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**Bedieningshandleiding en  
installatie instructies**

**Operation manual and  
installation instructions**

**Bedienungshandbuch und  
Einbauanleitung**

**Manuel d'utilisation et  
instructions d'installation**

**Manual de manejo y  
instrucciones de instalación**

**Manuale per l'uso e  
istruzioni per l'installazione**

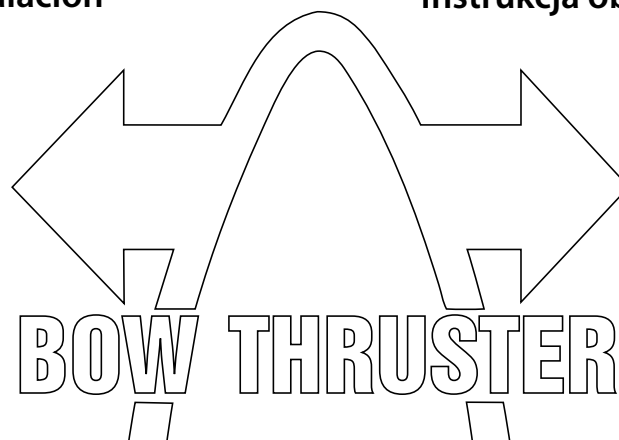
**Betjeningsvejledning og  
installationsinstruktioner**

**Bruksanvisning och  
monteringsinstruktioner**

**Bruksanvisning og  
installasjonsinstrukser**

**Käyttö- ja asennusohje**

**Instrukcja obsługi oraz instalacji**



**BOW3512D**

**35 kgf - ø 150 mm**

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Boormal

Drill pattern

Bohrschablone

Gabarit

Plantilla de perforación

Sagoma di trapano natura

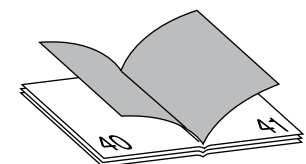
Skabelon

Borrjigg

Boresjablon

Poraussabluuna

Szablon wiercenia



## 1 Introduction

These installation instructions give guidelines for fitting the Vetus bow thruster 'BOW3512D'.

The quality of installation will determine how reliably the bow thruster performs. Almost all faults can be traced back to errors or imprecision during installation. It is therefore imperative that the steps given in the installation instructions are followed in full during the installation process and checked afterwards.

**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 thrust given by the bow thruster will vary from vessel to vessel depending on the effect of the wind, the water displacement and the shape of the underwater hull.

The nominal thrust quoted can only be achieved under the most favourable conditions:

- Make sure that the batteries are supplying the correct voltage during use
- During the installation process the '**Installation recommendations for bow thrusters**', must be followed, specifically concerning:
  - Sufficiently large diameter of the battery cables so that voltage drop is reduced to a minimum.
  - The manner in which the tunnel has been connected to the hull.
  - Use of bars in the tunnel openings.
 

These bars should only be used where this is strictly necessary (if sailing regularly in severely polluted water.)
  - The bars must have been fitted correctly.

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

- Carry out the recommended maintenance regularly.
- Never allow the bow thruster to operate for a long period; the maximum length of usage is restricted because of heat release in the electric motor. After use the motor must be allowed to cool off.

### 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.

If significantly larger batteries in combination with very short battery cables of significantly larger diameter than recommended are used then the thrust will increase. In such cases the maximum length of usage must be reduced in order to prevent damage to the motor.

## 2 Safety

### 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 jet 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 detach the battery poles 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.

## 3 Use

- Switch on the main switch.
- Consult the handbook supplied with the control panels for instructions on using the bow thruster.

**Never switch in one movement from starboard to portside or reverse, but wait until the propeller stands still, before giving it a command to operate the electric motor in the opposite direction.**

### CARE!

**If 2 control panels are installed never operate the bow thruster from both panels simultaneously.**

- Switch off the main switch when leaving the ship.



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

## 4 Installation

In order to install the tunnel, consult 'Installation recommendations for bow thrusters', Vetus art. code 020571.03

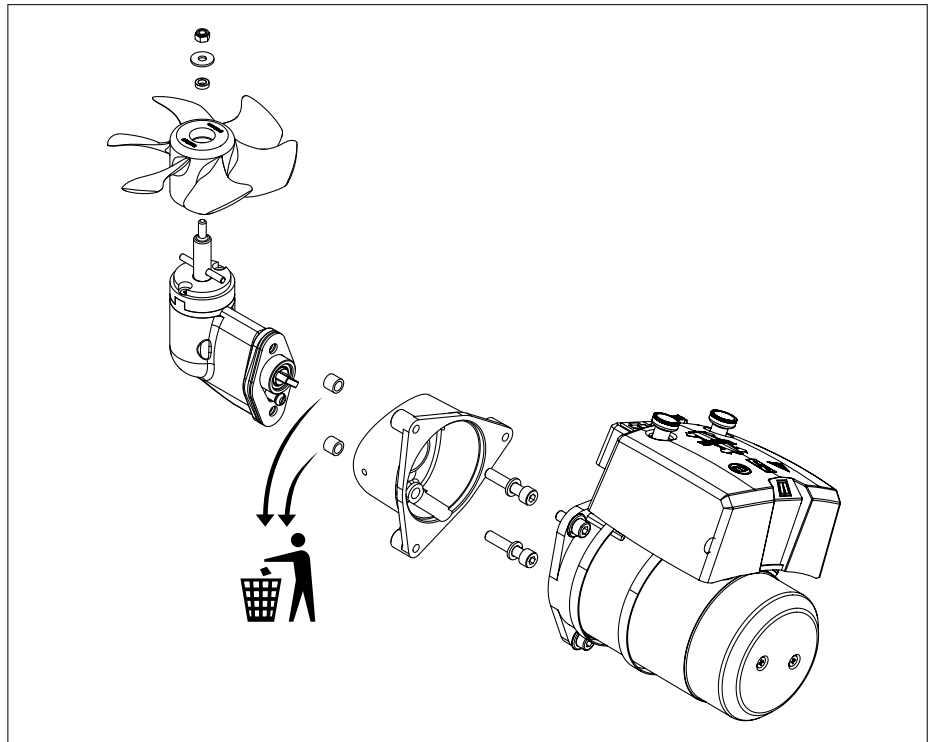
For overall dimensions see drawing, page 71.

### 4.1 Preparation

The bow thruster will be delivered fully assembled. Perform the following steps:

- Remove the propeller.
- Remove the motor from the intermediate flange.
- Remove the intermediate flange from the tail piece.

The 2 bushes are only required for transport and are now no longer needed.



#### NOTE

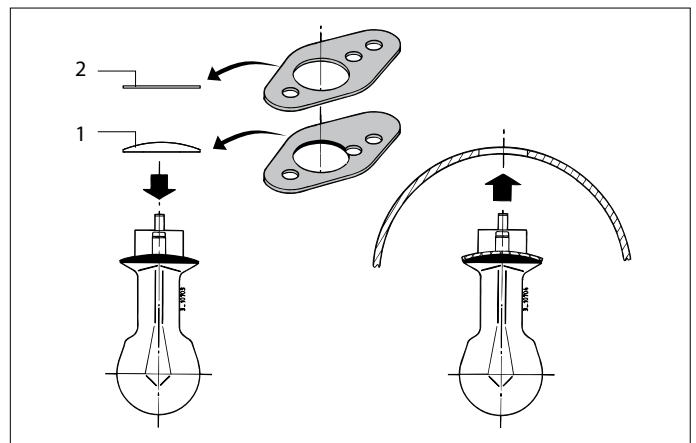
The areas in which the electric motor of the bow thruster and the battery are positioned must be dry and well ventilated.

### 4.2 Installation tailpiece and intermediate flange

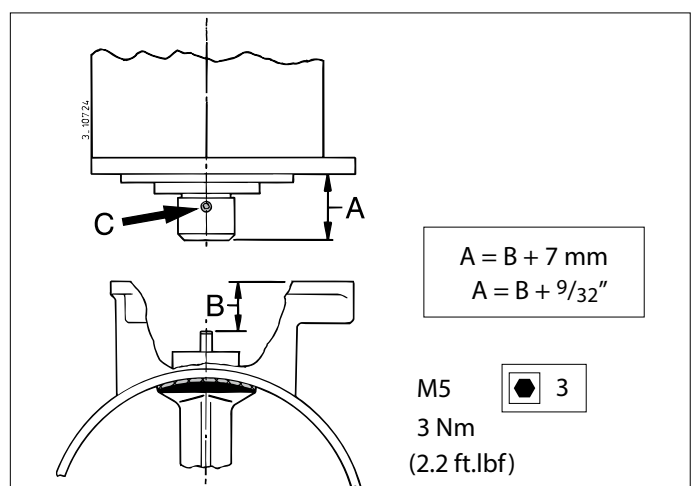
- Ensure that the plastic shim plate (1) has been positioned on the tail piece.
- Place one packing (2) between the tail piece and the tunnel.
- Apply a sealant (e.g. polyurethane or silicone) between the tail piece and packing, and between the packing and the tunnel wall.
- Place the tail piece in the hole in the tunnel.

Any extra packings used should be ones capable of justifying the tail piece.

\*) e.g. Sikaflex®-292.



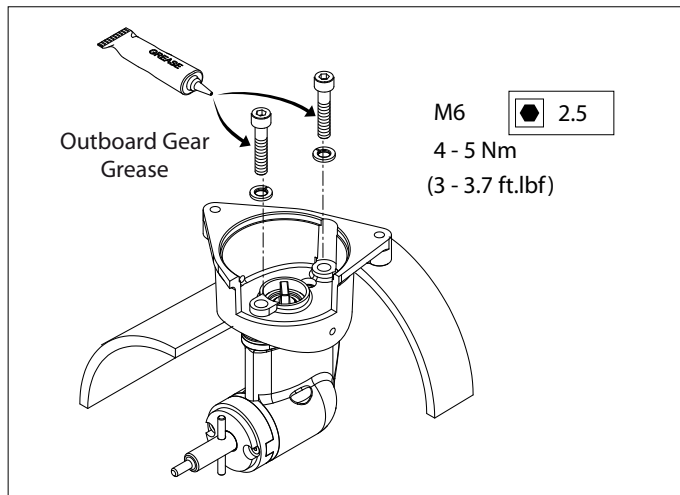
- Grease the hole of the intermediate flange and position this flange. Fit the bolts.
- Now check size 'A' ('A' = 'B' + 7 mm ). Use the adjustable screw 'C', if needed, to achieve the correct size 'A'.



- Now fit the intermediate flange permanently to the tail piece and grease the threads of the bolts with 'outboard gear grease' before inserting and tightening them.

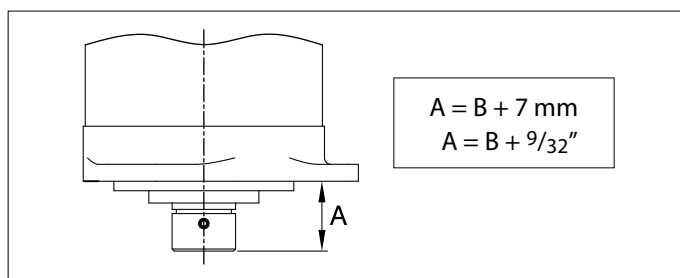
 **NOTE**

Check for possible leaks immediately the ship returns to water.

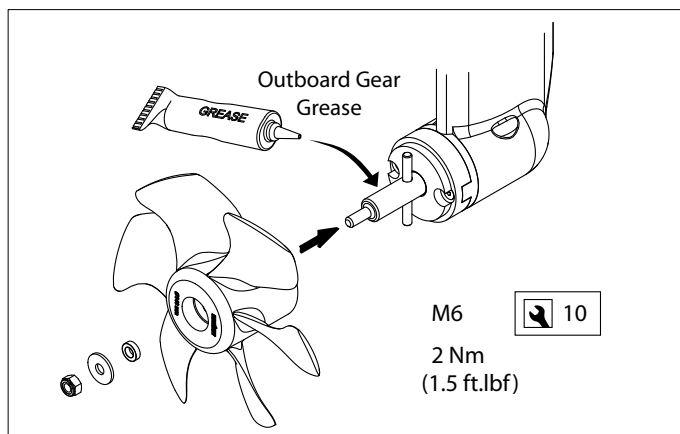


### 4.3 Final assembly

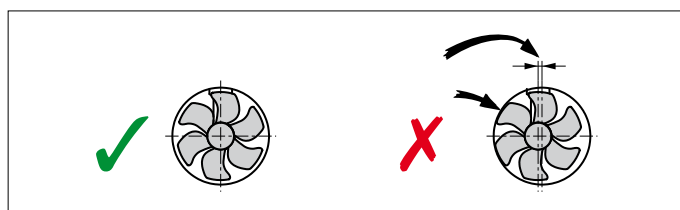
- Check again dimension 'A'.



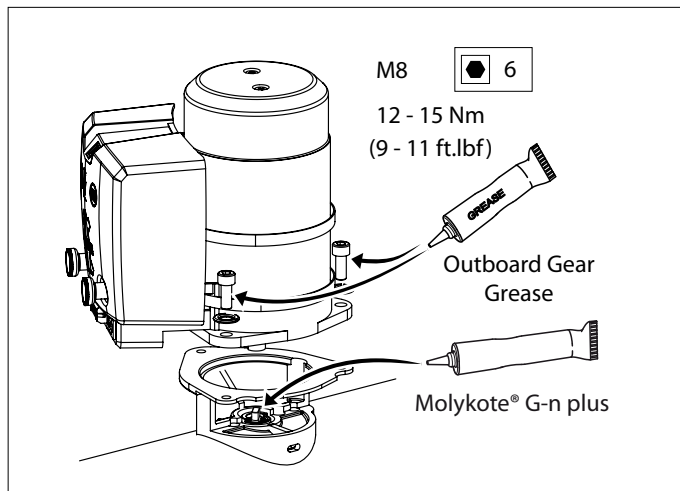
- Grease the propeller shaft with 'outboard gear grease' and install the propeller.



The propeller should run a minimum of 1.5 mm (1/16") free of the thrust tube wall, all round.



- Grease the input shaft with an installation compound, like 'Molykote® G-n plus'.
- Grease the threads of the fastenings bolts with 'outboard gear grease' and install the electric motor to the intermediate flange.
- For a first check, turn the propeller by hand, it should turn easily, whilst being connected to the output spindle of the electric motor.



## 5 Electrical installation

Consult the chapter 'Electrical Management' in 'Installation recommendations for bow thrusters', Vetus art. code 020571.03

Check that the voltage, recorded on the motor type plate, is in agreement with the vessel's circuit voltage. Position the battery or batteries as close as possible to the bow thruster; the main power supply cables can then be short, which reduces the voltage drop as much as possible.

See page 75 for the applicable battery capacity, the size of main power supply cables and fuse to use.

- Connect the main power supply cables.

- Fit the control panel next to the steering position. There must be at least 50 mm space behind the panel.

- Fit the control cable between the bow thruster and the control panel through the vessel and connect the jack connections together.

If it is necessary to cut the intermediate cable and reconnect it take care to ensure the correct colours are connected together.

N.B: The colours of the wire cores in the intermediate cable may differ from the wire core colours as used on the bow thruster motor and on the control panel!

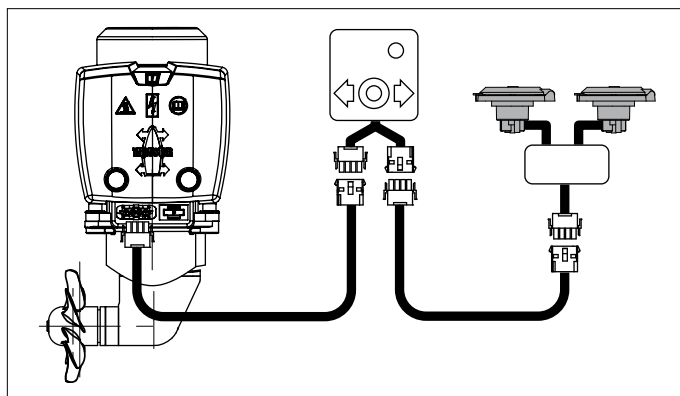
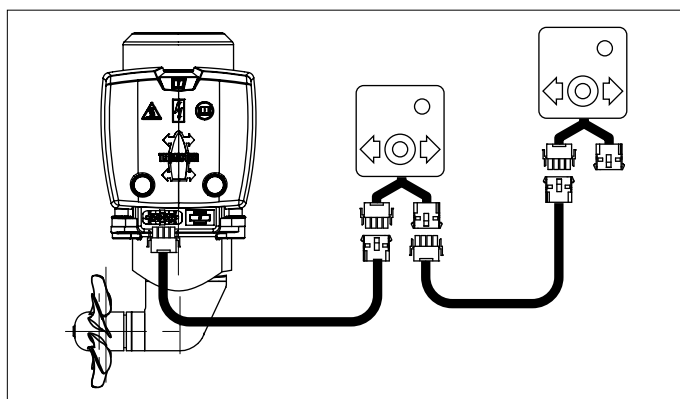
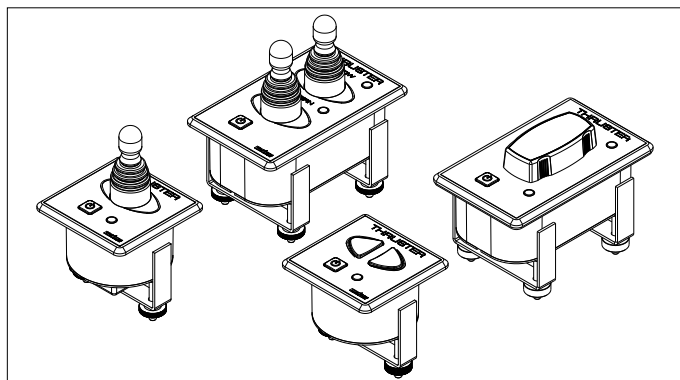
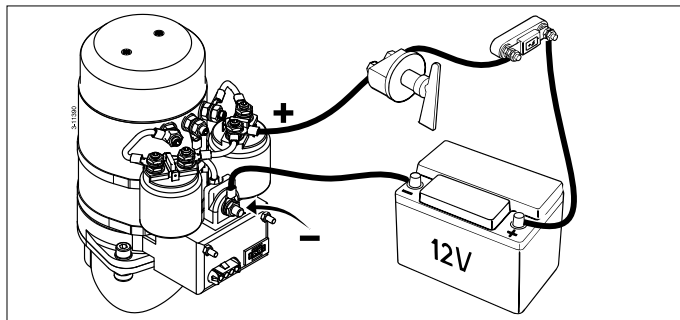
If there are two steering positions, the second control panel can be connected to the first one.

 **NOTE**

If 2 separate switches are used instead of a Vetus console, consult the diagram on page 74.

**Make sure that no other electrical parts come loose when connecting the electric cables.**

**Check all electrical connections after 14 days. Electrical parts (such as bolts and nuts) may come loose as a result of fluctuations in temperature.**

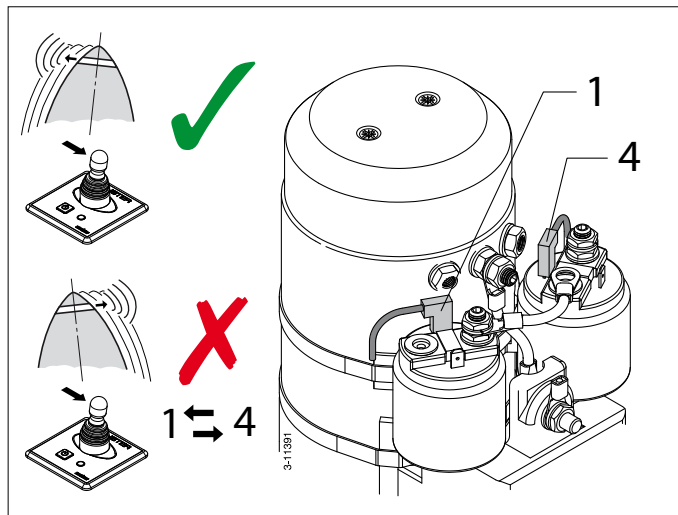


If it is found during test running that the thrust direction does not correspond with the direction switch on the control panel then the blue (no. 1) and the white (no. 4) wires on the relay must be interchanged.



**WARNING!**

Do NOT test the bow thruster while the ship is out of water, unless you are certain that everyone is at a safe distance from the thrust tube.  
Never allow the bow thruster to run for longer than 5 seconds with the ship out of water.



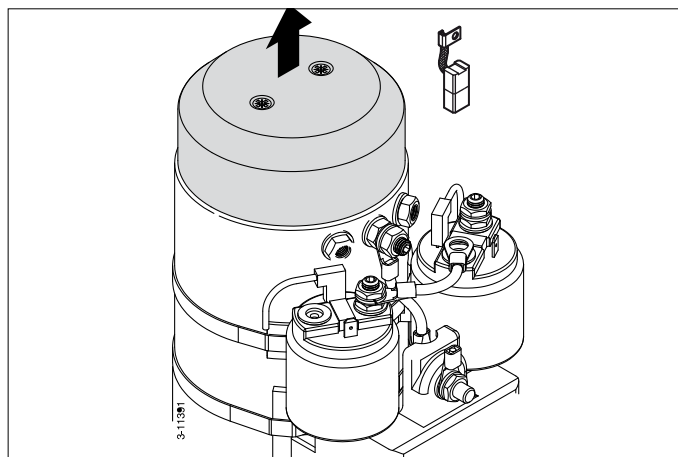
## 6 Maintenance

Check the carbon brushes for wear - in normal use once per year - with very intensive use of the bow thruster, e.g. with hire vessels, once every two months.

- Remove the Protective cover from the relay and then the Protective cover to the brushes.
- Clean the carbon brushes, the holders and the collector. (Blow away the dust coming off the brushes.)
- Check the length of the carbon brushes and replace before the minimum length (L min) is reached. Also check the collector for excessive wear.

For minimum length and art. code, see page 76.

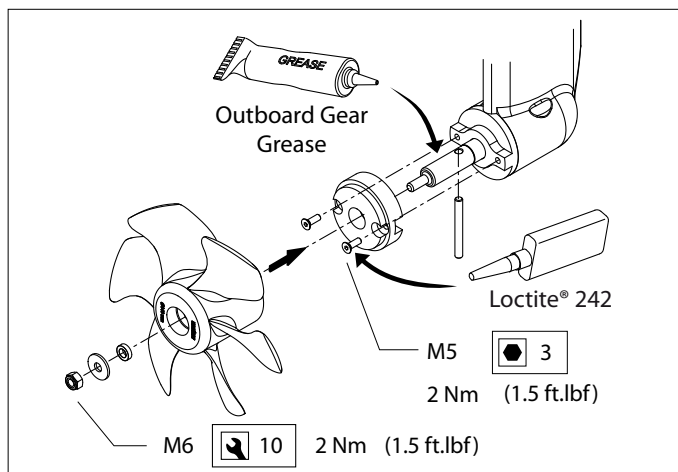
- The brushes can be taken out of the holders by releasing the retaining spring.



The bow thruster tailpiece has long-term lubrication.

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

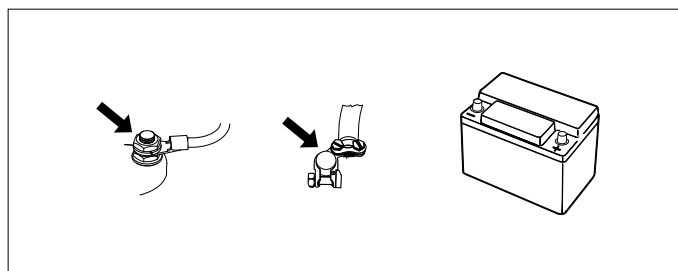
- Check the cathodic Protection and if necessary renew the zinc anode.  
For the art. code for the zinc anode, see page 76.
- Provide the bolts with a screwlock (Loctite®).
- Clean the propeller shaft, grease with 'outboard gear grease' and refit the propeller on the shaft.



Six weeks after installation and at least once annually thereafter, be sure to check all of the electrical connections between the battery/batteries and the bow thruster, as well as the connections on the motor relays.

If they have been loosened previously, prevent the nut and bolt from turning while connecting the main power supply cables. This is also why you should always use a second wrench when tightening bolts.

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





## 7 Trouble shooting

### Electric motor does not operate

- Check that the battery main switch is 'ON'.
- Check whether the control panel fuse has burnt out. <sup>[1]</sup>
- Check if the main fuse has burnt out. <sup>[2]</sup>

In all the above cases, the 'POWER' indicator LED is not lit.

- The electric motor has overheated and its thermal Protection has broken the circuit of the control current.

The panel gives a warning signal three times ( . - . - ) and the LED will glow red.

As soon as the motor has cooled down enough, the LED will resume glowing green and the bow thruster can be put back in service.

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 battery is flat.
- Bad electrical connection(s) due to e.g. corrosion.
- The carbon brushes are not making proper contact.
- The battery capacity is reduced because of very low temperatures.
- Weed or fishing line has become caught in the propeller.

### Control panel fuse is burnt out <sup>[1]</sup>

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

### Electric motor turns (too) fast 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 has been broken by a foreign object having entered the propeller or tunnel.

Replace the drive pin and check the propeller flange for any damage.

### After pressing the on/off switch on the panel, the panel is not switched 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 giving the signal ( - . - ).

<sup>[1]</sup> The control current fuse is in the bow thruster motor. A spare fuse can be found in the relay cap, see p. 76.

<sup>[2]</sup> See table on page 75

## 8 Technical data

<b>Type</b>	:	<b>BOW3512D</b>
<b>Electric motor</b>		
Type	:	reversible DC motor
Voltage	:	12 V DC
Current	:	220 A <sup>[3]</sup>
Rated output	:	1.5 kW
No. of revolutions	:	2600 rpm
Rating	:	S2 - 4 min. <sup>[3]</sup>
Protection	:	IP44
Motors conform to CE (2014/30/EU, EMC - EN61000)		
<b>Transmission</b>		
Gears	:	Bevel gear helical teeth
Gear ratio	:	1 : 1
Lubrication	:	oilbath, approx. 0.04 litre (1.4 fl.oz.) outboard gear oil SAE80W or EP 90
Housing	:	bronze
<b>Propeller</b>		
Diameter	:	146 mm (5 3/4")
No. of blades	:	6
Profile	:	asymmetrical
Material	:	polyacetal (Delrin ®)
Rated thrust	:	350 N (35 kgf, 79 lbf)
<b>Control circuit</b>		
Fuse	:	Blade type fuse 'ATO' 5 A
Current solenoid switch	:	2.8 A
Control circuit wires	:	1.5 mm <sup>2</sup> (14 AWG)
Extension cable	:	6, 10, 16, 18 or 20 m (20', 33', 52', 59', or 65')
<b>Thrust-tunnel</b>		
<b>Steel model</b>		
dimensions	:	O.D. 159 mm, wall thickness 4,5 mm
treatment	:	blasted, coated with: SikaCor Steel Protect. Suitable for all kinds of protection systems.
<b>Plastic model</b>		
dimensions	:	I.D. 150 mm, wall thickness 5.3 mm
material	:	glass fibre reinforced polyester
<b>Aluminium model</b>		
dimensions	:	I.D. 150 mm, wall thickness 5 mm
material	:	aluminium, 6061 or 6062 (AlMg1SiCu)
<b>Weight</b>		
Excl. thrust-tunnel	:	12 kg (26 lbs)

### Length of usage:

<sup>[3]</sup> 4 min. continuously or max. 4 min. per hour at 220 A (12 Volt)..

## 9 Hoofdafmetingen

## Mål

Principal dimensions

Huvudmått

Hauptabmessungen

Viktigste mål

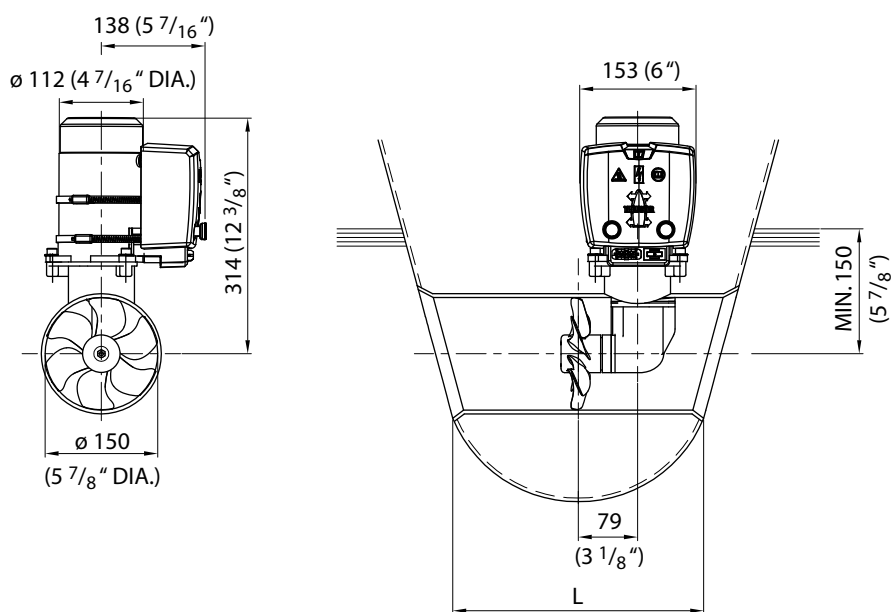
Dimensions principales

Päämitat

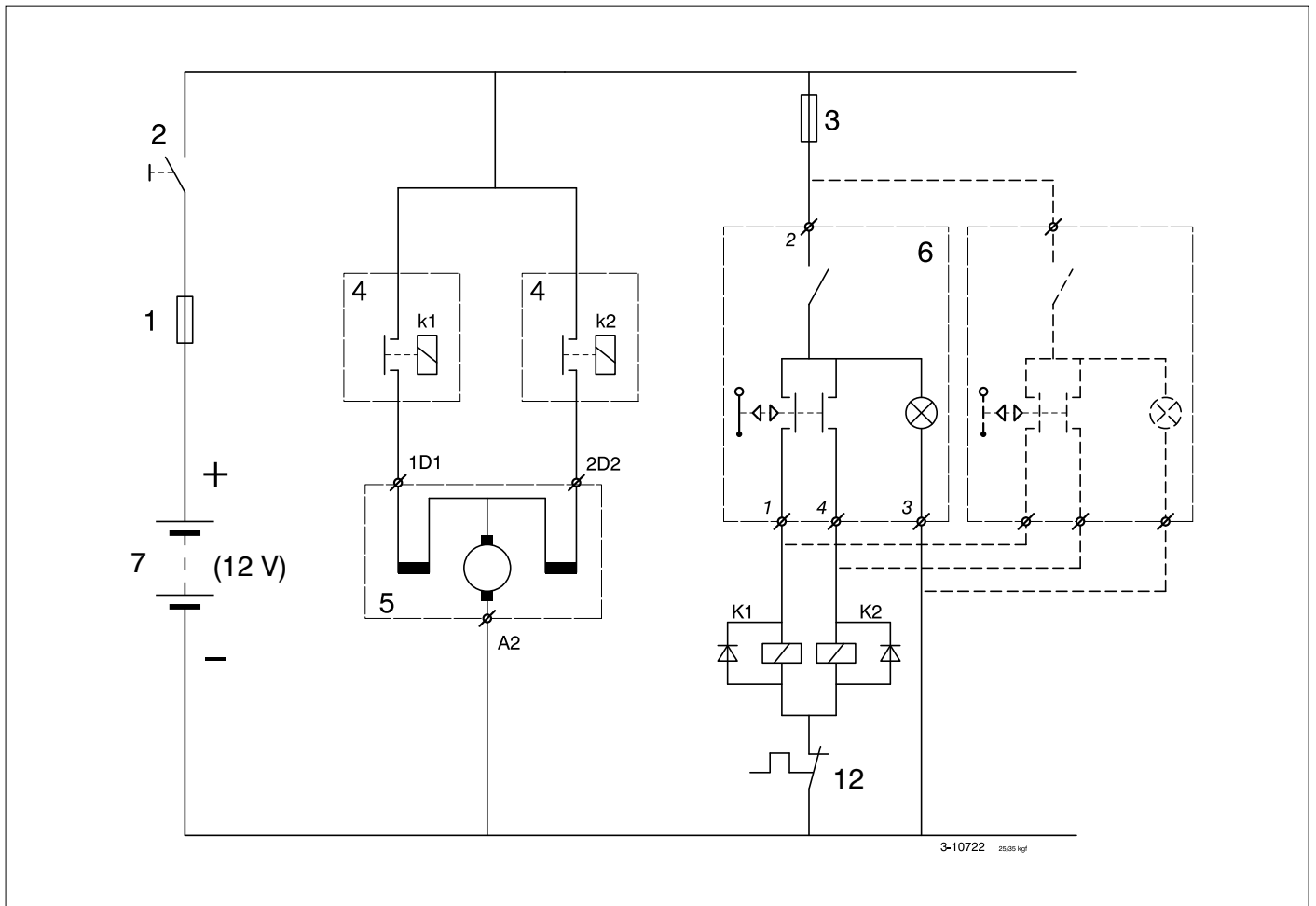
Dimensiones principales

Główne wymiary

Dimensioni principali



1 : 10



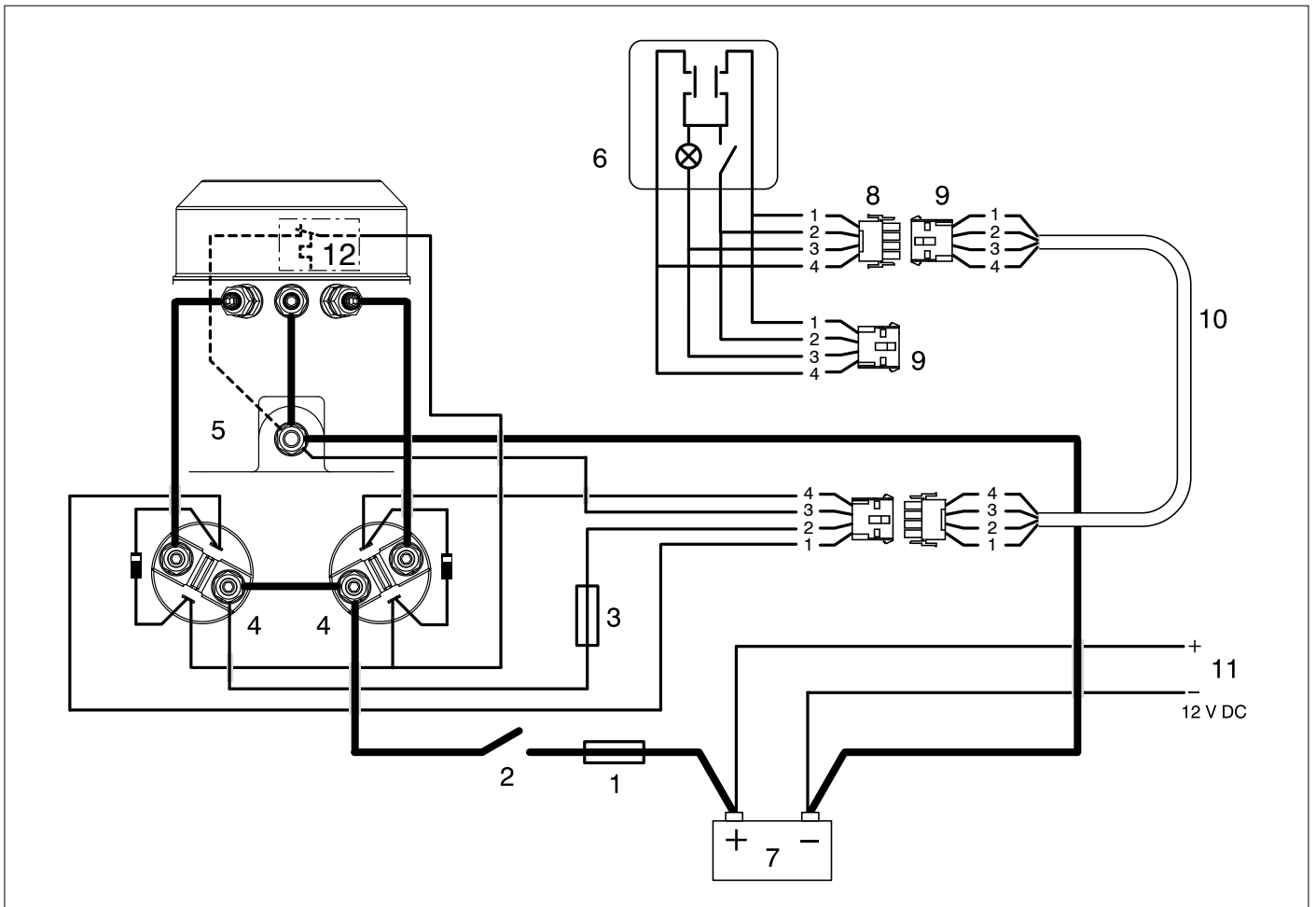
1	Hoofdzekering	Main fuse	Hauptsicherung	Fusible principal	Fusible principal
2	Hoofdschakelaar	Main switch	Hauptschalter	Interrupteur principal	Interruptor principal
3	Stuurstroomzekering	Control current fuse	Steuerstromsicherung	Fusible courant de commande	Fusible de circuito de control
4	Magneetschakelaar	Solenoid switch	Relais	Contacteur solénoïde	Interruptor de solenoide
5	Elektromotor	Electromotor	Elektromotor	Moteur électrique	Electromotor
6	Bedieningspaneel	Control panel	Bedienungspaneel	Panneau de commande	Tablero de mandos
7	Accu	Battery	Batterie	Batterie	Batería
8	Steker	Plug	Stecker	Prise mâle	Clavija macho
9	Contrasteker	Socket	Kontrastecker	Prise femelle	Clavija hembra
10	Verlengkabel	Extension cable	Zwischenkabel	Câble de branchement	Cable prolongador
11	Dynamo	Alternator	Lichtmaschine	Générateur	Generador
12	Thermische beveiliging	Thermal Protection	Thermosicherung	Sécurité thermique	Dispositivo térmico de seguridad

Kleurcode bedrading:	Wiring colour code:	Farbkode für die Bedrahtung:	Code de couleur des câbles:	Código de color de los cables:
1 Blauw	Blue	Blau	Bleu	Azul
2 Rood (+)	Red (+)	Rot (+)	Rouge (+)	Rojo (+)
3 Zwart (-)	Black (-)	Schwarz (-)	Noir (-)	Negro (-)
4 Wit	White	Weiß	Blanc	Blanco

**Schema elettrico**  
**Elektrisk skema**

**Kopplingschema**  
**Elektrisk skjema**

**Sähkökaavio**  
**Schemat okablowania**



1	Fusibile principale	Hovedsikring	Huvudsäkring	Hovedsikring	Päävirtasulake	Bezpiecznik główny
2	Interruttore principale	Hovedafbryder	Huvudströmbrytare	Hovedbryter	Päävirtakytkin	Główny włącznik
3	Fusibile del circuito di comando	Styrestromssikring	Styrströmsäkring	Styrestromsikring	Ohjausvirtasulake	Bezpiecznik prądu sterującego
4	Interruttore solenoidale	Magnetafbryder	Kontaktor	Magnetbryter	Rele	Przełącznik elektromagnetyczny
5	Motore elettrico	Elektromotor	Elmotor	Elektromotor	Sähkömoottori	Silnik elektryczny
6	Panolo di comando	Betjeningspanel	Manöverpanel	Kontrollpanel	Ohjauspaneli	Pulpit operatora
7	Batteria	Batteri	Batteri	Batteri	Akku	Akumulator
8	Spina maschio	Stik	Stickkontakt	Støpsel	Pikaliitin	Wtyczka
9	Spina femmina	Kontrastik	Kontrastickontakt	Stikkontakt	Pikaliitin	Gniazdo
10	Prolunga	Forlængerledning	Förlängningskabel	Skjøtekabel	Jatkokaapeli	Kabel przedłużający
11	Dinamo	Dynamo	Generator	Dynamo	Generaattori	Alternator
12	Protezione termica	Termisk beskyttelse	Termiskt skydd	Termisk sikring	Lämpösuojain	Zabezpieczenie termiczne

	Codice colori cavi:	Farvekode til kabler:	Färgkod kablage:	Fargekode ledninger:	Kaapeleiden värikoodit:	Kolorowy kod okablowania:
1	Blu	Blå	Blå	Blå	Sininen	Niebieski
2	Rosso (+)	Rød (+)	Röd (+)	Rød (+)	Punainen (+)	Czerwony (+)
3	Nero (-)	Sort (-)	Svart (-)	Svart (-)	Musta (-)	Czarny (-)
4	Bianco	Hvid	Vit	Hvit	Valkoinen	Biały

## 10.1 Bediening met voetschakelaars

Operated by foot switches

Bedienung mit Fußschaltung

Commande à interrupteurs à pied

Manejo mediante conmutadores de pedal

Comando a pedale

Betjening med fodkontakter

Manövrering med fotomkopplare

Betjening med fotbrytere

Ohjaus jalkakytkimellä

Obsługiwany przez przełączniki nożne



WAARSCHUWING WARNING WARNUNG AVERTISSEMENT ADVERTENCIA AVVERTIMENTO ADVARSEL VARNING ADVARSEL VAROITUS OSTRZEŻENIE

Beide boegschroefrelais (K1 en K2) mogen nooit gelijktijdig ingeschakeld worden! Installeer daarom bij toepassing van voetschakelaars 2 extra relais zoals in onderstaand schema is aangegeven.

The two bow thruster relays (K1 and K2) must never both be engaged at the same time! For this reason, install two extra relays as depicted in the schematic below when utilising foot switches.

Die beiden Bugschraubenrelais (K1 und K2) dürfen unter keinen Umständen gleichzeitig eingeschaltet werden! Installieren Sie aus diesem Grund, vorm Gebrauch von zwei Fußschaltern zwei zusätzliche Relais, wie in nachfolgender Skizze angegeben.

Les deux relais d'hélice d'étrave (K1 et K2) ne doivent jamais être actionnés simultanément ! Si des interrupteurs à pied sont utilisés, il faudra donc installer 2 relais supplémentaires comme indiqué sur le schéma ci-dessous.

¡Los relés correspondientes a los tornillos de retención (K1 y K2) no deben nunca conmutarse al mismo tiempo! Si utiliza conmutadores de pedal, instale 2 relés adicionales, tal y como se indica en el siguiente esquema.

I due relè dell'elica di prua (K1 e K2) non devono mai essere azionati contemporaneamente! Pertanto, quando utilizzate i comandi a pedale installate 2 relè ausiliari, come indicato nello schema sottostante.

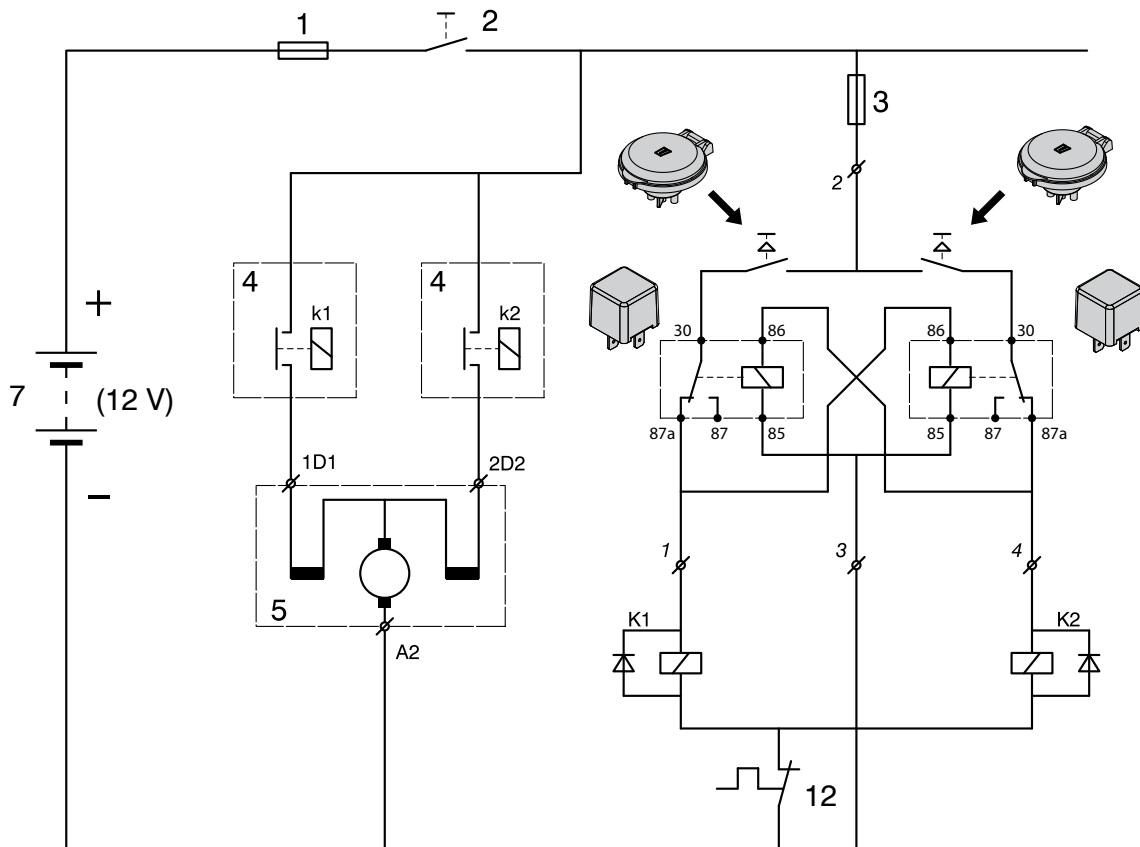
De to bovpropelrelæer (K1 og K2) må aldrig tilkobles samtidig. Ved anvendelse af fodkontakter skal der monteres 2 ekstra relæer som vist i skemaet nedenfor.

Bogpropellerns båda reläer (K1 och K2) får aldrig kopplas på samtidigt! Vid användning av fotomkopplare ska därför två extra reläer installeras i enlighet med nedanstående kopplingschema.

Begge baugpropellreléene (K1 og K2) skal aldri slås på samtidig! Installer derfor ved hjelp av fotbrytere 2 ekstra reléer som angitt i skjemaet nedenfor.

Molempia keulapotkureita (K1 ja K2) ei saa käynnistää koskaan samanaikaisesti! Asenna siksi jalkakytkimintä sovellettaessa kaksi ylimääräistä relettä alla olevan kaavion mukaisesti.

Dwa przełączniki pędnika dziobowego (K1 i K2) nie mogą nigdy być włączane w tym samym czasie. Z tego powodu w przypadku użycia pedałów nożnych, należy zainstalować dodatkowe przełączniki, jak przedstawiono na schemacie poniżej.



## 11 Accucapaciteit, accukabels

Battery capacity, battery cables

Akkukapazität, Akkukabel

Capacité de la batterie, câbles de batterie

Capacidad de las baterías, cables de baterías

Capacità della batteria e cavi della batteria


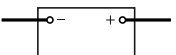
Batteriets kapacitet,  
batterikabler

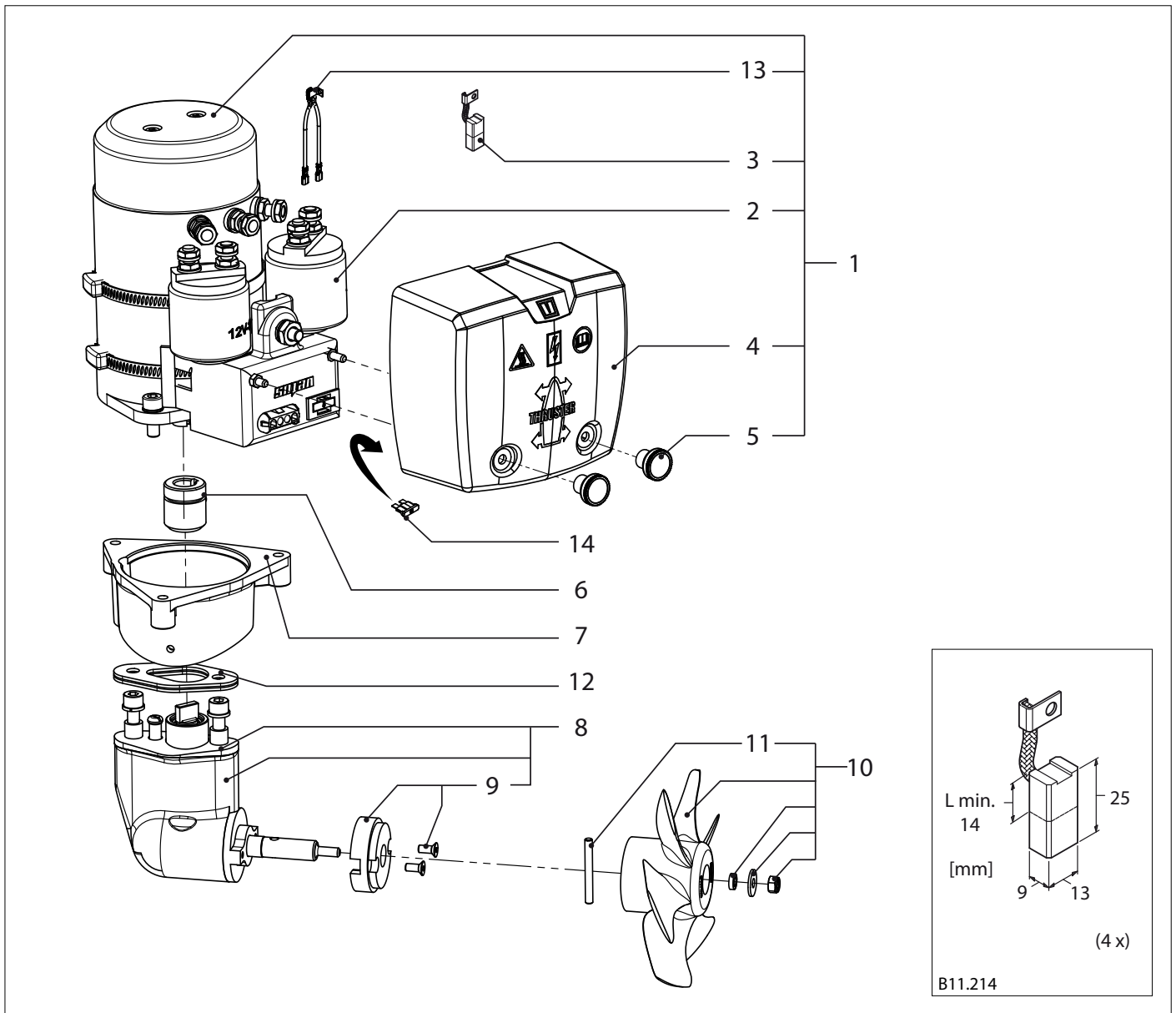
Batterikapacitet, batterikablar

Batterikapacitet, batterikabler

Akkukapasiteetti, akkukaapelit

Pojemność akumulatora,  
kable akumulatora

Boegschroef	Toe te passen accu('s)		Totale lengte plus- en minkabel	Draaddoor-sneede	Zekering			
	Minimaal	Maximaal			'traag'	Vetus art. code		
Bow thruster	Battery capacity required		Total length of plus- and minus cable	Cable cross-section	Fuse			
	Minimum	Maximum			'slow blow'	Vetus art. code		
Bugschraube	Zu verwendende Akkus		Gesamtlänge Plus- und Minuskabel	Draht-durchschnitt	Sicherung			
	Minimum	Maximum			'träge'	Artikelnummer		
Hélice d'étrave	Batterie(s) à utiliser		Longueur totale des câbles plus et moins	Diamètre du câble	Fusible			
	Minimum	Maximum			'lent'	code d'art. Vetus		
Hélice de proa	Batería(s) a aplicar		Largo total cable positivo y negativo	Diámetro de hilo	Fusible			
	Mínimo	Máximo			'lento'	Código de art. Vetus		
Elica	Batteria(e) da usare		Lunghezza totale cavo positivo e negativo	Diametro cavi	Fusibile			
	Minimo	Massimo			'a tempo'	Vetus código art.		
Bovpropel	Batterikapacitet		Total længde af positiv og negativ batterikabel tilsammen	Tråd-diameter	Sikring			
	Min.	Max.			'træg'	Vetus artikeln		
Bogpropeller	Lämpligt batteri		Total längd kabel till plus- och minuspol	Kabelns dimension	Säkring			
	Min.	Max.			'trög'	Vetus artikelnr		
Baugpropell	Nødvendig batterikapacitet		Total lengde pluss- og minuskabel	Ledningt-verrsnitt	Sikring			
	Min.	Maks			'treg'	Vetus art. kode		
Keulapotkuri	Vaadittava akkukapasiteetti		'Miinus'- ja 'plus'-kaapeleiden kokonaispituudet	Kaapelikoko	Sulake			
	Minimi	Maksimi			hidas	Vetus koodi		
Pędnik dziobowy	Wymagana pojemność akumulatora		Całkowita długość kabla dodatniego i ujemnego	Przekrój kabla	Bezpiecznik			
	Minimalna	Maksymalna			'zwłoczny'	Nr kat. Vetus		
BOW3512D 35 kgf - 12 V	CCA 500 - 12 V  55 Ah - 12 V BCI 90 - 500		CCA 750 - 12 V  100 Ah - 12 V BCI 31 - 750		0 - 11 m	35 mm <sup>2</sup> AWG 2 AWG 1	160 A	ZE160
					0 - 34 ft 34 - 43 ft			



**BOW3512D**

**Service onderdelen**

**Service parts**

pos.	qty	part	benaming	description
1	1	SET0021	Elektromotor 1,5 kW - 12 V compl. met relais	Electromotor 1.5 kW - 12 V c/w solenoid switches
2	1	SET0009	Set relais 12 V	Set of solenoid switches 12 V
3	1	BP1187	Set van 4 stuks koolborstels	Set of 4 pcs of carbon brushes
4	1	BPC00100	Relaiskap	Relais cover
5	1	SET0006	Set van 2 stuks kartelmoeren	Set of 2 pcs knurled nuts
6	1	SET0022	Koppeling	Coupling
7	1	BP1034B	Tussenflens	Intermediate flange
8	1	SET0017	Startstuk compl.	Tailpiece compl.
9	1	SET0149	Zinkanode compl. met schroeven	Zincanode c/w screws
10	1	SET0087	Schroef compl. met meeneempen en montageset	Propeller c/w drive pin and mounting set
11	1	BP1129	Meeneempennen, 5 stuks	Propeller pins, 5 pcs
12	2	BP1170	Pakking	Gasket
13	1	TS105	Thermische beveiliging	Thermal Protection
14	1	BP256	Reserve zekering 5 A	Spare fuse 5 A

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