ARGAL

AM

INDEX

MAGNETIC DRIVE PUMPS **AM** SERIES

ARGAL chemical pumps has achieved the certification for the quality according to the norms **ISO 9001:2000** in the month of November 2002, with certificate no.15559-02, released by the **SQS** Association Switzerland for Systems of Quality and Management, included in the international network of certification **IQ Net**.

The important goal reached with the certification testifies the application of all the procedures of quality in every sector of the firm.

Since 1998 the innovation of ranges with seal-less and sealed pumps of Frontiera series has started with the aim to better qualify the products in our catalogue and to increase the presence of **ARGAL** in the both nation and international surround. In the recent years the new seal-less and sealed **ROUTE** and **AM** pumps of this catalogue have been added.

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 2002
This SQS Certificate is valid up to and including 14 November 2005
Scope number 18
Registration number 15559-02

Managing Director SQS — T. Zahner

President SQS — Prof. Dr. H. D. Seghezzi

IQNet

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*

IQNet

Dr. Fabio Roversi
President of IQNet

Theodor Zahner
Managing Director SQS

SQS

I N D E X

Labels in this catalog

GFR/PP (WR)	Glass fibre reinforced Polypropylene (30%)
CFF/E-CTFE (GF)	Etylene-ChloroTrifluoroEthylene carbon fiber filled (20%)
CARB. H.D.	Carbon hight density
SiC	Silicon Carbide
CER	Alumina ceramic at 99,7% - hight purity
FKM (V)	Fluorinated elastomer (e.g.: Viton®)
FFKM (K)	Perfluore elastomer (e.g: Kalrez®)
EPDM (E)	Etylene-Propylene rubber (e.g: Dutral®)
BSP - m	BSP parallel threaded male connections (according to ISO 7/1)
BSP - f	BSP parallel threaded female connections (according to ISO 7/1)
NPT - m	Threaded male NPT connections
NPT - f	Threaded female NPT connections
ND	Nominal diameter
ISO	Ref. Flange ISO 2084 - NP10
ANSI	Ref. Flange ANSI B 16.5 – Flat Face
IEC	According to E.C. motors
NEMA	Accordind to U.S. motors

The new pumps of the AM range, magnetic driven, have been developed on the base of previous TM series, in order to give a better answer to the actual demands of the market.
These pumps are centrifugal, horizontal axis, close-coupled type; the bodies entirely built with reinforced thermoplastic polymers; materials for internal components: ceramic oxides, HD carbon, fluorinated elastomers; so any contact of metallic parts with the pumped fluid is avoided: combination of materials right for the best in the performances, to get, on a small scale, “chemical pumps”.

“Hermetic” pump

The outlet magnet assembly driven by the motor schaft, produces a magnetic torque dragging up in rotation the inside magnet assembly on which the impeller is overmoulded.
The rear casing, having appropriate shape and joined to the volute casing, divides the two magnetic units, making an hermetic case all round the impeller.

Safety and life

- The drive magnetic system finally excludes any type
of rotating seal. The only need of seal is guaranteed
thanks to an O-ring static gasket, in the connection between volute casing and rear casing.

- **Special solutions and employed materials allow occasionally dry running operation, avoiding any damages inside with internal structure R (starting from 15 min. up to many hours in function of working conditions).**

Versatility and performances

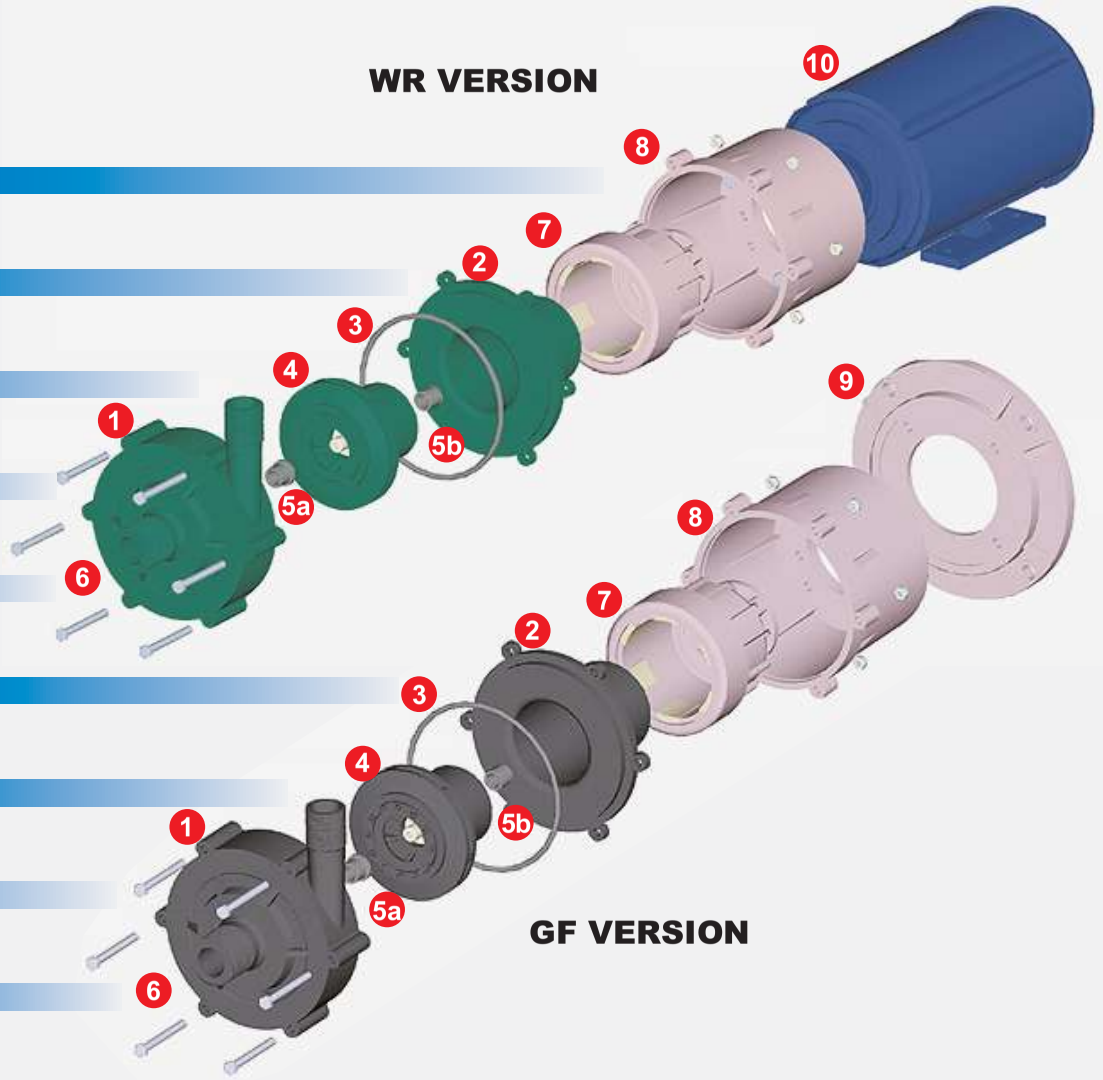
- **R-X**: two sets of constructive materials for many applications: from clean water to waste and slightly abrasive liquids, strong alkali or the salts such as sodium hypochlorite, acids as chromic, nitric, sulphuric, etc. (see chart 1).

- Standard or **P** (more powered): two executions able to work at max. capacity tranferring fluid with specific gravity low-medium (1.1-1.4 kg/dm3) or medium-high (1.1-1.4 kg/dm3).

- Powerfull magnet assembly in Neodymium-Iron-Boron (except mod. 45).

Simple construction

1. Volute casing
2. Rear casing
3. OR gasket
4. Centrifugal impeller
5. a/b Guide bushings
6. Stainless steel Screws
7. Drive magnet assembly
8. Support
9. Flange for NEMA motor
10. Elettrical motor



THE MATERIALS

Version	Reinforced Polymers	Min temp.	Max temp.	Environment temp.
WR	GFR - PP	-5°C (23°F)	80°C (176°F)	0÷40°C (14÷104°F)
GF	CFF - E-CTFE	-30°C (-22°F)	110°C (230°F)	-20÷40°C (-4÷104°F)

THE CONSTRUCTIONS

AM 45

VERSION	WR	GF
EXECUTION	R_1	R_1
Volute casing	GFR - PP	CFF - E-CTFE
Rear casing		
Centrifugal impeller		
Guide bushing	CARB. HD	CARB. HD
Shaft	CER	CER
Thrust bush	CER	CER
OR gasket	FKM (1)	FKM (1); (2)
Screws	304 SS	304 SS

Upon request: (1) EPDM and (2) FFKM

AM 250-350-500 and 250P-350P-500P

VERSION	WR		GF	
EXECUTION	R_1	X_1	R_2	X_2
Volute casing	GFR - PP		CFF - E-CTFE	
Rear casing				
Centrifugal impeller				
Guide bushing	CARB. HD	SiC	CARB. HD	SiC
Shaft	CER	CER	SiC	SiC
Thrust bush	CER	CER	SiC	SiC
OR gasket	FKM (1)		FKM (1); (2)	
Screws	304 SS		304 SS	

Upon request: (1) EPDM and (2)FFKM

The employment of Polypropylene reinforced with glass fibres allows to use the centrifugal pumps AM for all the liquids, also chemicals, compatible with the execution in manifold applications where you do not want to contaminate the external enviroment with liquid losses or also evaporations of the same. The reinforcement with glass fibres gives stability to the material as well as to the maximum temperatures of application.
The Etylene-ChloroTrifluoroEthylene carbon fiber filled, furthermore, thanks to the great chemical inactivity of the basic material and the reinforcement, allows the transfer of the hightly aggresive liquids. The mechanical characteristics of the reinforced material allow the employment also with fluids containing solids with medium grade of abrasion (for example: with the X execution: up to the index of hardness Mohs 4, maximum quantity in weight 5%, maximum dimension 0,25 mm).

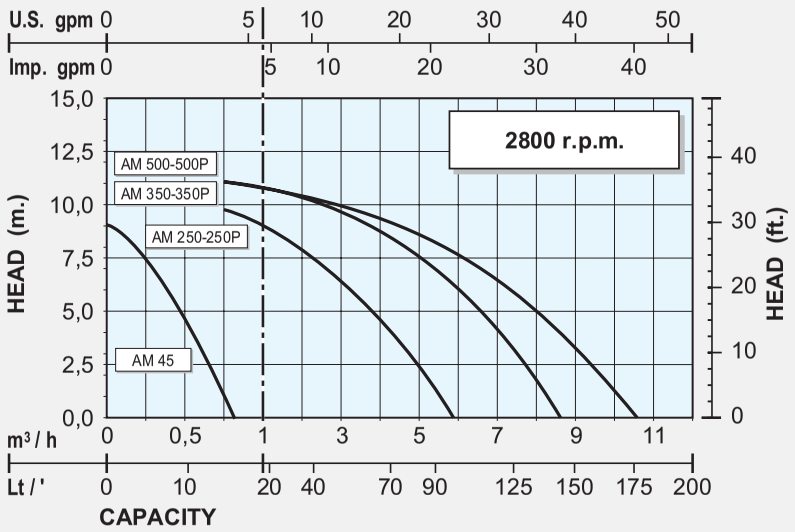
NOTES:
Medium viscosity: ≤ 20 cSt Maximum inlet pressure: 1,5 bar

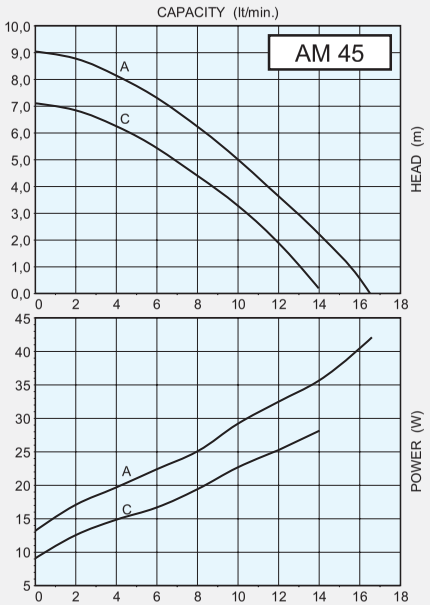
Table 1

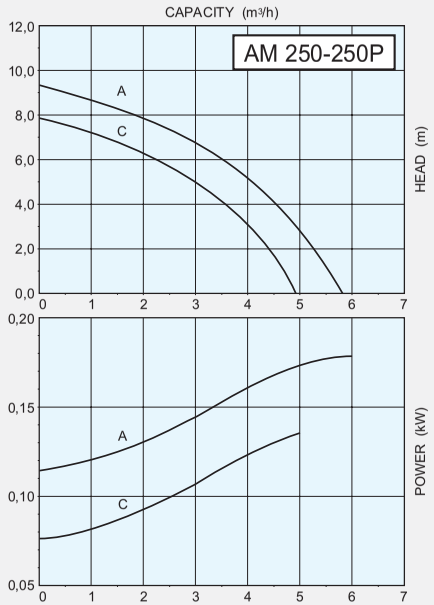
CHEMICAL MEDIUMS:	WR	GF	V	K
Cold mineral acids	++	++	+	+
Hot mineral acids	0	++	-	+
Cold oxidizing acids	-	++	+	+
Hot oxidizing acids	-	++	0/-	+
Cold inorganic salts	++	++	+	+
Hot inorganic salts	+	++	+	+
Cold inorganic bases	++	++	-(*)	+
Hot inorganic bases	++	++	-(*)	+
Cold alogens	-	+	+	+
Hot alogens	-	+	-	+
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	+	+

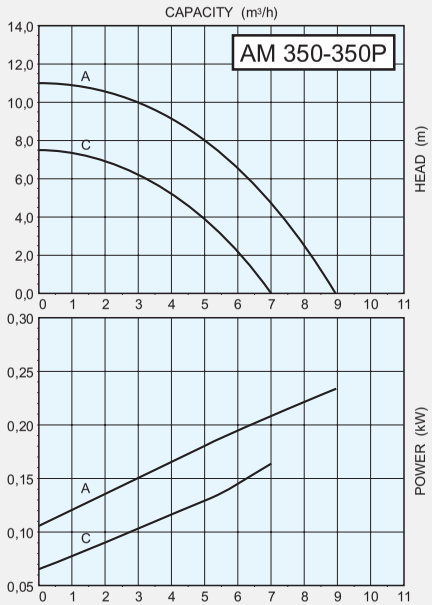
Legend:
• Excellent ++ • Good + • Moderate 0 • Not resistant -
(*) Use: E=EPDM

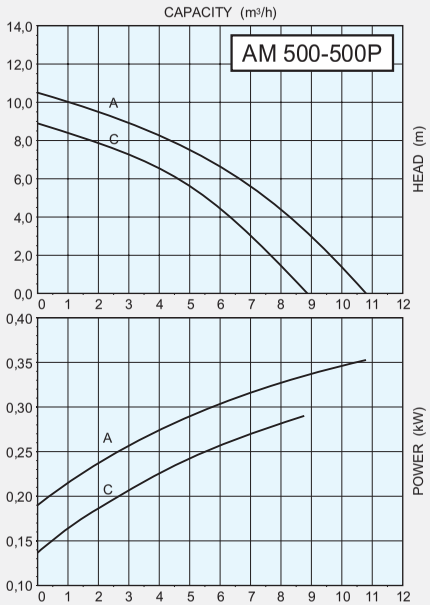
GENERAL PERFORMANCES CURVES 50 HZ











PRODUCTION PROGRAM

SPECIFICATIONS

Pumps	AM	45	250	250 P	350	350 P	500	500 P
Ø Inlet	BSP	1/2" m	3/4" f		1" m		1 1/4" m	
Ø Outlet	BSP	3/8" m	3/4" m		1" m		1 1/4" m	
Ø Inlet	NPT	1/2" m	3/4" f		1" m		1 1/4" m	
Ø Outlet	NPT	3/8" m	3/4" m		1" m		1 1/4" m	
Inlet and outlet flange ISO	DN	Not avaible	Not avaible		25		32	
Inlet and outlet flange ANSI	Inch				1"		1 1/4"	
Powers (IEC)	kW	45 (w)	0.18	0.25	0.25	0.37	0.37	0.55
Phases	N.	1phase	3phase					
Std. voltage	V	230 ± 5%	400 ± 5%					
Motor protection IEC Std.	IP	21	55					
Motor sizes	IEC	Special	63A	63B	63A	71A	71A	71A

Curves 50 Hz - Actual value

Limits of specific gravity of the liquids (kg/dm³)
reported to the maximum flow for each impeller.

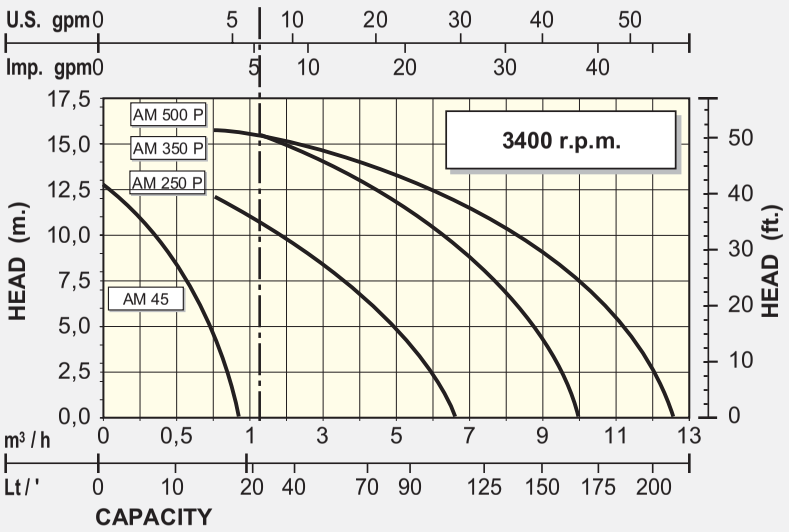
AM	Execution standard	Execution "P"
Impeller	Specific gravity	Specific gravity
A	1.1	1.4
C	1.4	1.9

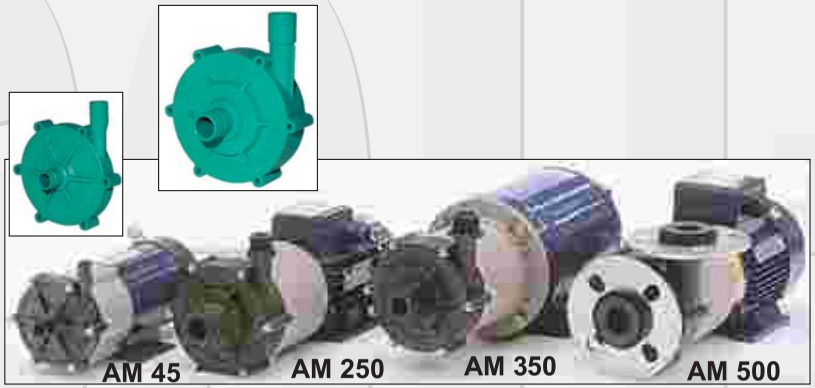
Actual r.p.m. at max. capacity

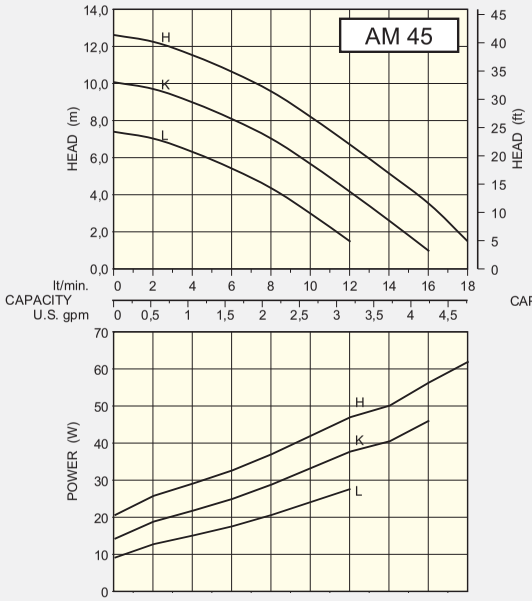
AM Pump	45	250	250 P	350	350 P	500	500 P
r.p.m.	2800	2750	2750	2750	2750	2750	2750

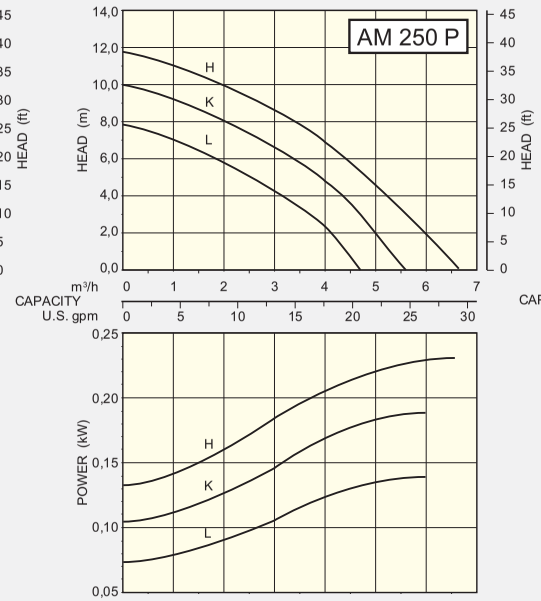
NOTES:Curves referred to: water at 20°C - Viscosity 1 °E
Power referred to specific gravity 1 kg/dm³

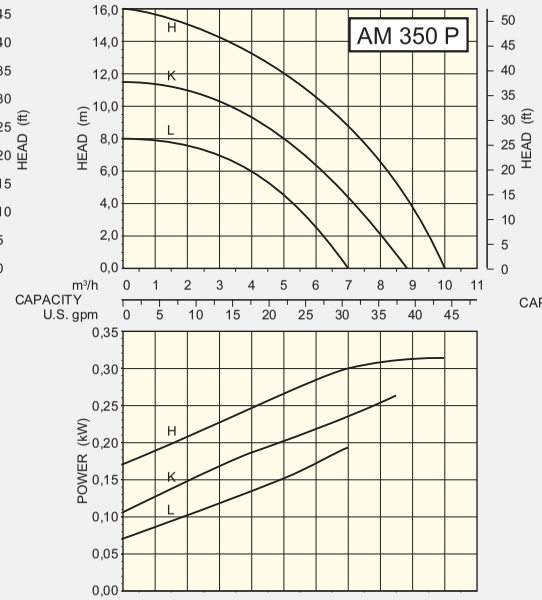
GENERAL PERFORMANCES CURVES 60 HZ

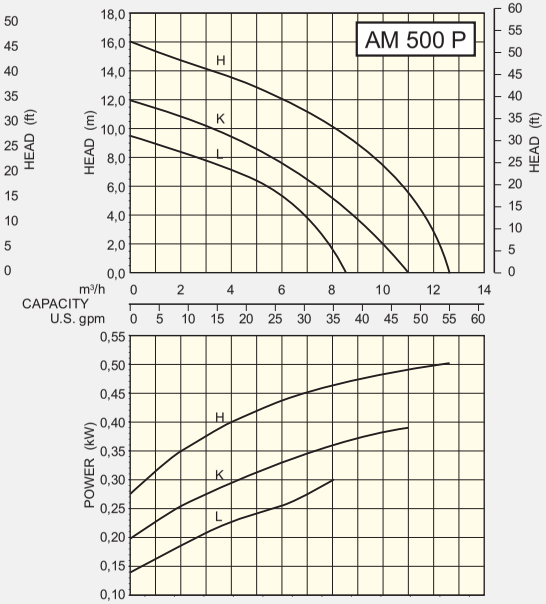












60 HZ

SPECIFICATIONS

Pumps	AM	45	250 P	350 P	500 P
Ø Inlet	BSP	1/2" m	3/4" f	1" m	1 1/4" m
Ø Outlet	BSP	3/8" m	3/4" m	1" m	1 1/4" m
Inlet and outlet flange ISO	DN	Not avaible	Not avaible	25	32
Inlet and outlet flange ANSI	Inch			1"	1/4"
Powers (IEC)	kW	45 (w)	0.25	0.37	0.55
Phases (IEC)	N.	1phase	3phase		
Std. voltage (IEC)	V	240 ± 5%	460 ± 5%		
Protezione motori IEC Std	IP	21	55		
Motor sizes	IEC	Special	63B	71A	71B

Ø Inlet	NPT	1/2" m	3/4" f	1" m	1 1/4" m
Ø Outlet	NPT	3/8" m	3/4" m	1" m	1 1/4" m
Inlet and outlet flange ANSI	Inch	Not avaible	Not avaible	1"	1 1/4"
Powers (NEMA)	HP	45 (w)	1/3	1/2	3/4
Phases (NEMA)	N.	1phase	3phase		
Std. voltage (NEMA)	V	208-230	208/230-460		
Motor sizes	NEMA	Special	56C	56C	56C

Curves 60 Hz - Actual value

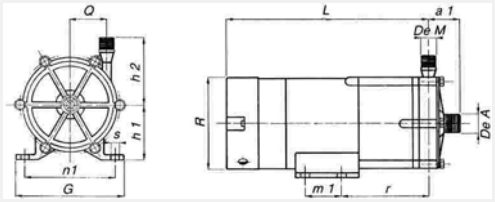
Limits of specific gravity of the liquids (kg/dm³)
reported to the maximum flow for each impeller.

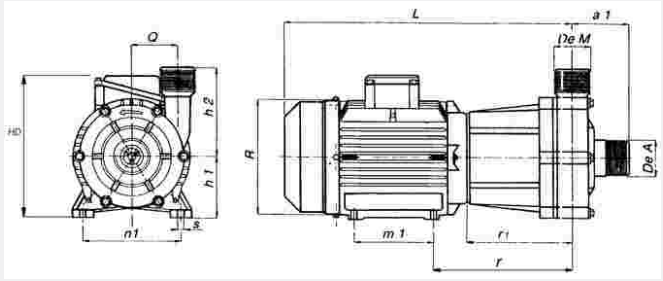
AM	Execution standard
Impeller	Specific gravity
H	1.1
K	1.4
L	1.9

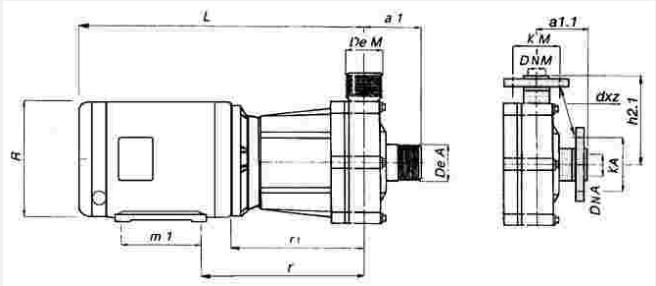
Actual r.p.m. at max. capacity

AM Pump	45	250 P	350 P	500 P
r.p.m.	3400	3200	3200	3300

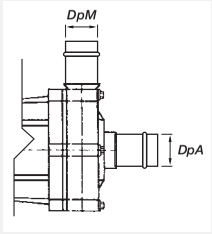
NOTES: Curves referred to: water at 20°C - Viscosity 1 °E
Power referred to specific gravity 1 kg/dm³







Model	AM 45 (mm)	AM 45 (inch)
a1	34	1 11/32
L	22.5	57/64
G	120	4 3/4
Q	40	1 9/16
h1	60	2 3/8
h2	75	2 31/32
S	ø 9.5	ø 3/8
r	90	3 9/16
R	ø 102.3	ø 4
m1	40	1 9/16
n1	100	3 15/16
Weight	4 Kg	8.8 lbs



HOSE CONNECTED				
Model	AM 45		AM 250	
	(mm)	(inch)	(mm)	(inch)
DpA	18	3/4	26	1
DpM	18	3/4	26	1

Pumps with IEC motors (mm)

AM model	250	250 P	350	350 P	500	500 P
a1	62		62		62	
a1.1	70		70		70	
L	312		312	330	330	
HD	140		140	165	165	
Q	47		49		53	
h1	63		63	71	71	
h2	100		100		100	
h2.1	108		108		108	
S	ø 6		ø 6	ø 7	ø 7	
r	160		160	170	170	
r1	123		123		123	
R	ø 125		ø 125	ø 140	ø 140	
m1	80		80		90	
n1	100		100	112	112	
KM (ISO)			85		100	
KA (ISO)			85		100	
KM (ANSI)			79		89	
KA (ANSI)			79		89	
d x z (ISO)			14 x 4		14 x 4	
d x z (ANSI)			16 x 4		16 x 4	
Peso Kg	8		8	11	11	

Pumps with NEMA motors (inches)

AM model	250 P		350 P	500 P
a1	2 7/16		2 7/16	2 7/16
a1.1	2 3/4		2 3/4	2 3/4
L	12 7/32	12 1/4	12 1/4	12 1/4
HD	5 29/32	6 1/2	6 1/2	6 1/2
Q	1 27/32		1 15/16	2 3/32
h1	3	3 1/2	3 1/2	3 1/2
h2	3 15/16		3 15/16	3 15/16
h2.1	4 1/4		4 1/4	4 1/4
S	11/32		11/32	11/32
r	7 7/8	8 3/16	8 3/16	8 3/16
r1	5 5/8		5 5/8	5 5/8
R	5 3/4		5 3/4	5 3/4
m1	2 3/4	3	3	3
n1	4 1/4	4 7/8	4 7/8	4 7/8
KM (ISO)			3 11/32	3 15/16
KA (ISO)			3 11/32	3 15/16
KM (ANSI)			3 1/8	3 1/2
KA (ANSI)			3 1/8	3 1/2
d x z (ISO)			9/16 x 4	9/16 x 4
d x z (ANSI)			5/8 x 4	5/8 x 4
Peso lbs	28,5		31	37,5

PUMP IDENTIFICATION LABEL

Ref. to the reader:

Other possibilities:

AM	250 P	GF	C	V	R	B	E	N	3
1	2	3	4	5	6	7	8	9	10
	45 250 350 500 350 P 500P	WR	A H K L	E K	X	N Z P	U	S E 0	1

1	Magnetical pump AM	6	Internal structure R o X: see "The Constructions"
2	Chosen model	7	Connections: B = BSP; N = NPT; Z = ISO, ANSI, JIS Flanged; P = Hose
3	Execution: WR or GF: see chart 2 and "The Materials"	8	Motor: E = IEC; U = NEMA
4	Impeller type: see diaphrams and ref. to specific gravity	9	Motor data: N = Std.; S = Special voltage; E = Ex-proof; 0 = Without motor
5	OR gasket: V = FPM; E = EPDM; K = FFKM	10	No. phases of the electrical: 3 = 3phase; 1 = 1phase

Ready delivery pump models

AM	250, 350, 500	WR	A	V	R	B	E	N	3
AM	250P, 350P, 500P	GF	A	V	R	B	E	N	3
AM	45	WR	A	V	R	B	–	–	–

PRODUCTION PROGRAM

K range (KG and KGS)
Installed powers:
kW 0,75÷37
Bodies materials:
GFR/PP - PVDF - PVC
Lenghts 400÷3000 mm

Production program

K range (KM and KMS)
Installed powers:
kW 0,75÷22
Bodies materials:
GFR/PP - PVDF - PVC
Lenghts 250÷2000 mm

Prototype

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

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

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

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

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

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

ARGAL CHEMICAL PUMPS