



***Dtorque***  
**50**

---

# **OUTBOARD** **ENGINE**

---

## **TILLER SET ASSEMBLY INSTRUCTIONS**

<b>Document identifier:</b>	008748-00
<b>Revision status:</b>	03
<b>Date of release:</b>	01.10.2024
<b>Document language:</b>	EN
<b>Product identifier:</b>	304795 (L), 304796 (XL)



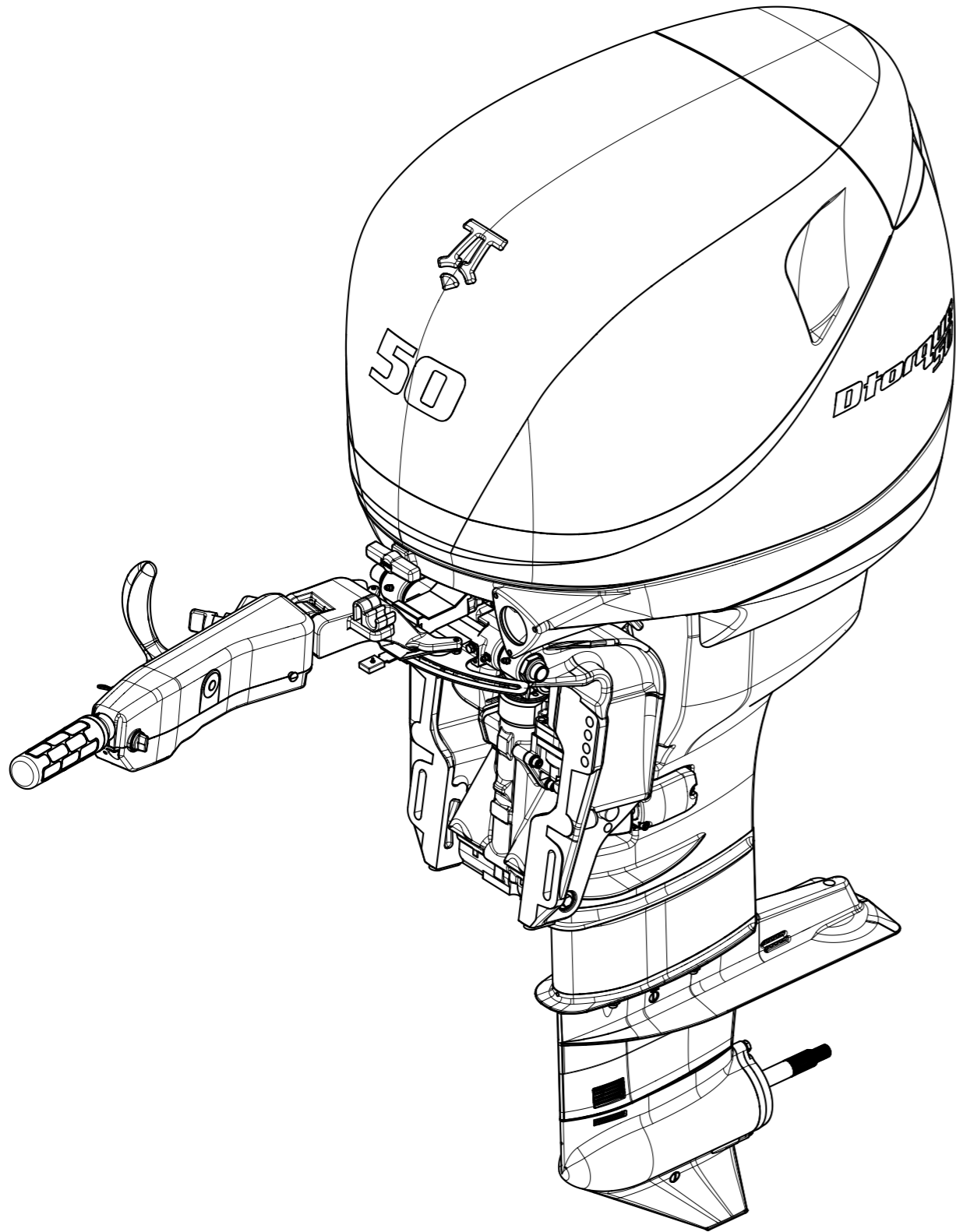


**NM Network Services Ltd**  
16 High Street, Newick  
Lewes, BN8 4LQ · UK  
[www.neandermarine.com](http://www.neandermarine.com)

© 2024 Neander Marine

This manual contains information which is covered by copyright regulations. This manual may not be copied, printed, filmed or reproduced in any other way, edited, duplicated or distributed – neither in full nor in part – without prior written consent. Neander and Dtorque are registered trademarks of Neander Marine. Any companies, brands or registered trademarks are property of the respective copyright holder and are only used





## TABLE OF CONTENTS

1 Scope of delivery.....	2
2 This document .....	3
3 Safety .....	3
3.1 Intended use .....	3
3.2 Skills .....	3
4 Select matching parts .....	3
4.1 TP sensor .....	3
4.2 Transom bracket .....	3
5 Preparing .....	4
6 Assemble tiller and steering resistance .....	4
6.1 Assemble steering resistance .....	4
6.2 Assemble tiller on power trim .....	4
6.3 Align and fix steering resistance .....	4
6.4 Attach Bowden cables .....	5
7 Adapt TP sensor .....	5
7.1 Current TP sensor .....	5
7.2 Older TP sensor .....	6
8 Further work .....	7

## 1 Scope of delivery

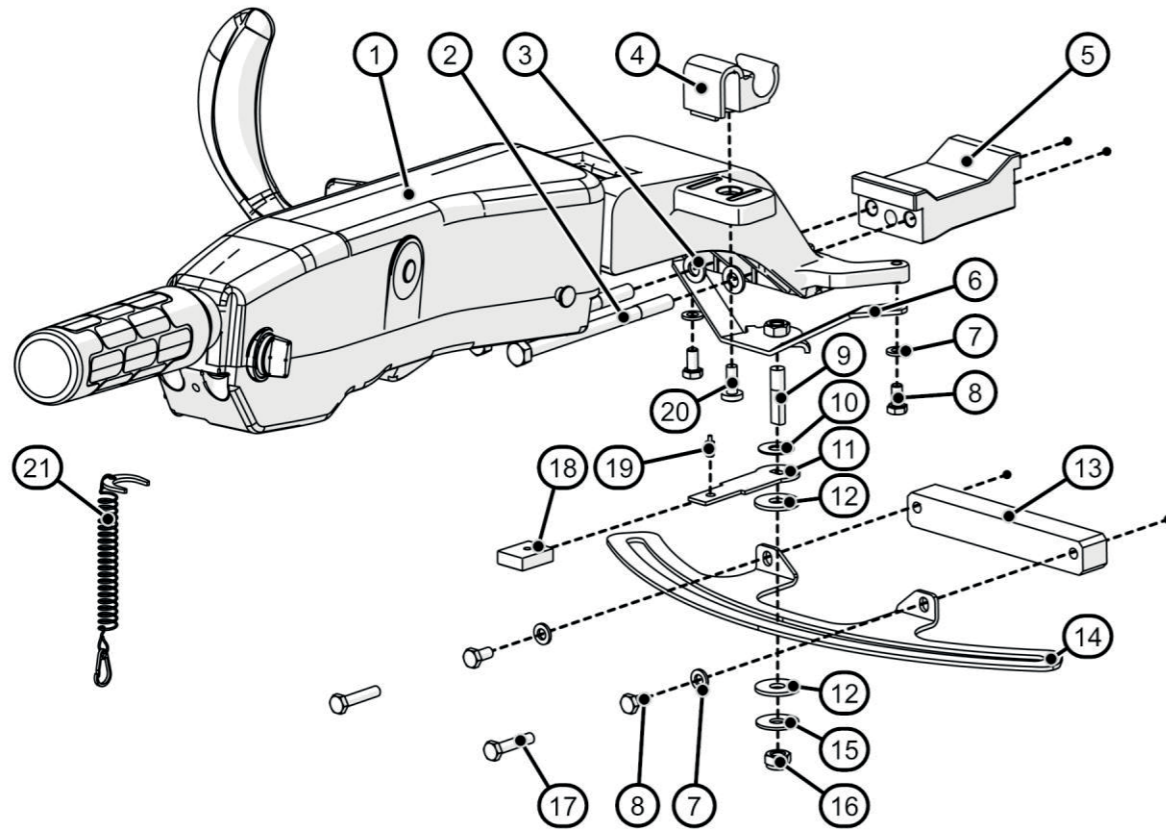


Fig. 1: Components for assembling tiller and steering resistance

1 Tiller Dtorque	12 2 Friction discs
2 2 Hexagon screws	13 Spacer
3 2 Washers	14 Friction plate
4 Cable holder	15 Steel washer
5 Extension	16 Hexagon nut
6 Friction bracket	17 2 Hexagon screws long
7 2 Washers	18 Grip
8 4 Hexagon screws short	19 Expansion plug
9 Threaded pin	20 Crosshead screw
10 Nylon washer	21 Emergency stop leash
11 Friction lever	

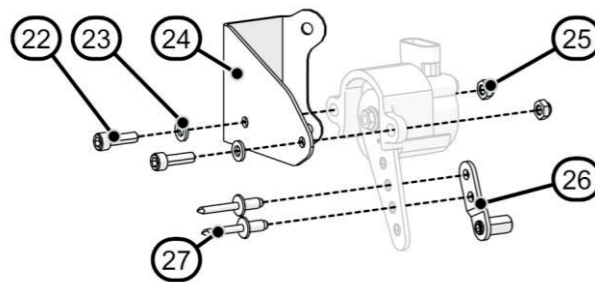


Fig. 2: Components for the adaptation of an older TP sensor

22 2 Inner hexagon bolts	25 2 Hexagon nuts
23 2 Washers	26 Extension
24 Bracket	27 2 Blind rivets

## 2 This document

This document explains the assembly of the tiller set Dtorque for the outboard engine Dtorque 111.

Installation, function and operation of the tiller set is explained in the **Owner's manual Dtorque 111**.

### ⚠ WARNING



#### Risk of injury due to improper installation and operation!

If this product is not installed and operated properly, situations may occur that could result in injury or death.

- ▶ Observe all information and notes on the installation and operation of this product in the **Owner's manual Dtorque 111**.

## 3 Safety

### 3.1 Intended use

This product is exclusively designed for use on the Dtorque 111 outboard motor and may only be installed and used there.

The product must not be operated on a boat with multiple outboard motors (e.g. twin drive).

### 3.2 Skills

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

Adjustments to the older TP sensor (B) may only be carried out by persons who are professionally qualified for precision mechanical work in accordance with the applicable law.

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

## 4 Select matching parts

### 4.1 TP sensor

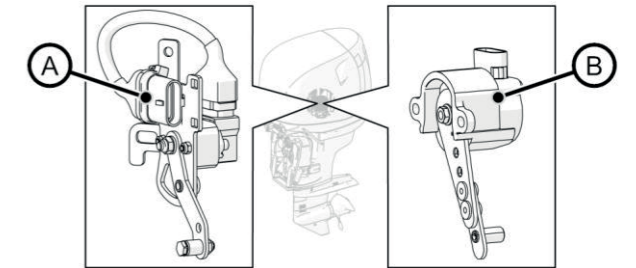


Fig. 3: TP sensor

- A Current TP sensor
- B Older TP sensor

1. If using a current TP sensor (A): Sort out the components (22) to (27) as they will not be used.
2. If using an older TP sensor (B): Have the components (22) to (27) ready for mounting.

### 4.2 Transom bracket

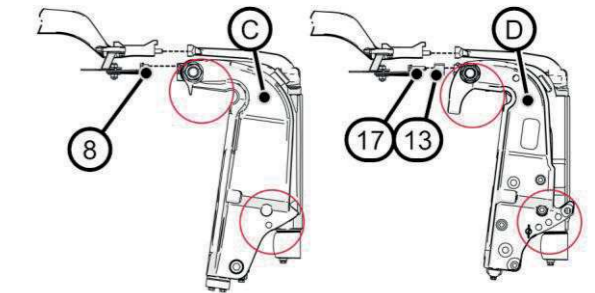


Fig. 4: Transom bracket

- C Current Transom bracket
- D Older Transom bracket
- 8 2 Hexagon screws short
- 13 Spacer
- 17 2 Hexagon screws long

1. *If using a current transom bracket (C):* Sort out the components (17) and (13) as they will not be used.
2. *If using an older transom bracket (D):* Put the components (17) and (13) ready for mounting and sort out 2 short hexagon head screws (8) that will not be used.

## 5 Preparing

1. Have the matching parts ready.
2. Position the boat with the Dtorque 111 outboard motor mounted horizontally on a flat surface and secure it against rolling away and tilting.
3. Ensure that the main switch is turned off and the power supply to the motor is disconnected.
4. *If present:* Disassemble bowden cables for throttle and gearshift (see Owner's manual Dtorque 111).
5. **⚠ WARNING** Hazard of crushing due to swivelling motor!  
Ensure that there are no persons or objects between the outboard motor and the transom.
6. Remove the transport lock on the transom bracket (see Owner's manual Dtorque 111).

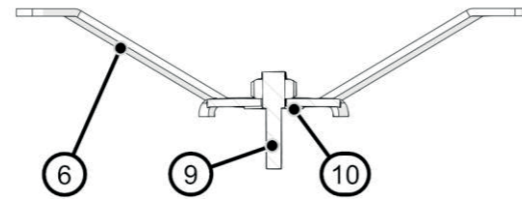
## 6 Assemble tiller and steering resistance

Providing	
Persons	1
Tools	for hexagon screws (wrench size 10 mm and 13 mm)
	for crosshead screw (size 2)
	torque wrench (25 N·m)
Materials	medium-hard threadlocker (e.g. Loctite 242)

### 6.1 Assemble steering resistance

1. Push the handle (18) onto the friction lever (11) until the bore holes of the handle and friction lever are aligned.
2. Insert the expansion plug (19) into the borehole and press the locking pin into the plug.
3. Place the tiller in a fall-proof and scratch-protected position so that the connection for the cable holder points upwards.
4. Position the friction bracket (6) so that the bore holes of the friction bracket and the threaded holes on the tiller are aligned and the welded nut points to the proposed connection on the transom bracket.
5. Insert 2 hexagon screws (8) into 2 washers (7).
6. Screw the friction bracket (6) to the tiller with the hexagonal screws (8), but do not tighten the hexagonal screws.

7. Screw the threaded pin (9) into the nut thread on the friction bracket (6) so that the thicker part of the threaded pin points to the tiller.
8. Place the nylon washer (10) on the threaded pin (9) and hold it in place.
9. Screw the threaded pin (9) until the thread cut out of the threaded pin starts exactly at the nylon washer (10).



10. Place the friction lever (11) and one of the friction discs (12) one after the other on the threaded pin (9) and hold them in place.
11. Align the friction plate (14) with the fixing lugs facing upwards, place it on the threaded pin (9) and hold it in place.
12. Place the second friction washer (12) and the steel washer (15) on the set screw one after the other and hold them in place.
13. Screw the hexagon nut (16) hand-tight onto the threaded pin (9), but do not tighten it.

### 6.2 Assemble tiller on power trim

1. Fold the tiller handle upward.
2. Insert 2 hexagon screws (2) into the 2 washers (3).
3. Insert the hexagon screws (2) into the boreholes on the tiller (1).
4. Align the extension (5) with the overhang facing upwards and put it on the hexagon head screws with the side that has no recess between the drill holes.
5. Apply threadlocker to the threads of the 2 hexagon screws (2) as specified by the manufacturer.
6. Position the tiller (1) to the power trim so that the hexagonal screws are in contact with the threaded holes on the transom bracket.
7. Screw both hexagon screws (2) completely into the threaded holes on the transom bracket and tighten them with a torque of 25 N·m.

### 6.3 Align and fix steering resistance

1. Align the tiller so that the threaded pin (9) is in the centre of the friction plate.
2. Hand-tighten both hexagon screws (8) on the friction bracket.

3. Turn the friction lever (11) to the left until it stops.
4. Hand-tighten the hexagon nut (16).
5. *In the case of a current transom bracket (Fig. 4, C):* Insert the 2 shorter hexagon head screws (8) with the washers (7) in place through the holes in the friction plate (14) and screw them completely into the threaded holes on the transom bracket.
6. *In the case of an older transom bracket (Fig. 4, D):* Insert spacer (13) between friction plate (14) and threaded holes on transom bracket and hold it in place.
7. *In the case of an older transom bracket (Fig. 4, D):* Insert the 2 longer hexagon screws (17) with washers (7) in place through the holes in the friction plate (14) and the spacer (13), apply threadlocker to the threads according to the manufacturer's instructions and screw the hexagon screws completely into the threaded holes on the transom bracket.
8. Tighten the hexagon screws on the transom bracket (8 or 17) to a torque of 6 N·m.
9. Align the friction bracket (6) so that the threaded pin (9) is centered in the guide of the friction plate (14).
10. Tighten both hexagon screws (8) on the friction bracket to a torque of 6 N·m.
11. With the friction lever (11) in the left position, tighten the hex nut (16) until the maximum desired resistance is set.
12. Turn friction lever (11) to the right and check that the tiller moves easily.
13. *If the tiller does not move easily:* loosen the hex nut (16) and adjust the maximum resistance.

### 6.4 Attach Bowden cables

1. Position the cable holder (4) from above at the borehole on the tiller so that the borehole on the tiller and the borehole on the cable holder are aligned.
2. Guide both Bowden cables from their connection on the tiller over the tiller and through the downward-opened guide on the cable holder (4).
3. Align and hold the cable holder (4) so that the cable holder guides are perpendicular to the tiller.
4. Insert the crosshead screw (20) from below through the borehole on the tiller into the borehole on the cable holder (4) and tighten the cable holder.

## 7 Adapt TP sensor

The TP sensor must be adapted because the actuation travel with the tiller is smaller than with the remote control box.

### 7.1 Current TP sensor

Providing	
Persons	1
Tools	for hexagon nut (wrench size 10 mm)

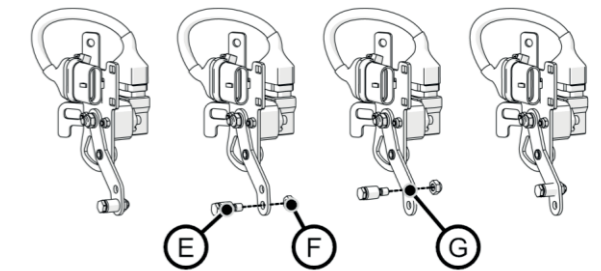


Fig. 5: Adapt bolt

- E Bolt
  - F Hexagon nut
  - G Upper bore hole
1. Unscrew the hexagon nut (F).
  2. Pull the bolt (E) out of the lower hole and insert it with the threaded side into the upper hole (G).
  3. Screw the hexagon nut (F) onto the thread of the bolt (E) and tighten.



## 7.2 Older TP sensor

Providing	
Persons	1
Tools	for inner hexagon bolts (wrench size 5 mm)
	for hexagon screws (wrench size 10 mm)
	for fixing the lever on the TP sensor
	for drilling for Blind Rivets with 6 mm diameter
	Blind Rivet Tool for Blind Rivets 6x12 mm
	torque wrench (8 N·m)
Materials	medium-hard threadlocker (e.g. Loctite 242)

### 7.2.1 Disassemble TP sensor

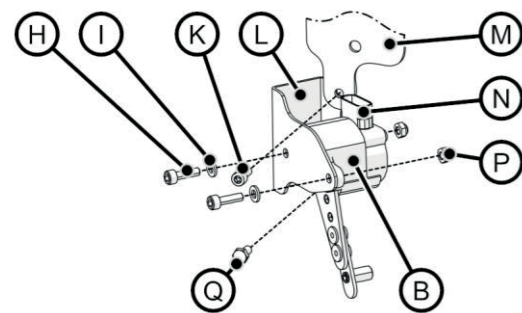


Fig. 6: Disassemble TP sensor

- H 2 Inner hexagon bolts
  - I 2 Washers
  - K Inner hexagon screw
  - L old Bracket TP sensor
  - M Bracket Voltage regulator
  - N Cable socket
  - P 2 Hexagon nuts
  - B TP sensor
  - Q Hexagon screw
1. Pull the cable plug out of the cable socket (N).
  2. Unscrew the 2 inner hexagon screws (H), remove them together with the 2 washers (I) and the 2 hexagon nuts (P) and dispose of them in an environment friendly manner.
  3. Carefully pull the TP sensor (B) to the right out of the holder (L) and keep it for reuse.
  4. Unscrew inner hexagon screw (K) and hexagon screw (Q), clean and keep for reuse.
  5. Pull bracket (L) to the left out of the gap between motor block and bracket (M) and store it for optional later reuse with a remote control.

### 7.2.2 Adapt extension

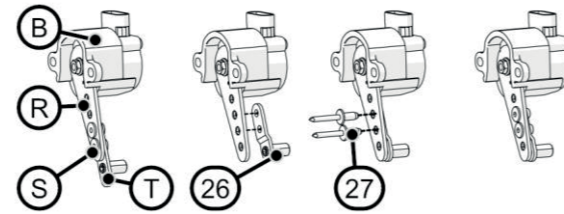


Fig. 7: Adapt extension

- B TP sensor
  - R Lever
  - S old Blind rivets
  - T old Extension
  - 26 new Extension
  - 27 2 new Blind rivets
1. **NOTICE** Material damage due to contamination of the sensor!  
Protect the sensor from contamination and work residues during work.
  2. Fix the lever (R) with a suitable clamping device and drill out the two old rivets (S).
  3. Remove old extension (T) and store for optional later reuse.
  4. Position the new extension (26) on the lever so that the two bore holes of the extension (26) and the two central bore holes of the lever (R) are aligned.
  5. Insert 2 new blind rivets (27) into the two central bore holes of the lever.
  6. Rivet both blind rivets with a suitable blind riveting tool.  
⇒ Lever and extension are riveted together tightly.
  7. Check that the rivets do not interfere with or block the free movement of the lever.  
⇒ The lever can be moved over the entire lever travel without resistance.

### 7.2.3 Assemble TP sensor with new bracket

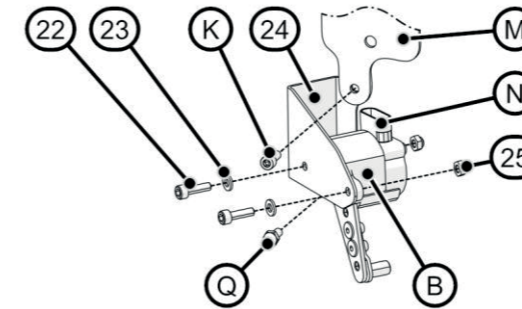


Fig. 8: Assemble TP sensor

- 22 2 inner hexagon bolts
  - 23 2 Washers
  - K Inner hexagon screw
  - 24 new Bracket TP sensor
  - M Bracket Voltage regulator
  - N Cable socket
  - 25 2 Hexagon nuts
  - B TP sensor
  - Q Hexagon screw
1. Apply threadlocker to the threads of the inner hexagon screw (K) and the hexagon screw (Q) as specified by the manufacturer.
  2. Insert the new bracket (24) from the left into the gap between the engine block and the bracket (M) so that the bore holes of the bracket and the threaded holes on the engine block are aligned.
  3. Screw new bracket (24) with inner hexagon screw (K) and hexagon screw (Q) to the motor block and tighten both screws with a torque of 8 N·m.
  4. Carefully insert the adapted TP sensor (B) from the right into the new bracket (24) and hold it in such a way that the bore holes of the TP sensor and the bore holes of the holder are aligned.
  5. Insert 2 screws (22) into the 2 washers (23).
  6. Insert the 2 inner hexagon screws (22) into the bore holes of the new holder (24) and the TP sensor (B).
  7. Screw 2 hexagon nuts (25) hand-tight onto the threads of the 2 inner hexagon screws (22), but do not tighten them.
  8. Screw the 2 inner hexagon screws (22) into the 2 hexagon nuts (25) and tighten them to a torque of 8 N·m.
  9. Insert the cable plug into the cable socket (N).
  10. Check that the lever is not blocked.  
⇒ The lever can be moved over the entire lever travel without resistance.

11. Check that the lever return is working properly.  
⇒ When released, the lever returns to its original position by itself.

## 8 Further work

After the tiller set Dtorque has been successfully installed, the following work must be performed:

- Installing the control cables (see Owner's manual Dtorque 111, Chapter "Connections to the engine")
- Connecting the leads (see Owner's manual Dtorque 111, Chapter "Connections to the engine")
- Adjusting the control cables (see Owner's manual Dtorque 111, Chapter "Settings")
- Adjusting the control resistance (see Owner's manual Dtorque 111, Chapter "Settings")
- Adjusting the steering resistance (see Owner's manual Dtorque 111, Chapter "Settings")



**NM Network Services Ltd**

16 High Street, Newick

Lewes, BN8 4LQ · UK

**[www.neandermarine.com](http://www.neandermarine.com)**