ARGAL

ZME

CENTRIFUGAL PUMPS FOR CHEMICALS

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ARGAL CENTRIFUGAL PUMPS FOR CHEMICALS

For twenty years, Argal has been manufaturing centrigugal horizontal and vertical pumps in thermoplastic corrosion-resistant resins. Since 1999 Argal works in accordance with the quality system certified ISO 9002.
This catalogue brings you the range of centrifugal horizontal pumps **ZME** which are essentially coming from the “Frontiera” serie.
They have been designed to respond positively to the severe applications, with highly corrosive fluids, of the chemical and pharmaceutical industries, surface treatments, industrial washing as well as the enviromental world, etc..


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

Fields of activity

Chemical pumps

has implemented and maintains a
Quality Management System
which fulfills the requirements of the following standard

ISO 9002

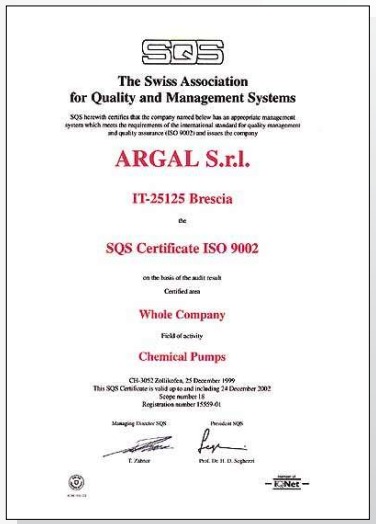
Scope No: 18

Issued on: 25.12.1999
Validity date: 24.12.2002

Registration Number: 15559-01

Catherine Nevilla
President of IQNet

Theodor Zeltner
Managing Director SQS


SQS

The Swiss Association
for Quality and Management Systems

SQS herewith certifies that the company named below has an appropriate management system which meets the requirements of the international standard for quality management and quality assurance (ISO 9002) and issues the company

ARGAL S.r.l.

IT-25125 Brescia

for

SQS Certificate ISO 9002

on the basis of the audit result

Certified area

Whole Company

Field of activity

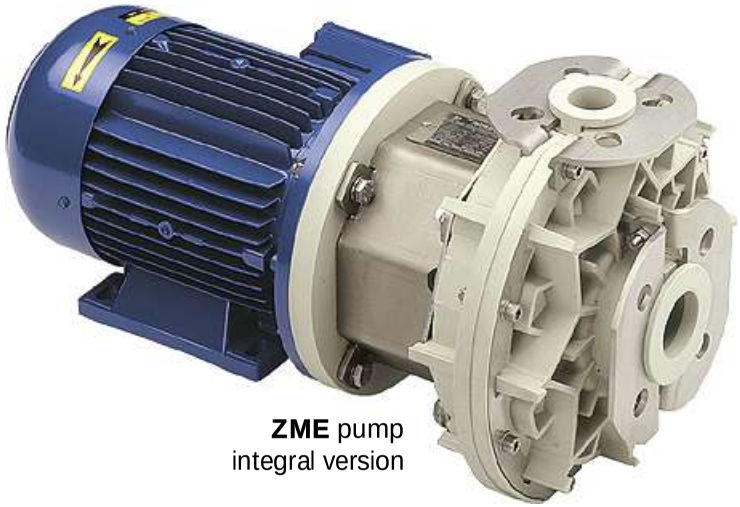
Chemical Pumps

CH-3052 Zollikofen, 25 December 1999
This SQS Certificate is valid up to and including 24 December 2002
Scope number 18
Registration number 15559-01

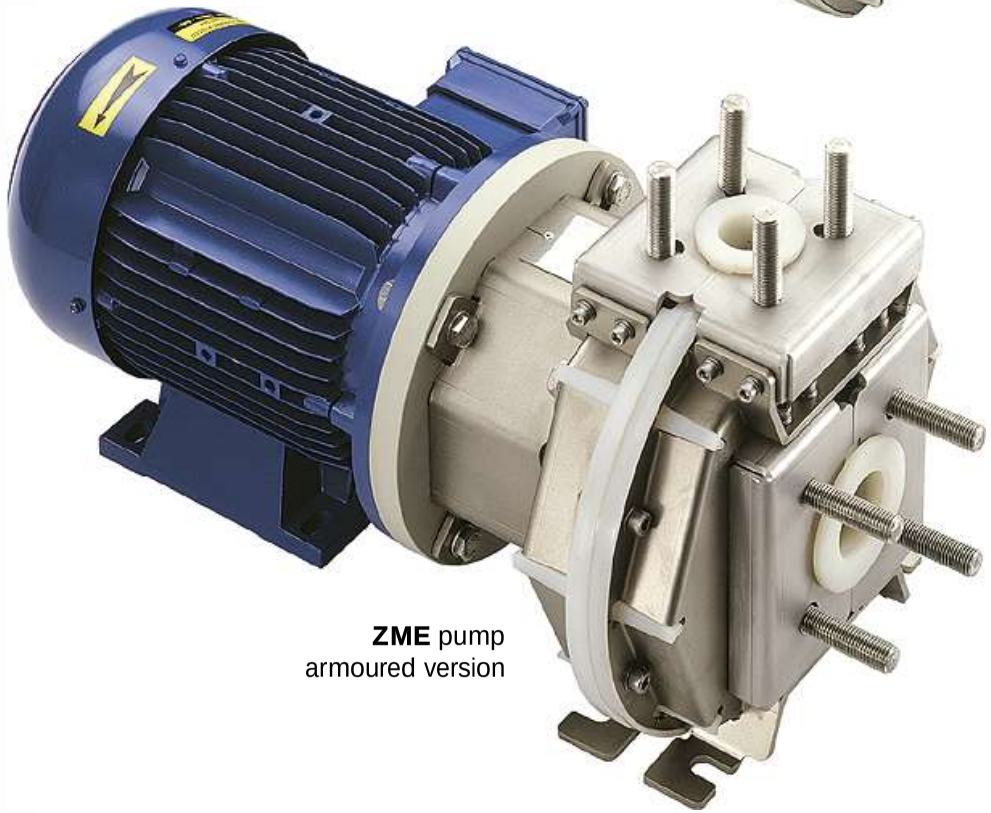
Managing Director SQS
T. Zeltner

President SQS
Prof. Dr. H. D. Seghezzi

IQNet



ZME pump
integral version



ZME pump
armoured version

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MAIN FEATURES OF ZME PUMPS

Chemically resistant
All the components that come into contact with pumped liquids are exceptionally resistant to chemicals; grouped in 2 versions, they have to be choosen in accordance with specific conditions of: concentration, temperature, presence of solids and chemical characteristics of the fluid itself.

Close-coupled version with mechanical seal
The **ZME** pumps are centrifugal and basically consist of a casing (volute casing) inside which bladed impeller rotates driven by the motor.
The impeller is fitted to the motor shaft and the leak of the liquid is prevented by sliding washers (mechanical seals) in appropriate material.
The anchorage is allowed thanks through the feet of the electrical motor (supplied in B35 frame with special designed shaft – voltage V. 400 +/- 5%.

Different types of mechanical seals
The **ZME** pumps can be fitted with the usual commercially available mechanical seals with combinations of material that suit all types of liquid:

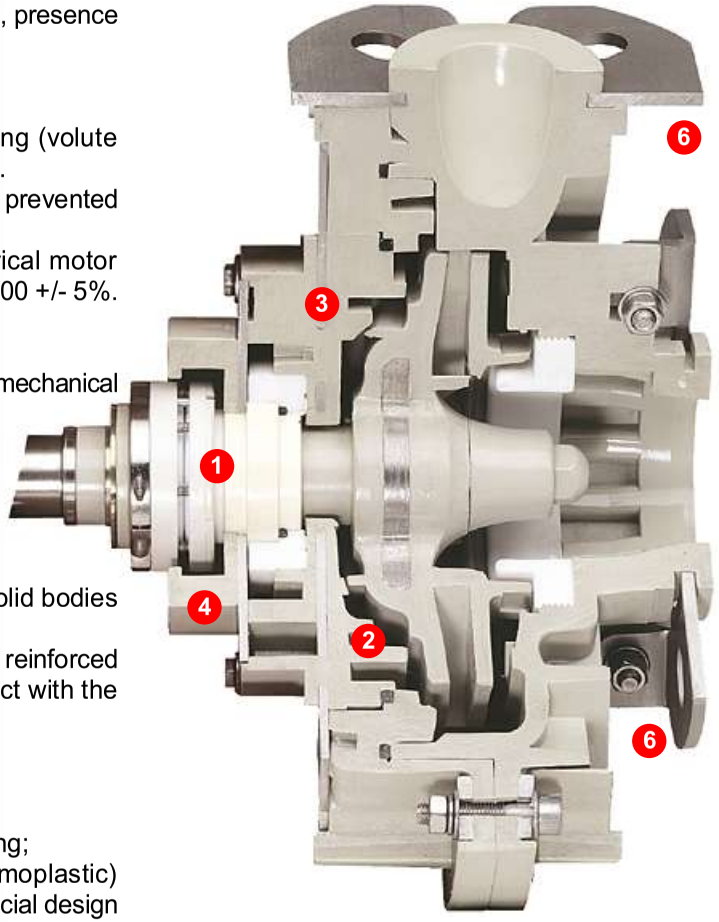
1 • external seals washed by the pumped liquid
• internal seals (also washed externally)
• double seals washed externally

Special care of internal parts of the pump.

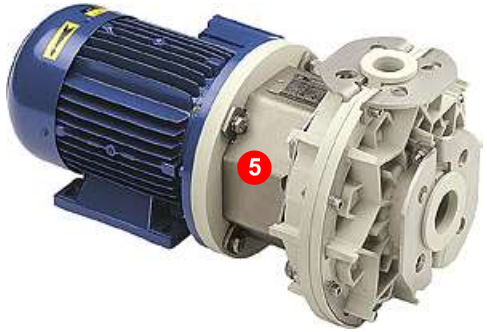
2 • the internal circulation to cool mechanical seal and take any solid bodies to the edge of the rear casing
3 • the composite structure of rear disk: the thermoplastic materials reinforced inside by a stainless-steel core (that does not come into contact with the liquid) as far as the fixed seat of the mechanical seal
4 • a conveyor for acccidental dripping of the mechanical seal

Innovative external structure of stainless steel sheeting

5 • the back support joint to the motor is made in AISI 304 sheeting;
6 • In the **N**-series “integral” pump (traditional pump only in thermoplastic) stainless steel replaces the traditional plastic flanges and the special design of the fastening fittings minimises the mechanial load exerted on the volute casing;
7 • In the “armoured” **R** series the stainless steel sheeting replaces all the old cast iron armour that often deteriorated after only a short period.
The new armour (that is not drawn but only bent with tools of a radius that are appropriate to the thickness) both supports the loads on the inlet/outlet fittings and protects the volute casing from internal liquid hammers and from accidental external blows.



ZME pump
integral version

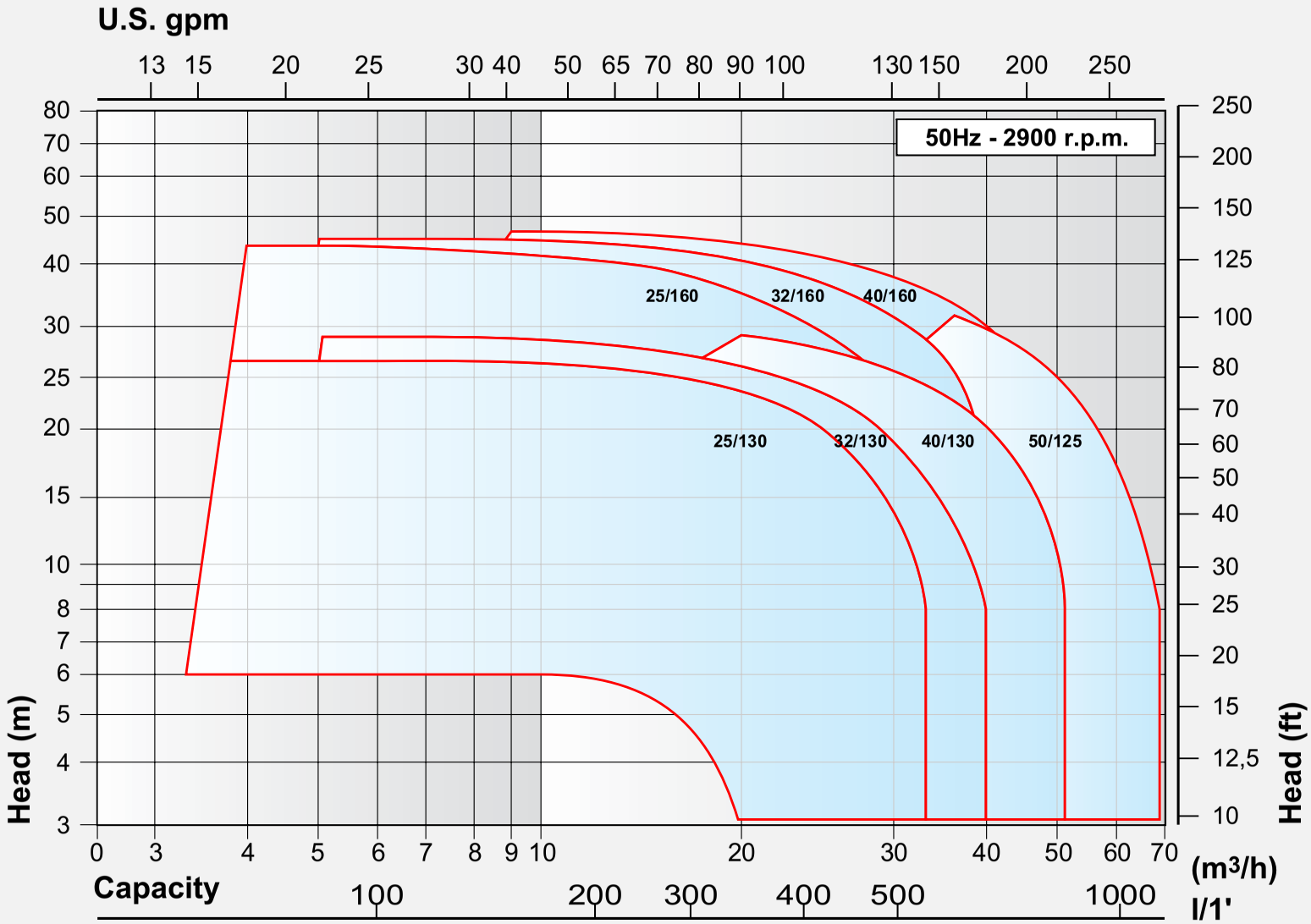


ZME pump
armoured version

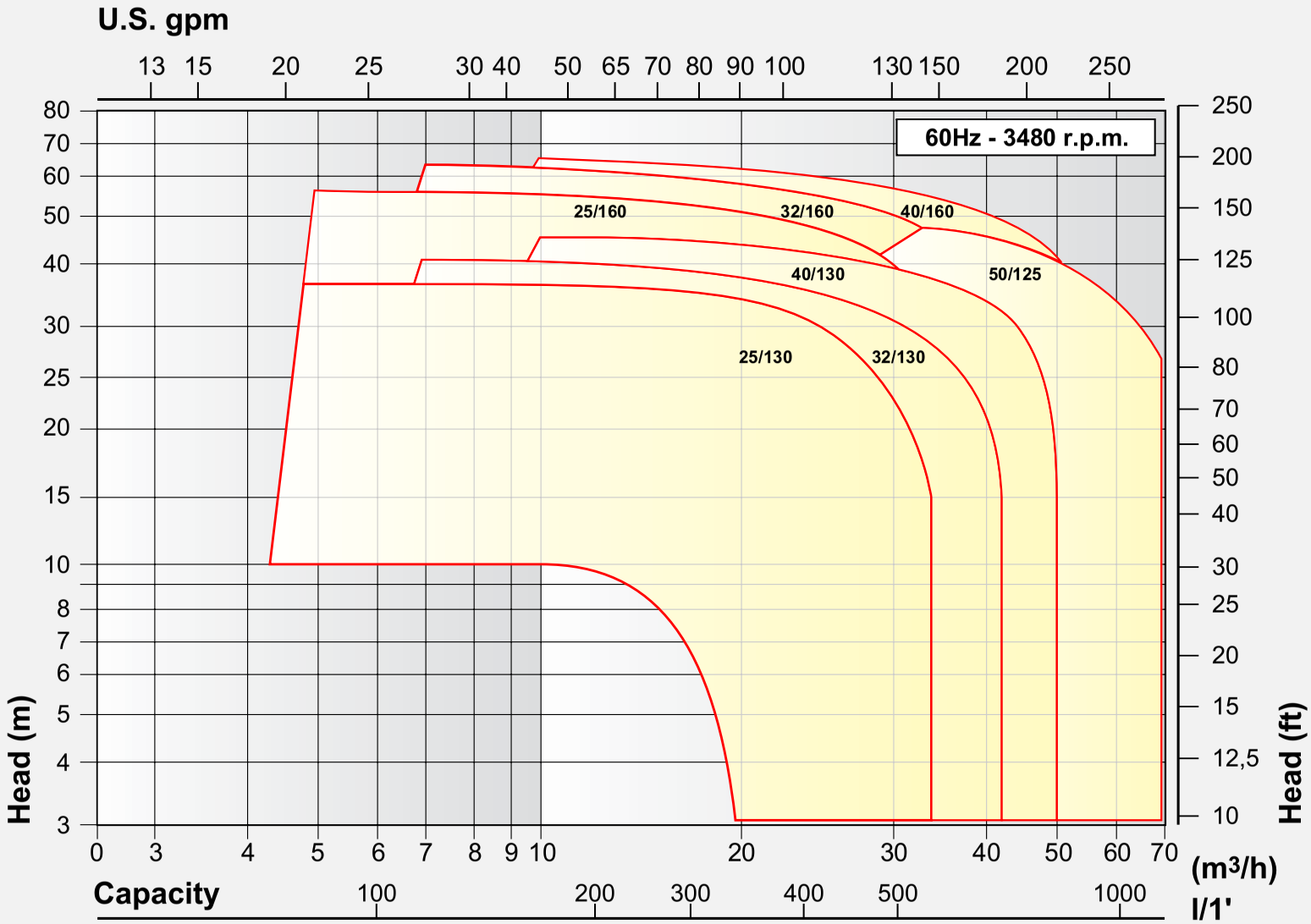
Accessories

• Drain plug connection	**Y1**
• Dry run protector	**Y3**
• Insulation of volute casing	**Y6**
• Base	**YB**

GENERAL PERFORMANCE CURVES 50 HZ



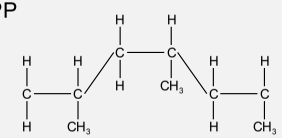
GENERAL PERFORMANCE CURVES 60 HZ



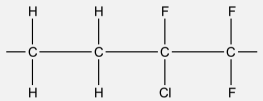
Standard version — Materials of the pumps

WW	POLYPROPYLENE	U.V. stabilized Polylpropylene.
GF	E-CTFE	Ethylene-Trifluorochloroethylene.
WF	PP / E-CTFE	Polypropylene (casing) /Ethylene-Trifluorochloroethylene (impeller).
Special versions		
DF	PVDF	Polyvinylidene Fluoride.
ER	POLYETHYLENE 500	Polyethylene high molecular weight.
Static elastomers		
V	FPM	Flourinated Elastomer (e.g.: Viton ®).
E	EPDM	Ethylene Propylene rubber.
K	FFPM	Perfluore Elastomer (e.g.: Karlez ®).

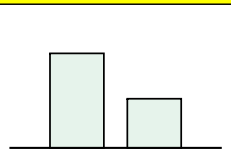
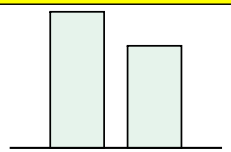
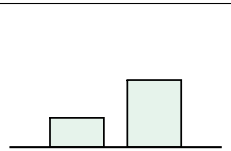
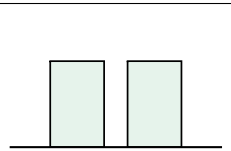
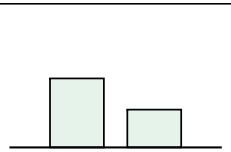
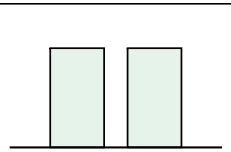
PP



E-CTFE



Mechanical, thermal and chemical characteristics of the materials

Material characteristics	PP	E-CTFE
Mechanical: Structural (traction) (flession) Superficial (hardness) (abrasion)		
Thermal: Low temperatures High temperatures		
Chemical: Inorganic compounds Organic compounds		

Chemical resistance of materials

ELEMENTS OF VALUTATION	VERSIONI			
	WW	**GF**	**V**	**K**
MEDIUMS CHEMICAL:				
Cold mineral acids	++	++	+	+
Hot mineral acids	0	++	-	+
Cold oxidizing acids	-	++	+	+
Hot oxidizing acids	-	++	0/-	+
Cold inorganic salts	++	++	+	+
Hot inorganic salts	+	++	+	+
Cold inorganic bases	++	++	-(*)	+
Hot inorganic bases	++	++	-(*)	+
Cold alogens	-	+	+	+
Hot alogens	-	+	-	+
Cold aliphatic solvents	+	+	+	+
Hot aliphatic solvents	-	0	0/-	+
Cold aromatic solvents	-	+	0/-	+
Hot aromatic solvents	-	0	-	+
Cold functional aromatic solvents	-	+	-	+
Hot functional aromatic solvents	-	0	-	+
Cold chlorinated solvents	-	+	-	+
Hot chlorinated solvents	-	0	-	+
Cold alcohols	++	++	-(*)	+
Hot alcohols	+	+	-(*)	+
Cold ethers	-	+	-	+
Hot ethers	-	+	-	+
Cold ketones	+	+		+
Hot ketones	0	0	-(*)	+
Cold amines	+	++	-(*)	+
Cold polymer solvents	++	0	+	+
Field of admitted temperatures °C	0/+70	-30/+110	(*) use E = EPDM	
Abrasion resistance Mohs index	1÷3	3÷5		

Legend: Excellent ++ Good + Moderate 0 Not resistant -

Other labels in this catalog:

CER Alumina ceramic 99,7% hight purity

CARBON H.D. Carbon hight density

SiC Silicon Carbide

PTFE Polytetrafluoroetylene

The pump structure

FEATURES OF COUPLING EVALUATION	CLOSE-COUPLED **ZME**
Conformity ISO 2858	Only for the flanged connections
Pump dimensions	Less than about 60%
Facilities for automatic check control	• Losses • Wear
Maintenance	Planned services only for spares
Working conditions	Until 16 hours at day
Investment	Reduced

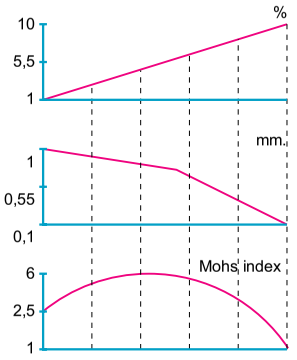
The need of external armour

FEATURES OF EVALUATION	ARMOURED **R**	MONOSTRUCTURED **N**
PN (nominal pressure of the pump) (Ref. H_2O at 20°C)	12 atm.	8 atm.
Presence of water hammer and/or over pressure	Good resistance	Y6 version (on request)
External mechanical stress (e.g. loads on the hydraulic connections, accidental impacts)	Excellent resistance	Good resistance
Heat insulation	Y6 version (on request)	Not available

Sequence of the values in the appliability scale

–	~	+	++
Not applicable	Unadvised	Applicable	Adequate

The rotation transmission model

FEATURES OF EVALUATION	**ZME**
Hermetic structure	By mechanical seal
EXAMINATION OF SOLIDS IN SUSPENSION General characteristics (to correlate) • Quantity in weight % • Dimensions in mm. • Hardness in Mohs	
• Inclination to precipitate (crystallizzation, polymerization)	Applicable
• Sensitivity to the magnetic field	Applicable
Wear parts numbers	2
Maintenance	Normal
Viscosity (over 30cSt it is necessary to adjust the impeller dimension and the driving torque)	<250 cSt

The mechanical seal

CONDITION OF WORK	MODEL	TIPOLOGY	CODE
Standard	**SF 1**	single external, ptfe bellows	**10**
Standard	**TS 5**	single external, elastomer bellows	**50**
Extreme	**SF 2**	single external, ptfe bellows	**20**
Extreme	**BF 3**	single internal, OR-ring	**30**
Critical	**M.SF A**	Double flushed, ptfe bellows	**A0**
Critical	**M.TS C**	Double flushed, elastomer bellows	**C0**
Hard	**M.SF B**	Double flushed, ptfe bellows	**B0**
Hard	**M.TS D**	Double flushed, elastomer bellows	**D0**

Counterfaces materials of the mechanical seal

EXECUTIONS	SF1	TS5	SF2	BF3	M.SF A	M.TS C	M.SF B	M.TS D
Rotating part	PTFE+V	CARB	SiC	SiC	PTFE+V	CARB	SiC	SiC
Fixed ring	CER	CER	SiC	SiC	CER	CER	SiC	CER
Bellows or OR *	PTFE	FPM	PTFE	FKM	PTFE	FKM	PTFE	FKM
2^ rotating part	-	-	-	-	CARB	CARB	CARB	CARB
2^ fixed ring	-	-	-	-	CER	CER	CER	CER

* Elastomer in EPDM is used when necessary

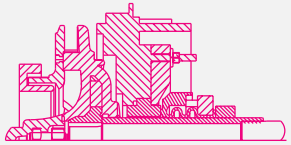
Definition of the mechanical seal

EVALUATION FEATURES	SF1 - TS5	SF2 - BF3	M.SE A - M.TS C	M.SE B - M.TS D
Concentrated acid compunds of flourine; strong concentrated hot alkali	Not Applicable	Applicable	Not Applicable	Applicable the M.SE B only
Clean chimical mediums; hot/cold; concentrated/in solution	Adeguata	Applicable	Applicable	Applicable
Mediums which are inclined to produce gas when are used	Adeguate the SF1	Applicable the SF2	Applicable	Applicable
Exam of suspended solids (to correlate):				
• Max. Quantity in weight %	1÷3	1÷3 (a) -1÷5 (b)	1÷11	1÷5 (a) - 1÷10 (b)
• Max. Dimensions mm	0,1÷0,6	0,1÷0,6 (a) - 1÷2 (b)	0,1÷0,8	0,1÷0,7 (a) - 0,1÷0,5 (b)
• Max. Hardness index Mohs	1÷2		1÷2	3÷6
Liquidi che tendono a precipitare	Not Applicable	Applicable the BF3 only *	Adeguate	Adeguate

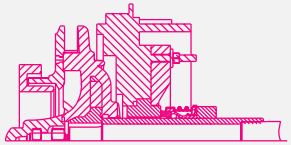
* With external flushing
IMPORTANT: See our chemical resistance tables and mechanical seal applications.

Sequence of the values in the appliability scale

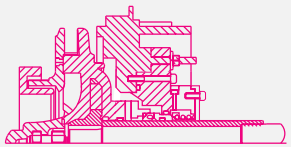
–	~	+	++
Not applicable	Unadvised	Applicable	Adequate



SF 1

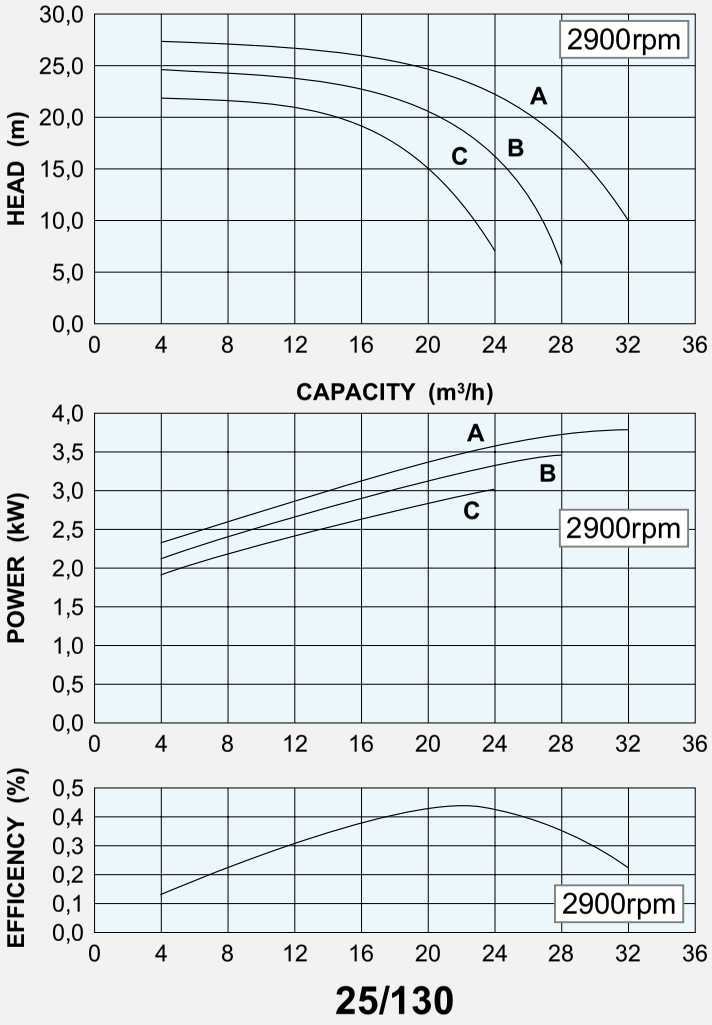


TS 5



BF 3

CURVES 50 HZ FOR ZME MODELS



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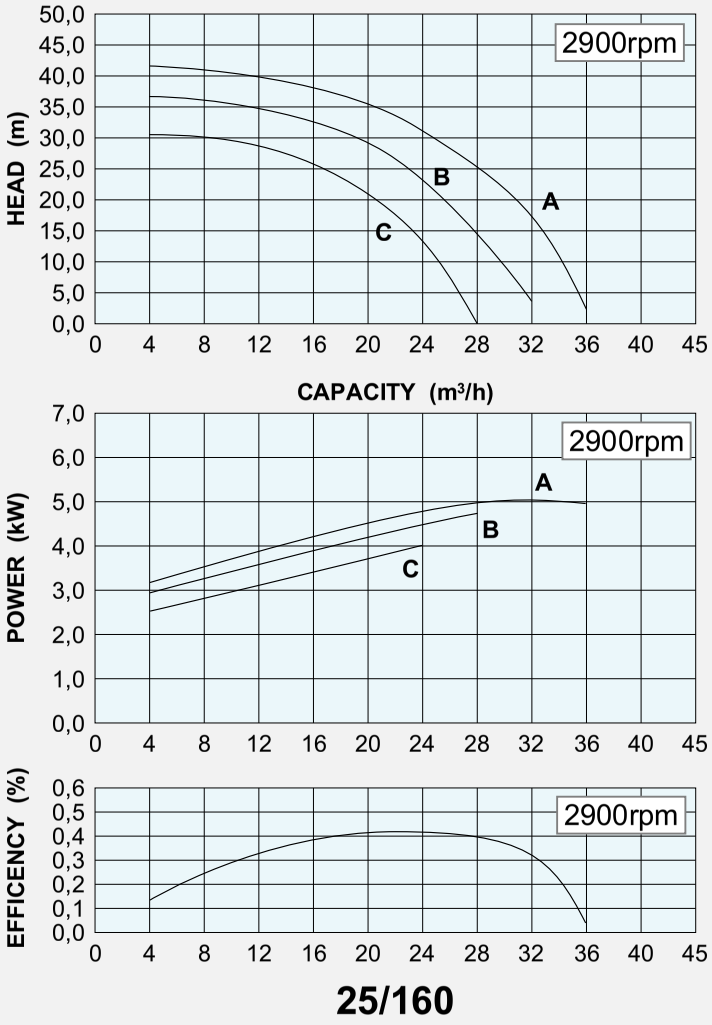

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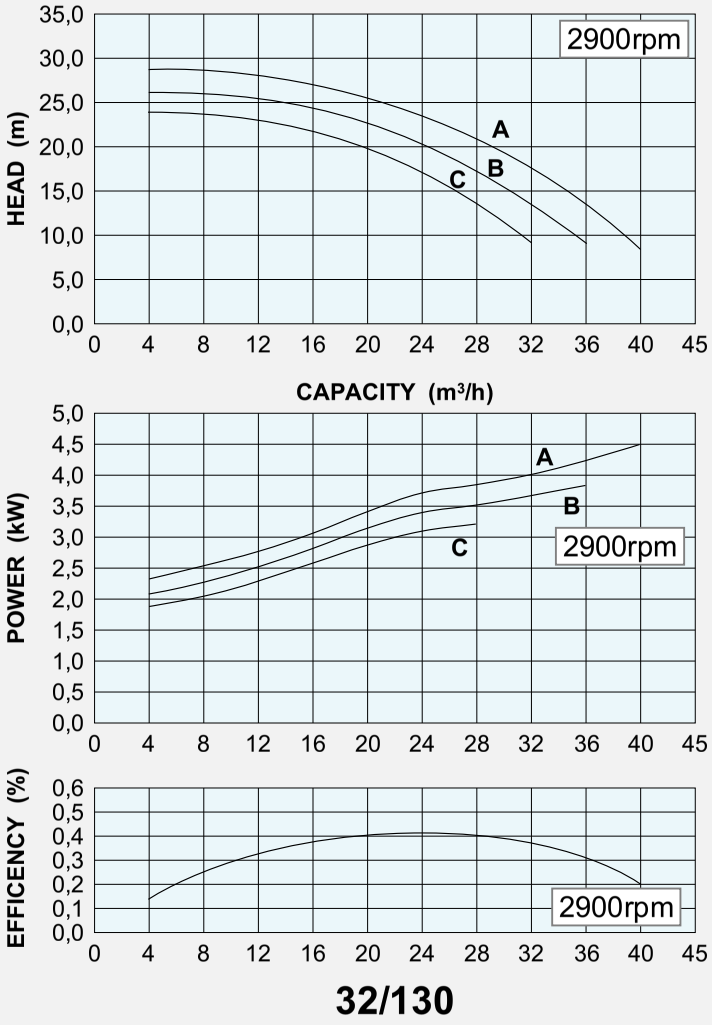
CURVES 50 HZ FOR ZME MODELS



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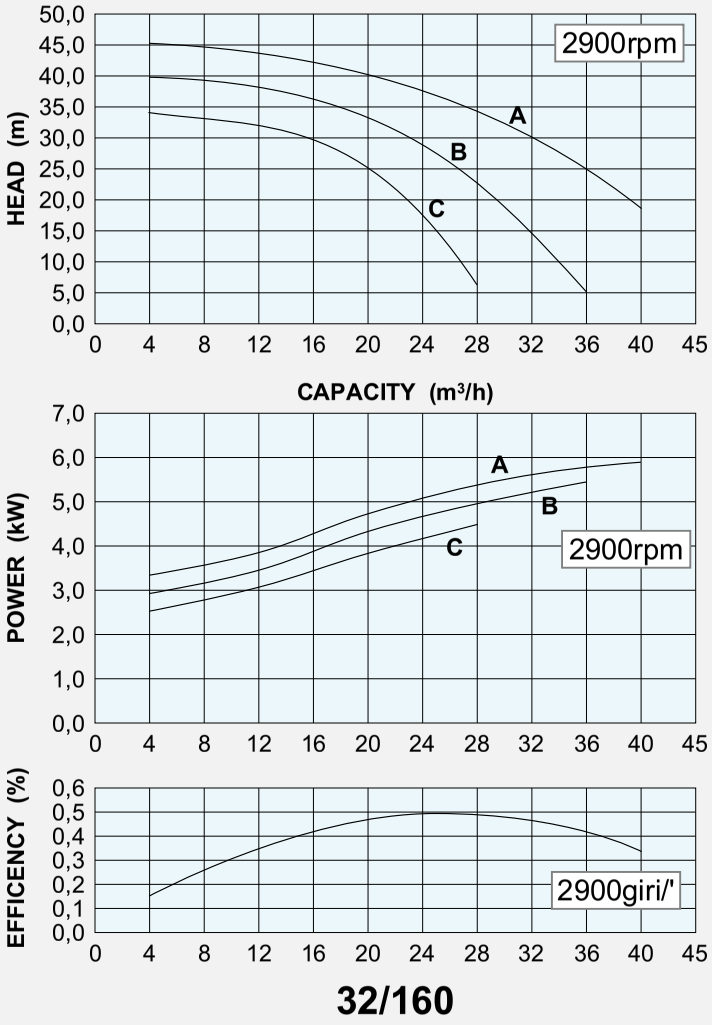

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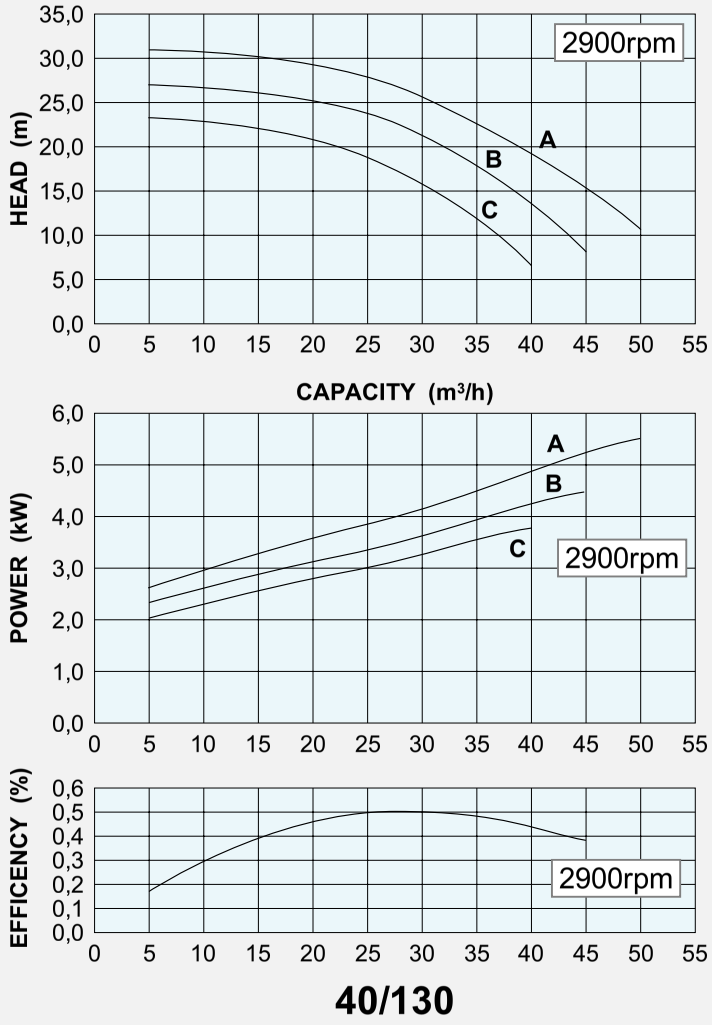

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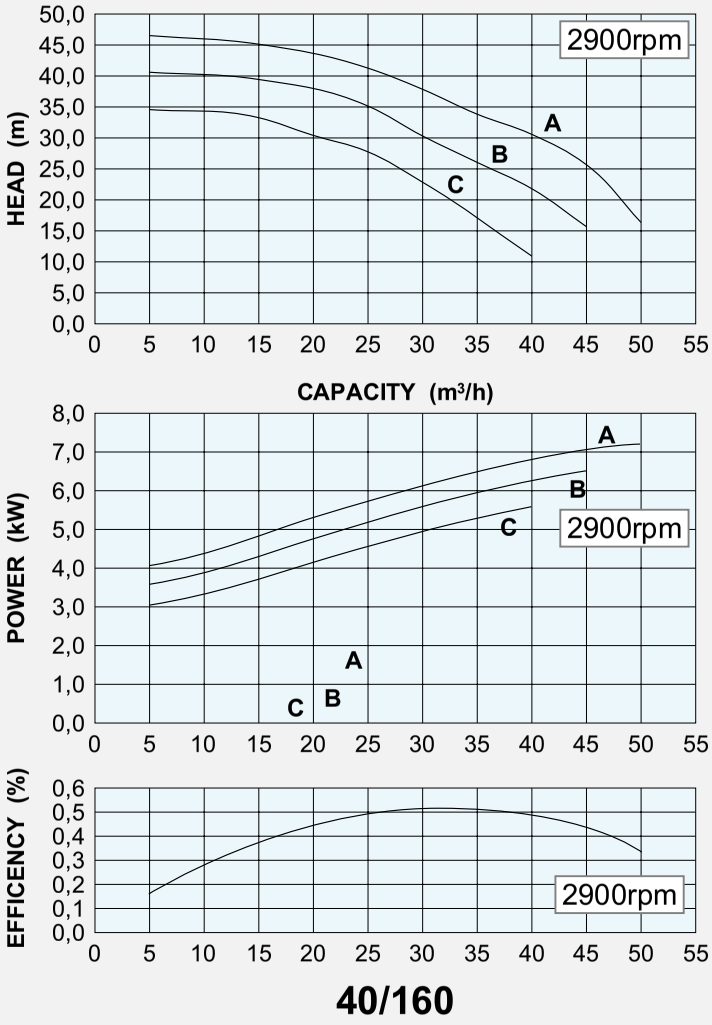

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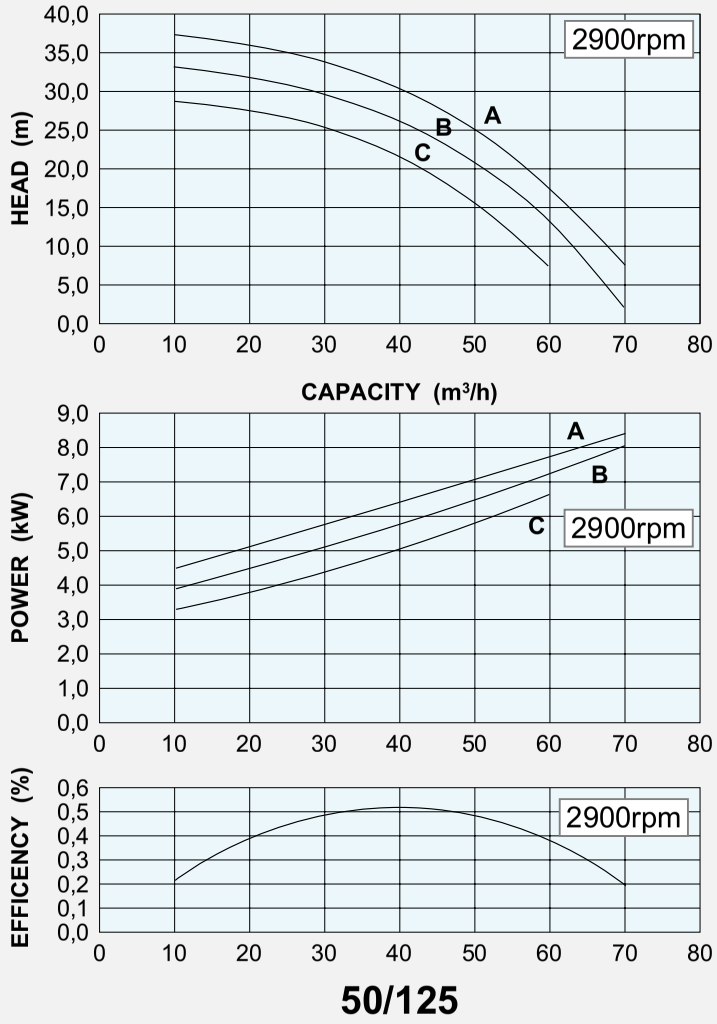

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Characteristics of IEC electric motors 2 poles

Model	Size	kW	Frame	Size	kW	Frame	Size	kW	Frame	Size	kW	Frame
25/130	112	4	B35	112	5,5	B35	112	7,5	B35	132	11÷12	B35
25/160												
32/130												
32/160												
40/130												
40/160												
50/125												

Notes for specific curves:

Detailed curves for both 1450/1740 and 2900/3480 rpm give the performance curves for each available impeller diameter. These also give NPSHr, Efficency and absorbed motor power.
Liquid viscosities up to 30 cSt will not adversely affect pump performance. 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 suction pipe diameter should be at least that of the pump inlet, with the fluid velocity as low as is pratical (max 2.5 m/sec.). If you have any problems ARGAL Customer Services will be pleased to advise.
The curves performances are based on the following impeller diameter:

- **A** max. diameter

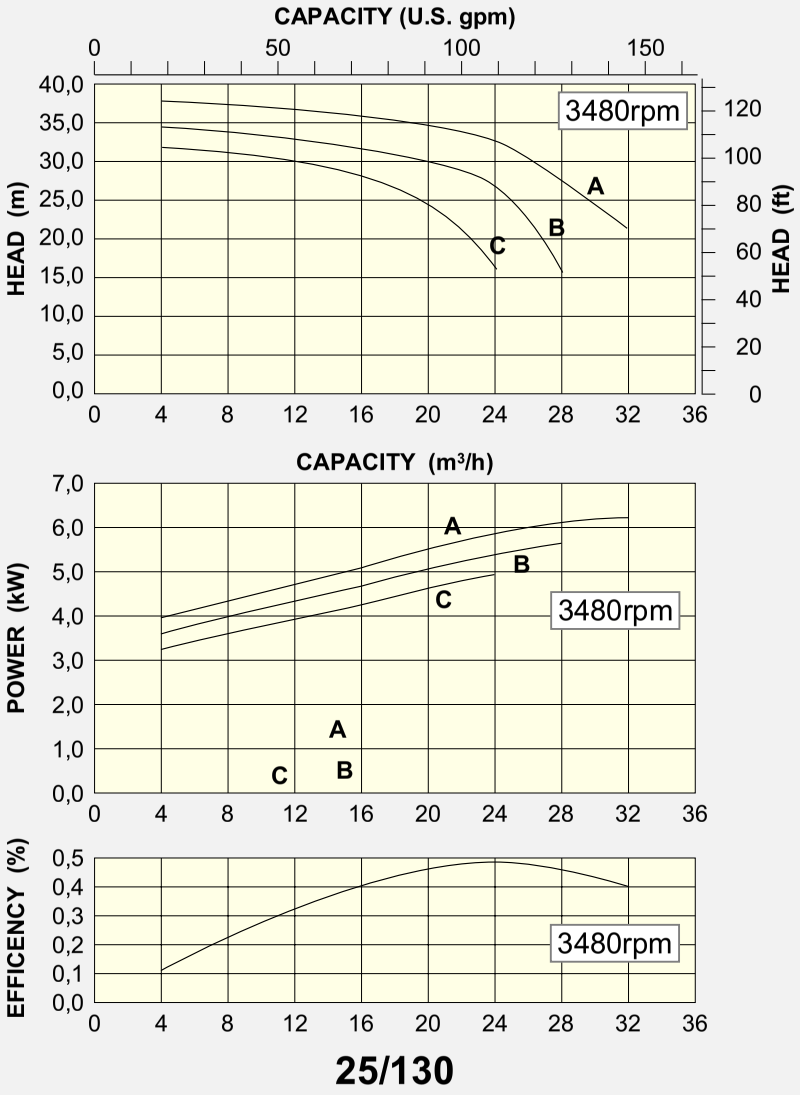
For reducer performances are available:

- **B** midd. diameter
- **C** min. diameter

Motor protection system typology:

- **N** Motor standard voltage (400÷5%)
- **S** Motor special voltage (no ADPE)

CURVES 60 HZ FOR ZME MODELS



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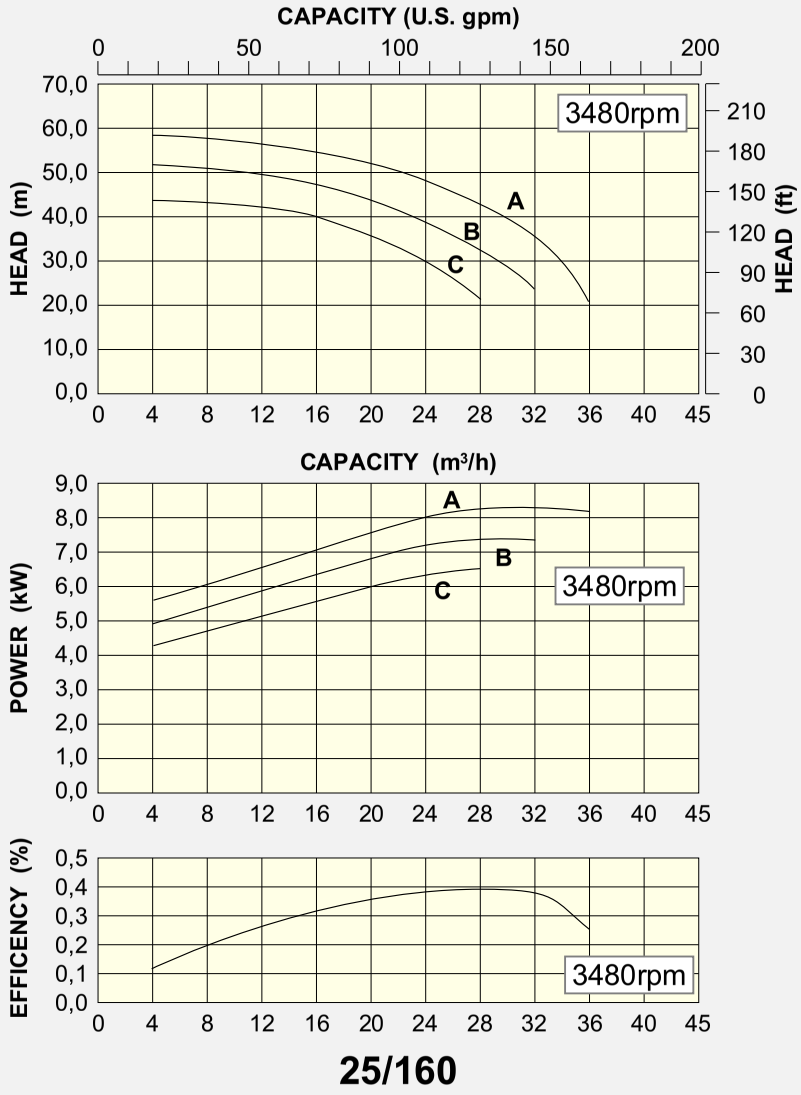

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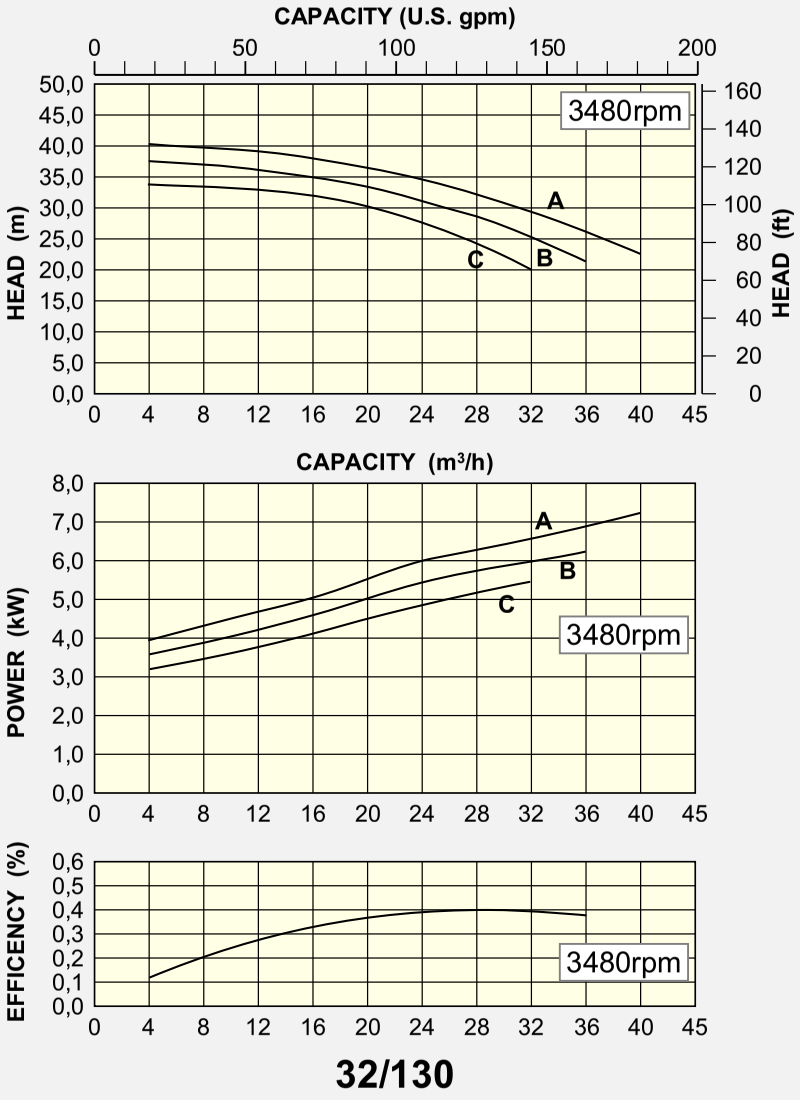

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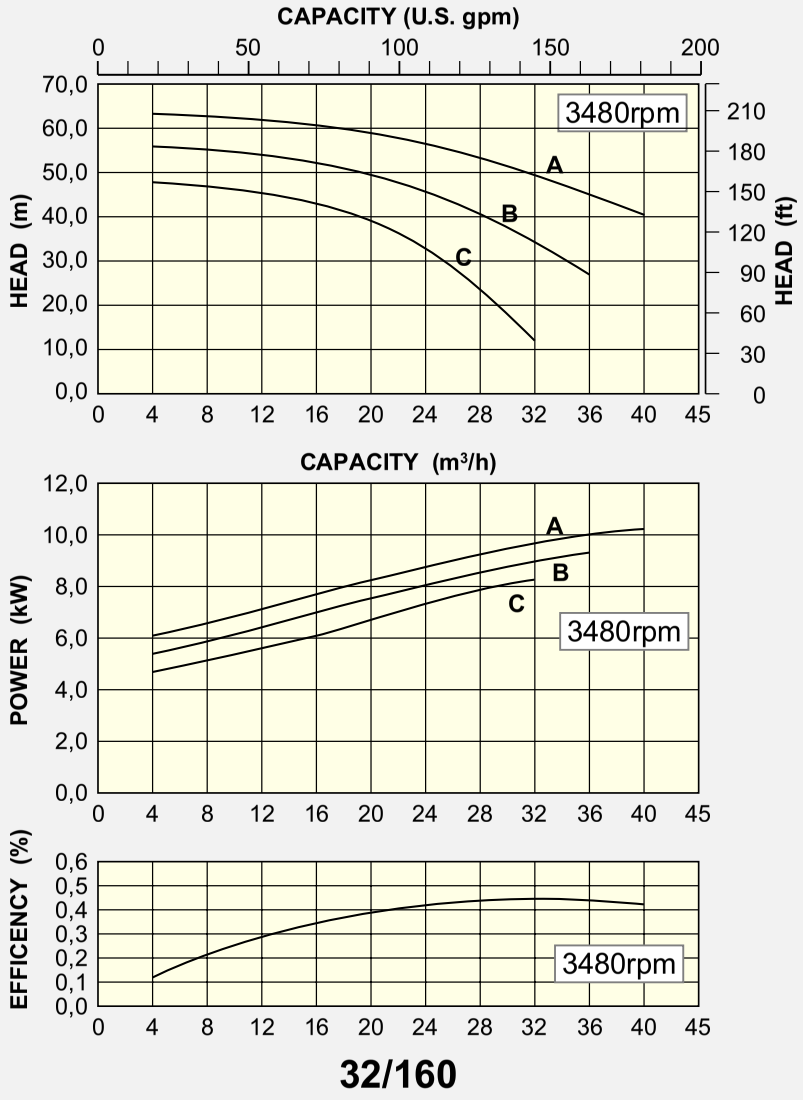

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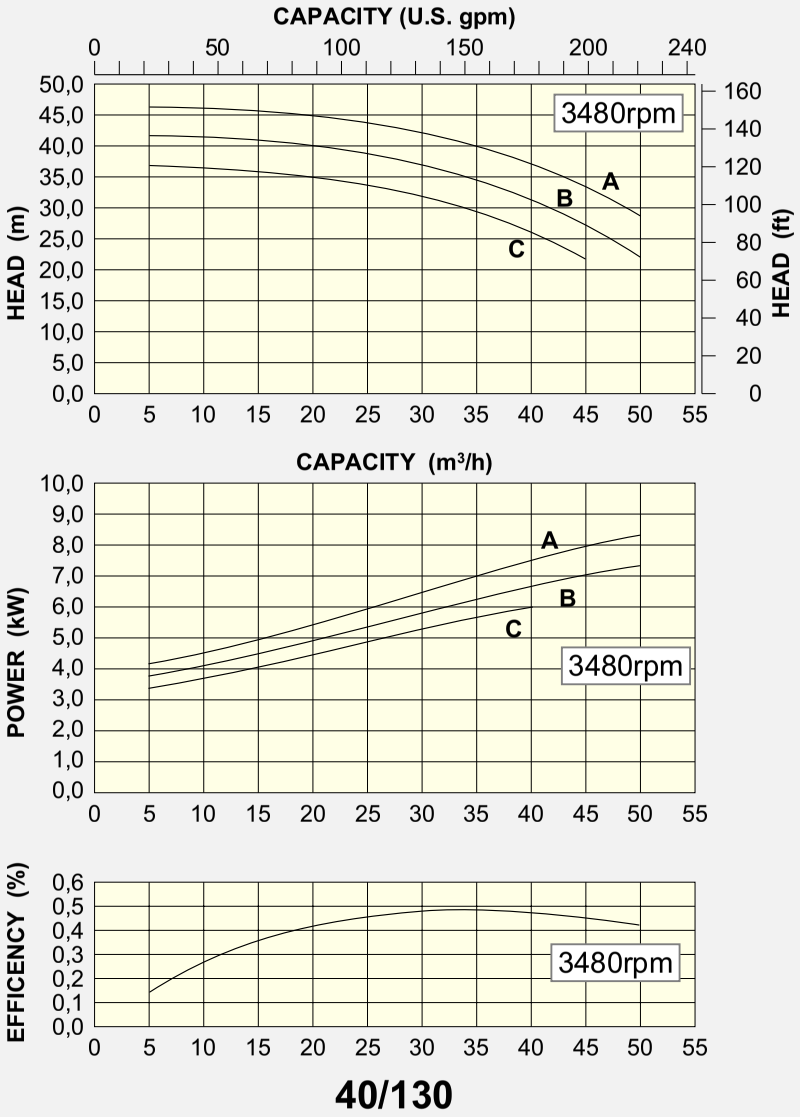
CURVES 60 HZ FOR ZME MODELS



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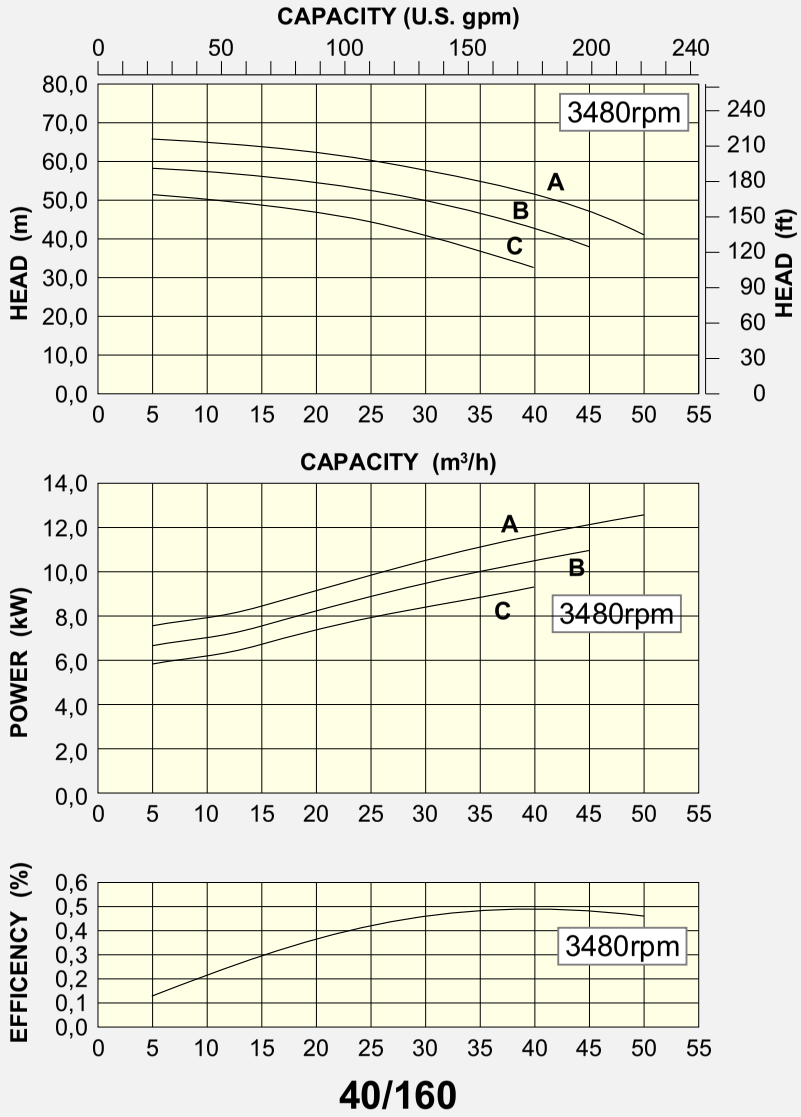

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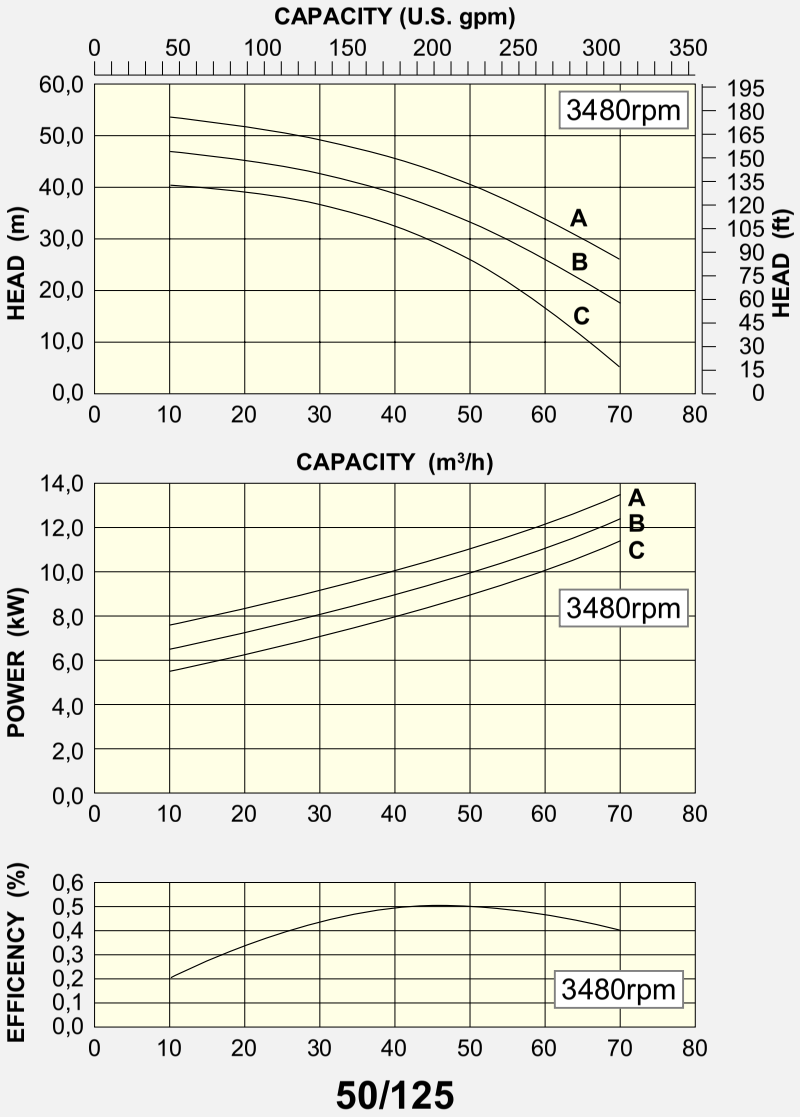

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32/160												
40/130												
40/160												
50/125												

Notes for specific curves:

Detailed curves for both 1450/1740 and 2900/3480 rpm give the performance curves for each available impeller diameter. These also give NPSHr, Efficency and absorbed motor power.
Liquid viscosities up to 30 cSt will not adversely affect pump performance. 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 suction pipe diameter should be at least that of the pump inlet, with the fluid velocity as low as is pratical (max 2.5 m/sec.). If you have any problems ARGAL Customer Services will be pleased to advise.
The curves performances are based on the following impeller diameter:

- **A** max. diameter

For reducer performances are available:

- **B** midd. diameter
- **C** min. diameter

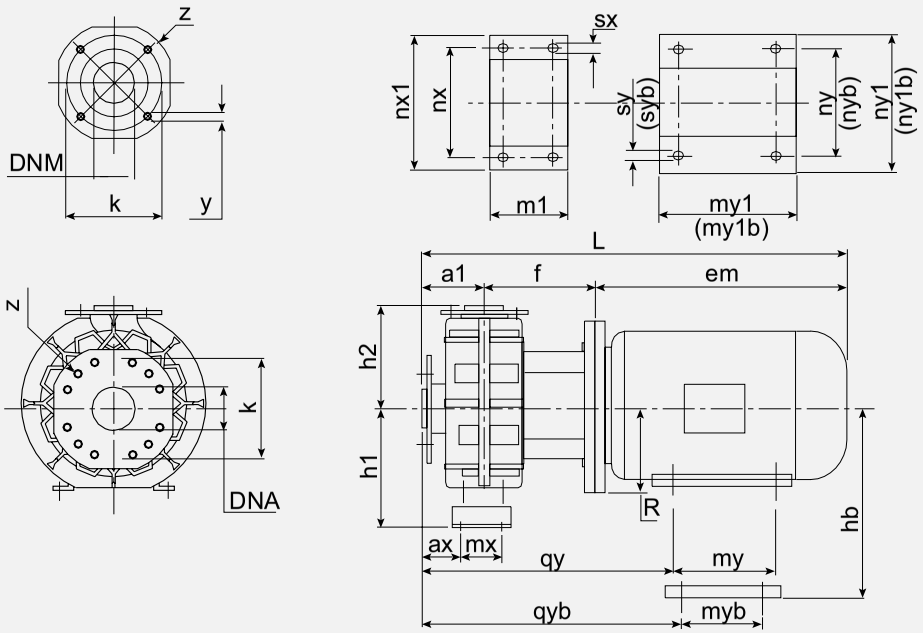
Motor protection system typology:

- **N** Motor standard voltage (400÷5%)
- **S** Motor special voltage (no ADPE)

DIMENSIONS

Pump model		Motor power kW	IEC motor size	Outlet DN	Outlet k	Outlet l	Outlet z	Inlet DN	Inlet k	Inlet l	Inlet z	a1	f	h1	h2	em	L	ax	mx	nx	mx1	nx1	sx	qy	my	ny	my1	ny1	sy	hb	qyb	myb	nyb	my1b	ny1b	syb
25/130 25/160	N	4	112	32	100 ~ 89	M16 ~ 5/8	4	50	125 ~ 121	M16 ~ 3/4	4	80	175	132	160	330	585	/	/	/	/	/	/	305	140	190	170	220	10	132	315	120	256	170	274	12
		5.5																																		
		7.5																																		
		11	132													400	655							325	140	216	180	274	10	/	/	/	/	/	/	/
	R	4	112													330	585	45	70	190	100	240	14	305	140	190	170	220	10	132	315	120	256	170	274	12
		5.5																																		
		7.5																																		
		11	132													400	655							325	140	216	180	274	10	/	/	/	/	/	/	/
32/130 32/160	N	4	112	32	100 ~ 89	M16 ~ 5/8	4	50	125 ~ 121	M16 ~ 3/4	4	80	175	132	160	330	585	/	/	/	/	/	/	305	140	190	170	220	10	132	315	120	256	170	274	12
		5.5																																		
		7.5																																		
		11	132													400	655							325	140	216	180	274	10	/	/	/	/	/	/	/
	R	4	112													330	585	45	70	190	100	240	14	305	140	190	170	220	10	132	315	120	256	170	274	12
		5.5																																		
		7.5																																		
		11	132													400	655							325	140	216	180	274	10	/	/	/	/	/	/	/
40/130 40/160	N	4	112	32	110 ~ 98	M16 ~ 5/8	4	65	145 ~ 140	M16 ~ 3/4	4	80	175	132	160	330	585	/	/	/	/	/	/	305	140	190	170	220	10	132	315	120	256	170	274	12
		5.5																																		
		7.5																																		
		11	132													400	655							325	140	216	180	274	10	/	/	/	/	/	/	/
	R	4	112													330	585	45	70	190	100	240	14	305	140	190	170	220	10	132	315	120	256	170	274	12
		5.5																																		
		7.5																																		
		11	132													400	655							325	140	216	180	274	10	/	/	/	/	/	/	/
50/125	N	7.5	112	50	125 ~ 121	M16 ~ 3/4	4	80	160 ~ 152	M16 ~ 3/4	8	100	175	132	160	330	605	/	/	/	/	/	/	325	140	190	180	220	10	132	335	120	256	170	274	12
		11	132													400	675							345	140	216	170	274	10	/	/	/	/	/	/	/
	R	7.5	112													330	605	65	70	190	100	240	14	325	140	190	180	220	10	132	335	120	256	170	274	12
		11	132													400	675							345	140	216	170	274	10	/	/	/	/	/	/	/

* On the armoured version.



PUMP IDENTIFICATION LABEL

Example

ZME	32/160	A	N	WW	V	10	kW1,1	I	N	YB
									Rif. to the reader:	
1	2	3	4	5	6	7	8	9	10	11
									Other possibilities:	
	25/130 25/160 40/130 40/160 50/125	B C	R	WF GF DF ER	E K	20 30 50 A0 B0 C0 D0	kW 4 ÷ 15	A J	S	Y1 Y2 Y3

1	Production program family of ARGAL.
2	Pump model (according to the required performance) - see pages 5 - 6
3	Centrifugal impeller (as shown from the specific curves for each pump) - see pages 13 - 17
4	Armoured or integral - see page 8
5	Materials of volute casing - see page 7
6	O-ring materials - see page 7
7	Type of mechanical seal - see page 9
8	Installed motor powers - see page 13
9	Flanged connections: ISO = I – ANSI 150 lb = A – JIS = J
10	Electric motor protection system typology - see page 17
11	Accessories - see page 4

The production program of our plastic pumps
for chemical products includes also:

- Complete range mechanical driven
  ISO 2858 centrifugal pumps.
- Magnetic driven pumps.
- Close-coupled pump with mechanical seal.
- Self-priming pumps.
- Vertical axle pumps.
- Drum pumps.

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CHEMICAL PUMPS

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