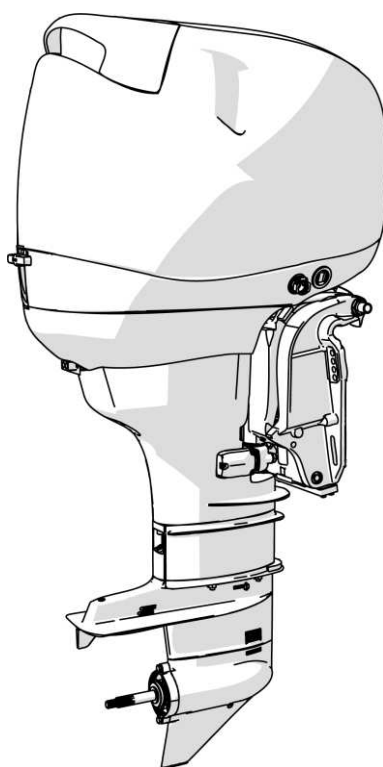


Dtorque 50

Outboard engine Dtorque 111



**Update
flywheels**

Service bulletin for distributors



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Table of Contents

1	This document	2
2	Implementation	2
3	Required parts	2
4	Safety	3
4.1	Skills	3
4.2	Hazards	3
4.3	Personal protective equipment	3
4.4	Warnings	3
5	Preparing	4
6	Identifying products	4
6.1	Disassemble flywheel cover	4
6.2	Upper flywheel	5
6.3	Lower flywheel	5
7	Updating	5
7.1	Preconditions	5
7.2	Disassemble fan wheel	6
7.3	Loosen flywheels	6
7.4	Take off flywheels	7
7.5	Put on new flywheels	8
7.6	Tighten flywheels	8
7.7	Check sensor distance	9
7.8	Assemble fan wheel	9
7.9	Assemble flywheel cover	10
8	Old flywheels	10
9	Documenting	11

1 This document

Service bulletins describe free updates with the aim of ensuring that our products can be used safely during their entire service life.

All currently valid service bulletins:

www.neander-motors.com/service-bulletins/.

Information and support:

aftersales@neander-motors.com

Current topic

In the past, there have been cases where fasteners of the rotor have come loose and where the trigger wheel has caused uneven running of the engine. The manufacturer has improved these components and offers a replacement of obsolete flywheels so that the improved components can be used.



These instructions describe the replacement of both flywheels. It may be that only one flywheel needs to be replaced.

Only replace the old flywheels (see *Identifying products*, p. 4)!

2 Implementation

The update is carried out exclusively by the manufacturer's distributors.

The envisaged working time is 90 minutes.

1. Distributors keep the necessary components, tools and materials in stock (see *Required parts*, p. 2).
2. Distributors inspect each Dtorque 111 outboard engine as soon as it is accessible to them (e.g. during the next service appointment) and identify the engines affected by the improvement.
3. If an outboard engine is affected by the update, distributors will inform customers and carry out the improvement free of charge.
4. After the update, distributors document the implementation for the manufacturer (see *Documenting*, p. 10) and are reimbursed the costs provided for this by the manufacturer.

3 Required parts

The following components, tools and materials must be ordered and kept in stock.

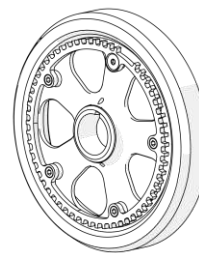


Fig. 1: Upper flywheel with trigger wheel (part no. 304710)



Fig. 2: Lower flywheel with rotor (part no. 304711)

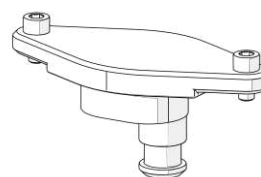



Fig. 3: Special tool for fixing the flywheels (part no. 503418)

4 Safety

⚠ WARNING	
	<p>Read before starting!</p> <p>This document helps people to avoid dangerous situations that could lead to injury and even death.</p> <ul style="list-style-type: none"> ▶ Read and follow all the instructions and information in this document. ▶ Keep the document ready for further use at any time.

4.1 Skills

The work described in this document may only be carried out by persons who are professionally qualified for assembly work in accordance with applicable law.

They must therefore be able to carry out the work described here professionally and without danger to persons or the environment.

4.2 Hazards

Heavy, moving parts



The boat and outboard engine can crush people.
The flywheels can crush body parts.

- Secure the boat and outboard engine against uncontrolled movement.
- Wear safety shoes when working with the flywheels.

Rotating and sharp-edged propeller



The rotating propeller can kill people and hurl objects.



The rotor blades are sharp-edged and can cause cuts if touched.

- Switch off the main switch (disconnect the power supply to the outboard engine).
- Secure the master switch to prevent it from being switched back on.
- Cover the propeller with cut-resistant material.

Hot surfaces



Components such as the turbocharger and engine head may be very hot and cause burns if touched.

- Allow the engine to cool down before carrying out any work.

4.3 Personal protective equipment



Safety shoes with steel toe cap (S4)



Splinter- and cut-resistant protective gloves



Closed safety glasses

4.4 Warnings

Signal words are used in this document and on the product to warn of dangerous situations.

- **⚠ DANGER** This signal word warns of a dangerous situation with a high level of risk. *If the hazard is not avoided, this will result in serious injury or death.*
- **⚠ WARNING** This signal word warns of a dangerous situation with a medium level of risk. *If the hazard is not avoided, this could result in serious injury or death.*
- **⚠ CAUTION** This signal word warns of a dangerous situation with a low level of risk. *If the hazard is not avoided, this could result in minor or moderate injuries.*
- **NOTICE** This signal word warns of potential material damage. *If the situation is not avoided, this could result in material damage.*

5 Preparing

Provide a safe working environment before starting any work.

1. **⚠ WARNING** Crushing by outboard engine or boat!
The outboard engine and boat are heavy and could crush or kill people if the movements are uncontrolled.
▶ Position the boat with the pre-assembled outboard engine horizontally on a flat surface and secure it against rolling away and tilting.
2. **⚠ WARNING** Crushing and cutting due to rotating propeller!
The rotating propeller could kill people and hurl objects if the outboard engine starts in an uncontrolled manner.
▶ Switch off the main switch and secure it against being switched on again.
3. **⚠ WARNING** Burns on the engine!
Hot parts on the engine can cause burns when working on the engine.
▶ Allow the engine to cool down.

6 Identifying products

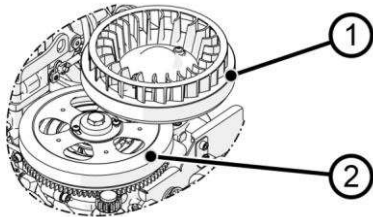


Fig. 4: Old flywheels

- 1 Upper flywheel
- 2 Lower flywheel

The products to be updated can be visually identified once the flywheel cover has been removed.

If the product does not need to be updated: Refit the flywheel cover (see Assemble flywheel cover, p. 10).

6.1 Disassemble flywheel cover

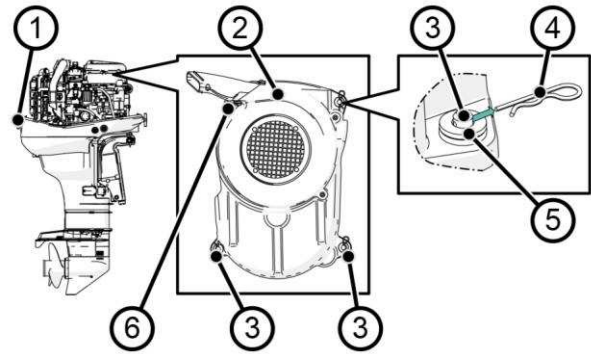


Fig. 5: Flywheel cover

- 1 Closure of the cowling
- 2 Flywheel cover
- 3 3 mounting pins
- 4 Spring cotter pin
- 5 Washer
- 6 Lateral mounting pin

1. Open both catches (1) of the cowling.
2. Carefully lift the cowling upwards from the outboard engine and set it down in a scratch-proof manner.
3. On the flywheel cover (2), pull out the spring cotter pins (4) and remove the washers (5) on all four mounting pins (3 and 6).
4. Firstly, lift the flywheel cover (2) off the three mounting pins (3) and then guide it sideways away from the mounting pin (6).
5. Carefully remove the flywheel cover (2) upwards and keep it ready for reuse.
6. Fit the washers (5) and the spring cotter pins (4) on the mounting pins (3 and 6).

6.2 Upper flywheel

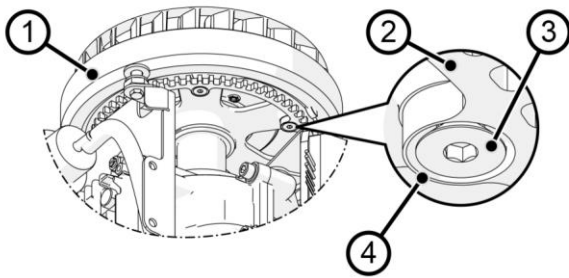


Fig. 6: Old upper flywheel

- 1 Old upper flywheel
- 2 Trigger wheel
- 3 4 small countersunk screws
- 4 Distance to the edge of the trigger wheel

The old upper flywheel (1) has one large and 4 small countersunk screws (3) that hold the trigger wheel (2).

It can be recognized by the 4 small countersunk screws (3), which have only a small distance (approx. 2 mm) to the edge of the trigger wheel (4).

The current flywheel has 4 small cylinder head screws at this point, which have a greater distance (approx. 5 mm) to the edge of the trigger wheel.

6.3 Lower flywheel

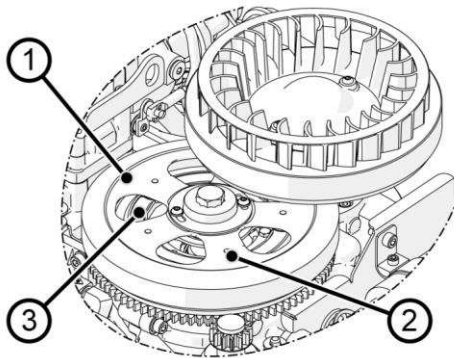


Fig. 7: Old lower flywheel with rotor holder

- 1 Old lower flywheel
- 2 5 threaded holes of rotor holder
- 3 Additional rotor holder

The old lower flywheel (1) can be recognised by the 5 threaded holes (2) and the additional rotor holder (3).

The current flywheel does not have this rotor holder.

7 Updating

Provisions	
People	1
Time	90 minutes
Personal protective equipment	Safety shoes with steel toe cap (S4), splinter- and cut-resistant protective gloves, closed safety glasses
Components	Lower flywheel (part no. 304711), upper flywheel (part no. 304710)
Tools	Special tool for fixing the flywheels (part no. 503418)
	Recoilless hammer
	Torque wrench (8 Nm, 150 Nm)
	For inner hexagon screws (5 mm)
	For hexagon screws (24 mm)
	Feeler gauge (0.3 ... 1.8 mm)
Materials	medium-hard threadlocker (e.g. Loctite 242)

7.1 Preconditions

- A safe working environment is provided (see *Preparing*, p. 3).
- The flywheel cover is disassembled (see *Disassemble flywheel cover*, p. 4).
- All flywheels to be replaced are identified (see *Identifying products*, p. 4).



These instructions describe the replacement of both flywheels. It may be that only one flywheel needs to be replaced.

Only replace the old flywheels (see *Identifying products*, p. 4)!

7.2 Disassemble fan wheel

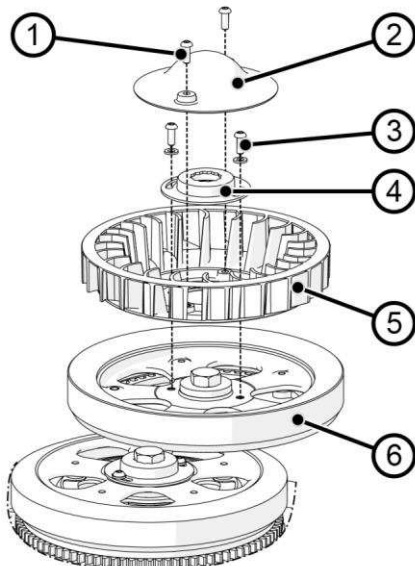


Fig. 8: Fan wheel on the old upper flywheel

- | | |
|---|-------------------------------------|
| 1 | 2 inner hexagon screws |
| 2 | Hub cover |
| 3 | 2 inner hexagon screws with washers |
| 4 | Screw lock |
| 5 | Fan wheel |
| 6 | Old upper flywheel |
1. Unscrew and remove the 2 inner hexagon screws (1).
 2. Remove the hub cover (2).
 3. Unscrew the 2 inner hexagon screws (3) and remove them together with the washers.
 4. Remove the screw lock (4).
 5. Remove the fan wheel (5) and keep it ready for reuse together with the parts disassembled so far.

7.3 Loosen flywheels

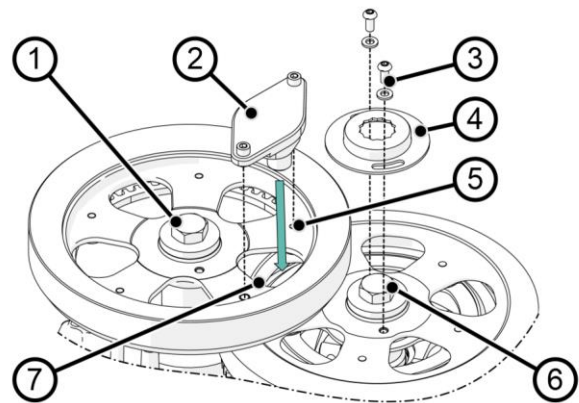


Fig. 9: Special tool on the old upper flywheel

- | | |
|---|---------------------------------------|
| 1 | Hexagon screw |
| 2 | Special tool for fixing the flywheels |
| 3 | Two inner hexagon screws with washers |
| 4 | Screw lock |
| 5 | Threaded hole |
| 6 | Hexagon screw |
| 7 | Opening in the upper flywheel |
1. Unscrew the two inner hexagon screws (3) on the screw lock (4) and remove them together with the washers.
 2. Remove the screw lock (4) and keep it ready for reuse together with the screws and washers.
 3. Turn the upper flywheel until an opening (7) points to the hexagon screw (6) of the lower flywheel.
 4. Insert the special tool (2) into the opening (7) from above.
 5. Screw the screws on the special tool hand-tight into the threaded holes (5) below.
 6. **⚠ CAUTION** Crushing due to unsuitable tool!
► Loosen the hexagon screws (1) and (6) counterclockwise using a suitable tool (torque of 150 N-m).
 7. Unscrew the screws on the special tool from the threaded holes (5) of the upper flywheel.
 8. Remove the special tool (2) upwards and keep it ready for reuse.

7.4 Take off flywheels

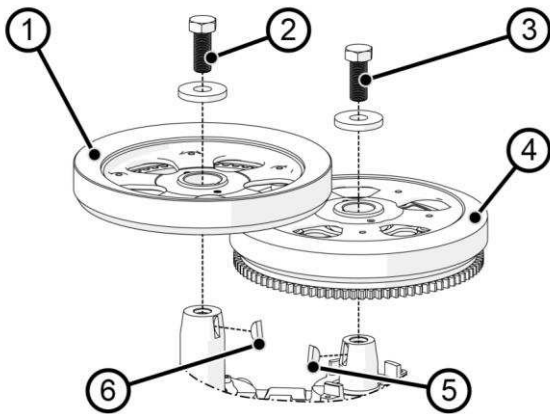


Fig. 10: Old flywheels

- | | |
|---|---------------------------|
| 1 | Old upper flywheel |
| 2 | Hexagon screw with washer |
| 3 | Hexagon screw with washer |
| 4 | Old lower flywheel |
| 5 | Woodruff key |
| 6 | Woodruff key |
1. Screw the hexagonal screw (2) on the upper flywheel (1) approx. 6 ... 8 mm from the thread, but do not unscrew it.
 - ⇒ The hexagon screw (2) secures the flywheel against falling out.
 2. Carefully loosen the upper flywheel (1) (e.g. by tapping it lightly from below with a recoilless hammer).
 3. Unscrew the hexagon screw (2) on the upper flywheel (1) and remove it together with the washer.
 4. **⚠ CAUTION** Crushing due to heavy flywheels!
 - ▶ Secure the Woodruff key (6) against falling out and carefully remove the flywheel (1) upwards.
 5. Remove the Woodruff key (6) and keep it together with the hexagon screw (2) and the washer ready for reuse.
 6. Screw the hexagonal screw (3) on the upper flywheel (1) approx. 6 ... 8 mm from the thread, but do not unscrew it.
 - ⇒ The hexagon screw (3) secures the flywheel against falling out.
 7. Carefully loosen the lower flywheel (4) (e.g. by tapping it lightly from below with a recoilless hammer).
 8. Unscrew the hexagon screw (3) on the lower flywheel (4) and remove it together with the washer.

9. **⚠ CAUTION** Crushing due to heavy flywheels!
 - ▶ Secure the Woodruff key (5) against falling out and carefully remove the flywheel (4) upwards.
10. Remove the Woodruff key (5) and keep it together with the hexagon screw (3) and the washer ready for reuse.

7.5 Put on new flywheels

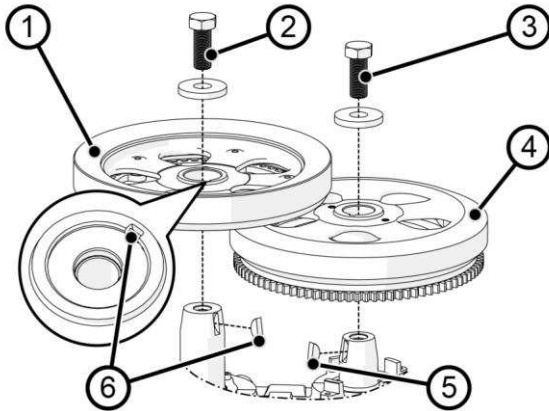


Fig. 11: New flywheels

- 1 New upper flywheel
- 2 Hexagon screw with washer
- 3 Hexagon screw with washer
- 4 New lower flywheel
- 5 Woodruff key
- 6 Woodruff key

1. Thoroughly clean the hexagon screws with the washers (2 and 3), the Woodruff keys (5 and 6), the recesses of the Woodruff keys and the bearing surface on the shaft.
2. Place the Woodruff key (5) in the recess and secure it against falling out.
3. **CAUTION** Crushing due to heavy flywheels!
► Carefully place the new lower flywheel (4) on the shaft from above so that the Woodruff key fits into the flywheel recess.
4. **NOTICE** Material damage due to missing Woodruff key!
► Make sure that the Woodruff key (5) is inserted into the flywheel recess.
5. Insert the hexagon head screw (3) with washer in place through the flywheel (4), screw it into the shaft and hand-tighten.
6. Place the Woodruff key (6) in the recess and secure it against falling out.
7. **CAUTION** Crushing due to heavy flywheels!
► Carefully place the new upper flywheel (1) on the shaft from above so that the Woodruff key fits into the flywheel recess.
8. **NOTICE** Material damage due to missing Woodruff key!
► Make sure that the Woodruff key (6) is inserted into the flywheel recess.
9. Insert the hexagon head screw (2) with washer in place through the flywheel (1), screw it into the shaft and hand-tighten.

7.6 Tighten flywheels

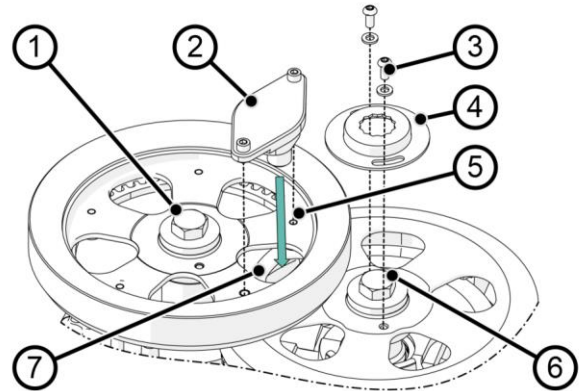


Fig. 12: Special tool on the new upper flywheel

- 1 Hexagon screw
- 2 Special tool for fixing the flywheels
- 3 Two inner hexagon screws with washers
- 4 Screw lock
- 5 Threaded hole
- 6 Hexagon screw
- 7 Opening in the upper flywheel

1. Thoroughly clean the inner hexagon screws (3), washers and screw lock (4).
2. Turn the upper flywheel (1) until an opening (7) points to the hexagon screw (6) of the lower flywheel.
3. Insert the special tool (2) into the opening (7) from above.
4. Screw the screws on the special tool hand-tight into the threaded holes (5) below.
5. Tighten the hexagon screws (1) and (6) clockwise with a torque of 150 Nm.
6. Unscrew the screws on the special tool from the threaded holes (5) of the upper flywheel.
7. Remove the special tool (2) upwards.
8. Apply threadlocker to the threads of the 2 inner hexagon screws (3) as specified by the manufacturer.
9. Insert the two inner hexagon screws (3) with washers in place through the holes in the screw lock (4) and tighten them on the lower flywheel with a torque of 8 Nm.

7.7 Check sensor distance

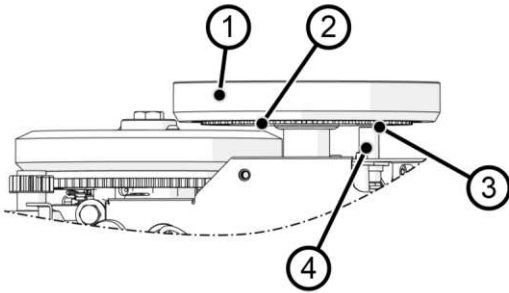


Fig. 13: Distance of the crankshaft position sensor

- 1 Upper flywheel
 - 2 Trigger wheel
 - 3 Distance between crankshaft position sensor and trigger wheel
 - 4 Crankshaft position sensor
1. Using a feeler gauge, measure the distance (3) between the crankshaft position sensor (4) and the trigger wheel (2).
 2. If the distance (3) is in the range of 0.3 ... 1.8 mm: Continue with the update.
 3. If the distance (3) is not in the range of 0.3 ... 1.8 mm: Check whether the sensor holder is damaged or bent.
 - ⇒ If the bracket is damaged or bent: Replace the bracket.
 - ⇒ If the bracket is not damaged or bent: Do not use the upper flywheel, stop the update and contact the manufacturer.

7.8 Assemble fan wheel

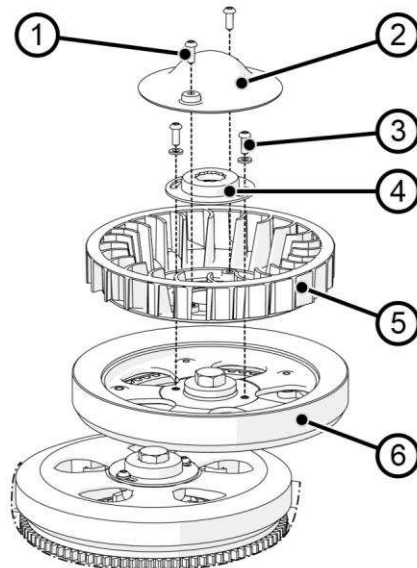


Fig. 14: Fan wheel on the new upper flywheel

- 1 Two inner hexagon screws
 - 2 Hub cover
 - 3 Two inner hexagon screws with washers
 - 4 Screw lock
 - 5 Fan wheel
 - 6 New upper flywheel
1. Thoroughly clean the fan wheel (5), hub cover (4), screw lock (4), inner hexagon screws (1 and 3) and washers.
 2. Position the fan wheel (5) on the upper flywheel so that the screw holes in the fan wheel (5) are precisely over the threaded holes for the two inner hexagon screws (3) in the flywheel.
 3. Apply threadlocker to the threads of the 2 inner hexagon screws (3) as specified by the manufacturer.
 4. Insert the two inner hexagon screws (3) with washers in place first into the screw holes of the screw lock (4) and then into the screw holes in the fan wheel (5), and screw them in by hand on the upper flywheel (6).
 5. Tighten the two inner hexagon screws (3) with a torque of 8 Nm.
 6. Apply threadlocker to the threads of the 2 inner hexagon screws (1) as specified by the manufacturer.
 7. Insert the two inner hexagon screws (1) with washers in place into the screw holes of the hub cover (2) and screw them in by hand into the threads in the fan wheel (5).
 8. Tighten the two inner hexagon screws (1) with a torque of 8 Nm.

7.9 Assemble flywheel cover

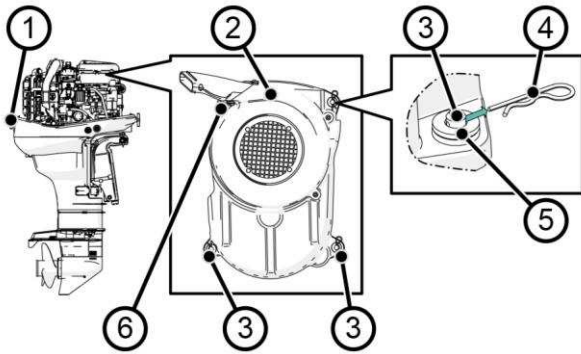


Fig. 15: Flywheel cover

- | | |
|--|---|
| <ol style="list-style-type: none"> 1 Closure of the cowling 2 Flywheel cover 3 3 mounting pins 4 Spring cotter pin 5 Washer 6 Lateral mounting pin | <ol style="list-style-type: none"> 1. Remove the spring cotter pins (4) and washers (5) from the mounting pins (3). 2. First, guide the flywheel cover (2) laterally over the mounting pin (5) and then push it onto the three mounting pins (3) from above. 3. Put the washers (5) on the mounting pins (3 and 5) and insert the spring cotter pins (4) into the mounting pins until they engage. 4. Carefully place the cowling on the engine casing from above. 5. Close both catches (1) of the cowling. |
|--|---|

8 Old flywheels

The manufacturer must ensure that the old flywheels are not reused. The old flywheels must therefore be made unfit for further use and this incapacitation must be proven to the manufacturer.

1. **⚠ CAUTION** Crushing due to heavy flywheels!
 - ▶ Fix the flywheels so that they cannot be moved.
 - ▶ Wear safety shoes with steel toe cap.
2. **⚠ CAUTION** Injuries due to flung metal splinters!
 - ▶ Wear closed safety glasses and splinter- and cut-resistant protective gloves.
3. Break the old flywheels, e.g. by drilling into a spoke and smashing it with a heavy hammer.
4. Take high-resolution photographs of the unfit flywheels from all sides.
 - ⇒ The photos clearly show that these are the old flywheels (see *Identifying products*, p. 4).
 - ⇒ The photos clearly show that the old flywheels cannot be reused.
5. Have the photos ready for documentation (see *Documenting*, p. 10).
6. Dispose of the old flywheels in an environmentally friendly manner in accordance with applicable legal regulations.

9 Documenting

Once the update has been completed successfully, document the following information:

Customer

- Name
- Email address

Boat

- Name
- Brand and model
- Weight
- Home port
- Country of operation

Dtorque 111 outboard engine

- Serial number
- Operating hours of the outboard engine (read using a tachometer)
- Age
- Date of commissioning

Flywheels

- Numbers of the Neander invoices of the parts used for the replacement (see *Identifying products, p. 4*)
- Photos of the incapacitated old flywheels (see *Old flywheels, p. 10*)

Submit all the information to the manufacturer using the following online form:

<https://neandermotors.freshdesk.com/en/support/tickets/new>



Original document



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