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Eigenaarshandleiding

Handbuch für den Eigentümer

Mode d'emploi destiné au propriétaire

Manual del propietario

Manuale per l'utente

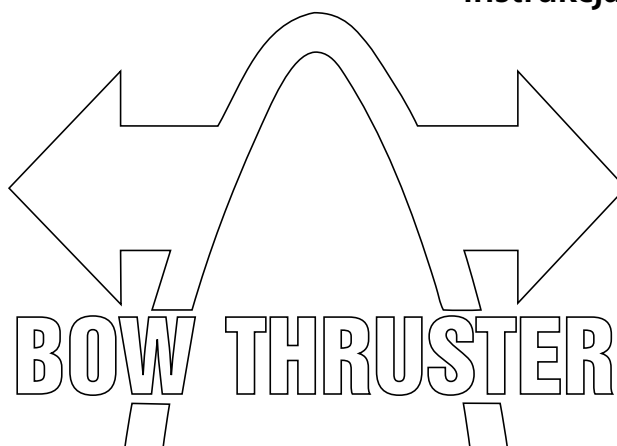
Brugervejledning

Bruksanvisning

Brukerveiledning

Käyttäjän opas

Instrukcja obsługi



Owner's manual

BOW PRO Series Thrusters

ø 110 mm : BOWA0301 (30 kgf)

ø 125 mm : BOWA0361 (36 kgf)

ø 125 mm : BOWA0421 (42 kgf)

ø 150 mm : BOWA0572 (57 kgf)

ø 185 mm : BOWA0651 (65 kgf)

ø 185 mm : BOWA0762 (76 kgf)

ø 185 mm : BOWA0902 (90 kgf)

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1 Safety measures

Warning indications

The following warning indications are used in this manual in the context of safety:



DANGER

Indicates that great potential danger exists that can lead to serious injury or death.



WARNING

Indicates that a potential danger that can lead to injury exists.



CAUTION

Indicates that the usage procedures, actions etc. concerned can result in serious damage to or destruction of the device. Some CAUTION indications also advise that a potential danger exists that can lead to serious injury or death.



NOTE

Emphasises important procedures, circumstances etc.

Symbols



Indicates that the relevant procedure must be carried out.



Indicates that a particular action is forbidden.



WARNING!

When using the bow thruster watch out for swimmers or light boats which could be in the near vicinity of the bow thruster tunnel openings.

Pass on the safety instructions to others using the bow thruster.

General rules and laws with regard to safety and accident-prevention also need to be applied.

- Never touch the moving ends of the bow thruster whilst in operation.
- Never touch hot parts of the bow thruster and never place flammable materials in the vicinity of the bow thruster.
- Always stop the bow thruster before checking components or adjusting the bow thruster.
- Always disconnect the battery terminals during maintenance work.
- Ensure maintenance work is safe by only using tools suitable for the purpose.
- Always deactivate the main switch when the bow thruster is not in use for long periods.



Make sure that the user of the vessel is supplied with the owner's manual.

2 Introduction

This manual gives guidelines for operating and maintenance of the Vetus 'BOW PRO' bow thrusters.

The 'BOW PRO' bow thrusters have the following features:

- The thrust is continuously variable.
- The runtime is mainly limited by the capacity of the installed batteries.
- The thrust delivered is, within certain limits, not dependent on the battery voltage.
 - With a decreasing battery voltage, the controller ensures that the thrust will be maintained (APB, Active Power Balancing).
 - However, the current will increase with a decreasing battery voltage. If the current goes higher than is desirable, the delivered power is reduced (ACC, Automatic Current Control).
 - When the batteries are discharged such that the voltage has dropped to 10 Volts, with a 12 Volt system (20 V at 24 V), the power supplied is reduced (AVC, Active Voltage Control)
 - With a further discharge of the batteries, when the voltage has dropped to 8.5 Volt, with a 12 Volt system (17 V at 24 V), the bow thruster stops.
- Overheating of both motor and / or regulator is prevented by decreasing the output power after a very long period of continuous use.
- The thrust only decreases slightly (ATB, Active Temperature Balancing).
- In the event of a sudden overload of the motor, caused by an object in the tunnel, the motor will switch off for safety reasons (ABC, Active Blockage Control).
- The maintenance is minimal because the motor does not use carbon brushes.

Alterations made to the bow thruster by the user will void any liability on the part of the manufacturer for any damages that may result.

The actual thrust force, as performed by the bow thruster, will give different results with each individual vessel, depending on the windage, displacement and shape of the underwater section.

The nominal thrust quoted can only be achieved under normal conditions:

- Make sure that the batteries are supplying the correct voltage during use

Following the above recommendations will result in longer life and better performance of your bow thruster.

- Carry out the recommended maintenance regularly.



NOTE

The maximum continuous length of usage and the thrust as specified in the technical details are based on the recommended battery capacities and battery cables.

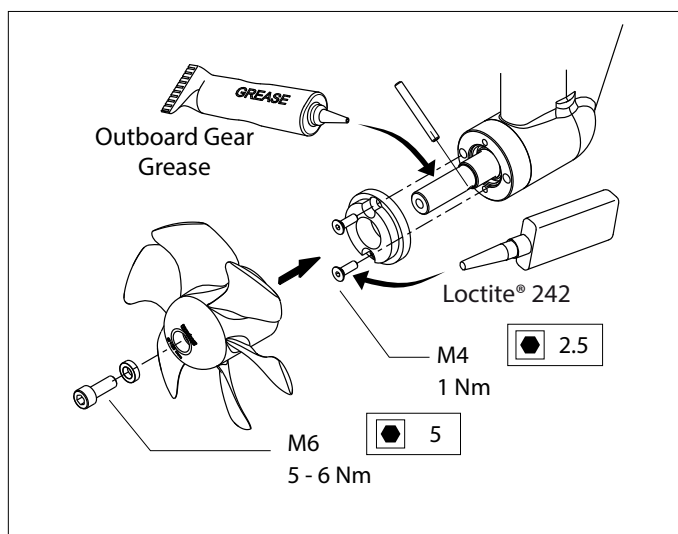
4 Maintenance

BOWA0301 - ø 110 mm:

The bow thruster tailpiece has long-term lubrication.

The following maintenance should be carried out during a slipway service:

- Check the cathodic protection and if necessary renew the zinc anode.
For the part number of the zinc anode, see page 95.
- Clean the bolts and apply threadlock (eg. Loctite®).
- Clean the propeller shaft, grease with 'outboard gear grease' and refit the propeller on the shaft.

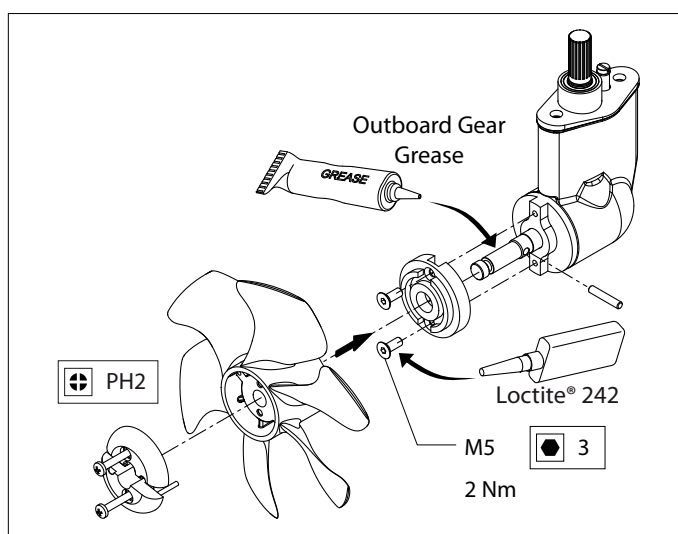


BOWA0361, BOWA0421 - ø 125 mm BOWA0572 - ø 150 mm

The bow thruster tailpiece has long-term lubrication.

The following maintenance should be carried out during a slipway service:

- Check the cathodic protection and if necessary renew the zinc anode.
For the part number of the zinc anode, see page 96 t/m 98.
- Clean the bolts and apply threadlock (eg. Loctite®).
- Clean the propeller shaft, grease with 'outboard gear grease' and refit the propeller on the shaft.



BOWA0651, BOWA0762, BOWA0902 - ø 185 mm:

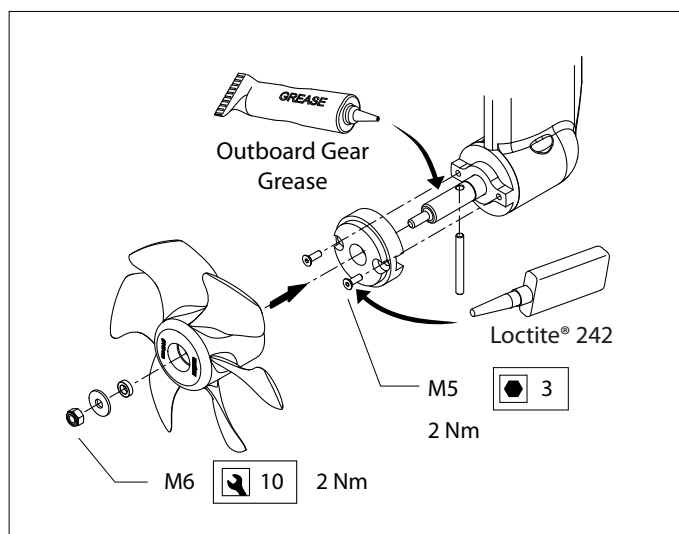
The bow thruster tailpiece has long-term lubrication.

The following maintenance should be carried out during a slipway service:

- Check the cathodic protection and if necessary renew the zinc anode.

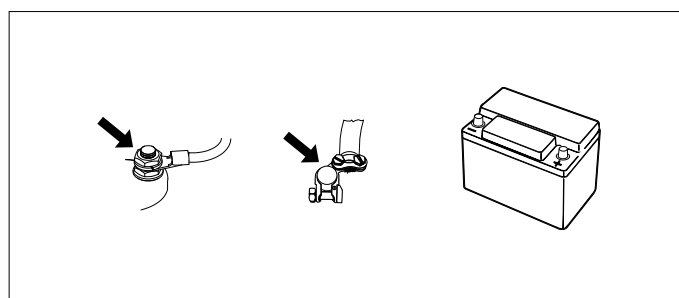
For the part number of the zinc anode, see page 99 t/m 101.

- Clean the bolts and apply threadlock (eg. Loctite®).
- Clean the propeller shaft, grease with 'outboard gear grease' and refit the propeller on the shaft.

**Electrical system**

Six weeks after installation and at least once annually thereafter, it is very important to check all of the electrical connections between the battery/batteries and the bow thruster.

The instructions of the manufacturer should be followed for the maintenance of the batteries. Vetus batteries are maintenance free.



5 Technical data

Type	:	BOWA0301	BOWA0361	BOWA0421
Electric motor	Type	: EC Motor	EC Motor	EC Motor
	Voltage	: 12 V =	12 V =	12 V =
	Current	: 200 A [1]	270 A [1]	250 A [1]
	Rated output	: 1,6 kW	1,6 kW	3,1 kW
	No. of revolutions	: 3750 rpm	3000 rpm	3100 rpm
	Rating	: S2 - 10 min. [1]	S2 - 10 min. [1]	S2 - 10 min. [1]
	Protection	: IP55		
	Insulation class	: F		
	Motors conform to CE (2014/30/EU, EMC - EN60945)			
	Ignition protected	: No		
Transmission	Gears	: Bevel gear helical teeth		
	Gear ratio	: 1 : 1	1 : 1	
	Lubrication	: oilbath, outboard gear oil SAE80W or EP 90		
		ca. 0,024 litre (0.8 fl.oz.)	ca. 0,04 litre (1.4 fl.oz.)	
	Housing	: bronze		
Propeller	Diameter	: 108 mm (4 1/4")	122 mm (4 13/16")	
	No. of blades	: 6	6	
	Profile	: asymmetrical	asymmetrical	
	Material	: polyacetal (Delrin ®)	polyacetal (Delrin ®)	
	Rated thrust	: 300 N (30 kgf, 66 lbf)	360 N (36 kgf, 79 lbf)	420 N (42 kgf, 93 lbf)
Control circuit	Fuse	: Blade type fuse 'ATO' 5 A		
	Control circuit wires	: 1,5 mm ² (14 AWG)		
	Extension cable	: 5, 10, 15, 20 of 25 m (16', 33', 49', 66, or 82')		
Thrust-tunnel	Steel model			
	dimensions	: O.D. 121 mm, wall thickness 4,5 mm	O.D. 133 mm, wall thickness 4 mm	
	treatment	: blasted, coated with: SikaCor Steel Protect. Suitable for all kinds of protection systems.		
	Plastic model			
	dimensions	: I.D. 110 mm, wall thickness 5 mm	I.D. 125 mm, wall thickness 5 mm	
	material	: glass fibre reinforced polyester		
	Aluminium model			
	dimensions	: I.D. 110 mm, wall thickness 5 mm	I.D. 125 mm, wall thickness 4 mm	
	material	: aluminium, 6060 of 6062 (AlMg1SiCu)		
	Weight	: 26 kg (57 lbs)		

[1] S2 '10' min. → Length of usage '10' min. continuously or max. '10' min per hour at the specified current.

BOWA0572	BOWA0651	BOWA0762	BOWA0902
EC Motor	EC Motor	EC Motor	EC Motor
24 V =	12 V =	24 V =	24 V =
190 A [1]	300 A [1]	200 A [1]	250 A [1]
3,1 kW	3,1 kW	3,1 kW	5,7 kW
2670 rpm	3460 rpm	3750 rpm	4150 rpm
S2 - 10 min. [1]	S2 - 10 min. [1]	S2 - 10 min. [1]	S2 - 10 min. [1]
IP55			
F			
No			
Bevel gear helical teeth			
1 : 1	1,7 : 1		
oilbath, outboard gear oil SAE80W or EP 90			
ca. 0,04 litre (1.4 fl.oz.)	ca. 0,06 litre (2.1 fl.oz.)		
bronze			
146 mm (5 3/4")	178 mm (7")		
6	6		
asymmetrical	asymmetrical		
polyacetaal (Delrin®)	polyacetaal (Delrin®)		
570 N (57 kgf, 126 lbf)	650 N (65 kgf, 143 lbf)	760 N (76 kgf, 168 lbf)	900 N (90 kgf, 198 lbf)
Blade type fuse 'ATO' 5 A			
1,5 mm² (14 AWG)			
5, 10, 15, 20 or 25 m (20', 33', 52', 59', or 65')			
O.D. 159 mm, wall thickness 4,5 mm	O.D. 194 mm, wall thickness 5,6 mm		
blasted, coated with: SikaCor Steel Protect. Suitable for all kinds of protection systems.			
I.D. 150 mm, wall thickness 5,3 mm	I.D. 185 mm, wall thickness 5 mm		
glass fibre reinforced polyester			
I.D. 150 mm, wall thickness 5 mm	I.D. 185 mm, wall thickness 5,5 mm		
aluminium, 6061 of 6062 (AlMg1SiCu)			
31 kg (68 lbs)	35 kg (77 lbs)		

6 Protection

The bow thruster is equipped with, among other things, protection against:

- Overheating of the motor or of the controller.

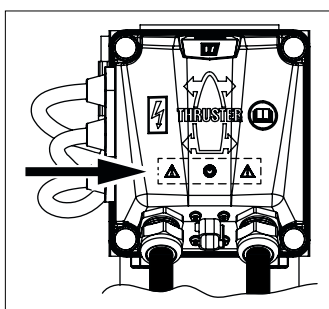
If the temperature of the motor or the regulator exceeds a certain value, the output power of the bow thruster motor will be reduced.

- Overload of the motor,
- The batteries being deeply discharged.

If a problem occurs, the control panel will sound a warning sound once (1) didahdididah (. - . -) and the LED will flash red.

If the problem is no longer present, the control panel sounds a signal didi (..) and the red LED turns off.

In the event of problems with the bow thruster, the LEDs on the indicator panel indicate the following:



Temperature of the motor or the controller too high. Current too high or short circuit. Battery voltage is too high or too low. Motor blocked. General error.	Battery voltage OK. CAN bus communication OK.	Motor power reduced, due to excessive motor or regulator temperature or incorrect battery voltage.

7 Trouble shooting

Electric motor does not operate

- Check that the battery main switch is 'ON'.
- Check that the battery voltage is correct (8.5 - 14.4 V, 12V bow thruster / 17.0 - 28.8 V, 24 V bow thruster).
- Check if the control current fuse has blown. ^[1]
- Check whether the fuse of the CAN bus power supply has blown.
- Check whether one of the main supply fuses has blown. ^[2]

In all the above cases, the "POWER" LED on the motor does not light up.

- An overload has occurred, see protections.

As soon as the controller has cooled down sufficiently the LED will turn green again and the bow thruster can be used again.

Check if it is possible to turn the propeller. A piece of wood or similar could have been caught between the propeller and the tunnel.

Electric motor turns slowly

- The motor or regulator has become too hot, the motor is running at reduced power.
- Weed or fishing line has become caught in the propeller.

Control panel fuse is blown ^[1]

- Short circuit in the operating circuit; check the wiring.

Electric motor rotates, but there is no thrust

- The blades of the propeller have been damaged by a foreign object having entered the propeller or tunnel.
- The drive pin*) on the propeller shaft is broken due to an object in the tunnel.

Replace the drive pin and check the hub of the propeller for damage.

*) Except the BOWA1102 (110 kgf), which does not have a drive pin.

After pressing the on/off switch on the panel, the panel does not switch on.

- The on/off switch must be pressed a **second** time within 6 seconds.

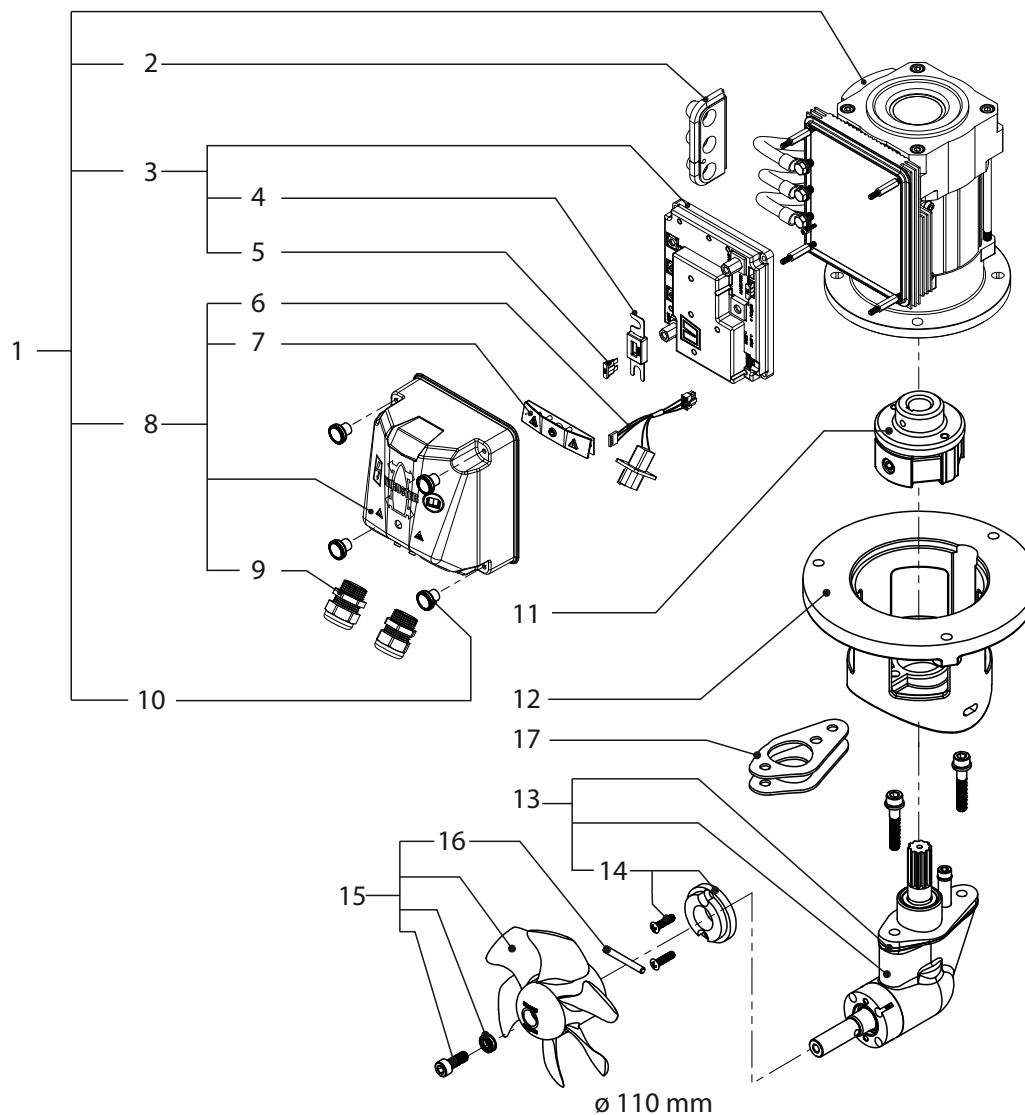
The LED will then remain green and the buzzer will confirm that the panel is ready for use by showing the signal (- . -).

- When the on/off switch is pressed, the joystick is not in the middle position.

[1] The control circuit fuse is located on the controller.

[2] See table on page 94

Boegschroef	Zekering	
	'traag'	Vetus art. code
Bow thruster	Fuse	
	'slow blow'	Vetus art. code
Bugschraube	Sicherung	
	'träge'	Artikelnummer
Hélice d'étrave	Fusible	
	'lent'	code d'art. Vetus
Hélice de proa	Fusible	
	'lento'	Código de art. Vetus
Elica	Fusibile	
	'a tempo'	Vetus codigo art.
Bovpropel	Sikring	
	'træg'	Vetus artikeln
Bogpropeller	Säkring	
	'trög'	Vetus artikelnr
Baugpropell	Sikring	
	'treg'	Vetus art. kode
Keulapotkuri	Sulake	
	hidas	Vetus koodi
Pędnik dziobowy	Bezpiecznik	
	'zwłoczny'	Nr kat. Vetus
BOWA0301 - 30 kgf - 12 V	200 A	ZE200
BOWA0361 - 36 kgf - 12 V	300 A	ZE300
BOWA0421 - 42 kgf - 12 V	300 A	ZE300
BOWA0572 - 57 kgf - 24 V	200 A	ZE200
BOWA0651 - 65 kgf - 12 V	300 A	ZE3050
BOWA0762 - 76 kgf - 24 V	200 A	ZE200
BOWA0902 - 90 kgf - 24 V	200 A	ZE200

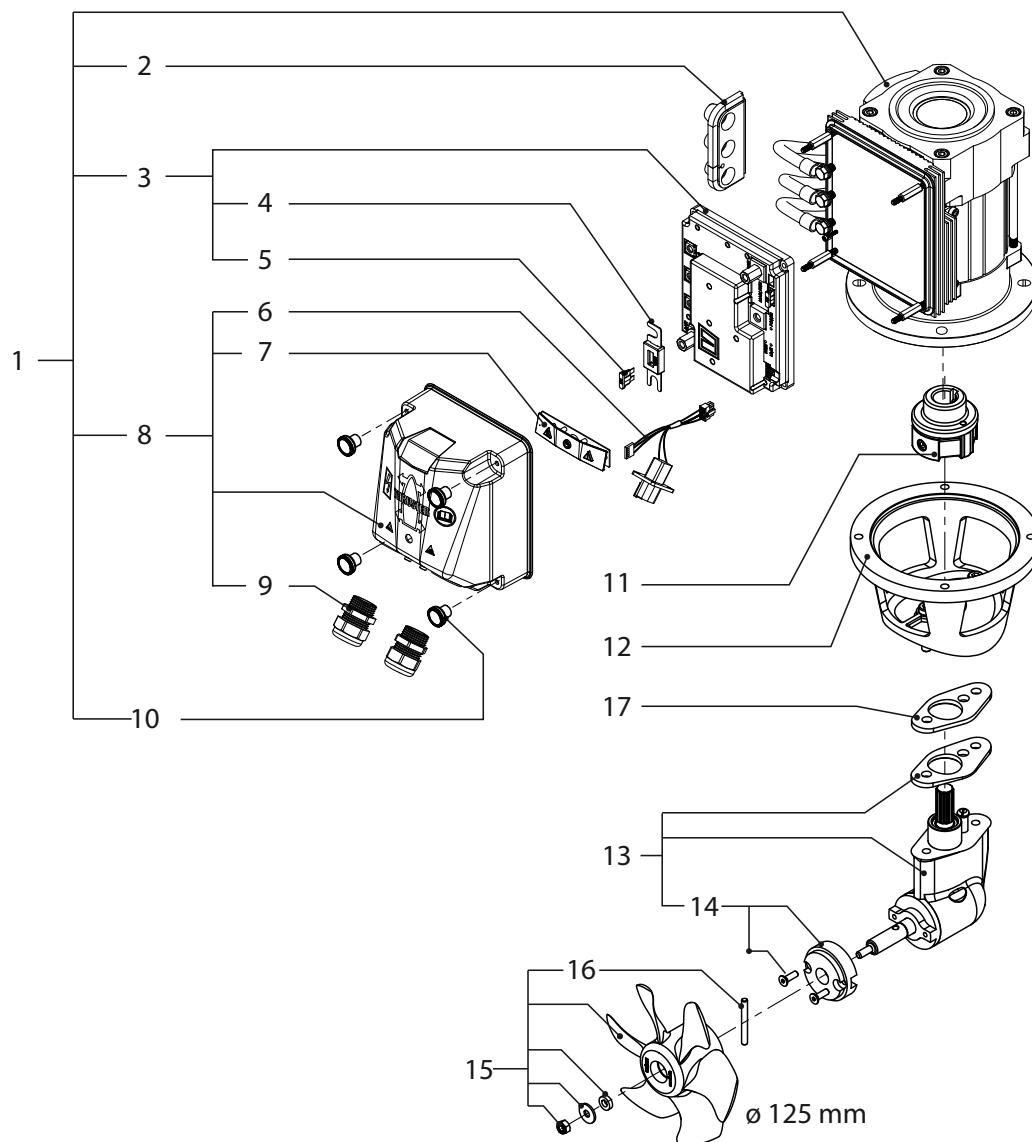


BOWA0301

Service onderdelen

Service parts

pos.	qty	part	benaming	description
1	1	BPA0301	Motor, compleet	Motor, complete
2	1	BP1711949	Drievoudige kabeldoorvoer	Triple grommet
3	1	MCVA0301	Regelaar, compleet	Controller, complete
4	1	ZE200	Fuse 200 A	Fuse 200 Amp
5	1	BP256	Fuse 5 A	Fuse 5 Amp
6	1	BP179999	Draadboom	Wiring loom
7	1	BPALED	LED paneel, compleet	LED panel, complete
8	1	BPC00100	Relaiskap, compleet	Relay cover complete
9	2	BPAPG21	Kabelinvoerwarterl	Cable gland
10	1	SET0006	Set van 4 stuks kartelmoeren	Set of 4 pcs knurled nuts
11	1	BP167087	Koppeling	Coupling
12	1	BP165624	Tussenflens	Intermediate flange
13	1	SET25E	Staartstuk compl.	Tailpiece compl.
14	1	SET0148	Zinkanode compl. met schroeven	Zinc anode c/w screws
15	1	SET0086	Schroef compl. met meeneempen en montageset	Propeller c/w drive pin and mounting set
16	1	BP1168	Meeneempen	Propeller pin
17	2	BP1170	Pakking	Gasket

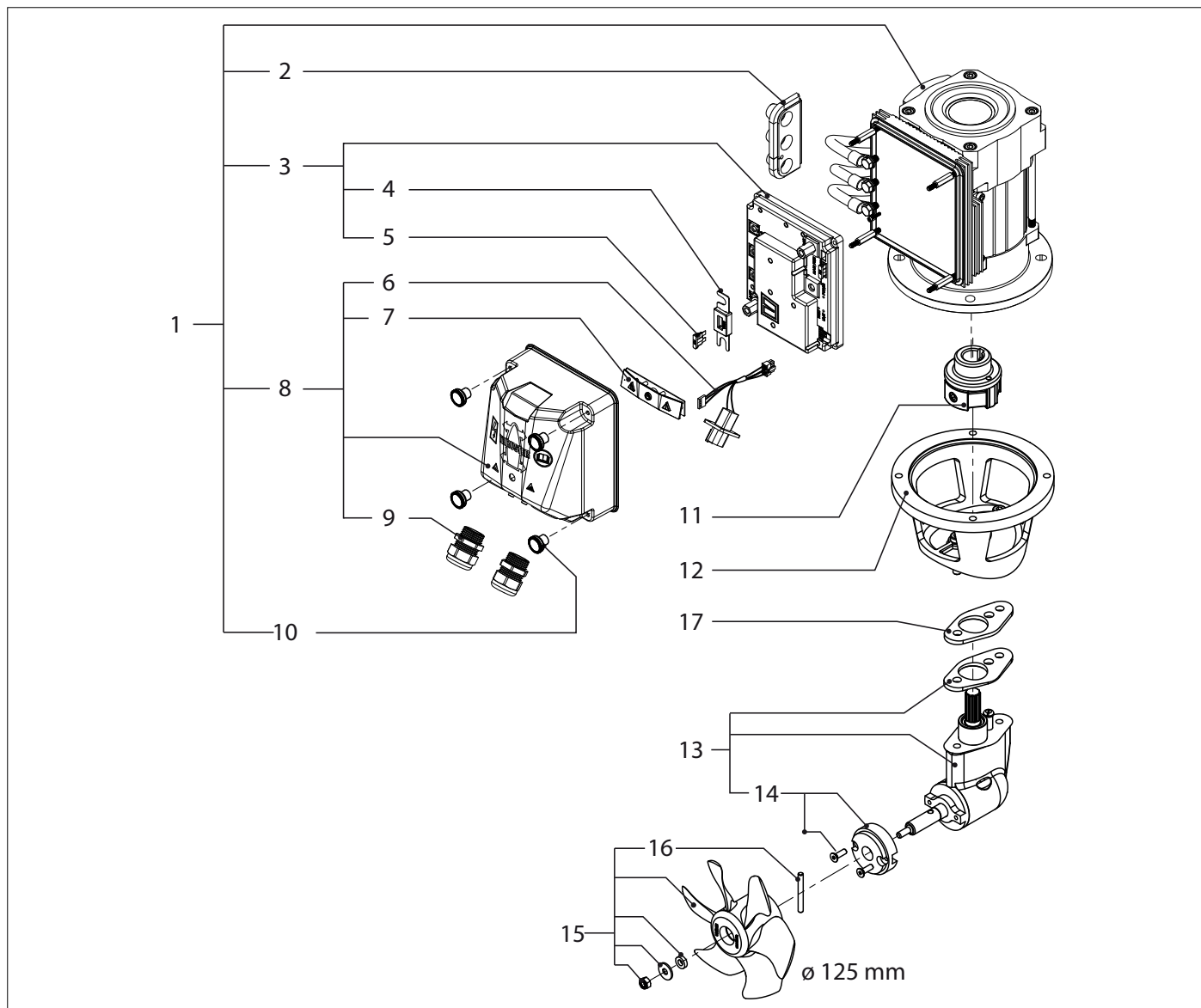


BOWA0361

Service onderdelen

Service parts

pos.	qty	part	benaming	description
1	1	BPA0361	Motor, compleet	Motor, complete
2	1	BP1711949	Drievoudige kabeldoorvoer	Triple grommet
3	1	MCVA0361	Regelaar, compleet	Controller, complete
4	1	ZE300	Fuse 300 A	Fuse 300 Amp
5	1	BP256	Fuse 5 A	Fuse 5 Amp
6	1	BP179999	Draadboom	Wiring loom
7	1	BPALED	LED paneel, compleet	LED panel, complete
8	1	BPC00100	Relaiskap, compleet	Relay cover complete
9	2	BPAPG21	Kabelinvoerwartel	Cable gland
10	1	SET0006	Set van 4 stuks kartelmoeren	Set of 4 pcs knurled nuts
11	1	BP1202	Koppeling	Coupling
12	1	SET45FB	Tussenflens	Intermediate flange
13	1	SET45T	Staartstuk compl.	Tailpiece compl.
14	1	SET0149	Zinkanode compl. met schroeven	Zinc anode c/w screws
15	1	SET45P	Schroef compl. met meeneempen en montageset	Propeller c/w drive pin and mounting set
16	1	BP1129	Meeneempennen, 5 stuks	Propeller pins, 5 pcs
17	2	BP1020	Pakking 2 mm	Gasket

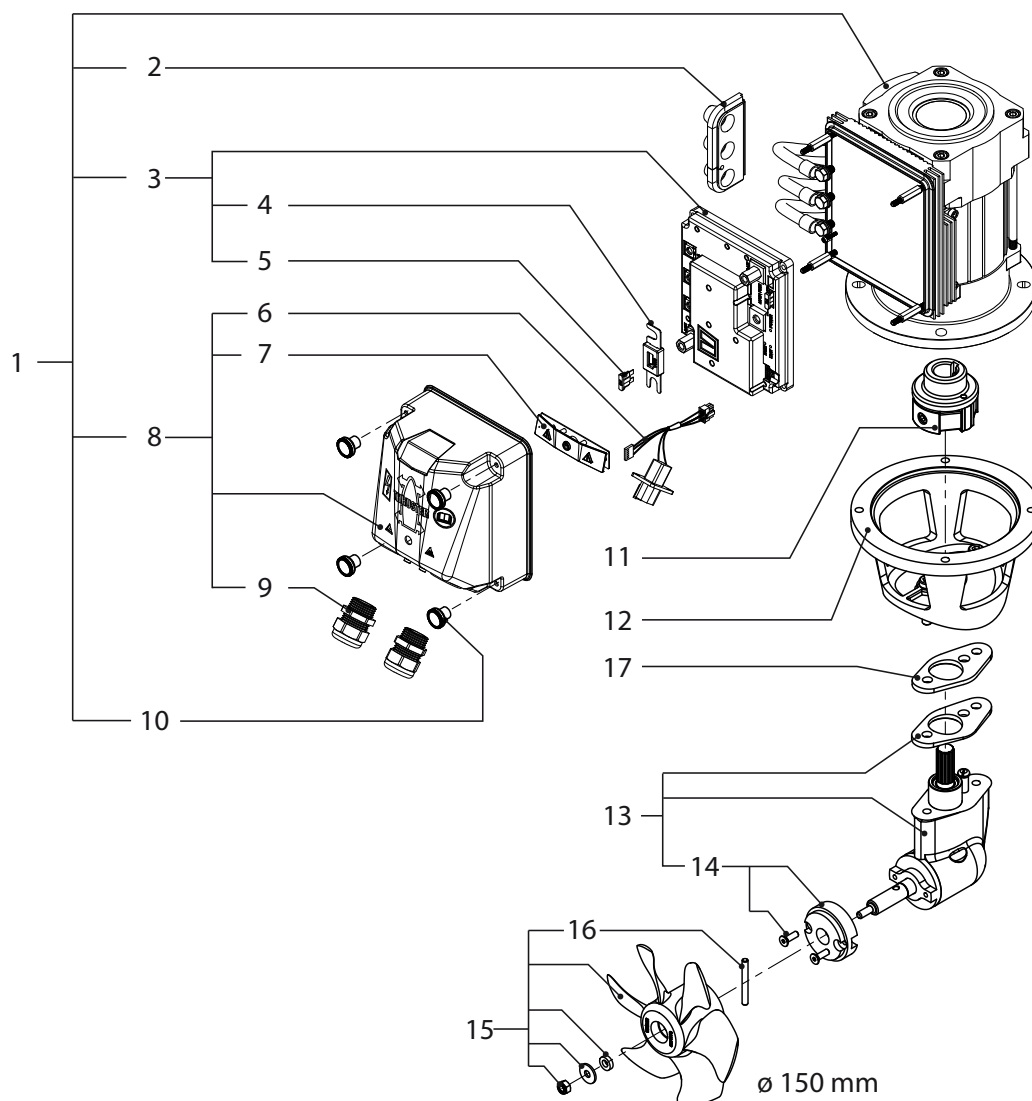


BOWA0421

Service onderdelen

Service parts

pos.	qty	part	benaming	description
1	1	BPA0421	Motor, compleet	Motor, complete
2	1	BP1711949	Drievoudige kabeldoorvoer	Triple grommet
3	1	MCVA0421	Regelaar, compleet	Controller, complete
4	1	ZE300	Fuse 300 A	Fuse 300 Amp
5	1	BP256	Fuse 5 A	Fuse 5 Amp
6	1	BP179999	Draadboom	Wiring loom
7	1	BPALED	LED paneel, compleet	LED panel, complete
8	1	BPC00100	Relaiskap, compleet	Relay cover complete
9	2	BPAPG21	Kabelinvoerwartel	Cable gland
10	1	SET0006	Set van 4 stuks kartelmoeren	Set of 4 pcs knurled nuts
11	1	BP1202	Koppeling	Coupling
12	1	SET45FB	Tussenflens	Intermediate flange
13	1	SET45T	Staartstuk compl.	Tailpiece compl.
14	1	SET0149	Zinkanode compl. met schroeven	Zinc anode c/w screws
15	1	SET45P	Schroef compl. met meeneempen en montageset	Propeller c/w drive pin and mounting set
16	1	BP1129	Meeneempennen, 5 stuks	Propeller pins, 5 pcs
17	2	BP1020	Pakking 2 mm	Gasket

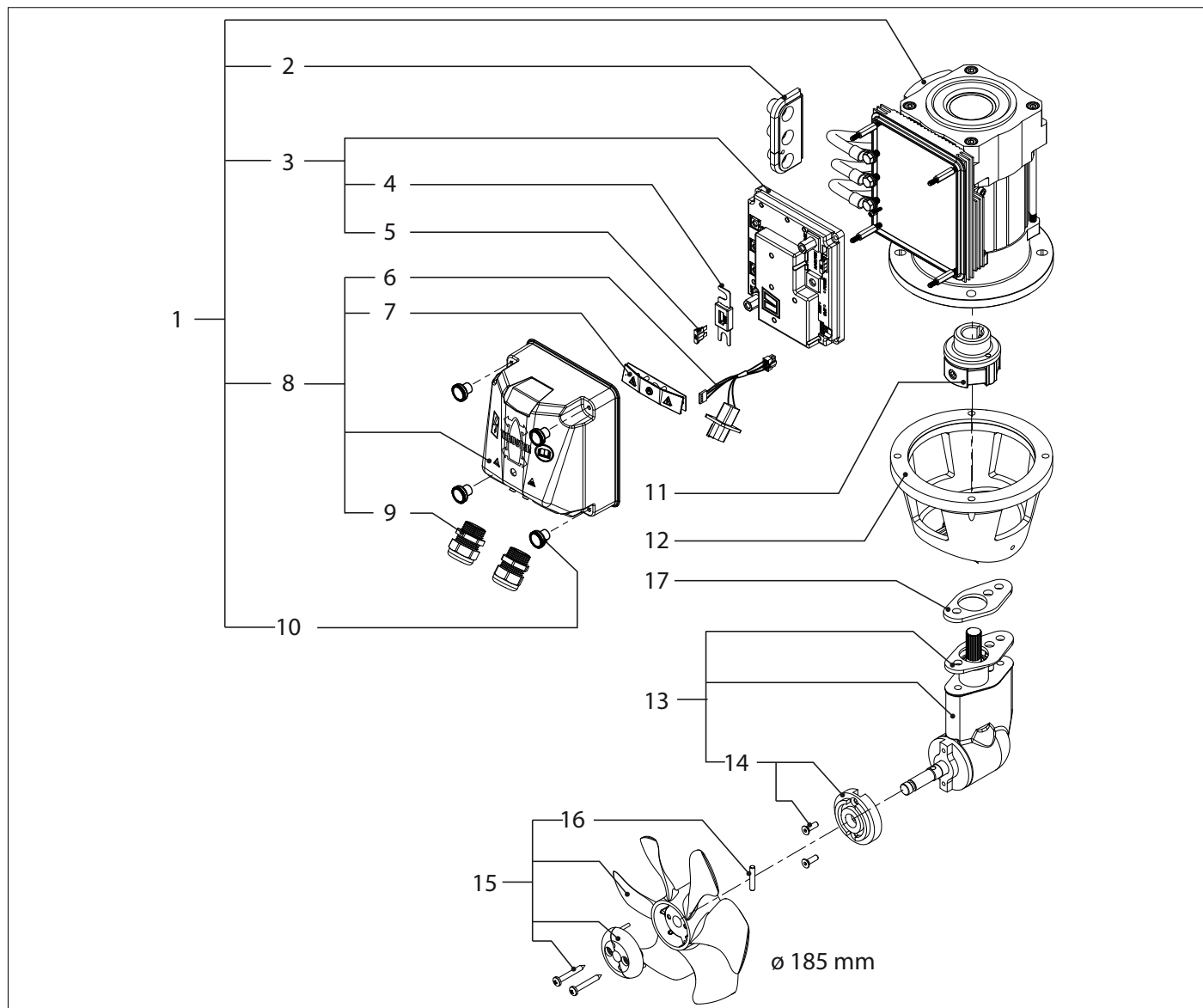


BOWA0572

Service onderdelen

Service parts

pos.	qty	part	benaming	description
1	1	BPA0572	Motor, compleet	Motor, complete
2	1	BP1711949	Drievoudige kabeldoorvoer	Triple grommet
3	1	MCVA0572	Regelaar, compleet	Controller, complete
4	1	ZE200	Fuse 200 A	Fuse 200 Amp
5	1	BP256	Fuse 5 A	Fuse 5 Amp
6	1	BP179999	Draadboom	Wiring loom
7	1	BPALED	LED paneel, compleet	LED panel, complete
8	1	BPC00100	Relaiskap, compleet	Relay cover complete
9	2	BPAPG21	Kabelinvoerwartel	Cable gland
10	1	SET0006	Set van 4 stuks kartelmoeren	Set of 4 pcs knurled nuts
11	1	BP1202	Koppeling	Coupling
12	1	BP1272B	Tussenflens	Intermediate flange
13	1	SET0078	Staartstuk compl.	Tailpiece compl.
14	1	SET0149	Zinkanode compl. met schroeven	Zinc anode c/w screws
15	1	SET0087	Schroef compl. met meeneempen en montageset	Propeller c/w drive pin and mounting set
16	1	BP1129	Meeneempennen, 5 stuks	Propeller pins, 5 pcs
17	2	BP1020	Pakking 2 mm	Gasket

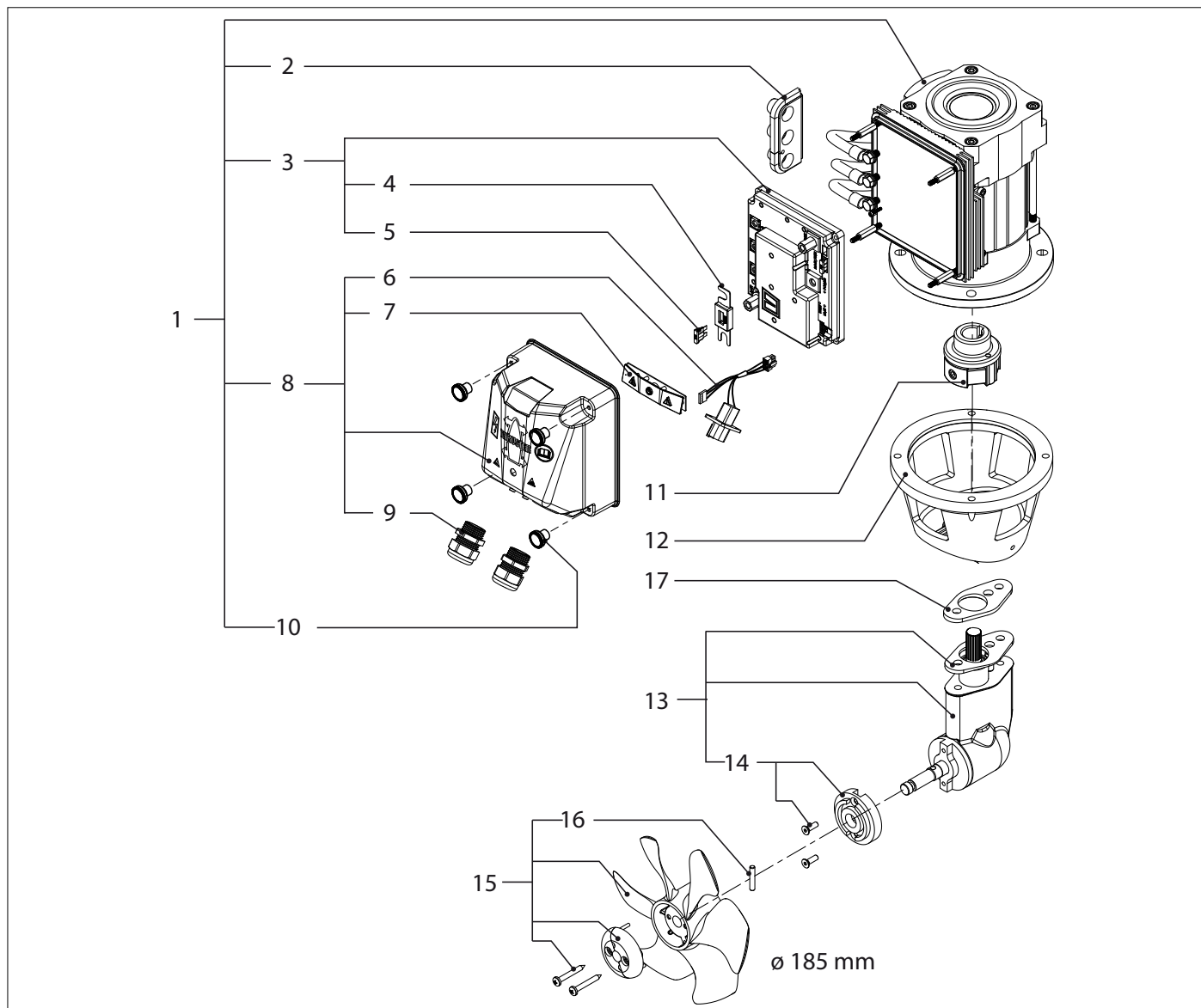


BOWA0651

Service onderdelen

Service parts

pos.	qty	part	benaming	description
1	1	BPA0651	Motor, compleet	Motor, complete
2	1	BP1711949	Drievoudige kabeldoorvoer	Triple grommet
3	1	MCVA0651	Regelaar, compleet	Controller, complete
4	1	ZE300	Fuse 300 A	Fuse 300 Amp
5	1	BP256	Fuse 5 A	Fuse 5 Amp
6	1	BP179999	Draadboom	Wiring loom
7	1	BPALED	LED paneel, compleet	LED panel, complete
8	1	BPC00100	Relaiskap, compleet	Relay cover complete
9	2	BPAPG21	Kabelinvoerwartel	Cable gland
10	1	SET0006	Set van 4 stuks kartelmoeren	Set of 4 pcs knurled nuts
11	1	BP1202	Koppeling	Coupling
12	1	BP1199B	Tussenflens	Intermediate flange
13	1	SET0035	Staartstuk compl.	Tailpiece compl.
14	1	SET0150	Zinkanode compl. met schroeven	Zinc anode c/w screws
15	1	SET0088	Schroef compl. met meeneempen en montageset	Propeller c/w drive pin and mounting set
16	1	BP275S	Meeneempennen, 5 stuks	Propeller pins, 5 pcs
17	2	BP1020	Pakking 2 mm	Gasket 2 mm

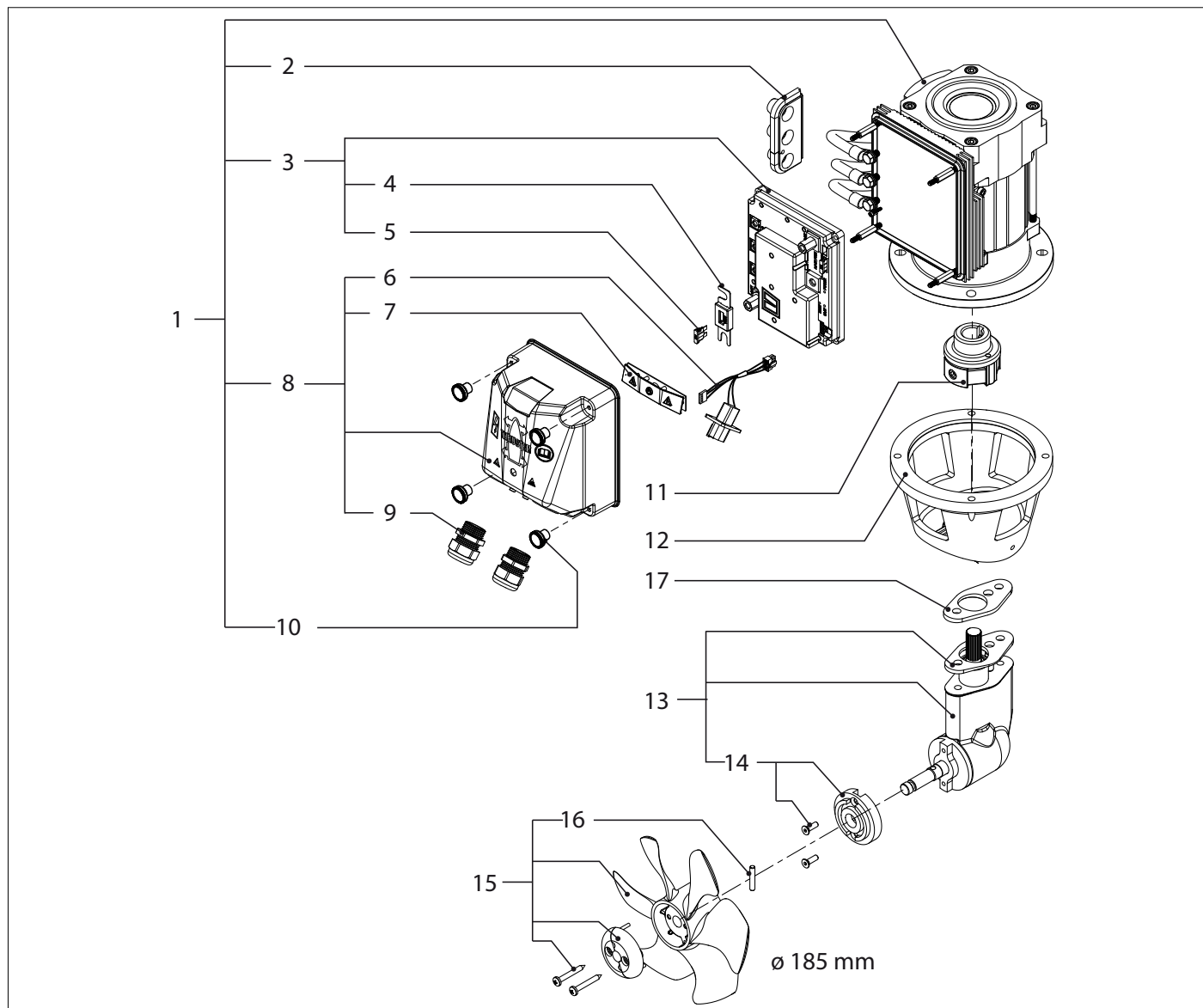


BOWA0762

Service onderdelen

Service parts

pos.	qty	part	benaming	description
1	1	BPA0762	Motor, compleet	Motor, complete
2	1	BP1711949	Drievoudige kabeldoorvoer	Triple grommet
3	1	MCVA0762	Regelaar, compleet	Controller, complete
4	1	ZE200	Fuse 200 A	Fuse 200 Amp
5	1	BP256	Fuse 5 A	Fuse 5 Amp
6	1	BP179999	Draadboom	Wiring loom
7	1	BPALED	LED paneel, compleet	LED panel, complete
8	1	BPC00100	Relaiskap, compleet	Relay cover complete
9	2	BPAPG21	Kabelinvoerwartel	Cable gland
10	1	SET0006	Set van 4 stuks kartelmoeren	Set of 4 pcs knurled nuts
11	1	BP1202	Koppeling	Coupling
12	1	BP1199B	Tussenflens	Intermediate flange
13	1	SET0035	Staartstuk compl.	Tailpiece compl.
14	1	SET0150	Zinkanode compl. met schroeven	Zinc anode c/w screws
15	1	SET0088	Schroef compl. met meeneempen en montageset	Propeller c/w drive pin and mounting set
16	1	BP275S	Meeneempennen, 5 stuks	Propeller pins, 5 pcs
17	2	BP1020	Pakking 2 mm	Gasket 2 mm



BOWA0902

Service onderdelen

Service parts

pos.	qty	part	benaming	description
1	1	BPA0902	Motor, compleet	Motor, complete
2	1	BP1711949	Drievoudige kabeldoorvoer	Triple grommet
3	1	MCVA0902	Regelaar, compleet	Controller, complete
4	1	ZE200	Fuse 200 A	Fuse 200 Amp
5	1	BP256	Fuse 5 A	Fuse 5 Amp
6	1	BP179999	Draadboom	Wiring loom
7	1	BPALED	LED paneel, compleet	LED panel, complete
8	1	BPC00100	Relaiskap, compleet	Relay cover complete
9	2	BPAPG21	Kabelinvoerwartel	Cable gland
10	1	SET0006	Set van 4 stuks kartelmoeren	Set of 4 pcs knurled nuts
11	1	BP1202	Koppeling	Coupling
12	1	BP1199B	Tussenflens	Intermediate flange
13	1	SET0035	Staartstuk compl.	Tailpiece compl.
14	1	SET0150	Zinkanode compl. met schroeven	Zinc anode c/w screws
15	1	SET0088	Schroef compl. met meeneempen en montageset	Propeller c/w drive pin and mounting set
16	1	BP275S	Meeneempennen, 5 stuks	Propeller pins, 5 pcs
17	2	BP1020	Pakking 2 mm	Gasket 2 mm



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