

Dual Battery Instructions

This set of instructions is for the upgrade of a Surly Big Easy from one battery to two batteries. Note: this upgrade will not increase the power or speed of the bicycle; however, it will increase the range. This service **MUST** be performed by a certified Bosch e-bike dealer.

All mounting hardware and components are included with the complete bike; however, a second Bosch PowerPack 500/400/300Wh battery needs to be purchased separately. Please ensure that all necessary parts and tools are present before attempting this upgrade.

Parts Included



- A. Bosch PowerPack 500/400/300Wh battery (NOT INCLUDED)
- B. Battery cable Y-connector
- C. PowerPack battery cable
- D. Battery mount adapter
- E. Battery mount casing (left)
- F. Battery mount casing (right)
- G. Battery lock core
- H. Lock core rubber isolator (2)
- I. Lock core mount adapter
- J. Battery lock cover (base)
- K. Battery lock cover (cap)
- L. Charge port cover
- M. Charge port block sticker
- N. M5 x 0.8-25L bolt - 4mm hex (2)
- O. M5 x 0.8-20L bolt - T25 Torx (2)
- P. M3.5 x 0.6-12L bolt - T15 Torx (3)
- Q. Charge port plug (2)
- R. Pin cover (for bike storage only)

Tools Required

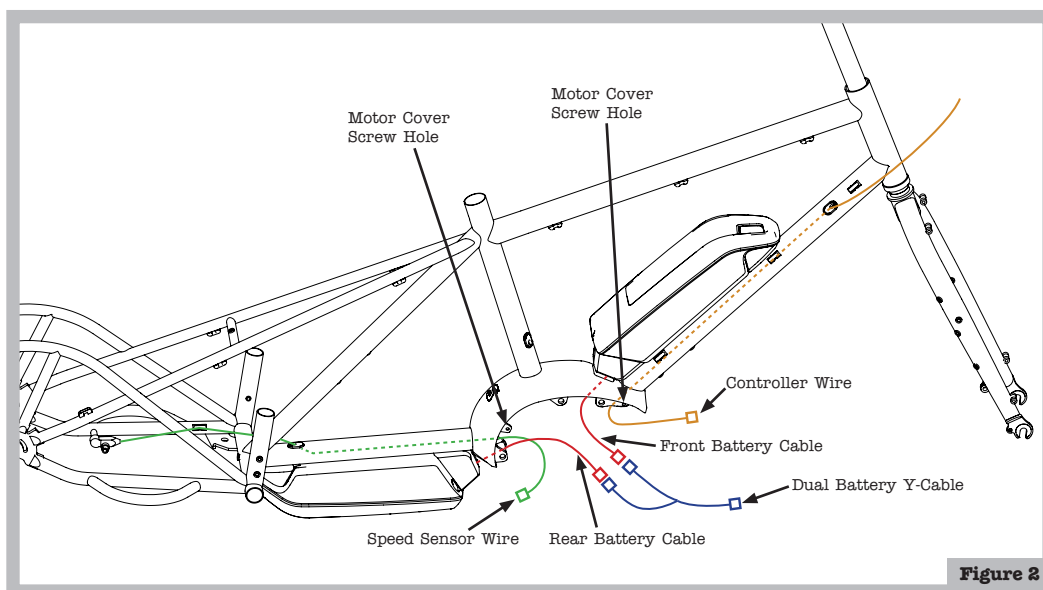
- Bosch lock ring tool (with 1/2" driver)
- Bosch Blue PowerPack assembly gauge
- Bosch computer software and dealer USB dongle
- ISIS crank arm puller (e.g. Park Tool CCP 44)
- Hex keys: 4, 5, 6, 8mm
- Torx wrenches: T15, T20, T25, T30
- Hex socket or wrench: 13mm
- Small flat head screwdriver
- Needle nose pliers
- Zip ties
- Torque wrench (Nm)

Installation

1. Detach downtube battery from frame and ensure system is off.
2. Remove both crank arms using ISIS crank arm puller.
3. Remove motor.
 - Follow instructions from dealer manual—*Bosch eBike Dealer Training: Removal/Installation of eBike Components (Removing the Drive Unit)*
 - TIP: While removing sprocket lock ring, keep chain on sprocket and hold rear brake to counteract torque being applied to lock ring
4. Install second battery mounts on underside of oval frame tube behind motor.
 - Follow instructions from dealer manual—*Bosch eBike Dealer Training: Removal/Installation of eBike Components (Frame Battery)*
 - Lock on frame = 4–5Nm
 - Mount casing = 2Nm
 - Lock cover = 2Nm
 - Mount adapter on frame = 4Nm
 - **NOTE:** Lock core mount adapter (item I) is not completely described in Bosch manual. Lock core mount adapter must be installed between frame and battery lock core for proper assembly
5. Route rear battery cable into motor mount through rubber wire grommet to protect battery cable from frame. Ensure rubber wire grommet is orientated correctly to minimize bends in battery cable (Fig 1).



6. Connect front and rear battery cables with Y-connector (Fig. 2). **NOTE:** Ends of Y-connector are two different lengths. Connect front battery with short end of cable end and rear battery with longer end of cable.



7. Tuck all wires in to frame motor mount so that there is space to reinstall motor (Fig. 3). It is especially important to note path of two motor cover screws during this process (Fig. 2). Motor cover screws will be blindly installed later in assembly and need space to clear wires. **NOTE:** Motor cover screws can have sharp edges that may damage wires during installation if care is not taken.



Figure 3



Figure 4

8. Reinstall motor, cover, and sprocket.
- Follow instructions from dealer manual—*Bosch eBike Dealer Training: Removal/Installation of eBike Components (Frame Battery)*
 - Plastic cover = 1Nm
 - Lock ring = 20–25Nm (LEFT-HAND THREAD)
 - Mounting plate = 9–11Nm
 - Frame interface = 25–30Nm
 - Lock cover = 2Nm
 - Mount adapter on frame = 4Nm
 - TIP: For leverage, install non-driveside crank arm before tightening sprocket lock ring. Hold non-driveside crank arm to counteract lock ring torque
 - Take special care to not cut or pinch cables and wires during install
 - To avoid damaging wires and cables, do not force motor cover screws through mounts during install. Screws can damage wires and cables tucked in frame if care is not taken
9. Reinstall remaining drivetrain components per manufacturer instructions.
- Crank arm spindle bolt = 40Nm
10. When both batteries are connected to bike, only one charge port can be used. Both batteries will charge intelligently from one port. Disable rear battery charging port by inserting charge port plugs into + and - terminals (Fig. 4) and then install charge port plug sticker to fully ensure the port is disabled.
11. Turn system on and check operation.
12. Connect bike to computer and open Bosch Diagnostic Tool software.
- Check for and install Bosch system updates
 - Record service notes (examples)
 - Lock core number
 - Frame serial number
 - Shop identification