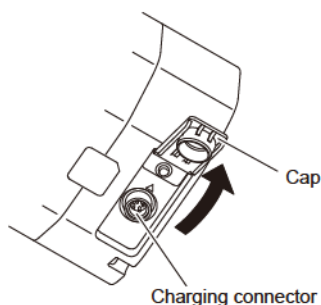
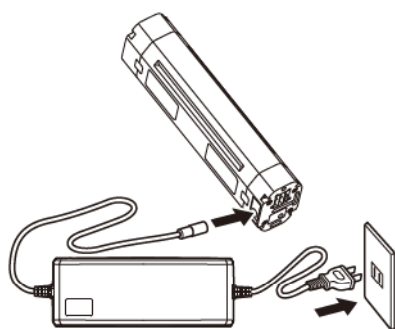


4. Connect the power plug of the battery charger to a household power outlet.
5. Remove the cap from the charging connector on the battery pack, and connect it to the charging plug on the battery charger.

NOTICE

- Do not connect the charging plug of the battery charger with the charging connector of the battery pack in a wet state.
- Be sure to connect the charging plug only after the charging connector on the battery pack is completely dry.

Otherwise the battery charger and battery pack may malfunction.

- Do not apply excessive force to the charging plug or pull on the cord with the charging plug connected to the battery pack.

Otherwise, the plug or connector may be damaged.

6. See "Reading the charging status for battery pack", and check that the battery charger is charging the battery pack.
7. The battery capacity indicator lamps will light up one by one until all four are on. Then, when charging is complete, all of the lamps will go off.
8. Confirm that charging is complete, and then disconnect the charging plug from the battery pack.
How to disconnect the plug (see the left figure)
- ① Grasp the lock-release ring.
- ② Pull it out straight.
9. Place the cap on the battery pack's charging connector.
10. Mount the battery pack on the bicycle.

WARNING

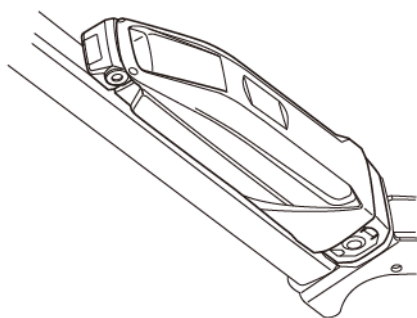
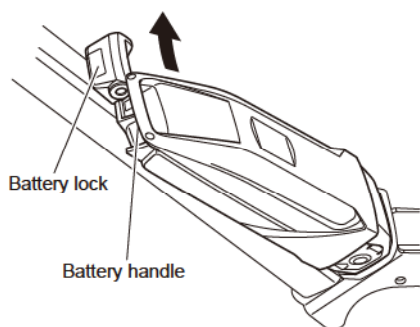
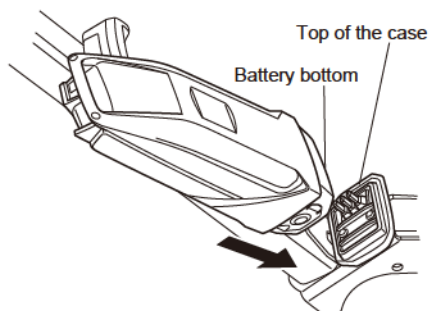
- Do not touch charger contacts with metallic objects. Do not allow foreign material to cause short circuit of the contacts. This could result in electric shock, fire, or damage the battery charger.
- Periodically remove dust from the power plug. Dampness or other issues could reduce the effectiveness of the insulation, resulting in fire.
- Never disassemble or modify the battery charger. This could result in fire or electric shock.
- Do not use with a power strip or extension cord. Using a power strip or similar methods may exceed rated current and can result in fire.
- Do not use with the cable tied or rolled up, and do not store with the cable wrapped around the charger main body. Cable damage can result in fire or electric shock.

- Firmly insert the power plug and the charging plug into the socket. Failure to insert the power plug and the charging plug completely can result in fire caused by electric shock or overheating.
- Do not use the battery charger near flammable material or gas. This could result in fire or explosion.
- Never cover the battery charger or place other objects on top of it while charging. This could result in internal overheating leading to fire.

TIP

Battery pack mounting method (Down tube type)

- Insert the battery in the direction of the arrow so that the battery bottom is aligned to the top of the case.
- Insert the upper part of the battery in the direction of the arrow so that the battery handle is aligned to the top of the battery lock.
- Press the upper part of the battery toward the frame until it clicks into place to secure it.



TIP

Battery pack mounting method (Multi location type)

How to install Multi location type battery packs varies between bicycles. For more information, see the instruction manual supplied with the bicycle.

11. Make sure that it is securely attached by pulling the battery pack after installation.



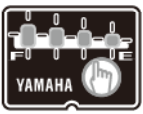
WARNING

- Do not short the contacts of the battery pack. Doing so could cause the battery pack to become hot or catch fire, resulting in serious injury or property damage.
- Do not disassemble or modify the battery pack. Doing so could cause the battery pack to become hot or catch fire, resulting in serious injury or property damage.
- Do not dispose of the battery pack in a fire or expose it to a heat source. Doing so could cause an explosion, resulting in serious injury or property damage.
- Do not drop the battery pack or subject it to impact. Doing so could cause the battery pack to become hot or catch fire, resulting in serious injury or property damage.

NOTICE

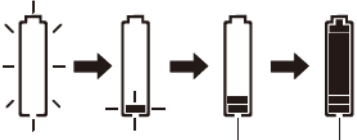
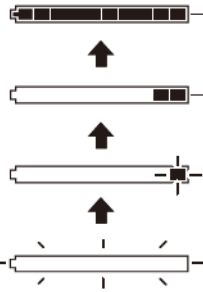
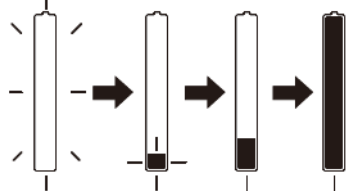
Make sure there is no foreign matter on the battery pack contacts before inserting the battery pack.

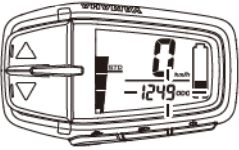
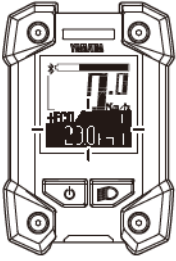
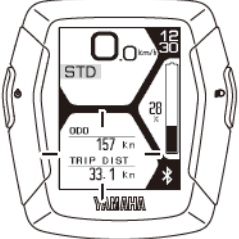
Reading the charging status for battery pack

Battery charger lamp	Battery capacity indicator lamps (Down tube type) (Multi location type)	Current status	Details
 On	Lit power lamps indicate the amount of charging completed. A flashing power lamp indicates current progress.   (Example: Battery is approximately 50–75 % charged.)	Charging	During charging, the battery capacity indicator lamps light up one by one.
 Off	  Off	Charging completed	When charging is complete, the charging lamp on the battery charger and the battery capacity indicator lamp on the battery pack go off.
	Four lamps flash simultaneously.  	Battery is in standby mode. * The battery internal temperature is too high or too low.	Charging will automatically restart when a temperature is reached that allows charging. (See “Appropriate charging environments”.) When possible, always perform charging at the optimal temperature of 59–77 °F (15–25 °C).

Reading the charging status for display unit (Applies only to models equipped with the Multi location type battery pack.)

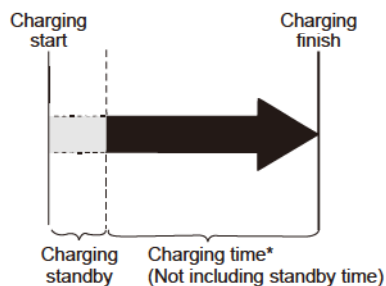
To check the charge status, turn on the power of the display unit.

Battery charger lamp	Display unit	Current status	Details
 On	(Display A)  0% <0.2 second intervals> 1-10% <0.5 second intervals> 11-99% (Display X)  11-99% 1-10% <0.5 second intervals> 0% <0.2 second intervals> (Display C)  0% <0.2 second intervals> 1-10% <0.5 second intervals> 11-99%	Charging	The battery capacity indicator slowly increases.

Battery charger lamp	Display unit	Current status	Details
	(Display A) All segments of the battery capacity indicator light up.  (Display X) All segments of the battery capacity indicator light up.  (Display C) All segments of the battery capacity indicator light up. 	Charging completed	When charging is complete, all segments of the battery capacity indicator of the drive unit will go off and the battery charger lamp of the charger will go out.
 Off	(Display A) All function display items are flashing.  (Display X) All function display items are flashing.  (Display C) All function display items are flashing. 	Battery is in standby mode. * The battery internal temperature is too high or too low.	Charging will automatically restart when a temperature is reached that allows charging. (See “Appropriate charging environments”.) When possible, always perform charging at the optimal temperature of 59–77 °F (15–25 °C).

TIP

For example, even if normal charging is started, if the battery temperature or the surrounding temperature is too high or too low, the charging may be extended or charging may be stopped without the battery being charged sufficiently in order to protect the battery.



Charging time guidelines

Although charging time varies depending on residual battery capacity and external temperature, if the battery has been exhausted, it generally takes approximately 3.5 hours (Down tube type 400 Wh), 4 hours (Down tube type 500 Wh) or 5 hours (Multi location type 600 Wh).

If the battery pack enters standby mode while charging, charging time will increase by an equal amount.

* If charging after a long period of disuse, the charging time will be lengthened depending on the battery status. However, note that if the battery capacity indicator lamps do not flash in fault pattern (See "Reading the charging status for battery pack"), there is no malfunction.

H. Checking the residual battery capacity

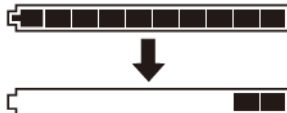
You can check the estimate of how much capacity is left in the battery and to what extent it is charged. The check can be performed using either the display unit's residual battery capacity indicator or the battery's residual battery capacity indicator lamps.

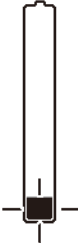
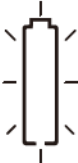
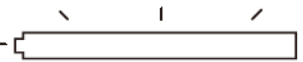
TIP

- Even if the battery's capacity reaches 0 (zero), you can still ride the bicycle as a regular bicycle.
- If you are using an old battery pack, the residual battery capacity indicator may suddenly display very little power when you start moving. This is not a malfunction. Once riding stabilizes and the load is reduced, the proper value is displayed.

Residual battery capacity indicator display and estimate of residual battery capacity for display unit

The residual battery capacity can be displayed as a numerical value on the display unit.

Display of the residual battery capacity for the display unit	Display of the residual battery capacity	Applicable situation
(Display A)  (Display X)  (Display C) 	100–11 %	When you turn on the power of the display unit and ride continually after the battery is fully charged, the segments for the residual battery capacity indicator go out one by one each time the residual battery capacity is reduced by 10 %.

Display of the residual battery capacity for the display unit	Display of the residual battery capacity	Applicable situation
(Display A)  <0.5 second intervals> (Display X)  <0.5 second intervals> (Display C)  <0.5 second intervals>	10–1 %	There is very little residual battery capacity left. Please charge the battery soon.
(Display A)  <0.2 second intervals> (Display X)  <0.2 second intervals> (Display C)  <0.2 second intervals>	0 %	There is no more residual battery capacity. Turn off the power for the display unit and charge the battery pack soon. * Assist is stopped, but you can still ride the bicycle as a regular bicycle.

Display of the battery capacity indicator lamps and the estimate of the residual battery capacity

When checking the residual battery capacity, push the battery capacity indicator button “”.

Display of the battery capacity indicator lamps		Estimate of the residual battery capacity	Applicable situation
(Down tube type)	(Multi location type)		
		100–76 %	From full charge (100 %), the battery capacity indicator lamps turn off, one by one.
		75–51 %	
		50–26 %	
		25–11 %	
 Slow flashing <0.5 second intervals>		10–1 %	There is very little battery capacity left.
 Fast flashing <0.2 second intervals>		0 %	The battery capacity has reached 0 (zero). Please charge the battery pack.

I. Pre-operation check

WARNING

Be sure to perform the inspection before riding the bicycle.
If there is anything you do not understand or find difficult, please consult a bicycle dealer.

NOTICE

- If you confirm there is a fault, have your bicycle inspected at a dealer as soon as possible.
- The power assist mechanism consists of precision parts. Do not disassemble it.

Along with performing the regular inspection before riding the bicycle, also perform the following inspections.

No.	Inspection item	Inspection contents
1	Residual battery capacity	Is enough capacity left in the battery?
2	Installation status of the battery pack	Is it properly installed?
3	Operation of the e-Bike Systems	Do the e-Bike Systems operate when you begin moving?

J. Cleaning, maintenance and storage

NOTICE

Do not use high-pressure washers or steam jet cleaners since they can cause water seepage, resulting in property damage or malfunction of the Drive Unit or display unit or battery pack. Should water get inside one of these units, have a bicycle dealer inspect your bicycle.

Caring for the battery pack

Use a moist, tightly-wrung towel to wipe off dirt on the battery pack. Do not pour water directly on the battery pack, such as with a hose.

NOTICE

Do not clean the contacts by polishing them with a file or using a wire, etc. Doing so could result in a fault.

Maintenance for the Drive Unit

NOTICE

Because a Drive Unit is a precision machinery, do not disassemble or exert any strong force on it (for example, do NOT hit this product with a hammer). Especially since the crank axle is directly connected to the inside of the Drive Unit, any large damages inflicted on the crank axle may lead to failures.

Storage

Store the system in a place that is:

- Flat and stable
- Well ventilated and free from moisture
- Sheltered from the elements and from direct sunlight

Long storage period (1 month or longer) and using it again after a long storage period

- When storing the bicycle for a long period (1 month or longer), remove the battery pack and store it using the following procedure.
- Decrease the residual battery capacity to where one or two battery capacity indicator lamps are lit, and store it indoors in a cool 59–77 °F (15–25 °C), dry place.
- Check the residual battery capacity once a month, and if only one battery capacity indicator lamp is flashing, charge the battery pack for about 10 minutes. Do not let the residual battery capacity become too low.

TIP

- If you leave the battery pack at “full charge” or “empty”, it will deteriorate quicker.
 - Due to self-discharge, the battery slowly loses its charge during storage.
 - The battery’s capacity decreases over time but proper storage will maximize its service life.
-
- When using it again after a long storage period, be sure to charge the battery pack before using it. Also, if you are using it again after storing it for 6 months or longer, have your bicycle inspected and maintained at a dealer.

K. Transport

The batteries are subject to the Dangerous Goods Legislation requirements. When being transported by third parties (e.g. via air transport or forwarding agency), special requirements on packaging and labels must be observed. To prepare the item for shipping, consult a hazardous materials expert. The customer can transport the batteries by road without further requirements. Do not transport damaged batteries.

Tape or mask off open contacts and pack up the battery pack in such a manner that it cannot move around in the packaging. Be sure to observe all local and national regulations. In case of questions concerning transport of the batteries, please refer to a bicycle dealer.

L. Consumer information

Disposal

The Drive Unit, battery pack, battery charger, display unit, speed sensor set, accessories and packaging should be sorted for environmental-friendly recycling.

Do not dispose of the bicycle or its components as household waste.

WARNING

Do not dispose of the battery pack in a fire or expose it to a heat source. Doing so could cause fire, or explosion, resulting in serious injury or property damage.

You may recycle your battery pack by calling 1-800-822-8837.

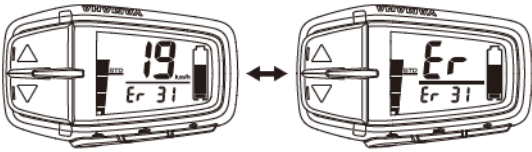
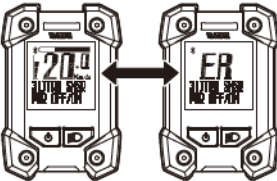


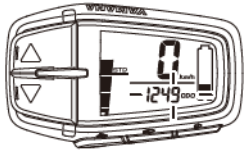
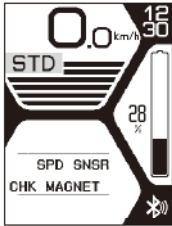
M. Troubleshooting

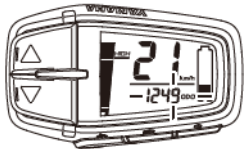
E-Bike Systems

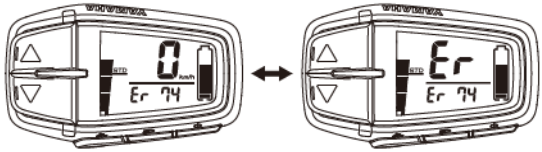
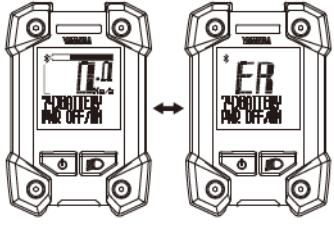
Symptom	Check	Action
Pedaling is difficult.	Is the display unit's power on?	Press the power switch on the display unit to turn the power on.
	Is the battery pack installed?	Install a charged battery pack.
	Is the battery pack charged?	Charge the battery pack.
	Has the bicycle remained stationary for 5 minutes or longer?	Turn the power on again.
	Are you riding on a long inclined road or carrying a heavy load during summertime?	This is not a malfunction. It is a safeguard engaged when the temperature of the battery pack or the Drive Unit is too high. Power assist will be restored once the temperature of the battery pack or the Drive Unit has decreased. Also, you can make this less likely to occur by shifting to a lower gear than you would usually use (for example, by shifting from second to first gear).
	Is the air temperature low (roughly 50 °F (10 °C) or below)?	During the wintertime, store the battery pack indoors before use.
	Are you charging the battery pack while it is mounted on the bicycle?	Stop charging the battery pack.

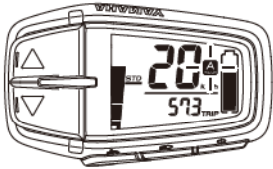
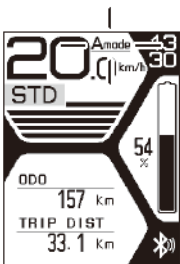
Symptom	Check	Action
The Drive Unit turns on and off while riding.	Is the battery pack correctly installed?	Check to make sure the battery pack is locked in place. If this problem still occurs with the battery pack firmly locked in place, there may be a loose connection with the battery pack terminals or wires. Have a bicycle dealer inspect your bicycle.
Strange rumbling or crunching noises come from the Drive Unit.		There could be a problem inside the Drive Unit. Have a bicycle dealer inspect your bicycle.
Smoke or unusual odor comes from the Drive Unit.		There could be a problem inside the Drive Unit. Have a bicycle dealer inspect your bicycle.

Symptom	Check	Action
(Display A) The main riding display and “Er” are displayed alternately, and an error description is indicated in the function display.  (Display X) The assist mode lamp lights up in red, the main riding display and “ER” are displayed alternately, and an error description is indicated in the function display.  Displays alternately  Error displays (Display C) Error messages other than those related to the battery are displayed here as “ER” together with a description of the error underneath. 		The problem occurs in the e-Bike Systems. Turn off the power and then turn it on again. If the problem cannot be solved, have your bicycle inspected by a dealer as soon as possible.

Symptom	Check	Action
Traveling range has decreased.	Are you fully charging the battery pack?	Charge the battery pack until full (F).
	Are you using the system under low-temperature conditions?	Normal traveling range will be restored when the ambient temperature rises. Additionally, storing the battery pack indoors (in a warm location) before use will improve traveling range under cold conditions.
	Is the battery pack worn out?	Replace the battery pack.
(Display A) The speed is not displayed even while riding, and the function display is flashing.  (Display X) An assist mode lamp lights up in red and an error description is indicated in the function display.   Error displays (Display C) An error description is indicated in the function display. 		The speed sensor cannot detect a correct signal. Turn off the power to the display unit and then turn it on again. Select the assist mode and then ride for a short distance. Also, make sure the magnet is mounted correctly on the spokes of the wheels.

Symptom	Check	Action
(Display A) The speed is displayed but the function display is flashing. (Power assist is stopped.) 		
(Display X) The assist mode indicator and function display are flashing. (Power assist is stopped.) 		This is not a malfunction. It is in a state that the operation of the power assist system is normal. This state may occur depending on the pedaling strength and riding speed, but it returns to normal condition if it is confirmed that the system is normal.
(Display C) The function display are flashing. (Power assist is stopped.) 		

Symptom	Check	Action
(Display A) The main riding display and “Er” are displayed alternately, and an error description is indicated in the function display.  (Display X) The assist mode lamp will light up in red, and the main riding display and “ER” are displayed alternately, and an error description is indicated in the function display.  (Display C) Error messages relating to battery errors are displayed here as “ER” together with “BATTERY” and a description underneath. 		The problem occurs in the battery pack. Turn off the power and then turn it on again. If the problem cannot be solved, have your battery pack inspected by a dealer as soon as possible.

Symptom	Check	Action
(Display A) The Automatic Support mode indicator is flashing.  (Display X) “A:####” and “####” on the assist mode indicator are alternately displayed.  For example, in the case of Standard mode (Display C) The Automatic Support mode indicator is flashing. 		There could be a problem inside the Drive Unit. Turn off the power to the display unit and then turn it on again. If the problem cannot be solved, have your bicycle inspected by a dealer as soon as possible.

Power supply of external devices via USB connection

*Applies to Display X and Display C.

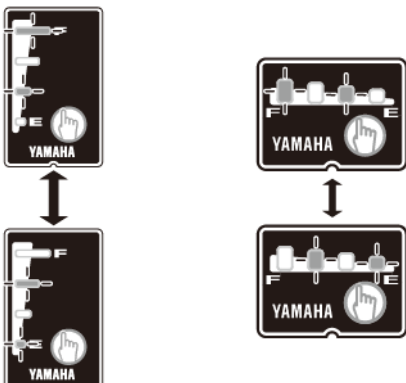
Symptom	Check	Action
Power is not supplied.	Is the display unit's power on?	Press the power switch on the display unit to turn the power on.
	Is the USB version correct?	Use an external device that complies with USB 2.0.
	Is the USB cable type correct?	Use an OTG cable. Also connect the host side to the display.
	Is the USB cable firmly connected?	Re-connect the USB cable.
	Is the USB receptacle or USB plug terminal dirty or wet?	Disconnect the USB cable from the display unit and external device. Remove the dirt and water on the USB receptacle and USB plug terminal and re-connect the cable.
	Is USB setting set to "COMM"?	(Display X) Set the USB settings to "PWR SPLY" by referring to "Stopwatch and settings" or turn off the power and then turn it on again. (Display C) Set the USB settings to "Power Supply" by referring to "Settings" or turn off the power and then turn it on again.

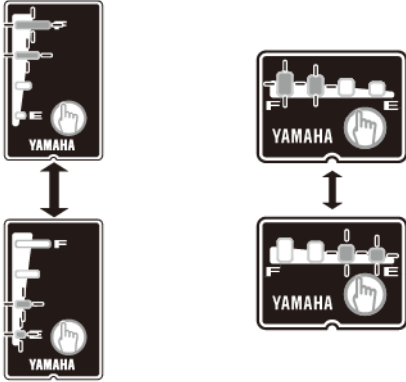
Wireless communication with Bluetooth low energy technology

*Applies to Display X and Display C.

Symptom	Check	Action
Wireless communication cannot be used.	Are both the wireless communication settings of the display unit and your wireless communication equipment turned on?	(Display X) Set the communication profiles by referring to “Stopwatch and settings”, and then set the correct communication profiles of the wireless equipment or application software. (Display C) Set the communication profiles by referring to “Settings”, and then set the correct communication profiles of the wireless equipment or application software.
	Are the communication profiles of the wireless equipment or application software that communicates wirelessly with the communication profiles of the display correct?	
The display values of the external wireless communication equipment are wrong.	Did you change the settings of the communication profiles?	Reset pairing for a moment, set the communication profiles of the display, and then establish pairing again. For resetting of pairing and the procedure of establishing pairing, refer to the instruction manual supplied with the wireless communication equipment.

Battery pack and charger

Symptom	Check	Action
Cannot charge	Is the power plug firmly connected? Is the charging plug firmly inserted in the battery pack?	Reconnect and try charging again. If the battery pack still does not charge, the battery charger might be malfunctioning.
	Are the residual battery capacity indicator lamps lit?	Review charging method and try charging again. If the battery pack still does not charge, the battery charger might be malfunctioning.
	Are the battery charger or battery pack contact terminals dirty or wet?	Remove the battery pack from the battery charger and the charger plug from the socket. Use a dry cloth or cotton swab to clean the charger and battery contact terminals. Then reconnect both the battery pack and the battery charger.
(Down tube type) (Multi location type) 	There is a contact fault in the contact terminals.	Remove the battery pack from the bicycle. Then connect the charging plug into the battery pack. (If battery capacity indicator lamps still flash alternately, there might be a fault in the battery pack). When the battery pack is remounted on the bicycle and the power switch of the display unit is pressed, if battery capacity indicator lamps still flash alternately, there might be a fault in the Drive Unit.

Symptom	Check	Action
(Down tube type) (Multi location type) 	There is a contact fault in the contact terminals.	Remove the battery pack from the battery charger, mount the battery on the bicycle and press the power switch of display unit. When the charging plug is reconnected into the battery pack, if battery capacity indicator lamps still flash simultaneously, there might be a fault in the battery charger.
	Is the charging connector on the battery pack wet?	Clean the charging connector and charging plug. Then dry them. Afterwards, connect the charging plug to the charging connector.
Both side battery capacity indicator lamps are flashing simultaneously. (Down tube type) (Multi location type) 		The battery pack protection feature has been activated and the system cannot be used. Replace the battery pack at a bicycle dealer as soon as possible.
The battery charger emits abnormal noises, foul odors or smoke.		Unplug the charger plug and immediately cease operation. Have a bicycle dealer inspect your bicycle.
The battery charger becomes hot.	It is normal for the battery charger to become somewhat warm during charging.	If the battery charger is too hot to be touched by hand, unplug the charger plug, wait for it to cool, and consult a bicycle dealer.
After charging, all of the battery capacity indicator lamps do not light up when the battery capacity indicator button "ⓘ" is pressed.	Has the charger plug been unplugged or the battery pack removed during charging?	Charge the battery pack again.
	Did you start charging with the battery pack at a high temperature, such as immediately after use?	Move to a location where the battery temperature can reach the range where charging is possible (59–77 °F (15–25 °C)), and then start charging again.

Symptom	Check	Action
After disconnecting the charging plug on the battery charger from the battery pack, the battery capacity indicator lamps continue to light up.	Is the charging connector on the battery pack wet?	Clean the charging connector and charging plug. Then dry them.

N. Specifications

Range of assist speed			0 to less than 20 mph (32 km/h)
Electric motor		Type	Brushless DC type
		Maximum 30 minutes power	500 W
Assist power control method			Control method depends on pedaling torque and bicycle speed
Battery pack	Down tube type 400 Wh/500 Wh	Type	PASB4 (X0R-00)/PASB4 (X0R-10) (Lithium-ion battery)
		Voltage	36 V
		Capacity	11 Ah/13.6 Ah
		Number of battery cells	40
	Multi location type 600 Wh	Type	PASB4 (B0P-00) (Lithium-ion battery)
		Voltage	36 V
		Capacity	16.5 Ah
		Number of battery cells	50
Charger		Type	PASC4
		Input voltage	AC 100–240 V/50–60 Hz
		Maximum output voltage	DC 42 V
		Maximum output current	DC 4.0 A
		Maximum consumed power	190 W (Charged at AC 100 V)
		Applicable type battery	PASB4

Display unit (Display X)	Power supply portion	USB receptacle type	USB2.0 Micro-B
		Output current	Max. 1000 mA
		Rated voltage	5 V
	Wireless communication portion	Communication system	Bluetooth version 4.0 (Bluetooth low energy technology)
		Output power	−9.27 dBm (e.i.r.p.)
		Communication range	Line-of-sight distance approx. 1 m (3 ft) without interference
		Frequency band	2.4 GHz band (2.400–2.4835 GHz)
		Modulation method	GFSK
		Supported profiles	CSCP ^{*1} CPP ^{*2}

*1 CSCP (Cycling Speed and Cadence Profile)

Corresponds to the wheel revolution data and crank revolution data.

*2 CPP (Cycling Power Profile)

Corresponds to the wheel revolution data, crank revolution data, instantaneous power, and accumulated energy.

- Communication is not necessarily guaranteed with all wireless communication devices that have the same profiles as this system.
Even when a device complies with the specification for Bluetooth low energy technology, there may be cases where the characteristics, specifications, or communicative environment of the device with this technology make it impossible to connect, or may result in different control methods, display or operation.
- YAMAHA MOTOR CO., LTD. can not be held liable in any way for damages or other loss resulting from information leaks during the communication via Bluetooth low energy technology.

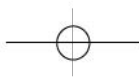
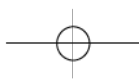
Display unit (Display C)	Power supply portion	USB receptacle type	USB2.0 Micro-B
		Output current	Max. 1000 mA
		Rated voltage	5 V
	Wireless communication portion	Communication system	Bluetooth version 4.0 (Bluetooth low energy technology)
		Output power	−5.39 dBm (e.i.r.p.)
		Communication range	Line-of-sight distance approx. 1 m (3 ft) without interference
		Frequency band	2.4 GHz band (2.400–2.4835 GHz)
		Modulation method	GFSK
		Supported profiles	CSCP ^{*1} CPP ^{*2} YEP1.0 ^{*3}

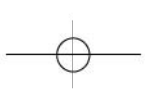
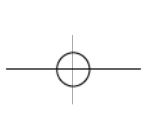
*1 CSCP (Cycling Speed and Cadence Profile)
Corresponds to the wheel revolution data and crank revolution data.

*2 CPP (Cycling Power Profile)
Corresponds to the wheel revolution data, crank revolution data, instantaneous power, and accumulated energy.

*3 YEP1.0
The e-Bike profile preset by YAMAHA MOTOR CO., LTD.
Navigation information (Compass) and fitness support (Fitness) can be displayed on the display unit by pairing the smartphone application with YEP 1.0.

- Communication is not necessarily guaranteed with all wireless communication devices that have the same profiles as this system.
Even when a device complies with the specification for Bluetooth low energy technology, there may be cases where the characteristics, specifications, or communicative environment of the device with this technology make it impossible to connect, or may result in different control methods, display or operation.
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