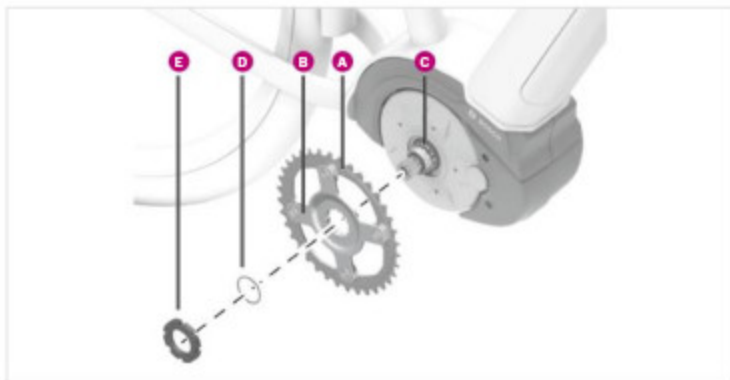


## Installing the Drive Unit (BDU310 / 350 / 365)



### Work steps

#### Fit the spider to the Drive Unit

1. Mount the left-side crank arm.  
To do this, grease the bottom bracket shaft and then tighten bolt M10 x 1. Tighten using a torque wrench.
2. When changing the chainring:  
Fit a new chainring (A) to the spider (B) using 4 chainring screws.
3. Press chainring (A) along with the mounted spider (B) onto the cleaned and lightly greased interlock (C). The spider must be on the side facing away from the bike.
4. Slide the O-ring (D) on as far as the spider. Only use O-rings if they are intact.
5. Grease the cleaned Spidernut (E) threads and tighten the Spidernut. The lettering on the Spidernut must be visible.  
– The locking has a left-hand thread, so tighten it to the left with the locking tool. Hold it back with the left crank.
6. Grease the right-side bottom bracket shaft and mount the crank arm with the crank bolt M10 x 1.



Make sure not to mix up the left and right cranks! Pedals can come loose if assembled incorrectly.

### Tool

- ▶ Allen key size 8
- ▶ Allen key size 5
- ▶ Torque wrench
- ▶ Locking tool (0.275.009.003, available from Bosch eBike online stores)
- ▶ Bearing grease and brush

### Tightening torques

- ▶ Spidernut: 25 – 30 Nm

## Removing the Drive Unit (BDU450 CX / 490 P)



### Work steps

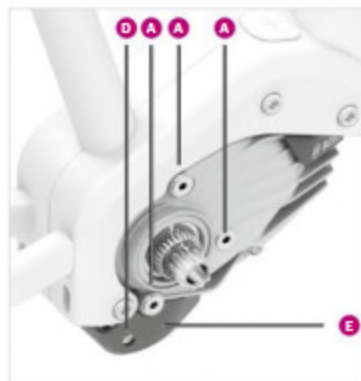
#### Detach the spider from the Drive Unit

1. Remove the crank arms.
2. Block the rear wheel, e.g. secure the brake lever with a cable tie or similar.
3. Use the locking tool to unscrew the Spidernut (A). As it has a left-hand thread, turn it to the right.
4. Loosen the brake lever again.
5. Remove the chain.
6. Remove the O-ring (B) and carefully check it for damage. Only reuse O-rings if they are intact.
7. Remove the chainring (D) together with the mounted spider (C).

### Tool

- ▶ Allen key size 8
- ▶ Standard crank-puller
- ▶ Locking tool 0.275.009.003 available from Bosch eBike online stores

# Removing the Drive Unit (BDU450 CX / 490 P)



## Work steps

### Remove the chain guard or chain guide adapter

- ▶ If there is a chain guard or chain guide adapter
- 1. Remove the M6 x 10 screws (A)
- 2. Remove the chain guard / chain guide adapter

Manufacturer-specific mounts, chain guide and chain guard solutions ("Bashguard") are possible on the thread inserts

### Remove the design cover

- ▶ Version with glued logo cover: Skip step
- 1. Remove two pan head Torx screws M4 x 12 (B)
- 2. Remove the design cover (C)

### Remove the design cover on the chainer side

1. Remove two pan head Torx screws M4 x 12 (D)
2. Remove the design cover (E)

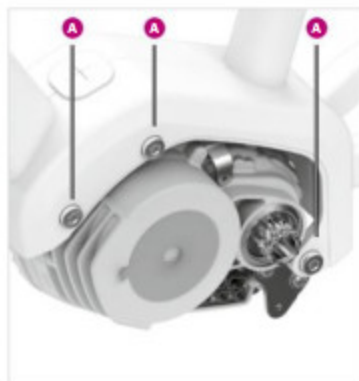
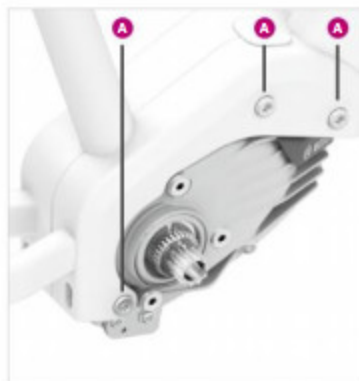
### Disconnect the cable connections on the Drive Unit

1. Remove the cable ties
  2. Carefully detach all cables using an electronics-suitable flat nose pliers
- ▶ The connector plug on the battery has a locking hook (F). When removing it, make sure to use a screwdriver to pry it up by 1 – 2 mm

Do not damage the plug or cable. Never pull the cable directly

## Tool

- ▶ Appropriate tool for chain guard screws
- ▶ Torx T20
- ▶ Side cutters
- ▶ Small slot-headed screwdriver
- ▶ Electronics-suitable flat nose pliers



## Work steps

### Remove the Drive Unit from the frame

1. Check that all cables are disconnected. Carefully pull out all cables as far as possible from the frame interface
2. Remove six M8 x 16 (A) Torx Plus screws
3. Remove the Drive Unit from the housing without applying force

Make sure to secure the Drive Unit so it cannot fall. If necessary remove it in an inverted position

Never loosen the retaining plates in the motor housing! Screws may not be inserted directly into the magnesium housing or removed from the housing. This would lead to a risk of corrosion and to a loss of warranty

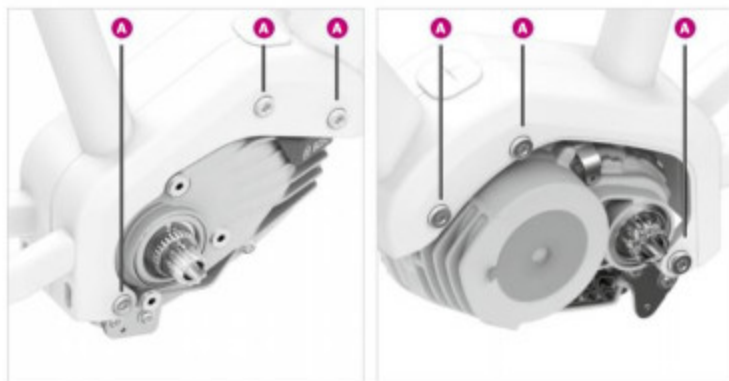
## Tool

- ▶ Torx Plus 40

### Torx Plus 40

Special profile for mechanical screw joints with particularly flat screw heads with high tightening torques. Standard Torx 40 can be used, but even with a new screw insert there is a risk of increased wear and possible damage to the screw threads

# Installing the Drive Unit (BDU450 CX / 490 P)



## Work steps

### Insert the Drive Unit

1. Place the Drive Unit onto the frame interface. Do not allow cables to pinch.
2. Loosely tighten six M8 x 16 (A) Torx Plus screws.
  - ▶ When reinstalling an already used Drive Unit: Remove any residue on screws and retaining plate threads. Use a medium-strength screw adhesive (e.g. Loctite 243) to secure screws.

### Connect the cable connections

1. Secure excess cable lengths using cable ties.
2. Plugs have latching lugs (G) to prevent polarity reversal. Make sure that these point in the right direction.

You should feel them engage. Plugs are colour coded and mechanically coded (see next page) and can be attached almost without any force. Do not apply force.



## Tool

- ▶ Torx Plus 40
- ▶ Torque wrench

## Tightening torques

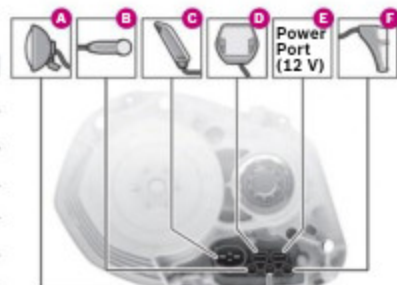
- ▶ Drive Unit on the frame:  
20 Nm ± 2 Nm

## Electrical connections

Performance Line CX (BDU450 CX), Performance Line Speed (BDU490 P), Cargo Line Cruise (BDU450 CX), Cargo Line Speed (BDU490 P)

The Drive Unit can be damaged if a plug is connected incorrectly

Pos.	Connection	Colour	voltage
A	Front lamp	blue	12 V
B	Speed sensor	grey	3.3 V / min. 3.1 V
C	Battery	black	36 V
D	Display	black	12 V
E	Power Port (12 V)	black	12 V
F	Rear light	black	12 V



## Work steps

### Connection for bicycle lighting

1. Only connect DC headlamps without a parking light function.

Corresponding DC headlamps and tail lights are available from Bosch eBike online stores, for example

2. Observe the current rating:
  - Output power for lighting: max. 18 W, output current max. 1500 mA
  - Distribution of the output current to the front and rear light as required

3. Remove the blanking plugs on the slots to connect the lighting cable. It is not necessary to occupy both lighting slots.
4. Activate the light switch function via the DiagnosticTool (see p. 129).

Original Bosch eBike lighting cables are available from Bosch eBike online stores

Unused connections must be closed off with blanking plugs - risk of corrosion

### Connection to Power Port (12 V)

- ▶ For supplying power to 12 V consumers, such as Bosch eBike ABS, eSuspension or other 12 V components
- ▶ Max. output power: 12 V, 1 A

When the Bosch eBike ABS is connected, no other consumers may be connected to the Power Port (12 V)

Take care not to confuse the display port (D) with the Power Port (12 V) (E)

12 V connector cables for third components are available from Bosch eBike online stores

# Installing Drive Unit (BDU450 CX / 490 P)



## Work steps

### Attach the design cover on the chainring side

1. Attach cover (A) to the retaining plate of the Drive Unit
2. Tighten pan head Torx screw M4 X 12 (B) (self-tapping on first assembly)

### Attach the logo cover

Attaching the logo cover on initial assembly

1. Remove the protective foil (C) from the adhesive surface on the motor head
2. Remove the protective foil from the back of the logo cover
3. Position the logo cover (D) on the motor head
  - Pay attention to the installation position: The lettering must be positioned horizontally
4. Firmly press the design cover onto the adhesive surface at room temperature (> 18 °C), applying constant pressure for at least 10 seconds

### Attach the design cover

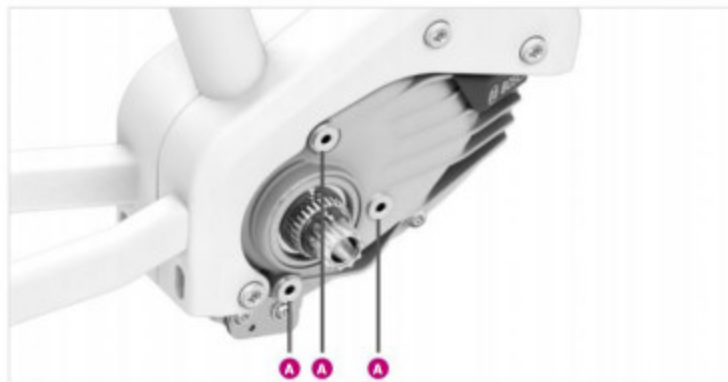
1. In the case of an initial assembly, remove the protective foil (C) from the motor head
2. Place the electrical cables around the crank casing to prevent pinching
3. Attach the design cover (E) to the front cooling rib of the Drive Unit, then attach the rear section
4. Tighten two pan head Torx screws M4 x 12 (F). The screws are self-tapping on first assembly

## Tool

- Torx T20
- Torque wrench

## Tightening torques

- Design cover:
  - Initial assembly (self-tapping): **3 Nm ± 0.2 Nm**
  - Subsequent assembly: **1 Nm ± 0.2 Nm**



## Work steps

### Fit the chain guard or chain guide adapter

- Optional, if intended by the bicycle manufacturer
  - Available from bike manufacturers
1. Screw the adapter to the screw-on points provided (A)
  2. Use M6 X 10 screws with shallow heads (max. screw-in depth: 8.5 mm)

- Longer screws may be used, depending on the chain guard manufacturer
- Max. screw-in depth of the threads in the Drive Unit: **8.5 mm**

## Tool

- Depending on the type of screw
- Torque wrench

## Tightening torques

- Chain guard / chain guide adapter on Drive Unit: According to manufacturer's specifications, **max. 5 Nm**

## Installing the Drive Unit (BDU450 CX / 490 P)



### Work steps

#### Fit the spider to the Drive Unit

1. Mount the left-side crank arm. To do this, grease the bottom bracket shaft and then tighten bolt M15 x 1. Tighten using a torque wrench.
2. Clean and grease the internal interlock of the spider (A).
3. Press chainring (B) along with the mounted spider (A) or directly mounted chainring onto the cleaned and lightly greased interlock (C). The spider must be on the side of the chainring facing toward the bike.
4. Slide the O-ring (D) on as far as the spider. Only use O-rings if they are intact.
5. Grease the cleaned Spidernut threads and tighten the Spidernut (E). The lettering on the Spidernut must be visible.
6. The locking has a left-hand thread, so tighten it to the left with the locking tool. Hold it back with the left crank.
7. Grease the right-side bottom bracket shaft and mount the crank arm with the crank bolt M15 x 1.



Make sure not to mix up the left and right cranks! Pedals can come loose if assembled incorrectly.

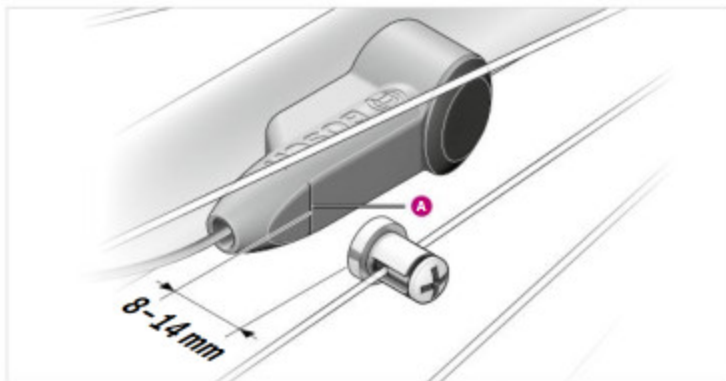
### Tool

- ▶ Allen key size 8
- ▶ Torque wrench
- ▶ Locking tool (0.275.009.003, available from Bosch eBike online stores)
- ▶ Bearing grease and brush

### Tightening torques

- ▶ Locking: 25 – 30 Nm
- ▶ Crank: According to manufacturer's specifications

## Installing a speed sensor



### Work steps

#### Install the speed sensor and spoke magnet

1. Screw the sensor into the frame thread provided. Push on the protective cap.
2. Attach the magnet to the spoke:
  - Installation position: Parallel opposite the marking (A)
  - Optimum clearance: 8 – 14 mm (due to risk of multiple signals or distortion of the rear wheel)
  - Range of the magnet: 5 – 17 mm
3. If necessary readjust the sensor with additional spacers.

### Tool

- ▶ Torx T20
- ▶ Phillips screwdriver size PH02
- ▶ Torque wrench

### Tightening torques

- ▶ Sensor on frame: 3 Nm
- ▶ Spoke magnet: 1 Nm

### Selected spare parts



When replacing the spoke magnet only use an original Bosch spare part (1.270.015.031). Standard bike computer magnets do not have sufficient magnetic strength.



## Tightening Torques and Tool

Components	Tool	Tightening torque
<b>Drive Unit BDU310 / 350 / 365</b>		
Drive Unit on the frame interface	Hexagonal socket wrench insert size 13	28 – 30 Nm
Mounting plate on the Drive Unit	Torx T30	Initial assembly (self-tapping): 13 – 15 Nm Subsequent assemblies (thread already exists): 9 – 11 Nm
Chain guard adapter on Drive Unit	Torx T20	according to manufacturer's specifications, max. 5 Nm
Design cover	Torx T20	1 Nm
Front section of design cover on housing	Torx T20	Initial assembly (self-tapping): 3 Nm Subsequent assembly: 2 Nm
Spidernut on the Drive Unit	Lock Ring Tool	25 – 30 Nm
Crank arms on bottom bracket shaft	Allen key size 8	according to manufacturer's specifications
<b>Drive Unit BDU450 CX / 490 P</b>		
Drive Unit on the frame interface	Torx Plus 40	20 Nm
Chain guard adapter on Drive Unit	Allen key size 5	according to manufacturer's specifications, max. 5 Nm
Design cover	Torx T20	Initial assembly (self-tapping): 3 ± 0.2 Nm; Subsequent assembly: 1 ± 0.2 Nm
Design cover on the chainring side	Torx T20	Initial assembly (self-tapping): 1.2 Nm Subsequent assembly: 1.3 Nm
Spidernut on the Drive Unit	Lock Ring Tool	25 – 30 Nm
Crank arms on bottom bracket shaft	Allen key size 8	according to manufacturer's specifications
<b>Speed sensor</b>		
Sensor on frame	Torx T20	3 Nm
Spoke Magnet	Phillips screwdriver size PH02	1 Nm
<b>PowerTube</b>		
Aluminium plate on the L-shaped mount	Torx T25	5 Nm
Mount system on L-shaped mount / U-shaped mount	Torx T25	5 Nm
Lock on threaded flange	Torx T20	4 Nm
<b>Rack battery</b>		
Lock cover on the key cylinder	Torx T15	2 Nm
<b>Frame battery</b>		
Mount adapter on frame	Torx T25	4 Nm
Mount casing	Torx T15	2 Nm
Lock on frame	Allen key size 4	4 – 5 Nm
Lock cover on the lock	Torx T15	2 Nm

Components	Tool	Tightening torque
<b>On-Board Computer and Control Unit</b>		
<b>SmartphoneHub</b>		
Sleeve on mount, fixing clamps on mount	Allen key size 2.5	1 Nm
Universal mount on hub	Phillips screwdriver size PH02	0.5 Nm
Clamping the control unit on the handlebar	Hexagonal socket, Intuvia, SmartphoneHub: Size 3; Kiox: Size 2.5	1 Nm
Control unit cable on bicycle on-board computer mount	Phillips screwdriver size PH00	should be loosely tightened by hand
<b>Kiox</b>		
Mount on stem (Ahead mount)	depending on the screw on the Ahead mount	according to the specifications of the Ahead mount manufacturer
Fastening the on-board computer to the mount	Phillips screwdriver size PH02	Intuvia: 1 Nm, Kiox: 0.5 Nm
Mounting plate on the mount	Allen key size 2.5	1 Nm
Cable box on the mounting plate	Allen key size 2.5	should be loosely tightened by hand
Clamping the control unit on the handlebar	Hexagonal socket, Intuvia, SmartphoneHub: Size 3; Kiox: Size 2.5	1 Nm
Control unit cable on bicycle on-board computer mount	Phillips screwdriver size PH00	should be loosely tightened by hand
<b>Intuvia</b>		
Clamping the mount on the handlebar	Allen key size 3	1 Nm
Fastening the on-board computer to the mount	Phillips screwdriver size PH02	Intuvia: 1 Nm, Kiox: 0.5 Nm
Clamping the control unit on the handlebar	Hexagonal socket, Intuvia, SmartphoneHub: Size 3; Kiox: Size 2.5	1 Nm
Control unit cable on bicycle on-board computer mount	Phillips screwdriver size PH00	should be loosely tightened by hand
<b>Purion</b>		
Clamping the mount on the handlebar	Allen key size 3	1 Nm
<b>eBike ABS</b>		
Housing sections on the mount / eBike ABS housing	Torx T20 (front) Torx T30 (rear)	1 Nm
Control unit on the mount	Torx T30	3 Nm
Brake lever on the handlebar	Torx T25	4 Nm
Brake calliper on the brake mount	Allen key size 3	6 Nm
Wheel speed sensors front / rear on calliper mount adapter	Torx T25 Feeler gauge (installation)	6 Nm
Front / rear sensor disc on brake disc	Torx T25	max. 4 Nm