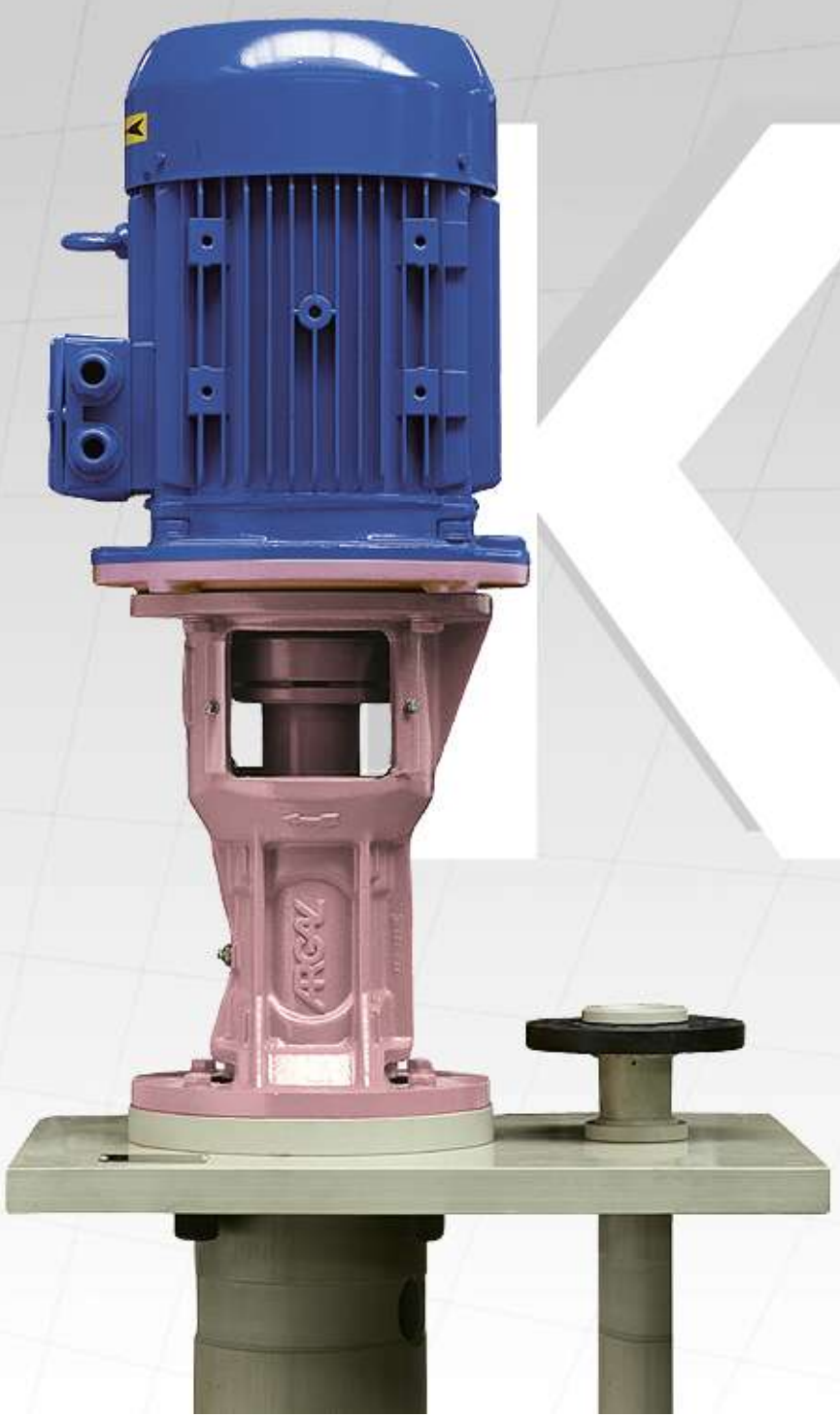
ARGAL

"SUMP PUMPS"

FOR CHEMICALS



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ARGAL chemical pumps

QUALITY AND EXPERIENCE

From the artisan's workshop to the modern industrial plant, the strategy of Argal has always been the same:
to invest in research and quality in order to obtain safe and reliable quality products.
In many years' activity (Argal was set up in 1975) manufacturing techniques and staff training have always kept abreast of the latest developments in pump technology.
Today's company uses the lastest production techniques backed up by a technical department constantly developing through research and development.
Using CAD, FEM optimisation and a fully equipped test and development facility the ARGAL product is being constantly improved.
ARGAL's main goal is the same as its always been: delivering safe product that fully conforms to CE standards and the international standards that will ensure that the product wins it rightful place at the top of the world market.
Since 1999 ARGAL has obtained the certification of the Quality Management System according to the standard ISO 9002.
In 1977, ARGAL changed from being a mere distributor of pumps to being a manufacturer of electric pumps.
It developed its own technology, and combined the precision standards of craftmanship with a sound business organisation.
Ten years later, in 1987, Argal launched a new range of magnetic drive pumps. They are totally different from other pumps of their kind because of the new, acid and chemical resistant materials from which they are constructed.
Today ARGAL has something else to offer: experience.
Experience gained in the practical use of these pumps enables us to propose specifications that will work safely and identify those areas that may cause problems. A pump may seem to be correct for a duty in terms of flow, head, suction lift and motor power. However chemical resistance, viscosity, temperature, specific fluid characteristics, etc. are all factors that have to be evaluated when selecting a pump.
Argal is the ideal patner. Togheter with the customer ARGAL and its sole Distributors will select the pump which is best suited to the task and will give the best long term performance.
ARGAL can assist the customer with chemical/phisical data, calculations of friction losses, differential heads, NPSH, suction heads, priming times, etc.
Our technical sales team are constantly expanding the knowledge and experience which is available to their clients.

I N D E X

MAIN FEATURES AND MATERIALS

MAIN FEATURES

The 'K' series Argal pumps are centrifugal and designed for vertical installation. They have submerged the column and the volute casing and the mechanical supports,with the motor are mounted above the liquid to be pumped.
No metal part comes into contact with the fluid and no bolts or nuts are submerged in the liquid. The columns are available in standard lengths of between 500 and 3000 mm with increments of 250 mm (100 mm for the KGS-KMS series).
Under normal operating conditions, no mechanical sealing systems are required to prevent leaks of liquid as vapour seals are fitted.
The pumps are designed to pump corrosive chemicals and have been engineered down to the smallest details to ensure a long working life and operating efficiency.

CONSTRUCTION

Single-stage centrifugal pumps with inlet vertically downwards and outlet connected via a vertical pipe to a connection on the base plate supplied with the pump.
The 'K' type vertical pumps are available in 4 main types:
• KG: up to 3000 mm long, with driven self-supporting shaft;
• KM: up to 2000 mm long, with driven shaft, close-coupled to the motor;
• KGS: up to 800 mm long, with self-supporting overhanging shaft;
• KMS: up to 750 mm long, with overhanging shaft, closecoupled to the motor.
For further details, see 'Standard product range' on page. 8.
The immersion depth can be increased if an extension pipe is fitted to the suction port (see specific table on page. 10)
A properly dimensioned filter on the suction side can be supplied on request to prevent solids being accidentally sucked up by the pump.

MATERIALS

The materials that come into direct contact with the fluid being pumped have excellent chemical resistance.
The FC, WR, WF and QR pump versions, the different guide and wear bushing specifications, are different combinations of materials from which the components that come into direct contact with the pumped fluid can be made (see 'Choosing the right pump' on page 3).
Selecting the correct combination of materials (refer to the table of compatibility supplied by our Technical Service) involves examining the chemical composition of the liquid, its concentration and temperature. This makes it possible to operate within the proper safety margins and ensure reliable applications.

MOTORS

The self supporting pumps are equipped with motors fully complying with the IEC standards. The versions with the special combined motor and pump shaft are manufactured to Argal specifications. All the motors have IP55 protection, are tropicalized, have F class insulation, 400V +/-5% voltage, are three-phase with 50/60Hz multifrequency. Different grades of protection and voltages can be supplied on request.
The 2-pole motors have a rotating speed of 2900 rpm (50 Hz) and 3500 rpm (60 Hz) and the 4-pole motors of 1450 rpm (50 Hz) and 1750 rpm (60Hz).

PAINTWORK

The metal parts of the structure not in contact with the pumped liquid are protected by an enamel over an appropriate primer undercoat. Special painting is available upon request.

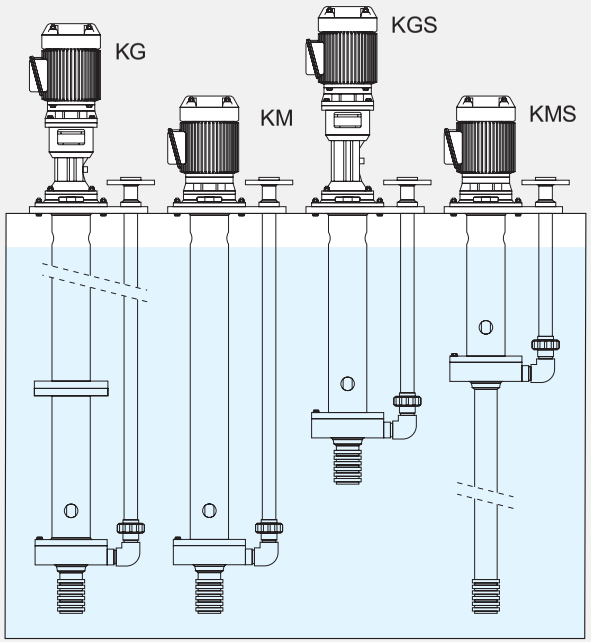



Fig. 2

WARNINGS

The pumps comply with CE standards on machine safety and are supplied with all the relevant documentation. The installation, use and maintenance manual must be carefully read and strictly followed by the user (fig. 3).

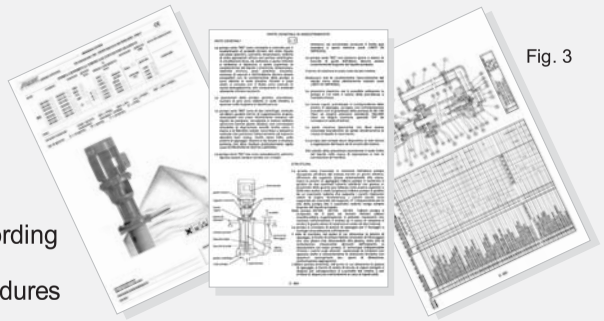


Fig. 3

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).

APPLICATION FIELDS, VERSIONS AND WORK TEMPERATURES

APPLICATIONS

Fixed installation of the most appropriate pump type for pumping: acid, hydroxide and salt solutions in different concentrations and temperatures: mixtures of strong acids, electrolytic baths, aromatic hydrocarbons, chlorides, alcohol, glycolethers, emulsions, etc. from tanks, reservoirs and collection sumps. Liquids with a specific weight of up to 2 kg/dmc can be handled according to the installed power; maximum kinematic viscosity of 75 cSt and maximum temperature of 90 °C (to be confirmed according to the type of pump, type of material and length of the column).

In the standard versions, the pumped liquid can contain up to a maximum of 10% solid non-abrasive particles with maximum dimensions of less than 1 mm (20% for the KGS and KMS series). There must be no filaments, adhesive or abrasive bodies. The maximum size of the solid bodies that may be occasionally present is 3 mm. For the FC version a 0.5% concentration of metal particles is allowed, with a maximum size of less than 0.5 mm. The ambient temperature range must fall within the limits specified in the table.

Submerged parts in the liquid.

Max work temperature and enviroment temperature interval									
Under-plate length (mm)	500	750	1000	1250	1500	1750	2000	2500	3000
Version	**Max work temperature (°C)**								
FC	90	85	70	60	55	50	45	35	30
WR / WF	70			60	55	50	45	35	30
QR	40							35	30
	Enviroment temperature interval (°C)								
FC	-10 ÷ +40				0 ÷ +40			+5 ÷ +40	
WR / WF	0 ÷ +40							+5 ÷ +40	
QR	+5 ÷ +30								

USES AND APPLICATIONS

- Supplying the liquid to the nozzle ramp in washing systems and surface treatment systems.
- Lift and return in water treatment plants.
- Recirculation of neutralizing solutions in gas scrubbing plants.
- Primary recirculation in heat exchangers.
- Distribution of chemical products from storage.
- Rising sea and spa water.
- Transfer and redelivery in galvanizing and hot zinc plating processes, pickling and anodyc oxidation treatment
- Emptying sumps in industrial waste disposal.

STANDARD VERSION	FC	WR	WF	QR
PUMP CASING	PVDF	PP	PP	PVC
IMPELLER	PVDF	PP	PVDF	PVDF
SHAFT COATING	PTFE	PE	PE	PVC
BASE PLATE	PP	PP	PP	PVC
DISCHARGE STUB PIPE	PVDF	PP	PP	PVC
SUPPORT	CAST IRON			
GASCKET Std	FPM			

Rotating parts hydrodynamic outline.
Hardwearing qualities of the bodies.

CHARACTERISTICS OF MATERIALS AND PARTICULARS OF CONSTRUCTION

Customized versions can be supplied when special combination of materials is required.

• **FC**:
The base resin is PVDF (vinylidene polyfluoride). This is a fluorinated plastomer that is highly resistant to abrasion, and has a high degree of mechanical resistance. It has excellent resistance to concentrations of strong acids and has good resistance to organic solvents (except for ketons, esters and acetone). It has excellent resistance to hot solutions of inorganic salts.

• **WR**:
The base resin is PP (polypropylene). It has good mechanical resistance, and quite good dimensional stability when hot. It has excellent resistance to concentrations of weak acids and cold concentrations of strong alkalis. It has excellent resistance to solutions of inorganic salts.

• **WF**:
The base resin is PP (polypropylene) but parts that are subject to exceptional wear are of PVDF in order to increase resistance to wear and abrasion.

• **QR**:
The base resin is PVC (polyvinyl chloride). It has excellent resistance to alkaline solutions and acids (in particular chromic acid, sulphur nitrite mixtures, sulphuric acid, sodium hypochlorite, turpentine and ozone).

The ER version of 500 polyethylene with high molecular weight is available on special request. It is highly resistant to abrasion and is suitable for low ambient temperatures.

Elastomers used:

• **V (FKM)**:
Fluorine rubber; high chemical inertia, even in relation to a large number of solvents.

• **E** (EPDM): Ethylene-propylene rubber: wide ranging chemical inertia; not suitable for oils.

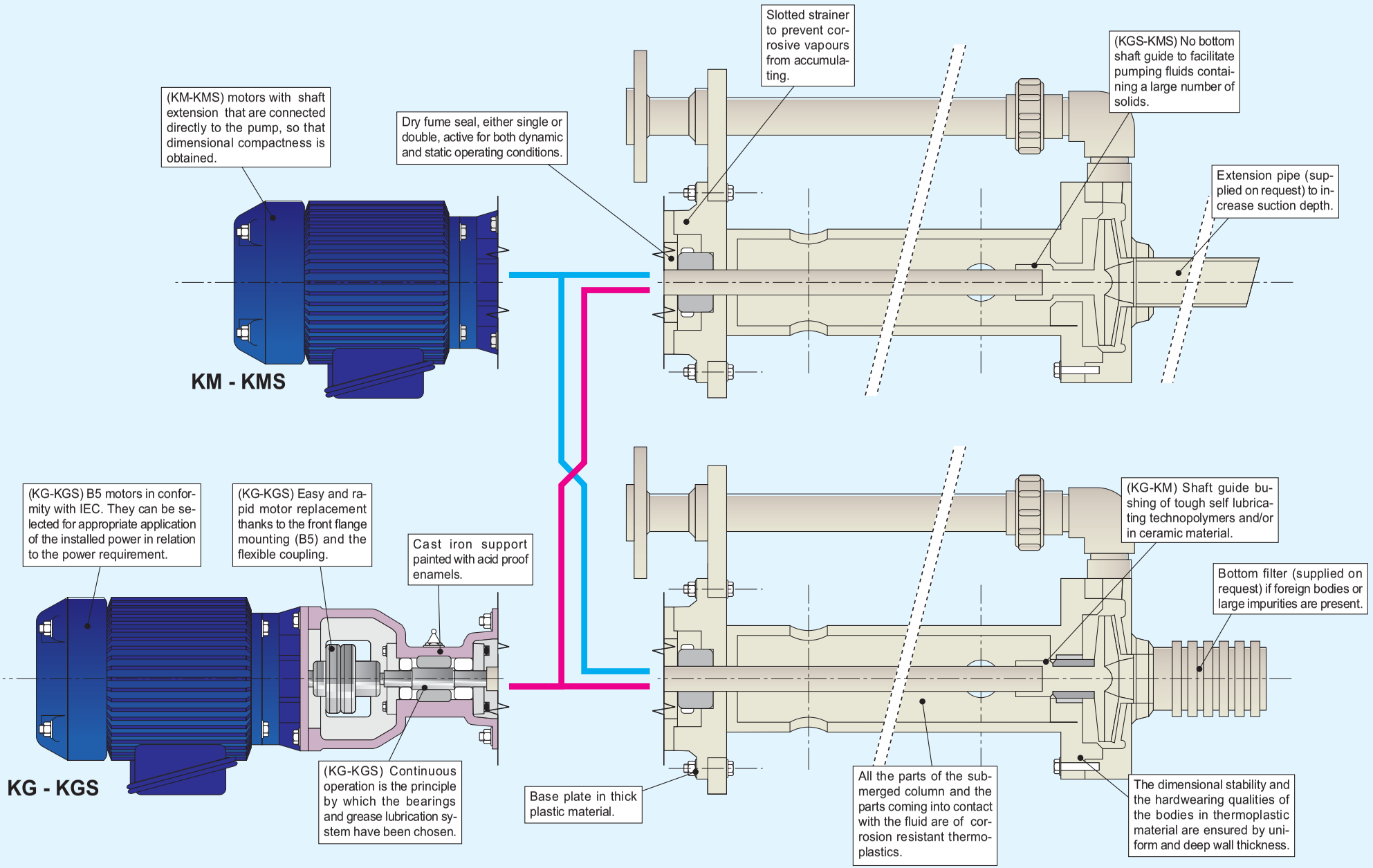
Guide bushings:
Depending on the physical and chemical features of the conveyed liquids, different combinations of materials can be used in the bottom guide of the shaft in the KG and KM versions.
The materials used for the connection of the guide and the wear bushings are PTFE+ceramics or alternatively, for liquids containing modest quantities of abrasive particles PTFE+ glass on ceramics (99.7% Al_2O_3).
For pumps with an installed length under the plate of more than 2 metres, an intermediate bushing consisting of a combination of the above materials is installed.

Vapour seals:
To contain the fumes that build up inside the pump, a single dry fume seal is installed on the base plate. This is active both in static and dynamic conditions and develops a back pressure of 50 - 100 mbars (according to pump size). Upon request, the special '2V' version can be supplied, which builds up a back pressure of 150-200 mbars. It can also be combined with a dynamic seal system of the labyrinth type.
For fluids containing a large number of solids, flushing by means of an auxiliary pipe from outside is also applied.

Sizes and combinations of the submerged guides

Groved on lange contact surfaces.
Dimensional stability for the wear parts.

DETAILS OF CONSTRUCTION



STANDARD PRODUCTION PROGRAM

RANGE	KG		KM		KGS			KMS	
H / mm COLUMN (+/- 25mm)	500 ÷ 3000 (multiple di 100 e 250)		500 ÷ 2000 (multiple di 100 e 250)		500-600-700	500-600 700-800	500-600 700-800	400	500-750
SPEED giri /1	2900 3500	1450 1750	2900 3500	1450 1750	2900 3500	2900 3500	1450 1750	2900 3500	2900 3500
Mod. PUMP									
25/100	●		●		●			●	
25/125	●		●		●			●	
32/125	●		●		●			●	
32/160	●	●	●	●			●		
32/200	●		●						
40/125	●	●	●	●		●	●		●
40/160	●	●	●	●			●		
40/200	●	●							
40/250		●							
50/125	●	●	●	●		●	●		●
50/160	●	●							
50/200	●	●							
50/250		●							
65/125	●	●	●	●		●	●		
65/160	●	●							
65/200		●							
65/250		●							
80/160	●	●							
80/200		●							
80/250		●							

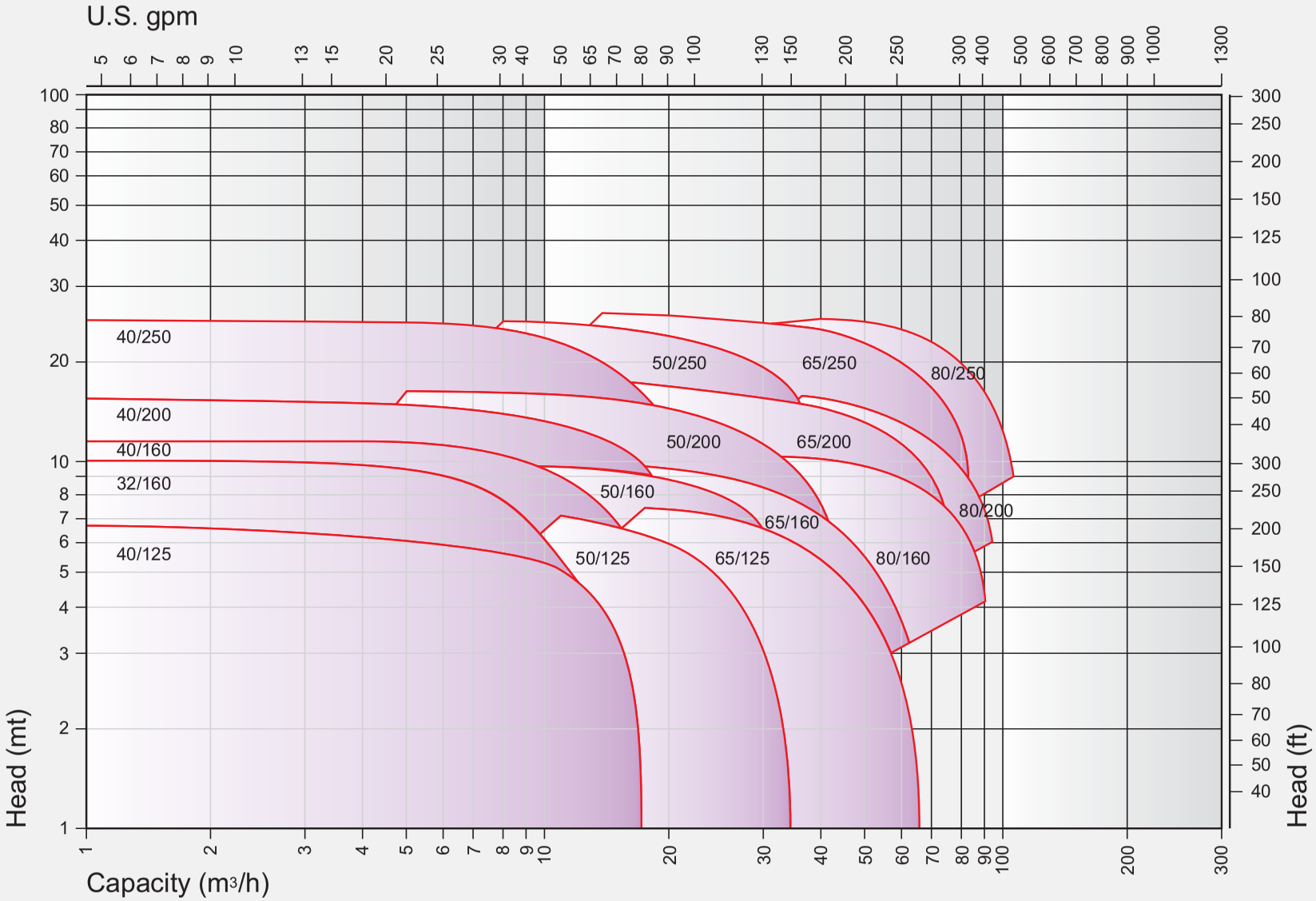
* Different sizes upon request

KM

KG

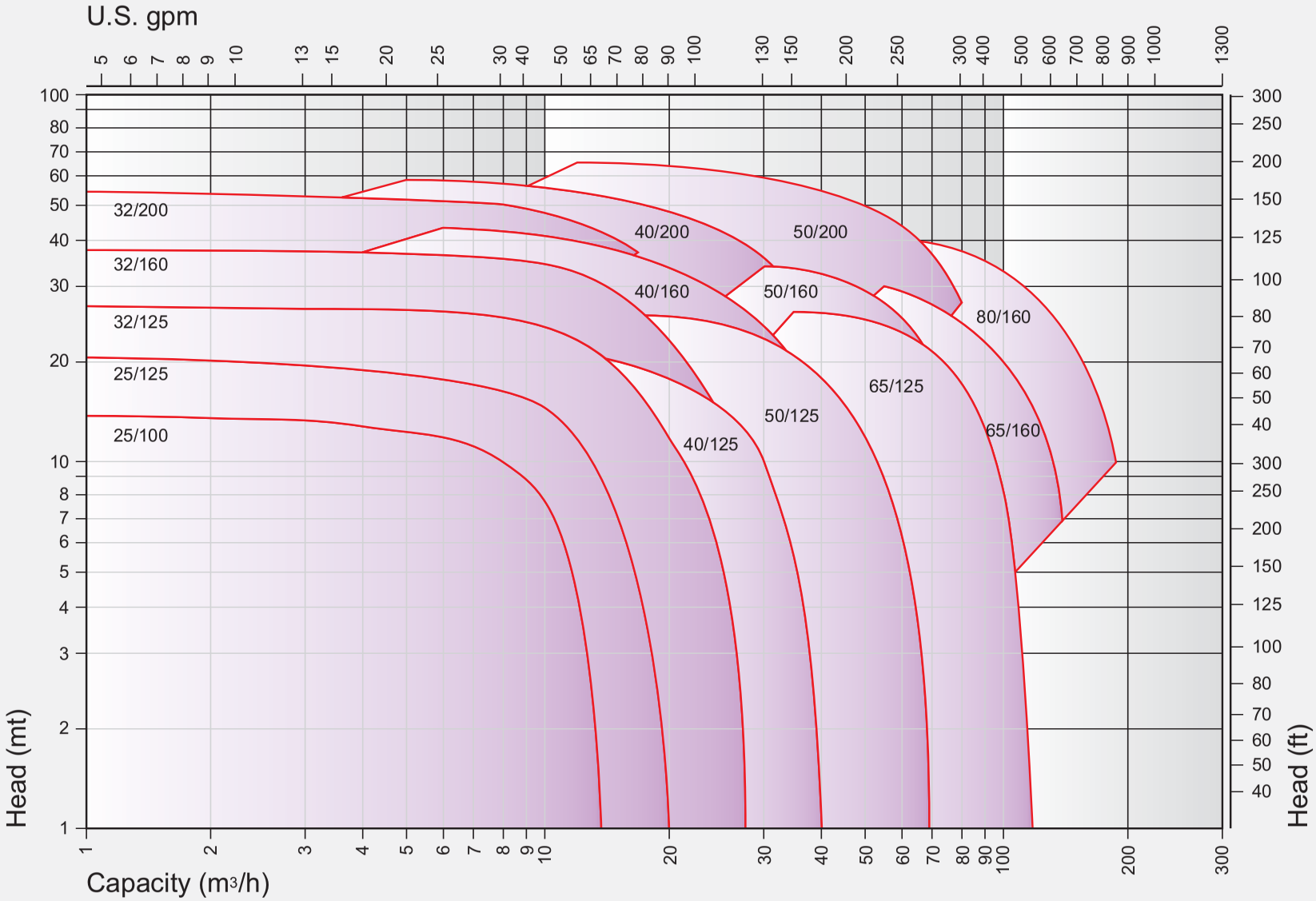
GENERAL PERFORMANCE CURVES 50 HZ 1450 r.p.m.

SPECIFIC CURVES 50 Hz (see specific catalog Sump Pumps Spec.Curves.pdf)



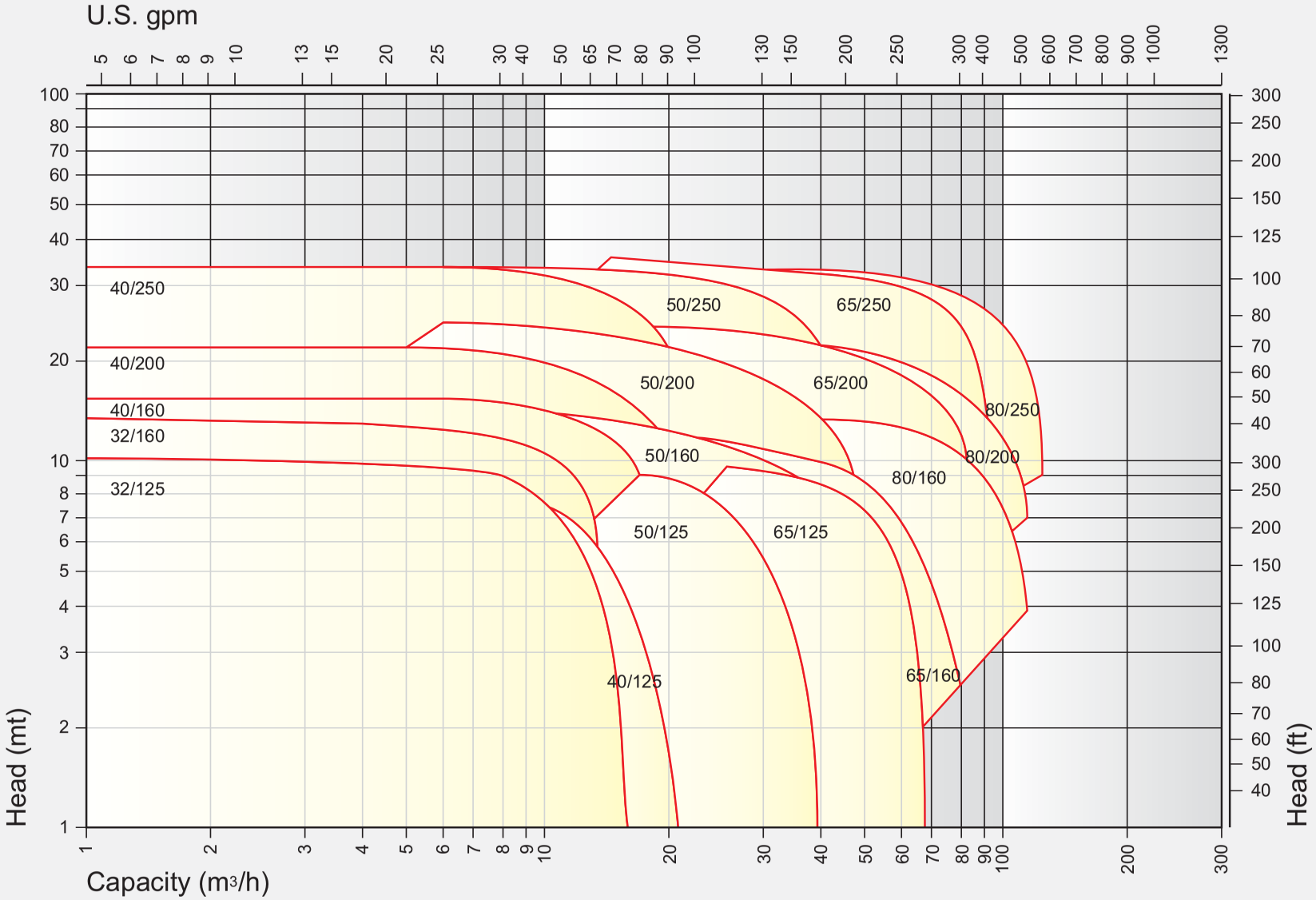
GENERAL PERFORMANCE CURVES 50 HZ 2900 r.p.m.

SPECIFIC CURVES 50 Hz (see specific catalog Sump Pumps Spec.Curves.pdf)



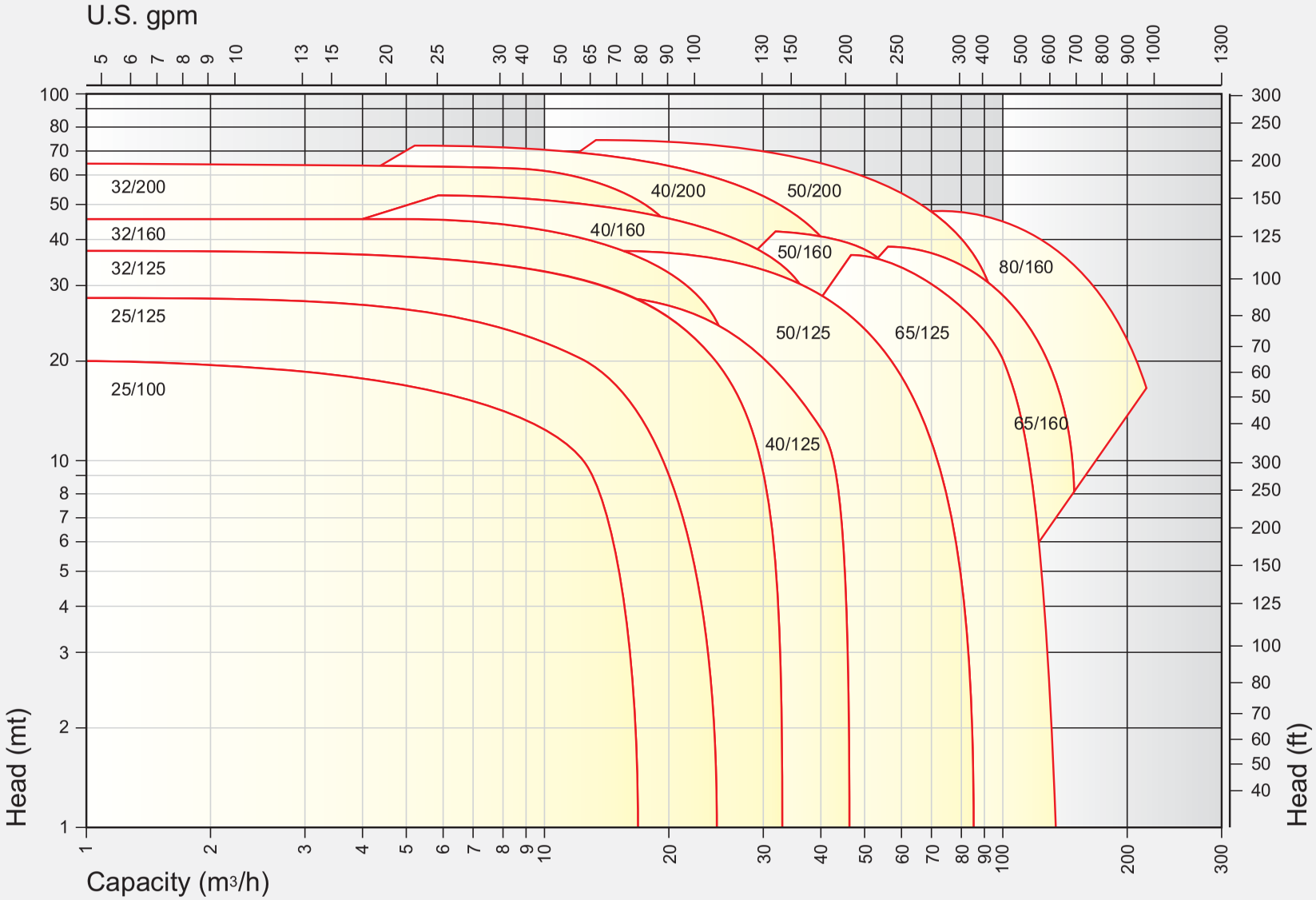
GENERAL PERFORMANCE CURVES 60 HZ 1740 r.p.m.

SPECIFIC CURVES 60 Hz (see specific catalog Sump Pumps Spec.Curves.pdf)



GENERAL PERFORMANCE CURVES 60 HZ 3450 r.p.m.

SPECIFIC CURVES 60 Hz (see specific catalog Sump Pumps Spec.Curves.pdf)



TABLES OF MOTOR POWERS AND PUMP WEIGHT

POWER		SIZE (IEC)		WEIGHT * Kg.	
kW	HP	2 Poles	4 Poles	2 Poles	4 Poles
0,25	0,35	63	71	4,5	6
0,37	0,5			6	7
0,55	0,75	71	80	7	9
0,75	1			9	10,5
1,1	1,5	80	90	11	13
1,5	2			14	16
2,2	3	90	100	18	23
3	4			24	27
4	5,5	112		30	36
5,5	7,5	132		47	53
7,5	10	132		53	64
11	15	160		88	101
15	20	160		107	118
18,5	25	160	180	122	130
22	30			132	160
25	35	180		170	
30	40			202	205
37	50	200		228	

* The weights are approximated.

MOTOR WEIGHTS AND DIMENSIONS								PUMP WEIGHT (Motor excluded)											
								KG			KM			KGS			KMS		
RANGE K Mod.	2 POLES 50 Hz kW	T MAX	4 POLES 50 Hz kW	T MAX	2 POLES 60 Hz kW	T MAX	4 POLES 60 Hz kW	T MAX	WR	QR	FC	WR	QR	FC	WR	QR	FC	WR	QR	FC	WR	QR	FC
									Ref.: H=1000			Ref.: H = 1000			Ref.: H = 600			Ref.: H = 400		
25/100	0,55÷1,1	250	0,25	250	0,55÷1,5	290	0,25÷0,37	250	26	29	32	18	21	24	26	29	32	15	18	21
25/125	1,1÷2,2	290	0,25÷0,55	250	1,5÷4	330	0,37÷0,75	250	30	36	39	22	28	31	30	36	39	20	26	29
32/125	2,2÷4	330	0,55÷1,1	290	3÷5,5	350	0,75÷1,5	290	30	36	39	22	28	31	30	36	39	20	26	29
32/160	3÷5,5	350	1,1÷1,5	290	4÷7,5	390	1,1÷2,2	330	55	64	70	35	44	50	50	60	65			
32/200	4÷11	500	1,1÷2,2	330	5,5÷11	500	1,5÷3	330	61	73	79							H = 500-750		
40/125	3÷7,5	390	1,1÷1,5	290	4÷7,5	390	1,1÷2,2	330	55	64	70	35	44	50	50	60	65	31	33	46
40/160	4÷11	500	1,1÷2,2	330	5,5÷11	500	1,5÷3	330	57	67	74	37	47	54	66	76	83	49	40	43
40/200	7,5÷18,5	500	1,5÷4	330	11÷22	630	2,2÷5,5	390	63	75	82									
40/250			2,2÷5,5	390			3÷11	500	67	82	90							H = 500-750		
50/125	5,5÷11	500	1,1÷2,2	330	7,5÷15*	500	1,5÷4	330	57	67	74	37	47	54	66	76	83	33	35	51
50/160	7,5÷18,5	500	2,2÷5,5	390	3÷7,5	405	11÷22	630	65	78	86									
50/200	11÷22	630	2,2÷5,5	390	11÷30	680	3÷7,5	390	65	78	86									
50/250			3÷11	500			5,5÷15	500	68	82	92									
65/125	7,5÷18,5	500	1,5÷4	330	3÷7,5	405	11÷22	630	60	72	80	40	52	60	69	81	89			
65/160	11÷22	630	3÷7,5	390	15÷30	680	4÷11	500	67	81	90									
65/200			4÷11	500			5,5÷18,5	630	68	82	92									
65/250			5,5÷18,5	630			7,5÷30	680	73	89	100									
80/160	11÷37	680	3÷7,5	500	15÷37	680	4÷11	500	70	87	97									
80/200			5,5÷22	630			7,5÷30	680	73	89	100									
80/250			7,5÷30	680			11÷30	680	75	91	105									

* 11 kW max power motor for compact version

KG and KM: 30% more for H = 2000 mm.
and 60% for H = 3000 mm. (toll. +/-10%);
KGS: 3% more for each 100 mm. of difference

ADD SUCTION PIPE: max. lenght allowed (negative suction head) in mm.

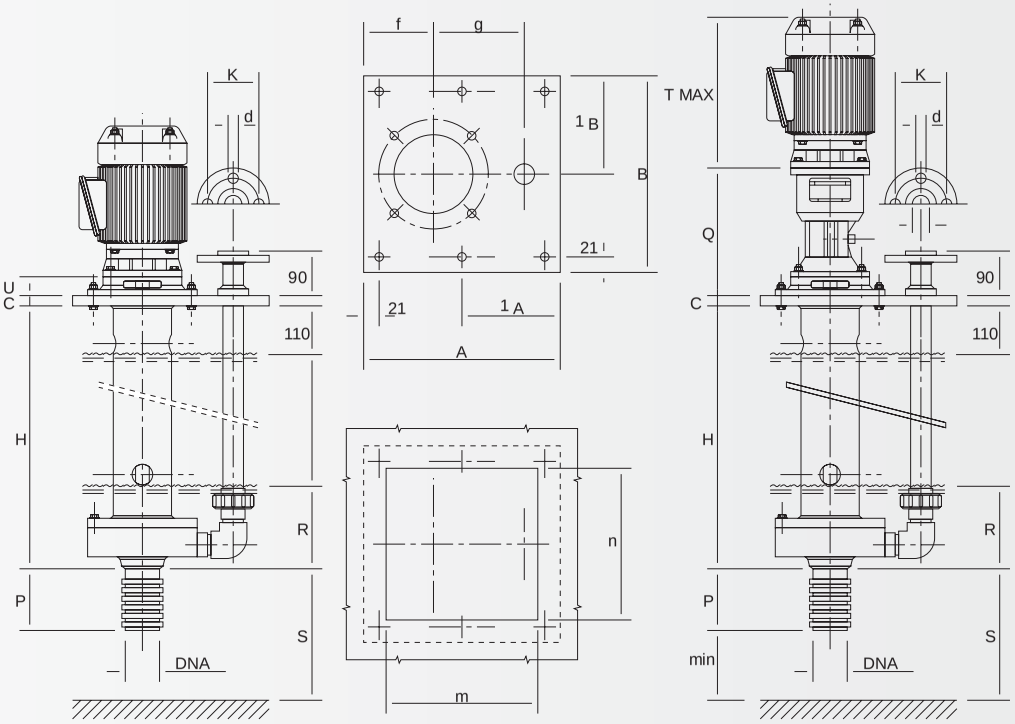
RANGE	KG - KM		KGS		KMS	
DN Pump suc-	WITHOUT	WITH FIL-	WITHOUT	WITH FIL-	WITHOUT	WITH FIL-
tion	2000	1000	1500	1000	1500	1000
40 - 50 - 65	1800	800	1300	800	1500	1000
80	1000	0	500	0		

Values referred to water at 20 °C.

DIMENSIONS AND PUMP IDENTIFICATION LABEL

RANGE K Mod.	DN IN	NOZZLE	DN OUT	K	d	Z	Q	U	L	R MIN	S MIN	P	A	B	C	f	g	m	n
25/100	40	1"1/2	25	85	14	4	280	36	320	130	50	150	450	380	25	172	185	330	260
25/125	40	1"1/2	25	85	14	4	280	36	320	130	50	150	450	380	25	172	185	330	260
32/125	50	2"	32	100	18	4	290	36	320	130	60	150	450	380	25	172	185	330	260
32/160	50	2"	32	100	18	4	360	20	387	250	60	260 (150*)	530	400	30	195	225	410	280
32/200	50	2"	32	100	18	4	380	20	414	250	70	260 (150*)	530	400	30	195	225	410	280
40/125	65	2"1/2	40	110	18	4	360	20	393	250	80	260 (150*)	530	400	30	195	225	410	280
40/160	65	2"1/2	40	110	18	4	380	20	395	250	80	260 (150*)	530	400	30	195	225	410	280
40/200	65	2"1/2	40	110	18	4	400		444	250	90	260 (150*)	530	400	50	195	225	410	280
40/250	65	2"1/2	40	110	18	4	380		477	250	90	260 (150*)	660	500	50	250	237	520	410
50/125	80	3"	50	125	18	4	380	20	400	250	100	510 (200*)	530	400	30	195	225	410	280
50/160	80	3"	50	125	18	4	400		455	300	100	510 (200*)	530	400	50	195	225	410	280
50/200	80	3"	50	125	18	4	400		455	300	100	510 (200*)	530	400	50	195	225	410	280
50/250	80	3"	50	125	18	4	380		507	300	100	510 (200*)	660	500	50	250	252	520	410
65/125	100	4"	65	145	18	4	380	20	420	250	130	620 (200*)	530	400	30	195	225	410	280
65/160	100	4"	65	145	18	4	400		458	300	130	620 (200*)	530	400	50	195	225	410	280
65/200	100	4"	65	145	18	4	380		496	300	130	620 (200*)	660	500	50	250	251	520	410
65/250	100	4"	65	145	18	4	400		526	300	130	620 (200*)	660	500	50	250	266	540	410
80/160	125	5"	80	160	18	8	400		498	350	150	620 (200*)	660	500	50	250	253	520	410
80/200	125	5"	80	160	18	8	400		548	350	150	620 (200*)	660	500	50	250	278	550	410
80/250	125	5"	80	160	18	8	400		568	350	150	620 (200*)	660	500	50	250	288	560	420

* Filter orizontal dimension; flanged connections DIN 2501 PN10 (If required ANSI flanged connections)



EXAMPLE FOR ORDERING

RANGE KG	MODEL 40/160	VERSION FC	IMPELLER A	GASKET V	H. COLUMN 2000	FILTER FT	POLI 2P	POWER kW 7,5
.1	.2	.3	.4	.5	.6	.7	.8	.9

.1: Range name.
.2: Pump model.
.3: Version initial (pag. 3).

.4: Impeller max. diameter.
.5: Gasket initial (pag. 4).
.6: Under-plate lenght (pag. 8).

.7: Suction filter (if required).
.8: Electric motor poles number.
.9: Installed power in kW.

Production program

LINE range
Installed powers:
kW 0,35÷7,5
Bodies materials:
PP - PVDF
Lenghts 275÷2000pe

FRONTIERA range
Potenze installabili: kW 0,55÷15
Materiali dei corpi: PP - E-CTFE
• Magnetic drive
• Sealed

ZGE range (ISO 2858)
Installed powers: kW 0,55÷300
Bodies materials: PP - PVDF - PVC - PE HMW
• Sealed

Member of AIB associazione industriale bresciana

ZME range
Installed powers: kW 5,5÷15
Bodies materials: PP - E-CTFE
• Sealed

AM range
Installed powers: kW 0,04÷0,55
Bodies materials: GFR/PP - CFF/E-CTFE
• Magnetic drive

ZMA and ZGA range
Installed powers: kW 0,75÷11
Bodies materials: PP - PVDF - PVC
• Self priming
• Sealed

ROUTE range
Installed powers: kW 0,35÷7,5
Bodies materials: GFR/PP - CFF/E-CTFE
• Magnetic drive
• Sealed