DAB
WATER•TECHNOLOGY

EVOSTA PWM

OEM HIGH-EFFICIENCY ELECTRONIC CIRCULATORS

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OEM HIGH-EFFICIENCY ELECTRONIC CIRCULATORS

in line with European directive of 2015 ErP 2009/125/CE (formerly EuP)

TECHNICAL DATA

Operating range: from 0.4 to 3.3 m3/h with head up to 6.9 metres
Liquid temperature range: from +2 °C to +95 °C
Working pressure: 10 bar (1000 kPa)
Protection rating: IP 44
Insulation class: F
Installation: with horizontal motor shaft
Standard power supply: single-phase 1x230 V~ 50/60 Hz
Pumped liquid: Clean, free from solids and mineral oils, not viscous, chemically neutral, close to the properties of water (max. glycol contents 30%)
Power supply cables and signal: standard length 0.5 m or according to customer's specifications.

APPLICATIONS

Electronic pump with low energy consumption for hot water circulation, designed to satisfy the demands of the OEM market.

ADVANTAGES

Thanks to the advanced technology employed, the permanent magnet synchronous motor and the frequency converter, the new range of EVOSTA PWM circulators ensures high efficiency in all integrated applications, bringing appreciable benefits in terms of energy saving. For this reason the new EVOSTA PWM circulator is not only in line with European directive ErP 2009/125/CE (formerly EuP), but is also ready to meet the requirements of the same standard which will come into force in August 2015 (EEI $\leq$ 0.23). The circulator features an electronic device that detects the changes demanded by the system and automatically adapts the circulator performance accordingly, always ensuring optimal efficiency and minimum energy consumption.
The EVOSTA PWM circulator is able to cover pumps with a head of 4, 5 and 6 metres with a single model. In addition, it is a product that can simplify the user's work, thanks to a single sequential setting button and a breather plug used to degas the system and unlock the motor shaft.
The EVOSTA PWM series circulator can operate in 3 different modes:

- Proportional differential pressure

- Constant differential curve

- Constant curve

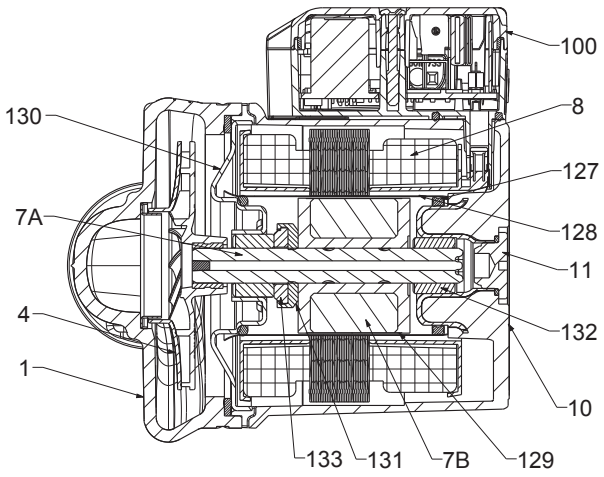
Thanks to the internal protection of the m  ump does not require any form of external protection.

CONSTRUCTION CHARACTERISTICS

Single body consisting of a cast iron hydraulic part and motor with wet rotor. Motor casing in die-cast aluminium. Technopolymer impeller. Ceramic motor shaft mounted on graphite bushings lubricated by the pumped liquid. Rotor jacket, stator jacket and closing flange in stainless steel. Ceramic thrust ring. EPDM seal rings and brass breather plug. Thanks to the internal protection of the motor, the pump does not require any form of overload protection.

MATERIALS

N°	DETAILS	MATERIALS
1	PUMP BODY	CAST IRON
4	IMPELLER	TECHNOPOLYMER
7A	MOTOR SHAFT	CERAMIC
7B	ROTOR	MAGNET
8	STATOR	-
10	MOTOR CASING	DIE CAST ALUMINIUM
11	BREATHER PLUG	BRASS
100	ELECTRONIC BOX	TECHNOPOLYMER
127	SEAL RING	EPDM
128	STATOR JACKET	STAINLESS STEEL
129	ROTOR JACKET	STAINLESS STEEL
130	CLOSING FLANGE	STAINLESS STEEL
131	THRUST RING SUPPORT	EPDM
132	BUSHINGS	GRAPHITE
133	THRUST RING	CERAMIC



- Designation index:
(example)

EVOSTA	40-70/	130	½"	PWM

EVOSTA — electronic circulator with threaded ports

40-70/ — maximum head range (dm)

130 — centre distance (mm)

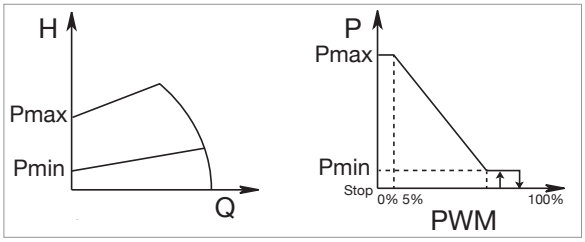
½" — = 1" ½ threaded ports
½" — = 1" threaded ports

PWM — OEM Circulator

OPERATING MODE

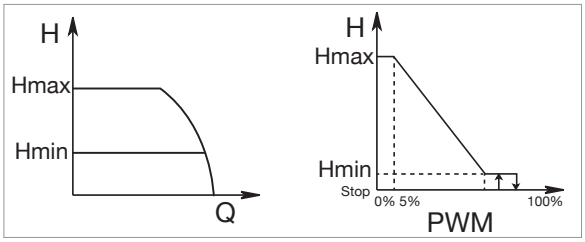
The PWM module allows the Evosta circulator to connect to an external control unit to perform the following modes:

ADJUSTMENT AT PROPORTIONAL PRESSURE



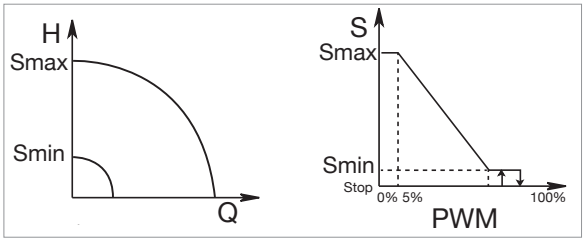
Adjustment of proportional pressure with variable setpoint between Pmin and Pmax depending on the PWM duty (default function)

ADJUSTMENT AT CONSTANT PRESSURE



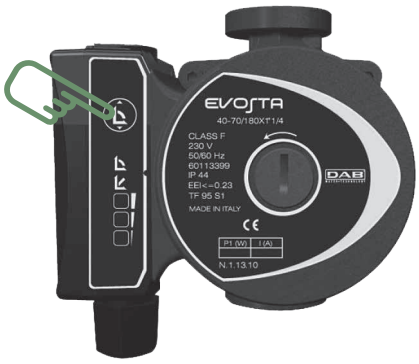
Adjustment at constant pressure with variable setpoint between Hmin and Hmax depending on the PWM duty (function present which must be set manually)

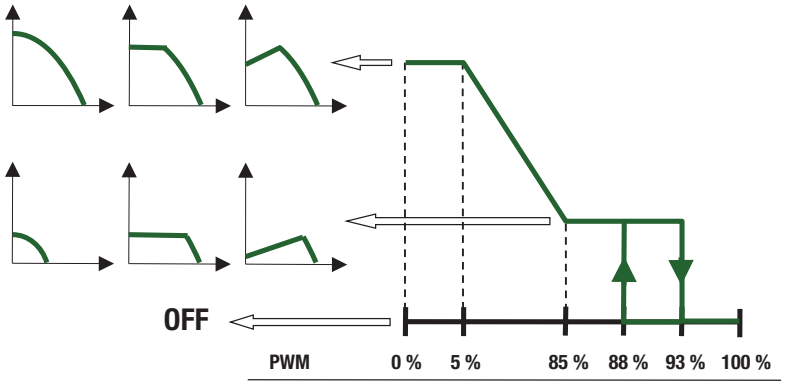
ADJUSTMENT AT CONSTANT SPEED



Adjustment at constant speed with variable setpoint between Smin and Smax depending on the PWM duty (function present which must be set manually)

- from 0 V the level is recognised INACTIVE
- from 5-15 V the level is recognised ACTIVE
- the minimum current of the active level is 5mA
- the operating frequency varies from 100 to 5000 Hz





PWM SIGNAL	CIRCULATOR OPERATION
from 0% to 5%	The pump maintains the maximum curve among those available in the set mode (constant speed / proportional pressure / constant pressure)
from 5% to 85%	The pump operates with gradually less performing curves until it reaches the minimum curve among those available at PWM = 85%
from 85% to 93%	The pump maintains the minimum curve among those available in the set mode (constant speed / proportional pressure / constant pressure)
from 93% to 100%	The pump remains off
from 100% to 88%	The pump remains off and switches on again at PWM < 88%

LED OPERATING MODE

Shown below is the behaviour of the circulator leds depending on the frequency of the PWM signal.

From PWM = 0% to PWM = 18%
All the leds are lit with a steady light and the circulator will operate with gradually less performing curves as the signal percentage value increases

From PWM = 18% to PWM = 32%
First two leds with a steady light and third led with a flashing light

From PWM = 32% to PWM = 45%
First two leds with a steady light, third led off

From PWM = 45% to PWM = 58%
First led with a steady light, second led with alternating light and third led off

From PWM = 58% to PWM = 71%
First led with a steady light, the other two off

From PWM = 71% to PWM = 93%
First led flashing and the other two off. In this situation the pump reaches the minimum available curve in the set mode at PWM=85% and maintains it until it switches off at PWM=93%

Constant Pressure

Proportional Pressure

Constant speed

ELECTRICAL CONNECTIONS

The Evosta PWM is supplied as standard with a power supply cable and signal cable 0.5 metres long:

VERSION WITH A SINGLE CABLE:

- Configuration with single power + signal cable 5 X AWG22 comprising 5 wires for power supply + signal, with 80°C and maximum capacity 2 A

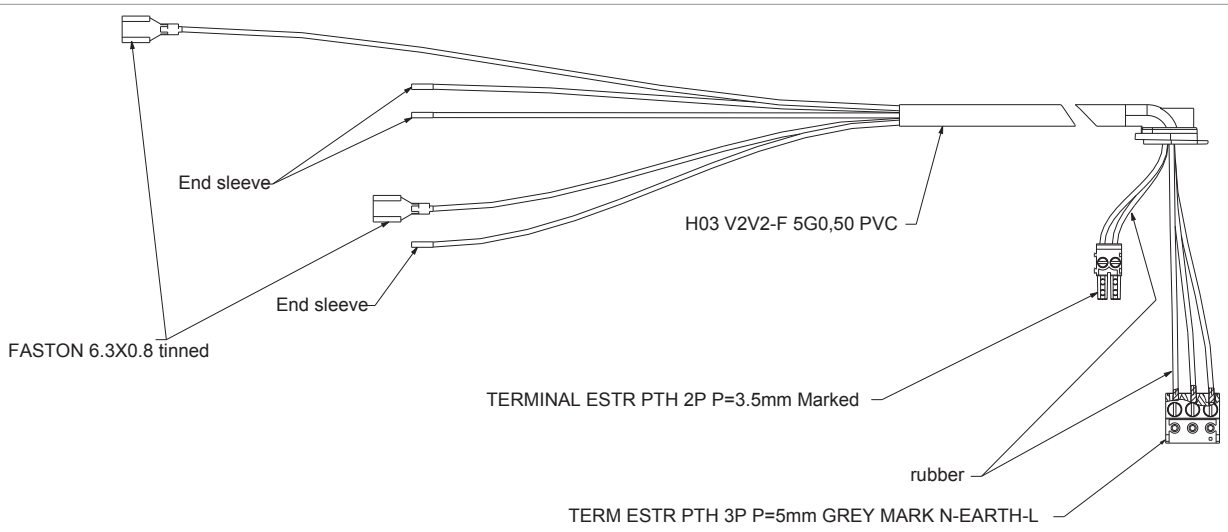
VERSION WITH TWO CABLES:

- POWER SUPPLY: cable type H03 V2V2-F 3G0,50 PVC (harmonised cable with rated V Uo/U of 300/300V; PVC insulation and sheath for temperatures of 90°C, flexible, composed of 3 leads of which 1 yellow-green with section 0.5 mm2 each).
For uses up to 80°C the max. current capacity is 3 A.

- SIGNAL: cable type 2 X AWG22 PVC (American Wire Gauge -AWG- cable composed of 2 leads with section 0.35 mm2)

SPECIAL VERSION ON REQUEST:

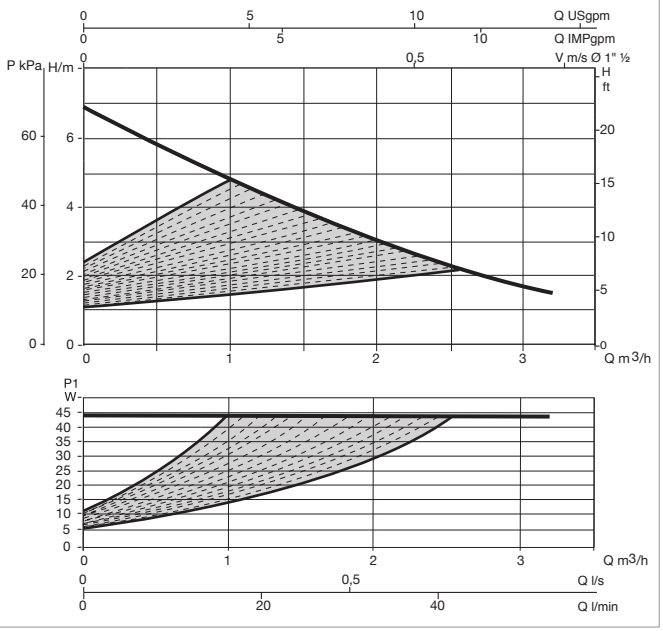
- Cable length, type, dimensions and temperature resistance according to customer's specifications.



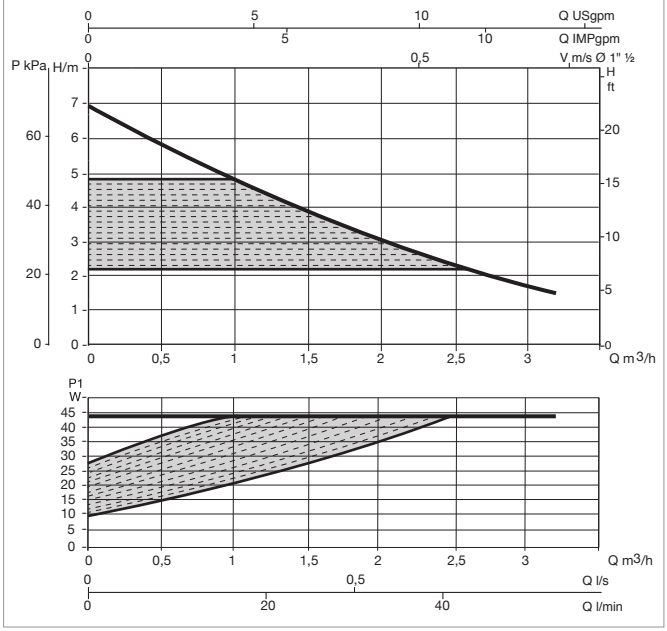
EVOSTA PWM - ELECTRONIC CIRCULATORS FOR DOMESTIC HEATING SYSTEMS – SINGLE WITH UNIONS

Liquid temperature range: from +2°C to +95°C - Maximum working pressure: 10 bar (1000 kPa)

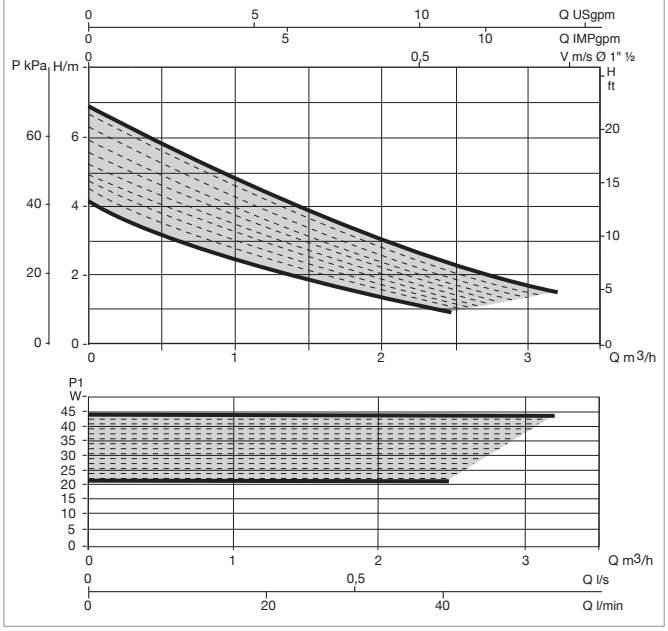
CURVE WITH PROPORTIONAL DIFFERENTIAL

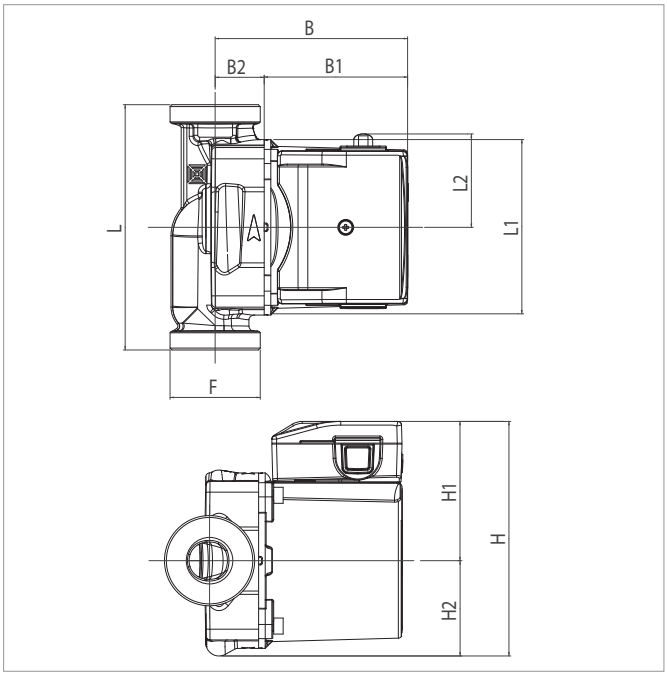


CURVE WITH CONSTANT SPEED



CURVE WITH CONSTANT DIFFERENTIAL PRESSURE





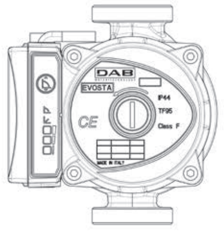
The performance curves are based on kinematic viscosity values = 1 mm2/s and density 1000 kg/m3. Curve tolerance according to ISO9906.

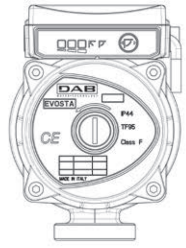
MODEL	CENTER DISTANCE mm	UNIONS ON REQUEST		VOLTAGE 50 Hz	P1 MAX W	In A	EEI *	MINIMUM SUCTION PRESSURE	
		STANDARDIZED	SPECIAL					t°	90°
EVOSTA 40-70/130 PWM	130	1" F	¾" F - 1¼" M	1x230 V ~	6 44	0,08 0,38	EEI ≤ 0,23	m.c.a.	10
EVOSTA 40-70/130 1/2" PWM	130	½" F	-	1x230 V ~	6 44	0,08 0,39	EEI ≤ 0,23	m.c.a.	10
EVOSTA 40-70/180 PWM	180	1" F	¾" F - 1¼" M	1x230 V ~	6 44	0,08 0,38	EEI ≤ 0,23	m.c.a.	10

* The reference parameter for the most efficient circulators is EEI ≤ 0.20

MODEL	L	L1	L2	B	B1	B2	H	H1	H2	F	PACK DIMENSIONS			VOLUME m3	WEIGHT Kg
											L	B	H		
EVOSTA 40-70/130 PWM	130	93	59	102,5	76,5	26	124	73,5	50,5	1"1/2	135	135	150	0,0027	2,4
EVOSTA 40-70/130 1/2" PWM	130	93	59	102,5	76,5	26	124	73,5	50,5	1"	135	135	150	0,0027	2,4
EVOSTA 40-70/180 PWM	180	93	59	102,5	76,5	26	124	73,5	50,5	1"1/2	130	190	150	0,0037	2,8

CONFIGURATIONS OF TERMINAL BOARD BOX AND CABLE OUTLET


STANDARD CONFIGURATION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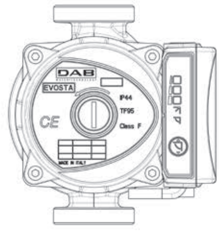
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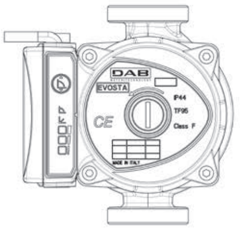
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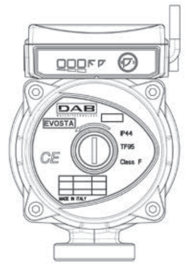
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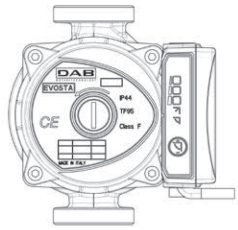
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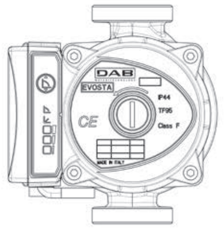
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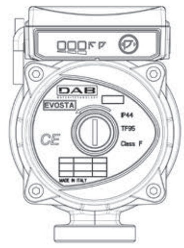
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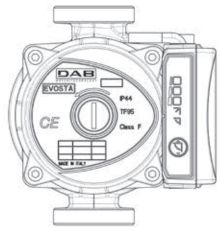
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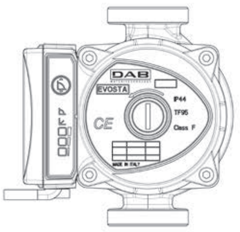
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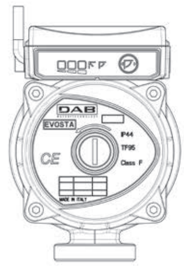
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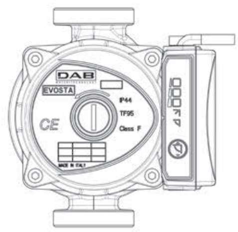
ON REQUEST

THE ECODESIGN DIRECTIVE (2009/125/EU)

01. What is it?

With the EcoDesign Directive, the European Community proposes the decrease of environmental impact and the promotion of sustainable development. This strategy guarantees both an adequate supply of energy and the achieving of really sustainable development. The Directive's objectives go beyond simple provisions on energy efficiency, going so far as to consider the cost and impact of the whole life cycle of the product. Whether customers are end users or professionals, they will benefit not only from better products and a healthier environment, but also from the economic advantage, made possible through the rationalisation of energy resources.
The EcoDesign Directive defines a general overview with which manufacturers must comply. Its aims are to increase energy efficiency and reduce the negative impact of their products on the environment during their whole life cycle.

02. Whom does it concern?

The EcoDesign Directive concerns both manufacturers and importers. Dealers and end users are therefore excluded from the field of application. Manufacturers are responsible for making products designed in such a way as to minimise their environmental impact. If the manufacturer cannot be identified, the importer becomes the person responsible for product conformity with regard to the EcoDesign Directive and the consequent implementing measures. In any case the importer must keep and make available the Declaration of Conformity and the technical documentation.

03. What products?

La dThe EcoDesign Directive concerns a long list of finished products and, more precisely, in the world of electropumps it will involve the following families of products:
electric motors designed for operating as normalised/integrated, circulators for heating with a wet rotor and some types of centrifugal pumps.
The normalised/integrated electric motors affected are those from 0.75 to 375 KW, three-phase, 2-4-6 pole, surface motors, with supply voltage up to 1000 V and designed to operate in continuous duty (S1). Among DAB products, the categories of electropumps involved are centrifugal and/or self-priming surface pumps, normalised monobloc pumps, vertical pumps and in-line pumps.
As regards the circulator family, the directive applies to wet rotor/integrated circulators for heating/conditioning/solar applications with powers up to 2500 W.
In 2012 the EcoDesign Directive was integrated with the implementation of directive no. 547/2012, thanks to which the Minimum Efficiency Index (MEI) was introduced, a hydraulic efficiency index for pumps with axial intake, in-line pumps, multistage vertical pumps, and submerged pumps.
Circulator efficiency is measured with the Energy Efficiency Index (EEI): the lower the index, the higher the efficiency. Since 01.01.2013 it has no longer been possible to market circulators that do not have an Energy Efficiency Index of at least 0.27 or lower. As from 01.08.2015 the wet rotor circulators on the market must have an E.E.I. of 0.23 or lower.

L'efficienza dei circolatori viene misurata attraverso l'indice EEI, Energy Efficiency Index, il quale più è basso e migliore è l'efficienza. A partire da 01/01/2013 non è stato più possibile commericializzare circolatori che non abbiano un Energy Efficiency Index almeno minore o uguake a 0,27. A partire dal 01.08.2015 i circolatori a rotore bagnato in commercio dovranno presentare un EEI minore o uguale a 0,23.

NOTES

DAB
WATER•TECHNOLOGY
Via Marco Polo, 14 - 35035 Mestrino (PD) Italy - Tel. +39.049.5125000 - Fax +39.049.5125950
www.dabpumps.com

DAB PUMPS SELECTOR

On-line product selection

DAB PUMPS LTD.
Unit 4 and 5, Stortford Hall Industrial Park,
Dunmow Road,
Bishops Stortford,
Herts
CM23 5GZ - UK
salesuk@dwtgroup.com
Tel. +44 1279 652 776
Fax +44 1279 657 727

DAB PUMPS B.V.
Brusselstraat 150
B-1702 Groot-Bijgaarden - Belgium
info.belgium@dwtgroup.com
Tel. +32 2 4668353
Fax +32 2 4669218

DAB PUMPS B.V.
Albert Einsteinweg, 4
5151 DL Drunen - Nederland
info.netherlands@dwtgroup.com
Tel. +31 416 387280
Fax +31 416 387299

DAB PUMPEN DEUTSCHLAND GmbH
Tackweg 11
D - 47918 Tönisvorst - Germany
info.germany@dwtgroup.com
Tel. +49 2151 82136-0
Fax +49 2151 82136-36

DAB PUMPS IBERICA S.L.
Avenida de Castilla nr.1 Local 14
28830 - San Fernando De Henares - Madrid
Spain
info.spain@dwtgroup.com
Tel. +34 91 6569545
Fax: +34 91 6569676

DAB PRODUCTION HUNGARY KFT.
H-8800
Nagykanizsa, Buda Ernó u.5
Hungary
Tel. +36 93501700

DAB PUMPS POLAND Sp. z o.o.
Mokotow Marynarska
ul. Postępu 15C
02-676 Warszawa - Poland
Tel. +48 223 81 6085

DAB UKRAINE Representative Office
Regus Horizon Park
4 M. Hrinchenka St, suit 147
03680 Kiev - Ukraine
Tel. +38 044 391 59 43

OOO DWT GROUP
Novgorodskaya str, 1, bld G, office 308
127576 Moscow - Russia
info.russia@dwtgroup.com
Tel. +7 495 122 00 35
Fax +7 495 122 00 36

DAB PUMPS INC.
3226 Benchmark Drive
Ladson, SC 29456 - USA
info.usa@dwtgroup.com
Tel. 1-843-824-6332
Toll Free 1-866-896-4DAB (4322)
Fax 1-843-797-3366

DWT SOUTH AFRICA
Podium at Menlyn,
3rd Floor, Unit 3001b, 43 Ingersol Road,
C/O Lois and Atterbury street,
Menlyn, Pretoria, 0181 - South-Africa
info.sa@dwtgroup.com
Tel. +27 12 361 3997
Fax +27 12 361 3137

DAB PUMPS CHINA
No.40 Kaituo Road, Qingdao Economic & Technological
Development Zone
Qingdao City, Shandong Province - China
PC: 266500
info.china@dwtgroup.com
Tel. +8653286812030-6270
Fax +8653286812210

DAB PUMPS DE MÉXICO, S.A. DE C.V.
Av Gral Álvaro Obregón 270, oficina 355
Hipódromo, Cuauhtémoc 06100
México, D.F.
Tel. +52 55 6719 0493

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