
SCHEELS
402

ELECTRIC BICYCLES
12 MAY 2021

JASON KURTZ

Who is Jason Kurtz?

- Grew up in Janesville, Iowa
- Started cycling 25 years ago
- Attended Hawkeye Community College
  – Liberal Arts Degree
- Mechanic and sales at Europa Cycle and Ski
- Scheels for past 14 years
- Mountain Biking is my cycling love

WHY ELECTRIC BICYCLES?

- MORE ADULT INTEREST IN CYCLING
- LITHIUM BATTERIES (LIGHTER WITH MORE STORED ENERGY / POWER CAPABILITY)
- NEW MOTOR AND CONTROL TECHNOLOGY
- LOTS OF SUPPLIERS, OFFERING MANY E-BIKE OPTIONS
- COSTS ARE COMING DOWN

WHY ELECTRIC BICYCLES?
(CONTINUED)

ALLOWS LONGER AND EASIER RIDES

ALLOWS ALL LEVELS OF RIDERS TO RIDE WITH A CYCLING GROUP.

MID MOUNT VS HUB MOUNT

https://youtu.be/vnBVXULCjSY

THE MARKET OFFERS MANY E-BIKE OPTIONS

(MOST WITH HUB MOUNT MOTORS)



Trike (hub)



Mountain (mid)



Folding commuter (hub)

Hunting (mid)





Cargo hauler (hub)

TREK WITH BOSCH MOTORS

MODELS WITH APPROXIMATE PRICE RANGES

NOTE THAT ALL SHOWN HAVE MID MOUNT MOTORS

MID MOUNT MOTORS HAVE THE GEAR RATIO AT THE REAR WHEEL TO MULTIPLY THE MOTOR TORQUE

TREK - CITY AND HYBRID ELECTRIC BIKES



Verve+

$2649 -$3149



Allant+

$3599-$5999



Vale Go!

$3299

TREK - ELECTRIC MOUNTAIN BIKES



Powerfly



Powerfly Equipped

$3699-$5999



Rail

$5000-$13000



E-Caliber

$8500-$13000

TREK - ELECTRIC ROAD BIKES



Domane+ HP

$7000-$7500



Domane+ LT

$5500-$12500 (LT9)
SPECIAL? LT9 $24500



Domane+ ALR

$4600

	 **Active Line** (20 mph)	 **Active Line** (20 mph)	 **Performance Line Speed** (28 mph)	 **Performance Line CX** (20 mph)
Gear type	Hub gear system	Derailleur system	Derailleur system	Derailleur system/Hub gear system*
Support level (%)	TURBO: 250 SPORT: 170 TOUR: 100 ECO: 40	TURBO: 250 SPORT: 170 TOUR: 100 ECO: 40	TURBO: 340 SPORT: 240 TOUR: 140 ECO: 60	TURBO: 340 eMTB**: 140-340 TOUR: 140 ECO: 60
Maximum possible drive torque (Nm)	TURBO: 40 SPORT: 38 TOUR: 35 ECO: 30	TURBO: 40 SPORT: 38 TOUR: 35 ECO: 30	TURBO: 85*** SPORT: 60 TOUR: 50 ECO: 40	TURBO: 85*** eMTB**: 85 TOUR: 50 ECO: 40
Maximum cadence (rpm)	100	100	> 120	> 120
Start-up behavior	harmonious	harmonious	sporty	very sporty
Max. Support up to	20 mph	20 mph	28 mph	20 mph
Gear shift detection	✗	✓	✓	✓ (dynamic)
Weight	approx. 6.3 lbs	approx. 6.3 lbs	approx. 7.1 lbs	approx. 6.3 lbs

SUPPORT / TORQUE LEVELS WILL BE COVERED IN VIDEO

BOSCH SENSES 3 VARIABLES AT 1000 TIMES / SECOND

- **PEDAL SPEED**
- **PEDAL TORQUE**
- **PEDAL ACCELERATION**

WHY?

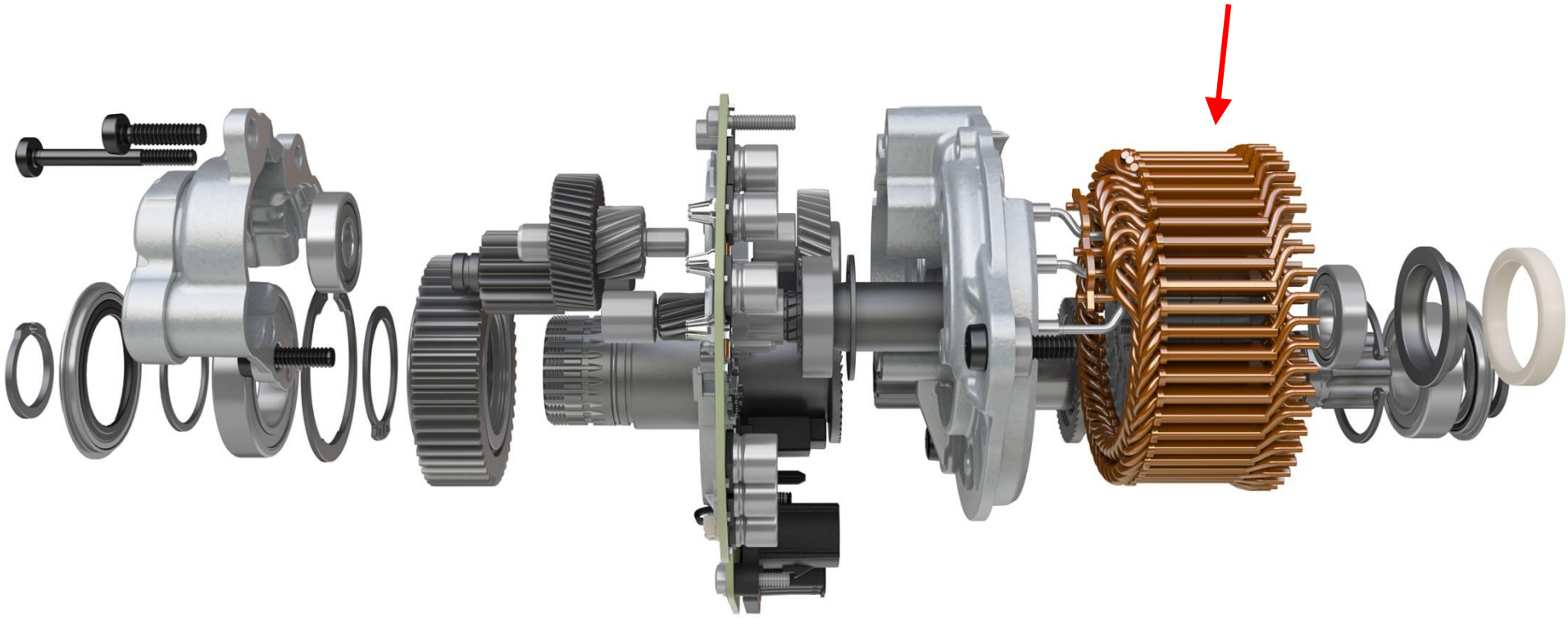
- **ALLOWS VARIABLE POWER ASSIST**
- **SMOOTH SHIFTING**
- **NATURAL CYCLING SENSATIONS**
- **LEGAL ON BIKE TRAILS**

HANDLEBAR CONTROL OPTIONS

	Purion	Intuvia	Kiox	Nyon	SmartphoneHub
5 riding modes	●	●	●	●	●
Shift recommendation	○	●	○	●	○
Walk assistance	●	●	●	●	●
High resolution display	○	○	●	●	○
Integrated display	●	●	●	●	●
Splash-proof	●	●	●	●	●
Navigation	○	○	●	●	●
Fitness tracking	○	○	●	●	●
eMTB-Mode	●	●	●	●	●
Compatible with eShift	○	●	●	●	○
Compatible with DualBattery	●	●	●	●	●
Third-party apps	○	○	●	●	●
Theft protection	○	○	●	●	○
Bosch eBike App	○	○	●	●	○
COBI.Bike App	○	○	○	○	●

BOSCH MOTOR COMPONENTS (EXPLODED) VIEW FROM FRONT OF BICYCLE

THE ELECTRIC MOTOR IS NEAR THE CYCLIST'S LEFT PEDAL



BOSCH LITHIUM BATTERIES



- OUTSTANDING BATTERY EFFICIENCY
- POWER DENSITY
- FAST RECHARGE 50% IN 2 HOURS
- EASY LOCKING AND REMOVAL FOR STORAGE AND CHARGING
- CHARGING ON THE BIKE
- NO MEMORY ISSUES
- LOW DISCHARGE RATE DURING STORAGE
- LONG SERVICE LIFE

BOSCH CHARGER OPTIONS

2 AMP CHARGER FOR SADDLEBAG



Compact Charger
The companion
The Compact Charger is the ideal charger for all eBikers who travel a lot. It weighs less than 600 g and is 40% smaller than the Standard Charger – small enough to fit into many saddlebags. The Compact Charger can also be used in Canada and Australia with mains voltages of 100 to 240 V.

4 AMP CHARGER FOR HOME



Standard Charger
The all-rounder
The robust and functional Standard Charger features a convincingly good balance between performance, size and weight and is suitable for every possible use.

BOSCH BATTERY CHARGE TIMES

		POWER PACK 400 POWER TUBE 400	POWER PACK 500 POWER TUBE 500	POWER TUBE 625
COMPACT CHARGER Saddle bag size	100% -->	6.5 HR	7.5 HR	8.8 HR
	50% -->	2.5 HR	3.5 HR	4.2 HR
STANDARD CHARGER Home charger	100% -->	3.5 HR	4.5 HR	4.9 HR
	50% -->	1.5 HR	2.0 HR	2.1 HR

BOSCH MODEL LINE VIDEO

AUSTRALIA TREK ADVERTISING

https://youtu.be/jK3i53ZGHnc

WHY YOU WOULD LIKE AN E-BIKE?

- https://trekbikes-1.wistia.com/medias/3738r9e39p


QUESTIONS?

BELOW ARE EXTRAS IF ASK

- RANGE PLANNING
- RANGE AND RIDING MODE
- CARE
- SERVICE LIFE

Easier planning

The Bosch Range Assistant

The range of the Bosch batteries is dependent on various factors. Range is influenced by the rider and the chosen support mode, as well as the drive or battery installed in the eBike. Environmental factors such as temperature, wind conditions and riding surface also play a key role in how far you can go on one battery charge. Our **range assistant** makes it possible to estimate a typical range under various parameters. The online tool will show important information on battery range in a visually appealing way.

Calculate the range yourself:
bosch-ebike.com/range



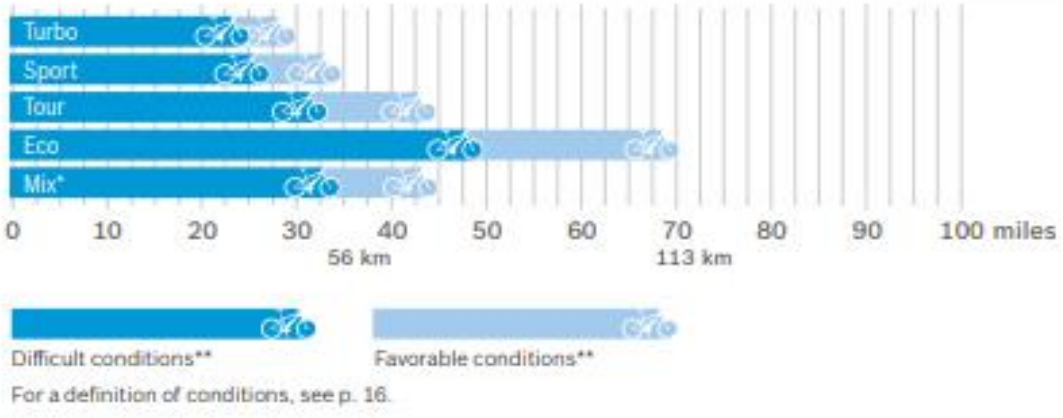
Range and riding modes

How they relate

The range of the Bosch eBike system is largely dependent on the level of support. A choice of five different riding modes is available, each of which is described below. The graphic shows their effect on the range in favorable (light blue) and difficult (dark blue) conditions.

Range based on the example of the Active Line with PowerPack 500 or PowerTube 500 taking account different riding modes.





For a definition of conditions, see p. 16.

Care

How to increase the service life of the battery

The Bosch battery is an important eBike component, and with the correct care you can optimize its life.



Charging – The batteries should be charged at room temperature in a dry location where a smoke detector is installed.

Storage during winter – Store the batteries in a dry location at room temperature. Fully charging or fully discharging results in higher loading of the battery. The ideal charge status for lengthy periods of storage is approximately 30% – 60% or 2 – 3 LEDs on the battery indicator.

Cleaning & care – We recommend using a damp cloth to clean the battery. The terminals should be cleaned occasionally and lightly greased. The battery should be removed before cleaning the eBike. Batteries must not be cleaned with direct water contact in order to protect the electronic components.

Winter use – During winter use, particularly below 32°F (0°C), we recommend charging and storing the battery at room temperature rather than inserting the battery in the eBike immediately before riding it. For longer journeys in the cold, it is advisable to use thermal protective covers.

Service life

Tips for maximizing your charge

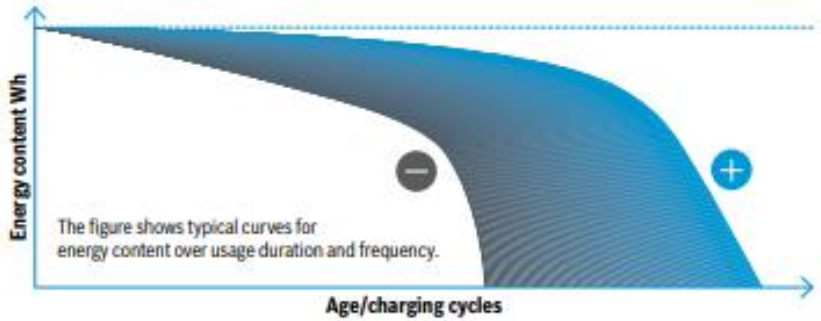
The service life of Bosch rechargable batteries is influenced primarily by the type and duration of use. Like any lithium-ion battery, a Bosch rechargable battery also ages over time, even when not in use.

Factors that shorten the service life:

- Excessive use
- Storage at temperature over 86°F (30°C)
- Prolonged storage below 32°F (0°C) in a fully charged or fully discharged state
- Parking the eBike in direct sunlight

Factors that extend the service life:

- Low-moderate use
- Storage at a temperature between 32°F (0°C) and 68°F (20°C)
- Storage at approximately 30 – 60% charge status
- Parking the eBike in the shade or a cool location



The figure shows typical curves for energy content over usage duration and frequency.

THANKS





Bosch E-Bike Systems

	Active Line (20 mph)
Gear type	Derailleur system
Support level (%)	TURBO: 250 SPORT: 170 TOUR: 100 ECO: 40
Maximum possible drive torque (Nm)	TURBO: 40 SPORT: 38 TOUR: 35 ECO: 30
Maximum cadence (rpm)	100
Start-up behavior	harmonious
Max. Support up to	20 mph
Gear shift detection	
Weight	approx. 6.3 lbs



Active Line Plus (20 mph)	
Gear type	Derailleur system
Support level (%)	TURBO: 270 SPORT: 180 TOUR: 100 ECO: 40
Maximum possible drive torque (Nm)	TURBO: 50 SPORT: 45 TOUR: 40 ECO: 35
Maximum cadence (rpm)	105
Start-up behavior	harmonious agile
Max. Support up to	20 mph
Gear shift detection	
Weight	approx. 7.1 lbs



Performance Line Cruise (20 mph)	
Gear type	Derailleur system
Support level (%)	TURBO: 300 SPORT/ eMTB**: 120- 300 TOUR: 120 ECO: 55
Maximum possible drive torque (Nm)	TURBO: 65 eMTB**: 60 TOUR: 45 ECO: 35
Maximum cadence (rpm)	> 120
Start-up behavior	sporty
Max. Support up to	20 mph
Gear shift detection	.
Weight	approx. 7.1 lbs



Performance Line Speed (28 mph)	
Gear type	Derailleur system
Support level (%)	TURBO: 340 SPORT: 240 TOUR: 140 ECO: 60
Maximum possible drive torque (Nm)	TURBO: 85*** SPORT: 60 TOUR: 50 ECO: 40
Maximum cadence (rpm)	> 120
Start-up behavior	sporty
Max. Support up to	28 mph
Gear shift detection	
Weight	approx. 7.1 lbs

Battery Guide 2020

BOSCH
Invented for life

THE eBIKE BATTERY GUIDE



Bosch eBike Systems | EN
bosch-ebike.com

Highlights

Outstanding battery efficiency

For maximum riding pleasure, lithium-ion PowerPacks demonstrate maximum energy density and are the most compact and lightweight batteries on the market.

Easy to store and quick to recharge

Modern Bosch lithium-ion batteries do not have memory or self-discharge issues. Your battery will charge to 50% in about 2 hours, depending on the charger and PowerPack.

Easy removal and installation

Both frame and rack battery models are easy to remove and charge in the home. The PowerPacks can also be conveniently charged directly on the bike.





The benefits of Bosch rechargeable batteries

No memory issues

Bosch batteries with lithium-ion cells can be charged quickly and at any time, regardless of the charge level. Interruptions in the charging process do not harm the battery. The battery does not have to completely discharge before recharging.

Extremely low self-discharge

Even if the battery has been in storage and not used for a long time, e.g. in the winter, the battery can be used without recharging it. This means Bosch rechargeable batteries do not need to be recharged after a long break in use. For longer storage, a charge status of approx. 30 to 60% is recommended.

Long service life

Bosch batteries are designed for many trips, miles and years of service. The intelligent, electronic Bosch Battery Management System (BMS) protects lithium-ion batteries from extreme temperatures, overcharging, and excessive discharge.

Bosch charger

Reliable power source

Bosch chargers are handy, lightweight and robust. The sealed housing makes them extremely stable. Bosch has developed two models that can charge Bosch equiped eBikes quickly and reliably wherever your journey may take you: 2 A Compact Charger and 4 A Standard Charger. All Bosch chargers operate silently and can also charge the Bosch PowerTube. They also feature a practical Velcro fastener for stowing the cable tidily.



Compact Charger
The companion
The Compact Charger is the ideal charger for all eBikers who travel a lot. It weighs less than 600 g and is 40% smaller than the Standard Charger – small enough to fit into many saddlebags. The Compact Charger can also be used in Canada and Australia with mains voltages of 100 to 240 V.



Standard Charger
The all-rounder
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Charging time

As fast as you like

Charging time depends on the battery capacity and the charger type. The following diagrams show how quickly the various batteries can be recharged using each specific charger.

A comparison of the charging times of the charger models:

