Original Installation Manual

Pendix eDrive

compatible with
Pendix.bike PRO App

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1. Safety notes

In these instructions you will find four different symbols – the symbol **Note** provides important information about your new motor and how to use it, the symbol **Caution** draws your attention to possible damage and/ or environmental hazards, the symbol **Danger** warns you against possible accidents and severe damage, including possible injuries to your person. The symbol **Torque** marks sections where a screw connection may only be tightened using a torque wrench. The torque value given must be adhered to. Whenever you see one of these symbols, there is a risk that one of the hazards described may actually occur! Every warning given is in a special box with a gray background for emphasis.

Explanation of symbols

This symbol provides information about how to handle the product or work with the respective section in the system manual, which must first be read through.

Caution: This symbol warns you against making mistakes which can result in damage to material or create an environmental hazard.

Danger: This symbol stands for a possible danger to your life and/ or health, if relevant instructions are ignored or not correctly followed. It also draws your attention to the fact that corresponding preventive measures must always be taken beforehand.

Torque: Important screw connection! When tightening up a threaded connection (screws), the exact torque must be adhered to. The correct tightening torque is either shown on the part in question, or you will find it in the table of (torque) tightening values on page 24 of this installation manual. You must use a torque wrench to obtain the proper torque. Parts which are not correctly tightened can break or become loose! This can cause severe falls and accidents!

2. Introduction

This installation manual describes the installation of the Pendix eDrive on a bicycle. It is meant for bicycle mechanics, technicians and people with equivalent knowledge and technological comprehension.

Carry out the assembly steps described in these instructions only. No other steps may be undertaken or changes made to the system. Do not take apart or open components! Improper and unprofessional mounting of the motor and manipulations to battery, charging unit and motor involve great danger to health and damage of material. In any such cases, Pendix refuses to accept any responsibility for damage or accidents caused.

For installation of the Pendix eDrive in a bicycle or onto a bicycle frame, expert technical background and experience are required, as well as special tools and equipment. For installation of the Pendix eDrive in a bicycle or onto a bicycle frame, expert technical background and experience are required, as well as special tools and equipment. In general we would recommend to choose an authorized Pendix premium partner to do the installation.
Read the manual carefully and follow all instructions step by step. Pay special attention to the Safety Notes. Always keep the installation manual in a safe place, and pass them on to all other persons working with a Pendix eDrive.

The Pendix eDrive is not designed for installation and effective use in bicycles for children and juveniles up to the age of 14 years!

Make sure that the bicycle is in a technical perfect and non-damaged condition. Check all components for cracks, breaks, deformations or heavy wear. If you notice anything of this kind, do not use the bike any further and let a Pendix premium partner check and repair it, if possible.

The Pendix eDrive motor is not designed for use in areas subject to explosion hazard or equivalent.

When a Pendix eDrive has been installed into your bicycle, it becomes a Pedelec. It is recommended to only retrofit bicycles that comply with the known bicycle standards, such as DIN EN14764, DIN EN14766 or ISO4210:2014.

Please read all supplied instructions for safe handling of the drive system and the bicycle. The “Original Pedelec Operaing Instructions” provides special instructions on handling and maintaining the bicycle and also on existing residual risks.

3. Field of application

The Pendix eDrive is provided for the following bicycle types: City- / Trekking- / Touringbikes, Mountainbikes (Race/ Cross-Country), road bike, folding bike, recumbent bicycles and further related types.

Because of the higher loads the application of Pendix eDrive in downhill-, freeride-, BMX-cycles, dirtbikes and further related types as well as operation in competition is prohibited. The usage in static conditions (dyno, home gym) is also prohibited.

Using clipless pedals in combination with Pendix eDrive is prohibited.

3.1 Residual risks

Observe compliance with the permissible total weight after installation of the Pendix eDrive in the bicycle:
Total weight = Pedelec weight + rider weight + load weight
This total weight must not exceed the permissible total weight originally specified by the bicycle manufacturer.

Incorrect mounting of the drive can cause serious damage. Please check the tight fit of the motor on the bottom bracket as well as the battery holder and battery before each ride.

Installation of the Pendix eDrive may result in slightly increased wear of chain rings, sprockets and chain/belt. Please observe the maintenance intervals for checking/replacing these components in the Pedelec manual.

4. Scope of supply

On the following page you will find a general overview of the components on the bike.

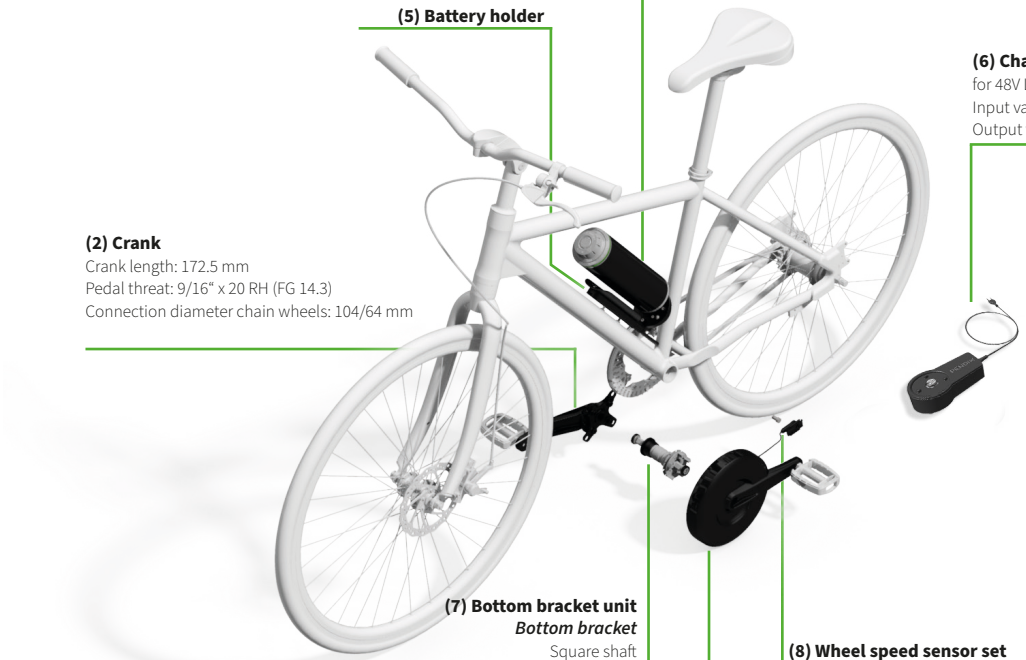
Pos.-no.	Description	Article no.	eDrive300	eDrive500	eDrive1000
1	Drive system unit; 250 W preassembled: coupling ring	A3C.902.140 A1C.301.002		1	
2	Crank; 172.5 mm	A1C.302.001		1	
3	Battery ePower300; 48 V; 13S2P	B1C.904.071	1	-	-
4	Battery ePower500; 48 V; 13S3P	B2C.904.071	-	1	2
5	Battery holder	A1C.904.022		1	
-	Screws battery holder • Screws battery holder M5x16 • Screws for connector cover M4x16 self-cutting	 A1C.402.205 A1C.402.211		1	
6	Charging unit HG Power; 160 W; 54.6 V; 3 A	B5C.904.081	1	1	1
7	Bottom bracket unit composed of: • Bottom bracket • Bottom bracket mounting • 2 spacer rings • Wave washer • 2 crank screws • Screwed bushing aluminium	 A1C.903.030 A1C.301.034 A1C.301.003 A1C.301.221 A1C.301.202 A1C.301.031		1	
9	Assembly set wheel speed sensor • Wheel speed sensor 290 mm / 580 mm • Spoke magnet	 A1C.903.070.0 / -070.1 A1C.301.207		1	
-	Installation/System instructions	A3D.705.003/ A3D.705.002		1	

5. Overview components

(3)/(4) ePower (battery) 300/500
13S2P Li-Ion/ 13S3P Li-Ion
Voltage: 48 V
Capacity: 300 Wh/497 Wh

(5) Battery holder

(6) Charging unit 160W
for 48V Li-Ion battery
Input values: 100-240 V AC; 50 Hz;
Output values: 54.6 V DC; 160W



(2) Crank
Crank length: 172.5 mm
Pedal threat: 9/16“ x 20 RH (FG 14.3)
Connection diameter chain wheels: 104/64 mm

(7) Bottom bracket unit
Bottom bracket
Square shaft
Shaft length: 128 mm
Bottom bracket thread: BSA 1.375“ x 24 TPI LH (FG34)
Crank thread: M8x1 RH
Bottom bracket mounting
Bottom bracket thread: BSA 1.375“ x 24 TPI RH (FG34)
Spacer ring electronic bottom bracket
Wave washer
Crank screw
Screwed bushing aluminium

(8) Wheel speed sensor set
Wheel speed sensor
Spoke magnet

(1) eMachine
Nominal power: 250 W
Crank length: 172.5 mm
Pedal threat: 9/16“ x 20 LH (FG 14.3)

6. Installation

Please use the checklist (see section 10) and the online installation video to check the bike and the installation!

6.1 Safety at work

Wear suitable work clothing such as gloves and solid shoes when mounting the Pendix eDrive. Attach the bicycle frame firmly to a suitable frame holder.
Always use suitable tools and equipment meeting good quality standards.

If you are not sure about how to put the above safety notes into practice, information on the subject of safety at work is easily obtainable. Consult for example relevant locally applicable legal requirements, safety measure guidelines and / or regulations, for example in the internet.

For your safety, the battery must not be connected when installing the motor. Do not place the battery in its holder until you have finished assembly / mounting work.

Never use a high-pressure cleaner to clean your Pendix eDrive motor components.
Warning: by doing so, water can intrude into the system and destroy it.

6.2 Requirements for installation

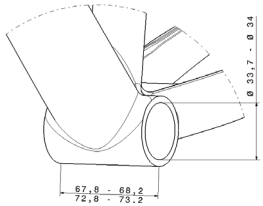
Before installing the Pendix eDrive, you have to check if the bicycle frame fulfills the requirements.

If your bicycle frame does not meet the described prerequirements, we cannot assume any guarantee.

Frame material
Pendix eDrive can be attached to all metal frames. If you wish to mount a Pendix system to a frame consisting of other materials such as carbon, wood, etc. please consult our Pendix Service Department before installation.

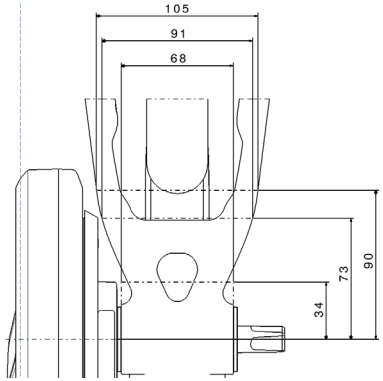
BSA bottom bracket housing with following dimensions
Diameter: 33.7 mm – 34.0 mm
Width: 68 mm or 73 mm +/- 0,2 mm
Thread: BSA 1.375“ x 24 TPI (FG34)
Check the diameter of the bottom bracket housing:
The interior diameter must measure between 33.7 mm and 34 mm.

Checking the housing width
The width of the bottom bracket housing must be either 68 mm or 73 mm. In each case with a tolerance of +/- 0.2 mm.
The bottom bracket housing should be smooth and free of paint or coating residues. The threads must be aligned and free of dirt.

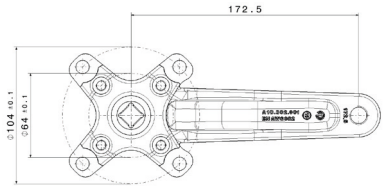


Eccentric bottom bracket
Should there be an eccentric bottom bracket in the bike, please take care of exchanging the eccentric bushing made of plastic by a model made of aluminum. Plastic eccentric bushings are not approved by Pendix.

Maximum rear structure width
Caution: in the case of fully suspended rear structures, keep in mind that the rear structure does not turn centrally around the bottom bracket as in most cases!



Testing the crank
Check to see that the available chain wheels fit round the crank.
The following illustration shows the right-hand crank. It also gives the connection dimensions for chain wheel fitting.

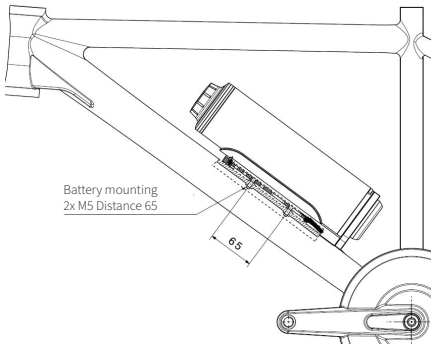


All commercially available chainrings with a connection diameter of 104 mm can be used, single and multiple sprocket wheels are compatible.
You can install all commercially available pedals with 9/16“ x 20 RH (FG 14.3) right hand thread.

After the installation of the crank, the length of the chain line (catenary) is 49 mm, which makes it possible to use the most common gear shifting systems. When the installation is completed, the derailleur should be checked and if necessary should be adjusted.

Checking the position of the battery holder
The holder for the battery should be attached either to the down tube or the seat tube. Already available attachment holes for a standard drinking bottle holder may be used for attachment of the battery holder. An alternative mounting option, if there are no screwed fixing points, is the Pendix clamp mount. It is not contained in delivery scope of the standard set, but can be ordered at Pendix with Art.no. A1C.904.021.

Pendix suggests to use the existing holes in the frame for the installation. The drilling of new holes can weaken the frame: it is a decision that must be made by the technician.
Pendix can assume no responsibility for the safety / duration of new attachments and resultant possible frame damage.



In the case of a full suspension frame, neither battery nor battery holder may come into contact with any other parts of the construction due to suspension movements.
Check to see that sufficient cable length is available for a correct and safe attachment of the battery holder.

If your frame has no thread for a bottle holder: Please use the Pendix clamp mounts. Do not drill holes in very light / thin-walled frames and especially frames made of composite materials (carbon frame)! In this case, please do not use clamp mounts. Drilling holes in such cases can cause broken frames, falls and severest injuries.

Checking the gear hub
If you want to use a gear hub with the Pendix eDrive, please make sure that the circuit for the torque of 65 Nm is activated. If necessary ask the dealer or the manufacturer of the gear hub about it. If you want to reduce the maximum torque, simply use the Pendix.bike PRO App to do so.

6.3 Special tools required

In order to mount the components, the following special tools are necessary and can also be ordered from Pendix.

Mounting the Pendix eDrive	
Bottom bracket tool left and right side 1/2“ connection	
Crank puller	
Assembly help bottom bracket	

We strongly recommend to use a dynamometric key for mounting the components in order to make sure that the screws are tightened with the specific torque.

Disassembly of already mounted components
Before you start installing the Pendix eDrive, you must remove the following parts from the bicycle:
- Crank on the left
- Chain guard, if available
- Crank on right (including chain wheel)
- Bottom bracket

Proceed as follows:

1. If the pedals are to be used again, you must remove them as first step.
2. Remove the left crank arm.
3. Remove the chain guard, if present.
4. Remove the right-hand crank arm including the chain wheel.
5. Now take out the bottom bracket.

Please also use the online installation video. Access data you get from Pendix.

Modern bicycle technology is high tech! Working in this field demands special training, knowledge, experience and special tools as well!

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7. Mounting the Pendix eDrive components

When laying out cables, make sure they do not come into contact with sharp edges, extreme bends or corners or rotating parts.Make sure you don't put pressure on the cable. If the cables are not tight or under any strain, there is a danger of broken or torn cables or else. To avoid damage to a cable, you should attach it in a way that it does not come into contact with the wheel. Especially in cases where bicycles have full suspensions, the distance between frame and rear structure changes constantly. Please ensure that the cable length is enough.

When tightening screw connections, always adhere to the exact torque required. For this, you must use a regulation tested torque wrench. Only in this way, safe and correct assembly work can be guaranteed.

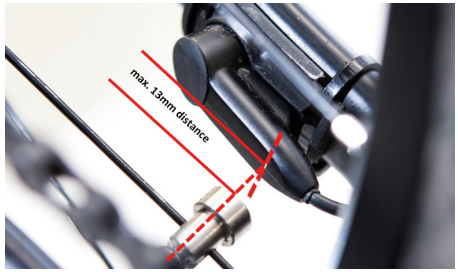
7.1 Wheel speed sensor

Attach the wheel speed sensor to the left chain stay using the supplied cable ties. If you have a 1st generation speed sensor, use the supplied holder to screw the speed sensor to.

Speed sensor of the 1st generation
The 2nd generation speed sensors already have the holder integrated in the sensor housing.

As moving part of the sensor, you must now attach the magnet to a spoke and position it correctly facing the main sensor.

The distance between magnet and sensor may not exceed 13 mm.



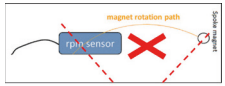
1st Generation Speed Sensor - Orientation to the vertical marking

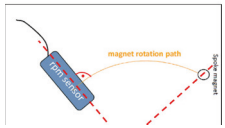
2nd Generation Speed Sensor – Orientation to round Pendix logo

Following this, lay out the cable along the chain stay as far as the bottom bracket case and attach it with cable ties as shown. At this point, the cable end will first of all be hanging free in front of the bottom bracket case.

Please not that for a safe function of the sensor, that it is positioned parallel to the spoke in the point where the magnet runs through the sensor.

In case that the standard cable is too short for your bicycle, you can order a longer cable through an order channel that you already know.



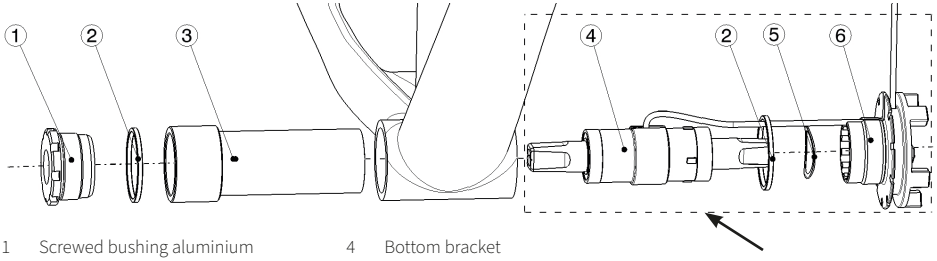


7.2 Bottom bracket

Make sure you do not damage the cable when mounting the electronic bottom bracket unit. Before installing the electronic bottom bracket, grease the ball bearings (remove pre-assembled part 06 from the bearing, see next page) the threads as well as the bottom bracket fitting with standard bicycle grease.

Do not use grease when installing your Pendix eDrive into a frame made of fiber materials (carbon frame)! Use standard carbon assembly paste instead.

Magnetic fields destroy the electronic bottom bracket. Please keep the battery plug of the charging unit, the spoke-mounted magnet and other magnetized objects away from the electronic bottom bracket at all times.

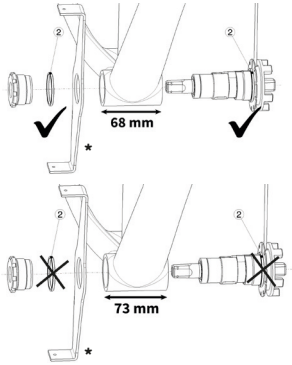


1 Screwed bushing aluminium
2 Spacer ring
3 Installation tool
4 Bottom bracket
5 Wave washer
6 Bottom bracket mounting

supplied in preassembled condition

For assembly, Pendix recommends the use of installation tool (No. 3). You can order this from the Pendix online shop or via the ordering channel you are familiar with. We can assume no responsibility (guarantee) for damage to the Pendix bottom bracket caused by using a different tool.

Please check, if the bottom bracket has a width of **68 mm** or **73 mm**. In case of a bottom bracket with **68 mm**, you require on the right and left side one spacer ring each.



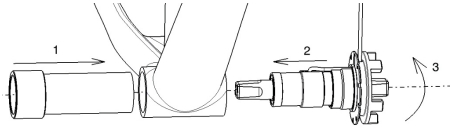
** is applicable with or without chainguard*

1. Insert the installation tool in the bottom bracket housing from the **right-hand side** (in driving direction), and push in as far as it will go.

When doing this, make sure that the tool slides into the case without meeting any increased resistance. If you notice any resistance, remove any disturbing elements in the bottom bracket housing by filing or grinding. Make sure not to damage the bottom bracket thread.

2. Push the electronic bottom bracket from the **left-hand side** (in driving direction) into the bottom bracket housing. Make sure that it slides easily into the assembly tool without damaging the cable in doing so.

3. Push the bottom bracket mounting (No.6) into the bottom bracket housing by turning it.



4. After tightening the electronic bottom bracket on the left side by hand, remove the installation tool from the bottom bracket housing by carefully pulling it out.

Make sure that the tool slides out of the housing without any increased resistance.

5./6. Now fasten the electronic bottom bracket on the other side by turning in the screwed bushing (No.1 in drawing top left).

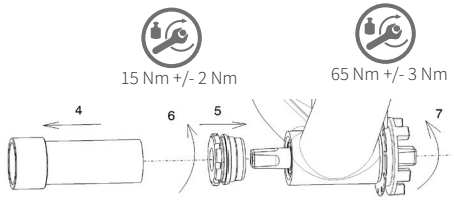
Only hand-tighten the bottom bracket in this step.

Before step 7 push the bottom bracket as far as possible in direction of the just mounted screwed aluminium bushing.

7. As final step, use a torque wrench to tighten the bottom bracket on the left side to a torque of 65 Nm +/- 3 Nm.

After installing the electronic bottom bracket, make sure that the shaft turns freely without showing any resistance.

In the housing of a BSA bottom bracket, thethread on the right hand side (in driving direction) Screw the bottom bracket on the right side with a tightening torque of **15 Nm +/- 2 Nm**.



Please pay attention to mount a standardized chain guard, which is conform to standard DIN EN ISO 4210-2.

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7.3 Battery holder

To attach the ePower battery holder to the bicycle, use the threads for a bottle holder if present. You can freely choose its position on the frame by effectively using the available holes in the battery holder, but make sure that that you have enough space below the holder so that, later on, you have room to pull the U-bend out for the lock of the battery in the one direction and room to remove the battery in the other direction.
An alternative mounting option, if there are no screwed fixing points, is the Pendix clamp mount. It is not contained in delivery scope of the standard set, but can be ordered at Pendix with Art.no. A1C.904.021.

Where a full suspension frame is present, the battery and the battery holder must at no time come into contact with other parts of the bicycle structure. Make sure there is sufficient cable length to attach the battery holder correctly and safely (to compensate for suspension movements).

Screw the battery holder on using the two supplied M5 screws to a tightening torque of **4.5 Nm +/- 0.5 Nm**. Use a screw locking (mid-strength) with both screws.

If your frame has no thread for a bottle holder: Please use the Pendix clamp mounts. Do not drill holes in very light / thin-walled frames and especially frames made of composite materials (carbon frame)! In this case, please do not use clamp mounts. Drilling holes in such cases can cause broken frames, falls and severest injuries.

First screw the lower battery holder screw into the battery holder to fix it to the bicycle frame. Fix the accu strap with the upper battery holder screw between the battery holder and the frame.

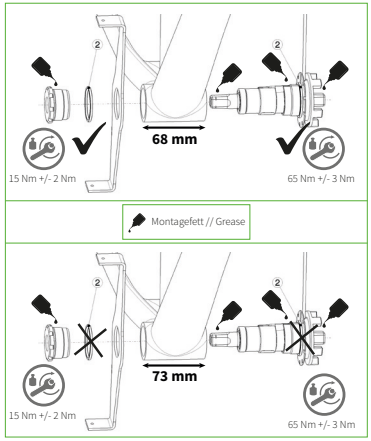
Installation of the accu strap

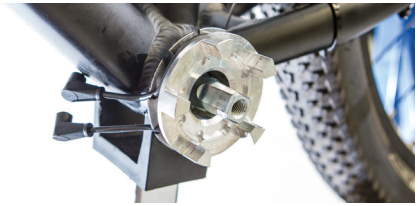
7.4 eMachine

Grease the square shafts of the bottom bracket shaft before mounting the engine and the crank.

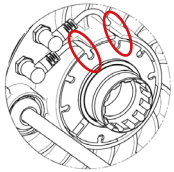
Lay out the cables of the wheel speed sensor and of the electronic bottom bracket in the provided ring of the bottom bracket mounting, and position them directly beside each other in the upper section in two of the provided grooves in the bottom bracket mounting.

The cables should have approximately 30 mm free length. It does not matter which cable is on the left or right side.





The motor is mounted on the left side of the frame. Position it first of all loosely in order to find out whether the cable of wheel speed sensor and electronic bottom bracket are positioned in the right place, so that they can be plugged into the motor. For this the grooves of the bottom bracket mounting in which the cables are attached must be accurately in line with the grooves in the motor.



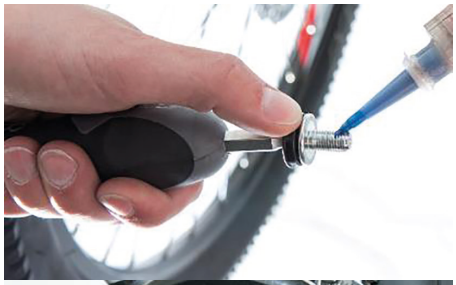
If this arrangement fits, the motor can be attached immediately by screwing it on. If it does not fit, you must remove the motor again and either continue turning it and placing it back on, or lay out the cable again so that it meets up with the correct position for it to be connected to the motor.
Then plug the eMachine on the bottom bracket shaft.

Hold the motor tightly in position, it is heavy!

The gearings of the torque support and the eMachine have to gear into each other.

Please note by putting the motor, that the coupling elements meshing each other. The motor flange on the back, where are the grooves for the sensor cables are in, should cover the ring, where the sensor cables are layed in.

Now you can screw the motor up with the supplied crank screw and tighten it at a torque of **32 Nm +/- 2 Nm**. The screw thread should already have a thread locking for safety. If no locking is on the thread, use a standard liquid screw locking (medium-strength).



Screw the pedal into the crank. Grease the thread. Make sure that the pedal on the left side is attached using a left-hand thread. In this case, the direction of tightening is anti- clockwise. The tightening torque is **35 Nm +/- 2 Nm**.

EN

7.5 Cable connection

As shown in the illustration, insert the plug of the wheel speed sensor and electronic bottom bracket into the motor in the two fittings.

Until model year 2021
It is not important to know which plug must be used for either of the sensors, the motor automatically recognizes each sensor.

From model year 2022
The electronic bottom bracket and the slot on the motor have a 5-pin connector. The speed sensor is still 3-pin. This shows where the electronic bottom bracket and speed sensor must be plugged in.

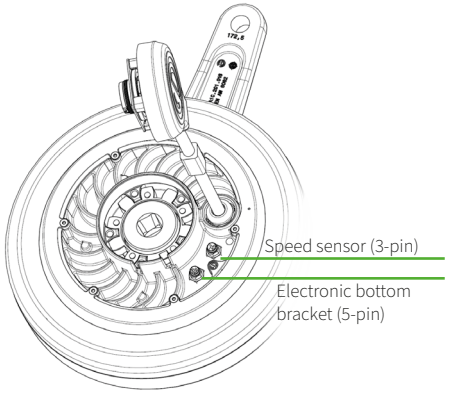


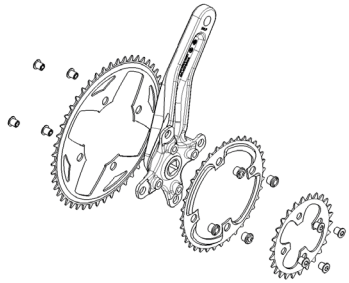
Fig. From model year 2022

Using the supplied M4x10 Torx-screws, attach the connector cover to the battery holder from below and tighten to a torque of **2.4 Nm +/- 0.2 N**.

According to length and accessibility, you can lay out the cable along or beside the frame tube. If necessary, fix it with cable ties. When laying out and attaching the cable, make sure it does not come into contact with the motor, the pedals and rotating parts!
The cable may otherwise be damaged. If the bicycle is a full suspension bike make sure that the cable is not crushed or abraded during suspension motion!

7.6 Pendix crank

You must attach the chain wheels before attaching the crank to the bicycle.



Tighten the chain wheel screws to a torque of **9 Nm +/- 2 Nm**.

The chain wheels and pedals are not delivered with the Pendix system. In other words, you can use these parts of your bicycle if their dimensions agree with the details given in the chapter 5.2 „Requirements for installation“.

Attach the right-hand crank with assembled chain wheels and with applied chain on the greased square shaft section. Tighten the crank using the supplied crank screw to a torque of **32 Nm +/- 2 Nm**. The screw thread should already have a thread locking for safety. If no locking is on the thread, use a standard liquid screw locking (medium-strength). Caution: check this crank for correct positioning opposite the crank on the other side.

Now screw on the right-hand pedal in clockwise motion to a torque of **35 Nm +/- 2 Nm**.

You have now completed assembly of the Pendix eDrive. Please continue with Chapter 8. First ride.

The disassembly of the Pendix eDrive takes place in reverse sequence of the described steps.

Check the correct and safe function of the gearshift before the first ride. The chain wheels may have a slightly different position than before, this means a new adjustment of the gear change function may be necessary. Only ride if gears change without difficulty. Make sure the crank and the chain move without contact at all gear levels inside the chain guard.

Gear changing systems are safety-relevant components! All mechanical and adjustment work which is not carried out professionally by a specialist makes riding your bicycle dangerous! When adjustments are faulty, the chain of your bicycle can drop off and cause accidents through falling.

8. First ride

After completing installation and switching on the Pendix system for the first time, the motor control system runs an automatic calibration. Thus, when switching on for the first time, the calibration mode is indicated by a blinking green light on the LED display. To calibrate, please ride your bicycle during this blinking phase for at least 300 m (about 1,000 feet). In the beginning, the drive system (motor) is not yet supporting. Try to ride as steady as possible keeping to the same speed. As soon as the motor has finished calibrating successfully, the LED display shows a permanent green light and the motor is supporting. Please ride another 1,000 m with motor support for fine calibration.

After some first rides it can happen due to pro duction process, that there occurs some oil on the motor. This is no failure and has no interference on the functionality of the system. Its only excessive grease from sealing installation and can be wiped off.

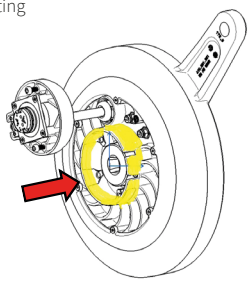
The calibration of the system is only possible by riding. The calibration on the workstand is not designated and will not bring positive result.

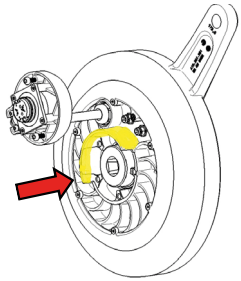
9. Mounting addition Pendix eDrive folding bike

Hints
Please use the original installation manual for mounting the Pendix eDrive. In this mounting extension you will find all information you need to mount the Pendix eDrive on a folding bike.

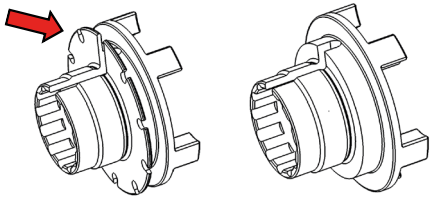
Pendix eDrive folding bike version
The Pendix eDrive folding bike version differs in the following points:

Motor flange: The flange on the back side of the engine becomes reworked mechanically so, that only one half of the flange is existing



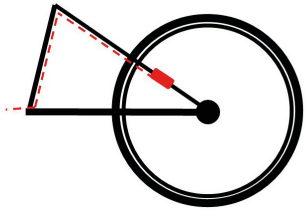


Bottom bracket mounting: The inner flange of this part got removed by mechanical reworking.



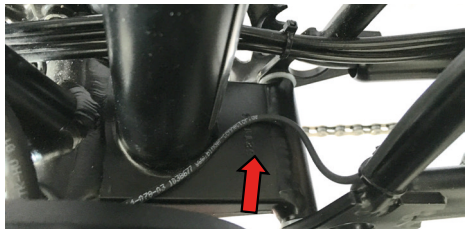
Mounting hints
The numbering in this mounting addition refers to the Pendix installation manual and give hints at the relevant points.

To 7.1 Wheel speed sensor
In the folding bike kit, there is a speed sensor with cable length of 580mm included. Positioning the sensor on the upper strut and run the cable along the strut like showed in the following picture.



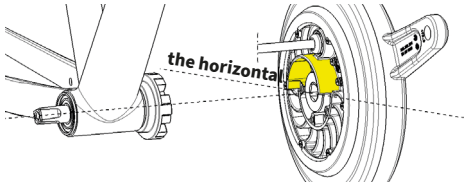
Take care of laying the cable in a way, that with folding the rear wheel, there is no stress to it. For that, lay a small loop in the area of the seatpost.

Please be carefully with the first try of folding for checking the space and the needed length of the cable without damaging it.



To 7.3 Battery holder
Please use the Pendix clamp mount for installing the battery holder to the bike. The manual for clamp mount is included in every set.

To 7.4 Drive system unit
The eMachine is mounted like described under 7.4. With that you have to make sure, that the motor got positioned with the existing flange on the motor above the bottom bracket. Due to the removed flange below the bottom bracket, you get the space for full folding functionality of the folding bike. It will not work always to mount the flange like in the following picture, with exact orientation to the horizontal, but most of the flange should be positioned above the horizontal.



Please continue with the further steps of the installation until the installation is finished.

10. Installation check list

In order to minimize the risk of liability for commercial fitters, we recommend the documentation of the installation using the "installation report" function, which is integrated in the Pendix.bike PRO App!

 **Before installation: inspection of safety-relevant components on the bicycle** If there are former damages on safety-relevant components identifiable that do not allow a safe operation, please desist from installing the Pendix eDrive as long as the deficiency on the affected components is not remedied. check	**check**
brakes (at least two brakes existing, functionality, wear)	
fork (age, visible damage, deformation)	
frame (age, visible damage, deformation)	
handlebar (age, visible damage, deformation)	
tires (flaws, wear)	
rims (visible damage, deformation)	
Before installation: Checking the requirements for Pendix installation done check	**check**
bottom bracket BSA thread / bottom bracket width 68 mm or 73 mm	
bottle mounts existing → if not: using Pendix clamp mounts	
installation space for battery & battery holder (down tube trapeze frame)	
chainwheel(s) with correct fitting dimension for crank (Ø104/ 64 mm bolt circle)	
frame material metallic? No → consultation with Pendix service	
cable length needed from motor through battery holder 250 mm/ 500 mm	
cable length needed from wheel speed sensor through motor 290 mm/ 580 mm	
During the installation: all installation works have to be done without battery inserted!	**check**
wheel speed sensor mounted and wires placed according to installation manual	
spoke magnet positioned and mounted according to installation manual	
bottom bracket thread greased	
spacers on bottom bracket according to installation manual at 68 mm housing width: used! 73 mm housing width: not used!	

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bottom bracket mounted with correct torque → right: 15 Nm ± 2 Nm and left: 65 Nm ± 3 Nm	
bottom bracket turns free without increased resistance	
battery holder mounted with correct torque → 4,5 Nm ± 0,5 Nm	
square shaft left and right on bottom bracket greased	
electric motor mounted with correct torque → 32 Nm ± 2 Nm	
pedal mounted with correct torque to the motor → 35 Nm ± 2 Nm	
sensors plugged to motor according to installation manual	
battery plug mounted with correct torque to holder → 2,4 Nm ± 0,5 Nm	
chainwheel(s) mounted to crank with correct torque → 9 Nm ± 2 Nm	
crank mounted to bottom bracket with correct torque → 32 Nm ± 2 Nm	
pedal mounted with correct torque to crank → 35 Nm ± 2 Nm	
After installation: Ensure that all components move freely	**check**
Inspection of clearance between all components, e.g. no contact between motor sealing ring and chain brace deflecting Fully MTB → no contact with other components center kick stand → swing out → contact with motor? Yes → mount other kick stand wires do not shuffle on rotating parts	
gearing/ chainline/ try all gears, possibly adjust gearing	
first activation according to installation manual	
test run	
For installation by commercial fitters only: documentation / handover to customer	**check**
fill in handover documentation + bicycle identification in bicycle manual (page U5, U6) and copy for your own retention	
fill in declaration of conformity and enclose to bicycle manual	
stick type label CE “EPAC EN 15194” on bicycle	
give installation manual, system manual and bicycle manual to customer	
determine the permissible total weight of the wheel and attach the label to the wheel.	
instruction for customer on the bicycle	
filled in retailer check list for your own files	

10.1 Comments

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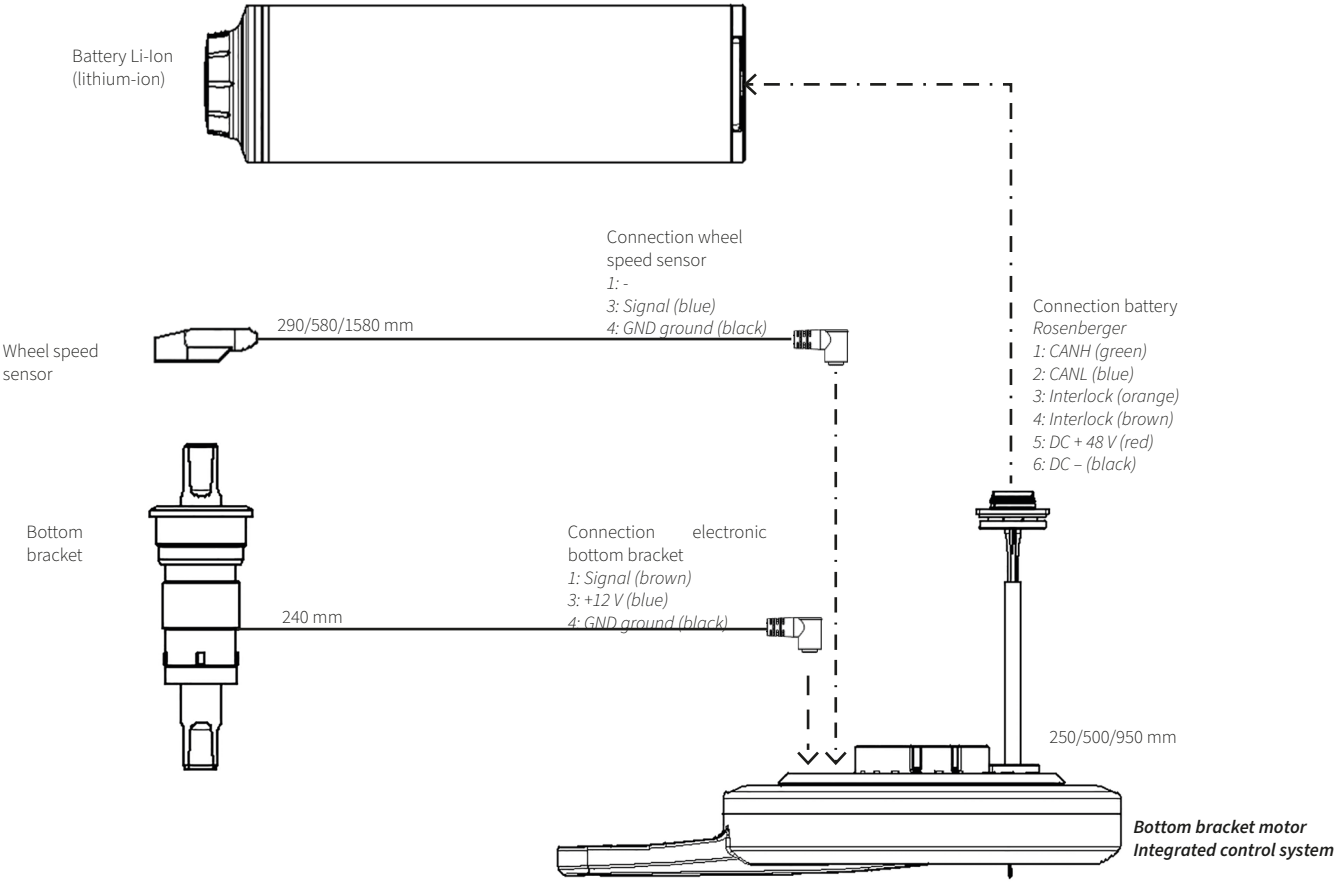
11. Guarantee conditions

Warranty regulations can be found at tac.pendix.com

The guarantee regulation can be found at:
- Austria: https://pendix.at/garantie
- Switzerland: https://pendix.ch/garantie
- Belgium: https://pendix.be/garantie or https://pendix.be/en/warranty
- Netherlands: https://pendix.nl/garantie or https://pendix.nl/en/warranty
- all other countries: https://pendix.com/warranty

12. Wiring diagram



13. Technical data/ Maintenance

eMachine	
Motor	gearless mid-mounted motor
Performance	250 W nominal
Speed (max)	25 km/h
Assistance levels	3
Torque (max)	65 Nm
Sound pressure level Lpmax in dB(A)	
passing through with motor	45.1
Starting with motor	49.0
ePower300 (battery)	
Type	Lithium-Ionen 13S2P
Capacity	300 Wh nominal
Voltage (norm)	48 V
Distance*	37 - 72 km
ePower500 (battery)	
Type	Lithium-Ionen 13S3P
Capacity	497 Wh nominal
Voltage (norm)	48 V
Distance*	62 - 120 km
Dimensions (width x height x depth)	
ePower300 (battery)	80 x 276 mm
ePower500 (battery)	80 x 342 mm
eMachine	292 x 206 x 50 mm

*the generated riding profile "performance" (factory settings) data is depending on parameters as total weight, driving behavior, topography, pedaling cadence and bike type

Overall system	
System weight	6.9 kg (eDrive300) 7.3 kg (eDrive500)
Operating temperature	-10° C to +50° C
Storage temperature	-20° C to +60° C

Tightening torque values for screw connections		
Battery holder on the frame (with safety screws)	4.5 Nm	± 0.5 Nm
Right-hand assembly side (greased)	15 Nm	± 2 Nm
Bottom bracket mounting (greased)	65 Nm	± 3 Nm
Crank screw left/right (with safety screws and grease on square shaft)	32 Nm	± 2 Nm
Pedal left/right	35 Nm	± 2 Nm
Connector cover to battery holder	2.4 Nm	± 0.2 Nm
Chain wheel screws, steel	9 Nm	± 2 Nm

The built-in electronic bottom bracket is a mechanical wearing part. The durability is specified with 20,000km, after which the bottom bracket should be replaced.

14. Imprint

Responsible for content and illustrations
Pendix GmbH
Innere Schneeberger Straße 20
08056 Zwickau
Germany
Telephone: +49 (0) 375 270 667 10
email: info@pendix.de

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These operating instructions are covered by requirements and scope of EN ISO (European Norm, International Standards Organization) 4210:2014 and 15194:2017.

When supply and effective use are outside the range of these instructions, the relevant instructions by the manufacturer of the bicycle used must be included.

Pendix EN, 11.21 Rev.03, A3D.705.003

Pendix GmbH
Innere Schneeberger Straße 20
08056 Zwickau
www.pendix.de
Germany

In service cases please contact your contracting partner.

15. EC Declaration of Incorporation *by the drive supplier*

In accordance with EU Machine Directive 2006/42/EC dated 17 May 2006, Annexe II B
We herewith declare that the partly completed machine described below, in its design and structure as well as in the form made commercially available by us, agrees with the following fundamental safety and health requirements to Annex I of Directive 2006/42/EC of the European Parliament.
Nos. 1.1.3.; 1.2.1.; 1.2.2.; 1.2.3.; 1.2.6.; 1.3.4.; 1.3.9.; 1.5.1; 1.5.2.; 1.5.4.; 1.5.5.; 1.5.6.; 1.5.8; 1.5.10.; 1.5.11.

Putting into operation (commissioning) is not allowed until and when – insofar as applicable - the machine into which the incomplete machine or machine part is to be installed, fully agrees with the regulations laid down in Machine Directive 2006/42/EU.
The technical documentation in accordance with Annexe VII part B have been provided, and will be transmitted to the relevant (electronic) references in the separate states upon justified request to do so.

Manufacturer:
Pendix GmbH
Innere Schneeberger Straße 20
08056 Zwickau

Description and identification of the machine:
Function: Electric bicycle support motor (up to 25 km/ h or 15 ½ mph)
Type/model: Pendix eDrive
Serial number:
Construction year:

We herewith agree conformity with other guidelines/directives also applying to the product:
- RED Directive on the making available on the market of radio equipment (2014/53/EU), includes compliance with the EMC Directive (2014/30/EU) as well as the Low Voltage Directive (2014/35/EU),
- RoHS II Directive (2011/65/EU)

Other guidelines followed:
- Directive on batteries and accumulators 2006/66/EC
- WEEE - Directive 2012/19/EU

Applied harmonized standards (norms) and technical specifications followed:
- according to MD: DIN EN ISO 12100 | DIN EN ISO 13849-1 | DIN EN 15194 | DIN 4210:2014
- according to RED: EN 300 328 V1.8.1 (4.3.1.1, 4.3.1.7, 4.3.1.8, 4.3.1.9, 4.3.1.10) | 301 489-1 | 301 489-17
- according to EMC: EN55014-1:2017 | EN 55014-2:2015 | EN 61000-3-2:2019 | EN 61000-3-3:2013
- according to LVD: EN 60335-1:2012+A11+A13 | EN 60335-2-29:2004+A2

Authorized representative for technical documentation:
Christian Hennig
(see Manufacturer's address)

Place / date:
Zwickau, the 27th of September 2023

legally responsible person, details:

Christian Hennig, Chief Technical Officer (CTO)

Only to be observed by commercial installers

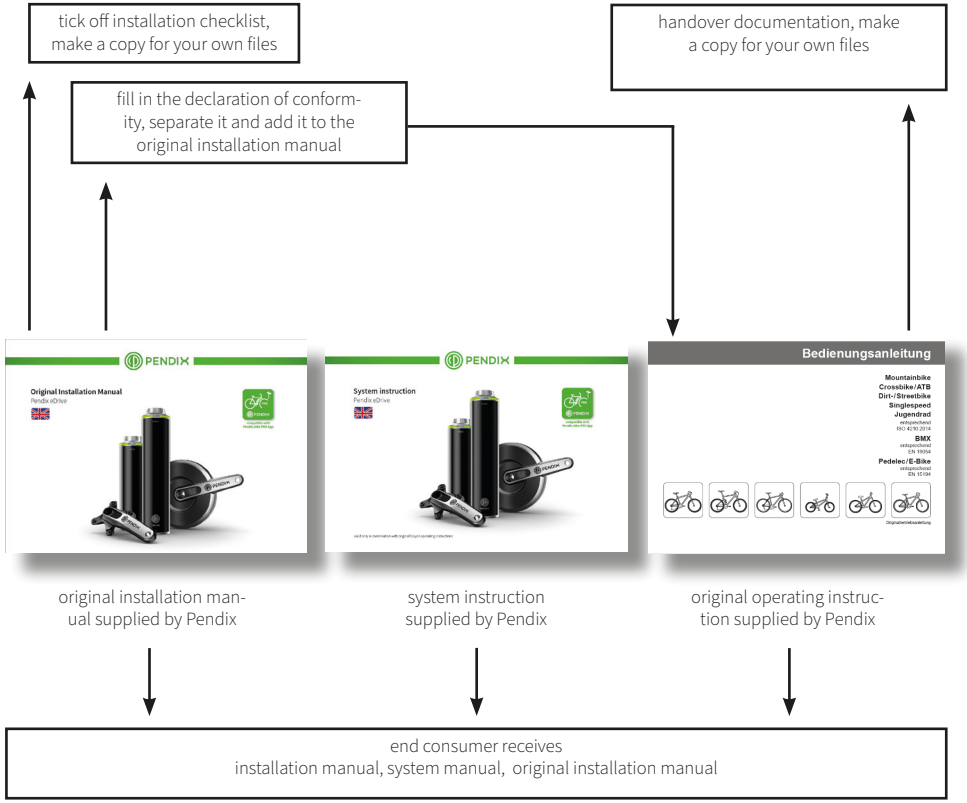
16. Installation documentation *by the installation company*

At the moment of the installation of the Pendix eDrive, you are going to be a manufacturer of a machine according to the machinery directive. Linked to this are i.a. obligations to supply an original installation manual as well as issuing a declaration of conformity.

- The original installation manual for Pedelecs exists in a general form and is delivered by Pendix with every Pendix eDrive order. The bicycle identification & handover documentation (back cover pages) are inserted in the original installation manual for Pedelecs and have to be filled out before every retrofitting process to record the condition of the components on the bicycle at the moment of the installation. Please copy all the documentations and add them to your files. We recommend to use the digital report function in the Pendix.bike PRO App to make notes about the retrofitting process and to save it in the Pendix portal to be able to view it anytime. The original installation manual and the converted bicycle will be handed over to the end consumer.

- Furthermore it is required to certificate a declaration of conformity which has to be handed over to the customer. The installation report in the Pendix.bike PRO App makes sure that the declaration of conformity is saved and is provided for you and your customer in the Pendix portal. Alternatively you can fill in the declaration on the following page with your details and detach it from the installation manual. After that you simply attach it to the original installation manual.

- We strongly recommend the usage of our installation checklist which contains all necessary steps to the extensive installation of the Pendix. The installation checklist provides a good checkup of all performed testings and assembly steps.



EU Declaration of Conformity *by the installation company*

In accordance with EU Machine Directive 2006/42/EC dated 17 May 2006, Annexe II A
We herewith declare that the machine described below, in its design and structure as well as in the form made commercially available by us, agrees with the fundamental safety and health requirements of Directive 2006/42/EC of the European Parliament and of the Council, of 17 May 2006 on Machinery.
In the case of changing the machine in a not coordinated way with us, this declaration will lose its validity.

Manufacturer:

Name: .....

Address: .....

Postcode, city: .....

Description and identification of the machine:

Function: Pedelec up to 25 km/ h

Type/model: Pedelec with Pendix eDrive

Serial number: .....

Construction year: .....

We herewith agree conformity with other guidelines/directives also applying to the product:
RED Directive on the making available on the market of radio equipment (2014/53/EU),
includes compliance with the EMC Directive (2014/30/EU) as well as the
Low Voltage Directive (2014/35/EU)
RoHS II Directive (2011/65/EU)

Other guidelines followed:
Directive on batteries and accumulators 2006/66/EC
WEEE - Directive 2012/19/EU

Applied harmonized standards (norms) and technical specifications followed:
according to MD: DIN EN ISO 12100 | DIN EN ISO 13849-1 | DIN EN 15194 | DIN 4210:2014
according to RED: EN 300 328 V1.8.1 (4.3.1.1, 4.3.1.7, 4.3.1.8, 4.3.1.9, 4.3.1.10) | 301 489-1 | 301 489-17
according to EMC: EN55014-1:2017 | EN 55014-2:2015 | EN 61000-3-2:2019 | EN 61000-3-3:2013
according to LVD: EN 60335-1:2012 +A11+A13 | EN 60335-2-29:2004+A2

Place/Date:

..... , dated .....

legally responsible person, details:

....
name, first name position in the firm

Signature:

Own notes

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Own notes

Own notes

EN

Installation manual Pendix EN
A3D.705.003-R04-CN21.322.001

Rev.04_09-2023

This Pendix eDrive was assembled by:

Pendix GmbH
Innere Schneeberger Straße 20
08056 Zwickau
Germany

www.pendix.com