



E.2 Series

New generation of dry
rotor circulator

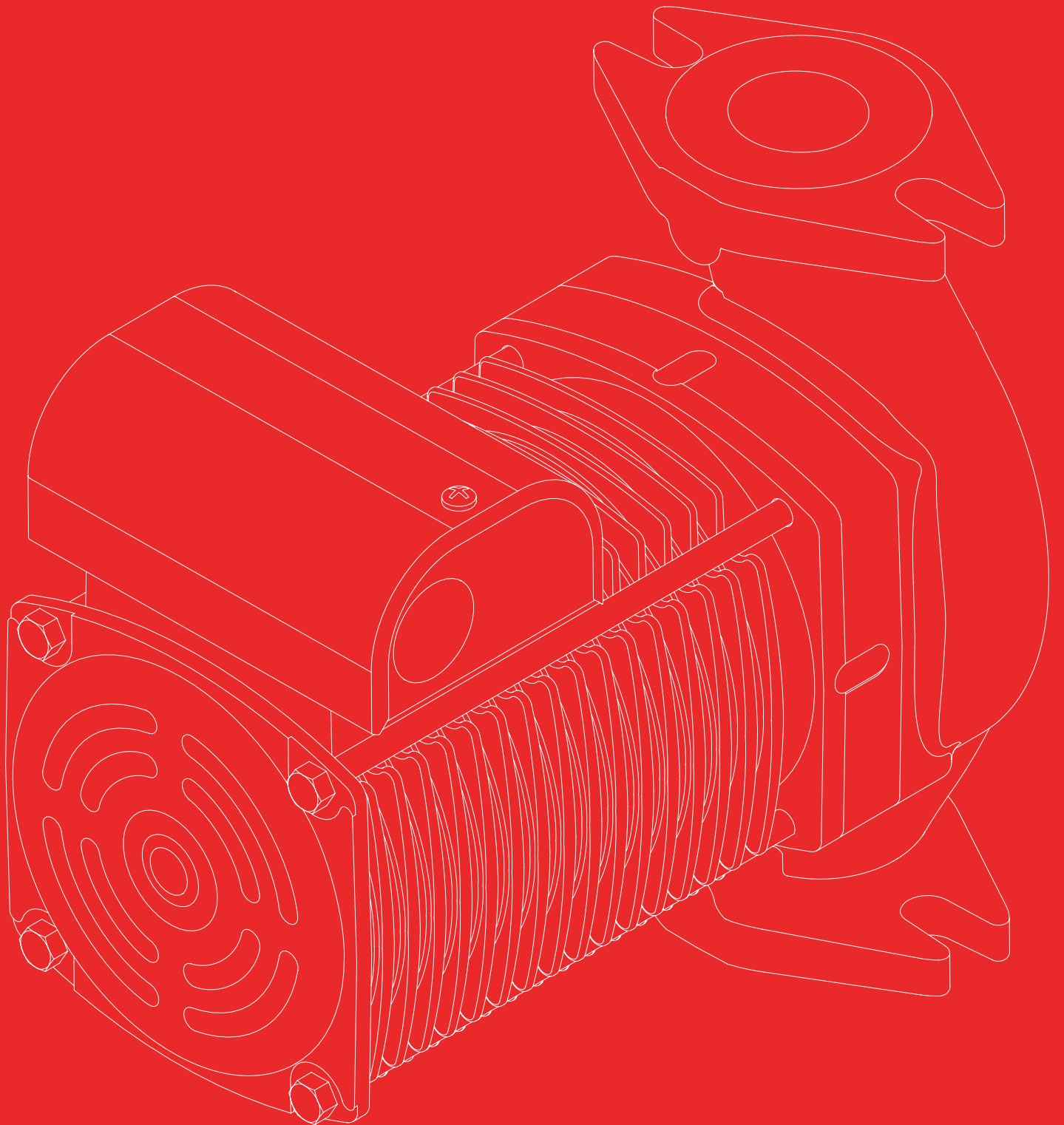
NSF 372



TECHNICAL BOOKLET

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DATE: NEW



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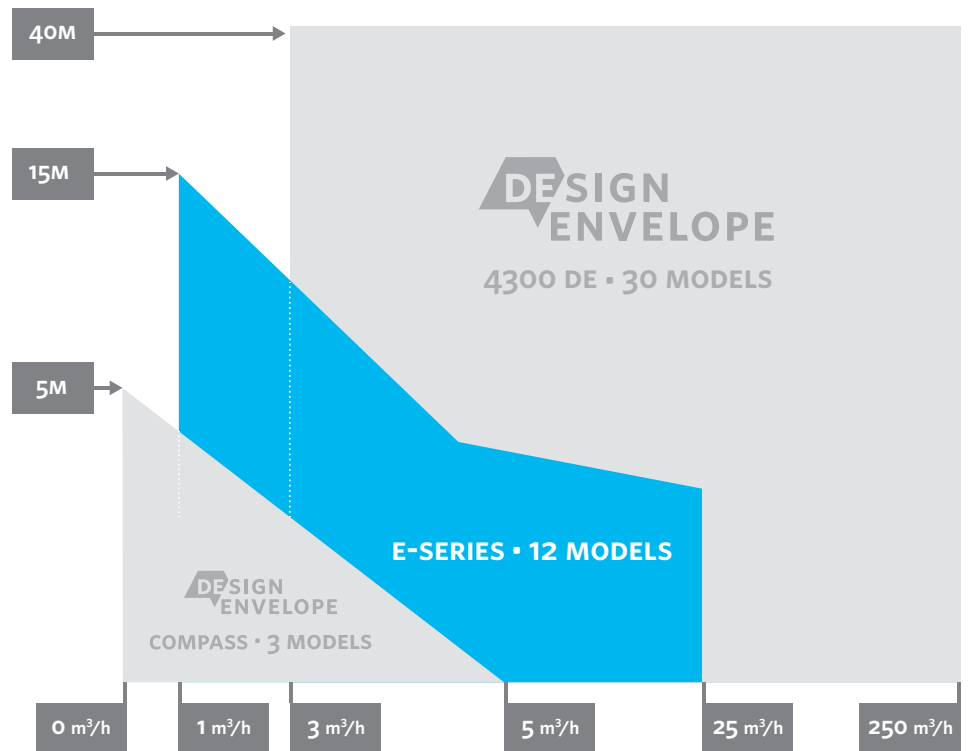
BE SMALLER & MORE EFFICIENT

THE E.2-SERIES DRY ROTOR CIRCULATOR

The Armstrong E.2 circulators draw on advanced motor technology and efficient hydraulic design to achieve excellent wire-to-water duty point efficiencies.

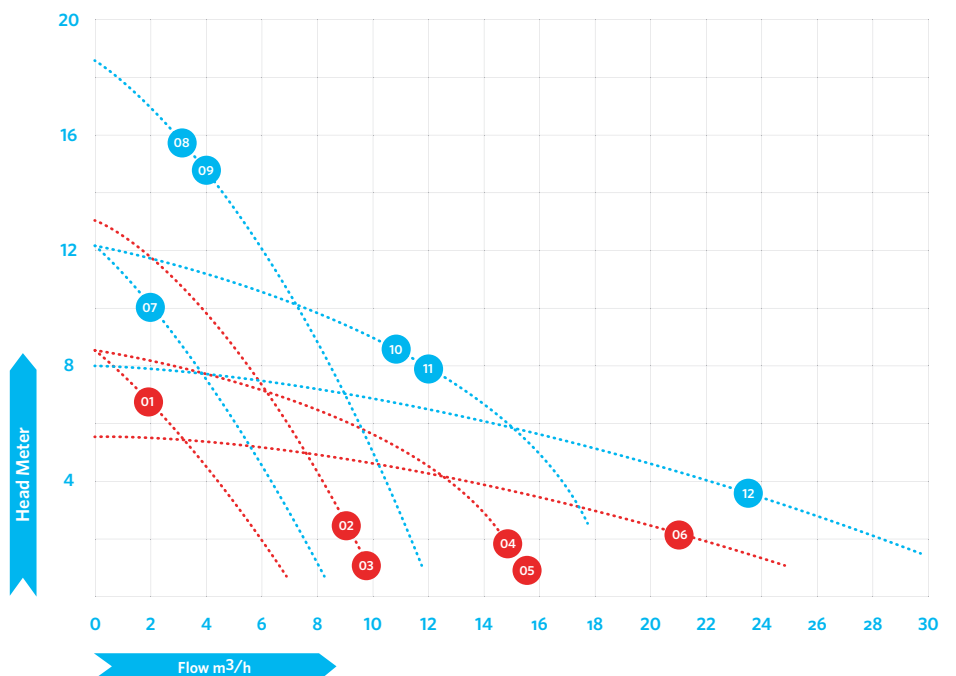
Delivering outstanding value to designers, specifiers, contractors, wholesalers, OEMs and building owners. Designed for use in a wide range of hydronic applications, including:

Hot & chilled water recirculation
Domestic hot water generation
Snow-melt installations
Radiant heating systems
Geothermal heat pumps



Circled numbers denote E.2 Series model number (Performance guaranteed only at operating point indicated).

01 E9 50Hz	07 E9 60Hz
02 E14 50Hz	08 E14 60Hz
03 E14B 50Hz	09 E14B 60Hz
04 E22 50Hz	10 E22 60Hz
05 E22B 50Hz	11 E22B 60Hz
06 E33 50Hz	12 E33 60Hz



LIFETIME VALUE

EASY TO MAINTAIN & REPAIR

E.2 Series circulators are permanently lubricated, so there's no requirement for maintenance during normal operation. When the mechanical seal wears out, it can be replaced in less than five minutes, which reduces onsite labor costs for contractors.

LEADING DUTY-POINT EFFICIENCY

The highly efficient dry motor design and hydraulics make the E.2 Series circulator more efficient than other fixed speed pumps in its class. This excellent wire-to-water efficiency leads to energy savings that building owners will appreciate.

EASY INSTALLATION & UPGRADES

The compact size of E.2 Series circulators makes them easy to install, even in confined spaces. The minimized flange-to-flange dimensions, combined with the Armstrong offering of cross-referenced Spool Pieces, make it easy for contractors to upgrade an existing circulator with an E.2 Series circulator, without making changes to the installed piping.

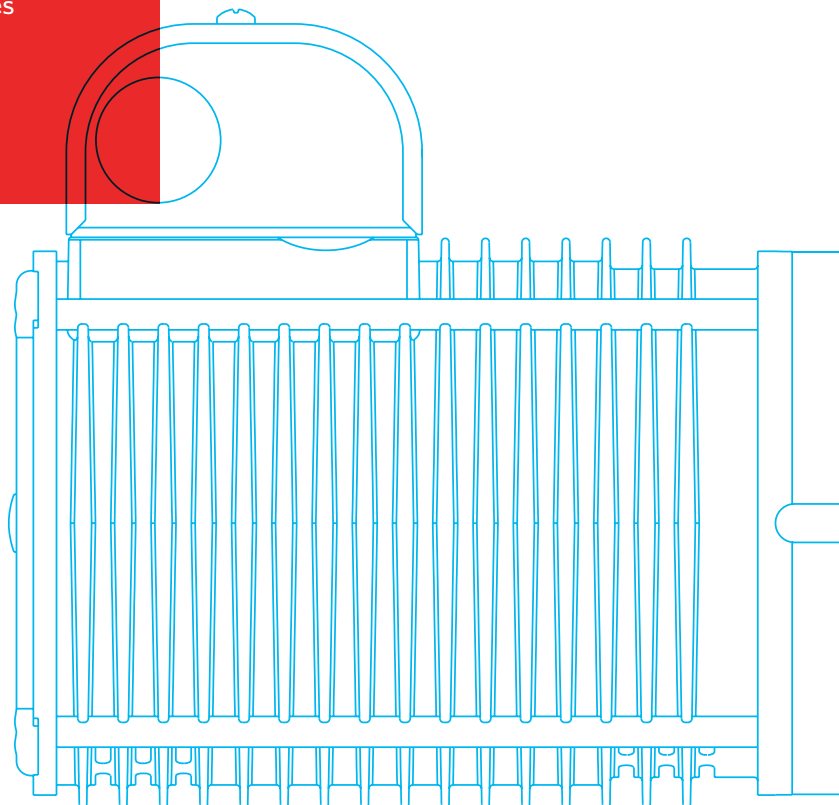
THE ENVIRONMENTALLY FRIENDLY SOLUTION

Broad range of circulator sizes lets you match performance to system requirements and avoid over-sizing

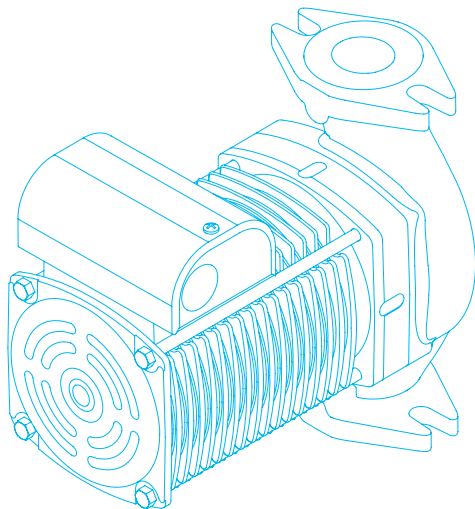
Excellent duty-point efficiency helps you reduce energy consumption

Easy on-site seal replacement means you can repair an E.2 Series pump rather than throwing it away and installing a replacement

Mechanical seal can be replaced easily in less than five minutes



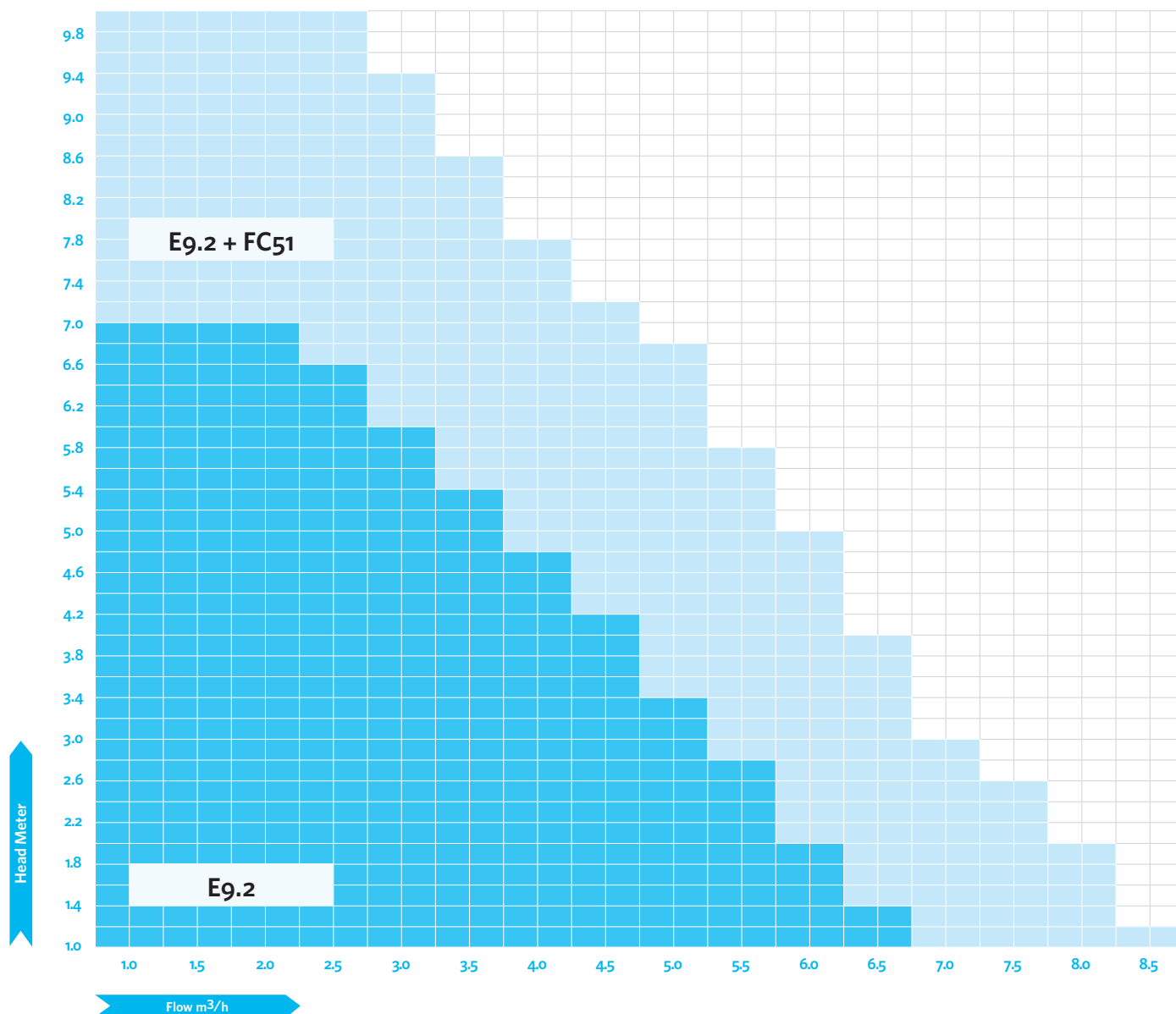
E9.2



DN32 Threaded BSPT

In-line pump with dry rotor technology. Easy maintenance with mechanical seal with Viton® elastomer. Small footprint available in fixed speed 50Hz and variable speed 60Hz version.

For indoor use only.



TECHNICAL SUBMITTAL

E9.2

PUMP DESCRIPTION			
Technology:	Circulator with motor fan		
Flow @ 50 Hz (Range):	1,0 à 6,5 m ³ /h	01	Type: STD125
Head @ 50 Hz (Range):	1,0 à 6,8 m		Execution: Close-coupled
Flow @ 60 Hz (Range):	1 à 8,5 m ³ /h	07	Material - Casing: Cast Iron
Head @ 60 Hz (Range):	1,0 à 9,8 m		Material - Shaft: Stainless Steel
Impeller size Ø:	83 mm	Material - Impeller: 30% Glass-filled NORYL™	
Max speed:	3250 rpm	Bearings: Permanently lubricated seal balls	
Fluid:	Water 100%	Volute gasket: EPDM	
Fluid temperature:	+4 à +110°C	Suction flange Ø*: DN32 threaded BSPT	
Fluid pressure:	10 bar g. max.	Discharge flange Ø*: DN32 threaded BSPT	
Installation:	Indoor with ambience max. 30°C	Flange rating: PN10	
Mounting:	Vertical pipe	Flange to Flange dim.: 201 mm	
Weight E9.2:	6 kg	Weight flange kit: 1 kg	
Part number fixed speed pump:	182201-647FS	Part number variable speed pump:	182201-647VS

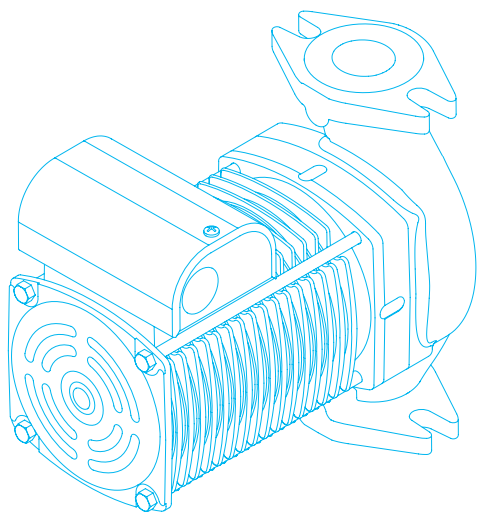
MOTOR			
Type:	1/6 HP 240V Open	Power installed:	125 W
Brand:	Armstrong	N° pole:	2
Rating:	IP 21	Electrical supply:	240V/1Ph/50-60Hz
Cooling:	ODP/Radiator	Full load current:	1,0 A
Insulation:	F / 80 K	Frequency drive:	Option

MECHANICAL SEAL			
Type:	Compact	Fluid:	Water 100%
Brand:	Armstrong	Suitable for potable water:	No - See bronze models
Materials:	Silicon carbide and FKM viton®		

FREQUENCY DRIVE OPTION			
Type:	FC51 1HP/0.75kW	Chassis:	M1
Brand:	Danfoss	Control mode:	Open loop
Rating:	IP20 (To be mounted in control panel)	Connectivity:	1 x RS485
Communication:	ModBus RTU	Relay:	1
Analogue input:	2	Digital inputs:	5
Analogue output:	1	Pressure Sensor:	Not included
EMC standards, Emission:	EN 61800-3, EN 61000-6-3/4, EN 55011, CEI 61800-3	EMC standards, Immunity	EN 61800-3, EN 61000-6-1/2, EN 61000-4-2 a EN 61000 4-6
Weight:	1.1 kg		

* The flanges kit (gaskets, bolts and flanges) are supplied separately and to be assembled by the installer.

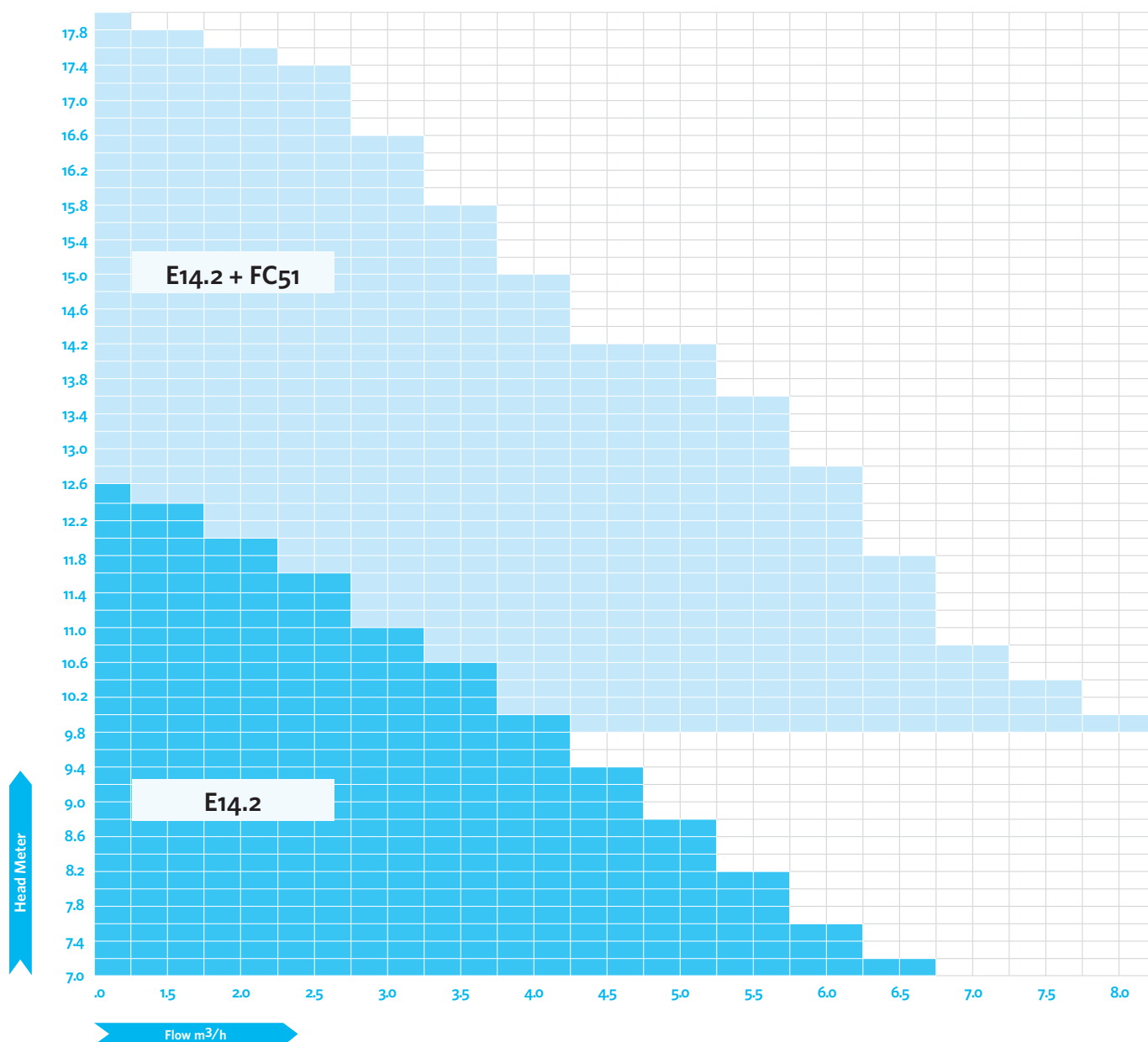
E14.2



DN32 Threaded BSPT

In-line pump with dry rotor technology. Easy maintenance with mechanical seal with Viton® elastomer. Small footprint available in fixed speed 50Hz and variable speed 60Hz version.

For indoor use only.



TECHNICAL SUBMITTAL

E14.2

PUMP DESCRIPTION			
Technology:	Circulator with fan cooled motor		
Flow @ 50 Hz (Range):	1 to 6,5 m³/h	02	Type: STD125
Head @ 50 Hz (Range):	0,7 to 12,4 m		Execution: Close-coupled
Flow @ 60 Hz (Range):	1 to 8,0 m³/h	08	Material - Casing: Cast Iron
Head @ 60 Hz (Range):	10,0 to 17,8 m		Material - Shaft: Stainless Steel
Impeller size Ø:	102 mm		Material - Impeller: 30% Glass-filled NORYL™
Max speed:	3300 rpm		Bearings: Permanently lubricated seal balls
Fluid:	Water 100%		Volute gasket: EPDM
Fluid temperature:	+4 à +110°C		Suction flange Ø*: DN32 threaded BSPT
Fluid pressure:	10 bar g. max.		Discharge flange: Ø*: DN32 threaded BSPT
Installation:	Indoor with ambience max. 30°C		Flange rating: PN10
Mounting:	Vertical pipe		Flange to Flange dim.: 211 mm
Weight E9.2:	8 kg		Weight flange kit: 1.2 kg
Part number fixed speed pump:	182212-802FS		Part number variable speed pump: 182212-802VS

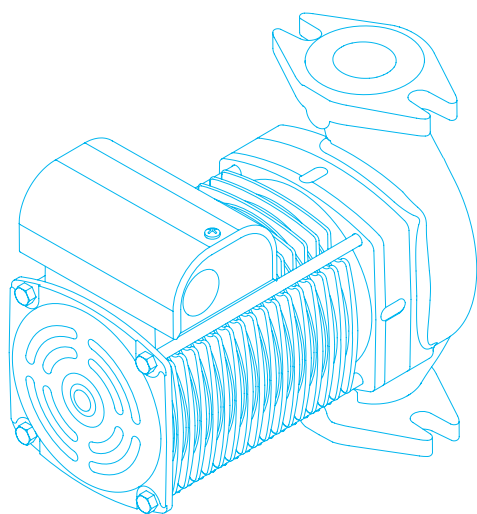
MOTOR			
Type:	2/5 HP 240V Open	Power installed:	300 W
Brand:	Armstrong	N° pole:	2
Rating:	IP 21	Electrical supply:	240V/1Ph/50-60Hz
Cooling:	Fan cooled	Full load current:	2,4 A
Insulation:	F / 80 K	Frequency drive:	Option

MECHANICAL SEAL			
Type:	Compact	Fluid:	Water 100%
Brand:	Armstrong	Suitable for potable water:	No - See bronze models
Materials:	Silicon carbide and FKM viton®		

FREQUENCY DRIVE OPTION			
Type:	FC51 1HP/0.75kW	Chassis:	M1
Brand:	Danfoss	Control mode:	Open loop
Rating:	IP20 (To be mounted in control panel)	Connectivity:	1 x RS485
Communication:	ModBus RTU	Relay:	1
Analogue input:	2	Digital inputs:	5
Analogue output:	1	Pressure Sensor:	Not included
EMC standards, Emission:	EN 61800-3, EN 61000-6-3/4, EN 55011, CEI 61800-3	EMC standards, Immunity	EN 61800-3, EN 61000-6-1/2, EN 61000-4-2 a EN 61000 4-6
Weight:	1.1 kg		

* The flanges kit (gaskets, bolts and flanges) are supplied separately and to be assembled by the installer.

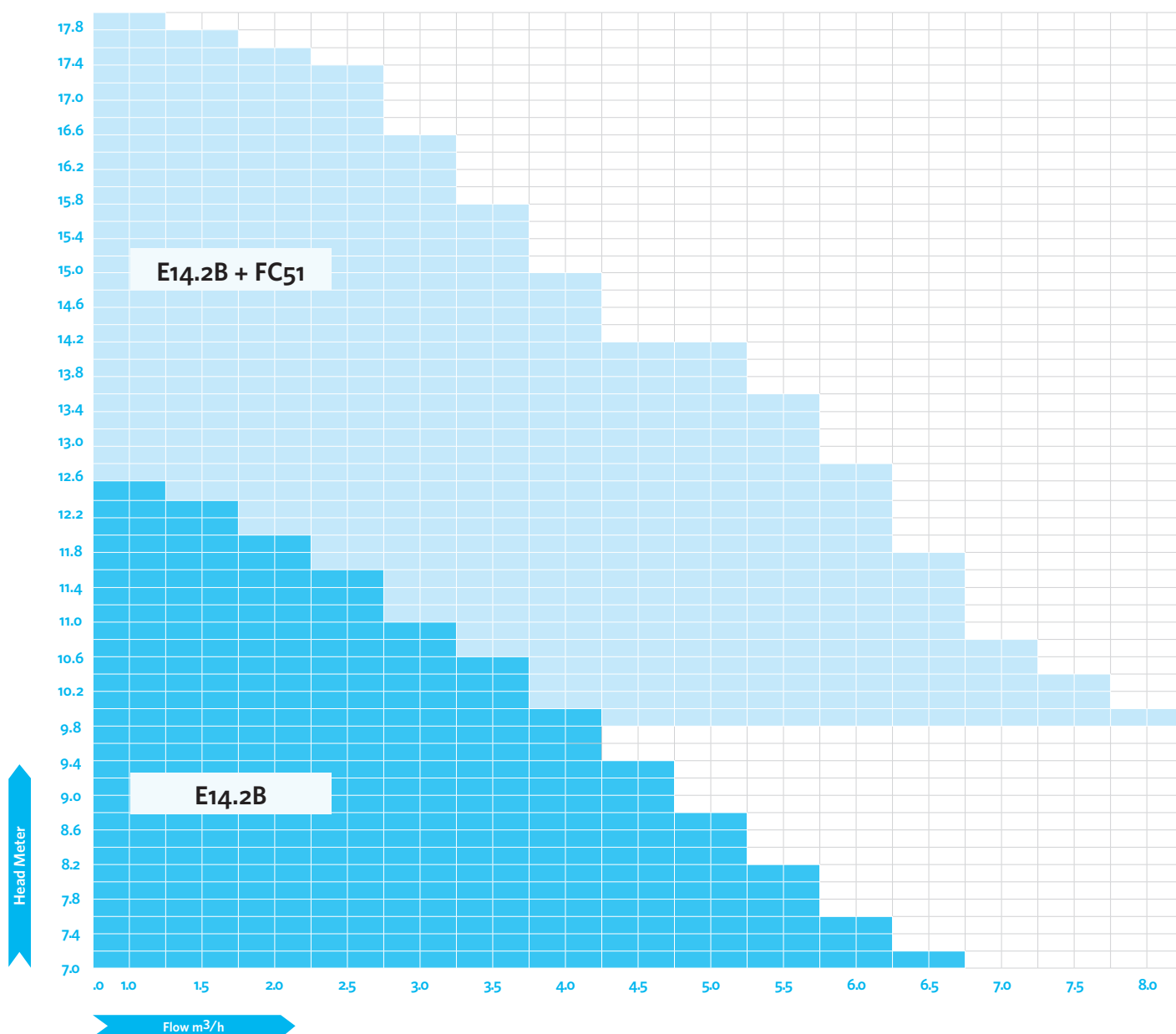
E14.2B



DN32 Threaded BSPT

In-line pump with dry rotor technology. Easy maintenance with mechanical seal with Viton® elastomer. Small footprint available in fixed speed 50Hz and variable speed 60Hz version.

For indoor use only.



TECHNICAL SUBMITTAL

E14.2B

PUMP DESCRIPTION

Technology:	Circulator with fan cooled motor		
Flow @ 50 Hz (Range):	1 to 6,5 m³/h	03	Type: LF BRZ
Head @ 50 Hz (Range):	0,7 to 12,4 m		Execution: Close-coupled
Flow @ 60 Hz (Range):	1 to 8,0 m³/h	09	Material - Casing: Cast Iron
Head @ 60 Hz (Range):	10,0 to 17,8 m		Material - Shaft: Bronze
Impeller size Ø:	102 mm		Material - Impeller: 30% Glass-filled NORYL™
Max speed:	3300 rpm		Bearings: Permanently lubricated seal balls
Fluid:	Water 100%		Volute gasket: EPDM
Fluid temperature:	+4 à +110°C		Suction flange Ø*: DN32 threaded BSPT
Fluid pressure:	10 bar g. max.		Discharge flange: Ø*: DN32 threaded BSPT
Installation:	Indoor with ambience max. 30°C		Flange rating: PN10
Mounting:	Vertical pipe		Flange to Flange dim.: 211 mm
Weight E9.2:	8 kg		Weight flange kit: 1.2 kg
Part number fixed speed pump:	182212-803FS		Part number variable speed pump: 182212-803VS

MOTOR

Type:	2/5 HP 240V Open	Power installed:	300 W
Brand:	Armstrong	N° pole:	2
Rating:	IP 21	Electrical supply:	240V/1Ph/50-60Hz
Cooling:	Fan cooled	Full load current:	2,4 A
Insulation:	F / 80 K	Frequency drive:	Option

MECHANICAL SEAL

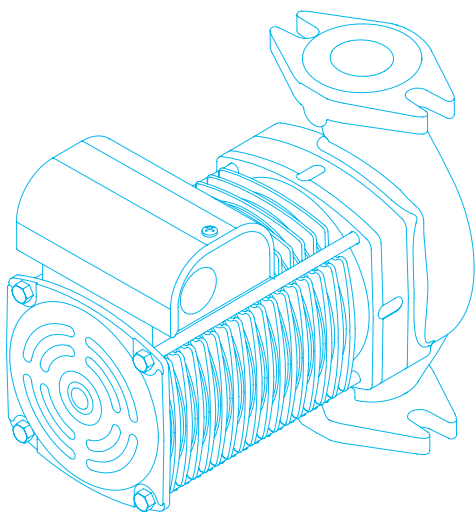
Type:	Compact	Fluid:	Water 100%
Brand:	Armstrong	Suitable for potable water:	Yes
Materials:	Silicon carbide and FKM viton®		

FREQUENCY DRIVE OPTION

Type:	FC51 1HP/0.75kW	Chassis:	M1
Brand:	Danfoss	Control mode:	Open loop
Rating:	IP20 (To be mounted in control panel)	Connectivity:	1 x RS485
Communication:	ModBus RTU	Relay:	1
Analogue input:	2	Digital inputs:	5
Analogue output:	1	Pressure Sensor:	Not included
EMC standards, Emission:	EN 61800-3, EN 61000-6-3/4, EN 55011, CEI 61800-3	EMC standards, Immunity	EN 61800-3, EN 61000-6-1/2, EN 61000-4-2 a EN 61000 4-6
Weight:	1.1 kg		

* The flanges kit (gaskets, bolts and flanges) are supplied separately and to be assembled by the installer.

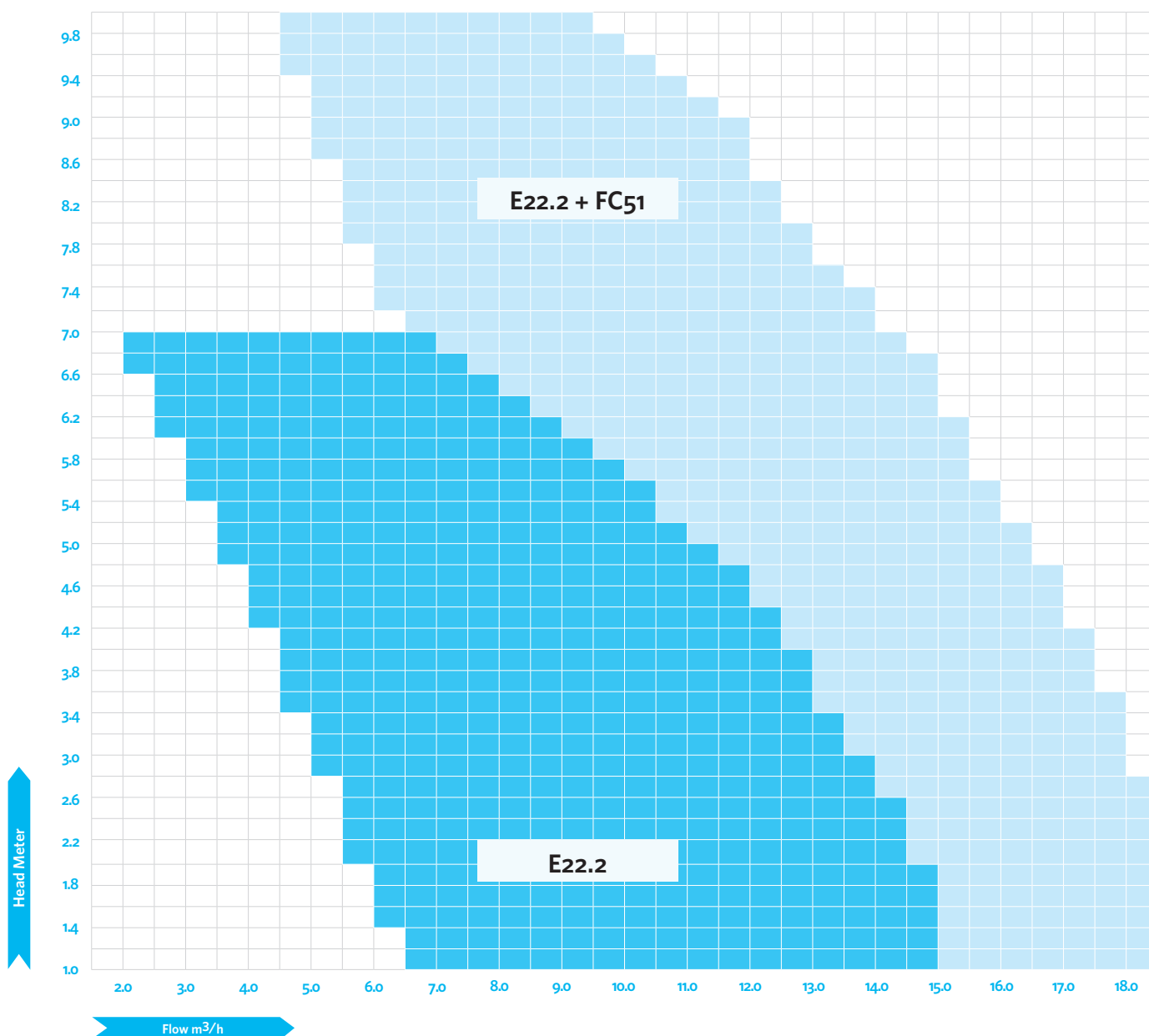
E22.2



DN40 Threaded BSPT

In-line pump with dry rotor technology. Easy maintenance with mechanical seal with Viton® elastomer. Small footprint available in fixed speed 50Hz and variable speed 60Hz version.

For indoor use only.



TECHNICAL SUBMITTAL

E22.2

PUMP DESCRIPTION			
Technology:	Circulator with fan cooled motor		
Flow @ 50 Hz (Range):	2,5 to 15,0 m³/h	04	Type: STD125
Head @ 50 Hz (Range):	1,0 to 6,8 m		Execution: Close-coupled
Flow @ 60 Hz (Range):	3,0 to 18,0 m³/h	10	Material - Casing: Cast Iron
Head @ 60 Hz (Range):	1,0 to 9,8 m		Material - Shaft: Stainless Steel
Impeller size Ø:	79 mm	Material - Impeller: 30% Glass-filled NORYL™	
Max speed:	3350 rpm	Bearings: Permanently lubricated seal balls	
Fluid:	Water 100%	Volute gasket: EPDM	
Fluid temperature:	+4 à +110°C	Suction flange Ø*: DN40 threaded BSPT	
Fluid pressure:	10 bar g. max.	Discharge flange Ø*: DN40 threaded BSPT	
Installation:	Indoor with ambience max. 30°C	Flange rating: PN10	
Mounting:	Vertical pipe	Flange to Flange dim.: 262 mm	
Weight E9.2:	10 kg	Weight flange kit: 1.2 kg	
Part number fixed speed pump:	182212-626FS	Part number variable speed pump:	182212-626VS

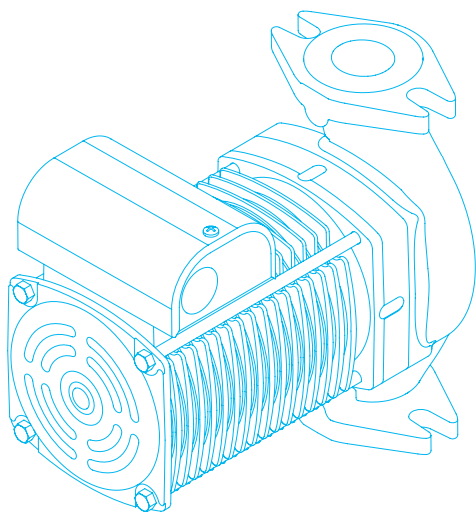
MOTOR			
Type:	2/5 HP 240V Open	Power installed:	300 W
Brand:	Armstrong	N° pole:	2
Rating:	IP 21	Electrical supply:	240V/1Ph/50-60Hz
Cooling:	Fan cooled	Full load current:	3.0 A
Insulation:	F / 80 K	Frequency drive:	Option

MECHANICAL SEAL			
Type:	Compact	Fluid:	Water 100%
Brand:	Armstrong	Suitable for potable water:	No - See bronze models
Materials:	Silicon carbide and FKM viton®		

FREQUENCY DRIVE OPTION			
Type:	FC51 1HP/0.75kW	Chassis:	M1
Brand:	Danfoss	Control mode:	Open loop
Rating:	IP20 (To be mounted in control panel)	Connectivity:	1 x RS485
Communication:	ModBus RTU	Relay:	1
Analogue input:	2	Digital inputs:	5
Analogue output:	1	Pressure Sensor:	Not included
EMC standards, Emission:	EN 61800-3, EN 61000-6-3/4, EN 55011, CEI 61800-3	EMC standards, Immunity	EN 61800-3, EN 61000-6-1/2, EN 61000-4-2 a EN 61000 4-6
Weight:	1.1 kg		

* The flanges kit (gaskets, bolts and flanges) are supplied separately and to be assembled by the installer.

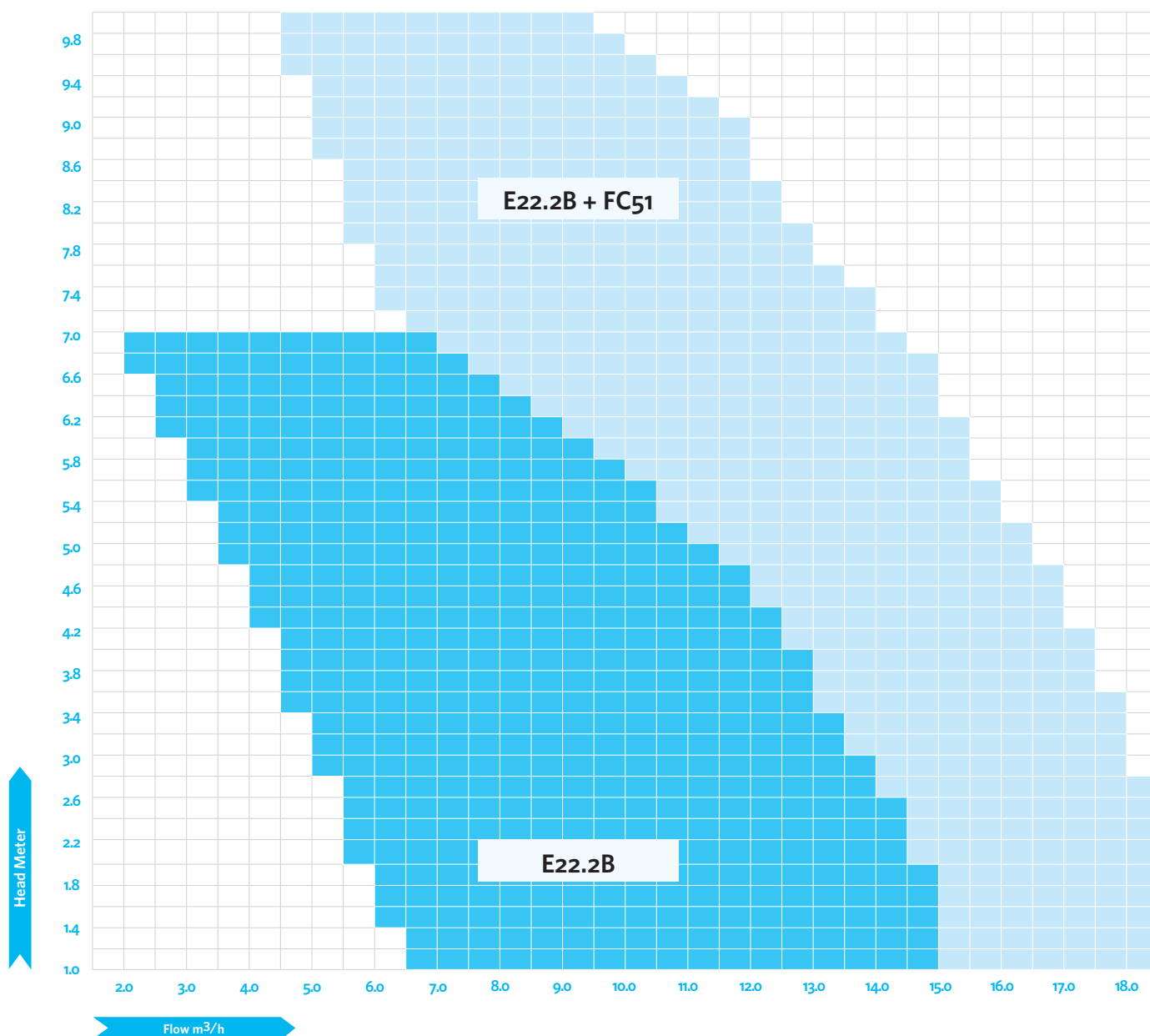
E22.2B



DN40 Threaded BSPT

In-line pump with dry rotor technology. Easy maintenance with mechanical seal with Viton® elastomer. Small footprint available in fixed speed 50Hz and variable speed 60Hz version.

For indoor use only.



TECHNICAL SUBMITTAL

E22.2B

PUMP DESCRIPTION

Technology:	Circulator with fan cooled motor		
Flow @ 50 Hz (Range):	2,5 to 15,0 m³/h	05	Type: LF BRZ
Head @ 50 Hz (Range):	1,0 to 6,8 m		Execution: Close-coupled
Flow @ 60 Hz (Range):	3,0 to 18,0 m³/h	11	Material - Casing: Bronze
Head @ 60 Hz (Range):	1,0 to 9,8 m		Material - Shaft: Stainless Steel
Impeller size Ø:	79 mm		Material - Impeller: 30% Glass-filled NORYL™
Max speed:	3350 rpm		Bearings: Permanently lubricated seal balls
Fluid:	Water 100%		Volute gasket: EPDM
Fluid temperature:	+4 à +110°C		Suction flange Ø*: DN40 threaded BSPT
Fluid pressure:	10 bar g. max.		Discharge flange: Ø*: DN40 threaded BSPT
Installation:	Indoor with ambience max. 30°C		Flange rating: PN10
Mounting:	Vertical pipe		Flange to Flange dim.: 262 mm
Weight E9.2:	10 kg		Weight flange kit: 1.2 kg
Part number fixed speed pump:	182212-627FS		Part number variable speed pump: 182212-627VS

MOTOR

Type:	2/5 HP 240V Open	Power installed:	300 W
Brand:	Armstrong	N° pole:	2
Rating:	IP 21	Electrical supply:	240V/1Ph/50-60Hz
Cooling:	Fan cooled	Full load current:	3,0 A
Insulation:	F / 80 K	Frequency drive:	Option

MECHANICAL SEAL

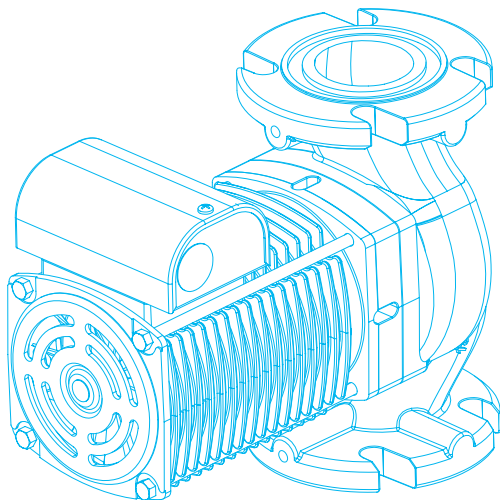
Type:	Compact	Fluid:	Water 100%
Brand:	Armstrong	Suitable for potable water:	Yes
Materials:	Silicon carbide and FKM viton®		

FREQUENCY DRIVE OPTION

Type:	FC51 1HP/0.75kW	Chassis:	M1
Brand:	Danfoss	Control mode:	Open loop
Rating:	IP20 (To be mounted in control panel)	Connectivity:	1 x RS485
Communication:	ModBus RTU	Relay:	1
Analogue input:	2	Digital inputs:	5
Analogue output:	1	Pressure Sensor:	Not included
EMC standards, Emission:	EN 61800-3, EN 61000-6-3/4, EN 55011, CEI 61800-3	EMC standards, Immunity	EN 61800-3, EN 61000-6-1/2, EN 61000-4-2 a EN 61000 4-6
Weight:	1.1 kg		

* The flanges kit (gaskets, bolts and flanges) are supplied separately and to be assembled by the installer.

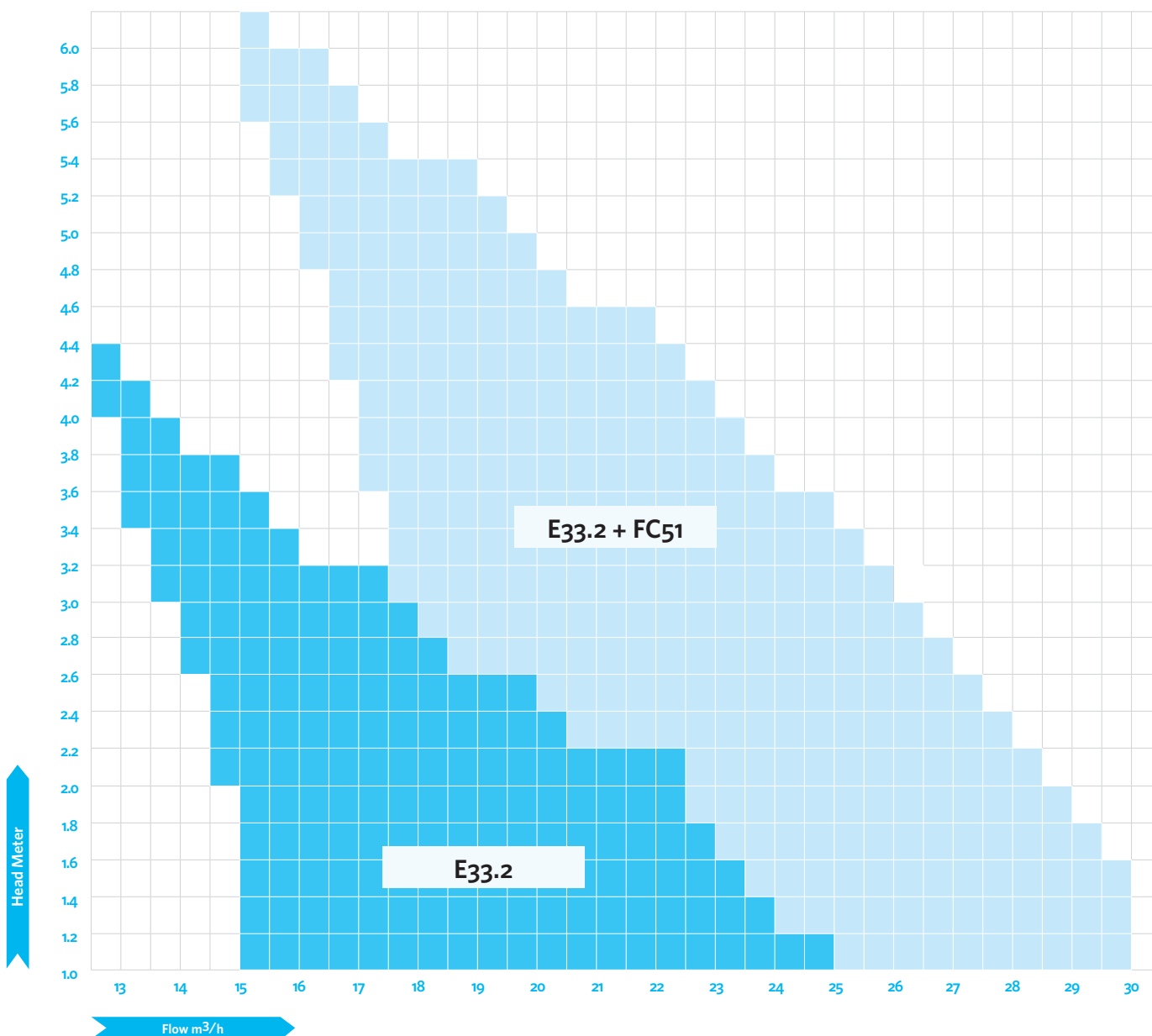
E33.2



DN50 Threaded BSPT

In-line pump with dry rotor technology. Easy maintenance with mechanical seal with Viton® elastomer. Small footprint available in fixed speed 50Hz and variable speed 60Hz version.

For indoor use only.



TECHNICAL SUBMITTAL

E33.2

PUMP DESCRIPTION			
Technology:	Circulator with fan cooled motor		
Flow @ 50 Hz (Range):	13,0 to 25,0 m³/h	06	Type: STD125
Head @ 50 Hz (Range):	1,0 to 4,2 m		Execution: Close-coupled
Flow @ 60 Hz (Range):	15.5 to 30,0 m³/h	12	Material - Casing: Cast Iron
Head @ 60 Hz (Range):	1,0 to 6,0 m		Material - Shaft: Stainless Steel
Impeller size Ø:	71 mm		Material - Impeller: 30% Glass-filled NORYL™
Max speed:	3300 rpm		Bearings: Permanently lubricated seal balls
Fluid:	Water 100%		Volute gasket: EPDM
Fluid temperature:	+4 à +110°C		Suction flange Ø*: DN50 threaded BSPT
Fluid pressure:	10 bar g. max.		Discharge flange: Ø*: DN50 threaded BSPT
Installation:	Indoor with ambience max. 30°C		Flange rating: PN10
Mounting:	Vertical pipe		Flange to Flange dim.: 265 mm
Weight E9.2:	12 kg		Weight flange kit: 3.0 kg
Part number fixed speed pump:	182212-628FS		Part number variable speed pump: 182212-628VS

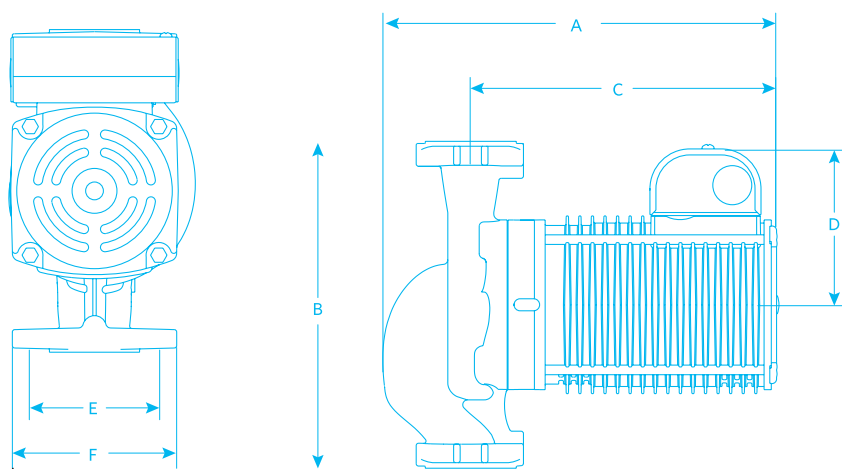
MOTOR			
Type:	2/5 HP 240V Open	Power installed:	300 W
Brand:	Armstrong	N° pole:	2
Rating:	IP 21	Electrical supply:	240V/1Ph/50-60Hz
Cooling:	Fan cooled	Full load current:	3,1 A
Insulation:	F / 80 K	Frequency drive:	Option

MECHANICAL SEAL			
Type:	Compact	Fluid:	Water 100%
Brand:	Armstrong	Suitable for potable water:	No - See bronze models
Materials:	Silicon carbide and FKM viton®		

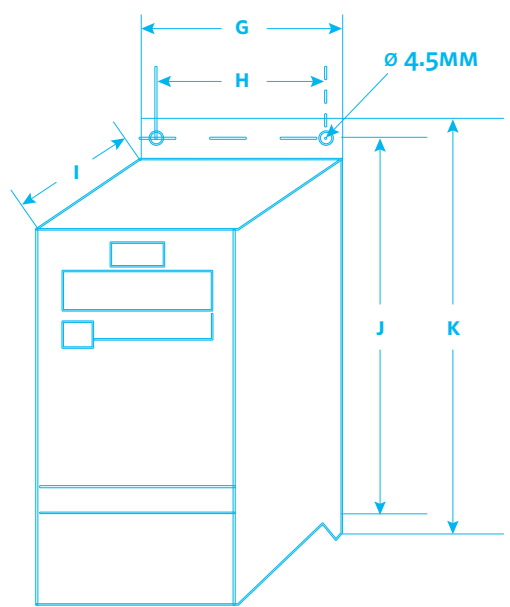
FREQUENCY DRIVE OPTION			
Type:	FC51 1HP/0.75kW	Chassis:	M1
Brand:	Danfoss	Control mode:	Open loop
Rating:	IP20 (To be mounted in control panel)	Connectivity:	1 x RS485
Communication:	ModBus RTU	Relay:	1
Analogue input:	2	Digital inputs:	5
Analogue output:	1	Pressure Sensor:	Not included
EMC standards, Emission:	EN 61800-3, EN 61000-6-3/4, EN 55011, CEI 61800-3	EMC standards, Immunity	EN 61800-3, EN 61000-6-1/2, EN 61000-4-2 a EN 61000 4-6
Weight:	1.1 kg		

* The flanges kit (gaskets, bolts and flanges) are supplied separately and to be assembled by the installer.

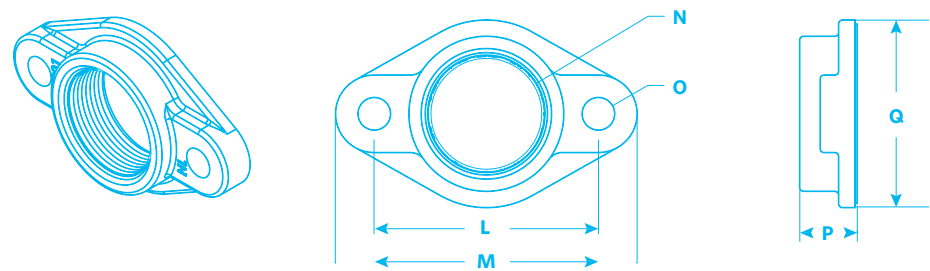
E9.2 MECHANICAL DIMENSIONS



PUMP DIMENSIONS (mm)	
MODEL	E9.2
BODY	CAST IRON
A	180
B	164
C	140
D	97
E	81
F	107
CONNECTION TYPE & SIZE	DN32 Threaded BSPT
Weight	5.94 Kg

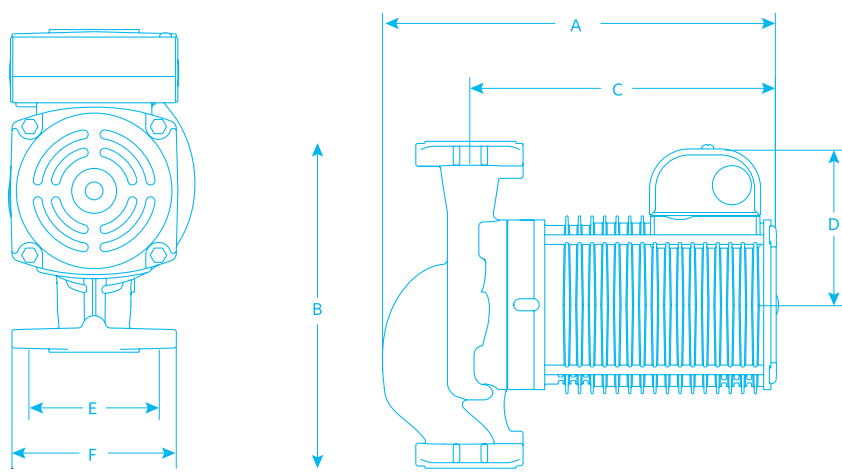


FC51 DIMENSIONS (mm)	
ENCLOSURE	M1
G	70
H	55
I	155.6
J	140.4
K	150
Weight	1.1 Kg

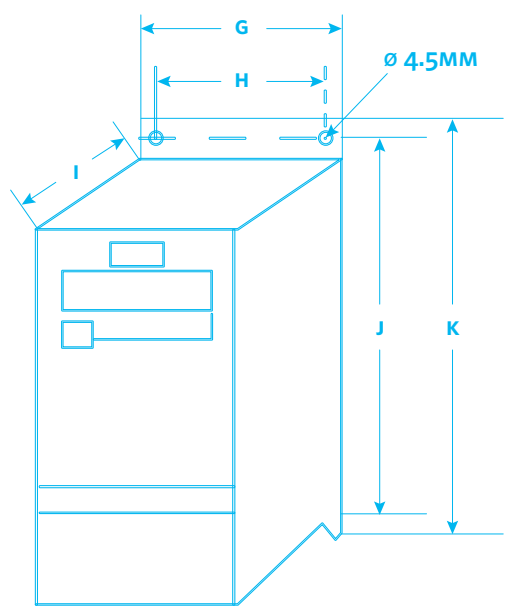


COUNTER FLANGES (mm)	
L	87.31
M	117.48
N	DN32 BSPT
O	Ø=12.70
P	22.23
Q	73.03

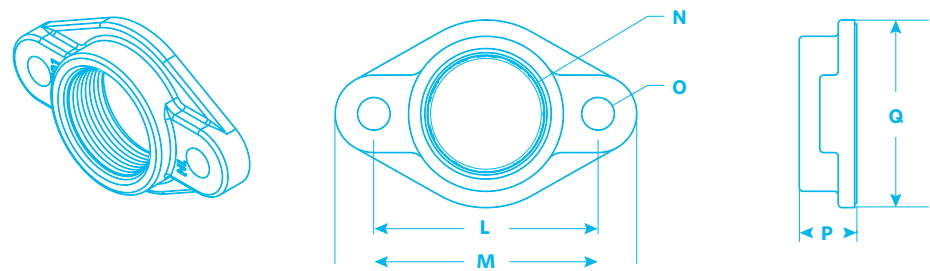
E14.2 MECHANICAL DIMENSIONS



PUMP DIMENSIONS (mm)	
MODEL	E14.2
BODY	CAST IRON
A	235
B	164
C	197
D	101
E	81
F	107
CONNECTION TYPE & SIZE	DN32 Threaded BSPT
Weight	8.07 Kg

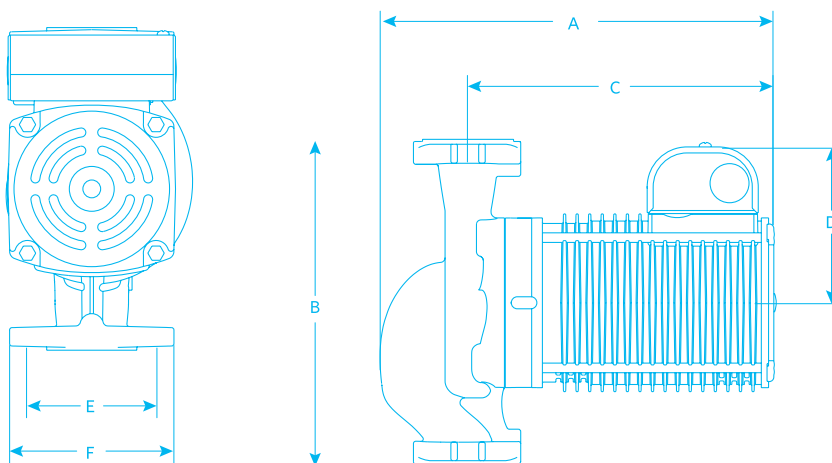


FC51 DIMENSIONS (mm)	
ENCLOSURE	M1
G	70
H	55
I	155.6
J	140.4
K	150
Weight	1.1 Kg



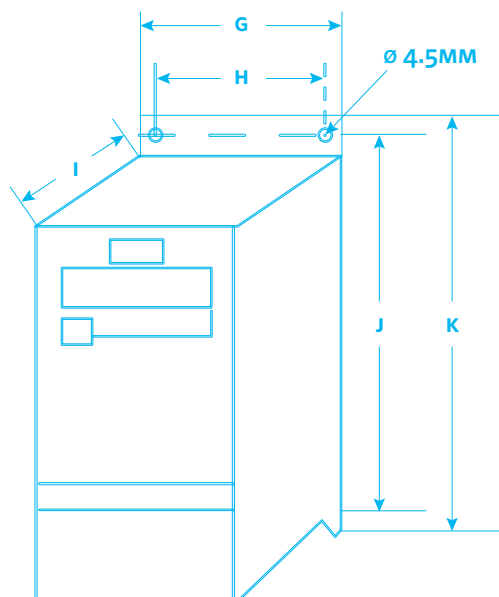
COUNTER FLANGES (mm)	
L	87.31
M	117.48
N	DN32 BSPT
O	Ø=12.70
P	22.23
Q	73.03

E14.2B MECHANICAL DIMENSIONS



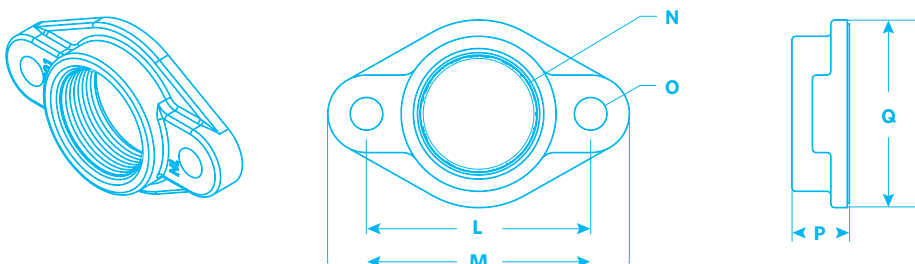
PUMP DIMENSIONS (mm)

MODEL	E14.2B
BODY	BRONZE
A	235
B	164
C	197
D	101
E	81
F	107
CONNECTION TYPE & SIZE	DN32 Threaded BSPT
Weight	8.35 Kg



FC51 DIMENSIONS (mm)

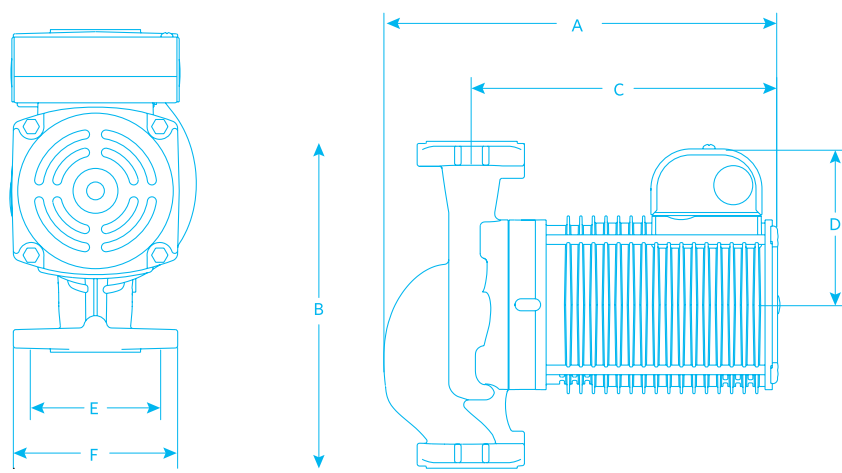
ENCLOSURE	M1
G	70
H	55
I	155.6
J	140.4
K	150
Weight	1.1 Kg



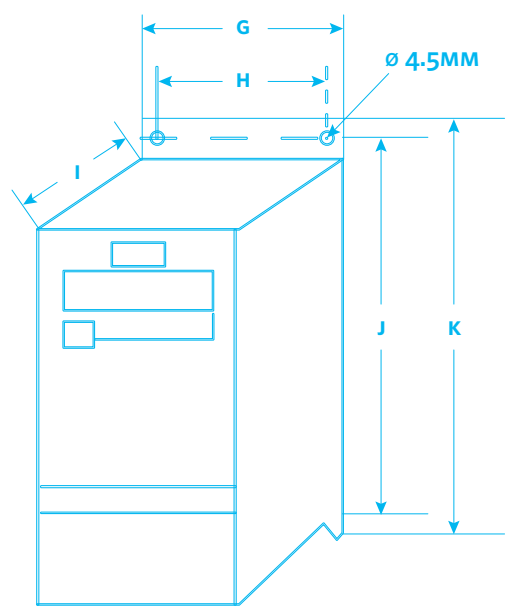
COUNTER FLANGES (mm)

L	87.31
M	117.48
N	DN32 BSPT
O	Ø=12.70
P	22.23
Q	73.03

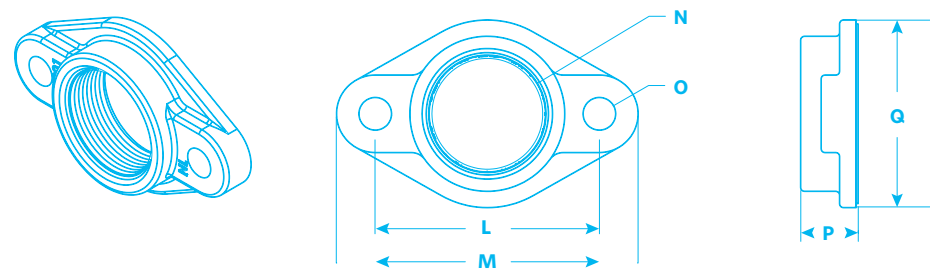
E22.2 MECHANICAL DIMENSIONS



PUMP DIMENSIONS (mm)	
MODEL	E22.2
BODY	CAST IRON
A	261
B	215
C	202
D	101
E	86
F	107
CONNECTION TYPE & SIZE	DN40 Threaded BSPT
Weight	9.39 Kg

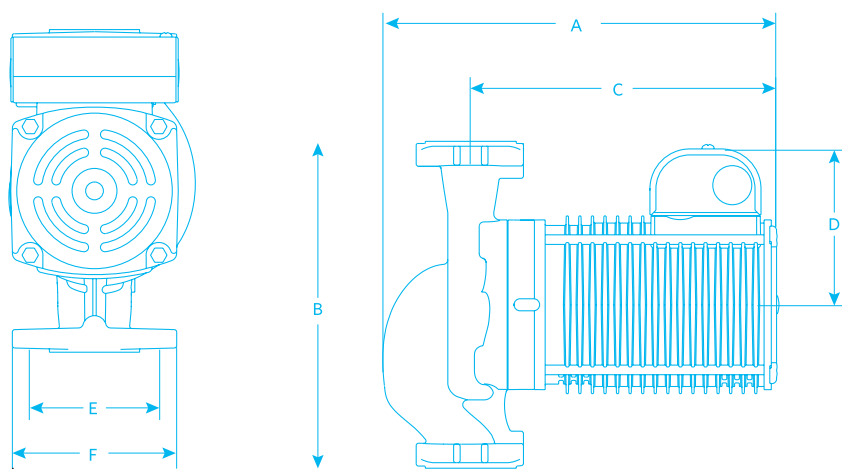


FC51 DIMENSIONS (mm)	
ENCLOSURE	M1
G	70
H	55
I	155.6
J	140.4
K	150
Weight	1.1 Kg

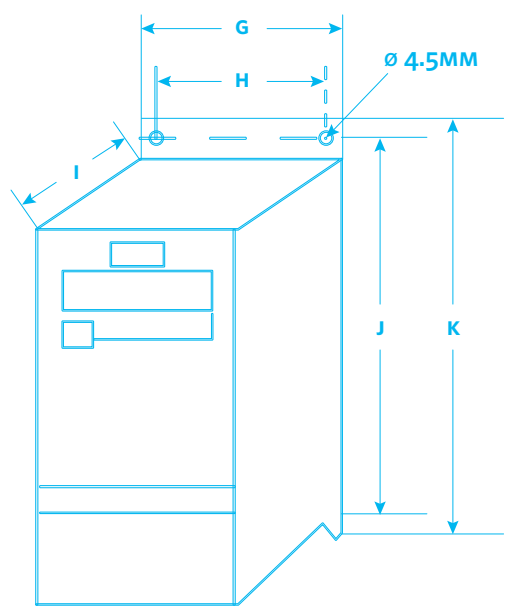


COUNTER FLANGES (mm)	
L	87.31
M	117.48
N	DN40 BSPT
O	Ø=12.70
P	22.23
Q	73.03

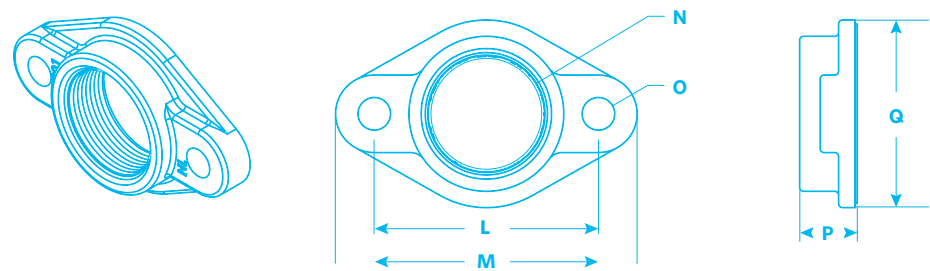
E22.2B MECHANICAL DIMENSIONS



PUMP DIMENSIONS (mm)	
MODEL	E22.2B
BODY	BRONZE
A	261
B	215
C	202
D	101
E	86
F	107
CONNECTION TYPE & SIZE	DN40 Threaded BSPT
Weight	9.48 Kg

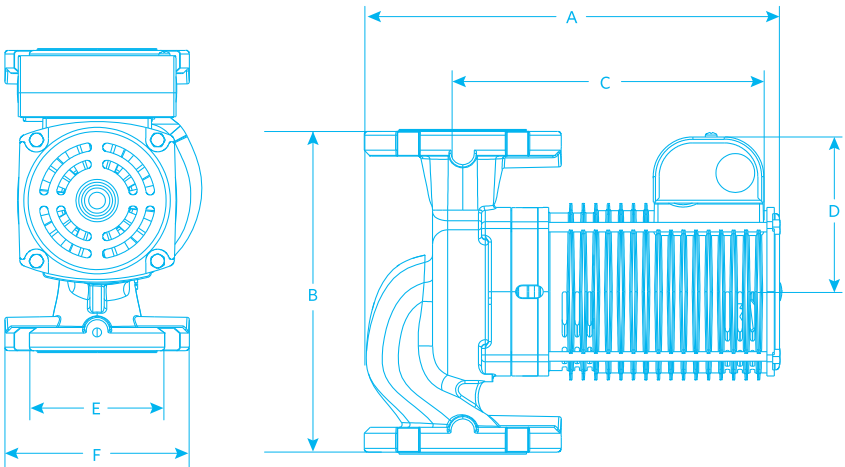


FC51 DIMENSIONS (mm)	
ENCLOSURE	M1
G	70
H	55
I	155.6
J	140.4
K	150
Weight	1.1 Kg



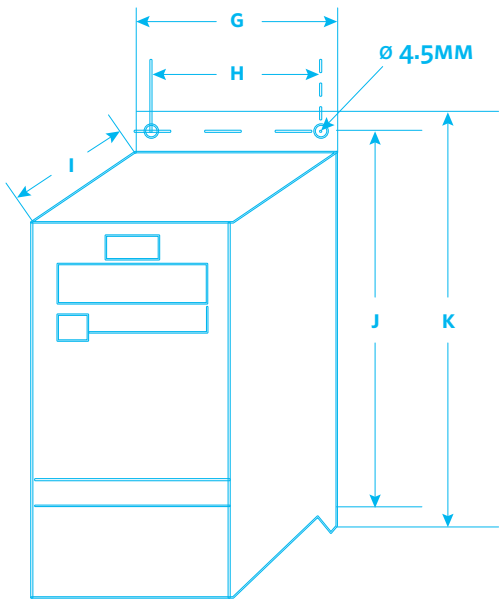
COUNTER FLANGES (mm)	
L	87.31
M	117.48
N	DN40 BSPT
O	Ø=12.70
P	22.23
Q	73.03

E33.2 MECHANICAL DIMENSIONS



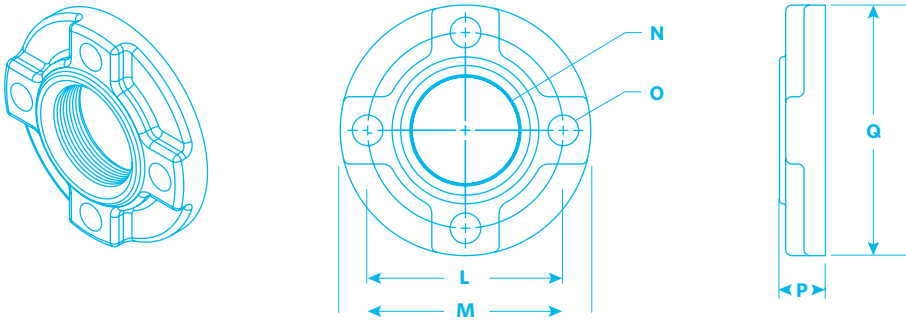
PUMP DIMENSIONS (mm)

MODEL	E33.2
BODY	CAST IRON
A	276
B	215
C	210
D	101
E	73
F	131
CONNECTION TYPE & SIZE	DN50 Threaded BSPT
Weight	7.8 Kg



FC51 DIMENSIONS (mm)

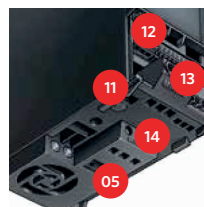
ENCLOSURE	M1
G	70
H	55
I	155.6
J	140.4
K	150
Weight	1.1 Kg



COUNTER FLANGES (mm)

L	101.6
M	130.05
N	DN50 BSPT
O	Ø=15.88
P	23.81
Q	130.05

FC51 DRIVE DATASHEET



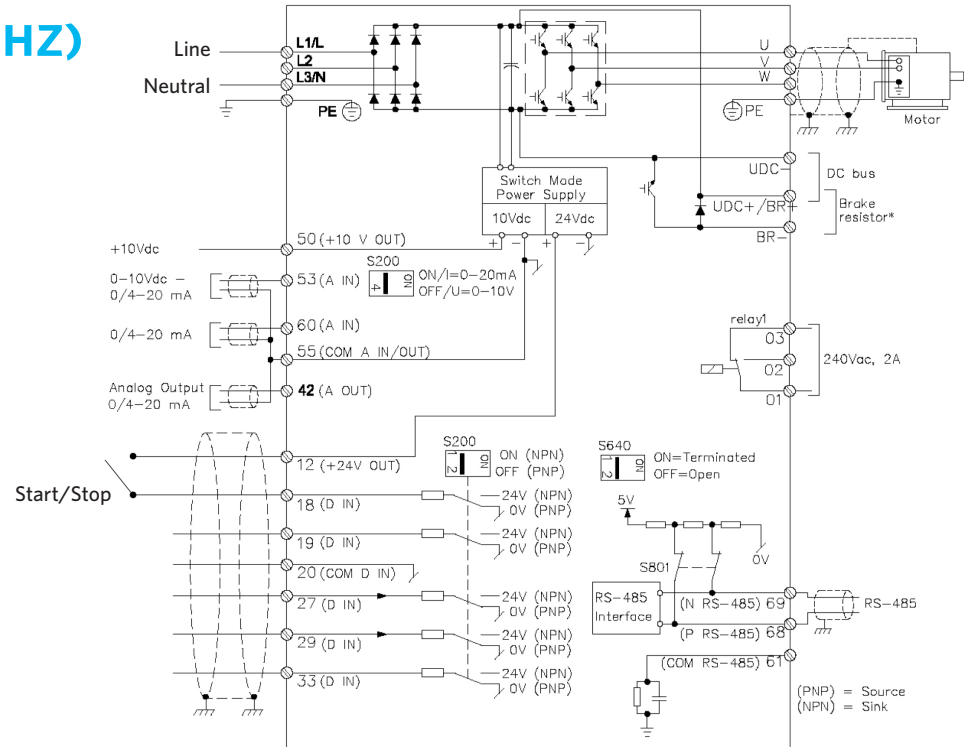
- 01** Well protected IP 20 enclosure
No forced air flow through electronics
- 02** IP 20 even without terminal cover
- 03** High quality capacitors
- 04** RFI Filter
- 05** DC-link access
- 06** Hot pluggable LCP
- 07** LCD display
- 08** Potentiometer
- 09** RS 485 pluggable
- 10** Customer relay screw terminals
Wire inlet from the bottom
- 11** Safety earth
min. 4 mm2 accessible from front
- 12** I/O terminals
- 13** Mains screw terminals
- 14** Motor screw terminals

SPECIFICATIONS

MAINS SUPPLY (L1, L2, L3)		ANALOG INPUT		CABLE LENGTHS	
Supply voltage:	1 x 200-240 V $\pm 10\%$ 3 x 200-240 V $\pm 10\%$ 3 x 380-480 V $\pm 10\%$	Analog inputs:	2	Max. motor cable length, screened (shielded):	15 m
Supply frequency:	50/60 Hz	Modes:	1 current/1 voltage or current	Max. motor cable length, unscreened (unshielded):	50 m
Displacement Power Factor (cos) near unity:	(> 0.98)	Voltage level:	0 - 10 V (scaleable)	SURROUNDINGS/ EXTERNAL	
Switching on input supply L1, L2, L3: 1-2 times/min.		Current level:	0/4 - 20 mA (scaleable)	Enclosure	IP 20
		ANALOG OUTPUT		Vibration test:	0.7 g
OUTPUT DATA (U, V, W)		Programmable analog outputs:	1	Max. relative humidity:	5%-95% (IEC 721-3-3; Class 3K3 (non-condensing) during operation)
Output voltage:	0-100% of supply voltage	Current range at analog output:	0/4-20 mA	Aggressive environment:	(IEC 721-3-3), coated class 3C3
Output frequency:	0-200 Hz (VVC+ mode) 0-400 Hz (U/f mode)	Max. load to common at analog output:	500 Ω	Ambient temperature:	Max. 50° C
Switching on output:	Unlimited	Accuracy on analog output:	Max. error: 1% of full scale	24-hour average:	Max. 40° C
Switching on output:	0.05-3600 sec	ON-HAND POWER SUPPLY		APPROVALS	
DIGITAL INPUTS		Output voltage:	10.5 \pm 0.5 V, 24 \pm 0.5 V	CE, UL	
Programmable inputs:	5	Max. load (10 V):	25 mA	PROTECTION AND FEATURES	
Logic:	PNP or NPN	Max. load (24 V):	100 mA	Electronic thermal motor protection against overload	
Voltage level:	0-24 V	RELAY OUTPUTS		Temperature monitoring of the heat sink protects the drive from overheating	
Maximum voltage on input:	28 V DC	Programmable relay outputs:	1	The drive is protected against short-circuits on motor terminals U, V, W	
Input Resistance, Ri:	Approx. 4 k Ω	Max. terminal load:	240 V AC, 2 A	The drive is protected against earth fault on motor terminals U, V, W	
PULSE INPUTS		FIELDBUS COMMUNICATION			
Programmable pulse inputs:	1	FC Protocol, Modbus RTU			
Voltage level:	0-24 V DC (PNP positive logic)				
Pulse input accuracy (0,1-110 kHz):	Max. error: 0.1% of full scale				
Pulse input frequency:	20-5000 Hz				

VARIABLE SPEED WIRING DIAGRAM

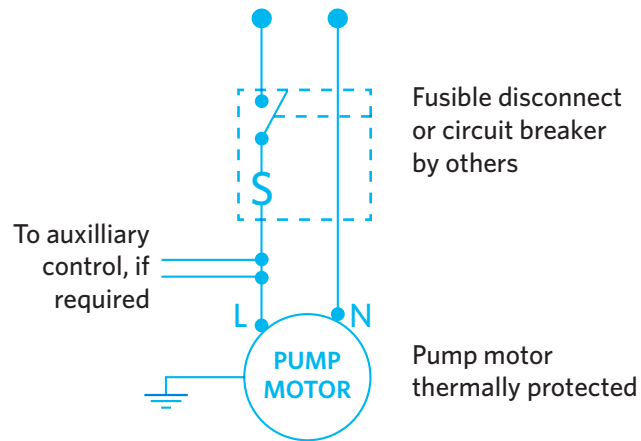
(240V/1PH/50HZ)



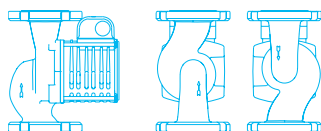
FIXED SPEED WIRING DIAGRAM

(240V/1PH/50HZ)

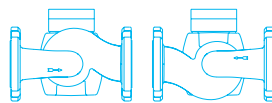
Typical wiring diagram for single phase, 240V, 50Hz power source



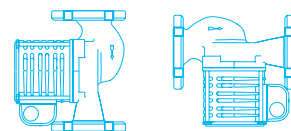
MOUNTING ORIENTATION (FOR INDOOR USE ONLY)



RECOMMENDED

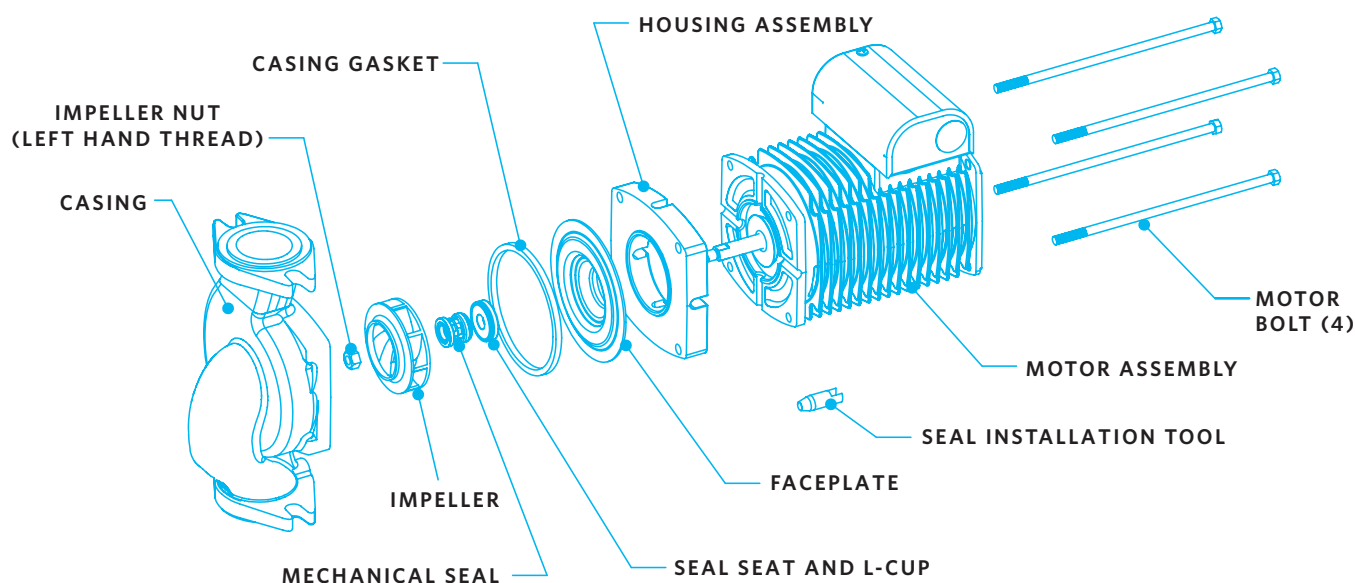


OPTIONAL



NOT RECOMMENDED

EXPLODED VIEW AND SPARE PARTS LIST



SPARE PART LIST

MODEL	P/N	DESCRIPTION
E9.2 CI	880202-677	E series mechanical seal kit all sizes*
	182202-011	E9.2 rotative assembly including gasket (PLV)
	804300-211	Flange Kit Cast Iron 32mm BSPT
E14.2 CI	880202-677	E series mechanical seal kit all sizes*
	182212-031	E14.2 rotative assembly including gasket (PLV)
	804300-211	Flange Kit Cast Iron 32mm BSPT
E22.2 CI	880202-677	E series mechanical seal kit all sizes*
	182212-059	E22.2 rotative assembly including gasket (PLV)
	804301-211	Flange Kit Cast Iron 40mm BSPT
E33.2 CI	880202-677	E series mechanical seal kit all sizes*
	182212-087	E33.2 rotative assembly including gasket (PLV)
	806074-211	Flange Kit Cast Iron 50mm BSPT
E14.2 BZ	880202-677	E series mechanical seal kit all sizes*
	182212-031	E14.2 BZ rotative assembly including gasket (PLV)
	804300-241	Flange Kit Bronze 32mm BSPT
E22.2 BZ	880202-677	E series mechanical seal kit all sizes*
	182212-059	E22.2 BZ rotative assembly including gasket (PLV)
	804301-241	Flange Kit Bronze 40mm BSPT
FC51	K2210/400	Drive FC51 Single phase 240/1/50 without LCP
	K2210/401	LCP for Drive FC51 without Potentiometer

ARMSTRONG HVAC PUMPING SOLUTIONS



DE COMPASS Circulator

Application: Residential heating and cooling, potable water supply.

Advantages: Design Envelope Intelligent Variable Speed technology combined with ECM motors, saves 50% in electrical energy over fixed speed circulators.



E2 SERIES Circulator

Application: Heating and cooling systems in large residential and light commercial installations.

Advantages: Dry rotor pump with easy access to mechanical seal.



DE Pumps

Application: HVAC-system pumping and control (water or glycol based)

Advantages: Integrated intelligent controls with Sensorless closed loop control and space-saving installation. Vertical in-line installation with SG and FTV accessories.



DE IFMS Systems

Application: Commercial and district energy systems.

Advantages: Fully packaged solutions with Armstrong products and integrated pumping system including parallel Sensorless control.



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