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Bedieningshandleiding en
installatieinstructies

Operation manual and installation
instructions

Bedienungshandbuch und Einbauanleitung

Manuel d'utilisation et instructions
d'installation

Manual de manejo y instrucciones de
instalación

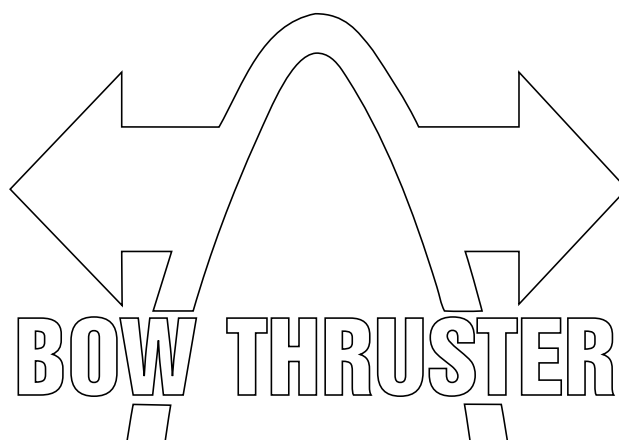
Manuale per l'uso e istruzioni per
l'installazione

Betjeningsvejledning og installations-
instruktioner

Bruksanvisning och
monteringsinstruktioner

Bruksanvisning og
installasjonsinstrukser

Käyttö- ja asennusohje



BOW2512C

25 kgf - ø 110 mm

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Boormal

Sagoma di trapana natura

Drill pattern

Skabelon

Bohrschablone

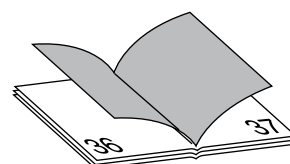
Borrjigg

Gabarit

Boresjablon

Plantilla de perforación

Poraussabluuna



1 Introduction

These installation instructions give guidelines for fitting the Vetus bow thruster 'BOW2512C'.

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.

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:
- 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 020571.01

For overall dimensions see drawing, page 65.

NOTE

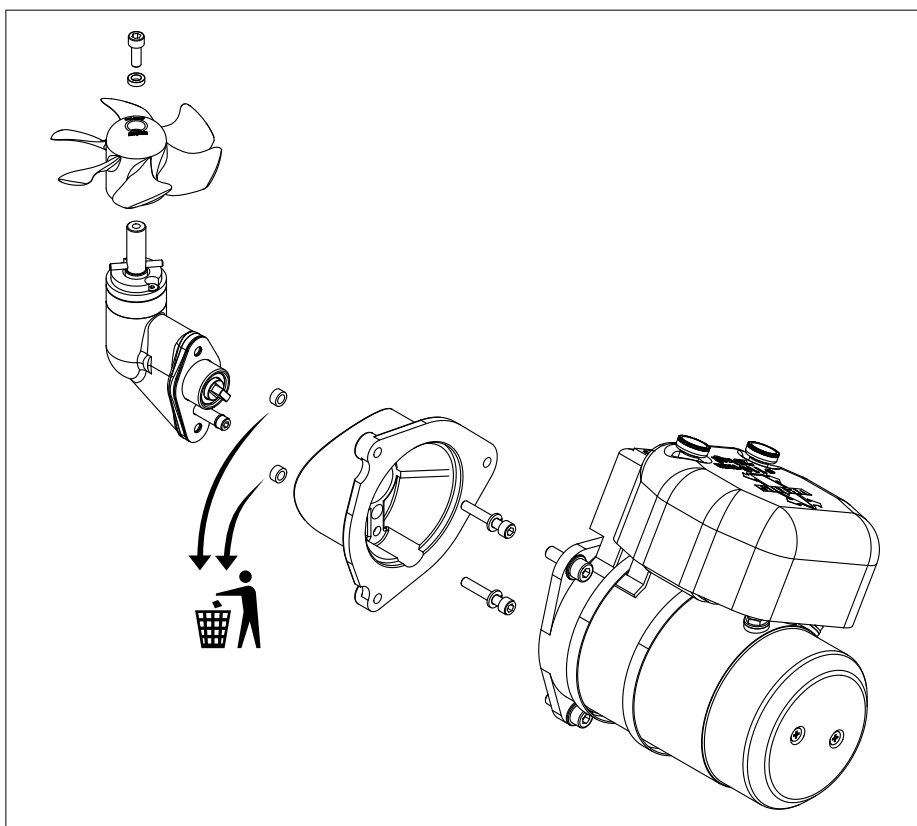
The areas in which the electric motor of the bow thruster and the battery are positioned must be dry and well ventilated.

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.

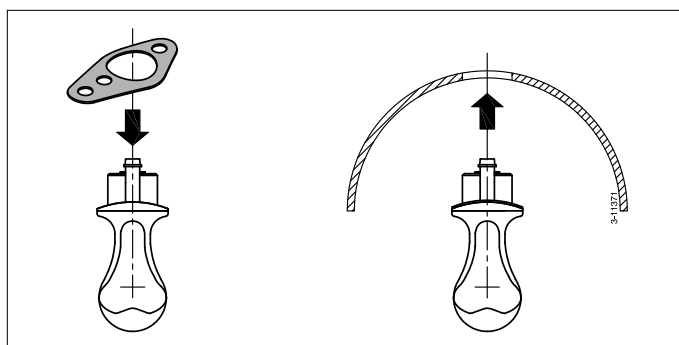


4.2 Installation tailpiece and intermediate flange

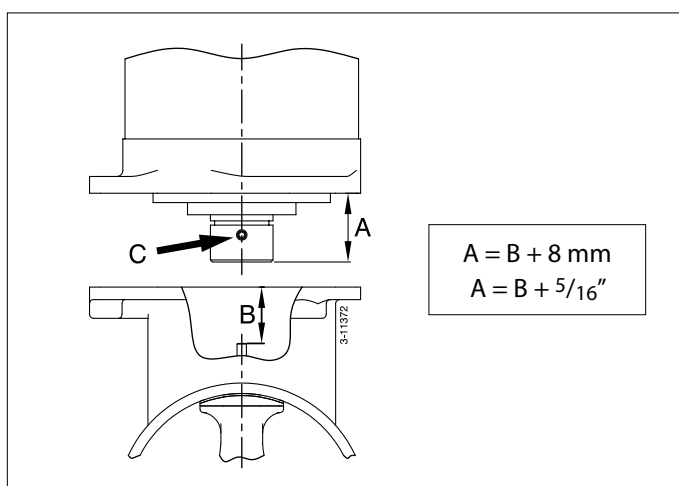
- Place one packing between the tail piece and the tunnel. Apply a sealant (e.g. polyurethane or silicone) between the tail piece and packing, and between the packing and the tunnel wall. Place the tail piece in the hole in the tunnel.

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' + 8 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.

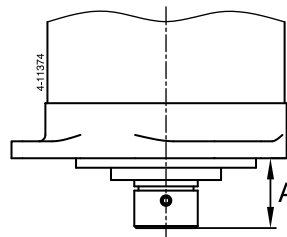


NOTE

Check for possible leaks immediately the ship returns to water.

4.3 Final assembly

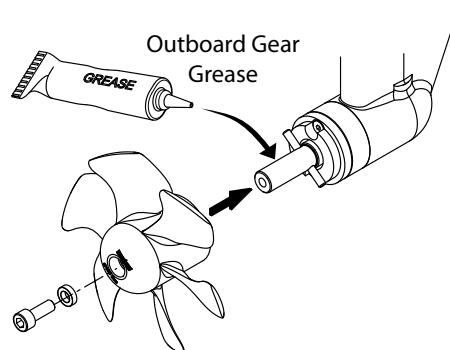
- Check again dimension 'A'.



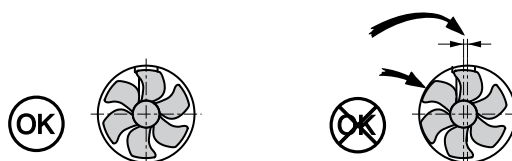
$$A = B + 8 \text{ mm}$$

$$A = B + 5/16''$$

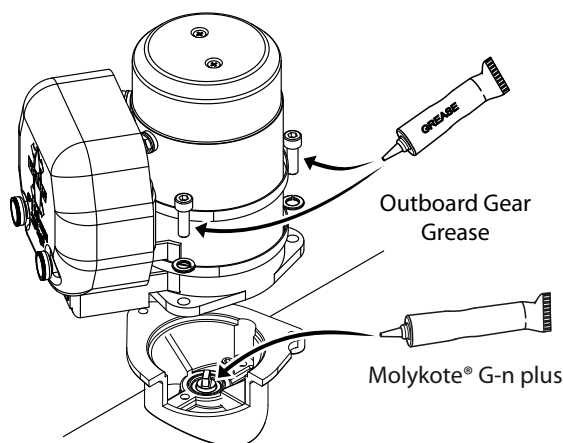
- Grease the propeller shaft with 'outboard gear grease' and install the propeller.



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 020571.01

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 69 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!

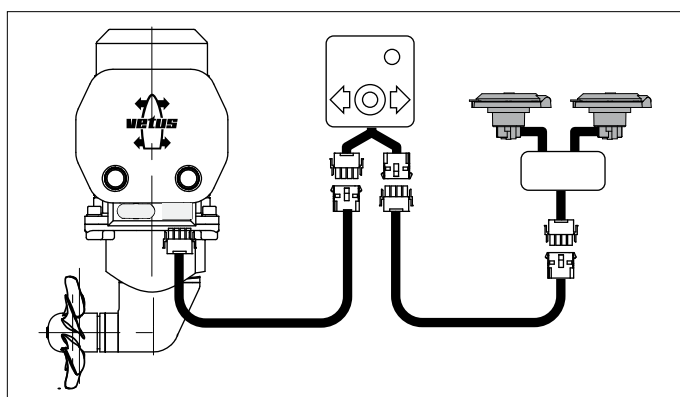
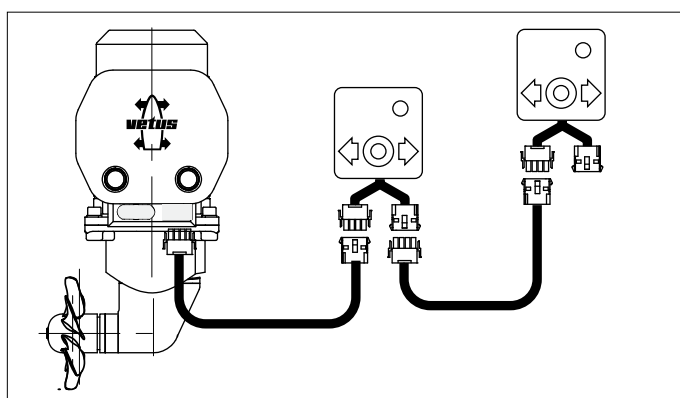
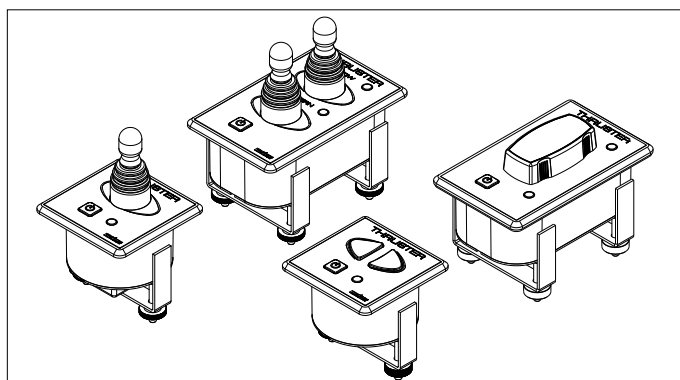
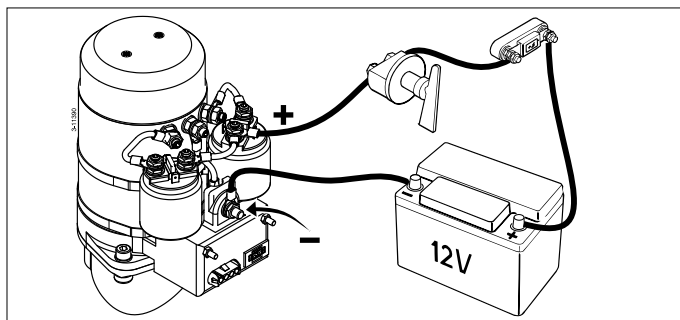
If there are two steering positions, the second control panel can be connected to the first one.

NOTE

If 2 separate switches are used instead of a Vetus console, consult the diagram on page 68.

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.



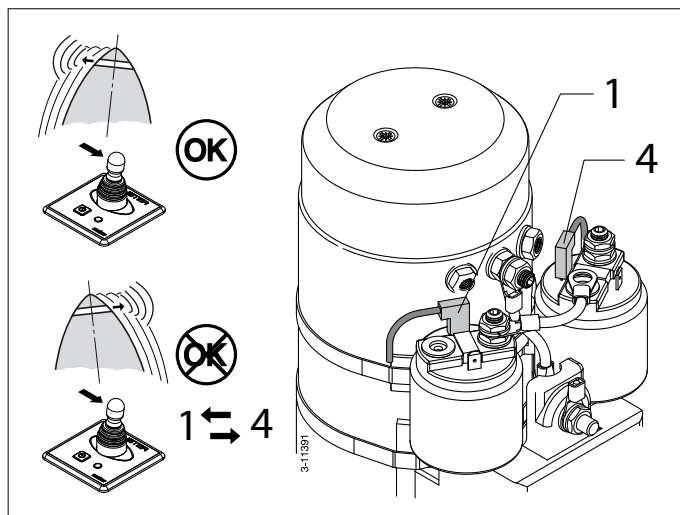
If it is found during test running that the thrust direction does not correspond with the direction switch on the control panel then the blue (no. 1) and the white (no. 4) wires on the relay must be interchanged.



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.



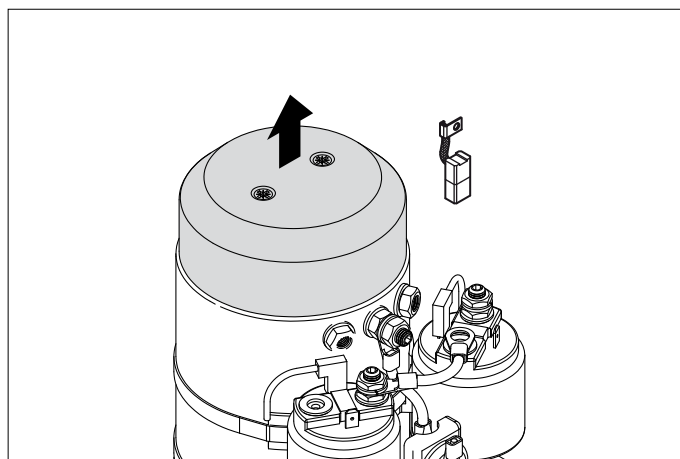
6 Maintenance

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 70.

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



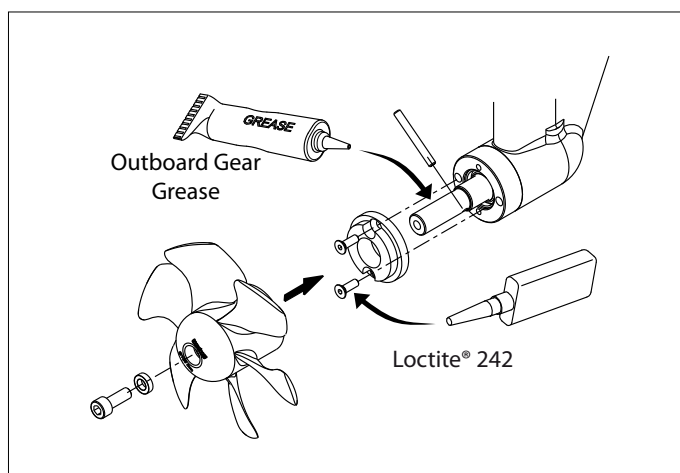
The bow thruster tailpiece has long-term lubrication.

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

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

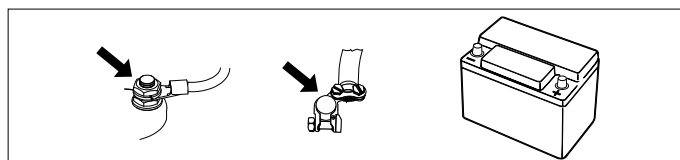
For the art. code for the zinc anode, see page 70.

- Provide the bolts with a screwlock (Loctite®).
- Clean the propeller shaft, grease with 'outboard gear grease' and refit the propeller on the shaft.



Check all electrical connections at least once annually.

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. ^[1]
- Check if the main fuse has burnt out. ^[2]

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 ^[1]

- 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.

8 Technical data

Type	:	BOW2512C
Electric motor		
Type	:	reversible DC motor
Voltage	:	12 V DC
Current	:	200 A ^[3]
Rated output	:	1.5 kW
No. of revolutions	:	3200 rpm
Rating	:	S2 - 4 min. ^[3]
Protection	:	IP44
Motors conform to CE (80/336/EEC, EMC - EN60945)		
Transmission		
Gears	:	Bevel gear helical teeth
Gear ratio	:	1 : 1
Lubrication	:	oilbath, approx. 0.024 litre (0.8 fl.oz.) outboard gear oil SAE80W or EP 90
Housing	:	bronze
Propeller		
Diameter	:	108 mm (4 1/4 ")
No. of blades	:	6
Profile	:	asymmetrical
Material	:	polyacetal (Delrin ®)
Rated thrust	:	250 N (25 kgf, 55 lbf)
Control circuit		
Fuse	:	5 A
Current solenoid switch	:	2,8 A
Control circuit wires	:	1.5 mm ² (14 AWG)
Extension cable	:	6, 10, 16, 18 or 20 m (20', 33', 52', 59', or 65')
Thrust-tunnel		
Steel model		
dimensions	:	O.D. 121 mm, wall thickness 4.5 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
material	:	glass fibre reinforced polyester
Aluminium model		
dimensions	:	I.D. 110 mm, wall thickness 5 mm
material	:	aluminium, 6060 or 6062 (AlMg1SiCu)
Weight		
Excl. thrust-tunnel	:	12 kg (26 lbs)

^[1] The control current fuse is in the bow thruster motor.

^[2] See table on page 69

Length of usage:

^[3] 4 min. continuously or max. 4 min. per hour at 200 A (12 Volt).

9 Hoofdafmetingen

Dimensioni principali

Principal dimensions

Mål

Hauptabmessungen

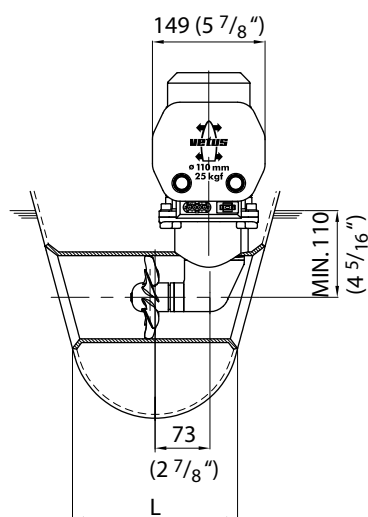
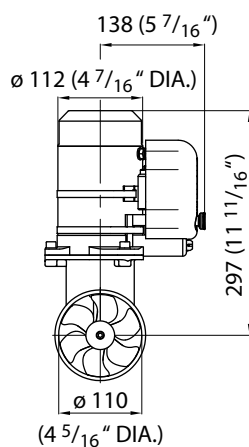
Huvudmått

Dimensions principales

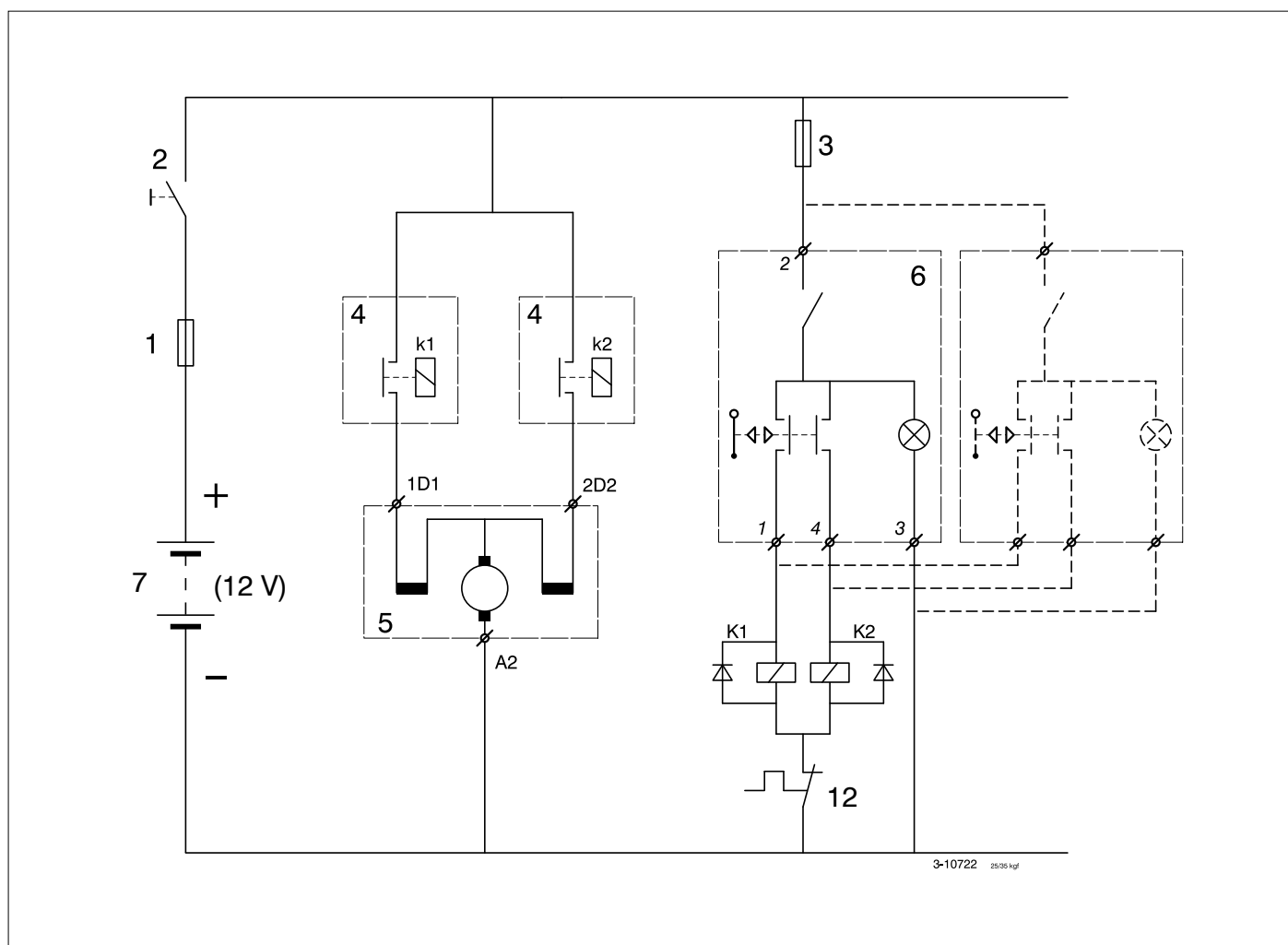
Viktigste mål

Dimensiones principales

Päämitat



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:	Farbcode 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

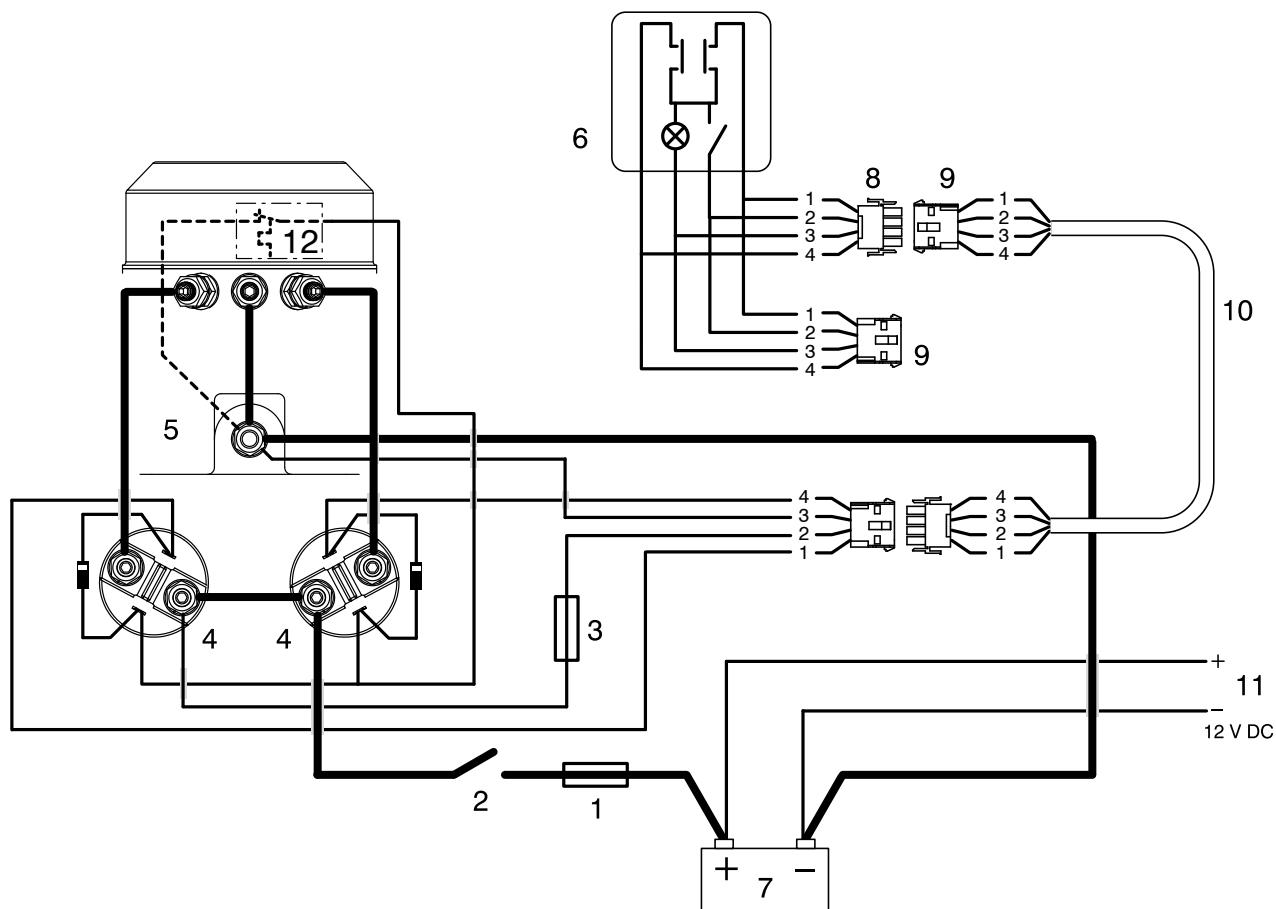
Schema elettrico

Elektrisk skema

Koplingsschema

Elektrisk skjema

Sähkökaavio



1	Fusibile principale	Hovedsikring	Huvudsäkring	Hovedsikring	Päävirtasulake
2	Interruttore principale	Hovedafbryder	Huvudströmbrytare	Hovedbryter	Päävirtakytkin
3	Fusibile del circuito di comando	Styrestømssikring	Styrströmsäkring	Styrestromsikring	Ohjausvirtasulake
4	Interruttore solenoidale	Magnetafbryder	Kontaktor	Magnetbryter	Rele
5	Motore elettrico	Elektromotor	Elmotor	Elektromotor	Sähkömoottori
6	Pannello di comando	Betjeningspanel	Manöverpanel	Kontrollpanel	Ohjauspaneli
7	Batteria	Batteri	Batteri	Batteri	Akku
8	Spina maschio	Stik	Stickkontakt	Støpsel	Pikaliitin
9	Spina femmina	Kontrastik	Kontrastickontakt	Stikkontakt	Pikaliitin
10	Prolunga	Forlængerledning	Förlängningskabel	Skjøtekabel	Jatkokaapeli
11	Dinamo	Dynamo	Generator	Dynamo	Generaattori
12	Protezione termica	Termisk beskyttelse	Termiskt skydd	Termisk sikring	Lämpösuojain

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

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



WAARSCHUWING WARNING WARNUNG AVERTISSEMENT ADVERTENCIA AVVERTIMENTO ADVARSEL VARNING ADVARSEL VAROITUS

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.

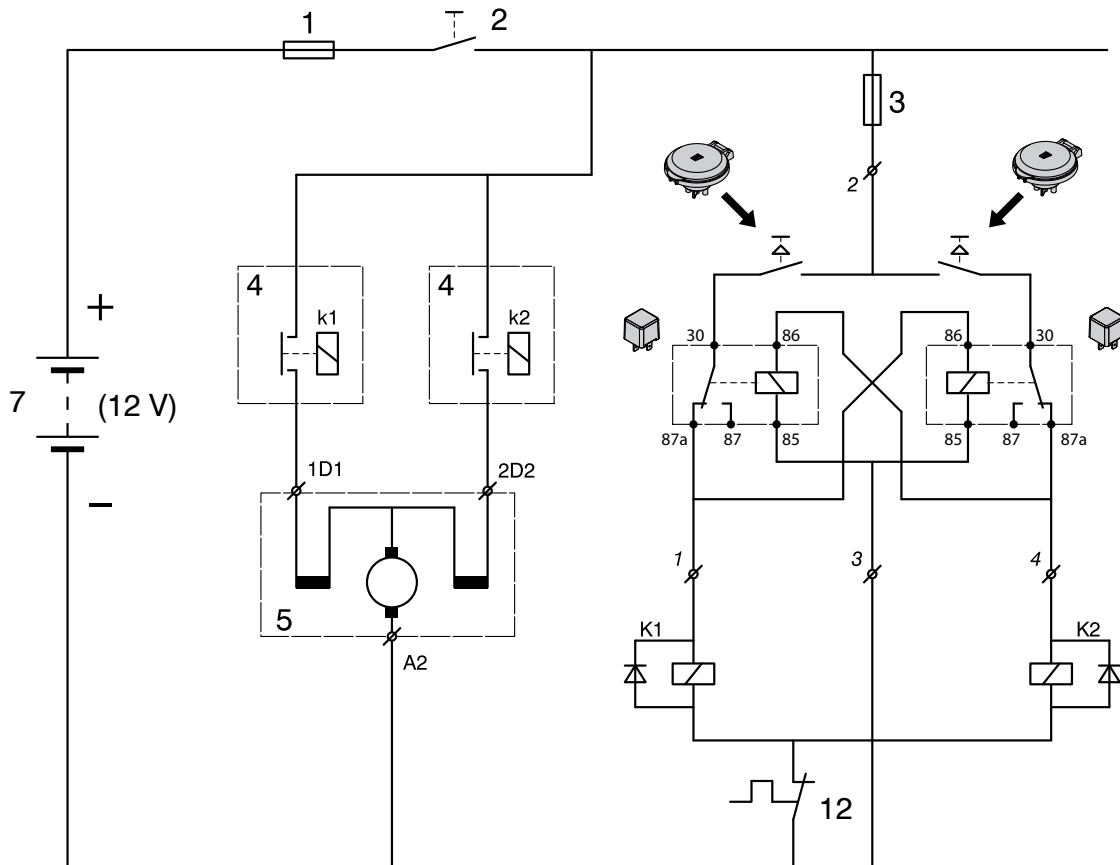
I due relè dell'elica di prua (K1 e K2) non devono mai essere azionati contemporaneamente! Pertanto, quando utilizzate i comandi a pedale installate 2 relè ausiliari, come indicato nello schema sottostante.

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 kopplingsschema.

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 jalkakytkintä sovellettaessa kaksi ylimääräistä relettä alla olevan kaavion mukaisesti.



11 Accucapaciteit, accukabels

Battery capacity, battery cables

Akkukapazität, Akkukabel

Capacité de la batterie, câbles de batterie

Capacidad de las baterías, cables de baterías

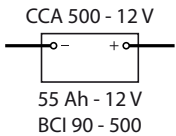
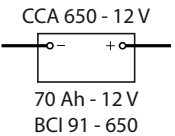
Capacità della batteria e cavi della batteria

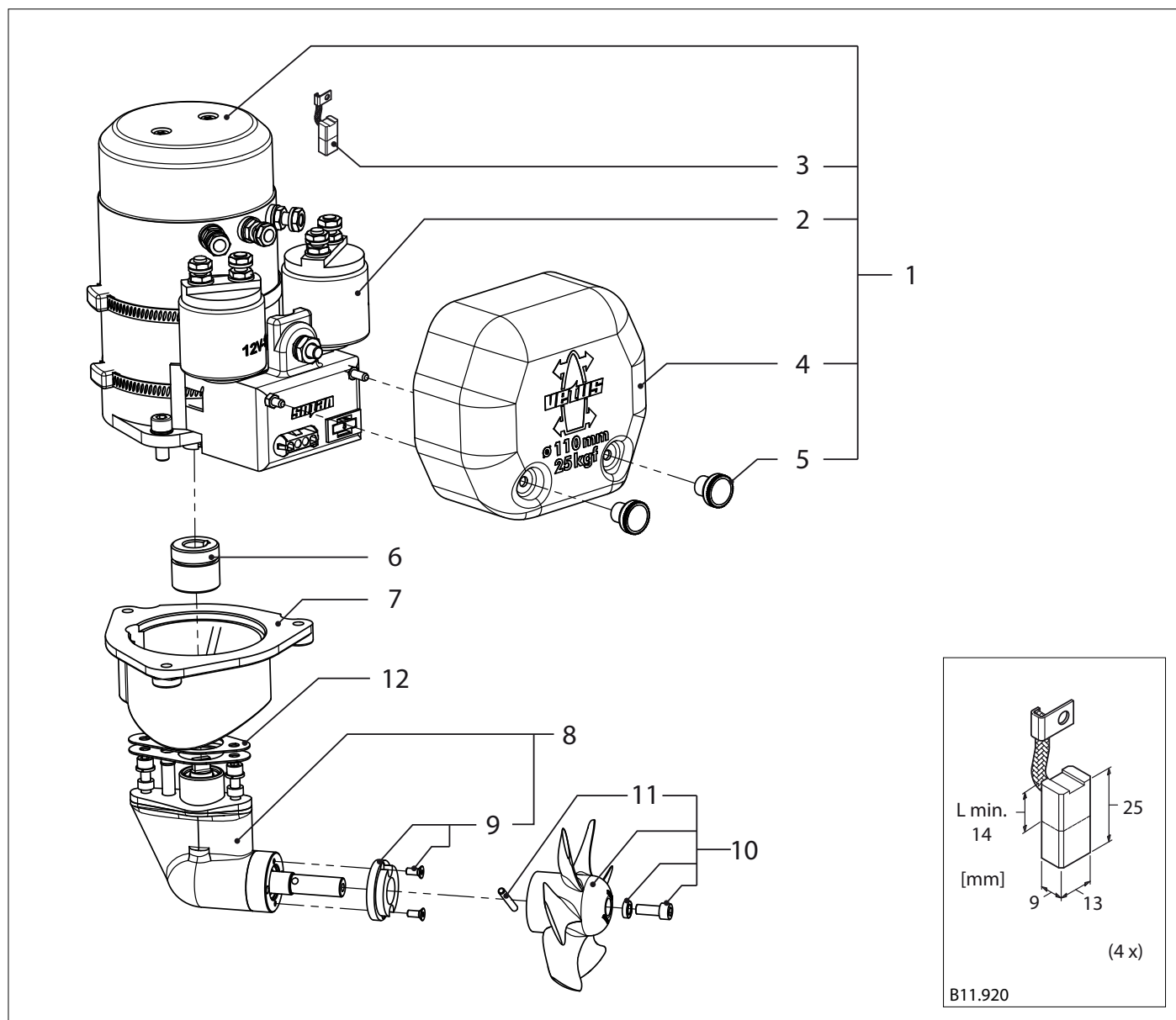
Batteriets kapacitet, batterikabler

Batterikapacitet, batterikablar

Batterikapasitet, batterikabler

Akkukapasiteetti, akkukaapelit

Boegschroef	Toe te passen accu('s)		Totale lengte plus- en minikabel	Draaddoor-snede	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 artikelnr
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	Ledningstverrsnitt	Sikring	
	Min.	Maks			'treg'	Vetus art. kode
Keulapotkuri	Vaadittava akkukapasiteetti		'Miinus'- ja 'plus'-kaapeleiden kokonaispituudet	Kaapelikoko	Sulake	
	Minimi	Maksimi			hidas	Vetus koodi
BOW2512C 25 kgf - 12 V			0 - 8 m 8 - 12 m	25 mm ² 35 mm ²	125 A	ZE125
			0 - 37 ft 37 - 47 ft	AWG 2 AWG 1		



BOW2512C

Service onderdelen

Service parts

pos.	qty	part	benaming	description
1	1	SET0007	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	SET0023	Set van 4 stuks koolborstels	Set of 4 pcs of carbon brushes
4	1	BP3076	Relaiskap	Relais cover
5	1	SET0006	Set van 2 stuks kartelmoeren	Set of 2 pcs knurled nuts
6	1	SET0010	Koppeling	Coupling
7	1	BP1148	Tussenflens	Intermediate flange
8	1	SET0011	Staatstuk compl.	Tailpiece compl.
9	1	SET0148	Zinkanode compl. met schroeven	Zincanode c/w screws
10	1	SET0086	Schroef compl. met meeneempenn en montageset	Propeller c/w drive pin and mounting set
11	1	BP1168	Meeneempennen, 5 stuks	Propeller pins, 5 pcs
12	2	BP1170	Pakking	Gasket



Declaration of Conformity

BOW2512C

Wij verklaren onder onze volledige verantwoordelijkheid dat dit product voldoet aan, en in overeenstemming is met, de volgende normen en richtlijnen:

Dichiariamo sotto la nostra responsabilità che questo prodotto è conforme e risponde alle seguenti norme e direttive:

We declare under our sole responsibility that this product is in conformity and accordance with the following standards and directives:

Vi erklærer på vores fulde ansvar, at dette produkt opfylder og er i overensstemmelse med følgende normer og direktiver:

Wir übernehmen vollständige Verantwortung dafür, dass dieses Produkt den folgenden Normen und Richtlinien entspricht und deren Anforderungen erfüllt:

Vi förklarar under vårt fullständiga ansvar att denna produkt uppfyller, och är i överensstämmelse med, följande normer och direktiv:

Nous déclarons sous notre entière responsabilité que ce produit est conforme aux normes et directives suivantes :

Vi erklærer under vårt fullstendige ansvar at dette produktet oppfyller og er i overensstemmelse med følgende standarder og direktiver:

Declaramos bajo nuestra total responsabilidad que este producto es conforme a las siguientes normas y directivas:

Vakuutamme täysin omalla vastuullamme, että tämä tuote täyttää seuraavien normien ja direktiivien vaatimukset ja yhdenmukaisuuden:

EN 61000-6-3:2001

EN 61000-6-2:2001

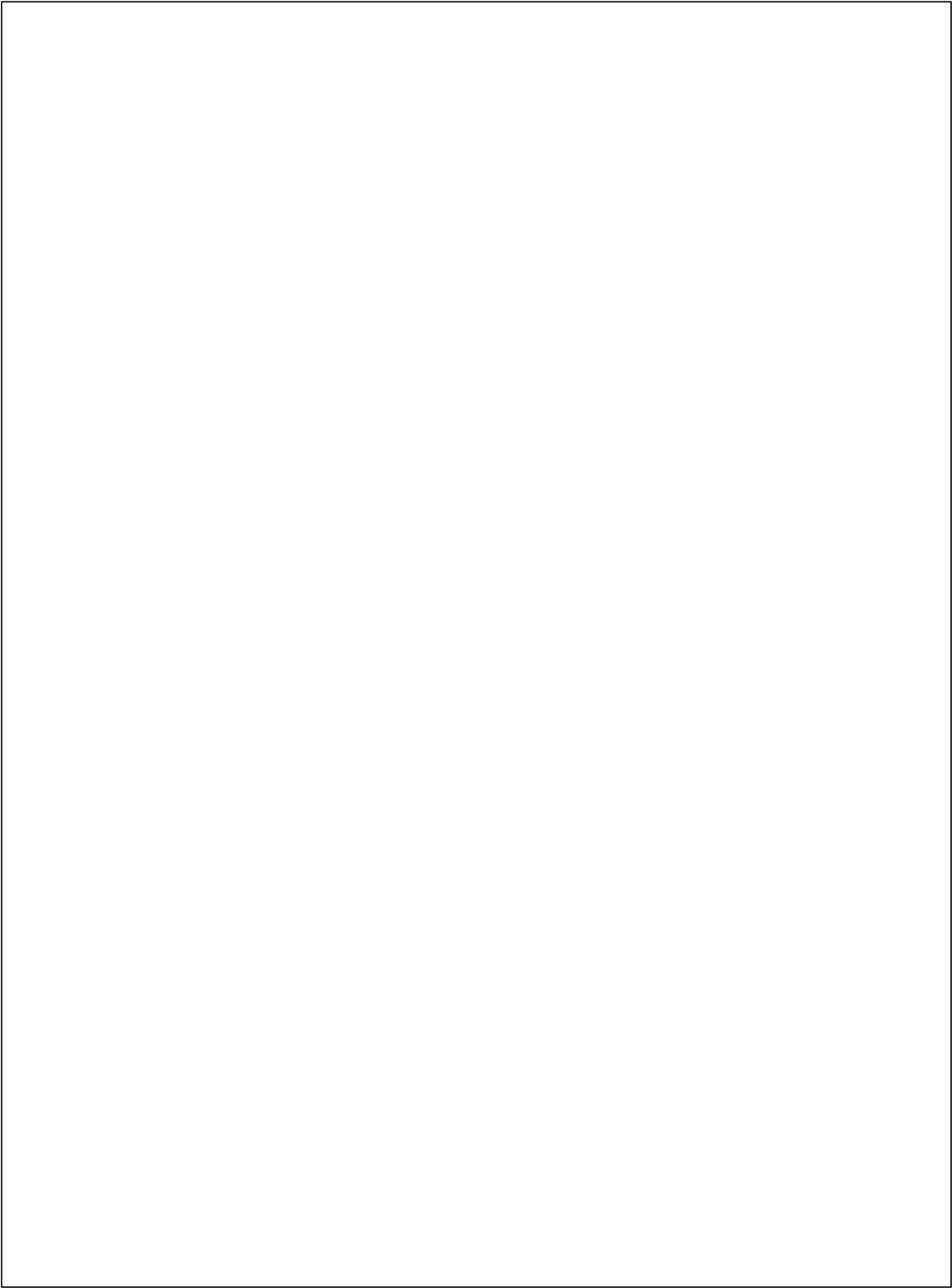
89/336/EEC

93/68/EEC

Schiedam, 26 04 2011

Ing. P.H. le Pair

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