

Product training

MAHLE SmartBike Systems



MAHLE - A Globally Successful and Reliable Partner

12.6 bn. EUR

Turnover



>79.000

Employees



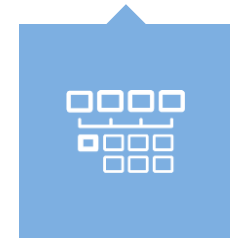
16

Research- & Development Centers



6 & 1

Profit Center & Division



Foundation



160

Production Locations



4

Business Units

Every second car produced worldwide
contains MAHLE components.

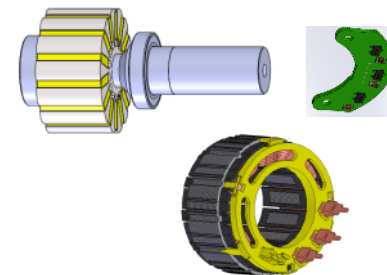


Product Overview Ebike Drive Systems

MAHLE Open Market Full Pedelec Drive Systems



Light-Weight
Mid-Drive Unit

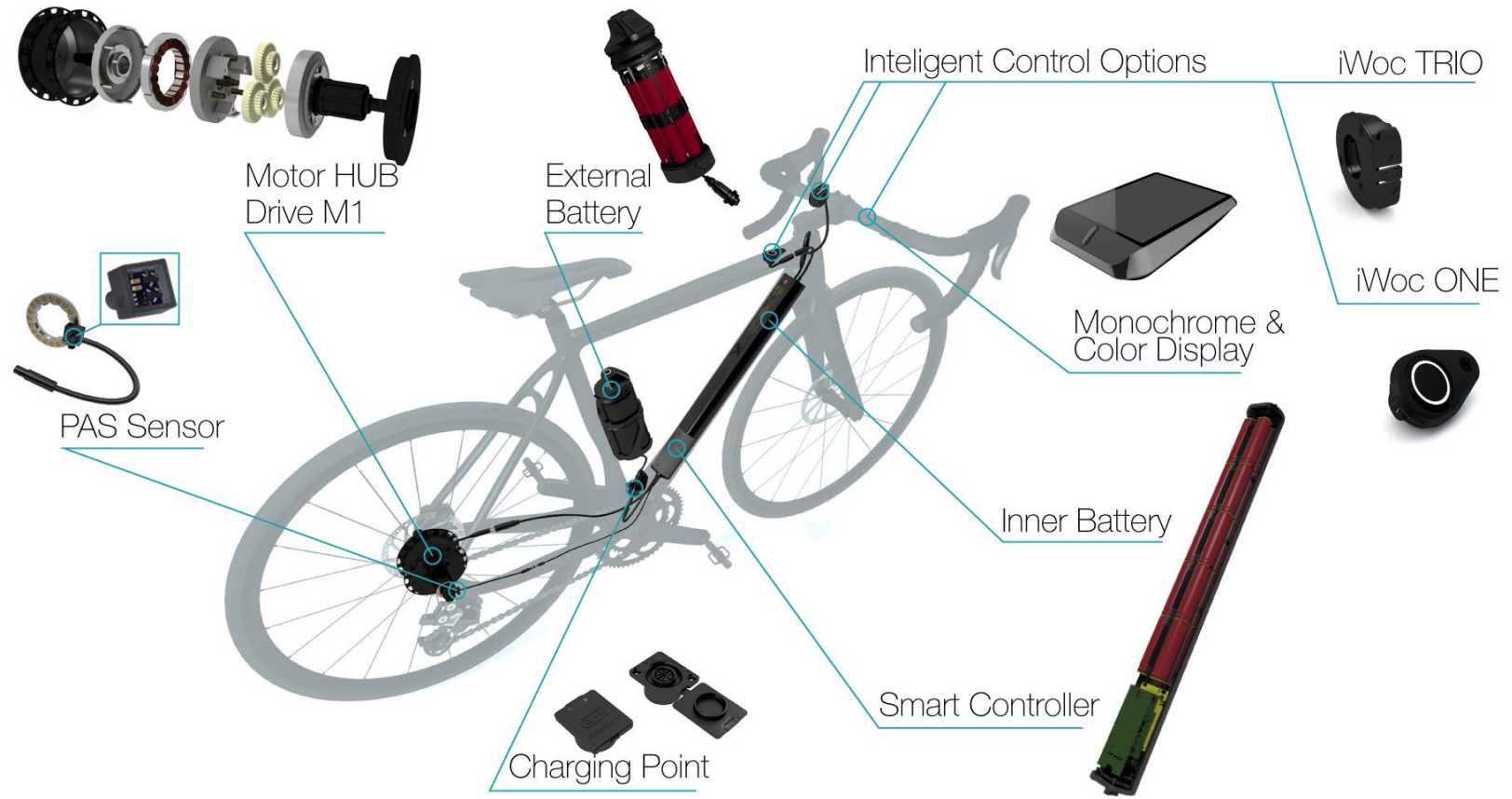


Performance
Electric Motor

X35 System at a Glance



Driven by performance



X35

B1 (Inner Battery)

Battery B1

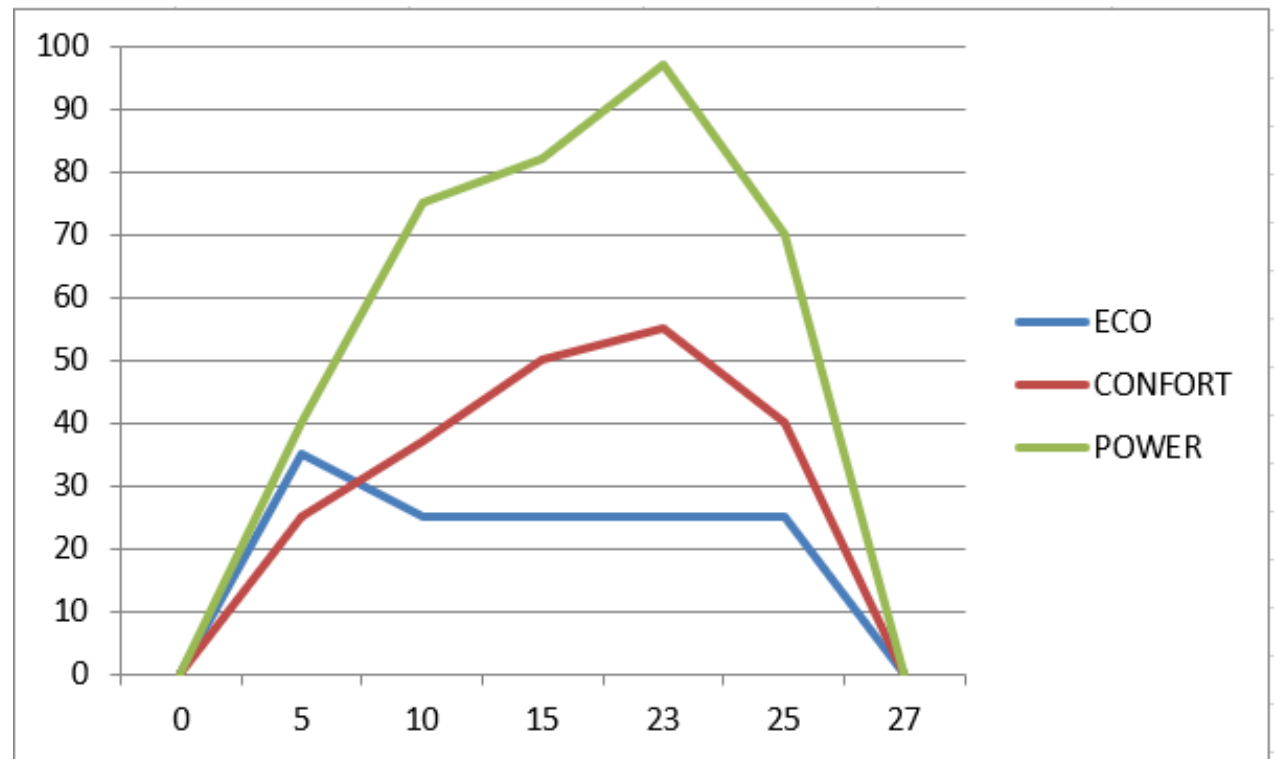
- 250 Wh
- CAN BUS Compatible
- Motor Controller and Bluetooth® integrated in the housing
- Compatible with range extender / additional battery
- Weight 1.5 Kg



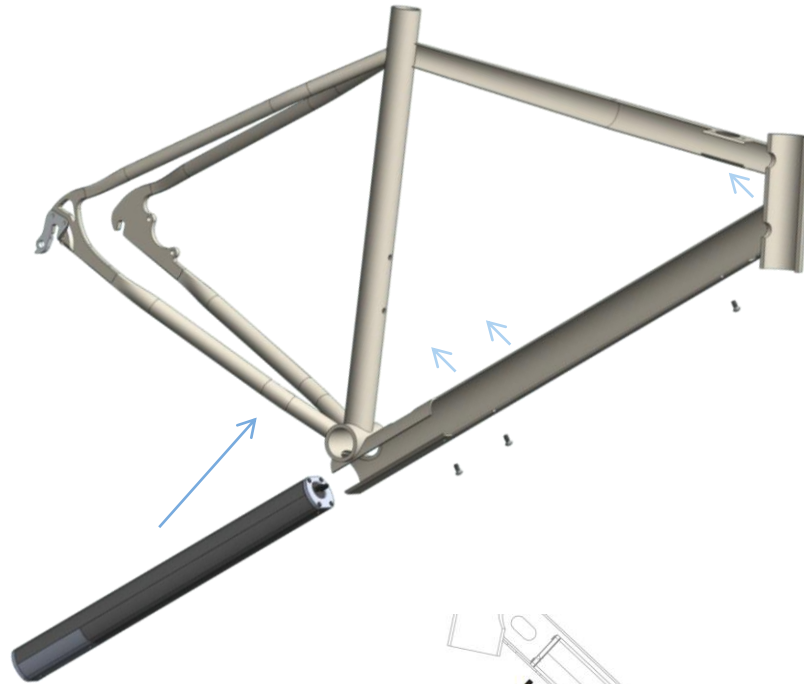
X35

Power outlet

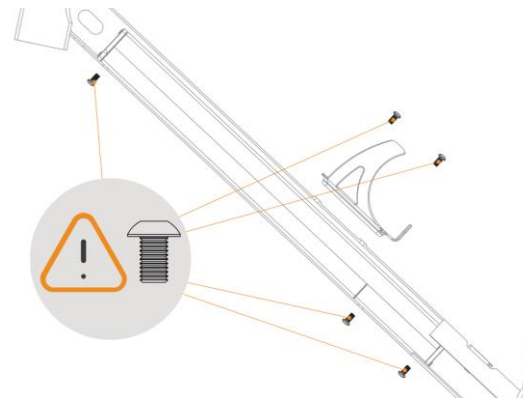
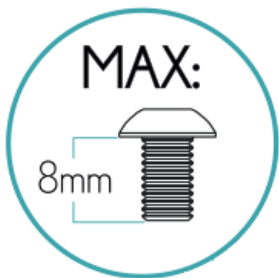
- Customized levels of assistance for every brand and model.
- Every bike can feel different
- Cross changing batteries (from urban to eRoad etc.) will impact the feeling of the bike.



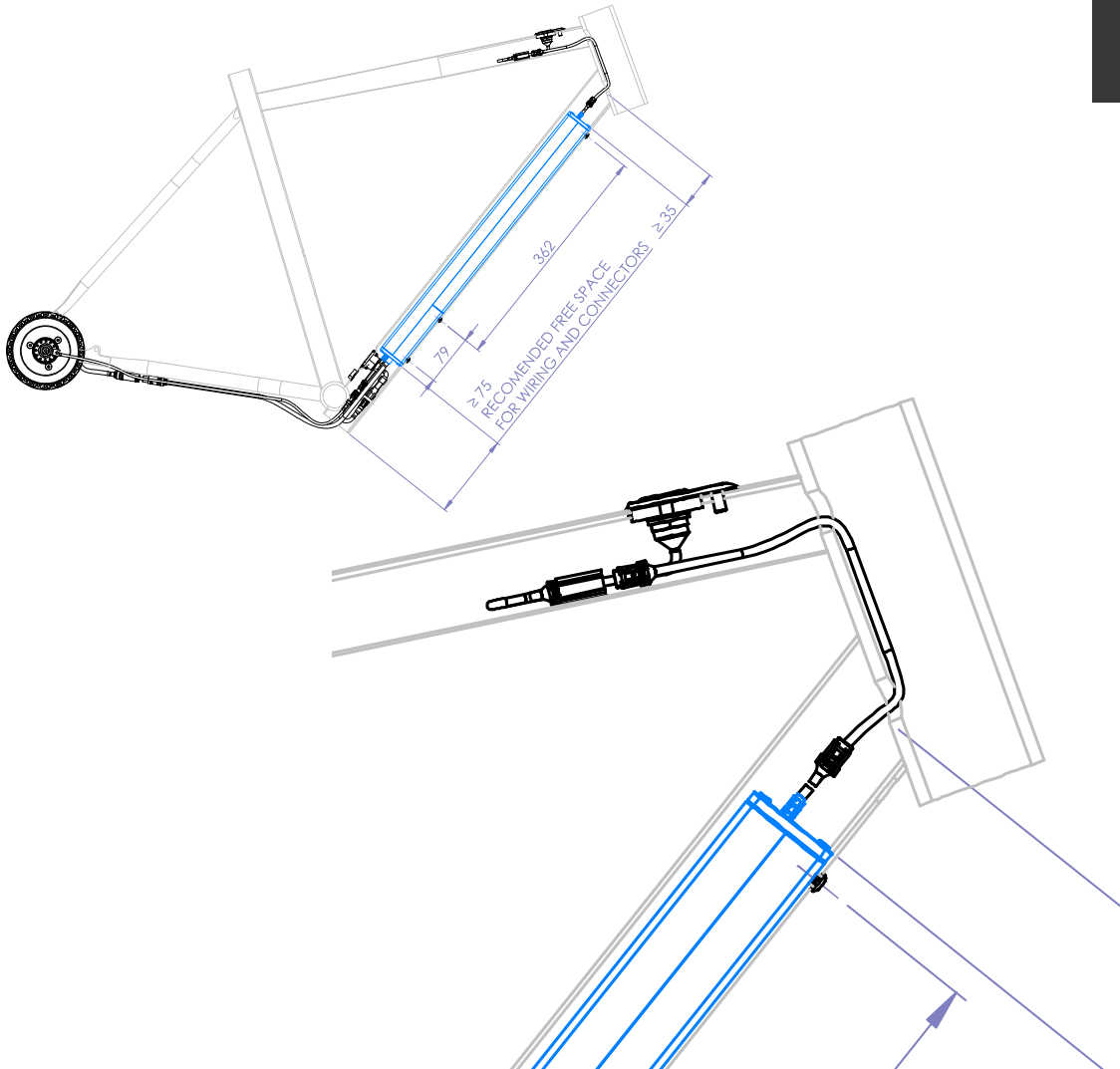
Battery integration



- Easy battery integration by three M5 x 8mm screws.
- The length of the screws is critical – battery can be damaged



Battery Wiring



Check the battery wiring:

- Removing the fork might be required before removing the battery
- Connectors can be protected with tape

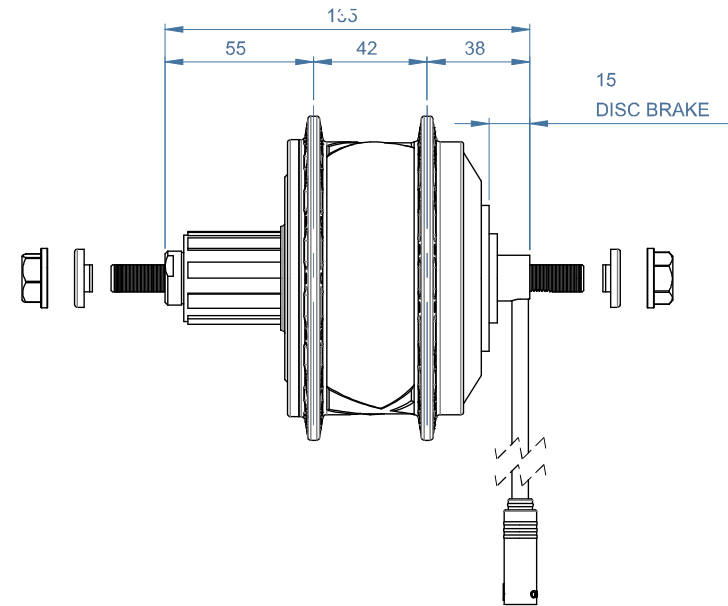
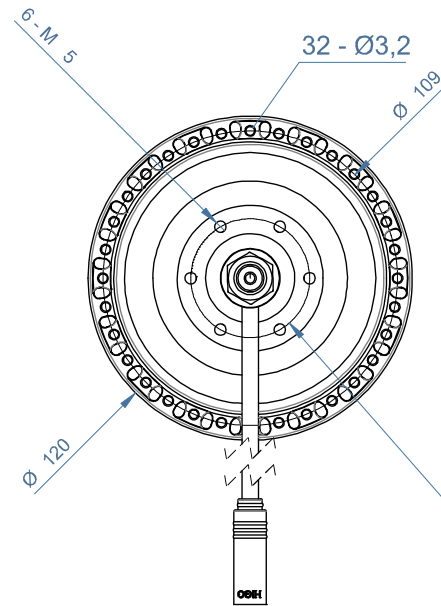
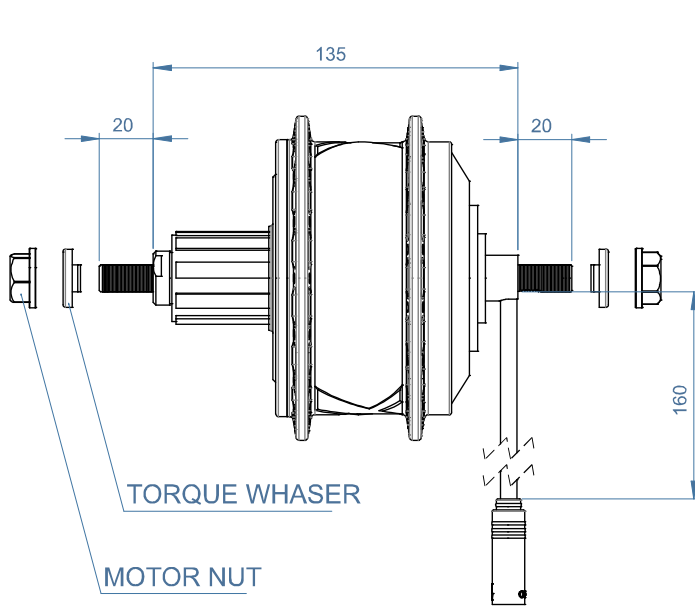
X35**X35+ M1 (Drive Unit)****Motor M1-36/250W**

- Weight 2,0 kg
- Nominal Power 250W
- HG freehub body only (up to 11sp)
- Disc brake compatible
- Specific dropout design
- 135mm rear spacing



X35

Technical drawing



X35

Assembling Tools



Open end wrench 17mm



8mm Allen key

X35

Assembling



None drive side: spindle securing nut, washer with securing nose (torque washer), plastic cover for motor cable

Drive side: Freewheel securing nut, washer with securing nose (torque washer), spindle securing nut

Torque for the spindle nuts is 20Nm!

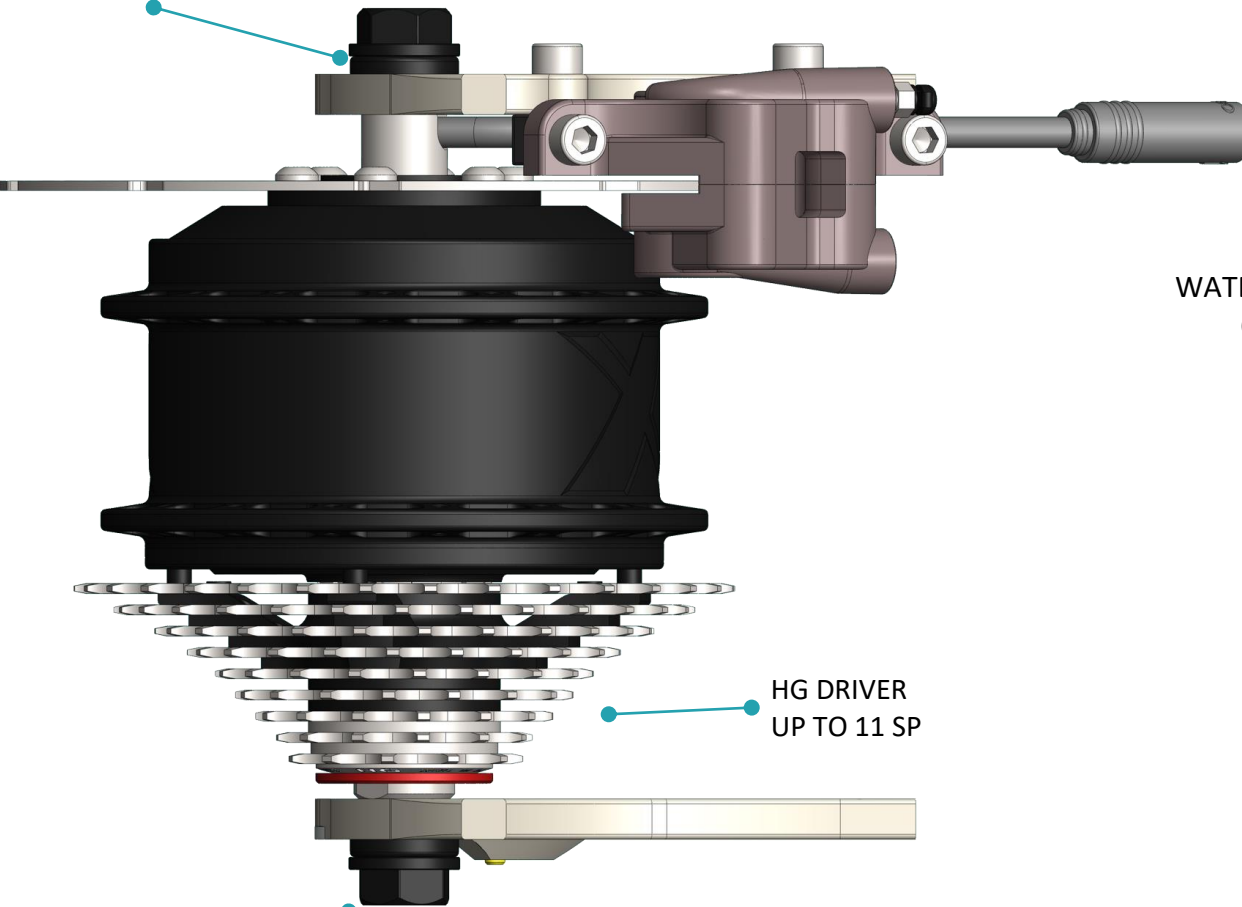
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Assembling

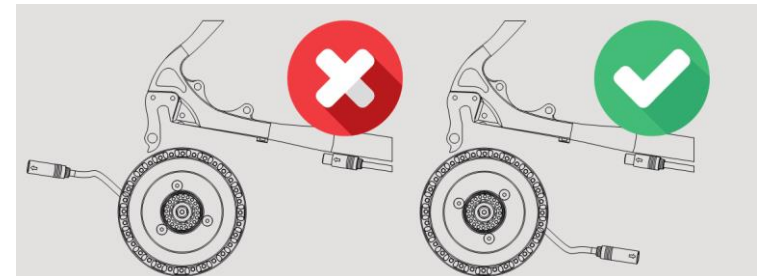
TORQUE WASHER



HG DRIVER
UP TO 11 SP

MOTOR NUT

WATERPROOF MOTOR
CONNECTOR



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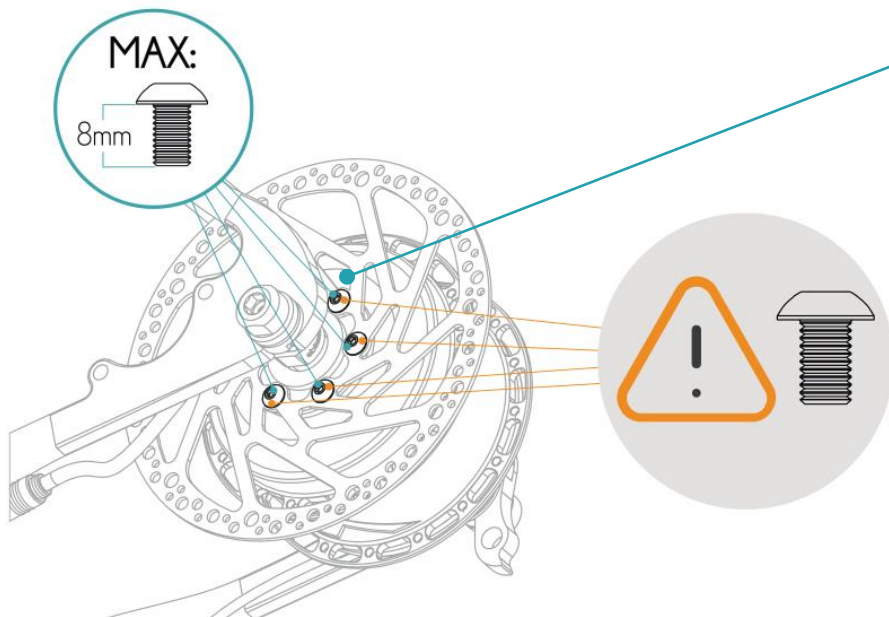
Assembling



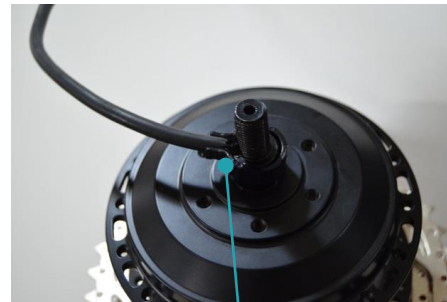
- The open side of the plastic cover which holds the cable, faces towards the frame.
- The closed side needs to face towards the motor unit.

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Assembling



Disc rotor with 8mm OEM screws



Shield to protect motor cable



Magnetic locking

Note:
Shimano screws can be up to 10mm long – will damage
the electric machine

X35 - MOTOR

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Freewheel Service / Open the motor unit



X35

Freewheel replacement



Remove the three T25 bolts behind the cassette



Connect the three hole side of the tool to the drive side of the motor unit



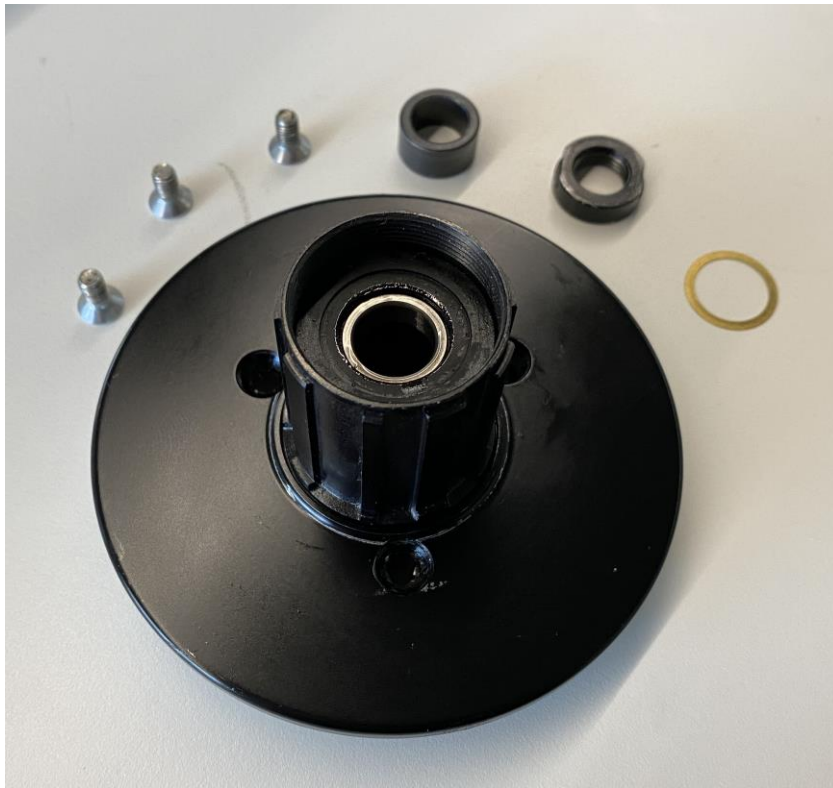
Connect the six hole side of the tool to the non-drive side of the motor unit



Open the motor unit by turning counter clockwise

X35

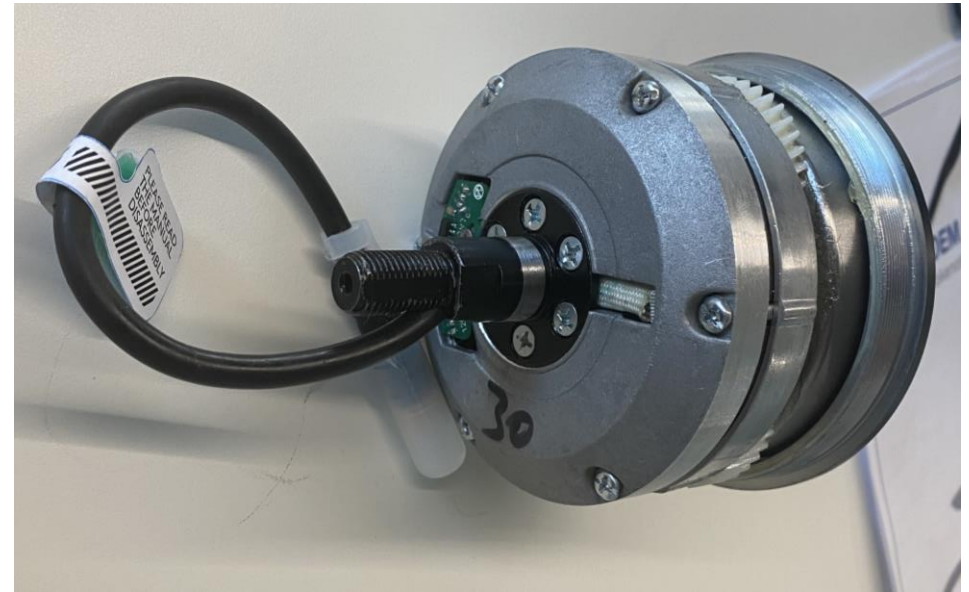
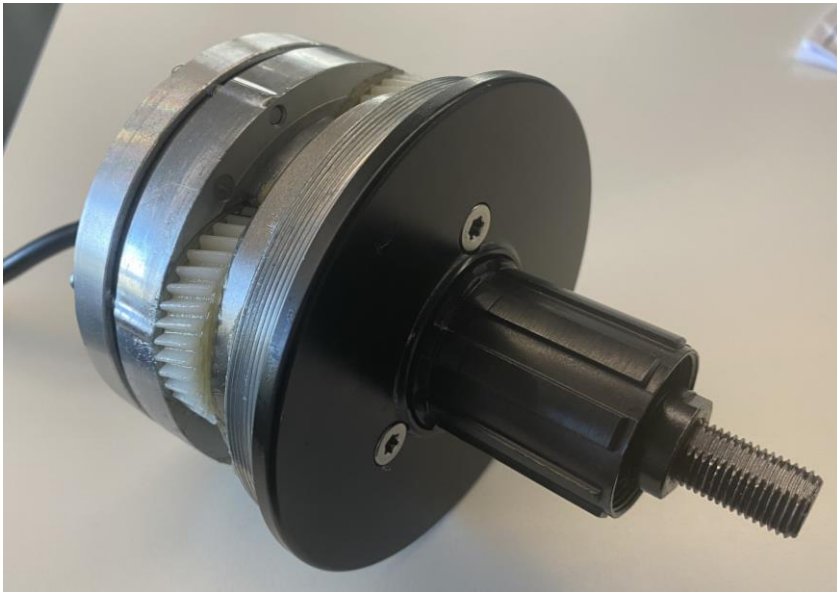
Freewheel replacement



**The freewheel always is connected to the outer plate of the motor unit.
If a freewheel is faulty or has worn out bearings you have to remove the whole unit.**

X35

Electric motor replacement



If the motor unit needs replacing this is the spare part that is delivered.

X35

iWoc[®] remote



iWoc[®] ONE

One Button – round LED for:

- Battery indicator
- Assistance level
- Status
- Lights
- Communication (Bluetooth)



iWoc[®] TRIO

Three Button – one LED, Vibration:

- Resistive Communication
- Installation on handlebar
- Compatible with Display, etc.

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iWoc[®] ONE

- Integrated into the frame
- Integrated LED ring
- Different LED colours depending on the battery status, power level, bluetooth connection etc.





PAS Motor Sensor

Integration in the motor / rear triangle / dropout

By integrating the PAS Sensor in the motor, no additional sensor is required (ie within the BB). This allows any standard Bottom Bracket to be installed. This system is under ebikemotion Technology Patent (Utility Model).

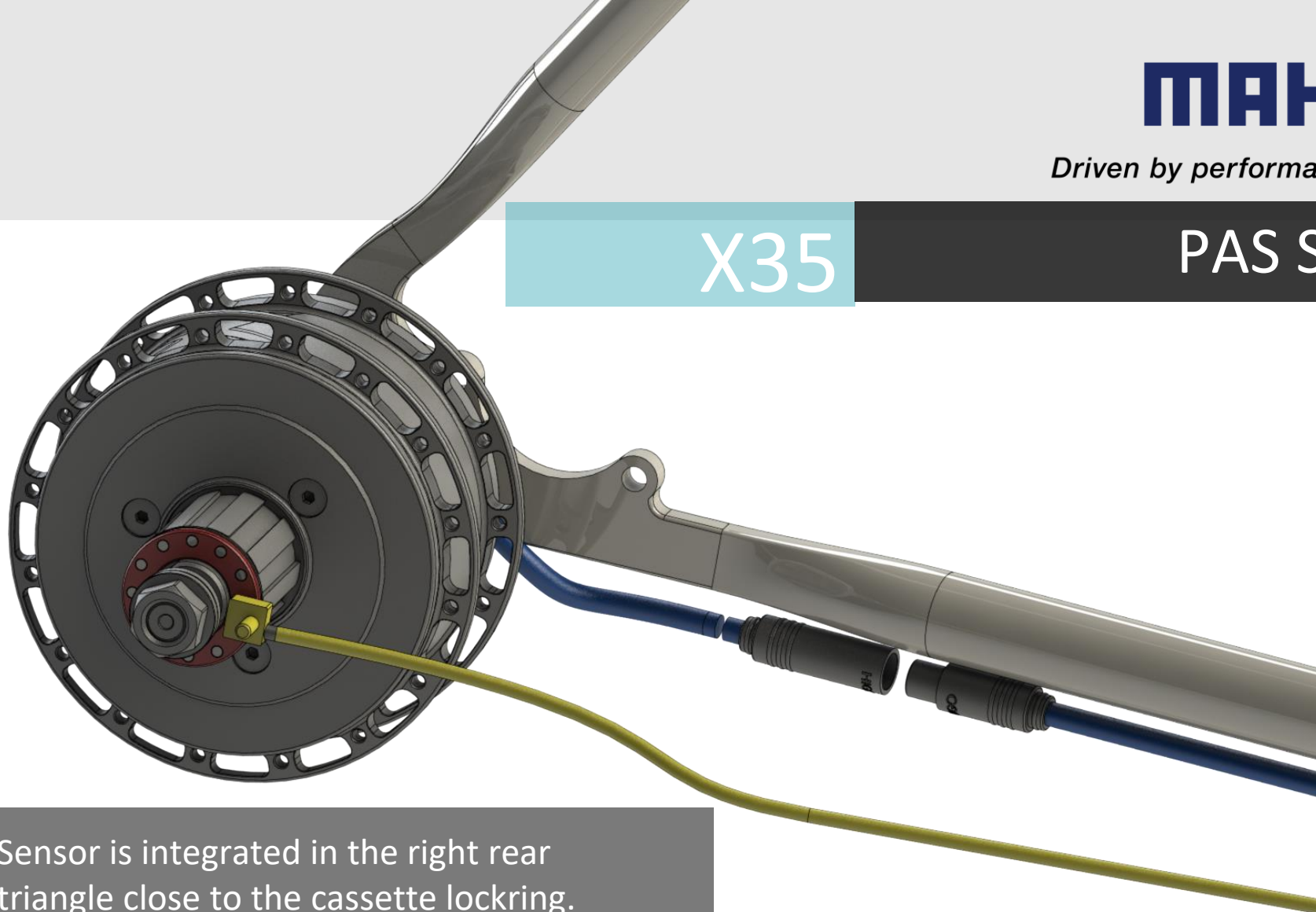
- A HALL sensor is integrated in the frame close to the cassette lockring
- The movement of the cassette detects assistance from the drive unit

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PAS Sensor



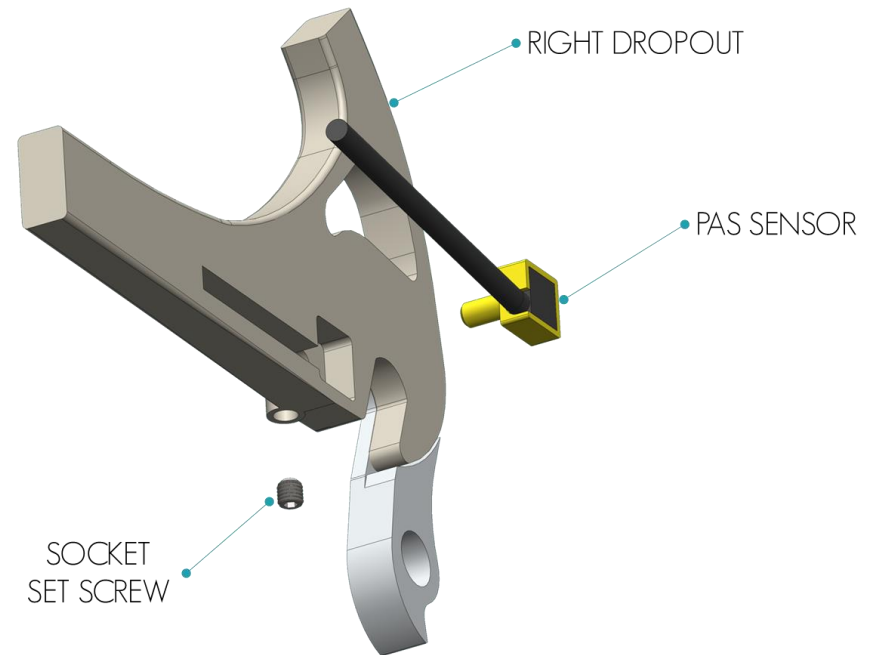
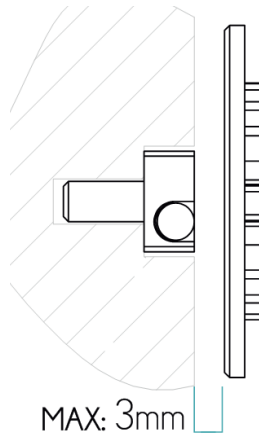
- Sensor is integrated in the right rear triangle close to the cassette lockring.
- Allows the X35 System to be compatible with every BB standard

X35

PAS Sensor



The distance between the sensor and the locking should not be below 3mm



X35

Charging Port



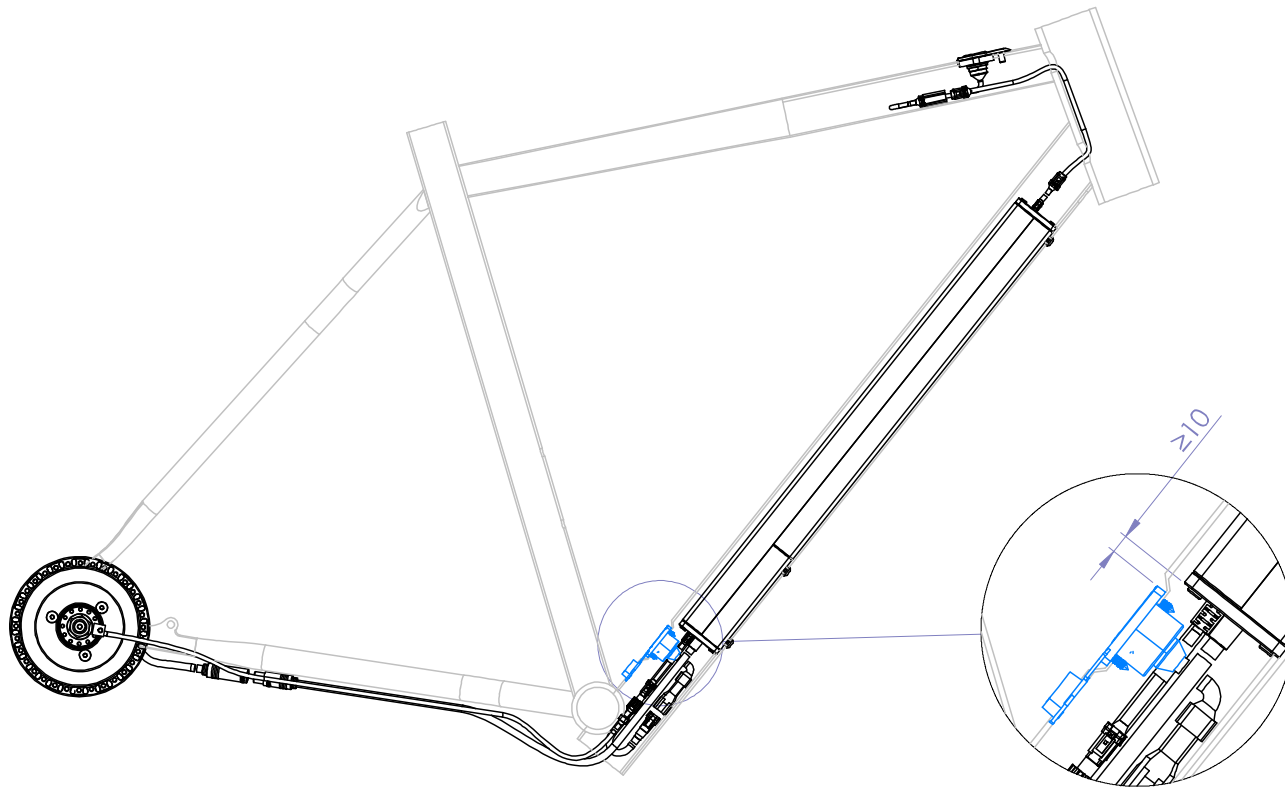
- Charging the battery
- Connecting the Range Extender Battery
- Diagnostic Port/Software upload

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Charging Port



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TIGHTENING TORQUE

	HUB MOTOR			BATTERY	ONE	TRIO	PAS	CHARGE POINT		
	Magnet Ring	Dropout Nut		Brake Disc Bolts	DT Bolts		TT Bolt	HB Ring	DO Stud	BB Bolts
TIGHTENING TORQUE	35 Nm	<i>Carbon</i>	<i>Alloy</i>	5,5 Nm	<i>Carbon</i>	<i>Alloy</i>	0,6 Nm	0,7 Nm	0,4 Nm	0,8
		20 Nm	23 Nm		4,5 Nm	5 Nm				
TYPE	M30,5x3,5mm	NUT M12 pitch 1,25mm		M5x8mm ISO 7380	M5x10mm ISO 7380		M3x10mm DIN 7991 / ISO 10642	M3x10mm ISO 4762 / DIN 912	M4 ISO 4026 / DIN 913	M3x8mm DIN 7991 / ISO 10642
QUANTITY	x1	x2		x6	x3 Hor / x2 Vert		x1	x1	x1	x2

X35

Range Extender

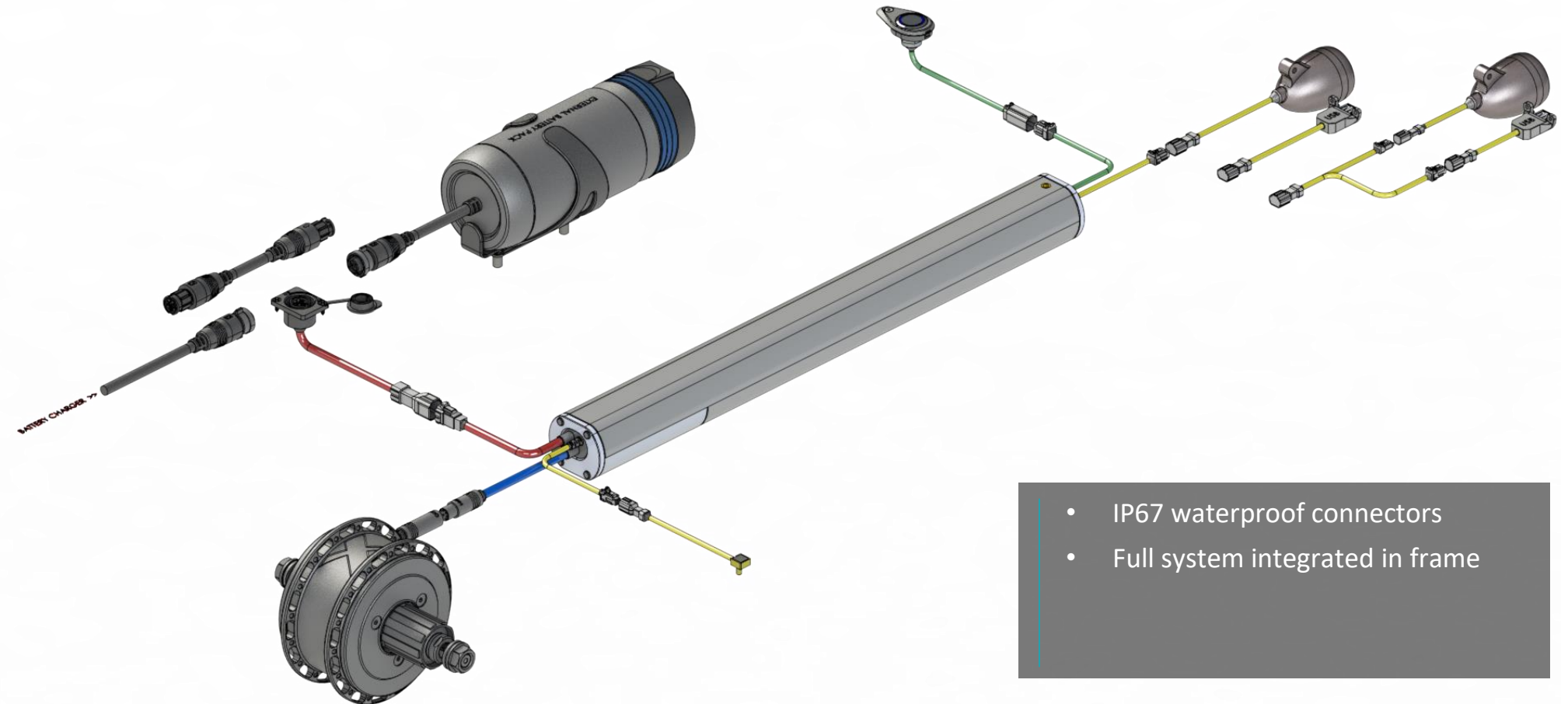


- 36V
- 208 Wh
- - 5,8Ah
- Smart BMS Balanced
- CAN BUS Compatible
- Intelligent Power Management

Functionality:

The bike can be charged with both batteries installed. Main battery will be charged first.

X35 Wiring Reference



- IP67 waterproof connectors
- Full system integrated in frame

X35**Smart Charger****Intelligent charger:**

- Plug charger into AC (wall socket) first.
- When connected to AC, if the LED is red (indicates a malfunction) – do not connect to eBike
- Connect only to AC when LED is green
- If LED is green and the battery of bike is below 90%, the LED turns red and iWoc starts flashing



X35

GCU Cable

What is the GCU cable needed for?

- Firmware Updates
- Configuration Update
- Activate new functionalities



X35

GCU Cable

How Updates work:

- Update files need to be saved on an empty USB stick (smaller than 32GB / FAT32 format)
- Connect the GCU cable to the charger and wait for the GCU LED to turn white
- Switch off the bike
- Connect the GCU cable with the charging port of the bike – LED turns green
- While updating the LED will turn yellow
- If the LED turns pink or red the process needs to be started over and / or the update files on the USB stick needs to be renewed
- Battery level should be above 85%

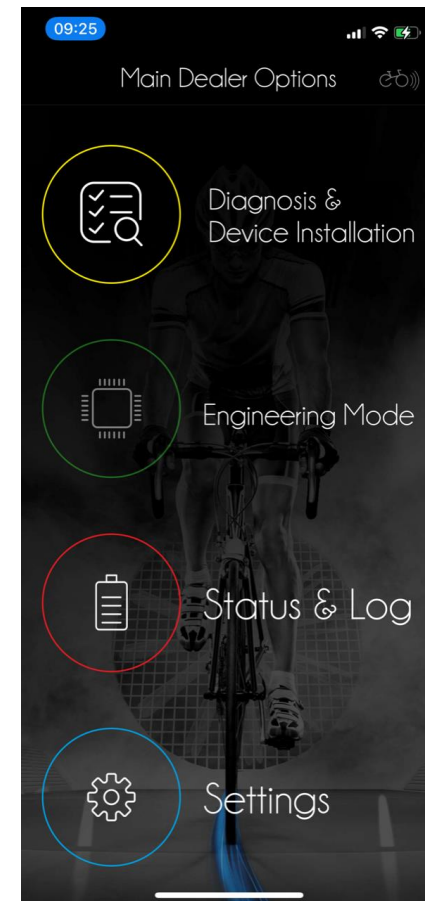


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Dealer APP

Dealer Application:

- Diagnosis
- Installing new components (e-SN)
- Engineering mode
- Specific documentation



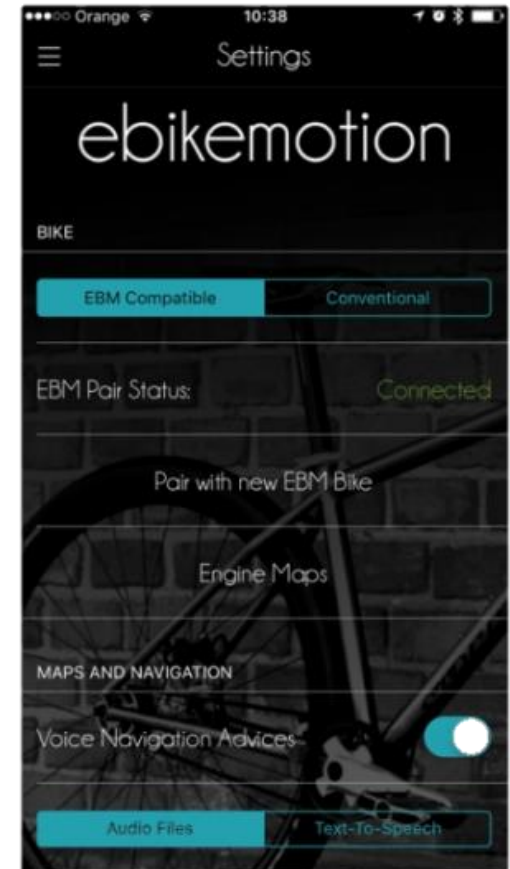
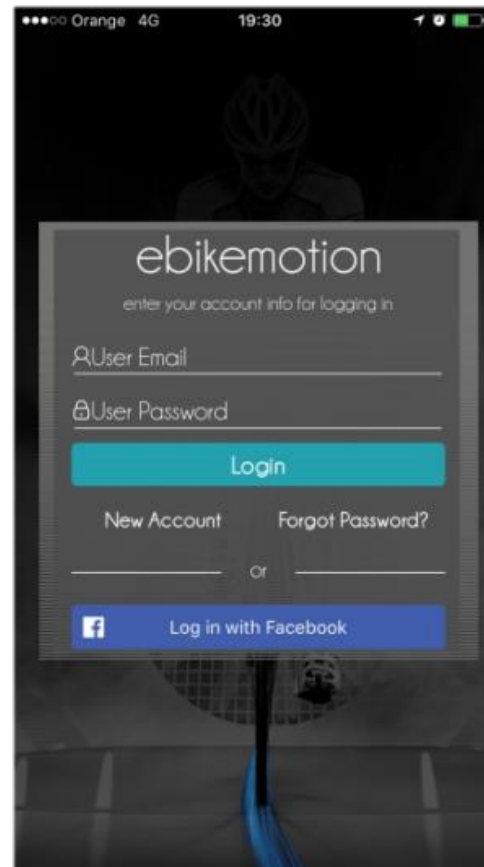
MAHLE SmartBike System User App

X35

User APP





User Application:


- Easy account creation
- Battery status
- Assistance
- Navigation
- Heart rate monitoring
- Motor mapping
- Etc.



X35

Website dashboard

Welcome to MAHLE ebikemotion SLU  English  Log out



simon.kolmstetter
My profile ▾


Dashboard


- My eBikes
- Activities
- Calendar of events
- Documentation


Users


- eBikes
- Contents
- Banners
- Premium package
- Device models


Welcome, simon.kolmstetter


Total distance  0.00 Kilometers

Total time  00:00:00 Hours Min. Sec.


Total calories  0.00 Kilocalories


Total ascended el...  0.00 Meters


Total activities  0 Activities

Total challenges  0 Challenges

Activity summary


 No activities found.



Create events 




Drag an event type and drop into calendar.

Meeting


Calendar of events 


  today November 2020 month week day

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14

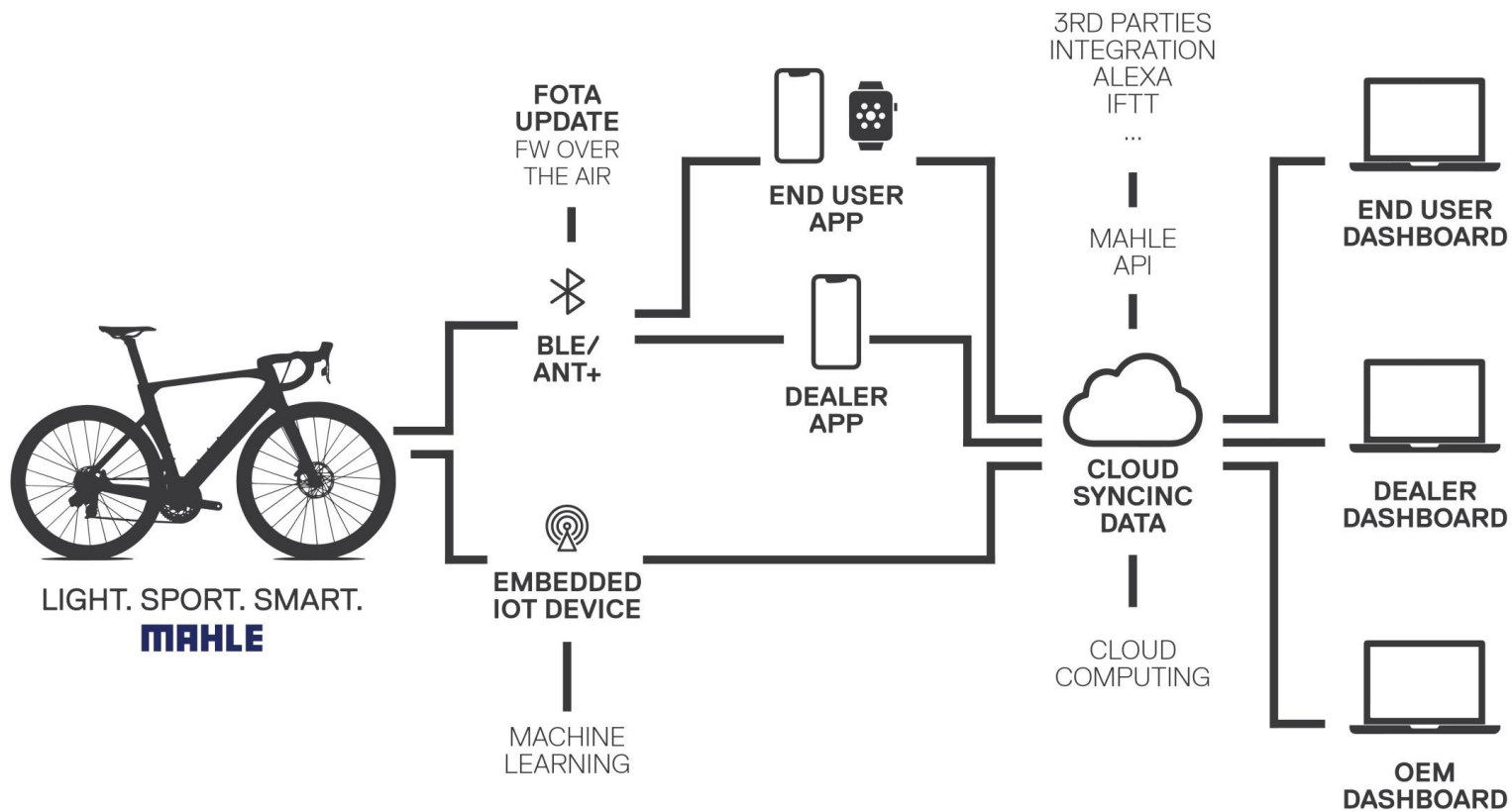
Friends 

No friends were found.

User devices 

 iPhone12,3

Everything is connected



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Questions?

Any questions?

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Thanks for your time