

**50 Hz**



# Ecocirc<sup>®</sup>, EB, EBV, TLCB, TLCHB Series

WET ROTOR CIRCULATORS FOR  
HEATING, COOLING AND SANITARY SYSTEMS

**ErP 2009/125/EC**

Cod. 191007561 Rev.A Ed.03/2013

 **LOWARA**  
a xylem brand



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## Ecocirc®, EB, EBV, TLCB, TLCHB SERIES PRODUCT RANGE CHART

TYPE	Version		Power supply		Pump coupling		Temperature of pumped liquid		Ambient temperature	Protection class
	Single	Twin	Single-phase 230 V 50 Hz	Single-phase 200-240 V 50/60 Hz	Threaded	Flanged	+2°C ÷ +65°C	-10°C ÷ +110°C	Max 40°C	IP 44
Ecocirc 15-4/130	•			•	•			•	•	•
Ecocirc 15-6/130	•			•	•			•	•	•
Ecocirc 20-4/130	•			•	•			•	•	•
Ecocirc 20-6/130	•			•	•			•	•	•
Ecocirc 25-4/130	•			•	•			•	•	•
Ecocirc 25-4/180	•			•	•			•	•	•
Ecocirc 25-6/130	•			•	•			•	•	•
Ecocirc 25-6/180	•			•	•			•	•	•
Ecocirc 32-4/180	•			•	•			•	•	•
Ecocirc 32-6/180	•			•	•			•	•	•
<b>SANITARY</b>										
EB 15-1/65 R	•		•		•		•		•	•
EB 15-1/65 RU	•		•		•		•		•	•
EB 15-1/110 R	•		•		•		•		•	•
EB 15-1/110 RU	•		•		•		•		•	•
EBV 15-1/65	•		•		•		•		•	•
EBV 15-1/65 U	•		•		•		•		•	•
EBV 15-1/110	•		•		•		•		•	•
EBV 15-1/110 U	•		•		•		•		•	•
EBV 15-3/65	•		•		•		•		•	•
EBV 15-3/110	•		•		•		•		•	•
TLCB 15-1.5	•		•		•		•		•	•
TLCB 15-3	•		•		•		•		•	•
TLCB 15-4	•		•		•		•		•	•
TLCB 15-6	•		•		•		•		•	•
TLCB 20-1.5M	•		•		•		•		•	•
TLCB 20-3M	•		•		•		•		•	•
TLCB 20-4M	•		•		•		•		•	•
TLCB 20-6M	•		•		•		•		•	•
TLCB 25-1.5	•		•		•		•		•	•
TLCB 25-3	•		•		•		•		•	•
TLCB 25-4	•		•		•		•		•	•
TLCB 25-4L	•		•		•		•		•	•
TLCB 25-6L	•		•		•		•		•	•
TLCHB 20-7L	•		•		•		•		•	•
TLCHB 20-8L	•		•		•		•		•	•
TLCHB 20-10L	•		•		•		•		•	•
TLCHB 20-12L	•		•		•		•		•	•
TLCHB 25-7L	•		•		•		•		•	•
TLCHB 25-8L	•		•		•		•		•	•
TLCHB 25-10L	•		•		•		•		•	•
TLCHB 25-12L	•		•		•		•		•	•

## High efficiency circulators for domestic heating

### Ecocirc® Series



### MARKET SECTORS

RESIDENTIAL.

### APPLICATIONS

- Water circulation in heating and air conditioning systems.
- Refurbishment or extension of existing systems.
- Recommended for facilities fitted with thermostatic valves.
- Single-family houses or apartment buildings.
- Floor heating systems.

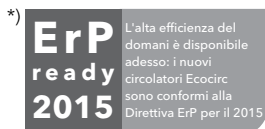
### SPECIFICATIONS

#### PUMP

- **Flow rate:** up to 3,2 m<sup>3</sup>/h.
- **Head:** up to 5,7 m.
- **Maximum power consumption:** 23 W (for the 4 m model) and 42 W (for the 6 m model).
- **Temperature of pumped liquid:** -10°C ÷ +110°C.  
Avoid condensation and ice formation.  
Maximum 20% glycol and water mixture.  
For glycol quantities higher than 20%, hydraulic performances must be checked.
- **Maximum operating pressure:** 10 bar (PN 10).
- **Rotor assembly group:** made of stainless steel/composite material/carbon.

#### MOTOR

- Permanent magnet EC (Electronically Commutated) type motor with spherical rotor/stator.
- Wet rotor with a single spherical ceramic/carbon bearing.
- Integrated motor protection; no external protection required.
- Single-phase 200-240 V 50/60 Hz power supply.
- Variable-speed motor, with automatic speed adjustment based on system requirement.
- **Insulation class** F (155°C).
- **Protection class** IP 44.



\*) model 15-6/130 excluded.

## Ecocirc® Series

### CONSTRUCTION CHARACTERISTICS

- **Improved hydraulics to improved efficiency:** The very latest computer simulations have further optimized the pump housing and the impeller. The cast iron pump housing is cathaphoresis coated completely and is therefore resistant to corrosion.
- **The spherical rotor.** The permanent magnet rotor/impeller unit is the only moving part. Spherical motor pumps are shaftless, and therefore whisper quiet over the whole lifetime. In case of an indicated rotor blocking, emergency software shakes and vibrates the rotor to avoid further blocking.
- The revolutionary **Anti-Block-Technology** allows to separate the magnetic chamber from the flow, preventing magnetite and sludge to block and damage the pump. Blocking up, even in very old, open systems is impossible by our pump design.
- Easy to control, **Two in one control:** Step-less manually control with constant speed, displayed by a white LED, or alternatively automatic differential pressure, displayed by a blue LED.
- **Optimized motor technology:** Doubled electric windings combined with the latest 32 Bit processor technology - that also makes the Ecocirc® even more efficient.
- **Overtemperature protection feature** that slows down the circulator in case the temperature of the electronic module is too high and shuts it down when temperature rises above the safety limit. The circulator will automatically restart after having cooled down.
- Always **easy to access:** The screw ring design results in a pump motor that can be rotated in any position around the 360°circle. The electrical connection as well as the control knob is therefore easy to access.
- 2 metres length **three cores cable** (3G0.75) for connection to the single-phase power source.
- **Automatic air purge:** Quick automatic air-venting-mode for a safe operation.
- According to EN standards 60335-1, 60335-2-51, 55014-1, 55014-2, 16297-1, 16297-2.

### CONTROL MODES

- Automatic regulation: the pump automatically adjusts the working conditions based on the requirement of the system. When the pump detects a decrease in the flow, the inverter reduces the differential pressure of the pump until it reaches the required head.

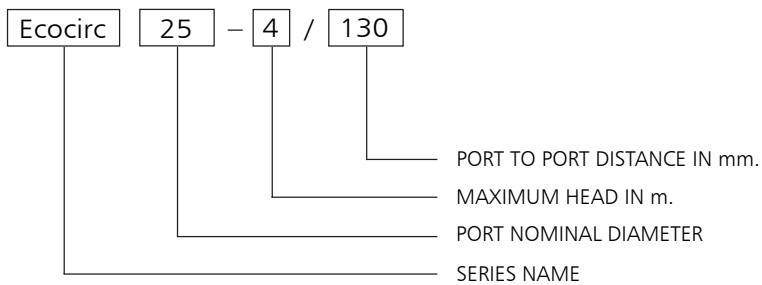
### ACCESSORIES

- Pipe unions.
- Insulation shell.

### INSTALLATION

- Suitable for installation in vertical or horizontal piping, in this last case not with the motor housing upward.

## Ecocirc® SERIES IDENTIFICATION CODE



EXAMPLE : Ecocirc 25-4/130

Electronic circulator of the Ecocirc series, port nominal diameter = 25, max head = 4 m, with port to port distance 130 mm.

## TABLE OF MATERIALS

PART	MATERIAL
Pump body	Cast iron ( EN-GJL-200 ) cataphoretically coated
Rotor assembly group	Stainless steel
	Composite material
	Carbon
Bearing	Ceramics
Gaskets	EPDM Rubber
Motor housing	Aluminum ( AlSi11Cu2 )
Screw ring	Aluminum ( AlMgSi05 )

ecocirc-50-en\_a\_tm

### Regulations (EC) n. 641/2009 and (EU) n. 622/2012 – Annex I – point 2 (Product information requirements)

- Energy efficiency index: see the EEI column in the tables in the Hydraulic performance section.
- "The benchmark for most efficient circulators is  $EEI \leq 0,20$ ".
- Information relevant for disassembly, recycling or disposal at end-of-life: observe the current laws and by-laws governing sorted waste disposal. Consult the product operating manual.
- Information for circulators specifically designed to potable water uses: note not applicable to these products.

## Ecocirc...4/ SERIES HYDRAULIC PERFORMANCE TABLE (CONSTANT SPEED)

PUMP TYPE	EEI ≤	POWER ABSORBED		SPEED	Q = DELIVERY											
		MIN W	MAX W		1/s 0	0,06	0,11	0,17	0,22	0,28	0,31	0,44	0,56	0,69		
230V 50Hz	(1)				H = TOTAL HEAD METRES COLUMN OF WATER											
					m <sup>3</sup> /h 0	0,2	0,4	0,6	0,8	1,0	1,1	1,6	2,0	2,5		
Ecocirc 15-4/130	0,22	4	23	min	0,5	0,4	0,4	0,4	0,3	0,2	0,2					
Ecocirc 20-4/130	0,21															
Ecocirc 25-4/130	0,21					max	3,6	3,4	3,1	2,9	2,7	2,5	2,4	1,8	1,3	0,5
Ecocirc 25-4/180	0,21															
Ecocirc 32-4/180	0,21															

Performances according to standards EN 16297-2.

(1) Energy efficiency index.

ecocirc4-c-50-en\_b\_th

## (PROPORTIONAL PRESSURE)

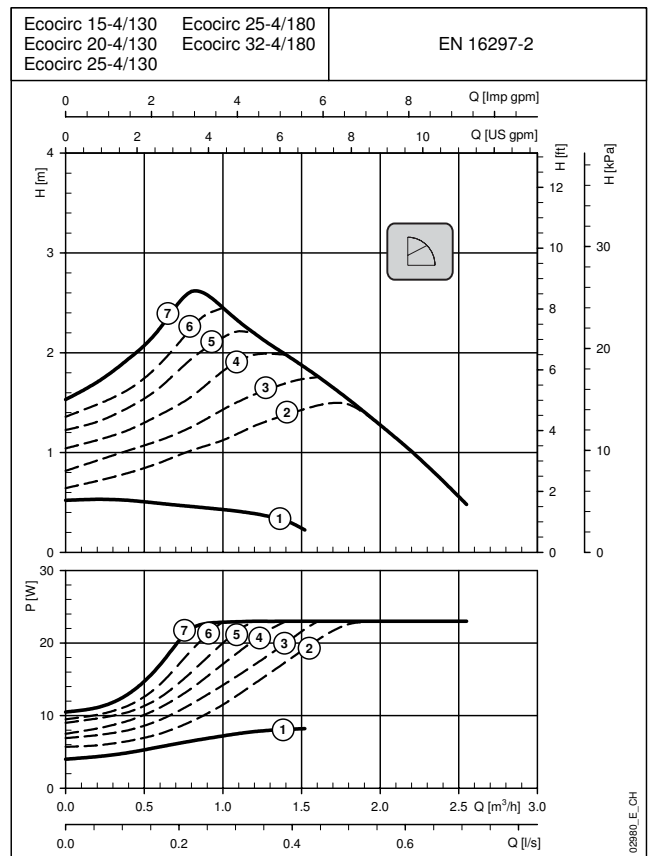
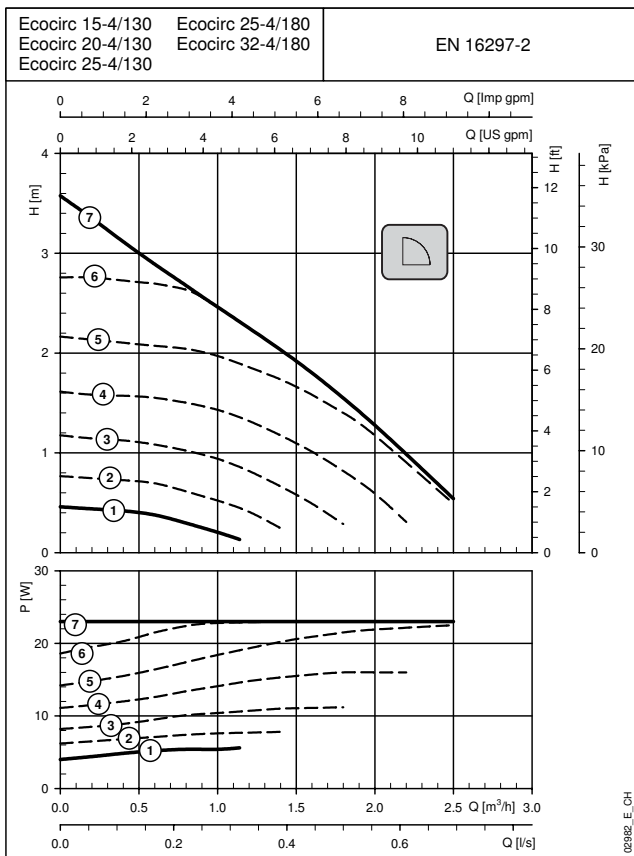
PUMP TYPE	EEI ≤	POWER ABSORBED		CURRENT ABSORBED		SPEED	Q = DELIVERY												
		MIN W	MAX W	MIN A	MAX A		1/s 0	0,06	0,11	0,17	0,22	0,28	0,33	0,44	0,56	0,69			
230V 50Hz	(1)						H = TOTAL HEAD METRES COLUMN OF WATER												
							m <sup>3</sup> /h 0	0,2	0,4	0,6	0,8	1,0	1,2	1,6	2,0	2,5			
Ecocirc 15-4/130	0,22	4	23	0,09	0,28	min	0,52	0,53	0,52	0,49	0,45	0,43	0,39						
Ecocirc 20-4/130	0,21																		
Ecocirc 25-4/130	0,21							max	1,53	1,70	1,94	2,25	2,62	2,45	2,20	1,75	1,28	0,55	
Ecocirc 25-4/180	0,21																		
Ecocirc 32-4/180	0,21																		

Performances according to standards EN 16297-2.

(1) Energy efficiency index.

ecocirc4-p-50-en\_b\_th

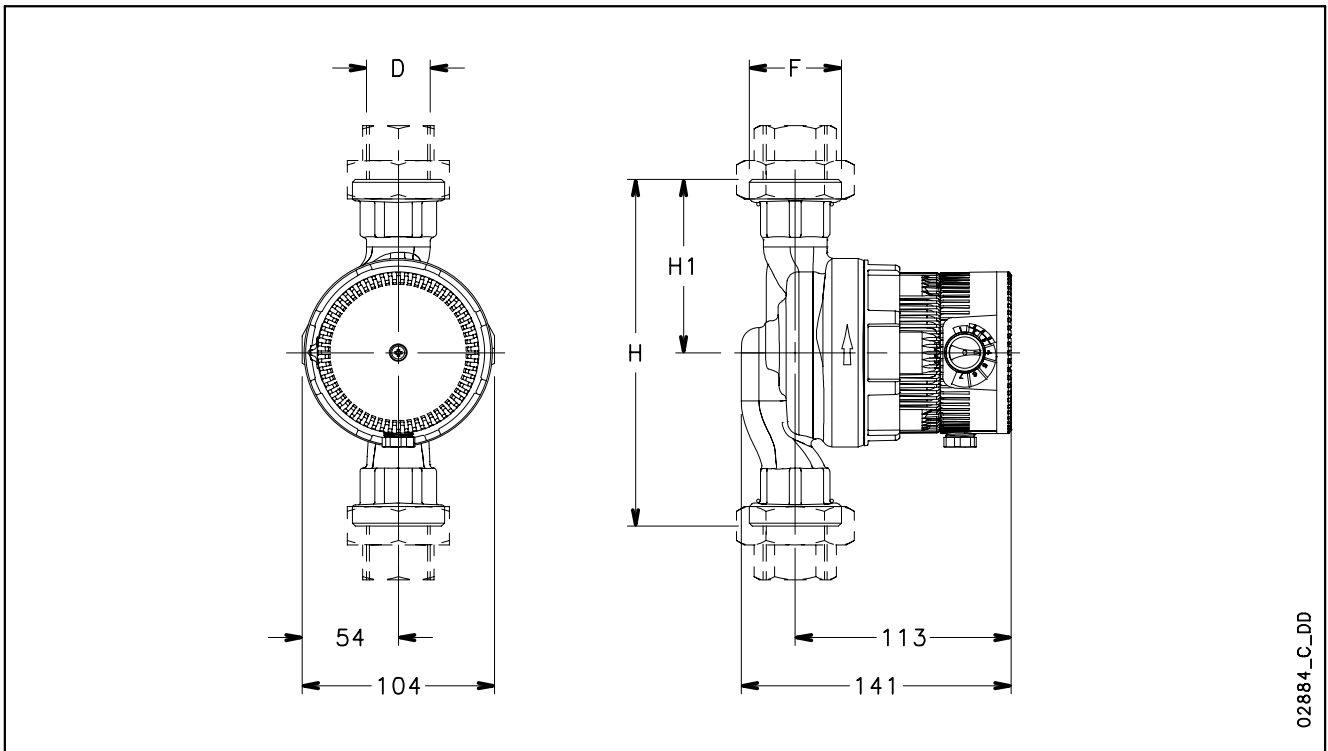
## SINGLE-PHASE OPERATING CHARACTERISTICS



These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .  
Pump operates steplessly. Lines correspond to knob settings and are for reference only.



**Ecocirc...4/ SERIES**  
**DIMENSIONS AND WEIGHTS**



02884\_C\_DD

**DIMENSIONS AND WEIGHTS TABLE**

PUMP TYPE	DIMENSIONS (mm)		D	F	DN	WEIGHT kg
	H	H1				
Ecocirc 15-4/130	130	65	Rp 1/2"	G 1"	15	1,9
Ecocirc 20-4/130	130	65	Rp 3/4"	G 1 1/4"	20	2,0
Ecocirc 25-4/130	130	65	Rp 1"	G 1 1/2"	25	2,1
Ecocirc 25-4/180	180	90	Rp 1"	G 1 1/2"	25	2,4
Ecocirc 32-4/180	180	90	Rp 1 1/4"	G 2"	32	2,4

ecocirc4-2p50-en\_a\_td

## Ecocirc...6/ SERIES HYDRAULIC PERFORMANCE TABLE (CONSTANT SPEED)

PUMP TYPE	EEI ≤	POWER ABSORBED		SPEED	Q = DELIVERY											
		MIN W	MAX W		l/s 0	0,06	0,11	0,17	0,22	0,31	0,44	0,56	0,69	0,89		
230V 50Hz	(1)				H = TOTAL HEAD METRES COLUMN OF WATER											
Ecocirc 15-6/130	0,26*	4	42	min	0,5	0,5	0,4	0,4	0,3	0,1						
Ecocirc 20-6/130	0,23															
Ecocirc 25-6/130	0,23					max	5,9	5,6	5,3	5,0	4,7	4,3	3,6	3,0	2,1	0,9
Ecocirc 25-6/180	0,23															
Ecocirc 32-6/180	0,23															

Performances according to standards EN 16297-2.

(1) Energy efficiency index.

\* ErP ready 2013

ecocirc6-c-50-en\_b\_th

## (PROPORTIONAL PRESSURE)

PUMP TYPE	EEI ≤	POWER ABSORBED		CURRENT ABSORBED		SPEED	Q = DELIVERY											
		MIN W	MAX W	MIN A	MAX A		l/s 0	0,06	0,11	0,17	0,22	0,28	0,42	0,56	0,69	0,83		
230V 50Hz	(1)						H = TOTAL HEAD METRES COLUMN OF WATER											
Ecocirc 15-6/130	0,26*	4	42	0,09	0,47	min	0,54	0,54	0,54	0,54	0,54	0,54	0,25					
Ecocirc 20-6/130	0,23																	
Ecocirc 25-6/130	0,23							max	2,86	3,09	3,38	3,70	4,05	4,38	3,70	2,95	2,15	1,25
Ecocirc 25-6/180	0,23																	
Ecocirc 32-6/180	0,23																	

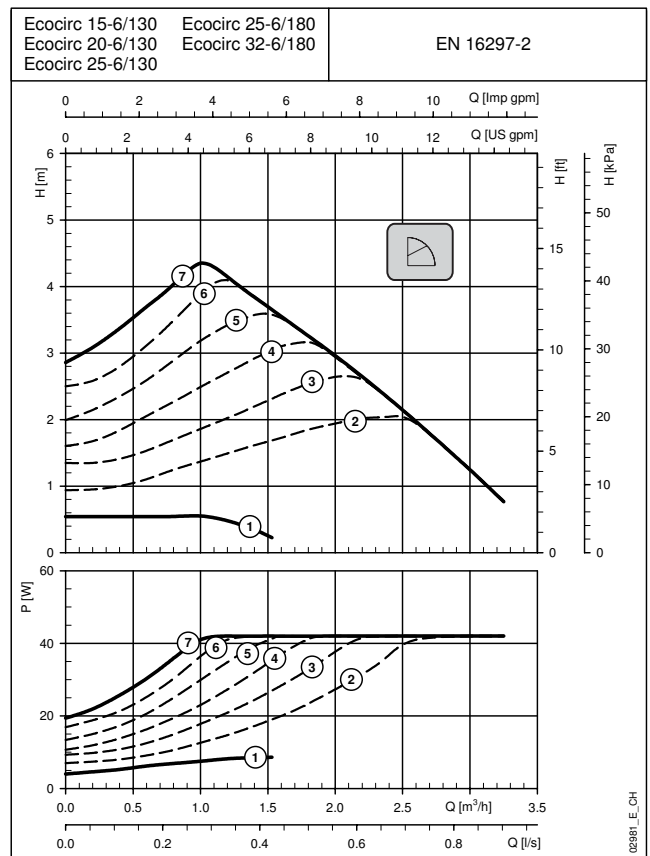
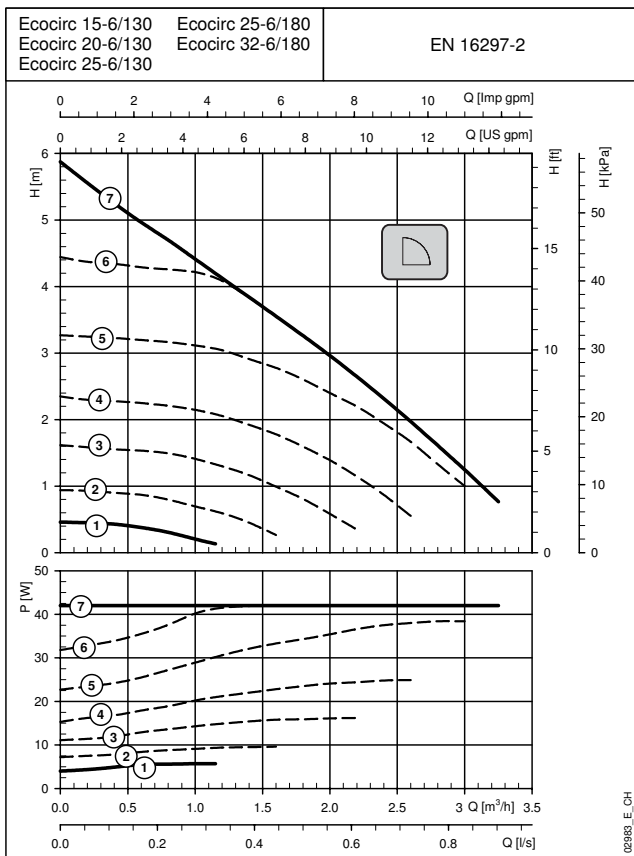
Performances according to standards EN 16297-2.

(1) Energy efficiency index.

\* ErP ready 2013

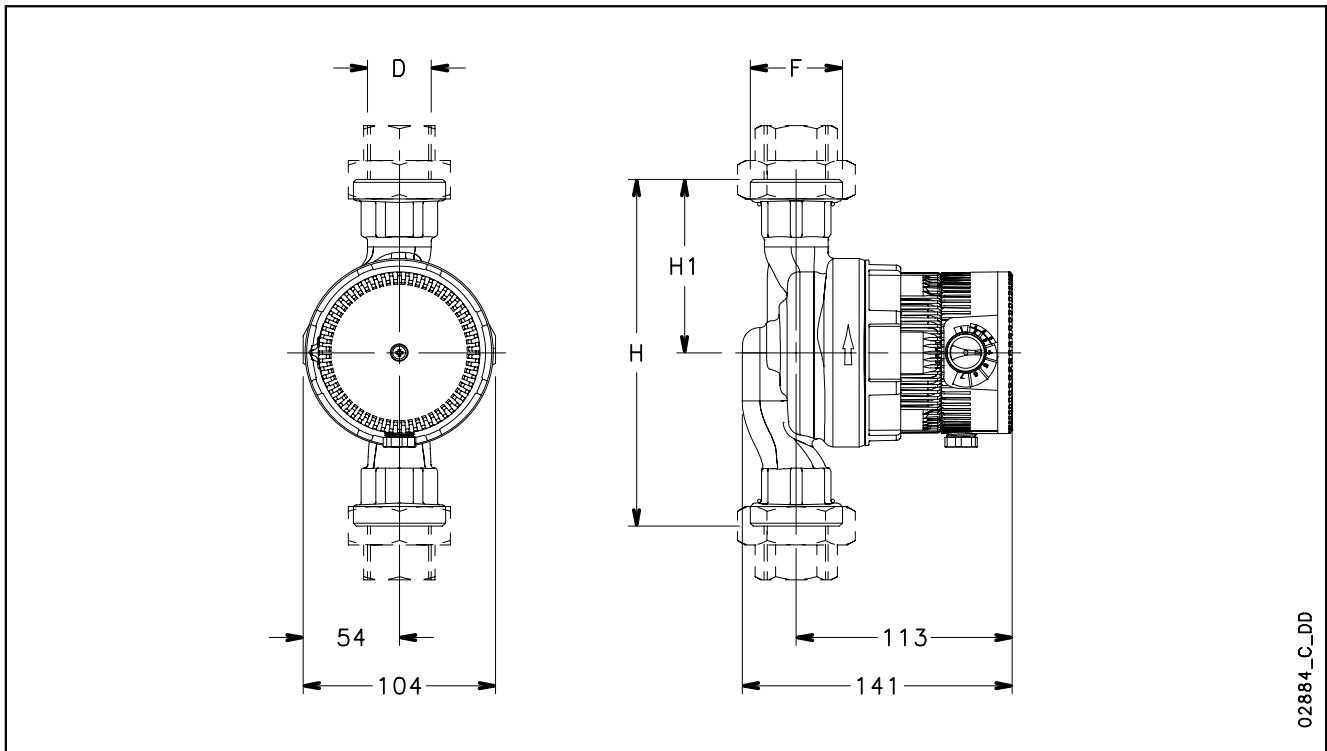
ecocirc6-p-50-en\_b\_th

## SINGLE-PHASE OPERATING CHARACTERISTICS



These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .  
Pump operates steplessly. Lines correspond to knob settings and are for reference only.

**Ecocirc...6/ SERIES**  
**DIMENSIONS AND WEIGHTS**



02884\_C\_DD

**DIMENSIONS AND WEIGHTS TABLE**

PUMP TYPE	DIMENSIONS (mm)		D	F	DN	WEIGHT kg
	H	H1				
Ecocirc 15-6/130	130	65	Rp 1/2"	G 1"	15	1,9
Ecocirc 20-6/130	130	65	Rp 3/4"	G 1 1/4"	20	2,0
Ecocirc 25-6/130	130	65	Rp 1"	G 1 1/2"	25	2,1
Ecocirc 25-6/180	180	90	Rp 1"	G 1 1/2"	25	2,4
Ecocirc 32-6/180	180	90	Rp 1 1/4"	G 2"	32	2,4

ecocirc6-2p50-en\_a\_td



## High efficiency electronic sanitary circulators

### MARKET SECTORS

RESIDENTIAL.

### APPLICATIONS

- Hot water circulation.

### EB, EBV Series

### SPECIFICATIONS

#### PUMP

- **Flow rate:** up to 1 m<sup>3</sup>/h.
- **Head:** up to 3 m.
- **Temperature of pumped liquid:** +2°C ÷ +65°C.  
Avoid condensation and ice formation.
- **Maximum operating pressure:** 10 bar (PN 10).
- **Rotor assembly group:** made of stainless steel/composite material/carbon.

#### MOTOR

- Permanent magnet EC (Electronically Commutated) type motor with spherical rotor/stator.
- Wet rotor with a single spherical ceramic/carbon ball bearing.
- Integrated motor protection; no external protection required.
- Single-phase 200-240V 50/60 Hz power supply.
- Motor type:
  - Fixed speed for temperature sensor and temperature sensor + timer models;
  - Variable speed with automatic regulation for basic and timer models.
- **Insulation class** F (155°C).
- **Protection class:** IP 44 no-timer models.  
IP 42 timer models.



## **EB, EBV Series**

### **CONSTRUCTION CHARACTERISTICS**

- Electric circulator pumps for domestic hot water applications at maximum temperature of 65°C, at maximum hardness of 25° f (14°dH).
- Brass pump body for direct installation onto piping for 1/2" and 1/2" - 1" 1/4" threaded union connections.
- The design is based on spherical rotor/stator technology.  
This means that:
  - The only moving part is the spherical rotor/impeller unit that turns on a hard ceramic ball.
  - Shaft seals or conventional bearing bushings with a shaft have been eliminated for a single self realigning spherical bearing.
- Blockage free rotor: the spherical motor principle does not require a manual unblocking device thanks to the small touching surface of the bearing on the ball. The starting torque required is minimal.
- Models available:
  - Fixed speed (EB.. models)
    - Temperature sensor to maintain the water onto piping at the required temperature . The circulator automatically turns off when the water temperature achieves the value. Temperature can be set up between 20°C and 70°C by the selector on the motor.
    - Temperature sensor and timer for more energy saving.
  - Variable speed (EBV.. models):
    - Performances optimized by system requests. Speed set up is done by a selector on the motor by 7 different positions. At 2 and 3 positions (ECO) the consumption is especially low.
    - Timer as a standard in order to daily set up the performances.
- 110 mm port-to-port length models are fitted out with non-return and shut off valve. 65 mm port-to-port length models are fitted out with a non-return valve to install to supply connection.
- According to EN standards 60335-1, 60335-2-51, 55014-1, 55014-2.

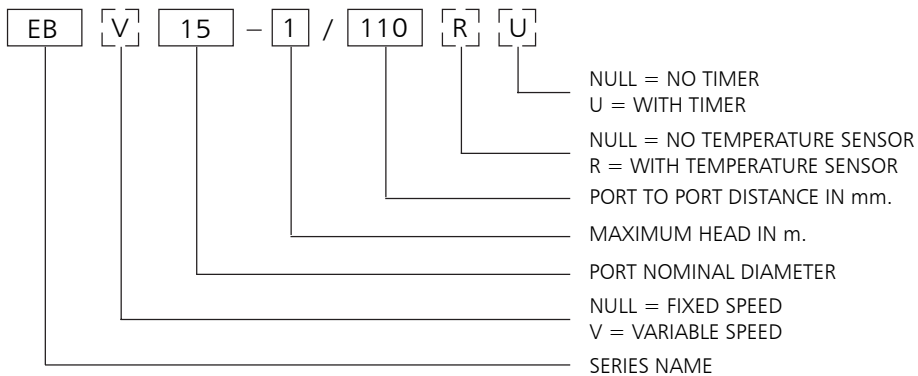
### **ACCESSORIES**

- Pipe unions.
- Insulation shell.

### **INSTALLATION**

- Suitable for installation in vertical or horizontal piping, in this last case not with the motor housing upward.

## EB, EBV SERIES IDENTIFICATION CODE



EXAMPLE : EB 15-1/110 RU

Electronic circulator of the EB series, port nominal diameter = 15,  
max head = 1 m, port to port distance 110 mm, with temperature probe and timer.

## TABLE OF MATERIALS

PART	MATERIAL
Pump body	Brass
Rotor assembly group	Stainless steel
	Composite material
Bearing	Carbon
Gaskets	Ceramic
	EPDM

eb-50-en\_b\_tm

### Regulations (EC) n. 641/2009 and (EU) n. 622/2012 – Annex I – point 2 (Product information requirements)

- a) Energy efficiency index: note not applicable to these products.
- b) "The benchmark for most efficient circulators is  $EI \leq 0,20$ ": note not applicable to these products.
- c) Information relevant for disassembly, recycling or disposal at end-of-life: observe the current laws and by-laws governing sorted waste disposal. Consult the product operating manual.
- d) Information for circulators specifically designed to potable water uses: "This circulator is suitable for drinking water only".

## EB, EBV SERIES HYDRAULIC PERFORMANCE TABLE

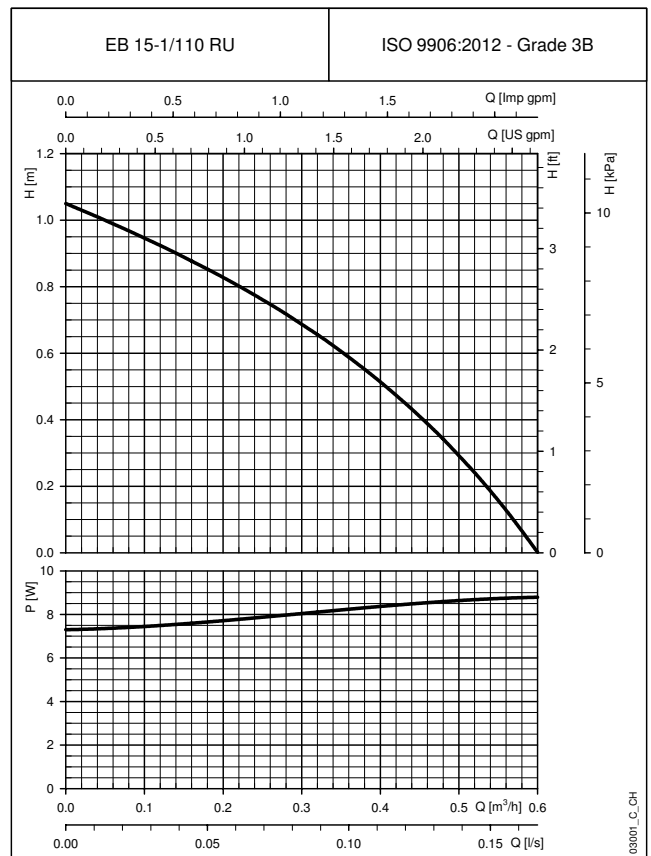
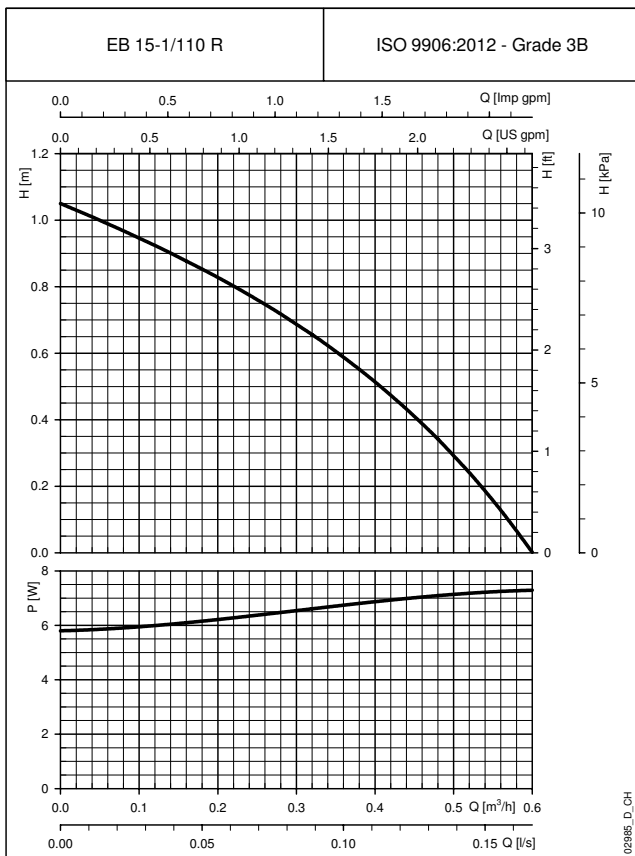
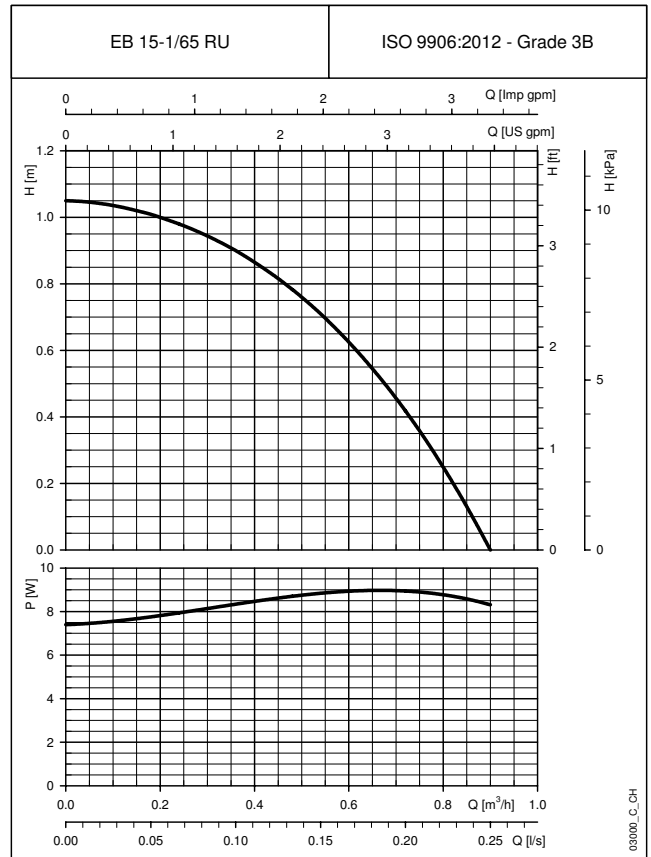
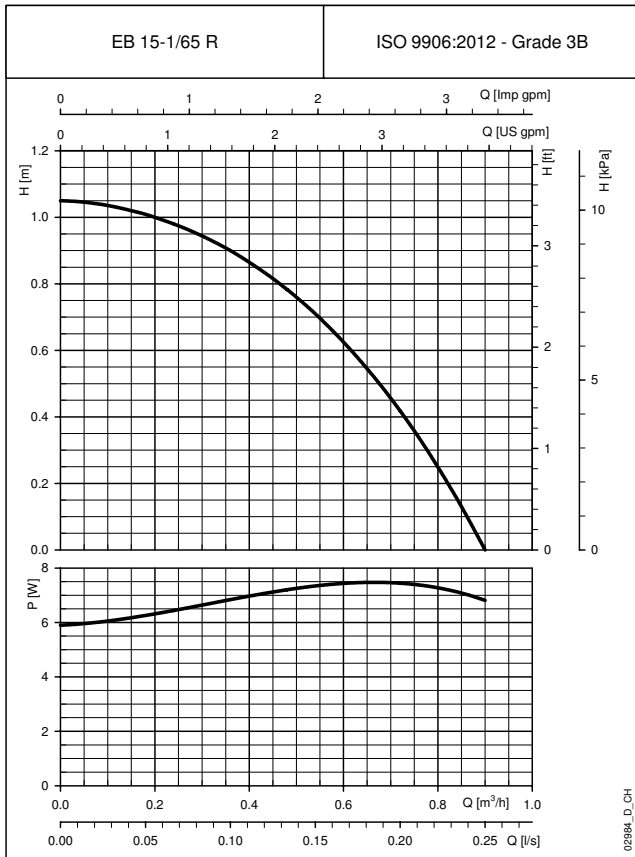
PUMP TYPE	POWER ABSORBED		SPEED	Q = DELIVERY										
	MIN W	MAX W		l/s 0	0,03	0,06	0,08	0,11	0,14	0,19	0,22	0,28	0,36	0,39
				m <sup>3</sup> /h 0	0,1	0,2	0,3	0,4	0,5	0,7	0,8	1	1,3	1,4
H = TOTAL HEAD METRES COLUMN OF WATER														
230V 50Hz														
EB 15-1/65 R	5,9	7,5	max	1,05	1,04	1,00	0,94	0,86	0,76	0,46	0,25			
EB 15-1/65 RU	7,4	9,0	max	1,05	1,04	1,00	0,94	0,86	0,76	0,46	0,25			
EB 15-1/110 R	5,8	7,3	max	1,05	0,95	0,83	0,69	0,51	0,29					
EB 15-1/110 RU	7,3	8,8	max	1,05	0,95	0,83	0,69	0,51	0,29					
EBV 15-1/65	2,6	2,7	min	0,20	0,18	0,15	0,10							
	5,9	7,5	max	1,05	1,04	1,00	0,94	0,86	0,76	0,46	0,25			
EBV 15-1/65 U	4,1	4,2	min	0,20	0,18	0,15	0,10							
	7,4	9,0	max	1,05	1,04	1,00	0,94	0,86	0,76	0,46	0,25			
EBV 15-1/110	2,2	2,3	min	0,10										
	5,8	7,3	max	1,05	0,95	0,83	0,69	0,51	0,29					
EBV 15-1/110 U	3,7	3,8	min	0,10										
	7,3	8,8	max	1,05	0,95	0,83	0,69	0,51	0,29					
EBV 15-3/65	2,6	2,6	min	0,25	0,24	0,20	0,12							
	17,1	23,7	max	3,10	3,09	3,08	3,07	3,06	3,04	3,02	3,00	2,97	2,91	2,89
EBV 15-3/110	4,0	4,0	min	0,20	0,11									
	17,1	26,6	max	3,31	3,20	3,08	2,96	2,84	2,71	2,43	2,28	1,96		

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

eb-50-en\_e\_th

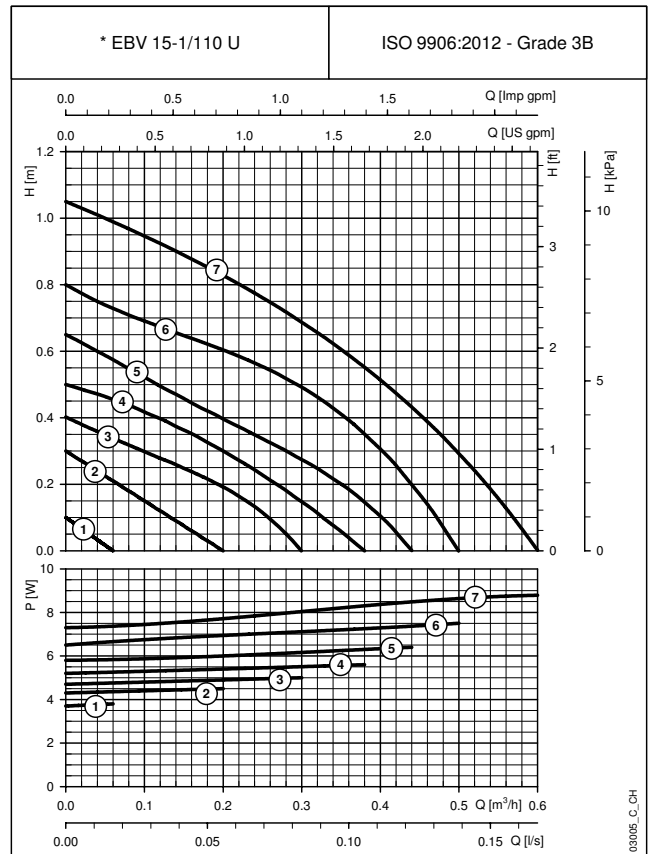
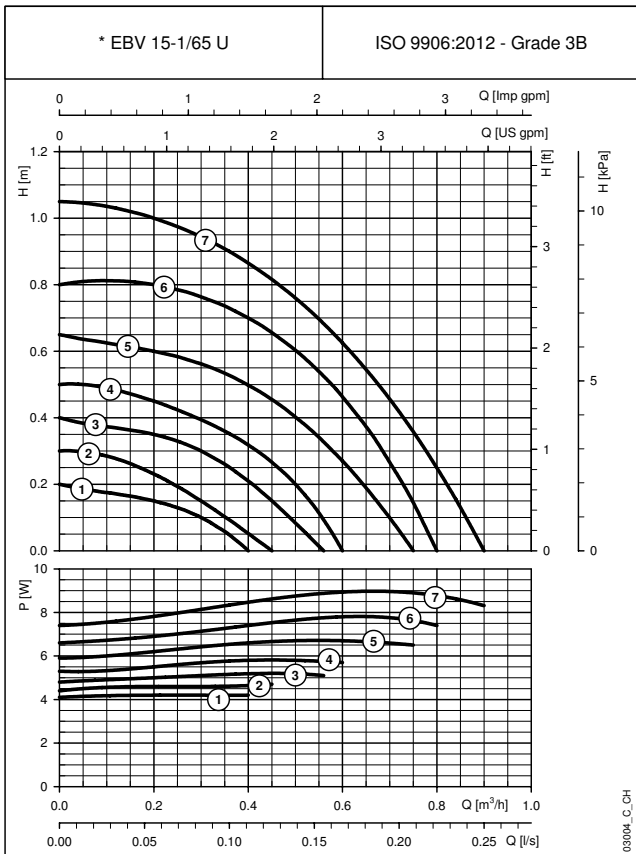
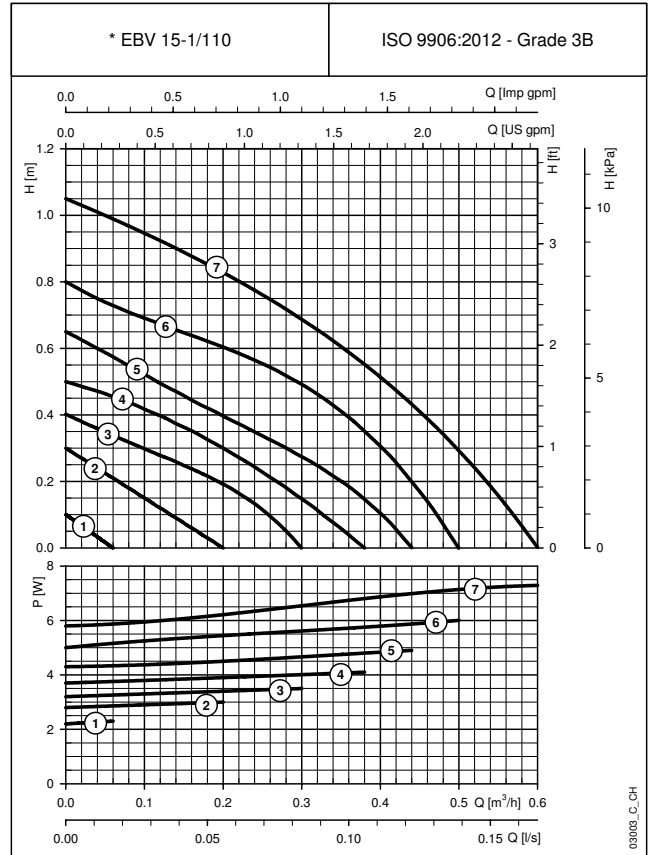
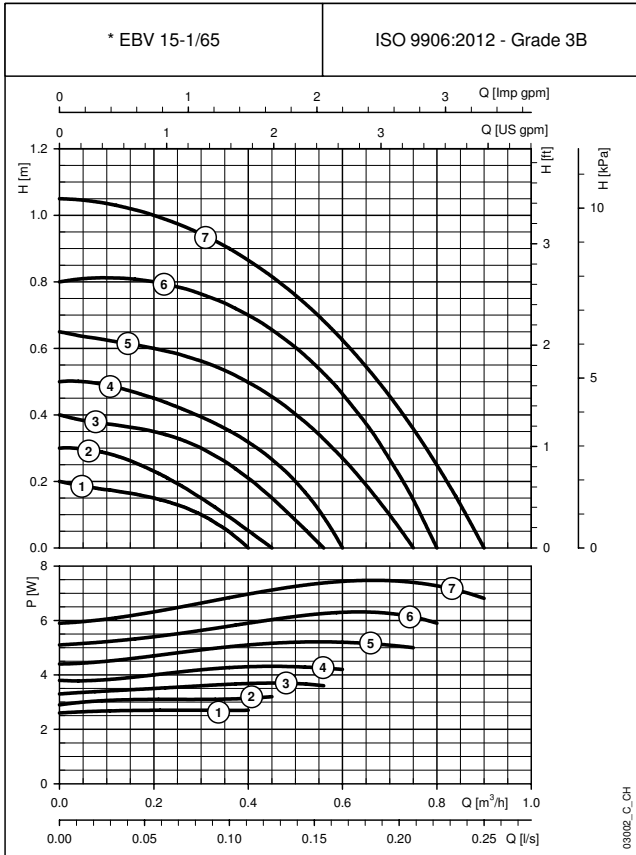


**EB SERIES  
SINGLE-PHASE OPERATING CHARACTERISTICS**



These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

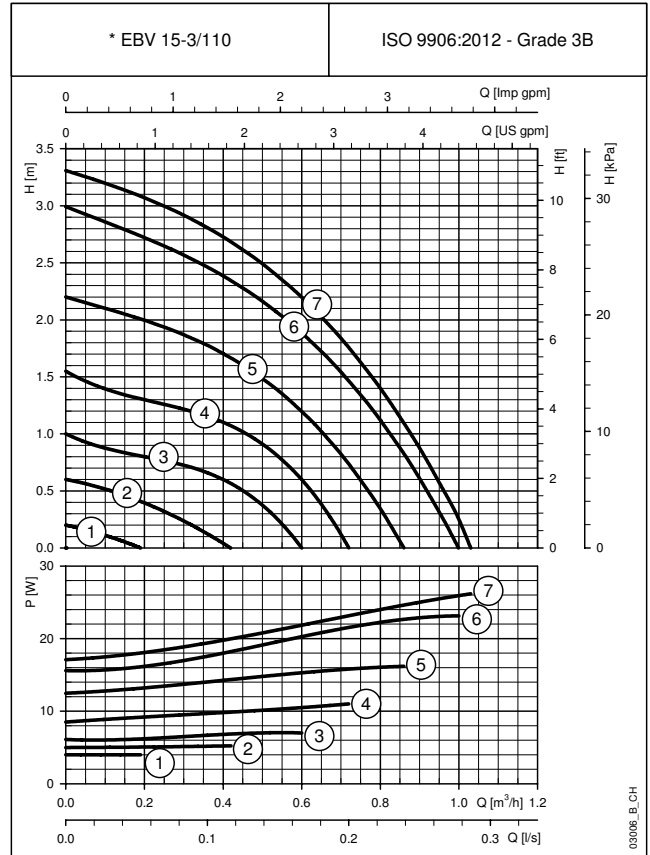
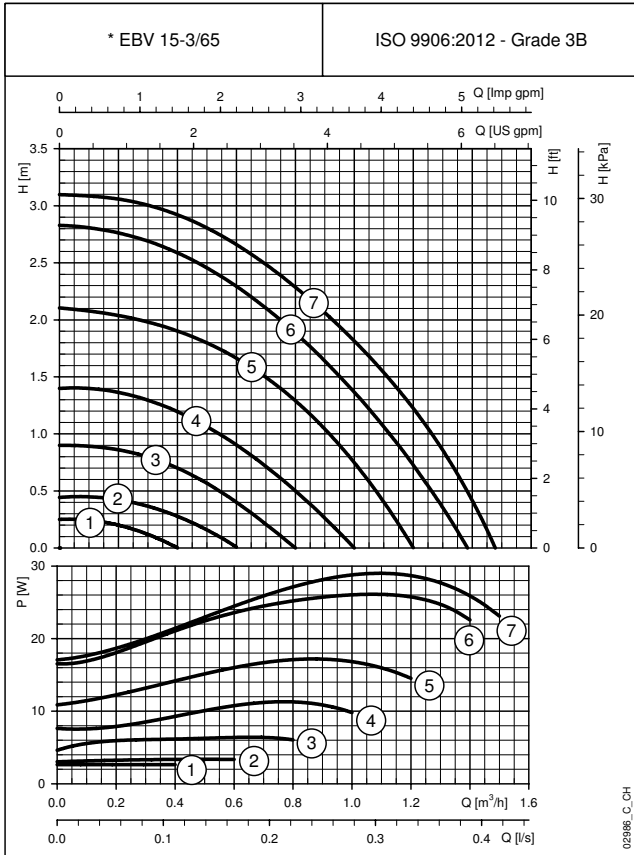
**EBV SERIES  
SINGLE-PHASE OPERATING CHARACTERISTICS**



These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

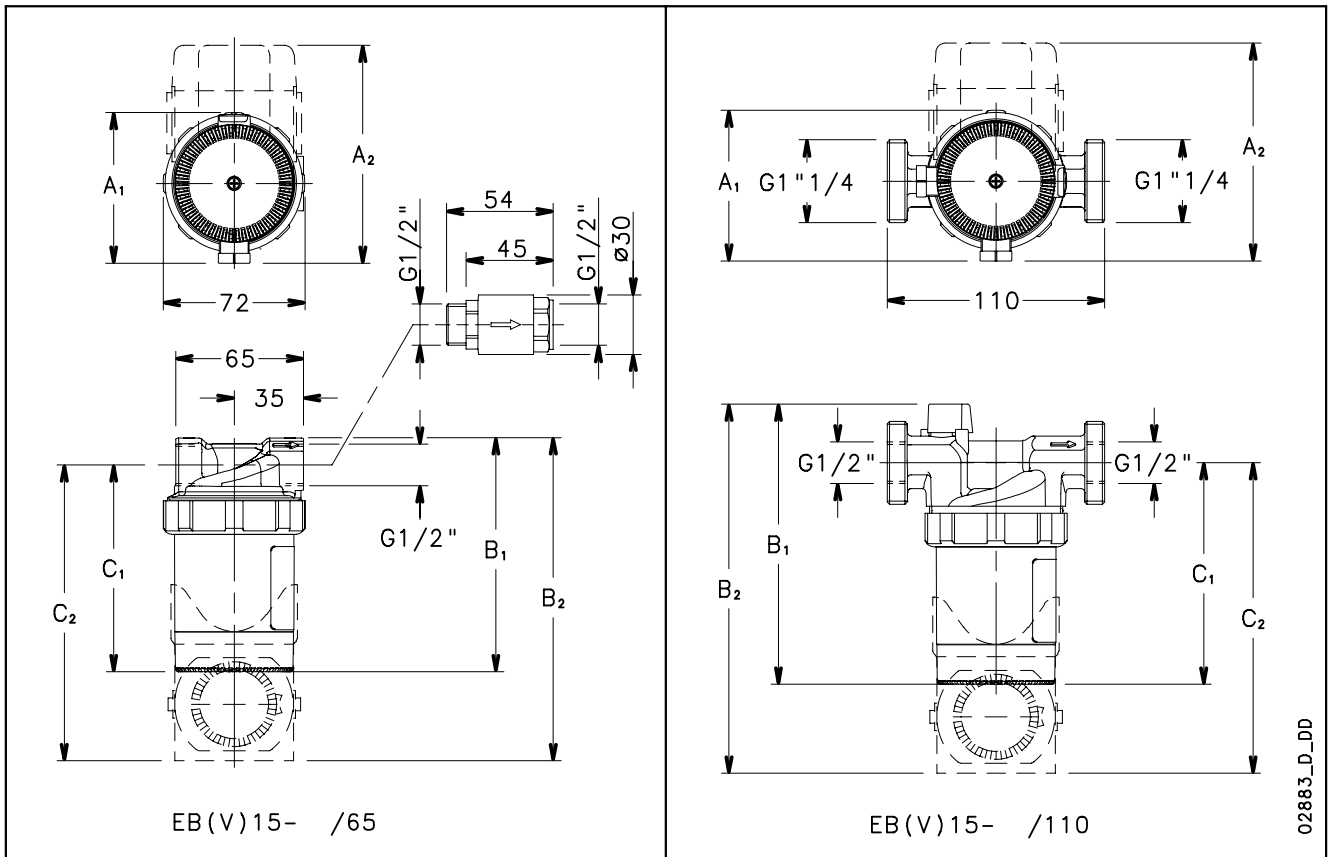
\* Pump operates steplessly. Lines correspond to knob settings and are for reference only.

**EBV SERIES  
SINGLE-PHASE OPERATING CHARACTERISTICS**



These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .  
\* Pump operates steplessly. Lines correspond to knob settings and are for reference only.

## EB, EBV SERIES DIMENSIONS AND WEIGHTS



## DIMENSIONS AND WEIGHTS TABLE

PUMP TYPE		DIMENSIONS (mm)						DN	PESO
		A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	C <sub>1</sub>	C <sub>2</sub>		kg
EB 15-1/65R	EBV 15-1/65	76	-	118	-	105	-	15	0,9
EB 15-1/65RU	EBV 15-1/65U	-	110	-	163	-	150	15	1
EB 15-1/110R	EBV 15-1/110	76	-	142	-	112	-	15	1,3
EB 15-1/110RU	EBV 15-1/110U	-	110	-	187	-	157	15	1,4
	EBV 15-3/65	76	-	118	-	105	-	15	0,9
	EBV 15-3/110	76	-	142	-	112	-	15	1,3

eb-2p50-en\_d\_td

## Sanitary Circulators

### MARKET SECTORS

RESIDENTIAL.

### APPLICATIONS

- Circulation of sanitary hot water.

## TLCB Series



### SPECIFICATIONS

#### PUMP

- **Flow rate:** up to 5 m<sup>3</sup>/h.
- **Head:** up to 6 m.
- **Temperature of pumped liquid:** +2°C ÷ +65°C.  
Avoid condensation and ice formation.
- **Maximum operating pressure:** 10 bar (PN 10).
- **Impeller:** made of composite material.
- **Wear ring:** ceramic.

#### MOTOR

- Wet rotor type, with bearings lubricated by the pumped liquid.  
Axial and radial bearings made of ceramic.
- Single-phase 230 V 50 Hz power supply.  
Terminal box axially integrated in the motor.
- Three speed hand selector motor.
- **Insulation class** 180 (H).
- **Protection class** IP 44.

### CONSTRUCTION CHARACTERISTICS

- Electric circulator pumps for sanitary hot water circulation, at a maximum temperature of 65°C , maximum hardness of 25° f (14° dH) and maximum viscosity of 10 mm<sup>2</sup>/S.
- Bronze pump body designed for direct installation onto copper piping, with 1", 1" ¼ and 1" ½ threaded connections.
- According to EN standards 60335-1, 60335-2-51, 55014-1, 55014-2.

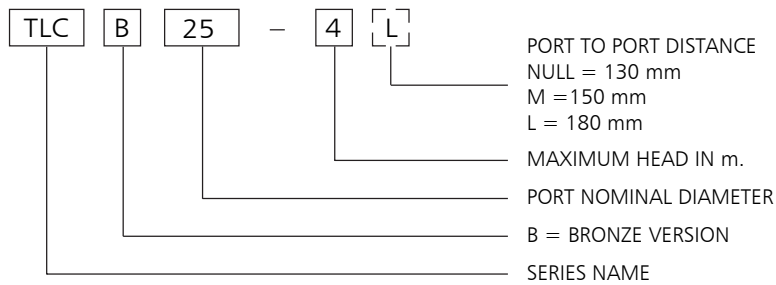
### ACCESSORIES

- Pipe unions.
- Insulation shell.

### INSTALLATION

- Suitable for installation in horizontal or vertical piping, in any position provided that motor axis is horizontal.

## TLCB SERIES IDENTIFICATION CODE



EXAMPLE : TLCB 25-4L

TLC series circulator, bronze B version, port nominal diameter = 25, max head = 4 m, with port to port distance of 180 mm.

## TABLE OF MATERIALS

PART	MATERIAL
Pump body	Bronze
Impeller	Composite material
Shaft	Ceramics
Inner jacket	Stainless steel
Wear ring	Ceramics
Bearings	Ceramics
Gaskets	EPDM

t1cb-2p50-en\_a\_tm

### Regulations (EC) n. 641/2009 and (EU) n. 622/2012 – Annex I – point 2 (Product information requirements)

- a) Energy efficiency index: note not applicable to these products.
- b) "The benchmark for most efficient circulators is  $EEI \leq 0,20$ ": note not applicable to these products.
- c) Information relevant for disassembly, recycling or disposal at end-of-life: observe the current laws and by-laws governing sorted waste disposal. Consult the product operating manual.
- d) Information for circulators specifically designed to potable water uses: "This circulator is suitable for drinking water only".

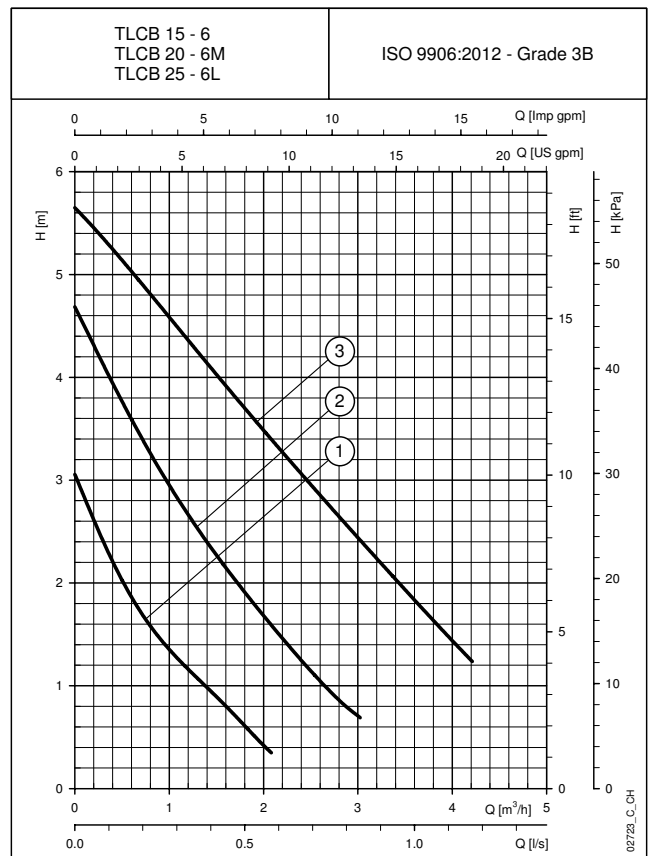
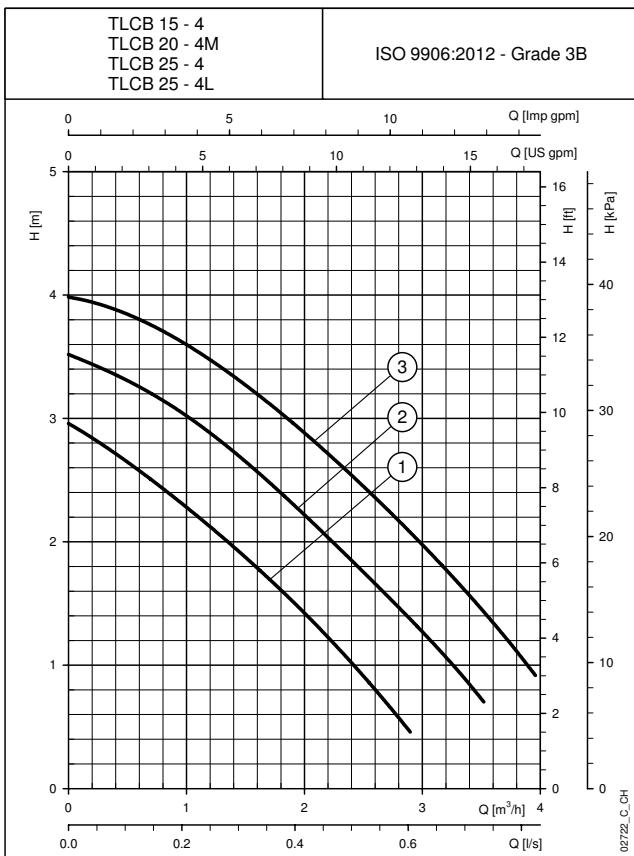
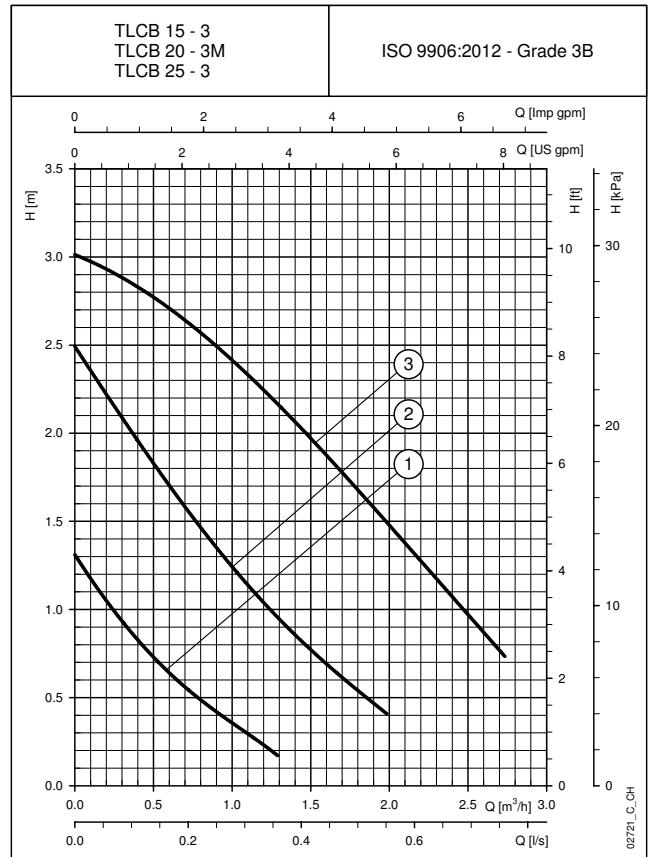
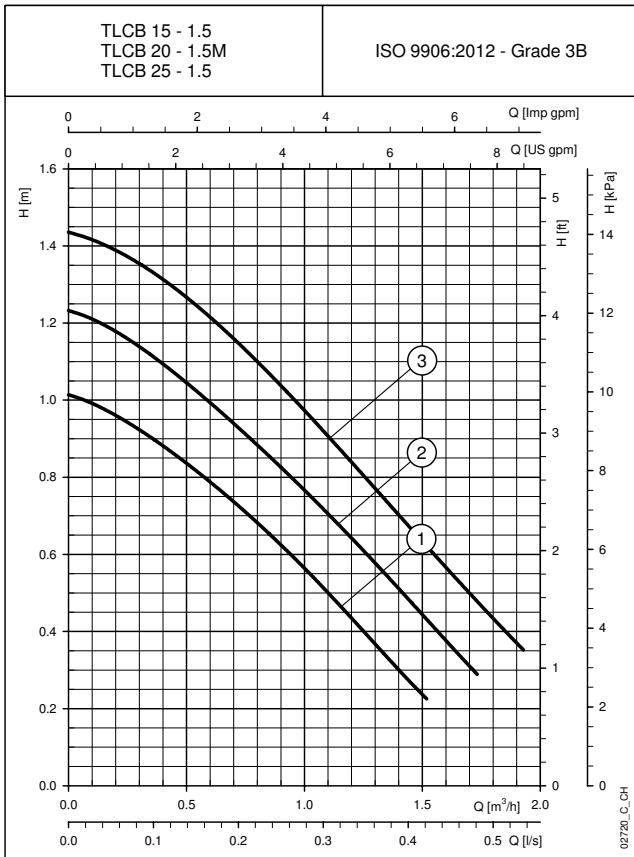
## TLCB SERIES HYDRAULIC PERFORMANCE TABLE

PUMP TYPE	MAXIMUM ABSORBED POWER W	MAXIMUM ABSORBED CURRENT A	CAPACITOR		SPEED	Q = DELIVERY											
						l/s 0	0,2	0,3	0,4	0,5	0,7	0,8	1,0	1,2			
						m <sup>3</sup> /h 0	0,6	1,2	1,5	1,8	2,4	3,0	3,6	4,2			
230V 50Hz			$\mu$ F	V		H = TOTAL HEAD METRES COLUMN OF WATER											
TLCB 15-1.5	28	0,16	2,0	400	1	1,0	0,8	0,4	0,2								
TLCB 20-1.5M	43	0,24			2	1,2	1,0	0,6	0,4								
TLCB 25-1.5	58	0,28			3	1,4	1,2	0,8	0,6	0,4							
TLCB 15-3	33	0,17	2,0	400	1	1,3	0,6	0,2									
TLCB 20-3M	48	0,25			2	2,5	1,7	1,0	0,8	0,5							
TLCB 25-3	63	0,30			3	3,0	2,7	2,2	2,0	1,7	1,1						
TLCB 15-4	40	0,19	2,0	400	1	3,0	2,6	2,1	1,9	1,6	1,0						
TLCB 20-4M	59	0,28			2	3,5	3,3	2,9	2,7	2,4	1,8	1,3					
TLCB 25-4 (L)	70	0,33			3	4,0	3,8	3,5	3,3	3,0	2,5	2,0	1,3				
TLCB 15-6	56	0,27	3,0	400	1	3,1	1,9	1,2	0,9	0,6							
TLCB 20-6M	83	0,37			2	4,7	3,6	2,7	2,3	1,9	1,2	0,7					
TLCB 25-6L	100	0,44			3	5,6	5,0	4,4	4,0	3,7	3,1	2,4	1,8	1,2			

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

tldb-2p50-en\_c\_th

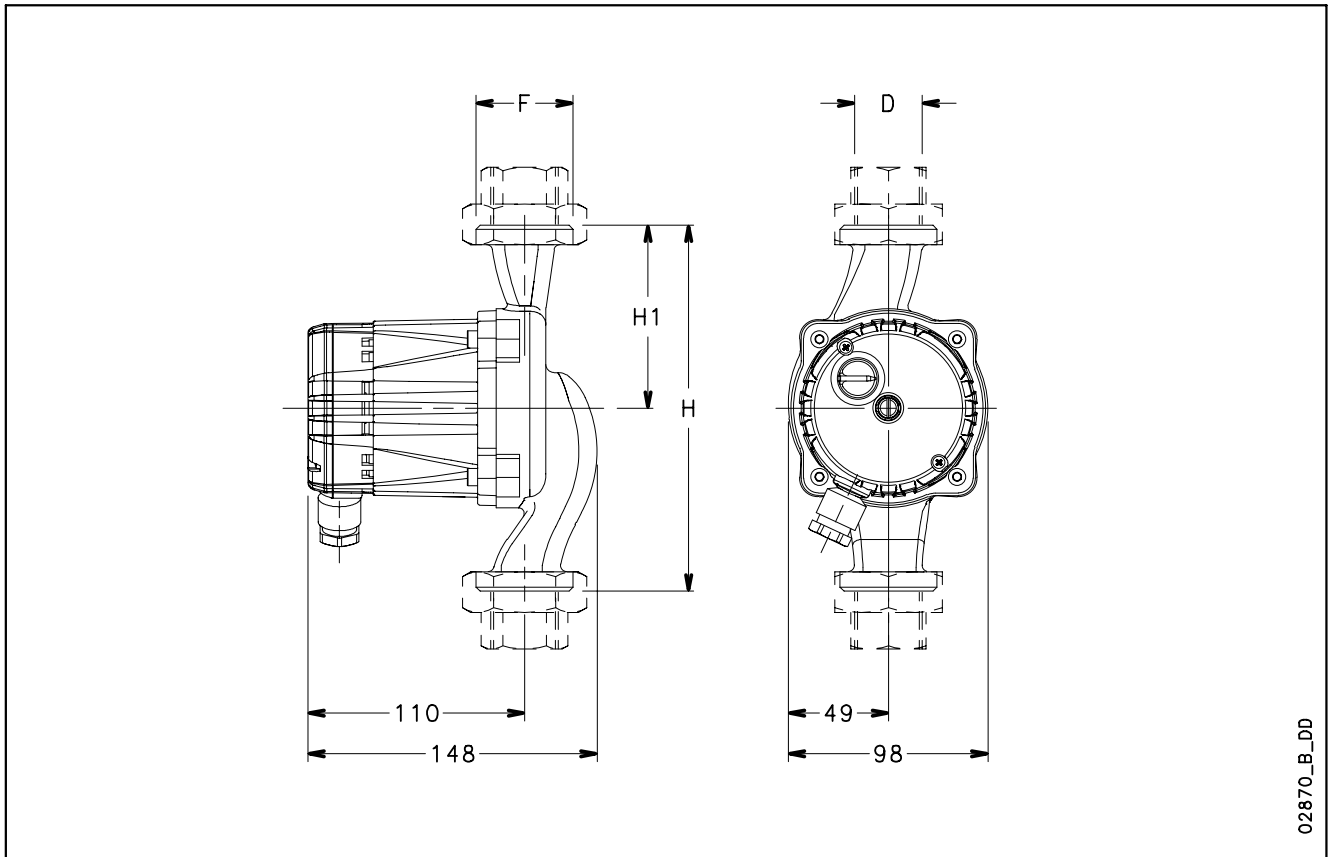
**TLCB SERIES  
SINGLE-PHASE OPERATING CHARACTERISTICS**



These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .



## TLCB SERIES DIMENSIONS AND WEIGHTS



02870\_B\_DD

## DIMENSIONS AND WEIGHTS TABLE

PUMP TYPE	DIMENSIONS (mm)		D	F	DN	WEIGHT kg
	H	H1				
TLCB 15-1.5	130	65	1/2"	G 1"	15	2,9
TLCB 20-1.5M	150	75	3/4"	G 1 1/4"	20	3
TLCB 25-1.5	130	65	1"	G 1 1/2"	25	3
TLCB 15-3	130	65	1/2"	G 1"	15	2,9
TLCB 20-3M	150	75	3/4"	G 1 1/4"	20	3
TLCB 25-3	130	65	1"	G 1 1/2"	25	3
TLCB 15-4	130	65	1/2"	G 1"	15	2,9
TLCB 20-4M	150	75	3/4"	G 1 1/4"	20	3
TLCB 25-4	130	65	1"	G 1 1/2"	25	3
TLCB 25-4L	180	90	1"	G 1 1/2"	25	3,1
TLCB 15-6	130	65	1/2"	G 1"	15	2,9
TLCB 20-6M	150	75	R 3/4"	G 1 1/4"	20	3
TLCB 25-6L	180	90	R 1"	G 1 1/2"	25	3,1

tlcB-2p50-en\_c\_td



## Sanitary Circulators

### MARKET SECTORS

SANITARY LIGHT COMMERCIAL.

### APPLICATIONS

- Circulation of sanitary hot water in high flow/high head installations.

## TLCHB Series



### SPECIFICATIONS

#### PUMP

- **Flow rate:** up to 12 m<sup>3</sup>/h.
- **Head:** up to 12 m.
- **Temperature of pumped liquid:** +2°C ÷ +65°C.  
Avoid condensation and ice formation.
- **Maximum operating pressure:** 10 bar (PN 10).
- **Impeller:** made of composite material.
- **Wear ring:** ceramic.

#### MOTOR

- Wet rotor type, with bearings lubricated by the pumped liquid.  
Axial and radial bearings made of ceramic.
- Single-phase 230 V 50 Hz power supply.  
Terminal box axially integrated in the motor.
- Three speed hand selector motor.
- **Insulation class** 180 (H).
- **Protection class** IP 44.

### CONSTRUCTION CHARACTERISTICS

- Electric circulator pumps for sanitary hot water circulation, at a maximum temperature of 65°C , maximum hardness of 25° f (14° dH) and maximum viscosity of 10 mm<sup>2</sup>/S.
- Bronze pump body designed for direct installation onto copper piping, with 1" ¼ and 1" ½ threaded connections.
- According to EN standards 60335-1, 60335-2-51, 55014-1, 55014-2.

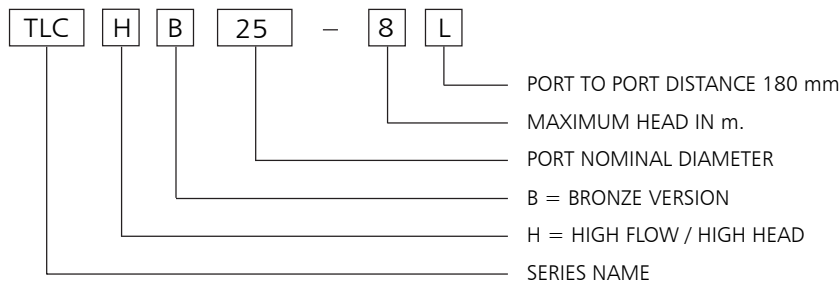
### ACCESSORIES

- Pipe unions.
- Insulation shell.

### INSTALLATION

- Suitable for installation in horizontal or vertical piping, in any position provided that motor axis is horizontal.

## TLCHB SERIES IDENTIFICATION CODE



EXAMPLE : TLCHB 25-8L

TLC series circulator, high flow/head H version, bronze B version, port nominal diameter = 25, max head= 8 m, with port to port distance of 180 mm.

## TABLE OF MATERIALS

PART	MATERIAL
Pump body	Bronze
Impeller	Composite material
Shaft	Ceramics
Inner jacket	Stainless steel
Wear ring	Ceramics
Bearings	Ceramics
Gaskets	EPDM

tlchb-2p50-en\_a\_tm

### Regulations (EC) n. 641/2009 and (EU) n. 622/2012 – Annex I – point 2 (Product information requirements)

- Energy efficiency index: note not applicable to these products.
- "The benchmark for most efficient circulators is  $EEI \leq 0,20$ ": note not applicable to these products.
- Information relevant for disassembly, recycling or disposal at end-of-life: observe the current laws and by-laws governing sorted waste disposal. Consult the product operating manual.
- Information for circulators specifically designed to potable water uses: "This circulator is suitable for drinking water only".

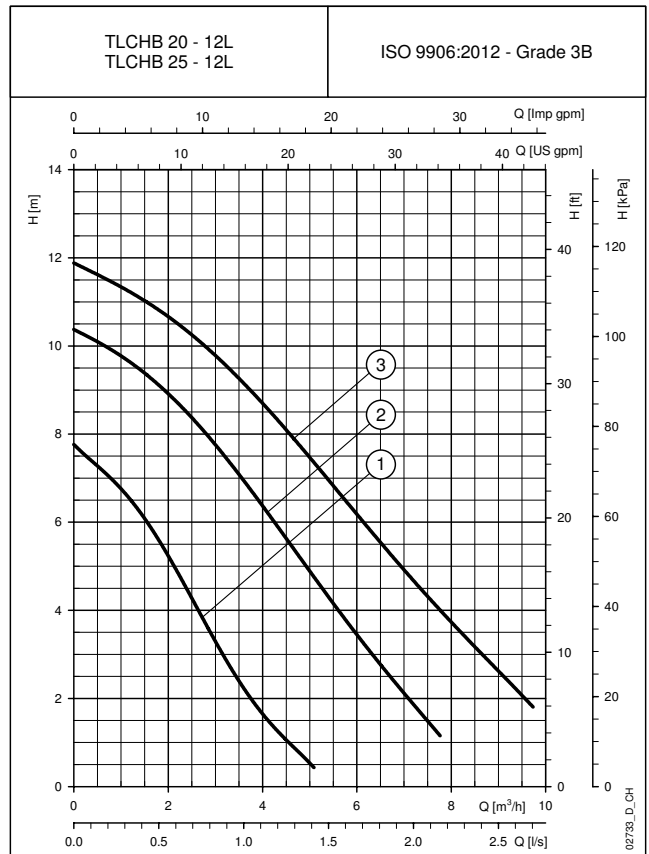
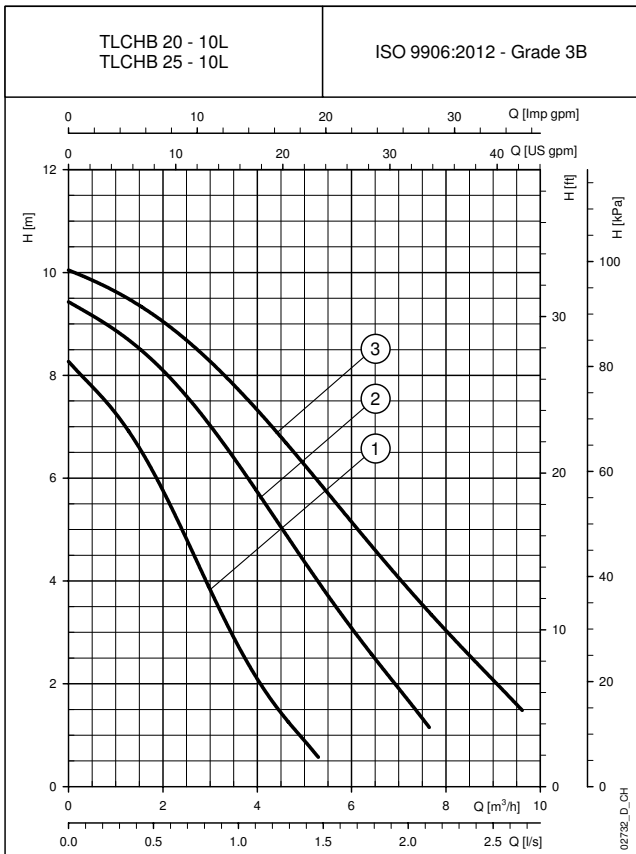
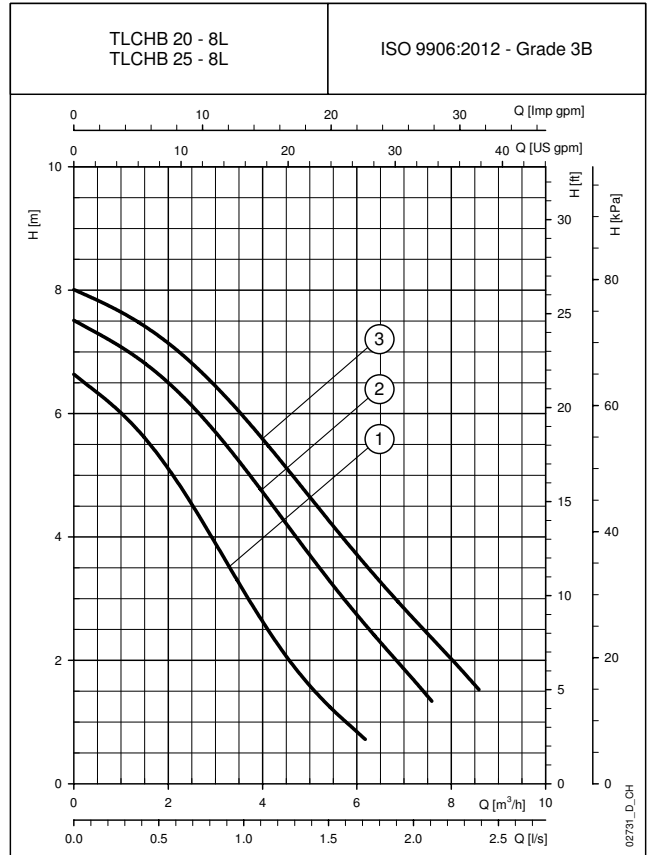
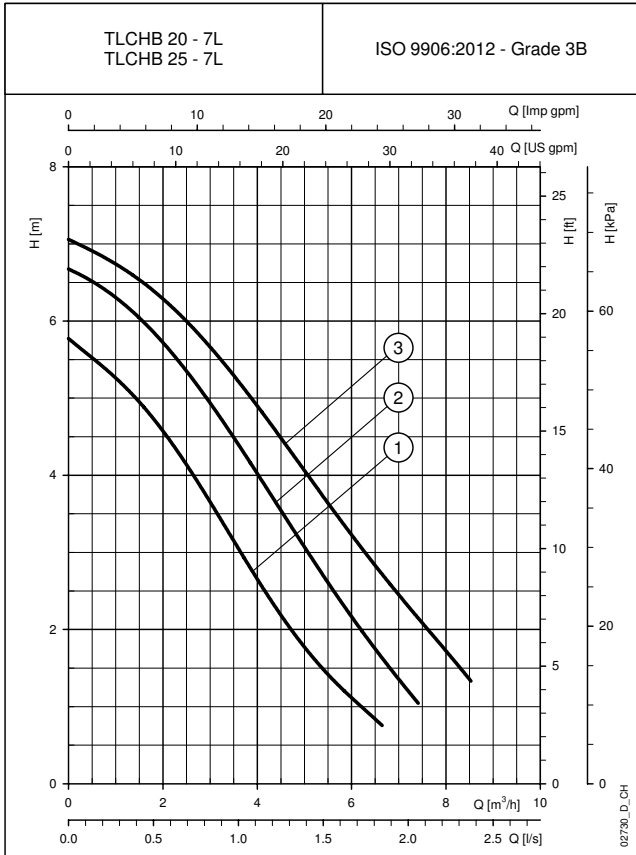
## TLCHB SERIES HYDRAULIC PERFORMANCE TABLE

PUMP TYPE	MAXIMUM ABSORBED POWER W	MAXIMUM ABSORBED CURRENT A	CAPACITOR		SPEED	Q = DELIVERY								
						l/s 0	0,3	0,7	1,0	1,3	1,7	2,0	2,3	2,7
						m <sup>3</sup> /h 0	1,2	2,4	3,6	4,8	6,0	7,2	8,4	9,6
			$\mu$ F	V		H = TOTAL HEAD METRES COLUMN OF WATER								
230V 50Hz														
TLCHB 20-7L TLCHB 25-7L	220 228 260	1,03 1,04 1,13	8,0	400	1 2 3	5,8 6,7 7,1	5,1 6,2 6,7	4,2 5,4 6,1	3,1 4,4 5,2	1,9 3,3 4,2	1,1 2,2 3,2		1,2 2,3	1,4
TLCHB 20-8L TLCHB 25-8L	260 270 286	1,23 1,24 1,25	8,0	400	1 2 3	6,6 7,5 8,0	5,9 7,0 7,6	4,7 6,2 6,9	3,1 5,1 5,9	1,8 3,9 4,8	0,8 2,7 3,7		1,7 2,7	1,7
TLCHB 20-10L TLCHB 25-10L	283 343 357	1,35 1,44 1,56	8,0	400	1 2 3	8,3 9,4 10,0	7,0 8,7 9,5	5,0 7,7 8,8	2,7 6,3 7,7	1,1 4,6 6,5	1,1 3,1 5,1		1,7 3,8	2,6 1,5
TLCHB 20-12L TLCHB 25-12L	285 372 400	1,36 1,69 1,73	8,0	400	1 2 3	7,8 10,4 11,9	6,5 9,6 11,2	4,5 8,5 10,3	2,2 6,9 9,2	0,7 5,2 7,7	0,7 3,4 6,2		1,9 4,7	3,3 2,0

Hydraulic performances in compliance with ISO 9906:2012 - Grade 3B (ex ISO 9906:1999 - Annex A)

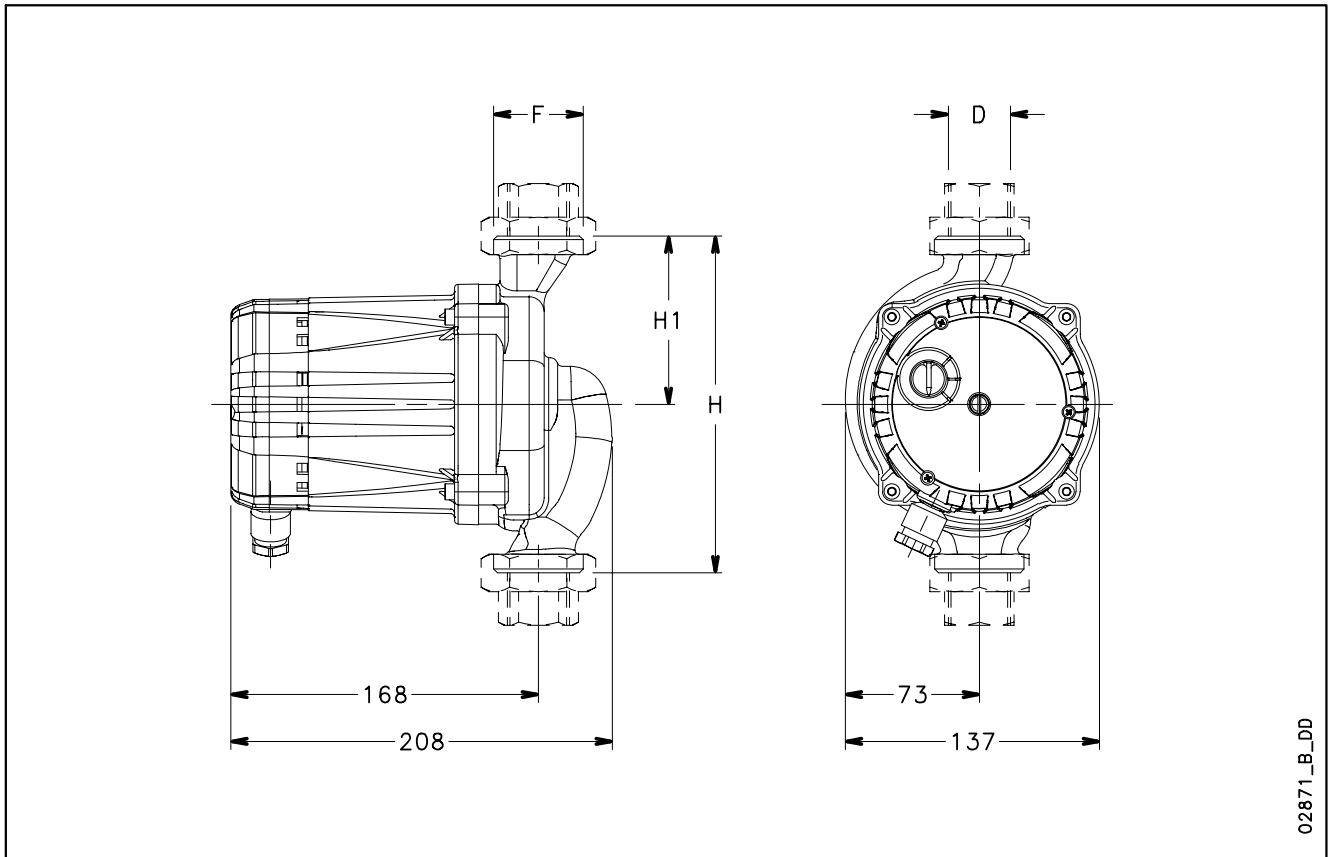
tlchb-2p50-en\_d\_th

**TLCHB SERIES  
SINGLE-PHASE OPERATING CHARACTERISTICS**



These performances are valid for liquids with density  $\rho = 1.0 \text{ Kg/dm}^3$  and kinematic viscosity  $\nu = 1 \text{ mm}^2/\text{sec}$ .

## TLCHB SERIES DIMENSIONS AND WEIGHTS

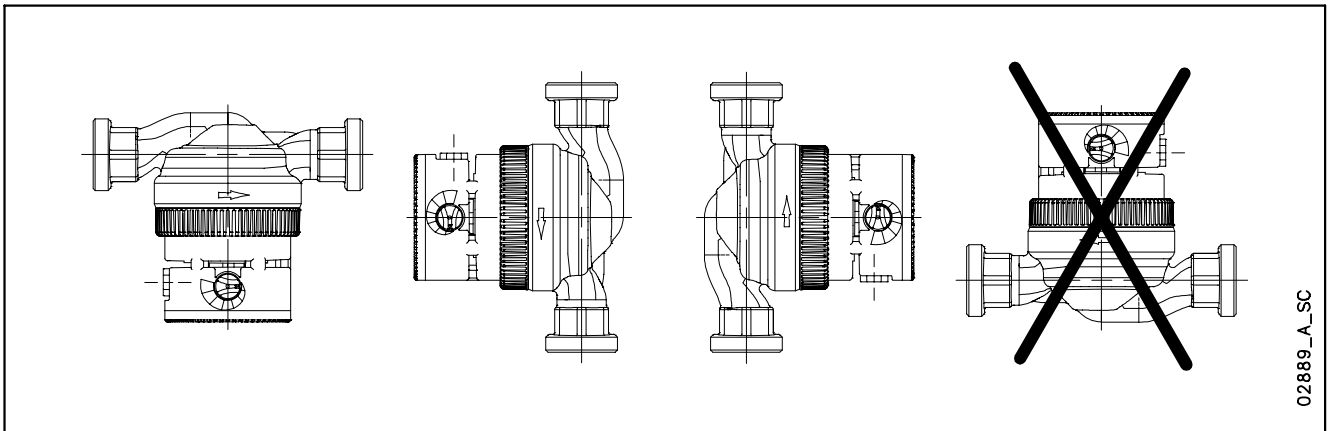


### DIMENSIONS AND WEIGHTS TABLE

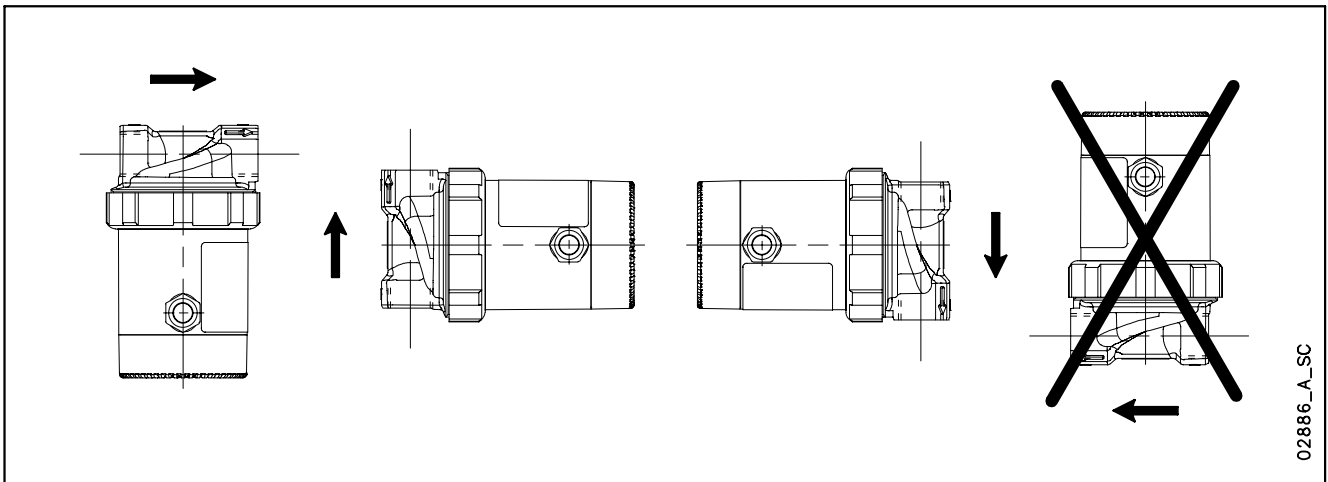
PUMP TYPE	DIMENSIONS (mm)					WEIGHT kg
	H	H1	D	F	DN	
TLCHB 20-7L	180	90	3/4"	G 1 1/4	20	6,7
TLCHB 25-7L	180	90	1"	G 1 1/2	25	6,7
TLCHB 20-8L	180	90	3/4"	G 1 1/4	20	6,7
TLCHB 25-8L	180	90	1"	G 1 1/2	25	6,7
TLCHB 20-10L	180	90	3/4"	G 1 1/4	20	6,7
TLCHB 25-10L	180	90	1"	G 1 1/2	25	6,7
TLCHB 20-12L	180	90	3/4"	G 1 1/4	20	6,7
TLCHB 25-12L	180	90	1"	G 1 1/2	25	6,7

tlchb-2p50-en\_c\_td

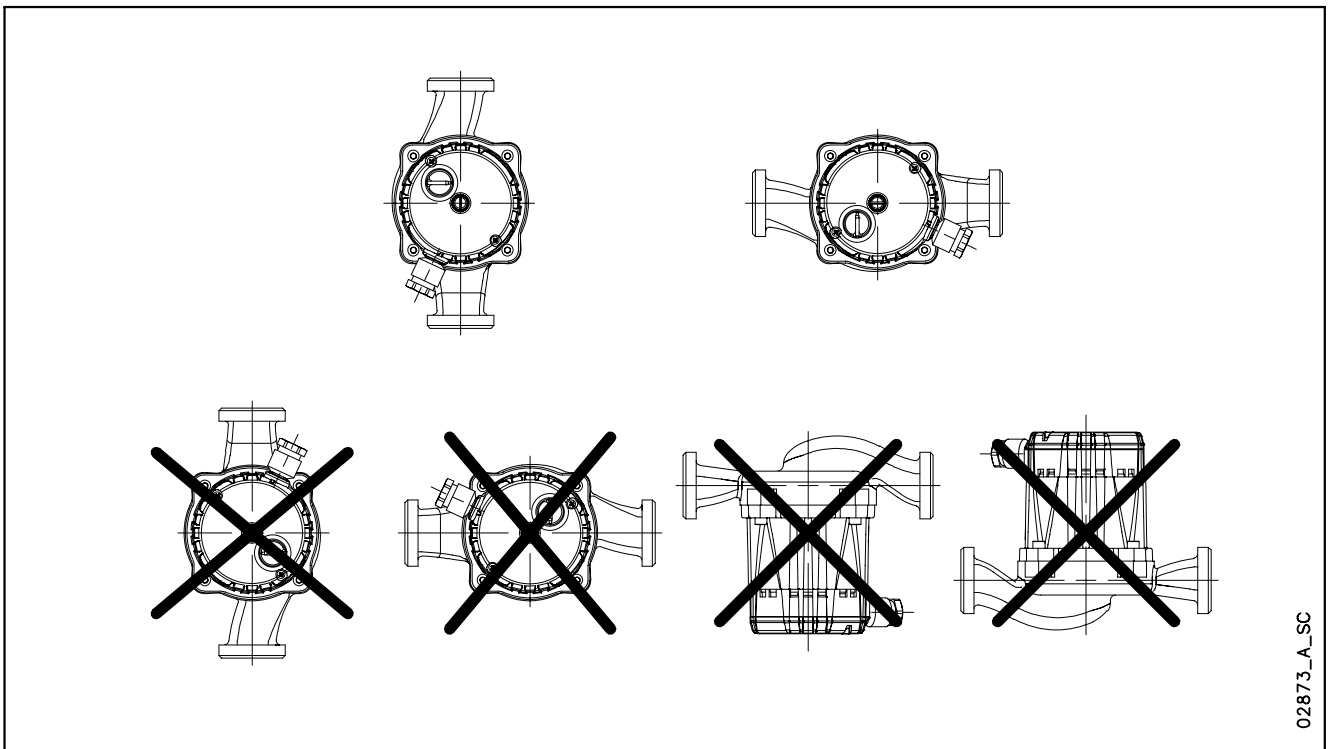
**Ecocirc® SERIES  
INSTALLATION POSITIONS**



**EB, EBV SERIES**



**TLCB, TLCHB SERIES**





# **TECHNICAL APPENDIX**

## VAPOUR PRESSURE VAPOUR PRESSURE ps AND ρ DENSITY OF WATER TABLE

t °C	T K	ps bar	ρ kg/dm <sup>3</sup>	t °C	T K	ps bar	ρ kg/dm <sup>3</sup>	t °C	T K	ps bar	ρ kg/dm <sup>3</sup>
0	273,15	0,00611	0,9998	55	328,15	0,15741	0,9857	120	393,15	1,9854	0,9429
1	274,15	0,00657	0,9999	56	329,15	0,16511	0,9852	122	395,15	2,1145	0,9412
2	275,15	0,00706	0,9999	57	330,15	0,17313	0,9846	124	397,15	2,2504	0,9396
3	276,15	0,00758	0,9999	58	331,15	0,18147	0,9842	126	399,15	2,3933	0,9379
4	277,15	0,00813	1,0000	59	332,15	0,19016	0,9837	128	401,15	2,5435	0,9362
5	278,15	0,00872	1,0000	60	333,15	0,1992	0,9832	130	403,15	2,7013	0,9346
6	279,15	0,00935	1,0000	61	334,15	0,2086	0,9826	132	405,15	2,867	0,9328
7	280,15	0,01001	0,9999	62	335,15	0,2184	0,9821	134	407,15	3,041	0,9311
8	281,15	0,01072	0,9999	63	336,15	0,2286	0,9816	136	409,15	3,223	0,9294
9	282,15	0,01147	0,9998	64	337,15	0,2391	0,9811	138	411,15	3,414	0,9276
10	283,15	0,01227	0,9997	65	338,15	0,2501	0,9805	140	413,15	3,614	0,9258
11	284,15	0,01312	0,9997	66	339,15	0,2615	0,9799	145	418,15	4,155	0,9214
12	285,15	0,01401	0,9996	67	340,15	0,2733	0,9793	155	428,15	5,433	0,9121
13	286,15	0,01497	0,9994	68	341,15	0,2856	0,9788	160	433,15	6,181	0,9073
14	287,15	0,01597	0,9993	69	342,15	0,2984	0,9782	165	438,15	7,008	0,9024
15	288,15	0,01704	0,9992	70	343,15	0,3116	0,9777	170	433,15	7,920	0,8973
16	289,15	0,01817	0,9990	71	344,15	0,3253	0,9770	175	448,15	8,924	0,8921
17	290,15	0,01936	0,9988	72	345,15	0,3396	0,9765	180	453,15	10,027	0,8869
18	291,15	0,02062	0,9987	73	346,15	0,3543	0,9760	185	458,15	11,233	0,8815
19	292,15	0,02196	0,9985	74	347,15	0,3696	0,9753	190	463,15	12,551	0,8760
20	293,15	0,02337	0,9983	75	348,15	0,3855	0,9748	195	468,15	13,987	0,8704
21	294,15	0,24850	0,9981	76	349,15	0,4019	0,9741	200	473,15	15,550	0,8647
22	295,15	0,02642	0,9978	77	350,15	0,4189	0,9735	205	478,15	17,243	0,8588
23	296,15	0,02808	0,9976	78	351,15	0,4365	0,9729	210	483,15	19,077	0,8528
24	297,15	0,02982	0,9974	79	352,15	0,4547	0,9723	215	488,15	21,060	0,8467
25	298,15	0,03166	0,9971	80	353,15	0,4736	0,9716	220	493,15	23,198	0,8403
26	299,15	0,03360	0,9968	81	354,15	0,4931	0,9710	225	498,15	25,501	0,8339
27	300,15	0,03564	0,9966	82	355,15	0,5133	0,9704	230	503,15	27,976	0,8273
28	301,15	0,03778	0,9963	83	356,15	0,5342	0,9697	235	508,15	30,632	0,8205
29	302,15	0,04004	0,9960	84	357,15	0,5557	0,9691	240	513,15	33,478	0,8136
30	303,15	0,04241	0,9957	85	358,15	0,5780	0,9684	245	518,15	36,523	0,8065
31	304,15	0,04491	0,9954	86	359,15	0,6011	0,9678	250	523,15	39,776	0,7992
32	305,15	0,04753	0,9951	87	360,15	0,6249	0,9671	255	528,15	43,246	0,7916
33	306,15	0,05029	0,9947	88	361,15	0,6495	0,9665	260	533,15	46,943	0,7839
34	307,15	0,05318	0,9944	89	362,15	0,6749	0,9658	265	538,15	50,877	0,7759
35	308,15	0,05622	0,9940	90	363,15	0,7011	0,9652	270	543,15	55,058	0,7678
36	309,15	0,05940	0,9937	91	364,15	0,7281	0,9644	275	548,15	59,496	0,7593
37	310,15	0,06274	0,9933	92	365,15	0,7561	0,9638	280	553,15	64,202	0,7505
38	311,15	0,06624	0,9930	93	366,15	0,7849	0,9630	285	558,15	69,186	0,7415
39	312,15	0,06991	0,9927	94	367,15	0,8146	0,9624	290	563,15	74,461	0,7321
40	313,15	0,07375	0,9923	95	368,15	0,8453	0,9616	295	568,15	80,037	0,7223
41	314,15	0,07777	0,9919	96	369,15	0,8769	0,9610	300	573,15	85,927	0,7122
42	315,15	0,08198	0,9915	97	370,15	0,9094	0,9602	305	578,15	92,144	0,7017
43	316,15	0,09639	0,9911	98	371,15	0,9430	0,9596	310	583,15	98,70	0,6906
44	317,15	0,09100	0,9907	99	372,15	0,9776	0,9586	315	588,15	105,61	0,6791
45	318,15	0,09582	0,9902	100	373,15	1,0133	0,9581	320	593,15	112,89	0,6669
46	319,15	0,10086	0,9898	102	375,15	1,0878	0,9567	325	598,15	120,56	0,6541
47	320,15	0,10612	0,9894	104	377,15	1,1668	0,9552	330	603,15	128,63	0,6404
48	321,15	0,11162	0,9889	106	379,15	1,2504	0,9537	340	613,15	146,05	0,6102
49	322,15	0,11736	0,9884	108	381,15	1,3390	0,9522	350	623,15	165,35	0,5743
50	323,15	0,12335	0,9880	110	383,15	1,4327	0,9507	360	633,15	186,75	0,5275
51	324,15	0,12961	0,9876	112	385,15	1,5316	0,9491	370	643,15	210,54	0,4518
52	325,15	0,13613	0,9871	114	387,15	1,6362	0,9476	374,15	647,30	221,20	0,3154
53	326,15	0,14293	0,9862	116	389,15	1,7465	0,9460				
54	327,15	0,15002	0,9862	118	391,15	1,8628	0,9445				

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## TABLE OF FLOW RESISTANCE IN 100 m OF STRAIGHT CAST IRON PIPELINE (HAZEN-WILLIAMS FORMULA C=100)

FLOW RATE		NOMINAL DIAMETER in mm and inches																		
m <sup>3</sup> /h	l/min		15	20	25	32	40	50	65	80	100	125	150	175	200	250	300	350	400	
			1/2"	3/4"	1"	1 1/4"	1 1/2"	2	2 1/2"	3"	4"	5"	6"	7"	8"	10"	12"	14"	16"	
0,6	10	v	0,94	0,53	0,34	0,21	0,13													
		hr	16	3,94	1,33	0,40	0,13													
0,9	15	v	1,42	0,80	0,51	0,31	0,20													
		hr	33,9	8,35	2,82	0,85	0,29													
1,2	20	v	1,89	1,06	0,68	0,41	0,27	0,17												
		hr	57,7	14,21	4,79	1,44	0,49	0,16												
1,5	25	v	2,36	1,33	0,85	0,52	0,33	0,21												
		hr	87,2	21,5	7,24	2,18	0,73	0,25												
1,8	30	v	2,83	1,59	1,02	0,62	0,40	0,25												
		hr	122	30,1	10,1	3,05	1,03	0,35												
2,1	35	v	3,30	1,86	1,19	0,73	0,46	0,30												
		hr	162	40,0	13,5	4,06	1,37	0,46												
2,4	40	v		2,12	1,36	0,83	0,53	0,34	0,20											
		hr		51,2	17,3	5,19	1,75	0,59	0,16											
3	50	v		2,65	1,70	1,04	0,66	0,42	0,25											
		hr		77,4	26,1	7,85	2,65	0,89	0,25											
3,6	60	v		3,18	2,04	1,24	0,80	0,51	0,30											
		hr		108	36,6	11,0	3,71	1,25	0,35											
4,2	70	v		3,72	2,38	1,45	0,93	0,59	0,35											
		hr		144	48,7	14,6	4,93	1,66	0,46											
4,8	80	v		4,25	2,72	1,66	1,06	0,68	0,40											
		hr		185	62,3	18,7	6,32	2,13	0,59											
5,4	90	v			3,06	1,87	1,19	0,76	0,45	0,30										
		hr			77,5	23,3	7,85	2,65	0,74	0,27										
6	100	v			3,40	2,07	1,33	0,85	0,50	0,33										
		hr			94,1	28,3	9,54	3,22	0,90	0,33										
7,5	125	v			4,25	2,59	1,66	1,06	0,63	0,41										
		hr			142	42,8	14,4	4,86	1,36	0,49										
9	150	v				3,11	1,99	1,27	0,75	0,50	0,32									
		hr				59,9	20,2	6,82	1,90	0,69	0,23									
10,5	175	v				3,63	2,32	1,49	0,88	0,58	0,37									
		hr				79,7	26,9	9,07	2,53	0,92	0,31									
12	200	v				4,15	2,65	1,70	1,01	0,66	0,42									
		hr				102	34,4	11,6	3,23	1,18	0,40									
15	250	v				5,18	3,32	2,12	1,26	0,83	0,53	0,34								
		hr				154	52,0	17,5	4,89	1,78	0,60	0,20								
18	300	v					3,98	2,55	1,51	1,00	0,64	0,41								
		hr					72,8	24,6	6,85	2,49	0,84	0,28								
24	400	v					5,31	3,40	2,01	1,33	0,85	0,54	0,38							
		hr					124	41,8	11,66	4,24	1,43	0,48	0,20							
30	500	v					6,63	4,25	2,51	1,66	1,06	0,68	0,47							
		hr					187	63,2	17,6	6,41	2,16	0,73	0,30							
36	600	v						5,10	3,02	1,99	1,27	0,82	0,57	0,42						
		hr						88,6	24,7	8,98	3,03	1,02	0,42	0,20						
42	700	v						5,94	3,52	2,32	1,49	0,95	0,66	0,49						
		hr						118	32,8	11,9	4,03	1,36	0,56	0,26						
48	800	v						6,79	4,02	2,65	1,70	1,09	0,75	0,55						
		hr						151	42,0	15,3	5,16	1,74	0,72	0,34						
54	900	v						7,64	4,52	2,99	1,91	1,22	0,85	0,62						
		hr						188	52,3	19,0	6,41	2,16	0,89	0,42						
60	1000	v							5,03	3,32	2,12	1,36	0,94	0,69	0,53					
		hr							63,5	23,1	7,79	2,63	1,08	0,51	0,27					
75	1250	v							6,28	4,15	2,65	1,70	1,18	0,87	0,66					
		hr							96,0	34,9	11,8	3,97	1,63	0,77	0,40					
90	1500	v							7,54	4,98	3,18	2,04	1,42	1,04	0,80					
		hr							134	48,9	16,5	5,57	2,29	1,08	0,56					
105	1750	v							8,79	5,81	3,72	2,38	1,65	1,21	0,93					
		hr							179	65,1	21,9	7,40	3,05	1,44	0,75					
120	2000	v								6,63	4,25	2,72	1,89	1,39	1,06	0,68				
		hr								83,3	28,1	9,48	3,90	1,84	0,96	0,32				
150	2500	v								8,29	5,31	3,40	2,36	1,73	1,33	0,85				
		hr								126	42,5	14,3	5,89	2,78	1,45	0,49				
180	3000	v									6,37	4,08	2,83	2,08	1,59	1,02	0,71			
		hr									59,5	20,1	8,26	3,90	2,03	0,69	0,28			
210	3500	v									7,43	4,76	3,30	2,43	1,86	1,19	0,83			
		hr									79,1	26,7	11,0	5,18	2,71	0,91	0,38			
240	4000	v									8,49	5,44	3,77	2,77	2,12	1,36	0,94			
		hr									101	34,2	14,1	6,64	3,46	1,17	0,48			
300	5000	v										6,79	4,72	3,47	2,65	1,70	1,18			
		hr										51,6	21,2	10,0	5,23	1,77	0,73			
360	6000	v										8,15	5,66	4,16	3,18	2,04	1,42			
		hr										72,3	29,8	14,1	7,33	2,47	1,02			
420	7000	v											6,61	4,85	3,72	2,38	1,65	1,21		
		hr											39,6	18,7	9,75	3,29	1,35	0,64		
480	8000	v											7,55	5,55	4,25	2,72	1,89	1,39		
		hr											50,7	23,9	12,49	4,21	1,73	0,82		
540	9000	v											8,49	6,24	4,78	3,06	2,12	1,56	1,19	
		hr											63,0	29,8	15,5	5,24	2,16	1,02	0,53	
600	10000	v												6,93	5,31	3,40	2,36	1,73	1,33	
		hr																		

## FLOW RESISTANCE TABLE OF FLOW RESISTANCE IN BENDS, VALVES AND GATES

The flow resistance is calculated using the equivalent pipeline length method according to the table below:

ACCESSORY TYPE	DN											
	25	32	40	50	65	80	100	125	150	200	250	300
	Equivalent pipeline length (m)											
45° bend	0,2	0,2	0,4	0,4	0,6	0,6	0,9	1,1	1,5	1,9	2,4	2,8
90° bend	0,4	0,6	0,9	1,1	1,3	1,5	2,1	2,6	3,0	3,9	4,7	5,8
90° smooth bend	0,4	0,4	0,4	0,6	0,9	1,1	1,3	1,7	1,9	2,8	3,4	3,9
Union tee or cross	1,1	1,3	1,7	2,1	2,6	3,2	4,3	5,3	6,4	7,5	10,7	12,8
Gate	-	-	-	0,2	0,2	0,2	0,4	0,4	0,6	0,9	1,1	1,3
Non return valve	1,1	1,5	1,9	2,4	3,0	3,4	4,7	5,9	7,4	9,6	11,8	13,9

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The table is valid for the Hazen Williams coefficient  $C=100$  (cast iron pipework);

for steel pipework, multiply the values by 1,41;

for stainless steel, copper and coated cast iron pipework, multiply the values by 1,85;

When the **equivalent pipeline length** has been determined, the flow resistance is obtained from the table of flow resistance.

The values given are guideline values which are bound to vary slightly according to the model, especially for gate valves and non-return valves, for which it is a good idea to check the values supplied by manufacturers.

## VOLUMETRIC CAPACITY

Litres per minute l/min	Cubic metres per hour m <sup>3</sup> /h	Cubic feet per hour ft <sup>3</sup> /h	Cubic feet per minute ft <sup>3</sup> /min	Imp. gal. per minute Imp. gal./min	US gal. per minute Us gal./min
<b>1,000</b>	0,0600	2,1189	0,0353	0,2200	0,2642
16,6667	<b>1,000</b>	35,3147	0,5886	3,6662	4,4029
0,4719	0,0283	<b>1,000</b>	0,0167	0,1038	0,1247
28,3168	1,6990	60,0000	<b>1,000</b>	6,2288	7,4805
4,5461	0,2728	9,6326	0,1605	<b>1,000</b>	1,2009
3,7854	0,2271	8,0208	0,1337	0,8327	<b>1,000</b>

## PRESSURE AND HEAD

Newton per square metre N/m <sup>2</sup>	kilo Pascal kPa	bar bar	Pound force per square inch psi	metre of water m H <sub>2</sub> O	millimetre of mercury mm Hg
<b>1,000</b>	0,0010	1 x 10 <sup>-5</sup>	1.45 x 10 <sup>-4</sup>	1.02 x 10 <sup>-4</sup>	0,0075
1000,0000	<b>1,000</b>	0,0100	0,1450	0,1020	7,5006
1 x 10 <sup>5</sup>	100,0000	<b>1,000</b>	14,5038	10,1972	750,0638
6894,7570	6,8948	0,0689	<b>1,000</b>	0,7031	51,7151
9806,6500	9,8067	0,0981	1,4223	<b>1,000</b>	73,5561
133,3220	0,1333	0,0013	0,0193	0,0136	<b>1,000</b>

## LENGTH

millimetre mm	centimetre cm	metre m	inch in	foot ft	yard yd
<b>1,000</b>	0,1000	0,0010	0,0394	0,0033	0,0011
10,0000	<b>1,000</b>	0,0100	0,3937	0,0328	0,0109
1000,0000	100,0000	<b>1,000</b>	39,3701	3,2808	1,0936
25,4000	2,5400	0,0254	<b>1,000</b>	0,0833	0,0278
304,8000	30,4800	0,3048	12,0000	<b>1,000</b>	0,3333
914,4000	91,4400	0,9144	36,0000	3,0000	<b>1,000</b>

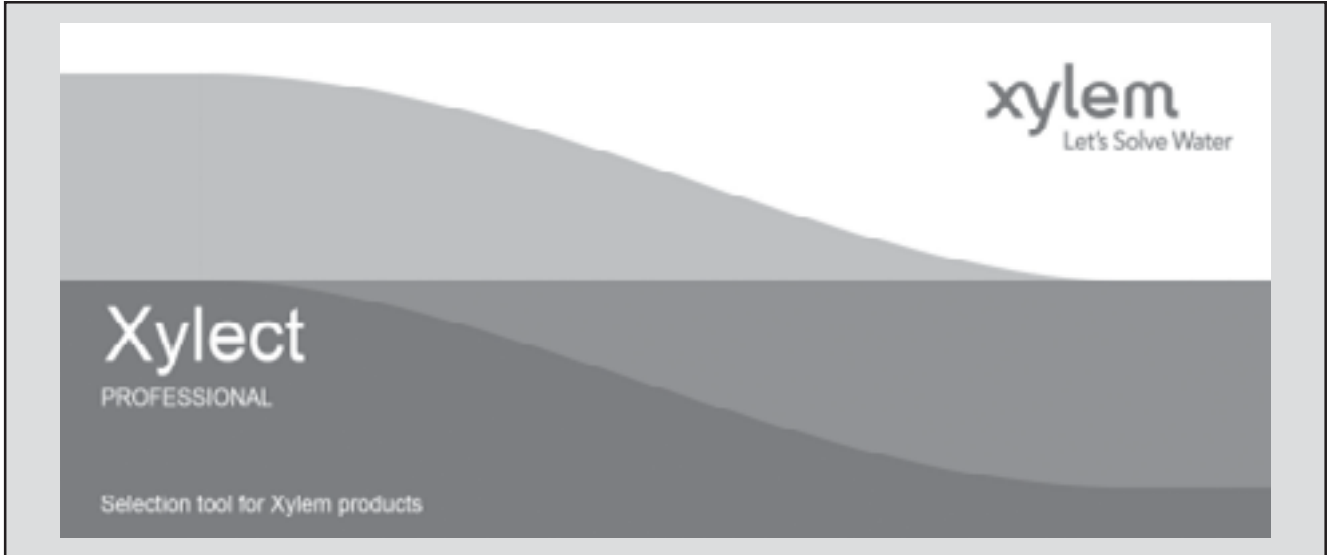
## VOLUME

cubic metre m <sup>3</sup>	litre litro	millilitre ml	imp. Gallon imp. gal.	US gallon US gal.	cubic foot ft <sup>3</sup>
<b>1,000</b>	1000,0000	1 x 10 <sup>6</sup>	219,9694	264,1720	35,3147
0,0010	<b>1,000</b>	1000,0000	0,2200	0,2642	0,0353
1 x 10 <sup>-6</sup>	0,0010	<b>1,000</b>	2.2 x 10 <sup>-4</sup>	2.642 x 10 <sup>-4</sup>	3.53 x 10 <sup>-5</sup>
0,0045	4,5461	4546,0870	<b>1,000</b>	1,2009	0,1605
0,0038	3,7854	3785,4120	0,8327	<b>1,000</b>	0,1337
0,0283	28,3168	28316,8466	6,2288	7,4805	<b>1,000</b>

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## FURTHER PRODUCT SELECTION AND DOCUMENTATION

### Xylect™



Xylect™ is pump solution selection software with an extensive online database of product information across the entire Lowara, and Vogel range of pumps and related products, with multiple search options and helpful project management facilities. The system holds up-to-date product information on thousands of products and accessories.

The possibility to search by applications and the detailed information output given makes it easy to make the optimal selection without having detailed knowledge about the Lowara and Vogel products.

The search can be made by:

- Application
- Product type
- Duty point

Xylect™ gives a detailed output:

- List with search results
- Performance curves (flow, head, power, efficiency, NPSH)
- Motor data
- Dimensional drawings
- Options
- Data sheet printouts
- Document downloads incl dxf files



*The search by application guides users not familiar with the product range to the right choice.*

**FURTHER PRODUCT SELECTION AND DOCUMENTATION**

**Xylect™**



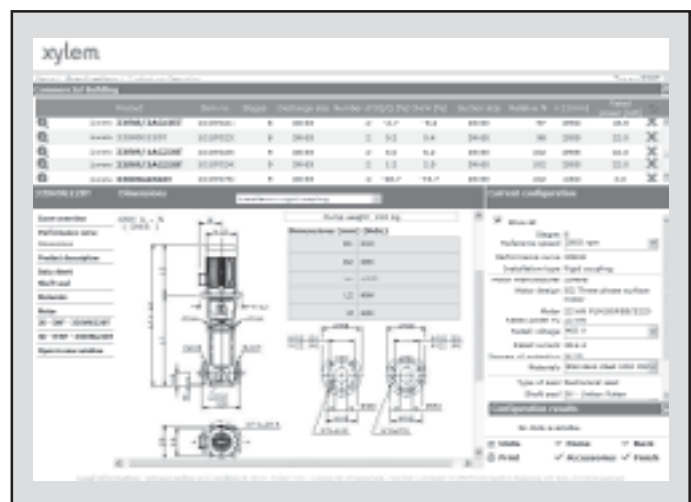
The detailed output makes it easy to select the optimal pump from the given alternatives.

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- Set own standard units
- Create and save projects
- Share projects with other Xylect™ users

Every user has a My Xylect space, where all projects are saved.

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Dimensional drawings appear on the screen and can be downloaded in dxf format.

# Xylem |'zīləm|

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- 2) a leading global water technology company.

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