Installatie instructies
Installation manual
Einbauanleitung
Instructions d’installation

RimDrive RD125 / RD160
125 kgf / 160 kgf - ø 250 mm
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Siehe Bedienungsanleitung für Bedienung, Wartung, Störungsbehebung und Technische Daten.

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Tjek instruktionsbogen mht. drift, vedligeholdelse, fejlfinding og tekniske data.

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Sjekk eiermanualen for drift, vedlikehold, feilsøking og teknisk data.

Lue käyttöohjeesta käyttö-, kunnossapito- ja vianetsähtäjheet sekä tekniset tiedot.
1 Safety

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 property. Some CAUTION indications also advise that a potential danger exists that can lead to serious injury or death.

ℹ️ Note
Emphasises important procedures, circumstances etc.

Symbols

✔️ Indicates that the relevant procedure must be carried out.

❌ Indicates that a particular action is forbidden.

Pass the safety precautions on to other people who will use the thruster. General rules and laws concerning safety and accident prevention must always be observed.

2 Introduction

These manual give guidelines for fitting the Vetus bow and/or stern thruster model ‘RimDrive’.

When used as a bow thruster, the ‘RimDrive’ is always mounted in a tunnel.

When used as a stern thruster, the ‘RimDrive’ can be installed either in a tunnel or directly into the hull (transom).

The quality of installation will determine how reliably the bow and/or stern 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.

Alters made to the ‘RimDrive’ 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 and/or stern 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 use ensure a correct battery voltage.
- The installation is carried out in compliance with the recommendations given in this installation instruction, in particular with regard to:
  - 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.

⚠️ Note
The areas in which the connection box with the controller of the ‘RimDrive’ and the battery are positioned must be dry and well ventilated.

⚠️ Note
Check for possible leaks immediately the ship returns to water.

⚠️ Make sure that the user of the vessel is supplied with the owner’s manual.
3 Positioning of thrust tunnel

Several installation examples.

To achieve the optimum performance, position the thrust tunnel as far forward as possible.

In case of a planning vessel the tunnel should, if possible, be so situated that when the vessel is planing it is above the water level thus causing no resistance.

If, in addition to controlling the movement of the bow, the stern of the vessel is required to move sideways, then a second ‘RimDrive’ may be installed at the stern.

If a tunnel for a stern thruster is used then position this thrust tunnel as close as possible near the stern of the boat.
When choosing the location for the thrust tunnel, take the following into account for optimum performance:

- The distance A shown in the drawing must be at least 0.5 x D. (D is the tunnel diameter).

- The shortest length of the tunnel (distance B) should be minimal 2 x D (500 mm, 20°).

Make the tube no longer than strictly necessary.

When choosing the location for the thrust tunnel, take the following into account for optimum performance:

- The distance A shown in the drawing must be at least 0.5 x D. (D is the tunnel diameter).

- The shortest length of the tunnel (distance B) should be minimal 2 x D (500 mm, 20°).

Make the tube no longer than strictly necessary.

A = min. 0.5 x D (125 mm, 5°)  B = min. 2 x D (500 mm, 20°)

4 Positioning of the bow thruster in the thrust-tunnel

The propeller should preferably be situated on the centre line of the vessel, but it must always be accessible from the outside to replace the anode if required.

In order to enable the installation the free space around the ‘RimDrive’ must be at least 10 cm (4”); size C.

The ‘RimDrive’ can be installed in various positions from horizontal to vertically upwards.

The connection box must always be positioned above the maximum level of the bilge water.
5 Connection of thrust tunnel to ship’s hull

**Tip:**
The manner, in which the thrust tunnel is connected to the ship’s hull, is of great influence to the actual performance of the bow thruster and to the drag that the hull produces when under way.

Direct connection of the tunnel to the hull, without a fairing, produces reasonable results.

The length ‘L’ of the fairing should be between 1 x D and 3 x D. This fairing should be embodied in the ship’s hull in such a way that the centreline of the fairing will correspond with the anticipated shape of the bow-wave.

<table>
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<tr>
<th>Thruster ‘RD . . . . ’</th>
<th>D [mm]</th>
<th>R [mm]</th>
<th>C [mm]</th>
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<thead>
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<td>250 . . . 750</td>
</tr>
<tr>
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<td>250</td>
<td>250 . . . 750</td>
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If the connection of the thrust tunnel and the ship's hull is to be made with a sloped side, it should be executed in accordance with the drawing.

Make the sloped side (C) with a length of 0.1 to 0.15 x D and make sure that the angle between the tunnel and the sloped side will be identical to the angle between the sloped side and the ship's hull.

6 Grid bars in the tunnel openings

Although the thrust force will be adversely affected, grid bars may be placed into the tunnel openings, for protection of the thruster.

In order to limit the negative effect of this on the thrust and on hull resistance during normal operation as much as possible, the following must be taken into account:

The bars must have a rectangular cross-section.
Do not fit round bars.

Do not fit more bars per opening than is indicated in the drawing.

The bars must overlap a certain amount.

The bars must be installed so that they stand perpendicular to the expected wave form.

Instead of a scallop and 'eyebrow' bump fairing can be placed just in front of the tunnel opening.
7 Installation of the thrust tunnel

**Tip**

Consult the ‘Owners manual’, chapter 6 Technical data, for dimensions and material specifications of the tunnel.

Drill 2 holes into the ship’s hull, where the centre line of the thrust tunnel will be, in accordance with the diameter of the marking tool.

Pass the marking tool (home-made) through both pre-drilled holes and set out the outside diameter of the thrust-tunnel to the hull.

<table>
<thead>
<tr>
<th>Thruster ‘RD…..’</th>
<th>D [mm] (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Steel</td>
</tr>
<tr>
<td>RD125</td>
<td>267</td>
</tr>
<tr>
<td>(10 33/64&quot;)</td>
<td>(10 15/64&quot;)</td>
</tr>
<tr>
<td>RD160</td>
<td>267</td>
</tr>
<tr>
<td>(10 33/64&quot;)</td>
<td>(10 15/64&quot;)</td>
</tr>
</tbody>
</table>

Dependent on the vessel’s construction material, cut out the holes by means of a jigsaw or an oxy-acetylene cutter.

7.1 Tunnel in two (2) parts

In order to simplify the installation of the tunnel tube with the right intermediate distance is a set of spacers available.

The set consists of three strip spacers (1) and 6 shims (2); Art. code: RDSET

Assemble the two parts of the tunnel, use the supplied strip spacers (1) and the clamping straps (2) as shown in the drawing.

Use shims (3) during assembly to prevent deformation of the clamping straps (2).

Make sure that the tunnel parts in the longitudinal direction abut against the stops of the strips. Then the tunnel parts will be correctly aligned and at the correct distance from each other.

Use only the clamping straps to secure the strips!

**Note**

Do not use the rubber sleeves and the plastic slabs!
Place the tunnel from the inside into the holes.

Connect the tunnel to the hull of the ship.

Remove the clamping straps and remove the strip spacers and shims.

The strip spacers and shims are furthermore no longer necessary.

Check that the distance between the tunnel ends is correct: 248-250 mm (9 3/4" - 9 27/32").

### 7.2 Tunnel in one (1) part

Instead of a tunnel in two parts a one part tube can be laminated as well.

After installation of the tunnel the middle part can be cut out.

Place the clamps temporarily on the tunnel and use them as a marking guide for the part to be cut out.

Check that the distance between the tunnel ends is correct: 248-250 mm.

#### Polyester thrust tunnel:

**Resin:** The resin used for the polyester thrust tunnel is isophthalic polyester resin (Norpol Pl 2857).

In order to connect the tunnel to the hull of the boat we recommend to apply epoxy resin. As an alternative to epoxy resin, vinylester resin can also be used.

The use of polyester resin as an alternative to epoxy resin is not recommended.

**Pre-treatment:** The outside of the tunnel must be roughened. Remove all of the top surface down to the glass-fibre. Use a grinding disc for this.

Remove the gelcoat on the inside of the tunnel too by sanding or grinding.

This is necessary to get a good bond to the GRP.

**Important:** Treat the end of the tunnel, after it has been sawn to length, treat the end of the tube with resin. This will prevent water seeping in.

**Laminating:** Apply a coat of resin as the first coat. Lay on a glass-fibre mat and impregnate with resin. Repeat this procedure until you have built up a sufficient number of layers.

A polyester thrust tunnel should be finished as follows:

- Roughen the hardened resin/glass-fibre. Apply a top coat of resin.
- Treat the side of the tunnel which comes into contact with water with ‘epoxy paint’ or 2-component polyurethane paint.
- Then apply anti-fouling treatment if required.
The ends of the tunnel must be smooth and entirely free from weld spatter or polyester or epoxy residues over a length of at least 10 cm.

Check this thoroughly!

This is necessary in order to obtain a good watertight connection of the RimDrive on to the tunnel.

**NOTE**

Steel and aluminium tunnels must be treated with a complete paint system in order to prevent galvanic corrosion of the Rimdrive.

Apply on the tube ends a silicone-free lubricant.

A lubricant for woodworking machines is extremely suitable.
For example: Bison Prof Houtglijmiddel
Waxilit 22-2411
Ivana houtglijmiddel 42066
Bostik® GLIDECOTE®

Place the rubber sleeves on the tube ends.

First place the plastic slabs on top of the rubber sleeves and then place the clamping straps over these parts.

Tighten the bolts of the clamping straps just enough that the plastic slabs remain in place.

**NOTE**

A difference in diameter between the tunnel tube and the Rimdrive may occur due to tolerances on the tunnel tubes.
Use the narrow rubber sleeves to overcome this difference.
Place the Rim Drive between the tube ends.

Apply a temporary support under the Rim-drive or use a hoist in order to keep them in the right place.

**Tip**

Use the holes 12 mm (15/32") dia. to install temporarily lifting eyes.

**Caution**

Apply a ‘spreader’ in order to avoid damage to the terminal box.

Use two angle brackets to lift the RimDrive if it is installed horizontally.

Slide the rubber sleeves together with the plastic slabs and the clamping straps halve way back over the Rimdrive.

Tighten the bolts of the clamping straps with a torque of 12 Nm (9 ft.lbf).

Remove the temporarily support or the hoist and check if the Rimdrive remains seated.

Apply a sealant on the inside transition to influence the flow of water as little as possible.

Apply a proper support under the RimDrive in case of:

- A tunnel tube length of more than 250 mm from RimDrive to hull.
- High speed or planing vessels.

Check for possible leaks immediately the ship returns to water.
8 Protection of the bow thruster against corrosion

To prevent corrosion problems, do not use copper based anti-fouling on the RimDrive. If copper based anti-fouling is applied to protect the hull make sure that the RimDrive is fully sealed during application.

Cathodic protection is a 'must' for the protection of all metal parts under water. In order to protect the housing of the Rimdrive against corrosion, it is supplied with an anode.

9 Stern Thruster Mounting

When selecting the location to mount the stern thruster, the centre line of the 'RimDrive' must be at least 250 mm below the waterline for the best possible result.

Ensure sufficient free space around the 'RimDrive' within the boat, see Overall Dimensions. Also see Overall Dimensions for the dimensions of the hole in the hull.

The connection box must be mounted above the maximum bilge water level.

That section of the hull (stern) where the 'RimDrive' is to be mounted must be completely flat. If the stern isn’t flat, a shim can be used.

If the stern height is insufficient for mounting the stern thruster, this can be solved by placing an angled section. Do keep in mind that the section for mounting the 'RimDrive' must be strong enough to cope with the upthrust of the water under normal cruising conditions. It is preferred to not have the 'RimDrive' protrude below the bilge.
We do not recommend mounting onto the bilge, as this will greatly impede the forward movement of the boat. Due to the upthrust of the water against the ‘RimDrive’ the stress on the bilge of the boat, at the location where the ‘RimDrive’ is mounted, will be enormous.

Mount the ‘RimDrive’ with a permanently flexible sealant, e.g. Sikaflex®-291i

Remove the plastic set screws ‘S’ and fit the stern thruster tunnels on to the Rimdrive.

The centre line of the tunnel of a standard stern thruster installation must be at least 1x the diameter of the tunnel below the waterline for an optimum result.

The use of a extension kit for stern thrusters makes it possible for the tunnel tube to be less than 1x the diameter of the tunnel below the waterline.

The sucking in of air is prevented by this. The upgrade kit is available as an option. Vetus art. code: SDKIT250.

10 Electrical installation

10.1 Choice of battery

The total battery capacity must be compatible with the size of the ‘RimDrive’ and the intended use, see table. We recommend Vetus maintenance-free batteries, which are available in the following capacities: 55 Ah, 70 Ah, 90 Ah, 108 Ah, 120 Ah, 143 Ah, 165 Ah, 200 Ah and 225 Ah.

We would also recommend the use of a separate set of batteries for the/each ‘RimDrive’. Placing the batteries as close to the ‘RimDrive’ as possible will result in shorter main power supply cables. In this way, any power loss associated with long cables can be avoided.

See page 150 for the suggested battery capacity.

Be sure to only use ‘sealed’ batteries if the batteries are located in the same compartment as the bow thruster. The Vetus ‘SMF’ and ‘AGM’ maintenance-free batteries are ideally suited to this application. Batteries that are not ‘sealed’ may produce small amounts of explosive gas during the charging cycle.

Always use batteries of the same type, capacity and state of service.
10.2 Charging facility

The common on-board charging systems are either 12 Volt or 24 Volt. A ‘converter’ is required when charging the 48 V battery set with the available on-board voltage.

![Battery charger diagram]

10.3 Main switch

see diagram page 148 - 1 -

The main switch must be fitted to the ‘positive cable’. The Vetus battery switch type BATSW250 is a suitable switch.

The BATSW250 is also available in a 2-pole version, Vetus art. code BATSW250T.

10.4 Main relay

see diagram page 148 - 2 -

Mount the supplied main relay near the bow thruster. Use the plug to connect the 3-wire cord to the relay.

**Note**

One wire (#2 in the plug) will connect directly to the main power connection (48 V). See the diagram on page 148. Also see 10.5 Fuses.

After all main power cables have been connected to the relay and the bow thruster, the cable plug can be inserted. The connection is on the outside of the connection unit.

10.5 Fuses

Main power fuse 1, see diagram page 148 - 3 -

In addition to the main switch and main relay, a 200 A fuse must be fitted to the ‘positive’ cable. Vetus art. code: ZE200. The fuse will protect the bow thruster from overloading and provide short circuit protection for the on-board power net.

We can also supply a fuse holder for all the fuses, Vetus art. code: ZEHC100.
Main power fuse 2

In the connection unit, there is a main power fuse on the controller. This fuse must be maintained at all times.

Note
When replacing the fuse, the replacement must be of the same capacity.

Control power fuse, see diagram page 148 - 4 -
The positive (+) wire of the main relay to the connection unit must be fitted with a 5 A fuse.

10.6 Main power cables (battery cables)

The wire diameter must be compatible with the 'RimDrive'.

<table>
<thead>
<tr>
<th>RD125</th>
<th>35 mm² - 50 mm²</th>
<th>AWG 2 - AWG 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD160</td>
<td>50 mm² - 70 mm²</td>
<td>AWG 0 - AWG 00</td>
</tr>
</tbody>
</table>

Use the largest cable diameter for cable lengths of more than 10 m (33 ft) and/or for an expected continuous use of more than 5 minutes.

Connect the positive (+) cable of the battery via the relay and connect the negative (-) cable directly to the bow thruster. Consult the diagram on page 148 for instructions.

Remove the lid by unscrewing the bolts. Connect the main power cables.

Note
Before the lid is put back the sachet of silica gel must be taken out of the package and placed inside the terminal box. Affect of the controller by condensation is so prevented.
11 Bow thruster controls

- Mount the control panel at the helm position. There must be a 100 mm (4") free space behind the panel.
- Place the interface in a dry and well ventilated space.
- Install the intermediate cable between the ‘RimDrive’ and the interface.

If it is necessary to cut the intermediate cable and reconnect it again, make sure all wires are connected colour to colour.

- Connect the panel to the interface.
  If there are two helm positions, the second panel must also be connected to the interface.
  See diagram page 149.

12 Remote control

You can connect a wireless or non-wireless remote control to a panel. This remote control can only be used if the panel to which it is connected is set to ‘ON’.

When using a remote control, the bow thruster can only be engaged at maximum thrust to either port or starboard.

See drawing.

NOTE

The input for the remote control is on a separate voltage supply and can be connected to either 12 or 24 Volts.

TIP

The remote control inputs are suitable for remote controls with either positive (+) or negative (-) switching.

13 Test run

Consult the instructions in the owner’s manual in ‘3 Operation’ to engage and operate the bow thruster.

WARNING

Do not test the bow thruster when the boat is out of the water unless you are convinced that everyone is at a safe distance from the propeller tunnel.

If, during the test run, it appears that the movement of the boat is contrary to the direction in which the joystick is moved, this can be adapted as follows.

13.1 Changing the thrust direction

- Engage the voltage supply of the bow thruster (main battery switch).
- Do not switch on the panel. If the panel is on, switch it off.
- With the joystick in the centre position, press and hold the HOLD button on one of the panels for 5 seconds until you hear a peep sound.

- Release the HOLD button.
  The ON/OFF LED should now be on, be it RED or GREEN.

Ignore the flashing Port and Starboard LEDs!

- Move the joystick to maximum port or maximum starboard. Now, only the port or starboard LED should be on.
  The ON/OFF LED will start to flash.
- Hold the joystick in that position and press the HOLD button. You will hear a peep sound.
  Now the opposite (port or starboard) LED will light up. Release the joystick.

To exit the set-up procedure:

- With the joystick in the centre position, press and hold the HOLD button for 2 seconds until you hear a beep. (Or switch the voltage supply off and back on again.)

The settings of the thrust direction have been changed and will remain as set even when the voltage supply has been switched off.
14 Hoofdafmetingen
Principal dimensions
Hauptabmessungen
Dimensions principales
Dimensiones principales

1 : 10
### 15 Elektrisch schema

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Main Switch</th>
<th>Hauptschalter</th>
<th>Interrupteur principal</th>
<th>Interruptor principal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hoofdschakelaar</td>
<td>Main switch</td>
<td>Hauptschalter</td>
<td>Interrupteur principal</td>
<td>Interruptor principal</td>
</tr>
<tr>
<td>2</td>
<td>Hoofdrelais</td>
<td>Main relay</td>
<td>Hauptrelais</td>
<td>Relais principal</td>
<td>Relé principal</td>
</tr>
<tr>
<td>3</td>
<td>Hoofdzekering</td>
<td>Main fuse</td>
<td>Hauptsicherung</td>
<td>Fusible principal</td>
<td>Fusible principal</td>
</tr>
<tr>
<td>4</td>
<td>Stuurstroomzekering</td>
<td>Control current fuse</td>
<td>Steuerstromsicherung</td>
<td>Fusible de courant de commande</td>
<td>Fusible de control de la corriente</td>
</tr>
<tr>
<td>5</td>
<td>Steker</td>
<td>Plug</td>
<td>Stecker</td>
<td>Prise de courant</td>
<td>Enchufe</td>
</tr>
<tr>
<td>6</td>
<td>Thruster</td>
<td>Thruster</td>
<td>Strahlruder</td>
<td>Propulseur</td>
<td>Propulsor</td>
</tr>
<tr>
<td>7</td>
<td>Interface</td>
<td>Interface</td>
<td>Schnittstelle</td>
<td>Interface</td>
<td>Interface</td>
</tr>
<tr>
<td>8</td>
<td>Bedieningspaneel</td>
<td>Control panel</td>
<td>Bedientafel</td>
<td>Panneau de contrôle</td>
<td>Panel de control</td>
</tr>
<tr>
<td>9</td>
<td>Accu</td>
<td>Battery</td>
<td>Batterie</td>
<td>Raccordement de charge</td>
<td>Conexión de carga</td>
</tr>
<tr>
<td>10</td>
<td>Laadaansluiting</td>
<td>Charge connection</td>
<td>Ladeanschluss</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Wiring Diagram]

+48 V

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>#1</td>
<td>#2</td>
<td>#3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Installation instructions thruster RIM DRIVE 250 mm

1. Hoofdschakelaar Main switch Hauptschalter Interrupteur principal Interruptor principal
2. Hoofdrelais Main relay Hauptrelais Relais principal Relé principal
3. Hoofdzekering Main fuse Hauptsicherung Fusible principal Fusible principal
4. Stuurstroomzekering Control current fuse Steuerstromsicherung Fusible de courant de commande Fusible de control de la corriente Fusibile corrente di controllo
5. Steker Plug Stecker Prise de courant Enchufe
6. Thruster Thruster Strahlruder Propulseur Propulsor
7. Interface Interface Schnittstelle Interface Interface
8. Bedieningspaneel Control panel Bedientafel Panneau de contrôle Panel de control Pannello di controllo Kontrolpanel Kontrollpanelen Kontrollpanel Ohjauspaneeli
9. Accu Battery Batterie Batterie Batería
10. Laadaansluiting Charge connection Ladeanschluss Raccordement de charge Conexión de carga Connessione di carica Ladestik Laddningsanslutning Ladetilkobling Latausliitäntä

Art. code L
RDICAB06 6 m
RDICAB10 10 m
RDICAB15 15 m

RJ45P01Y 1 m
RJ45P05Y 5 m
RJ45P10Y 10 m

RJ45P01Y 1 m
### Accu capaciteit

**Battery capacity**

**Akkukapazität**

**Capacité de la batterie**

**Capacidad de las baterías**

**Accucapaciteit**

**Batterie(n) à utiliser**

**Batería(s) a aplicar**

**Batteria(e) da usare**

**Batterikapacitet**

**Bateriikapasitet**

**Akkukapasiteetti**

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<table>
<thead>
<tr>
<th>Bow thruster</th>
<th>Battery capacity required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boegschroef</td>
<td></td>
</tr>
<tr>
<td>Minimaal</td>
<td>Maximaal</td>
</tr>
<tr>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Zu verwendende Akkus</td>
<td></td>
</tr>
<tr>
<td>Bugschraube</td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Hélice d'étrave</td>
<td>Batterie(s) à utiliser</td>
</tr>
<tr>
<td>Minimum</td>
<td>Maximum</td>
</tr>
<tr>
<td>Hélice de proa</td>
<td>Batería(s) a aplicar</td>
</tr>
<tr>
<td>Minimum</td>
<td>Máximo</td>
</tr>
<tr>
<td>Elica</td>
<td>Batteria(e) da usare</td>
</tr>
<tr>
<td>Minimo</td>
<td>Massimo</td>
</tr>
<tr>
<td>Bovpropel</td>
<td>Batterikapacitet</td>
</tr>
<tr>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>Bogpropeller</td>
<td>Lämpligt batteri</td>
</tr>
<tr>
<td>Min.</td>
<td>Max.</td>
</tr>
<tr>
<td>Baugpropell</td>
<td>Nödvendig batterikapasitet</td>
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<tr>
<td>Min.</td>
<td>Maks</td>
</tr>
<tr>
<td>Keulapotkuri</td>
<td>Vaadittava akkukapasiteetti</td>
</tr>
<tr>
<td>Minimi</td>
<td>Maksimi</td>
</tr>
</tbody>
</table>

#### RD125

**125 kgf - 48 V**

- **CCA 650 - 48 V**
  - 4 x 75 Ah - 12 V
  - 4 x BCI 31 - 650
- **CCA 1300 - 48 V**
  - 4 x 225 Ah - 12 V
  - 4 x BCI 8D - 1300

#### RD160

**160 kgf - 48 V**

- **CCA 750 - 48 V**
  - 4 x 110 Ah - 12 V
  - 4 x BCI 31 - 750
- **CCA 2100 - 48 V**
  - 8 x 165 Ah - 12 V
  - 8 x BCI 4D - 1050