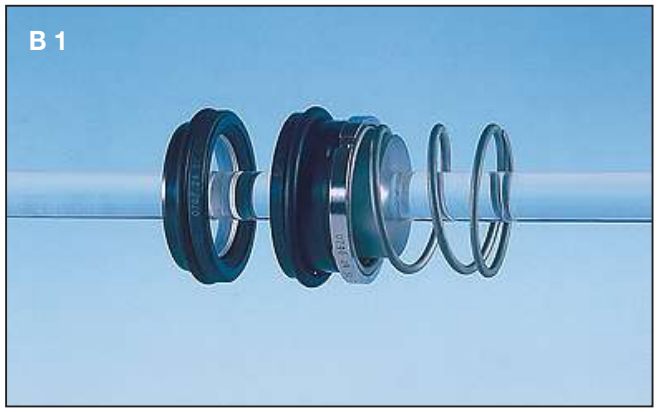
• M4
Double external mechanical seal, with elastomer bellows, for external flush with compatible fluid. Rotating head: Carbon. Fixed rings: Ceramic (Al_2O_3). Manufacturer: CRANE (model 502/502).

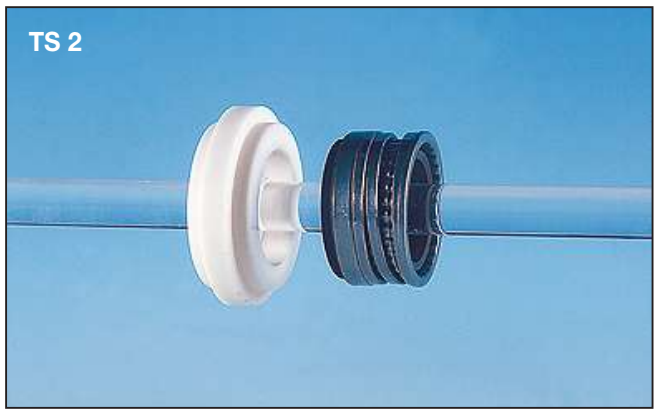
• M5
Double external mechanical seal, with elastomer bellows, for external flush with compatible fluid. Rotating head: Silicon carbide (SiC). Fixed rings: Silicon carbide (SiC). Manufacturer: CRANE (model 502/502).

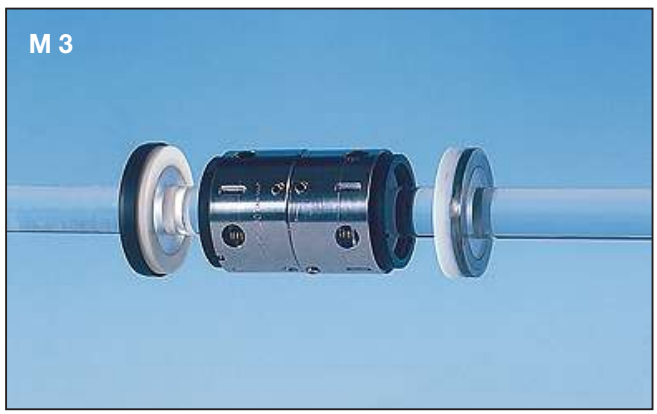
• M9
Double external mechanical seal, with elastomer bellows, for external flush with compatible fluid. Rotating head (inboard): Silicon carbide (SIC).Fixed rings: Ceramic (Al_2O_3). Manufacturer: HUHNSEAL/DRT (model HNT+AT).

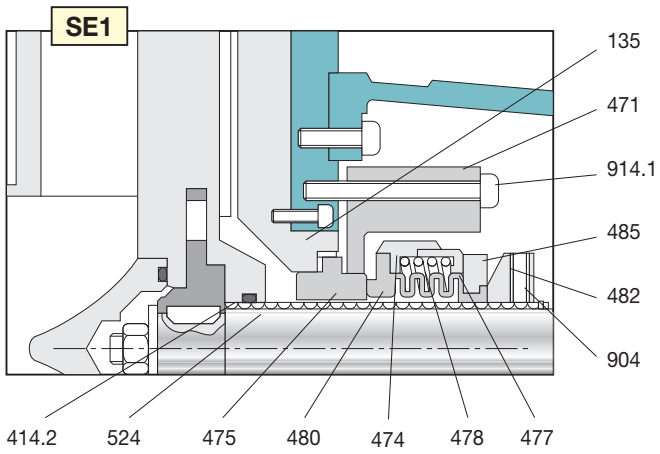
• M10
Double external mechanical seal, with O-ring seal, for external flush with compatible fluid. Rotating head (inboard): Silicon carbide (SIC). Fixed rings: Silicon carbide (SIC). Manufacturer: CRANE (model R33/R33).

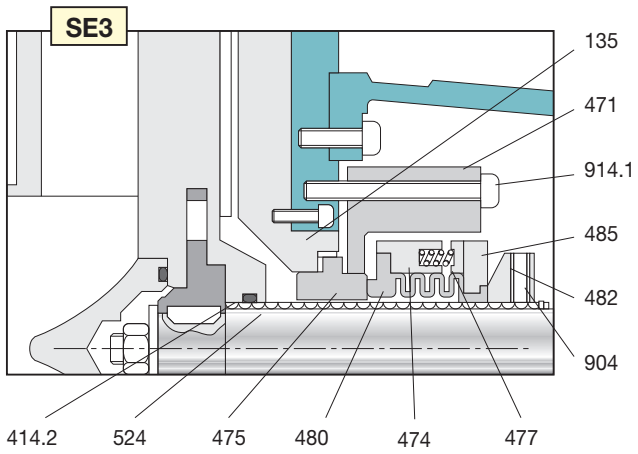


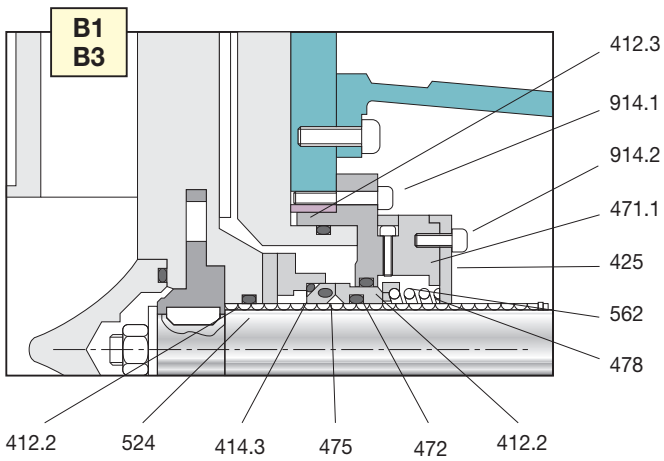


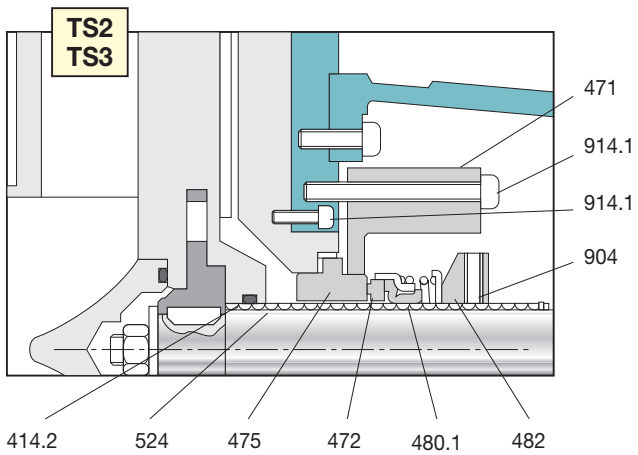


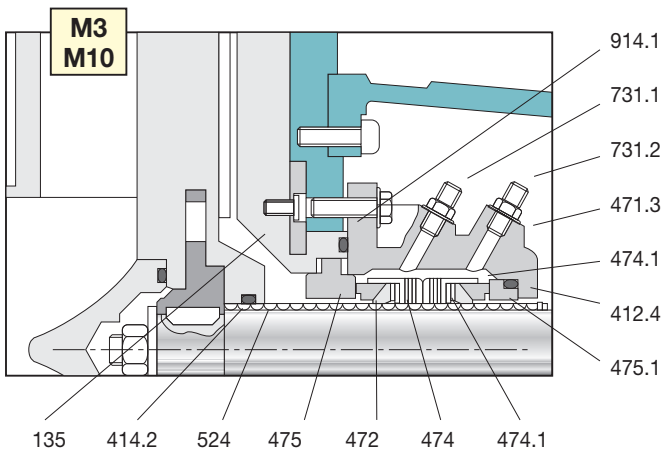


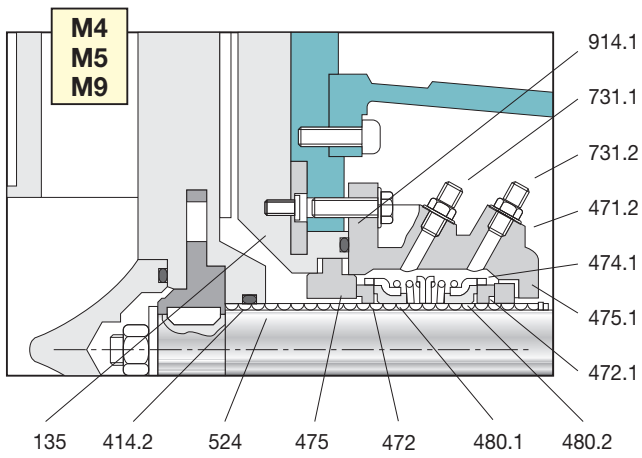












COMPONENTS OF MECHANICAL SEALS

table 3

Re.	Components desc.	Re.	Components desc.	Re.	Components desc.
135	Intermediate plate	474	Seal casing	485	Champ
412.2/3	O-ring	474.1	Seal casing	524	Shaft sleeve
412.4	O-ring	475	Fixed seal ring	562	Lock clip
412.2	O-ring	475.1	Fixed seal ring	731.1	Seal washing inlet
412.3	O-ring	477	Thrust spring	731.2	Seal washing outlet
482	Support plate	478	Thrust spring	904	Grub screws
471/.1/.2/.3	Seal cover	480	Snap ring with bellows	914.1/.2	Screws
472	Seal ring	480.1	Bellows		
472.1	Seal ring	480.2	Bellows		

BASE CHOISE - N - (ISO pump / IEC motor)

table 4

MOTOR SIZE	71	80	90 S	90 L	100 L	112 M	132 S	132 M	160 M	160 L	180 M	180 L	200 L	225 S	225 M	250 M	280 S	280 M	315 S	315 M	315 L	355 L
kW for 2 poles	0,37 0,55	0,75 1,1	1,5	2,2	3	4	5,5 7,5		11 15	18,5	22		30 70		45	55	75	90	110	132	160 200	250
kW for 4 poles	0,25 0,37	0,55 0,75	1,1	1,5	2,2 3	4	5,5	7,5	11	15	18,5	22	30	37	45	55	75	90		110 132	160 200	250 315

PUMP MODEL																						
32/125	2	2	2	3	3	3	4	4	5	5												
32/160																						
40/125																						
40/160																						
40/200	2	3	3																			
50/125		2	3																			
50/160		3	3						5	5	5											
50/200																						
50/250		4	4	4	4	4	5	5	6	6	6	6	7	7	7	8	9					
50/315		5	5	5	5	5																
65/160		3	4	4	4	4																
65/200		4			5	5						7	7	7	8	9						
65/250		5	5	5																		
80/200		5																				
80/250		6	6	6	6	6	6	6									9	9				
80/315													7									
80/400					7	7	7	7	7	7	7											
100/250					6	6											9	9				
100/315							6	6	6					7	8	8						
125/250										7	7											
125/315								8	8	8												
125/400											8	8	8	8								
150/250								8	8	8							9					
150/315											9	9	9	9	9	9						
150/400																						
200/400																	10	10	10	10	10	12
250/400																	11	11	11	11	11	
300/400																						

EXEMPLE FOR ORDERING

table 5

RANGE	MODEL	VERSION	IMPELLER	GASKET	SEAL	BASE	POLES	POWER kW
ZGE	**40/200**	**FC**	**185**	**V**	**SE1**	**N3**	**4P**	**1,5**
.1	.2	.3	.4	.5	.6	.7	.8	.9

.1: Range name.
.2: Pump model.
.3: Version (page 5).

.4: Impeller diameter in mm (note page 3)
.5: Gasket (page 5).
.6: Mecanical seal (page 7).

.7: Base number - ISO 3661; (page 9).
.8: Electric motor poles number.
.9: Installed power in kW.

ISO BASES 3661 (DIN 24 259)

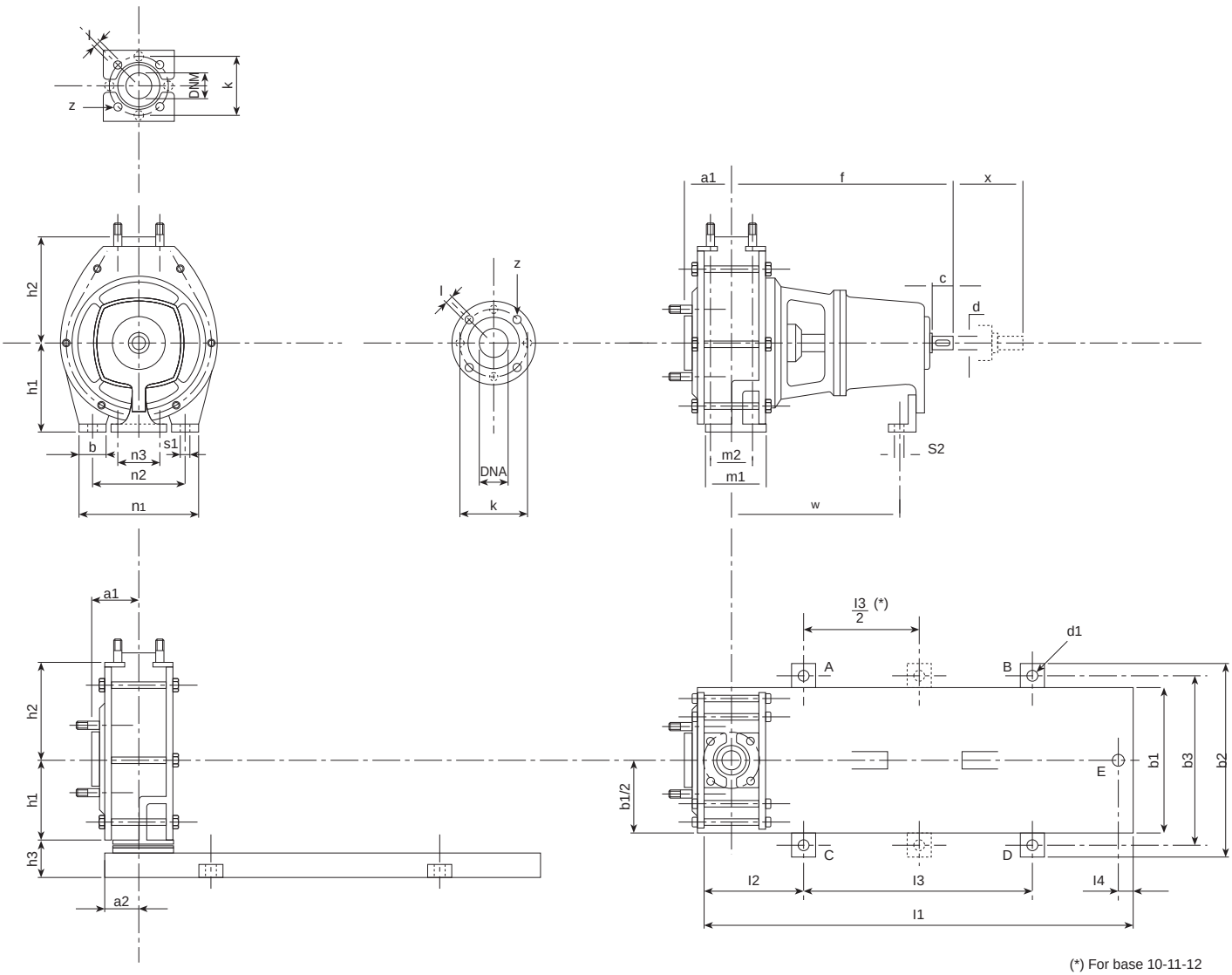
table 6

Base No.	2	3	4	5	6	7	8	9	10	11	12
l1	800	900	100	1120	1250	1400	1600	1800	2300	2500	2900
b1, max	270	300	340	380	430	480	530	600	750	750	750
l2	130	150	170	190	205	230	270	300	250	250	250
l3	540	600	660	740	840	940	1060	1200	1800	2000	2400
l4	35	35	40	40	45	50	55	55			
b2	360	390	450	490	540	610	660	730	950	950	950
b3	320	350	400	440	490	550	600	670	850	850	850
h3, max	125	125	125	140	160	180	200	200	175	240	240
d1	19	19	24	24	24	27	27	27	27	27	27

DIMENSION TABLE ISO 2858 (DIN 24 256)

table 7

PUMP MODEL	FLANGED CONNECTION OUTLET				INLET				PUMP DIMENSIONS				PUMP FIXING									SHAFT			
	DNM	k	l	z	DNA	k	l	z	a1	f	h1	h2	b	m1	m2	n1	n2	n3	s1	s2	w	x	d	c	a2
32/125	32	100	M16	4	50	125	M16	4	80	385	112	140	50	100	70	190	140	110	M12	M12	285	100	24	50	60
32/160											132	160				240	190								
40/125	40	110			65	145					112	140				210	160								
40/160											132	160				240	190								
40/200									100		160	180				265	212								
50/125	50	125		4	80	160		8			132	160				240	190								
50/160											160	180				265	212								
50/200												200													
50/250									125	500	180	225	65	125	95	320	250				370	140	32	80	75
50/315											225	280				345	280								
65/160	65	145			100	180			100		160	200				280	210								
65/200											180	225				320	250								
65/250									125		200	250	80	160	120	360	280		M16						90
80/200	80	160		8	125	210					180		65	125	95	345			M12						75
80/250											225	280	80	160	120	400	315		M16						90
80/315										530	250	315													
80/400											280	355				435	355								
100/250	100	180							140		225	280				400	315								
100/315											250	315													
125/250	125	210			150	240	M20					355											42	110	
125/315											280		100	200	150	500	400		M20						110
125/400											315	400													
150/250	150	240	M20		200	295	M20		160	670	280	375				550	450	140		M16	500	180	48		
150/315											315	400													
150/400												450													
200/400	200	295			250	355		12	200	700	370	470											60	125	
250/400	250	350		12	300	400			250	1002	420	600	130	250	200	700	575		M24		725	200	70	120	190
300/400	300	400							260													250			



(*) For base 10-11-12

ARGAL CHEMICAL PUMPS

Member of AIB associazione industriale bresciana

IT - 25125 BRESCIA - Via Labirinto, 159
Tel. +39 030 3507011 - Fax +39 030 3507077
Export dpt. Tel. +39 030 3507033
Web: www.argal.it - E-mail: export@argal.it

0208