LIVEWIRE MODEL

2020 HARLEY-DAVIDSON® OWNER'S MANUAL

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Harley-Davidson Motor Company
Service Communications
Milwaukee WI 53208 USA

HARLEY-DAVIDSON

LIVEWIRE MODEL

2020 HARLEY-DAVIDSON® OWNER'S MANUAL


MOTOR
HARLEY-DAVIDSON
CYCLES
AUTHORIZED
SERVICE

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YOUR OWNER'S MANUAL

We Care About You

Welcome to the Harley-Davidson Motorcycling Family! When enjoying your Harley-Davidson motorcycle, be sure to ride safely, respectfully and within the limits of the law. Always wear a helmet, proper eyewear and protective clothing, and insist your passenger does too. Never ride while under the influence of alcohol or drugs. Know your Harley and read and understand your owner's manual from cover to cover.

This manual has been prepared to acquaint you with the operation, care and maintenance of your motorcycle and to provide you with important safety information. Follow these instructions carefully for maximum motorcycle performance and for your personal motorcycling safety and pleasure. Your Owner's Manual contains instructions for operation and minor maintenance. Major repairs are covered in the Harley-Davidson Service Manual. Such major repairs require the attention of a skilled technician and the use of special tools and equipment. Your Authorized Harley-Davidson Electric Vehicle (EV) dealer has the facilities, experience and Genuine Harley-Davidson parts necessary to properly render this valuable service. We recommend that any maintenance be performed by an Authorized Harley-Davidson EV dealer. You may obtain the name and location of your nearest U.S. Authorized Harley-Davidson EV dealer by calling 1-800-258-2464 (U.S. only). To find Authorized Harley-Davidson EV dealers worldwide, see www.harley-davidson.com.

Attend a rider safety course. To enroll in a Harley-Davidson Riding Academy course, call 1-414-343-4056 (U.S.) or visit www.harley-davidson.com/learntoride. In the United States, for information about Motorcycle Safety Foundation rider courses, call 1-800-446-9227 or visit www.msf-usa.org.

United States Owners

Your Harley-Davidson motorcycle conforms to all applicable U.S. Federal Motor Vehicle Safety Standards and regulations effective on the date of manufacture. Protect your privilege to ride by joining the American Motorcyclist Association. Visit www.ama-cycle.org for more information.

Harley-Davidson reserves the right to change specifications, equipment or designs at any time without notice and without incurring obligation.

CUSTOMER SERVICE ASSISTANCE

Most sales or service issues are resolved at the dealership.

1. Discuss your problem with the appropriate personnel at the dealership in the Sales, Service or Parts area. If that proves unsuccessful, speak to the owner of the dealership or the general manager.

2. If you cannot resolve the issue with the dealership, contact the Harley-Davidson Customer Support Center. Harley-Davidson Motor Company Attention: Harley-Davidson Customer Support Center P.O. Box 653 Milwaukee, Wisconsin 53201 1-800-258-2464 (U.S. only) 1-414-343-4056

   For customers outside the US, contact your local Harley-Davidson market office, call 1-414-343-4056 or visit harley-davidson.com.

Table 1. Vehicle and Personal Data

PERSONAL INFORMATION	DEALER INFORMATION
Date of Purchase:	
Name:	Name:
Address:	Address:
Address:	Address:
Vehicle Identification Number:	Sales Contact:
Key Number:	Service Contact:

SAFETY DEFINITIONS

Statements in this manual preceded by the following words are of special significance:

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury. (08704a)

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. (00119a)

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. (00139a)

NOTICE

NOTICE indicates a potentially hazardous situation which, if not avoided, may result in property damage. (00140b)

NOTE

Refers to important information and is placed in italic type. It is recommended that you take special notice of these items.

These safety words may be accompanied by graphic symbols. The graphic symbols indicate potential safety hazards and avoidance actions to prevent a hazardous situation. The graphical symbols may be present in manuals, instructions, on the motorcycle and/or Parts & Accessory product labels. Refer to Safe Operating Rules (Page 3), the appropriate section in this manual and/or Parts & Accessory instructions for additional safety information. See Safety Symbol Definitions (Page 21).

SAFE OPERATING RULES

⚠ WARNING

Electric motorcycles are different from other vehicles. They operate, steer, handle and brake differently. Unskilled or improper use could result in loss of control, death or serious injury.

- **Take a rider training course.**
- **Read owner's manual before riding, adding accessories or servicing.**
- **Wear a helmet, eye protection and protective clothing.**
- **Never tow a trailer.**

(09004a)

Harley-Davidson Motorcycles Are for On-Road Use Only

This motorcycle is designed to be used only on the road. Operation or off-road usage in some areas may be illegal. Obey local laws and regulations.

General

⚠ WARNING

Consult a Harley-Davidson dealer regarding any questions or problems that occur in the operation of your motorcycle. Failure to do so can aggravate an initial problem, cause costly repairs, cause an accident and could result in death or serious injury. (00020a)

- Make sure all equipment required by federal, state and local law is installed and in good operating condition.
- Know and respect the rules of the road. Read the safety information that is provided by your state or regional traffic authority.
- In the United States, read the RIDING TIPS booklet that is provided with this owner's manual. Read the MOTORCYCLE HANDBOOK which is made available by your state or regional traffic authority.
- Protect your motorcycle against theft. Lock the front fork. Remove the key when parking your motorcycle.

⚠ WARNING

Do not add sidecar to this motorcycle. Operating motorcycle with sidecar can cause loss of vehicle control, which could result in death or serious injury. (00590d)

Operation

Before operating your new motorcycle, it is your responsibility to read and follow the operating and maintenance instructions in this manual and follow these rules for your personal safety.

- Before riding, complete the Pre-Ride Checklist (Page 39).

⚠ WARNING

Striking an object, such as a curb or pothole can cause internal tire damage. If an object is struck, have the tire inspected immediately inside and out by a Harley-Davidson dealer. A damaged tire can fail while riding and adversely affect stability and handling, which could result in death or serious injury. (00058b)

⚠ WARNING

Travel at speeds appropriate for road and conditions and never travel faster than posted speed limit. Excessive speed can cause loss of vehicle control, which could result in death or serious injury. (00008a)

- Do not exceed the legal speed limit or drive too fast for existing conditions. Always reduce speed when poor driving conditions exist. High speed increases the influence of any other condition affecting stability and increases the possibility of loss of control.
- Pay strict attention to road surfaces and wind conditions and keep both hands on the handlebar grips at all times when riding the motorcycle. Any two wheeled vehicle may be subject to upsetting forces such as wind blasts from passing trucks, holes in the pavement, rough road surfaces, rider control error, etc. These forces may influence the handling characteristics of your motorcycle. If this happens, reduce speed and guide the motorcycle with a relaxed grip to a controlled condition. Do not brake abruptly or force the handlebar. This may aggravate an unstable condition.
- New riders should gain experience under various conditions while riding at moderate speeds. Harley-Davidson suggests using range mode (or rain mode, if appropriate) for gaining experience. See Widgets (Page 95).
- Operate your motorcycle defensively. In an accident, a motorcycle does not afford the same protection as an automobile.
- It is the rider's responsibility to instruct passengers on proper riding procedures.
- Do not allow other individuals to operate the motorcycle unless they are experienced, licensed riders and are thoroughly familiar with the operation of the motorcycle.

Steering and Handling

⚠ WARNING

Do not operate vehicle with forks locked. Locking the forks restricts the vehicle's turning ability, which could result in death or serious injury. (00035a)

The motorcycle has a fork lock, but it also has a sensor that detects whether or not it is engaged. The system will not allow propulsion while the fork lock is engaged.

⚠ WARNING

Regularly inspect shock absorbers and front forks. Replace leaking, damaged or worn parts that can adversely affect stability and handling, which could result in death or serious injury. (00012a)

⚠ WARNING

Do not operate motorcycle with loose, worn or damaged steering or suspension systems. Contact a Harley-Davidson dealer for repairs. Loose, worn or damaged steering or suspension components can adversely affect stability and handling, which could result in death or serious injury. (00011a)

⚠ WARNING

Harley-Davidson parts and accessories are designed for Harley-Davidson motorcycles. Using non-Harley-Davidson parts or accessories can adversely affect performance, stability or handling, which could result in death or serious injury. (00001b)

⚠ WARNING

Do not open storage compartments while riding. Distractions while riding can lead to loss of control, which could result in death or serious injury. (00082a)

⚠ WARNING

When riding on wet roads, brake efficiency and traction are greatly reduced. Failure to use care when braking, accelerating or turning on wet roads can cause loss of control, which could result in death or serious injury. (00041a)

Accessories and Cargo

⚠ WARNING

Do not exceed the motorcycle's Gross Vehicle Weight Rating (GVWR) or Gross Axle Weight Rating (GAWR). Exceeding these weight ratings can lead to component failure and adversely affect stability, handling and performance, which could result in death or serious injury. (00016f)

- GVWR is the sum of the weight of the motorcycle, accessories and the maximum weight of the rider, passenger and cargo that can be safely carried.
- The GVWR is shown on the information label, located on the frame steering head or the frame downtube.
- GAWR is the maximum amount of weight that can be safely carried on each end of the motorcycle.
- For GVWR and GAWR, front and rear. See Specifications (Page 35).
- Keep cargo weight concentrated close to the motorcycle and as low as possible.
- Distribute weight evenly on both sides of the vehicle.
- Do not load bulky items too far behind the rider or add weight to the handlebars or front forks.
- Do not exceed maximum specified load in each saddlebag (if equipped).

- Luggage racks (if equipped) are designed for lightweight items. Do not overload racks.
- Make sure cargo is secure. Make sure the cargo will not shift while riding and check the cargo periodically. Accessories that change the operator's riding position may increase reaction time and affect handling of the motorcycle.

Tires

⚠ WARNING

Be sure tires are properly inflated, balanced, undamaged, and have adequate tread. Inspect your tires regularly and see a Harley-Davidson dealer for replacements. Riding with excessively worn, unbalanced, improperly inflated, overloaded or damaged tires can lead to tire failure and adversely affect stability and handling, which could result in death or serious injury. (00014b)

⚠ WARNING

Do not use liquid tire balancers or sealants in aluminum wheels. Using liquid tire balancers or sealants can cause rapid corrosion of the rim surface, which could cause tire deflation. Tire deflation can cause loss of vehicle control, which could result in death or serious injury. (00631b)

⚠ WARNING

Replace punctured or damaged tires. In some cases, small punctures in the tread area may be repaired from within the removed tire by a Harley-Davidson dealer. Speed should NOT exceed 50 mph (80 km/h) for the first 24 hours after repair, and the repaired tire should NEVER be used over 80 mph (129 km/h). Failure to follow this warning could lead to tire failure and result in death or serious injury. (00015b)

⚠ WARNING

Harley-Davidson recommends the use of its specified tires. Harley-Davidson vehicles are not designed for operation with non-specified tires, including snow, moped and other special-use tires. Use of non-specified tires can adversely affect stability, handling or braking and lead to loss of vehicle control, which could result in death or serious injury. (00024d)

Towing and Trailering

⚠ WARNING

Do not pull a trailer with a motorcycle. Pulling a trailer can cause tire overload, damage and failure, reduced braking performance, and adversely affect stability and handling, which could result in death or serious injury. (00018c)

- Never tow a trailer.

⚠ WARNING

Do not tow a disabled motorcycle. Towing can adversely affect stability and handling, which could result in death or serious injury. (00017a)

Brakes

⚠ WARNING

Brakes are a critical safety component. Contact a Harley-Davidson dealer for brake repair or replacement. Improperly serviced brakes can adversely affect brake performance, which could result in death or serious injury. (00054a)

⚠ WARNING

Apply front and rear brakes evenly. Favoring one brake accelerates wear and reduces braking efficiency. Operation with excessively worn brakes can lead to brake failure, which could result in death or serious injury. (00135a)

⚠ WARNING

Contact with DOT 4 brake fluid can have serious health effects. Failure to wear proper skin and eye protection could result in death or serious injury.

- **If inhaled: Keep calm, remove to fresh air, seek medical attention.**
- **If on skin: Remove contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. If irritation develops, seek medical attention.**
- **If in eyes: Wash affected eyes for at least 15 minutes under running water with eye lids held open. If irritation develops, seek medical attention.**
- **If swallowed: Rinse mouth and then drink plenty of water. Do not induce vomiting. Immediate medical attention required.**
- **See Safety Data Sheet (SDS) for more details available at sds.harley-davidson.com**

(00240d)

⚠ WARNING

DOT 4 brake fluid absorbs moisture from the atmosphere over time, changing the properties of the fluid. Check brake fluid moisture content at every service interval or annually (whichever comes first). Flush and replace the brake fluid every two years, or sooner if moisture content is 3% or greater. Failure to flush and replace fluid can adversely affect braking, which could result in death or serious injury. (06304b)

To ensure the brake system is performing to design, check the moisture content of the brake fluid at every service interval or at least annually using a DOT 4 brake fluid moisture tester (part number HD-48497-A or equivalent) following the instructions included with the tool. Flush DOT 4 fluid every 2 years or sooner if the brake system fluid test shows moisture content is 3% or greater.

Harley-Davidson recommends using Harley-Davidson Platinum Label DOT 4 Brake Fluid because of its superior moisture and corrosion inhibiting properties

Batteries and Charging

The main components of the charging system are the Rechargeable Energy Storage System (RESS), the On Board Charger (OBC), the 12 V Lithium-Ion Battery and the Electric Vehicle Supply Equipment (EVSE). High-voltage components are connected by high-voltage cables which are colored orange for easy identification.

Do not disassemble, remove or replace high-voltage components, covers or guards. Always have the high voltage system serviced by qualified technicians.

Rechargeable Energy Storage System (RESS)

⚠ DANGER

This vehicle contains a high voltage Rechargeable Energy Storage System (RESS). An improperly handled or damaged RESS can cause electrical shock and/or fire, which will result in death or serious injury.

- **RESS must only be serviced by a qualified technician using proper Personal Protective Equipment (PPE).**
- **Do not touch RESS connecter terminals with fingers, tools, jewelry, or other metal objects.**
- **Do not disconnect, disassemble, or use RESS for other than its intended use.**
- **Improper charging, impact or exposure to fire can damage the RESS.**
- **A damaged RESS can leak electrolyte and/or generate flammable gas.**

(08705a)

⚠ DANGER

A damaged RESS can leak electrolyte. Contact with electrolyte will cause serious chemical burns or blindness.

- **Always wear proper Personal Protective Equipment (PPE) while handling RESS.**
- **If electrolyte comes in contact with eyes, skin, or clothing, rinse affected area with clean water and seek medical attention immediately.**
- **See Safety Data Sheet (SDS) for more details available at sds.harley-davidson.com**

(08706a)

⚠ WARNING

Misused or abused lithium-ion batteries can get hot, explode or ignite, or potentially release gas, smoke or liquid. Always follow battery safety precautions. Misuse or abuse of lithium-ion batteries could result in death or serious injury. (07729b)

12 V Lithium-Ion Battery

- Do not use battery if it gives off an odor, generates heat, releases gas, smoke or liquid, becomes discolored, or deformed or appears abnormal in any way. If the battery is in use or being recharged, disconnect it from the motorcycle or charger immediately and discontinue use. Wear a protective face shield, rubberized gloves, respiratory protection and protective clothing when handling a damaged battery to prevent exposure to internal battery contents.
- Never attempt to open or disassemble a battery. If accidental contact with internal battery contents occurs, wash the affected skin area and contact a doctor for medical assistance.
- Do not pierce the battery case with a nail or other sharp objects, do not break it open, do not crush.
- Do not place the battery in a microwave oven or pressurized container.
- Do not immerse the battery in water.
- Do not strike, throw or subject the battery to severe physical shock.
- Do not press the indicator button on the battery longer than a few seconds.
- Keep out of reach of children and pets.

In the Event of Contact with Internal Battery Contents

⚠ WARNING

Contact with internal battery contents can have serious health effects. Wear protective face shield, rubberized gloves, respiratory protection, and protective clothing when handling damaged batteries. Failure to wear proper protective gear while handling a damaged battery could result in death or serious injury.

See Safety Data Sheet (SDS) for more details available at sds.harley-davidson.com (07728b)

General information: The following first aid measures are required only in case of exposure to internal battery contents after damage of the external battery casing.

Table 2. Battery Electrolyte Antidote

Physical Location	Procedure
After Inhalation	• Remove to fresh air • Wash mouth and nasal passages with water • If patient is not breathing, apply artificial respiration • Do not perform mouth-to-mouth resuscitation • Call a physician immediately
After Contact with Skin	• Wash off immediately with plenty of water and soap for at least 15 minutes • Take off contaminated clothing and wash it before reuse • Call a physician immediately
After Contact with Eyes	• Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes • Remove contact lenses, if present and easy to do. Continue rinsing • Seek medical treatment by eye specialist

Table 2. Battery Electrolyte Antidote

Physical Location	Procedure
After Ingestion	• Rinse mouth • Drink plenty of water or milk • Never give anything by mouth to an unconscious person • Do not induce vomiting • Call a physician immediately

Charging

Charging time depends on the begining State of Charge (SOC) and the target state of charge.

- The RESS keeps the 12 V Lithium-Ion battery charged.
- Level 1 (AC Slow Charge) charging with the EVSE requires a dedicated, properly grounded AC outlet protected by a circuit breaker.
- Level 3 (DC Fast Charge) charging requires a charging station.

Electric Vehicle Supply Equipment (EVSE), Level 1 Charging

The EVSE is also commonly referred to as the vehicle charging cord. The EVSE includes the connection to the outlet, the cable and the connection to the motorcycle.

- The supplied EVSE is intended only for this motorcycle.
- Do not use EVSE if there is any cracking or damage to the unit, the EVSE cable or the connector. Do not attempt to repair. Replace EVSE if damaged.

⚠ WARNING

To avoid risk of fire or electric shock, only use the supplied EVSE when charging motorcycle. Fire or electric shock could result in death or serious injury.

- **Do not use EVSE with an extension cord.**
- **Charge the motorcycle in a well-ventilated area.**
- **Make sure connectors are fully inserted into the outlet and motorcycle.**
- **Do not charge in the rain.**
- **Do not put fingers, jewelry or other metal objects in charging socket.**
- **Use a dedicated, properly grounded, AC outlet protected by a circuit breaker.**
- **Observe charging for several minutes before leaving the motorcycle unattended to ensure the vehicle is charging as expected.**

(08710b)

On Board Charger (OBC)

⚠ WARNING

Risk of electric shock or burn. Do not touch with fingers, jewelry or other metal objects. Only to be serviced by a qualified technician. Failure to follow instructions can result in death or serious injury. (08804b)

The EVSE connects to the charge port which supplies charging power to the OBC.

When charging 12 V Lithium-Ion Battery:

- If motorcycle is not equipped with a battery tender connector, then remove battery from motorcycle prior to charging. See Battery Replacement (Page 144).
- Do not recharge battery if voltage is below 8 V to prevent hazardous situations. Charging a deep discharged battery can cause release of smoke, gas and liquids.
- To prevent damage to the battery, the charging voltage should NEVER be higher than 14.4 V.
- Do not overcharge. In case of overcharging, a degassing event with smoke generation could occur.
- Do not connect the battery directly to an AC outlet.
- Only charge or discharge the battery in a well-ventilated area.

- Always use a lithium-ion battery specific battery charger to charge the lithium-ion battery, ensure charging voltage is between 14.2 V and 14.4 V.

Electric Vehicle Crash or Damage

⚠ DANGER

This vehicle contains a high voltage Rechargeable Energy Storage System (RESS). An improperly handled or damaged RESS can cause electrical shock and/or fire, which will result in death or serious injury.

- **RESS must only be serviced by a qualified technician using proper Personal Protective Equipment (PPE).**
- **Do not touch RESS connecter terminals with fingers, tools, jewelry, or other metal objects.**
- **Do not disconnect, disassemble, or use RESS for other than its intended use.**
- **Improper charging, impact or exposure to fire can damage the RESS.**
- **A damaged RESS can leak electrolyte and/or generate flammable gas.**

(08705a)

⚠ DANGER

A damaged RESS can leak electrolyte. Contact with electrolyte will cause serious chemical burns or blindness.

- **Always wear proper Personal Protective Equipment (PPE) while handling RESS.**
- **If electrolyte comes in contact with eyes, skin, or clothing, rinse affected area with clean water and seek medical attention immediately.**
- **See Safety Data Sheet (SDS) for more details available at sds.harley-davidson.com**

(08706a)

⚠ WARNING

Misused or abused lithium-ion batteries can get hot, explode or ignite, or potentially release gas, smoke or liquid. Always follow battery safety precautions. Misuse or abuse of lithium-ion batteries could result in death or serious injury. (07729b)

In the event of a crash, always handle as though the electric vehicle's high voltage system is charged and powered up. Stay clear of the motorcycle and contact an emergency response team to evaluate the vehicle. Damage to a high voltage battery may result in immediate or delayed release of toxic/flamable gases and/or fire.

In the Event of Contact with Internal Battery Contents

⚠ WARNING

Contact with internal battery contents can have serious health effects. Wear protective face shield, rubberized gloves, respiratory protection, and protective clothing when handling damaged batteries. Failure to wear proper protective gear while handling a damaged battery could result in death or serious injury.

See Safety Data Sheet (SDS) for more details available at sds.harley-davidson.com (07728b)

General information: The following first aid measures are required only in case of exposure to internal battery contents after damage of the external battery casing.

Table 3. Battery Electrolyte Antidote

Physical Location	Procedure
After Inhalation	• Remove to fresh air • Wash mouth and nasal passages with water • If patient is not breathing, apply artificial respiration • Do not perform mouth-to-mouth resuscitation • Call a physician immediately
After Contact with Skin	• Wash off immediately with plenty of water and soap for at least 15 minutes • Take off contaminated clothing and wash it before reuse • Call a physician immediately
After Contact with Eyes	• Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes • Remove contact lenses, if present and easy to do. Continue rinsing • Seek medical treatment by eye specialist

Table 3. Battery Electrolyte Antidote

Physical Location	Procedure
After Ingestion	• Rinse mouth • Drink plenty of water or milk • Never give anything by mouth to an unconscious person • Do not induce vomiting • Call a physician immediately

Hazardous Materials

For the purpose of shipping and handling, lithium ion batteries are considered hazardous materials. Refer to local regulations regarding special handling and packing requirements, shipping instructions, and for training requirements on hazardous materials.

Consumers are responsible for recycling or proper disposal of used batteries. Dispose in accordance with methods that meet or exceed all state and federal environmental laws.

- Never mix lithium-ion battery cores with lead acid cores.

Maintenance

⚠ WARNING

Perform the service and maintenance operations as indicated in the regular service interval table. Lack of

regular maintenance at the recommended intervals can affect the safe operation of your motorcycle, which could result in death or serious injury. (00010a)

- A new motorcycle must be operated according to the special break-in procedure. See Break-in Riding Rules (Page 40).
- Proper care and maintenance, including tire pressure, tire condition, tread depth and proper adjustment to steering head bearings are important to stability and safe operation of the motorcycle. See Service Records (Page 175).

Parts and Accessories

⚠ WARNING

Harley-Davidson parts and accessories are designed for Harley-Davidson motorcycles. Using non-Harley-Davidson parts or accessories can adversely affect performance, stability or handling, which could result in death or serious injury. (00001b)

- Use only Harley-Davidson approved parts and accessories. Use of certain other manufacturer's performance parts will void your new motorcycle warranty. See your Harley-Davidson dealer for details.

⚠ WARNING

Use Harley-Davidson replacement fasteners. Aftermarket fasteners can adversely affect performance, which could result in death or serious injury. (00013a)

- See your Harley-Davidson service manual for proper torque values.
- Aftermarket fasteners may not have the specific property requirements to perform properly.

⚠ WARNING

See the Accessories and Cargo section in your owner's manual. Improper cargo loading or accessory installation can cause component failure and adversely affect stability, handling and performance, which could result in death or serious injury. (00021b)

- Harley-Davidson Motor Company cannot test and make specific recommendations concerning every accessory or combination of accessories sold. Therefore, the rider must be responsible for safe operation of the motorcycle when installing accessories or carrying additional weight.
- Additional electrical equipment may overload the electrical system possibly resulting in electrical system and/or component failure.

EMERGENCY RESPONSE SAFETY

Harley-Davidson electric vehicles have been designed with many safety features for your protection. These features help provide safe access to the vehicle under various conditions.

If your vehicle has had a minor tip over, upright vehicle, turn off power and check for damage. If damage is found, see your Authorized Harley-Davidson Electric Vehicle (EV) dealer for repairs.

⚠ DANGER

This vehicle contains a high voltage Rechargeable Energy Storage System (RESS). An improperly handled or damaged RESS can cause electrical shock and/or fire, which will result in death or serious injury.

- **RESS must only be serviced by a qualified technician using proper Personal Protective Equipment (PPE).**
- **Do not touch RESS connecter terminals with fingers, tools, jewelry, or other metal objects.**
- **Do not disconnect, disassemble, or use RESS for other than its intended use.**
- **Improper charging, impact or exposure to fire can damage the RESS.**
- **A damaged RESS can leak electrolyte and/or generate flammable gas.**

(08705a)

⚠ DANGER

A damaged RESS can leak electrolyte. Contact with electrolyte will cause serious chemical burns or blindness.

- **Always wear proper Personal Protective Equipment (PPE) while handling RESS.**
- **If electrolyte comes in contact with eyes, skin, or clothing, rinse affected area with clean water and seek medical attention immediately.**
- **See Safety Data Sheet (SDS) for more details available at sds.harley-davidson.com**

(08706a)

⚠ WARNING

Misused or abused lithium-ion batteries can get hot, explode or ignite, or potentially release gas, smoke or liquid. Always follow battery safety precautions. Misuse or abuse of lithium-ion batteries could result in death or serious injury. (07729b)

Inspect your motorcycle if it has been submerged or involved in any accident incident. Always check for:

- Exposed wiring, damaged connectors or damaged housings of any components.
- Venting of vapors/gasses.
- Signs of sparks, smoke, or bubbling noises.

- Escaping fluids.
- Signs of radiating high heat.

In the event of a crash or any of these symptoms, always assume the electric vehicle's high voltage system is charged and powered up. Stay clear of the vehicle and immediately contact an emergency response team to evaluate the vehicle. Damage to a high voltage battery may result in immediate or delayed release of toxic/flamable gases and/or fire.

⚠ WARNING

Contact with internal battery contents can have serious health effects. Wear protective face shield, rubberized gloves, respiratory protection, and protective clothing when handling damaged batteries. Failure to wear proper protective gear while handling a damaged battery could result in death or serious injury.

See Safety Data Sheet (SDS) for more details available at sds.harley-davidson.com (07728b)

The following first aid measures are required only in case of exposure to internal battery contents after damage of the external battery casing.

Table 4. Battery Electrolyte Antidote

Physical Location	Procedure
After Inhalation	• Remove to fresh air • Wash mouth and nasal passages with water • If patient is not breathing, apply artificial respiration • Do not perform mouth-to-mouth resuscitation • Call a physician immediately
After Contact with Skin	• Wash off immediately with plenty of water and soap for at least 15 minutes • Take off contaminated clothing and wash it before reuse • Call a physician immediately
After Contact with Eyes	• Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes • Remove contact lenses, if present and easy to do. Continue rinsing • Seek medical treatment by eye specialist

Table 4. Battery Electrolyte Antidote

Physical Location	Procedure
After Ingestion	• Rinse mouth • Drink plenty of water or milk • Never give anything by mouth to an unconscious person • Do not induce vomiting • Call a physician immediately

ANTI-LOCK BRAKE SYSTEM (ABS)

⚠ WARNING

If ABS lamp continues flashing at speeds greater than 3 mph (5 km/h) or remains on continuously, the ABS is not operating. The standard brake system is operational, but wheel lock up can occur. Contact a Harley-Davidson Dealer to have ABS repaired. A locked wheel will skid and can cause loss of vehicle control, which could result in death or serious injury. (00361b)

To operate motorcycles equipped with an anti-lock brake system, see Reflex Defensive Rider Systems (Page 108).

RULES OF THE ROAD

- Always sound your horn, use your turn signals and exercise caution when passing other vehicles going in the same

direction. Never pass going in the same direction at street intersections, on curves or when going up or down a hill.

- At street intersections, give the right-of-way. Do not presume you have the right-of-way, as the other driver may not know that it is your turn.
- Always signal when preparing to stop, turn or pass.
- Promptly obey all traffic signs, including those signs used for the control of traffic at intersections. Always obey traffic signs near schools and at railroad crossings.
- When intending to turn, signal at least 100 ft (30.5 m) before reaching the turning point. If turning across an intersection, move over to the centerline of the street (unless local rules require otherwise). Slow down when entering the intersection and turn carefully.
- Never anticipate a traffic light. When a change is indicated from GO to STOP (or STOP to GO), slow down and wait for the light to change. Never run through a yellow or red traffic light.
- While turning, watch for pedestrians, animals, as well as vehicles.
- Do not leave the curb or parking area without signaling. Make sure that your way is clear to enter moving traffic. A moving line of traffic always has the right-of-way.
- Make sure that your license plate is installed in the position specified by law. Make sure that your license plate is always clearly visible. Keep the license plate clean.
- Ride at a safe speed that is consistent with the type of highway you are on. Pay strict attention to whether the road is dry, oily, icy or wet.
- Watch for debris such as leaves or loose gravel.
- Weather and traffic conditions on the highway dictate adjusting your speed and driving habits accordingly.

SAFETY SYMBOL DEFINITIONS

These are some of the symbols that you may see on your motorcycle and may accompany safety words, see Safety Definitions (Page 3). The symbols indicate potential safety hazards and avoidance actions to prevent a hazardous situation. The symbols may be present in manuals, instructions, on the motorcycle and/or Parts & Accessory product labels. Refer to Safe Operating Rules (Page 3), the appropriate section in this manual and/or Parts & Accessory instructions for additional safety information.

- Yellow triangle: Safety symbol alerting to a hazard. Refer to Table 5.
- Red circle with line: Prohibition symbol to avoid a situation which may lead to a hazard, personal injury and/or property damage. Refer to Table 6.
- Blue circle: Mandatory action to avoid a hazard resulting in personal injury and/or property damage. Refer to Table 7.

Table 5. General Warning Symbols

SYMBOL	SYMBOL DEFINITION
	General Warning indicating a hazard.
	Crash hazard.
	Electric shock hazard.
	Battery charging hazard.
	Explosive material hazard.
	Corrosive chemical burn hazard.
	Hot surface hazard.

Table 6. General Prohibition Symbols

SYMBOL	SYMBOL DEFINITION
	General prohibition sign to signify a prohibited action.
	Do not service without proper training or tools. Qualified technician only. Not user serviceable. No user replaceable parts. Refer service to qualified technician.
	Do not touch.
	Keep away from open flame. Avoid smoking, flames, or sparks.
	Do not expose to fire.
	Do not perform action above indicated temperature.
	Never tow a trailer.
	Do not use an extension cord.

Table 7. General Mandatory Action Symbols

SYMBOL	SYMBOL DEFINITION
	General mandatory action.
	Refer to appropriate manual or instructions.
	Take a rider training course.
	Wear a helmet and eye protection.
	Wear proper protective riding gear.
	Wear proper hand protection.
	Wear proper Personal Protective Equipment (PPE).
	Wear proper eye protection.

Table 8. General Information Symbols

SYMBOL	SYMBOL DEFINITION
	First responder cut loop. Emergency Personnel/First Responder use only.
	Protect from rain or wet conditions.

LABELS

See Figure 1 for safety and maintenance labels which were on the vehicle when new. Refer to Table 9.

NOTE

Replacement labels can be purchased for your motorcycle. See a Harley-Davidson dealer. Some labels are available in different languages for destinations outside the United States.

Refer to Safety Symbol Definitions (Page 21) for definitions of symbols on labels.

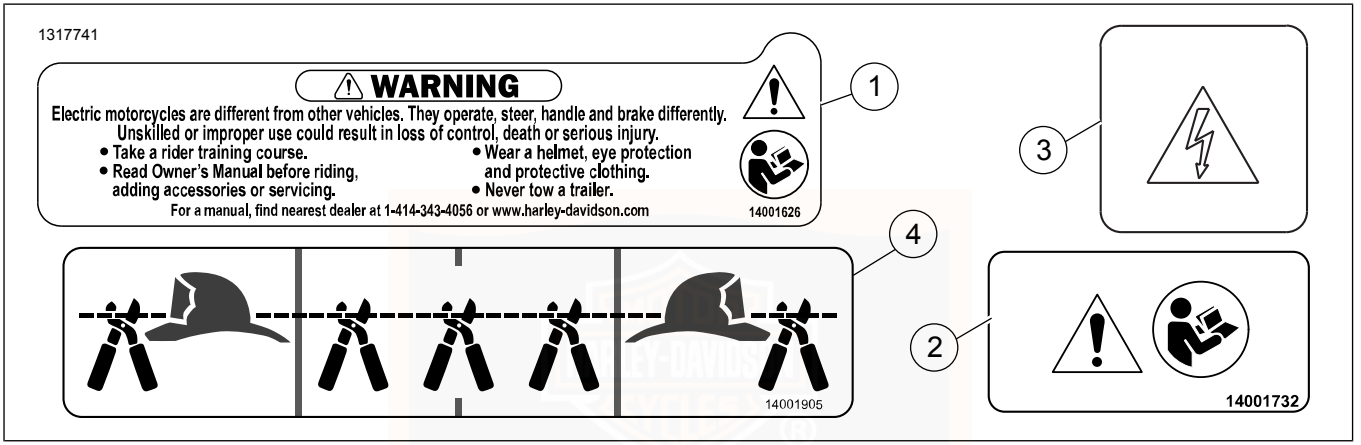


Figure 1. Labels

Table 9. Labels

ITEM	PART NO.	DESCRIPTION	LOCATION	TEXT
1	14001626	General warnings	Top of rear fender	WARNING: Electric motorcycles are different from other vehicles. They operate, steer, handle and brake differently. Unskilled or improper use could result in loss of control, death or serious injury. • Take a rider training course. • Read Owner's Manual before riding, adding accessories or servicing. • Wear a helmet, eye protection and protective clothing. • Never tow a trailer. For a manual, find nearest dealer at 1-414-343-4056 or www.harley-davidson.com
2	14001732	Battery warning	On battery box cover	No text, label uses ISO images.
3	14001630	High voltage warning	On left side high voltage wire cover	No text, label uses ISO images. ISO High voltage warning.
4	14001905	First responder cut loop identification	Under left and right sides of top cover on 12 V power lead	No text, label uses ISO images. Emergency Personnel/First Responder use only.

NOTES

VEHICLE IDENTIFICATION NUMBER (VIN)

General

See Figure 3. A unique 17-digit serial or Vehicle Identification Number (VIN) is assigned to each motorcycle. Refer to Table 10.

Location

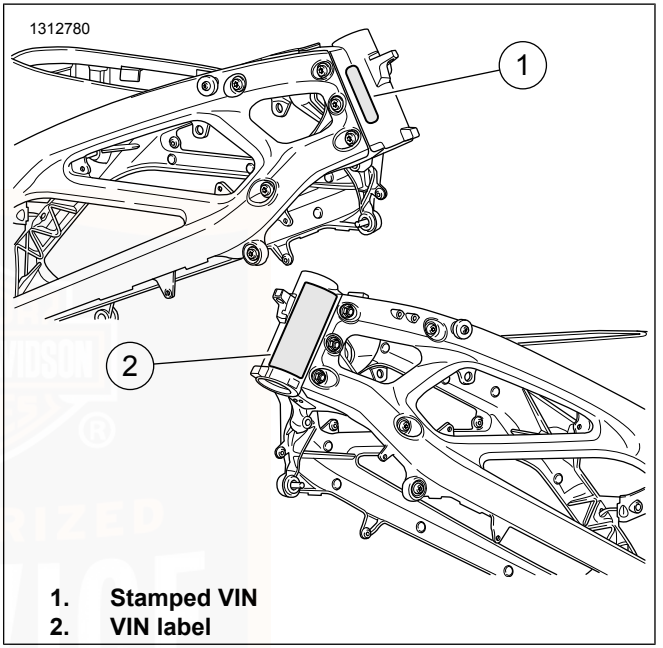
See Figure 2. The full 17-digit VIN is stamped on the right side of the frame near the steering head. In some destinations, a printed VIN label is also attached on the left side of the steering head.

Abbreviated VIN

An abbreviated VIN showing the vehicle model, motor type, model year, and sequential number is stamped on the left side of the electric vehicle powertrain.

NOTE

Always give the full 17-digit Vehicle Identification Number when ordering parts or making any inquiry about your motorcycle.



1. **Stamped VIN**
2. **VIN label**

Figure 2. VIN Locations

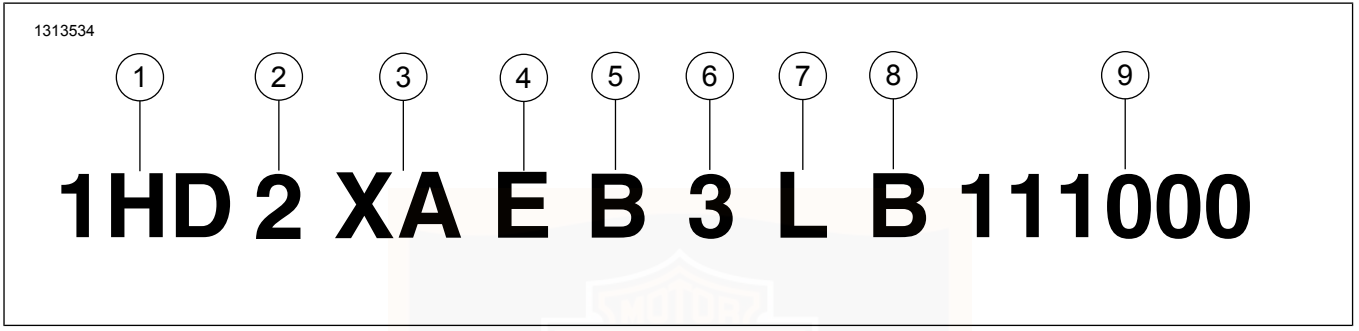


Figure 3. Typical Harley-Davidson VIN: 2020 LiveWire Model

Table 10. Harley-Davidson VIN Breakdown: 2020 LiveWire Model

POSITION	DESCRIPTION	POSSIBLE VALUES	
1	World manufacturer identifier®	1HD=Originally manufactured in the United States 5HD=Originally manufactured in the United States for sale outside the United States	
2	Motorcycle type	2=Middleweight electric motorcycle	
3	Model	XA=ELW LiveWire®	
4	Motor type	E=Revelation® electric power train	
5	Configuration/calibration, introduction	**Normal Introduction** B=EV1 C=EV2 D=EV3 E=EV4 F=EV5	**Mid-year or Special Introduction**
6	VIN check digit	Can be 0-9 or X	

Table 10. Harley-Davidson VIN Breakdown: 2020 LiveWire Model

POSITION	DESCRIPTION	POSSIBLE VALUES
7	Model year	L=2020
8	Assembly plant	B=York, PA USA D=H-D Brazil-Manaus, Brazil (CKD) N=Haryana India (Bawal District Rewari) S=Tasit, Pluagdang, Rayong, Thailand
9	Sequential number	Varies

MODELS AND FEATURES

Some models, features or configurations shown in this manual may not be available in all markets.

Harley-Davidson reserves the right to change specifications, equipment or designs at any time without notice and without incurring obligation.

PRIMARY CONTROLS AND SERVICE COMPONENTS

Familiarize yourself with the location of all the controls and service components on your motorcycle.

NOTE

Illustrations are for general reference only. Controls and service components shown are general locations and representations that do not show a specific model of motorcycle.

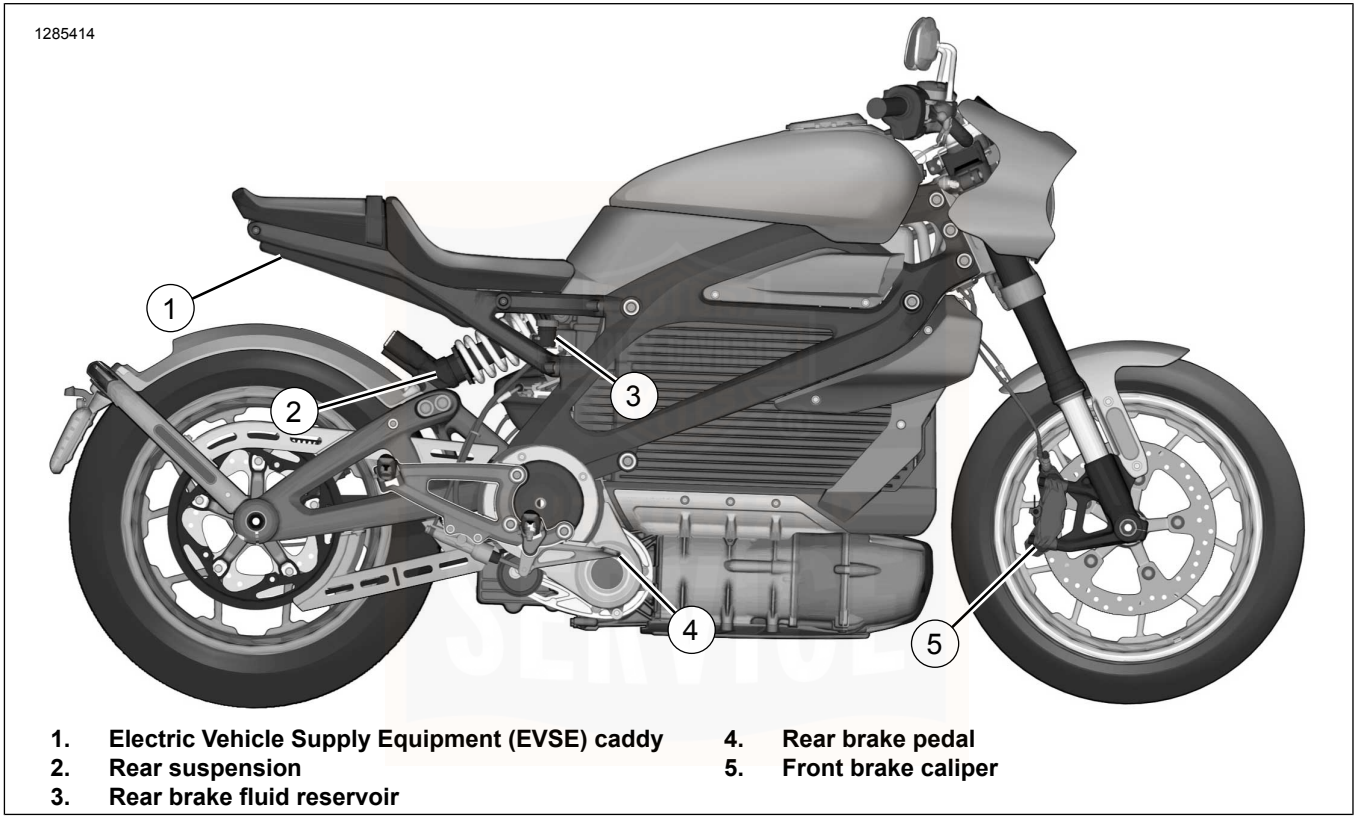
See Figure 4 for rider controls and service components accessible when seated.

See Figure 5 for rider controls and service components accessible from the right.

See Figure 6 for rider controls and service components accessible from the left.

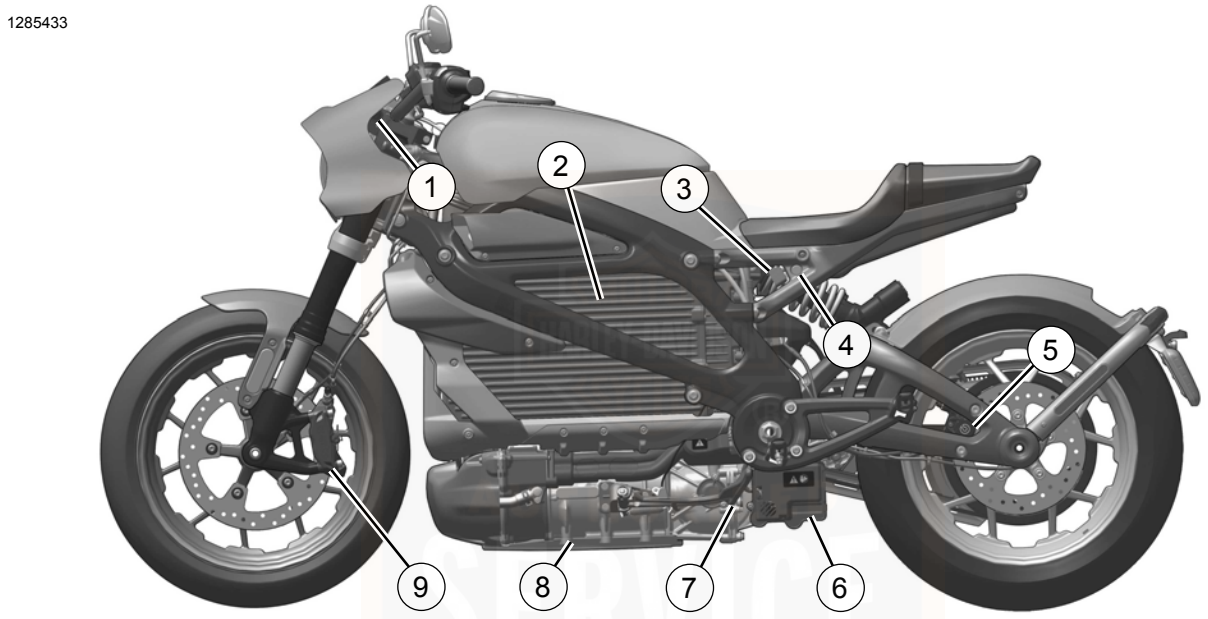
1. **Vehicle inlet/Charge port**
2. **Left hand control module**
3. **Instrument module**
4. **Front brake fluid reservoir**
5. **Front brake lever**
6. **Throttle twist grip**
7. **Right hand control module**

Figure 4. Controls and Service Components



1. **Electric Vehicle Supply Equipment (EVSE) caddy**
2. **Rear suspension**
3. **Rear brake fluid reservoir**
4. **Rear brake pedal**
5. **Front brake caliper**

Figure 5. Controls and Service Components



1. **USB port**
2. **Rechargeable Energy Storage System (RESS)**
3. **Seat latch**
4. **Seat lock**
5. **Rear brake caliper**
6. **Battery box**
7. **Jiffy stand**
8. **Electric Vehicle Power-Train (EVPT)**
9. **Front brake caliper**

Figure 6. Controls and Service Components

SPECIFICATIONS

NOTE

- *Specifications in this publication may not match those of official certification in some markets due to timing of publication printing, variance in testing methods, and/or motorcycle differences. Customers seeking officially recognized regulatory specifications for their motorcycle should refer to certification documents and/or contact their respective dealer or distributor.*
- *Harley-Davidson reserves the right to change specifications, equipment or designs at any time without notice and without incurring obligation. Refer to your respective dealer or www.harley-davidson.com for the latest available information.*

Tires

Table 11. Specified Tires

MODEL	MOUNT	SIZE	SPECIFIED TIRE	PRESSURE COLD	
				psi	kPa
ELW LiveWire®	Front	17 in	Michelin Scorcher Sport 120/70 ZR17 58W	36 psi	248 kPa
ELW LiveWire®	Rear	17 in	Michelin Scorcher Sport 180/55 ZR17 73W	42 psi	290 kPa

⚠ WARNING

Harley-Davidson recommends the use of its specified tires. Harley-Davidson vehicles are not designed for operation with non-specified tires, including snow, moped and other special-use tires. Use of non-specified tires can adversely affect stability, handling or braking and lead to loss of vehicle control, which could result in death or serious injury. (00024d)

Weights and Dimensions

Table 12. Weights

ITEM	lb	kg
Running weight [(1)]	548 lb	249 kg
Maximum additional weight allowed[(2)]	400 lb	181 kg
GVWR	948 lb	430 kg
GAWR front	434 lb	197 kg
GAWR rear	580 lb	263 kg
(1) The total weight of the motorcycle as delivered with all fluids. *(2) The total weight of accessories, cargo, riding gear, passenger and rider must not exceed this weight.*		

Table 13. Dimensions

ITEM	in	mm
Overall length	84.5 in	2,146 mm
Overall width	32.8 in	833 mm
Overall height	42.4 in	1,077 mm
Wheelbase	58.7 in	1,491 mm
Road clearance	5.1 in	130 mm
Seat height[(1)]	29.5 in	749 mm
(1) With 180 lb (81.6 kg) rider on seat.		

Capacities

Table 14. Capacities

ITEM	U.S.	METRIC
Transmission (approximate)	0.34 qt	0.32 L
Coolant (approximate)	0.8 qt	0.72 L

Motor and Transmission

Table 15. Motor: Revelation

ITEM	SPECIFICATION
Type®	Internal Permanent Magnet Synchronous Motor Water Jacket Cooling
Inverter Type	IGBT
Torque	86 ft-lbs (116 N·m)
Horsepower	105 hp (78 kW)
RPM	15,000 rpm Max

Table 16. Transmission

ITEM	SPECIFICATION
Type	Single Speed
Gear Ratio	9.706

Electrical

Table 17. Rechargeable Energy Storage System (RESS)

ITEM	SPECIFICATION
Type	Lithium Ion
Capacity	15.5kWh
On-board Charger Charge Rate	1400W
DC to DC Conversion	450W at 14.2V

Table 18. 12 Volt Electrical

ITEM	SPECIFICATION
Battery	Lithium Ion 12.8 V, 24 Wh, 120 A sealed and maintenance free
Charging system	Onboard DC to DC conversion

NOTES

REMOVING MOTORCYCLE FROM STORAGE

1. Charge the battery. See Charging Motorcycle (Page 40).
2. Inspect drive belt and sprocket. See Check Drive Belt Deflection (Page 132).
3. Perform the items in the Pre-Ride Checklist (Page 39).

PRE-RIDE CHECKLIST

1. Check Rechargeable Energy Storage System (RESS) State of Charge (SOC). Charge if required. See Charging Motorcycle (Page 40).
2. Adjust mirrors to proper riding positions. See Adjusting Mirrors (Page 54).
3. Check brake fluid level. See Checking Brake Fluid Level and Changing Brake Fluid (Page 137).
4. Inspect brake pads and discs for wear. See Inspecting Brake Pads and Discs (Page 135).
5. Check the hand and foot controls to be sure they are operating properly. Operate the front and rear brakes and throttle. See Operation (Page 75).
6. Inspect brake lines for wear or damage. See Checking Systems for Leaks or Abrasions (Page 139)
7. Check steering for smoothness by turning the handlebar through the full operating range.

⚠ WARNING

Be sure tires are properly inflated, balanced, undamaged, and have adequate tread. Inspect your tires regularly and see a Harley-Davidson dealer for replacements. Riding with excessively worn, unbalanced, improperly inflated, overloaded or damaged tires can lead to tire failure and adversely affect stability and handling, which could result in death or serious injury. (00014b)

8. Check tire condition, pressure and motorcycle loading. Refer to Checking Tire Pressure and Inspecting Tires (Page 50) for correct tire inflation pressure and motorcycle weight allowances.
9. Check suspension front and rear pre-load settings. Adjust to motorcycle loading, if necessary. Refer to Suspension Adjustments (Page 55), Adjusting Rear Shock Absorbers (Page 57) and Adjusting Front Shock Absorbers (Page 60).
10. Check for any fluid leaks. See Checking Systems for Leaks or Abrasions (Page 139).
11. Check drive belt for wear or damage. See Check Drive Belt Deflection (Page 132).

⚠ WARNING

Be sure headlamp, tail and stop lamp and turn signals are operating properly before riding. Poor visibility of rider to other motorists can result in death or serious injury. (00478b)

12. Check all electrical equipment and switches including the headlamp, tail and stop lamp, turn signals and horn for proper operation.

13. Service your motorcycle as necessary. See Service Records (Page 175).

BREAK-IN RIDING RULES

The sound design, quality materials, and workmanship that are built into your new Harley-Davidson will give you optimum performance right from the start.

Your EV motorcycle powertrain does not require any break-in period. For general break-in we recommend that you observe the riding rules provided below.

1. Avoid hard braking. Break-in new brakes with moderate use for the first 100 mi (160 km).

CHARGING MOTORCYCLE

General Information

LiveWire is powered by a lithium-ion Rechargeable Energy Storage System (RESS). Lithium-Ion technology provides higher power and energy density, faster charging, and longer life than traditional lead-acid batteries. The RESS's onboard DC-to-DC charger handles all charging and maintenance of the 12 V battery.

State of Charge (SOC) is the amount of energy in the RESS available to use before it needs to be recharged. The State of Health (SOH) is the measurement of impedance and capacity degradation of the RESS compared to when it was new. All lithium-ion batteries chemically age through time and use, resulting in a gradual degradation of performance and the ability to hold a charge. A 20% loss of SOH is expected over the life of the RESS warranty.

A battery's lifespan is related to the chemical breakdown and aging process which involves more than just time and use. It involves duration at high temperatures, types of charging, number of charge/discharge cycles, and storage duration. To maximize RESS performance and help extend RESS lifespan follow these tips:

- When recharging the RESS, choose Level 1 (110V to 220V) charging when possible. Level 1 charging causes the least amount of stress to the RESS.

- The RESS does not limit the number of times a Level 3 DC fast charger (480V) can be used. However, more frequent DC fast charging will stress the RESS more than Level 1 charging. If possible, avoid using DC fast charge, exclusively. The suggested best practice is to alternate your charging between Level 1 and Level 3 DC Fast Charge in a 4:1 ratio (4 Level 1 charges to every 1 Level 3 fast charge).
- The battery will protect itself from thermal damage, however extended periods of time operating at high temperature can speed the chemical aging process and shorten RESS lifespan.

The RESS is designed to charge quickly to 80% of its capacity, at which point the charge rate then slows to reduce the rate of RESS degradation. If the battery is too hot or too cold, the charge rate will automatically reduce to a sustainable level. Charging below 0C or over 50C/122F will result in significantly increased charge time. Under extreme usage or extreme temperature conditions, the RESS may limit its performance in order to prevent damage.

Electric Vehicle Supply Equipment (EVSE), Level 1 Charging

The EVSE is also commonly referred to as the vehicle charging cord which is stored under the seat. The EVSE includes the Charge Module (connection to the wall outlet), the cable and the Coupler (connection to the motorcycle). See EVSE Storage (Page 48).

The EVSE features:

- Compact, portable design
- Overheating protection
- Quick-read status indicator lights
- Underwriters Laboratories (UL) listed
- Auto-restart in event of ground fault or power outage

The motorcycle charging port provides primary EVSE theft resistance feature via an inlet lock pin commanded by the OBC.

Indicator Lights

- Blue Light – Status Indicator

  When plugged into the wall outlet, the blue status indicator light illuminates to communicate that the charger is ready to use.

  While the battery is charging, the blue light will blink on and off approximately every two seconds. See Figure 7.

  When fully charged, the blue light will change to solid blue. See Figure 8.

- Red – Trouble Indicator

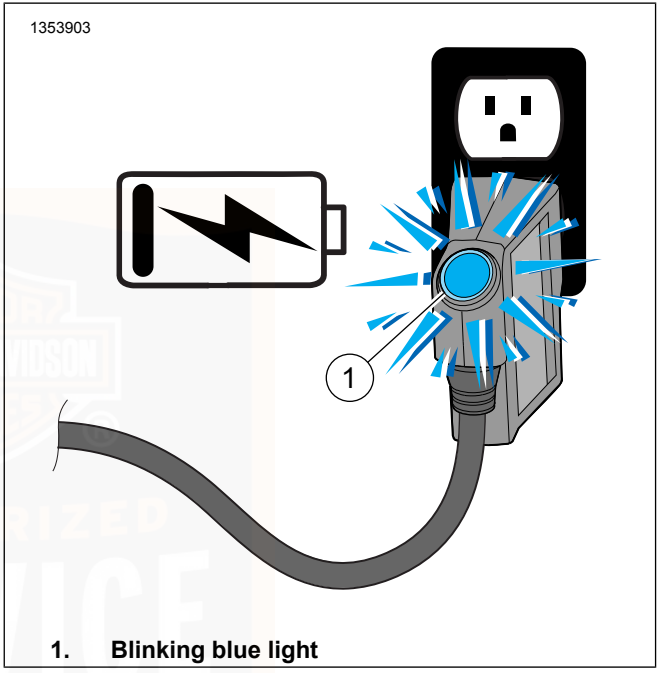
The red trouble indicator light illuminates when the charger has detected an error. See Figure 9. If the light is illuminated the charger will not deliver power to the vehicle. The error must be corrected before a charging cycle can begin or continue. Refer

to Troubleshooting in the EVSE Owner's Manual for more information.

NOTE

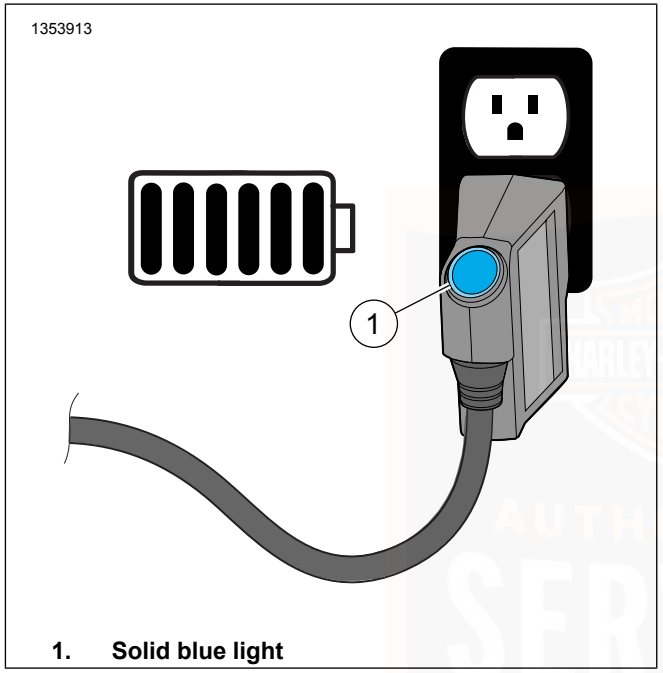
A momentary blink of the red trouble indicator light at first plug-in to the wall is normal and functions as a start-up safety check. This momentary blink is followed by the solid blue light and the red light turns off.

A constant or blinking red light indicates an actual problem.



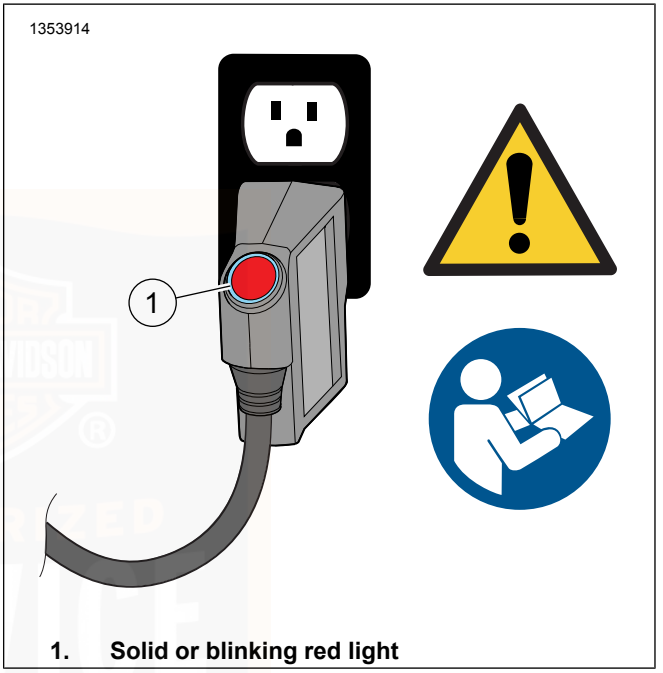
1. **Blinking blue light**

Figure 7. EVSE Charge Module - Charging



1. Solid blue light

Figure 8. EVSE Charge Module - Fully Charged



1. Solid or blinking red light

Figure 9. EVSE Charge Module - Fault

Charging

NOTE

EVSE is designed to plug directly into wall outlet. Do not use extension cords to reach motorcycle. Move motorcycle closer to outlet if EVSE will not reach. See Figure 10.

If the motorcycle tips over while plugged into a charger, the motorcycle will sense the tip and terminate charging.

When plugging into an unfamiliar wall outlet, it is good practice to let the vehicle charge for several minutes before leaving it unattended, to ensure it is in fact supplying the expected AC charging power.

1. Plug the CHARGE MODULE into the appropriate wall outlet. See Figure 11.
2. The red light will blink then the blue light on the CHARGE MODULE should be ON. This means that the charger is ready to provide power to your vehicle.

NOTE

When charging your motorcycle in a public location using the EVSE, be sure to use the Vehicle Inlet Security Insert to prevent theft of the EVSE. Install the insert into the motorcycle charging inlet, and then connect the charge coupler. See Figure 12. Store the insert with the EVSE in the EVSE caddy when not in use. See EVSE Storage (Page 48).

3. Plug the COUPLER into your vehicle's charging outlet until it clicks. See Figure 12. If inserted properly, the blue light on the CHARGE MODULE will blink once. Once latched, the COUPLER will not disengage unless the release button is manually pressed.
4. Automatic charging begins and power will be delivered in according to battery demand. While the battery is charging, the blue light will blink on and off approximately every two seconds.
5. When fully charged, the blue light will change to solid blue.

NOTE

Charging will automatically stop when battery is fully charged.

6. Disconnect COUPLER when the charge is complete by bringing fob to motorcycle, pressing the release button on the COUPLER and removing it from the vehicle. See Figure 13 and Figure 14.
7. Unplug CHARGE MODULE from wall outlet. See Figure 15.

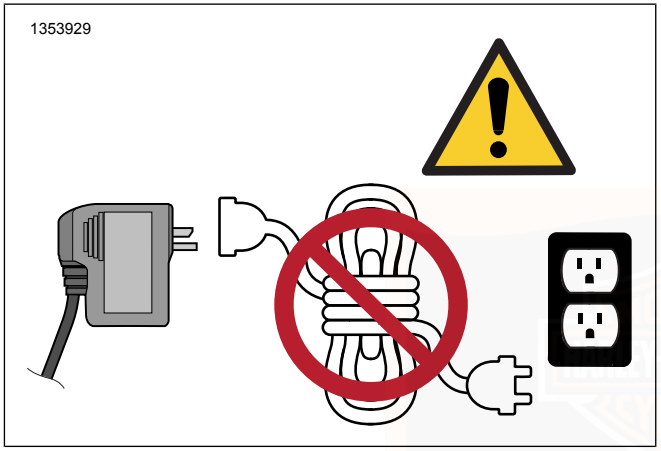


Figure 10. EVSE Charge Module - No Extension Cord

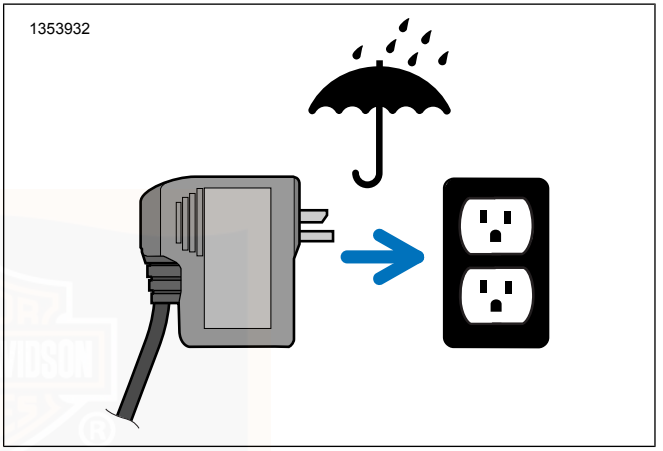


Figure 11. EVSE Charge Module - Keep Dry

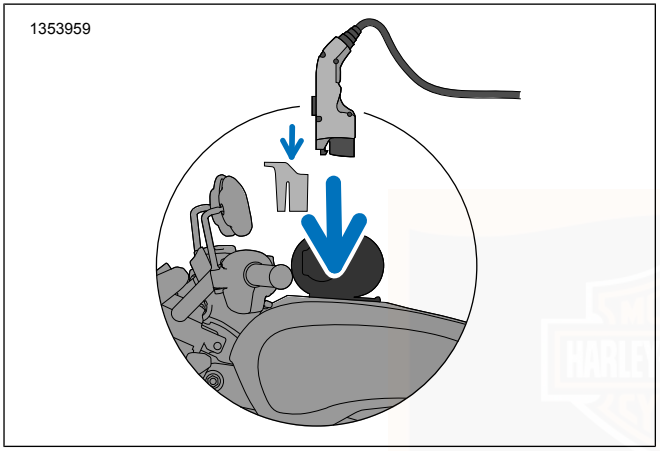


Figure 12. EVSE - Insert Coupler

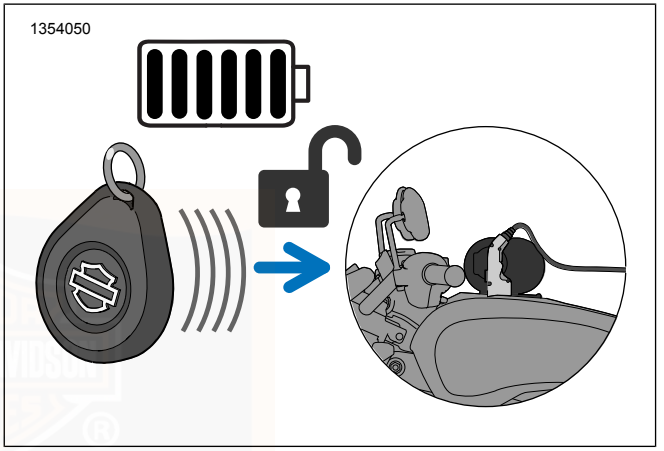


Figure 13. EVSE Coupler - Fob Present to Unlock Coupler

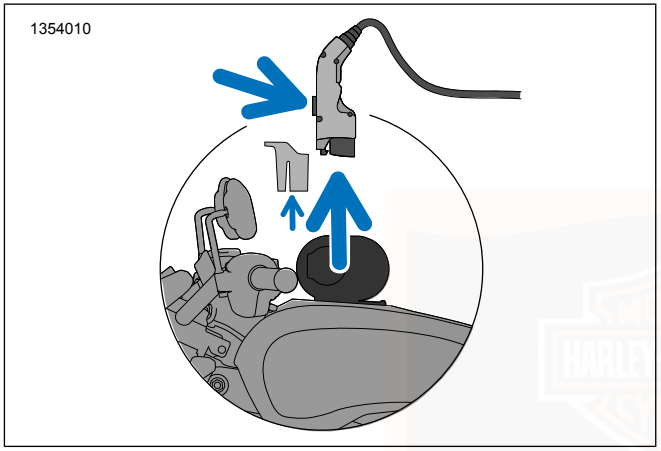


Figure 14. EVSE - Remove Coupler

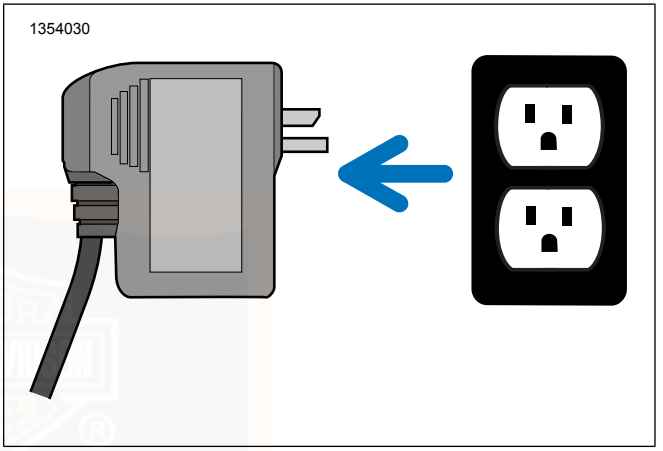


Figure 15. EVSE Charge Module - Un-Plug

Auto-Restart

Your EVSE has an auto-restart feature which ensures that your vehicle will be charged and ready for use when needed. When a charge interrupt occurs and an error is detected, the charger will cycle on and off to clear the error until the auto-restart removes the error. Charging will resume once the error is no longer detected. If the error is not overcome, the RED TROUBLE Indicator will remain.

The exception to an immediate restart is when the interruption is due to a charger GFCI fault. The Charger will attempt to restart 15 minutes after a GFCI event. After the fourth attempt

to restart, the charger will shut down and the RED TROUBLE Indicator will stay ON.

If the fault persists, do not continue to try to charge your vehicle. Contact Harley-Davidson Customer Support, www.harley-davidson.com.

Level 1 and 2 AC Charging and Level 3 DC Fast Charging Stations

AC Level 1 and 2 slow chargers connect through the charging port and the electrical power is then converted to DC through the OBC which then charges the RESS. AC Level 2 can be accepted but OBC charging ability will only allow for it to charge at a Level 1 rate.

Level 3 DC fast charging stations provide a high power DC current to the electric vehicle's battery without passing through the a converter. Which means the current is connected directly to the battery, making the charging process much faster than the AC slow charging process. Per industry standards for safety, inlet lock pin is also commanded by the OBC during all DC charging events to prevent High Voltage exposure.

NOTE

This vehicle complies with ECE R10 Section 7.20.4 when used in REESS (REchargeable Energy Storage System) charging mode coupled to a power grid with cables shorter than 98 ft (30 m).

EV charging stations are located in many places. Be sure to read and follow the instructions supplied at the charger location.

Storage

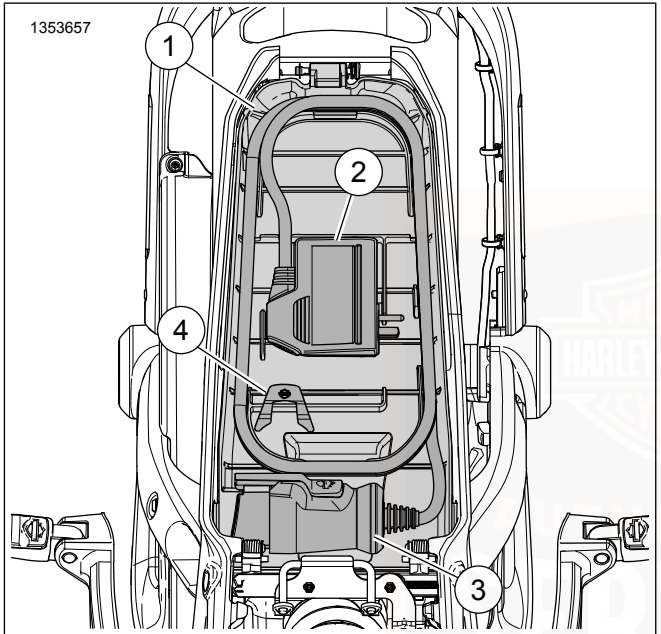
If it becomes necessary to store your motorcycle, follow the recommendations in Storing Motorcycle (Page 127).

EVSE STORAGE

The Electric Vehicle Supply Equipment (EVSE) can be stored under the seat in the EVSE caddy.

See Figure 16. For proper storage the EVSE should be placed into the caddy as shown.

1. Place coupler (3) within the guides in the EVSE caddy (1).
2. Wrap EVSE counter-clockwise around guides in the caddy.
3. Place charge module (2) within the guides in the caddy.
4. Place vehicle inlet security insert (4) in the caddy over the guide.



1. **EVSE caddy**
2. **Charge module**
3. **Coupler**
4. **Vehicle inlet security insert**

Figure 16. EVSE Storage

ABS BRAKE SYSTEM IDENTIFICATION

Identification

See Figure 17. The ABS brake system can be identified by a wheel speed sensor on the left side of the front wheel.

See Figure 18. The ABS system will also have an ABS module (EHCU).

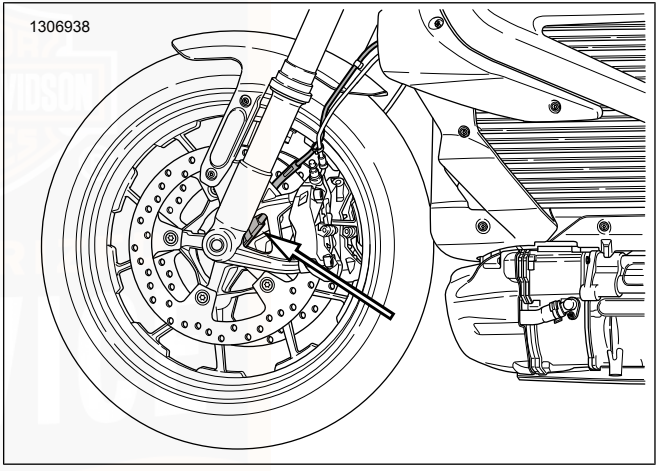


Figure 17. Wheel Speed Sensor (ABS identification)

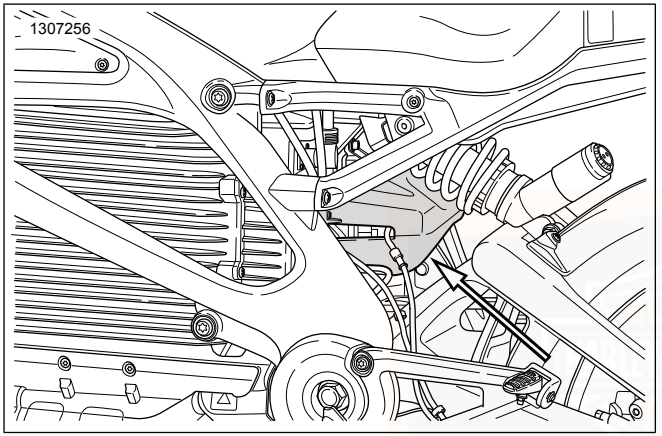


Figure 18. ABS Module (EHCU) Cover

CHECKING TIRE PRESSURE AND INSPECTING TIRES

General Information

⚠ WARNING

Match tires, tubes, rim strips or seals, air valves and caps to the correct wheel. Contact a Harley-Davidson dealer. Mismatching can lead to tire damage, allow tire slippage on the wheel or cause tire failure, which could result in death or serious injury. (00023c)

⚠ WARNING

Harley-Davidson front and rear tires are not the same. Interchanging front and rear tires can cause tire failure, which could result in death or serious injury. (00026a)

Tire Pressure

⚠ WARNING

Be sure tires are properly inflated, balanced, undamaged, and have adequate tread. Inspect your tires regularly and see a Harley-Davidson dealer for replacements. Riding with excessively worn, unbalanced, improperly inflated, overloaded or damaged tires can lead to tire failure and adversely affect stability and handling, which could result in death or serious injury. (00014b)

Tire pressures should be set using information in Table 19 and Table 20. Tires are considered Cold Tires if the vehicle has not been recently ridden. The tire pressure increases as the tire warms. Tires can warm due to both riding and high ambient air temperatures. Tires can remain warm for up to 2 hours after riding. For the most accurate reading, check tire pressures with a good gauge before riding while the tires are cold.

Check tire pressure:

- As part of the pre-ride checklist.
- At every scheduled service interval.

For Cold Tires with an Ambient Air Temp of 68 °F (20 °C) or less: Refer to Table 19.

Table 19. Specified Tires

MODEL	MOUNT	SIZE	SPECIFIED TIRE	PRESSURE COLD	
				psi	kPa
ELW LiveWire®	Front	17 in	Michelin Scorcher Sport 120/70 ZR17 58W	36 psi	248 kPa
ELW LiveWire®	Rear	17 in	Michelin Scorcher Sport 180/55 ZR17 73W	42 psi	290 kPa

For Cold Tires with an Ambient Air Temp higher than 68 °F (20 °C): Refer to the first column in Table 20 to determine the tire pressure adjustments. For example: If the motorcycle has not been ridden for 2 hours or more and the ambient temperature is 88 °F (31 °C), the recommended front and rear pressures are Table 19 pressures plus 2 psi (14 kPa).

Tires warm due to riding which increases the tire pressure. If the vehicle has been recently ridden, refer to the second column in Table 20 to determine the tire pressure adjustment. For example: If the motorcycle has been recently ridden and the ambient temperature is 88 °F (31 °C), the recommended front and rear pressures are the Table 19 pressures plus 7 psi (48 kPa).

If a tire pressure adjustment is made when the vehicle has been recently ridden, re-adjust the tire pressure per recommendations when the tires have cooled. Tires can remain warm for up to 2 hours after riding.

Harley-Davidson does not perform any testing with only nitrogen in tires. Harley-Davidson neither recommends nor discourages the use of pure nitrogen to inflate tires.

Table 20. Tire Pressure Adjustment

AMBIENT AIR TEMPERATURE	MOTORCYCLE NOT RIDDEN FOR 2 HOURS OR MORE: ADD TO FRONT AND REAR PRESSURES IN TABLE 1	MOTORCYCLE RECENTLY RIDDEN: ADD TO FRONT AND REAR PRESSURES IN TABLE 1
68 °F (20 °C) or less	0 psi (0 kPa)	5 psi (34 kPa)
79 °F (26 °C)	1 psi (7 kPa)	6 psi (41 kPa)

Table 20. Tire Pressure Adjustment

AMBIENT AIR TEMPERATURE	MOTORCYCLE NOT RIDDEN FOR 2 HOURS OR MORE: ADD TO FRONT AND REAR PRESSURES IN TABLE 1	MOTORCYCLE RECENTLY RIDDEN: ADD TO FRONT AND REAR PRESSURES IN TABLE 1
88 °F (31 °C)	2 psi (14 kPa)	7 psi (48 kPa)
99 °F (37 °C)	3 psi (21 kPa)	8 psi (55 kPa)
108 °F (42 °C) or higher	4 psi (28 kPa)	9 psi (62 kPa)

Inspecting Tires

⚠ WARNING

Replace tire immediately with a Harley-Davidson specified tire when wear bars become visible or only 1/32 in (1 mm) tread depth remains. Riding with a worn tire could result in death or serious injury. (00090c)

Check tire tread:

- As part of the pre-ride checklist.
- At every scheduled service interval.

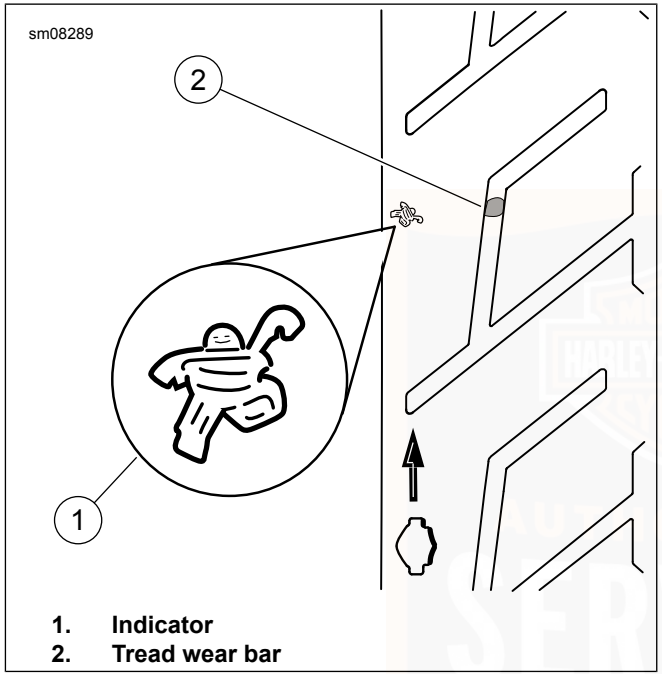
1. Inspect each tire for punctures, cuts and breaks.

Harley-Davidson tires are equipped with wear bars that run horizontally across the tread.

A tire is considered worn when the wear bars are visible or if only 0.031 in (0.8 mm) tread depth remains. A worn tire can:

- Be more easily damaged leading to tire failure.
- Provide reduced traction.
- Adversely affect stability and handling.

See Figure 19. Always replace tires before the tread wear bars appear.



1. Indicator
2. Tread wear bar

Figure 19. Tread Wear Indicator: Michelin Tires

Replacing Tires

⚠ WARNING

Tires are a critical safety component. Contact a Harley-Davidson dealer for tire repair or replacement. Improper tire service can adversely affect stability and handling, which could result in death or serious injury. (00057a)

⚠ WARNING

Harley-Davidson recommends the use of its specified tires. Harley-Davidson vehicles are not designed for operation with non-specified tires, including snow, moped and other special-use tires. Use of non-specified tires can adversely affect stability, handling or braking and lead to loss of vehicle control, which could result in death or serious injury. (00024d)

⚠ WARNING

Only install original equipment tire valves and valve caps. A valve, or valve and cap combination, that is too long or too heavy can strike adjacent components and damage the valve, causing rapid tire deflation. Rapid tire deflation can cause loss of vehicle control, which could result in death or serious injury. (00281a)

⚠ WARNING

Replace punctured or damaged tires. In some cases, small punctures in the tread area may be repaired from within the removed tire by a Harley-Davidson dealer. Speed should NOT exceed 50 mph (80 km/h) for the first 24 hours after repair, and the repaired tire should NEVER be used over 80 mph (129 km/h). Failure to follow this warning could lead to tire failure and result in death or serious injury. (00015b)

⚠ WARNING

Replace tire immediately with a Harley-Davidson specified tire when wear bars become visible or only 1/32 in (1 mm) tread depth remains. Riding with a worn tire could result in death or serious injury. (00090c)

New tires are needed if any of the following conditions exist (refer to Table 19 for the specified replacement tires):

- Tread wear bars become visible on the tread surfaces.
- Tire cords or fabric become visible through cracked sidewalls, snags or deep cuts.
- Bumps, bulges or slits in the tire.
- Punctures, cuts, or other damage to the tire that cannot be repaired.

When installing tires on rims, do not rely on tread design to determine direction of rotation. Always be sure the rotational arrows molded into the sidewalls point in the direction of rotation when the vehicle is moving forward.

ADJUSTING MIRRORS

⚠ WARNING

Objects in mirrors are closer than they appear. Use caution when judging distance of objects in mirrors. Failure to judge correct distances could result in death or serious injury. (00033a)

Adjust mirrors so you can see a small portion of your shoulders in each mirror. This will help you establish the relative distance of vehicles to the rear of your motorcycle.

OPERATING JIFFY STAND

Location

⚠ WARNING

Always park motorcycle on a level, firm surface. An unbalanced motorcycle can fall over, which could result in death or serious injury. (00039a)

⚠ WARNING

The jiffy stand locks when placed in the full forward (down) position with vehicle weight on it. If the jiffy stand is not in the full forward (down) position with vehicle weight on it, the vehicle can fall over which could result in death or serious injury. (00006a)

⚠ WARNING

Be sure jiffy stand is fully retracted before riding. If jiffy stand is not fully retracted, it can contact the road surface causing a loss of vehicle control, which could result in death or serious injury. (00007a)

See Primary Controls and Service Components (Page 31). The jiffy stand is located on the left side of the motorcycle.

When parking your motorcycle on a grade, position the motorcycle with front tire uphill. Place a wheel stop, such as a street curb or wheel chock, behind the rear tire to prevent movement of motorcycle.

The jiffy stand must be in the raised position for the motorcycle to start and run. A symbol and instruction will appear on the instrument module to raise the jiffy stand if attempting to start the motorcycle with jiffy stand down. Raising the jiffy stand will enable starting.

While the motorcycle is in motion at speeds greater than 15km/h (10mph), lowering the jiffy stand will not stop the motorcycle.

SUSPENSION ADJUSTMENTS

Damping is set at the factory for the average solo rider under normal riding conditions. The rider may make adjustments to compensate for individual riding styles and varying road conditions.

Evaluating and changing the rebound and compression damping is a very subjective process with many variables and should be approached carefully.

SUSPENSION DEFINITIONS

Damping: Resistance to velocity of suspension movement. Damping affects how easily the suspension can move and limits oscillations of the system once movement has begun.

Compression: The suspension is compressed when the wheel moves upward (when riding over a bump).

Rebound: The suspension is rebounding when it is moving back from being compressed (rebounding to the road surface after a bump).

Preload: An adjustment made to the rear shock and front fork springs to limit vehicle and rider sag to a standard percentage of total suspension travel.

Suspension Tuning

Make all suspension adjustments in small increments. Radical setting changes may cause you to skip the best adjustment.

Refer to Table 21. Possible suspension and operating characteristics and their probable causes are listed. This table is helpful in keeping your motorcycle in good operating condition.

To achieve the proper settings you will need the preload properly adjusted, the tires properly inflated and a familiar bumpy road. It is useful if the road contains a variety of different kinds of bumps from small sharp bumps such as potholes or frost heaves to large cracks.

Table 21. Suspension Tuning

SUSPENSION CHARACTERISTICS	SOLUTION
Bike wallows through turns.	Increase rebound damping.
Bike feels loose or vague after bumps.	
Wheel tends to "pogo" or suffer continuous bouncing after passing a bump. This is often noticable by watching the bike as it travels over bumps.	
Wheel responds to bump but doesn't return to ground quickly after bumps. This is more pronounced over a series of bumps and is often referred to as "packing down."	Reduce rebound damping.
Bike bottoms in dips or while cornering.	Increase compression damping.
Bike has excessive brake dive.	
Harsh ride, particularly over washboard surfaces.	Reduce compression damping.
Bumps transfer through handlebars or seat.	
Suspension seems not to respond to bumps. Tires chatter through corners or rider is jolted over rough roads.	

Changes in Load

The front and rear preload setting will need to be adjusted for the rider's weight and cargo. This adjustment should be made before the motorcycle is ridden any distance and after changing the overall vehicle weight (adding saddlebags, etc.).

Changes in the load carried requires changes in the preload settings. Carrying less weight than was used for setting up the suspension requires decreasing the amount of preload. Increasing the load carried requires adding more preload.

ADJUSTING REAR SHOCK ABSORBERS

General

Damping is set at the factory for the average solo rider under normal riding conditions. The rider may make adjustments to compensate for load, individual riding styles and varying road conditions.

Evaluating and changing the rebound and compression damping is a subjective process with many variables and should be approached carefully.

NOTICE

Compression and rebound adjusting valves may be damaged if too much force is used at either end of the adjustment range. (00237a)

NOTE

Do not force adjusters beyond mechanical stops.

Rebound and Compression Damping

Rebound Damping Adjustment

1. *NOTE*

***Rebound** adjuster is marked as **TEN** on the shock absorber.*

   See Figure 20. Turn rebound adjuster (1) clockwise in the H (hard) direction until it stops. This is the maximum rebound damping setting.

2. Turn rebound adjuster (1) counter-clockwise in the S (soft) direction the recommended number of turns. Refer to Table 24.

Compression Damping Adjustment

1. *NOTE*

***Compression** adjuster is marked as **COM** on the shock absorber.*

   See Figure 20. Turn compression adjuster (2) clockwise in the H (hard) direction until it stops. This is the maximum compression damping setting.

2. Turn compression adjuster (2) counter-clockwise in the S (soft) direction the recommended number of turns. Refer to Table 24.

Preload Adjustment

1. See Figure 20. Release the lock collar (4) on shock absorber by turning only the lock collar counter-clockwise until it stops at bottom of the threads.

2. Calculate rear preload settings.

   a. **Rider:** Refer to Table 22 for preload distance required for rider. Note distance required.

   b. **Passenger or cargo:** Refer to Table 23 for additional preload distance required for passenger or cargo. Note distance required.

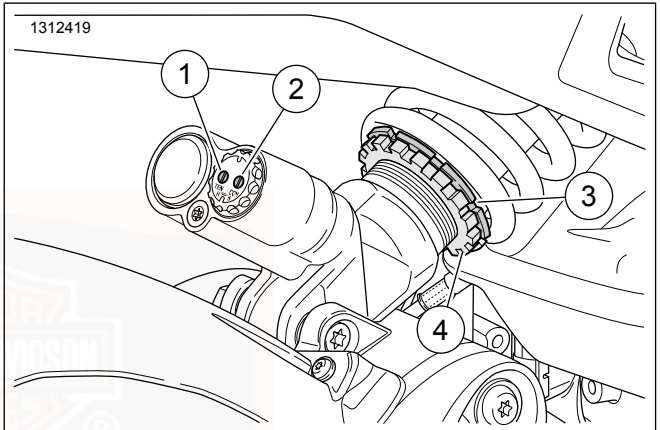
   c. Add rider and passenger/cargo preload amounts together to get final adjustment setting.

3. See Figure 20 and Figure 21. Adjust preload adjustment collar to the desired position.

   a. Turn collar clockwise to increase preload distance.

   b. Turn collar counter-clockwise to decrease preload distance.

4. Turn locking collar clockwise and lock collar against adjustment collar.



1. Rebound adjuster (marked TEN)
2. Compression adjuster (marked COM)
3. Preload adjustment collar
4. Preload adjustment lock collar

Figure 20. Rear Suspension Adjustment

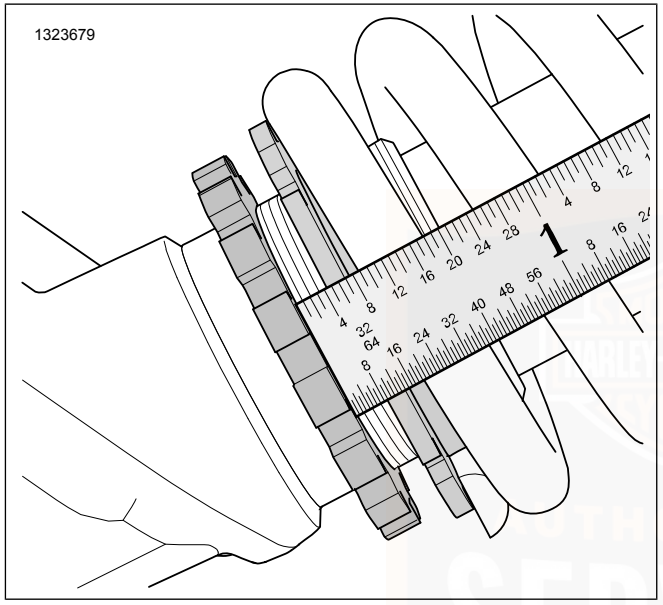


Figure 21. Rear Suspension Measurement

Table 22. Rear Preload Suspension Settings

RIDER WEIGHT	REAR SHOCK
kg/lb	Distance from Minimum[1]
<150 lb (68 kg)	0 in (0 mm)
150–170 lb (68–77 kg)	0 in (0 mm)
170–190 lb (77–86 kg)	0 in (0 mm)
190–210 lb (86–95 kg)	.04 in (1 mm)
210–230 lb (95–104 kg)	.08 in (2 mm)
230–250 lb (104–113 kg)	.12 in (3 mm)
250–270 lb (113–122 kg)	.20 in (5 mm)
270–290 lb (122–132 kg)	.27 in (7 mm)
290 lb (132 kg) to GVWR	.35 in (9 mm)
(1) Distance between adjuster nut and lock nut when lock nut is at minimum position (counter clockwise until stop).	

Table 23. Rear Preload with Passenger or Cargo

PASSENGER or CARGO	REAR SHOCK
kg/lb	Additional Distance[1]
0–50 lb (0–23 kg)	+.12 in (3 mm)
50–100 lb (23–45 kg)	+.27 in (7 mm)
100–150 lb (45–68 kg)	+.47 in (12 mm)
150 lb (68 kg) to GVWR	+.55 in (14 mm)
(1) Add to distance required for rider weight.	

Table 24. Rear Fork Compression and Rebound

RIDE SETTING	REAR SKOCK(1)	
	Compression	Rebound
Standard	2.5	3.5
Comfort	4	4
Sport	0.5	1.5
With Passenger	3	1

(1) Damping adjuster settings are done by turning adjuster clockwise until it stops at the maximum setting, then counting the turns counter-clockwise to the desired setting.

ADJUSTING FRONT SHOCK ABSORBERS

General

Damping is set at the factory for the average solo rider under normal riding conditions. The rider may make adjustments to compensate for load, individual riding styles and varying road conditions.

Evaluating and changing the rebound and compression damping is a subjective process with many variables and should be approached carefully.

NOTICE

Compression and rebound adjusting valves may be damaged if too much force is used at either end of the adjustment range. (00237a)

NOTE

Do not force adjusters beyond mechanical stops.

Rebound and Compression Damping

The rebound and compression screws (1 and 2) are located on the right fork tube. See Figure 22.

Rebound Damping Adjustment

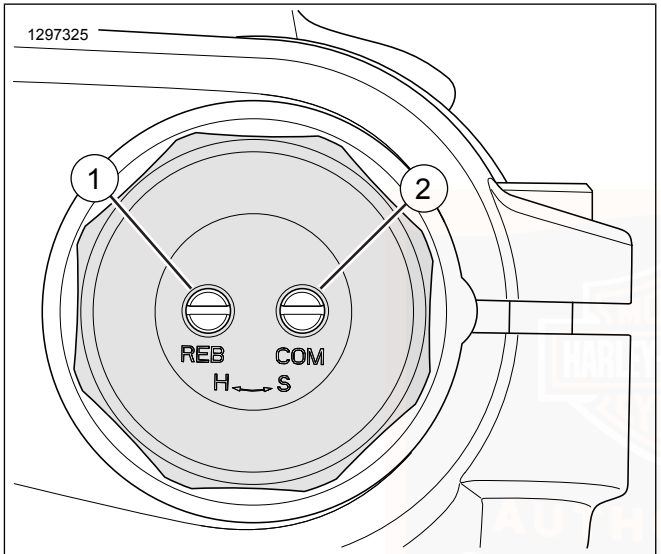
1. See Figure 22. Turn rebound adjuster (1) screw clockwise in the H (hard) direction until it stops. This is the maximum rebound damping setting.

2. Turn rebound adjuster (1) counter-clockwise in the S (soft) direction the recommended number of turns. Refer to Table 27.

Compression Damping Adjustment

1. See Figure 22. Turn compression adjuster (2) clockwise in the H (hard) direction until it stops. This is the maximum compression damping setting.

2. Turn compression adjuster (2) counterclockwise in the S (soft) direction the recommended number of turns. Refer to Table 27.



1. **Rebound adjuster**
2. **Compression adjuster**

Figure 22. Rebound and Compression Damping Adjustment

Spring Preload

The preload adjustment screw (1) is located on the left fork tube. See Figure 23.

1. *NOTE*

Using a wide flat blade screwdriver will ease the preload adjustment operation.

See Figure 23. Turn preload adjuster (1) counter-clockwise in the L (low) direction until it stops. This is the minimum preload setting.

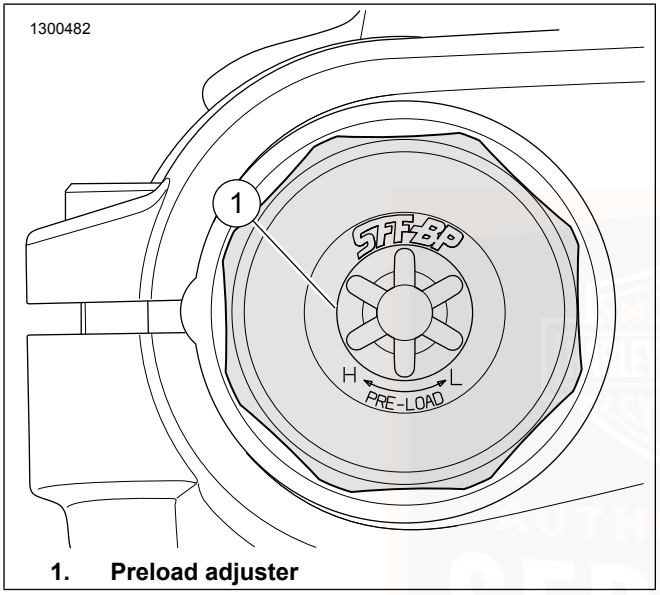
2. Calculate front preload settings.

   a. **Rider:** Refer to Table 25 for required rider preload adjustment. Note required adjustment.

   b. **Passenger or cargo:** Refer to Table 26 for required passanger and cargo preload. Note required adjustment.

   c. Add rider and passenger/cargo preload amounts together to get final adjustment setting.

3. Adjust front preload settings. Turn preload adjuster clockwise in the H (high) direction the calculated number of turns.



1. Preload adjuster

Figure 23. Preload Adjustment

Table 25. Front Preload Suspension Settings

RIDER WEIGHT	FRONT FORKS
kg/lb	Turns from Minimum[1]
<150 lb (68 kg)	0
150–170 lb (68–77 kg)	2
170–190 lb (77–86 kg)	5
190–210 lb (86–95 kg)	9
210–230 lb (95–104 kg)	12
230–250 lb (104–113 kg)	16
250–270 lb (113–122 kg)	19
270–290 lb (122–132 kg)	20
290 lb (132 kg) to GVWR	20
(1) Number of clockwise turns from minimum preload setting.	

Table 26. Front Preload with Passenger or Cargo

PASSENGER or CARGO	FRONT FORKS
kg/lb	Additional Turns[1]
0–50 lb (0–23 kg)	+1
50–100 lb (23–45 kg)	+3
100–150 lb (45–68 kg)	+4
150 lb (68 kg) to GVWR	+5
(1) Add to the turns required for rider weight.	

Table 27. Front Forks Compression and Rebound

RIDE SETTING	FRONT FORKS[1]	
	Compression	Rebound
Standard	2	2
Comfort	5.5	5
Sport	0	0.5
With Passenger	6	3

(1) Damping adjuster settings are done by turning adjuster clockwise until it stops at the maximum setting, then counting the turns counter-clockwise to the desired setting.

NOTES

SECURITY SYSTEM

Components

The security system consists of a control module, a hands-free antenna mounted on the motorcycle and a hands-free fob carried by the rider. The security system lamp in the instrument module indicates when security is armed or disarmed.

See Arming and Disarming (Page 67).

Options

See a Harley-Davidson dealer or www.harley-davidson.com for security system options.

SECURITY SYSTEM FOB

Assigning Fob

See Figure 24. Key fobs are electronically assigned to the security system by a Harley-Davidson dealer. Only two fobs can be assigned at any one time.

Purchase replacement fobs from a Harley-Davidson dealer. The fobs can only be assigned to an individual motorcycle by a trained Harley-Davidson technician.

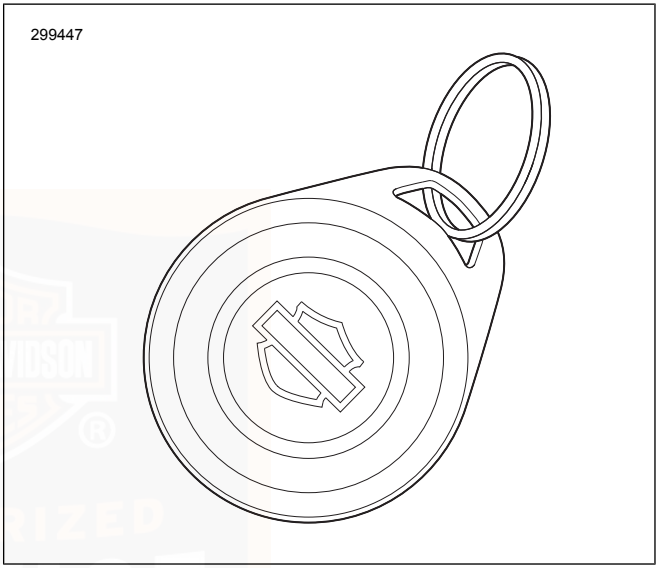


Figure 24. Fob: Security System

NOTE

- *The module will arm only if the fob has been assigned by a Harley-Davidson dealer and a Personal Identification Number (PIN) has been entered in the system. Record the PIN on the Personal Information page in the front of this Owner's Manual.*

- *If the fob is misplaced or fails, the rider can refer to the Personal Information page in the front of this Owner's Manual and use the PIN to manually disarm the system. See Arming and Disarming (Page 67) and Troubleshooting (Page 73).*
- *The rider can change the PIN at any time. See Personal Identification Number (PIN) (Page 67).*

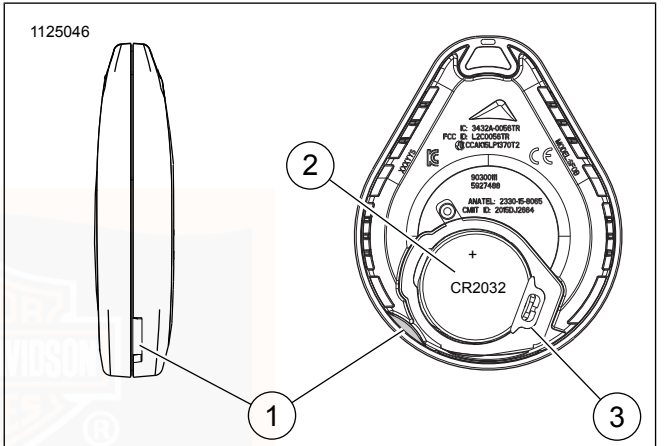
Fob Battery

Replace the fob battery every year.

NOTE

- *The reusable label found on the fob packaging lists the serial number of the fob. For reference, affix the label to a blank **"NOTES"** page in this Owner's Manual.*
- *See Figure 25. The serial number of the fob is also found on the inside of the fob.*

1. See Figure 25. To open the fob, turn a thin blade in the slot (1).
2. Remove the battery (2) and discard in accordance with local regulations.
3. Install a **new** battery (Panasonic CR2032 or equivalent) with the positive side up.
4. Align the two halves of the fob. Snap the halves together.



1. **Thumbnail slot**
2. **Battery (CR2032)**
3. **Latch**

Figure 25. Replace Fob Battery

Riding with a Fob

- Always carry the fob when riding, loading, moving, parking or servicing the motorcycle.
- Do not leave the fob attached to the handlebars or store the fob in a luggage compartment. Unintentionally leaving the fob with the motorcycle when it is parked prevents the system from activating the alarm.

- Do not ride with the fob stored in a metal case or with the fob closer than 76 mm (3.0 in) to a mobile phone, PDA, display or other electronic device. Any electromagnetic interference may prevent the fob from disarming the system.
- For added security, always lock the fork and remove the key when parked. If the fob is within range and the motorcycle is unlocked, tampering with the motorcycle will not activate the alarm.

Riding without a Fob

If the motorcycle is ridden without the fob in acceptable proximity, the Instrument Module (IM) displays "NO FOB." To restart a motorcycle without a fob, disarm the security system with the PIN.

PERSONAL IDENTIFICATION NUMBER (PIN)

The personal identification number (PIN) is a number that can be used to disarm the security system. Use the PIN in case the assigned fob is misplaced, fails or if the fob cannot communicate with the motorcycle because of electromagnetic interference.

A PIN is a five-digit number (1-9, no zeros).

Changing the PIN

The rider can change the PIN at any time. Refer to Table 34.

SECURITY STATUS INDICATOR

See Indicators (Page 88). The security lamp on the instrument module face indicates the status of the security system.

- **Armed:** A lamp that blinks approximately every 3 seconds indicates that the system is armed.
- **Disarmed:** After the system disarms and the ignition is on, the lamp will remain illuminated for approximately four seconds and then turn off.
- **Service:** See a Harley-Davidson dealer if the lamp remains lit continuously.

ARMING AND DISARMING

Arming

When the motorcycle is parked and the OFF/RUN switch is moved to OFF, the security system arms automatically within five seconds if no motion is detected. Even when the fob is present, the system arms.

On arming, the turn signals flash twice. While armed, the indicator lamp on the instrument module flashes every three seconds.

Disarming

With the fob present, the rider may ride or move the motorcycle for parking, storage or service without setting off the alarm. Disarming is automatic as long as the fob is within range.

Fob: An armed security system is automatically disarmed when the fob is present and the motorcycle is moved or the OFF/RUN switch is moved to RUN.

The range of the fob is 1.5 m (5ft).

When the system disarms, the security indicator lamp illuminates for a solid four seconds and then turns off.

Personal identification number (PIN): If the fob is misplaced or if the present fob fails to communicate, the system can be disarmed with the personal identification number (PIN). Refer to Table 28.

Disarming with a PIN

Disarm the security system manually using the PIN if the fob is lost, the fob battery is discharged or if where you parked there is a strong electromagnetic interference.

Do not turn handlebars, straddle seat or lift motorcycle off the jiffy stand. During a PIN disarm, if the security system detects motorcycle motion the system will activate the alarm.

NOTE

- *If a mistake is made while entering PIN, move the OFF/RUN switch to OFF before entering the last digit and then start the procedure from the beginning.*
- *If the procedure fails to disarm the security system, wait two minutes before attempting another PIN disarm.*
- *The security system remains disarmed until the OFF/RUN switch is moved to OFF.*
- *At any time during a PIN disarm if the fob is brought within range, the security system disarms as the module receives the coded signal from the fob.*

Table 28. Entering a PIN to Disarm Security System

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
1	If necessary, verify the current 5-digit PIN.		
2	Push the **OFF/RUN switch** to **RUN**.	The odometer window display will show ENTER PIN.	
3	Press and release the **left** turn signal switch.	In the odometer window, a flashing 1 will appear.	

Table 28. Entering a PIN to Disarm Security System

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
4	Increment the digit by tapping the **left** turn signal until the odometer window displays the first digit of the PIN.	The first digit in the odometer will be the first digit in the PIN.	
5	Press **right** turn switch **1 time.**	The first digit is stored and the next digit will flash.	Serves as enter key.
6	Increment the second digit using the **left** turn switch until the digit reaches the second digit of the PIN.	The second digit in the odometer will be the second digit in the PIN.	
7	Press **right** turn switch **1 time**.	The second digit is stored and the next digit will flash.	Serves as enter key.
8	Increment the third digit using the **left** turn switch until it reaches the third digit of the PIN.	The third digit in the odometer will be the third digit in the PIN.	
9	Press **right** turn switch **1 time**.	The third digit is stored and the next digit will flash.	Serves as enter key.
10	Increment the fourth digit using the **left** turn switch until it reaches the fourth digit of the PIN.	The fourth digit in the odometer will be the fourth digit in the PIN.	
11	Press **right** turn switch **1 time.**	The fourth digit is stored and the next digit will flash.	Serves as enter key.
12	Increment the fifth digit using the **left** turn switch until it reaches the fifth digit of the PIN.	The fifth digit in the odometer will be the fifth digit in the PIN.	
13	Press **right** turn switch **1 time**.	The fifth digit is stored. The security system indicator lamp stops blinking.	Smart Security System is disarmed.

ALARM

Warnings

Once armed, if the motorcycle is moved or lifted up off of its jiffy stand and the fob is not present, the alarm will warn the operator with three alternate flashes of the turn signals.

Within four seconds, if the motorcycle is back on its jiffy stand and no further motion is detected, the system will remain armed without activating the alarm.

If the motorcycle motion continues, the system will issue a second warning four seconds after the first.

Alarm Activation

If the security system is still detecting motion after a second warning, the system will activate the alarm.

When activated, the security system will:

- Alternately flash the four turn signals.

Duration: The alarm will stop within 30 seconds and if no motion is detected, the alarm will not restart.

However, if motorcycle motion continues the system will repeat the 30 second alarm and recheck for motion. The alarm will repeat this 30 second alarm cycle for five minutes (10 cycles) or until the alarm is deactivated.

NOTE

The alarm will also activate the LED, vibration or audible modes of an optionally purchased Harley-Davidson Security Pager. The range of a pager can be up to 0.5 mi (0.8 km). See a Harley-Davidson dealer for details.

Alarm Deactivation

Key fob: Bring the fob to the motorcycle. After the module identifies that the fob is present, the system will terminate the alarm.

PIN entry: Enter the PIN to deactivate the alarm. If an error is made while entering the PIN, wait until the alarm is between cycles to enter the PIN.

TRANSPORT MODE

It is possible to arm the security system without enabling the motion detector for one system cycle. The motorcycle can be moved in an armed state. The motorcycle cannot be turned on while in transport mode until the fob is present.

To Enter Transport Mode

1. With security fob present, set the OFF/RUN switch to RUN.
2. Set the OFF/RUN switch to OFF.
3. Simultaneously press both the left and the right turn signal switches within five seconds of turning the OFF/RUN switch to OFF.

4. Following a single flash, the turn signals flash three times to indicate that the system is armed in transport mode.

NOTE

When transport mode is enabled the IM will momentarily display In Transport Mode message.

To Exit Transport Mode

With the fob present, set the OFF/RUN switch to RUN to disarm the system and exit transport mode.

STORAGE AND SERVICE DEPARTMENTS

Long-Term Parking

To maintain arming, store the fob beyond the range of the antenna. The antenna range is approximately 1.5 m (5 ft). Have the fob present before moving parked motorcycle.

If the motorcycle will not be operated for several months, such as during the winter season, see Storing Motorcycle (Page 127).

Service Departments

When the motorcycle is left at a Harley-Davidson dealer, there are two options:

1. Leave an assigned fob with the dealer.
2. To maintain possession of the fob, ask the dealer to disable the system for service (service mode) before leaving the dealership. Once service mode is active, the vehicle can be operated without an assigned fob present. To maintain the service mode, the assigned fobs must be kept out of range. If the fob appears in range, the service mode is cancelled.

DISCONNECTING POWER

NOTE

Follow this procedure to safely deactivate electrical system.

Deactivate the electrical system whenever you perform maintenance on your motorcycle or need to disconnect/replace the battery.

NOTE

- *To remove/replace the main fuse, see your authorized Harley-Davidson EV dealer.*
- *To disconnect the battery, follow this procedure.*

Deactivate Electrical System

1. Ensure the FOB is present.
2. Remove top cover. See Top Cover (Page 143).
3. Place OFF/RUN switch in RUN position.

4. See Figure 26. Disconnect TCU connector (5-wire).
5. Disconnect siren from inside of battery cover, if equipped.
6. Place OFF/RUN switch in OFF position.
7. See Figure 27. Remove rear cover.
8. See Figure 28. Disconnect On-Board Battery Charger (OBC) power connector.

Disconnect the battery if needed. See Battery Replacement (Page 144).

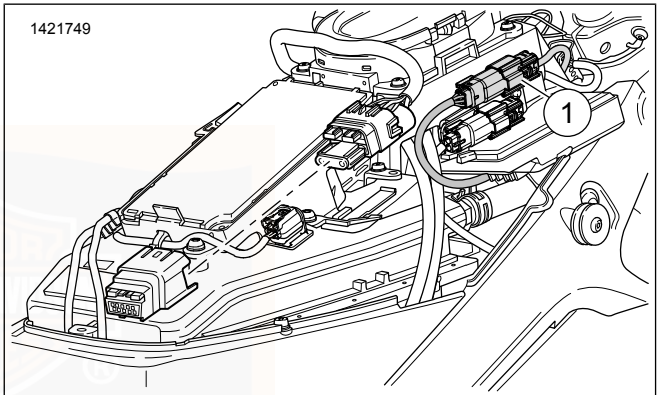
Perform maintenance as needed.

Reactivate Electrical System

NOTE

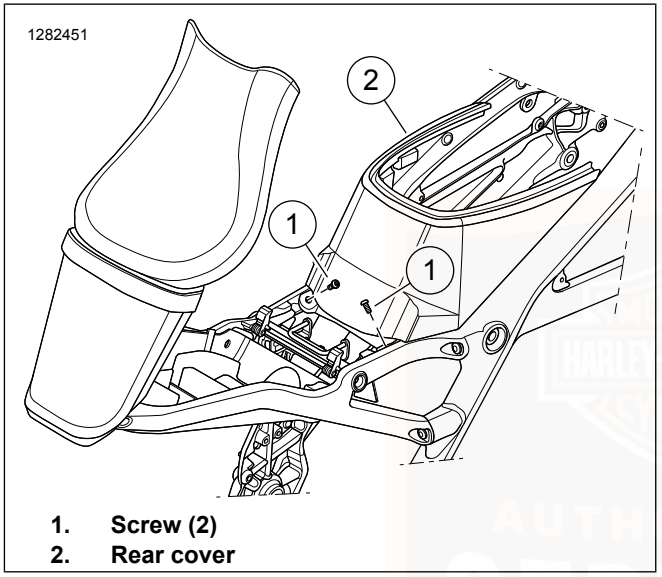
Ensure the OFF/RUN switch is set back to the OFF position and FOB is present.

1. Connect TCU.
2. Connect siren (if equipped).
3. Connect OBC connector.
4. Install the rear cover.
5. Install top cover.



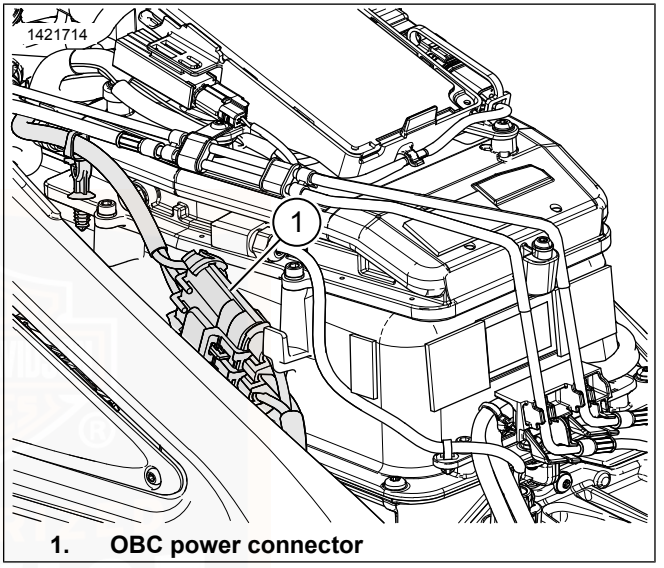
1. TCU connector (5-wire)

Figure 26. TCU connector



1. Screw (2)
2. Rear cover

Figure 27. Rear Cover



1. OBC power connector

Figure 28. OBC connector

TROUBLESHOOTING

Security Lamp

If the security lamp stays illuminated while riding, see a Harley-Davidson dealer.

Fob

If the security system continues to actuate warnings and alarms with the fob present, check for:

1. **Electromagnetic interference:** Other electronic devices, power lines, or other electromagnetic sources can cause the security system to operate inconsistently.
   a. Verify that the fob is not in a metal enclosure or within 3 in (76 mm) of any other electronic devices.
   b. Place the fob on the seat and set the OFF/RUN switch to RUN. After the system disarms, return the fob to a convenient location.
   c. Move motorcycle at least 15 ft (5 m) from the spot of interference.
2. **Discharged fob battery:** Use the PIN to disarm the system. Replace the battery. See Security System Fob (Page 65).

NOTE

When fob battery is low the IM will display LOW FOB BATTERY message.

3. **Damaged fob:** Use the PIN to disarm the motorcycle. Replacement fobs are available for purchase from a Harley-Davidson dealer.

KEYLESS ACTIVATION

⚠ WARNING

The automatic-on headlamp feature provides increased visibility of the rider to other motorists. Be sure headlamp is on at all times. Poor visibility of rider to other motorists can result in death or serious injury. (00030b)

A Motorcycle with a keyless ignition does not require a key for operation. Instead, an assigned security fob must be present or the PIN must be used before propulsion can be enabled.

The key supplied with the motorcycle is for the fork lock. See Controls, Instruments and Switches (Page 76).

Ignition Mode

With security fob present, set the OFF/RUN switch to RUN. The lights and IM become operational and propulsion can be enabled. To disarm the security system using the PIN, see Arming and Disarming (Page 67).

The motorcycle remains on until the OFF/RUN switch is set to OFF. Taking the security fob out of range will not turn off the motorcycle after it is turned on. However, the IM will display a NO FOB alert if the motorcycle begins moving without the fob present.

NOTE

With the OFF/RUN switch in RUN, the system will turn off after 15 minutes of inactivity.

When parked, set the OFF/RUN switch to OFF and take the security fob from the motorcycle to prevent theft or propulsion. With the motorcycle turned off and the security fob out of range, the propulsion system and OFF/RUN switch remain disabled, immobilizing the motorcycle.

Accessory Mode

See Figure 31. With the security fob present, press and hold the Trigger switch. The IM and accessory circuit are powered. The headlamp (high and low beam) and turn signal lamps remain off. While in accessory mode:

- The IM is activated.
- Power is supplied to the USB port and data transfer is enabled.
- The headlamp halo will illuminate.
- The headlamp can be activated by pressing the headlamp flash to pass switch.
- The stop lamps can be operated.

To turn off accessory mode, press and hold the Trigger switch.

Do not leave the motorcycle in accessory mode for an extended period. This can discharge the battery. If the vehicle is left in

accessory mode for two hours, the vehicle will automatically shut off to prevent complete battery discharge. To resume accessory mode, press and hold the trigger switch.

CONTROLS, INSTRUMENTS AND SWITCHES

Left-Hand Control Module

See Figure 4. Operate the switches on the left hand control module (2) with the thumb of the left hand. See Left Hand Control Switches (Page 90).

Right-Hand Control Module

See Figure 5. Operate the switches on the right hand control module (7) with the thumb of the right hand. See Right Hand Control Switches (Page 93).

Instrument Module

See Figure 4. The IM (3) displays vehicle instrumentation including speedometer, odometer, charge status and range, widgets, and telltales. See Instruments (Page 78).

Brakes

⚠ WARNING

Do not position fingers between hand control lever and handlebar grip. Improper hand positioning can impair control lever operation and cause loss of vehicle control, which could result in death or serious injury. (00032a)

Front brake lever: See Figure 4. The front brake lever (5) controls the front brake. Operate the hand lever with the fingers of the right hand.

Rear brake pedal: See Figure 5. The rear brake pedal (4) activates the rear wheel brake.

⚠ WARNING

Do not apply brake strongly enough to lock the wheel. A locked wheel will skid and can cause loss of vehicle control, which could result in death or serious injury. (00053a)

Apply brakes evenly to prevent wheels from locking up. A balance between rear and front brake is best.

Throttle Twist Grip

Accelerate: See Figure 4. Slowly twist throttle twist grip (6) backward (toward rear of motorcycle) to increase speed.

Decelerate: Slowly twist throttle control grip forward (toward the front) to decrease speed.

OFF/RUN Switch

NOTE

The headlamp and tail lamps operate when the OFF/RUN switch is in the RUN position.

See Figure 32. To activate propulsion, see Starting Motorcycle (Page 106).

Fork Lock

⚠ WARNING

Do not operate vehicle with forks locked. Locking the forks restricts the vehicle's turning ability, which could result in death or serious injury. (00035a)

NOTICE

Protect your vehicle against theft. Failure to lock the motorcycle after parking could result in theft and/or equipment damage. (00151b)

See Figure 29. The fork lock is located in the triple clamp on the right side and is locked with the key. The fork lock also has a sensor that detects whether or not it is engaged. The system will not allow propulsion while the fork lock is engaged. See Propulsion Interlocks in Instruments (Page 78).

Using the fork lock immediately after parking your motorcycle will discourage unauthorized use or theft.

1. Turn fork to full left position.
2. Insert key into fork lock.
3. Turn key to right position (clockwise).
4. Remove key.
5. To unlock fork, insert key into fork lock and turn to the left position (counter-clockwise). Remove lock key.
6. Check steering for proper operation by turning the handlebars through the full operating range. Handlebars should turn smoothly without binding.

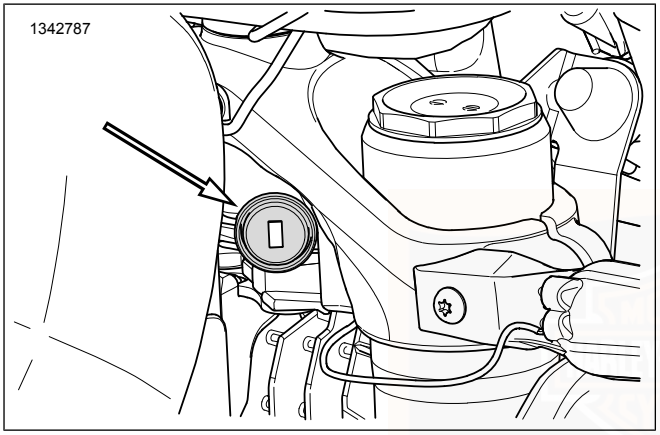


Figure 29. Fork Lock

INSTRUMENTS

Settings Menu

⚠ WARNING

Set volume levels and other controls on audio and electronic devices before riding. Distractions can lead to loss of control, resulting in death or serious injury. (00088b)

See Figure 30. The settings menu displays the menus used to set up ride modes, appearance, system, widgets and user settings.

NOTE

To make full use of features and minimize distraction while on the road, configure the system with your personal preferences before riding.

After propulsion has been enabled the settings menu and touchscreen functions are disabled.

Table 29. Settings Main Menu

Press	Result
[Settings] ⚙	Configure instrument module settings. **Do before riding the motorcycle.**
	Available selections: RIDE MODE, APPEARANCE, SYSTEM, CUSTOMIZE WIDGETS, USER SETTINGS.

RIDE MODE

Table 30. Settings Menu: Ride Mode

Press	Result
[RIDE MODE]	Allows enable and disable of available ride modes and allows setup of three custom ride modes.
	Preset ride mode selections: Preset Ride mode selections: Enable/Disable, Copy+Edit.(1)
	Custom ride mode selections: Enable/Disable, Power slider, Regen slider, Throttle slider, Traction control setting (High, Medium, Low)(2, 3)
(1) Copy+Edit selection will copy the selected ride mode into a selected custom ride mode option and allow the rider to build a custom ride mode using a preset selection as a starting point. *(2) Power Slider adjusts how much overall power will be available in the custom ride mode. Regen slider adjusts how much regen will be enabled in the custom ride mode. Throttle slider adjusts the intensity of throttle response felt by the rider in the custom ride mode.* *(3) The traction control level adjusts how much rear wheel slip the system will allow. The HIGH setting allows a high level of slip, which is the LEAST LEVEL of traction control intervention. The Medium (MED) setting allows a MEDIUM LEVEL of slip, which is a moderate level of traction control intervention. The LOW setting allows a low level of slip, which is the HIGHEST LEVEL of traction control intervention. Traction control adjustment does not affect the performance of drag torque slip control or ABS functions.*	

APPEARANCE

Table 31. Settings Menu: Appearance

Press	Result
[APPEARANCE]	Configure instrument module appearance.
	Available selections: SPEEDOMETER STYLE (DIGITAL/ANALOG), AUTO BRIGHTNESS (on/off), BRIGHTNESS slider.

SYSTEM

Table 32. Settings Menu: System

Press	Result	
[System]	Configure instrument module settings. **Do before riding the motorcycle.**	
	Available selections: BLUETOOTH CLOCK LOCALIZATION ABOUT	
	BLUETOOTH: (H-D App must be installed on phone for full functionality)	• BLUETOOTH (On/Off) • PAIRING (Android devices must have H-D App installed and open for pairing. Apple devices must have H-D App closed for pairing) • MY DEVICES > **Optional selections: When devices paired: (Select desired device from list) FAVORITE (On/Off), CONNECT THIS DEVICE, FORGET THIS DEVICE.**
	CLOCK:	• SYNC CLOCK TO PHONE (On/Off) • CLOCK TYPE (12/24) • HOUR, MINUTE, AM/PM

	LOCALIZATION:	• LANGUAGE
		  • List of selectable languages
		• UNITS
		  • SPEED/DISTANCE (MI/KM)
		  • TEMPERATURE (F/C)

Table 32. Settings Menu: System

Press	Result	
	ABOUT:	• FACTORY OPTIONS • CLEAR CACHE (CLEAR CACHE selection will clear all paired bluetooth devices from IM memory.) • UPDATE SOFTWARE

Updating Software

1. Check software version.
   a. Refer to Table 32. SETTINGS> SYSTEM> ABOUT> SOFTWARE. This menu will show the current software version on the IM.
   b. Check for latest software version. See website: www.h-d.com/downloads.
2. Update software.
   a. Download the latest software version to USB-C device. See website: www.h-d.com/downloads.
   b. Unzip the downloaded file to extract the gpg file. The gpg file must be at the root directory of your Universal Serial Bus Type-C (USB-C) drive in order for it to be detected by the instrument module. Only one gpg file should be present at the root directory level.
   c. See Figure 6. Connect USB-C drive to motorcycle.
   d. Refer to Table 32. SETTINGS> SYSTEM> ABOUT> FACTORY OPTIONS. Select UPDATE SOFTWARE.
   e. Allow update to complete.
   f. Remove USB-C drive.

CUSTOMIZE WIDGETS

See Widgets (Page 95) for more details on Widget functions.

Table 33. Settings Menu: Customize Widgets

Press	Result	
[CUSTOMIZE WIDGETS]	**Available selections:** ALERT RIDE MODE POWER RANGE BATTERY TEMP TRIP BLUETOOTH NAVIGATION AUDIO PHONE CHARGING	
	ALERT:	• LOCATION (LEFT/RIGHT)
	RIDE MODE:	• ENABLED (On/Off) • LOCATION (LEFT/RIGHT)
	POWER:	• ENABLED (On/Off) • LOCATION (LEFT/RIGHT)
	RANGE:	• ENABLED (On/Off) • LOCATION (LEFT/RIGHT)
	BATTERY:	• ENABLED (On/Off) • LOCATION (LEFT/RIGHT)

Table 33. Settings Menu: Customize Widgets

Press	Result	
	TEMP:	• ENABLED (On/Off) • LOCATION (LEFT/RIGHT)
	TRIP:	• ENABLED (On/Off) • LOCATION (LEFT/RIGHT) • OPTION (Trip B/Key On) • TRIP RESET (Trip A, Trip B, Key On)
	BLUETOOTH:	• ENABLED (On/Off) • LOCATION (LEFT/RIGHT)
	NAVIGATION:	• ENABLED (On/Off) • LOCATION (LEFT/RIGHT) • TIME INFO (ARRIVAL/DURATION) • DISTANCE TO DESTINATION (On/Off)
	AUDIO:	• ENABLED (On/Off) • LOCATION (LEFT/RIGHT) • AUDIO INFO (On/Off) (PLAYHEAD/ALBUM)
	PHONE:	• ENABLED (On/Off) • LOCATION (LEFT/RIGHT)
	CHARGING:	• ENABLED (On/Off)

USER SETTINGS

Table 34. Settings Menu: User Settings

Press	Result
[USER SETTINGS]	**Available selections:** SMALL DISPLAY INFO, BATTERY BAR OPTIONS, CHANGE PIN, PIN DISPLAY.
Options for:	**SMALL DISPLAY INFO**[1] • Blank (On/Off) • TRIP A (On/Off) • TRIP B (On/Off) • KEY ON (On/Off) [1]
	BATTERY BAR OPTIONS • SHOW BATTERY PERCENTAGE (On/Off) • SHOW RANGE (On/Off) • RANGE (SHORT/LONG)
	CHANGE PIN
	PIN DISPLAY (SHOW/TEMP/HIDE)
(1) Small display refers to odometer display.	

Charge State/Range

NOTE

Actual range will vary depending on riding habits, ambient weather and equipment conditions.

See Figure 30. The charge state and range bar displays the charge state of the Rechargeable Energy Storage System (RESS) and estimated remaining range.

Speedometer

⚠ WARNING

Travel at speeds appropriate for road and conditions and never travel faster than posted speed limit. Excessive speed can cause loss of vehicle control, which could result in death or serious injury. (00008a)

See Figure 30. The IM registers miles per hour (MPH) (U.S. models default) and kilometers per hour (km/h) (international models default). The IM can be configured to register either miles per hour or kilometers per hour through the settings menu.

Instrument backlighting changes with ambient lighting differences, changes in ambient light, such as such as going through a tunnel, may change level of backlighting.

Clock

See Figure 30. The clock displays current time in 12/24 hour format. The settings menu is used to set time and select 12 or 24 hour format.

Odometer

Pressing the trip switch with the OFF/RUN switch in either position activates the odometer reading.

See Figure 30. The odometer display also provides the following selectable displays:

- Odometer
- Trip odometer A
- Trip odometer B
- Trip odometer K

Press and release the trip switch to cycle through the displays.

Trip Odometers A, B and K

See Figure 30. To check mileage or to reset trip odometers, the OFF/RUN switch must be in the RUN position. Press and release the trip switch until the desired trip odometer is displayed. An A, B, or K on the left of the odometer display identifies the trip odometer.

NOTE

Trip K (Key on) resets each time the OFF/RUN switch is put into the RUN position if more than five minutes has passed since vehicle has been turned off.

To reset or zero trip odometers, have desired (A or B) odometer displayed. Press the trip switch and hold for approximately one second. The trip odometer resets to zero.

Propulsion Interlocks

See Figure 30. The vehicle is equipped with propulsion interlocks (23). Propulsion interlocks are conditions that must be met before propulsion can be enabled. Propulsion interlock

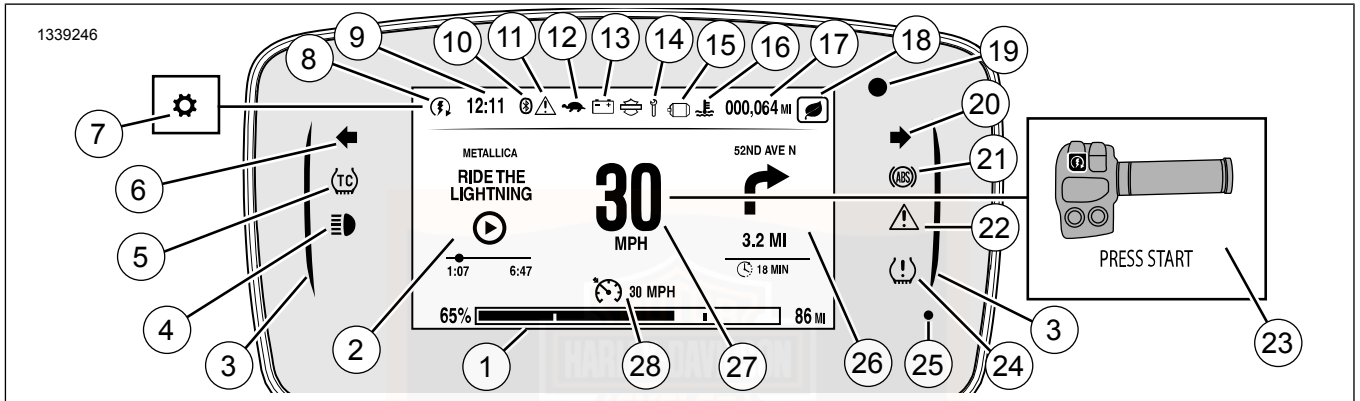
messages will be displayed on the IM when conditions are not met to enable propulsion.

Propulsion interlock messages include; CALL SERVICE, UNPLUG TO RIDE, PRESS RUN, WAIT - NOT READY, UNLOCK FORK, RAISE SIDE STAND, RELEASE TWIST GRIP and PRESS START.

Widgets

See Figure 30. Widgets can be displayed on the left and right sides (2 and 26) of the IM. Each selectable widget displays unique additional information on the IM.

See Widgets (Page 95).



1. Charge state/Range bar
2. Left widget
3. Side bar
4. Headlamp high beam
5. Traction control
6. Left turn signal
7. Settings
8. Propulsion enabled
9. Clock
10. Bluetooth
11. EV alert
12. Propulsion limited
13. 12V Battery discharge
14. Not used
15. Malfunction Indicator Lamp (MIL)
16. Coolant temperature
17. Odometer
18. Ride mode
19. Light sensor (not an indicator)
20. Right turn signal
21. Anti-lock Braking System (ABS)
22. EV fault
23. Propulsion interlock
24. Not used
25. Security/Fault
26. Right widget
27. Speedometer
28. Cruise control

Figure 30. Instrument Module Displays and Selections

INDICATORS

Service Lamps

See Figure 30. The service lamps indicate the condition of the powertrain/powertrain management system.

EV Alert: Amber Icon appears when the vehicle has detected the vehicle requires maintenance and/or repair but can still be operated.

EV Fault: Red Icon appears when the vehicle has detected an error, the vehicle should not be operated and will go into shutdown mode.

Malfunction Indicator Lamp (MIL): The MIL normally comes on when the ignition is first turned on. During this time, the powertrain management system runs a series of self-diagnostics.

If the MIL does not turn off after enabling propulsion or comes on at any other time, See an authorized Harley-Davidson Electric Vehicle (EV) dealer.

Side Bar Lamps

See Figure 30.

Charging: When charging, the sidebar lamps illuminate in a red, yellow, green succession.

Accessory mode: The side bar lamps are blue when the motorcycle is in accessory mode.

Propulsion not enabled: With the OFF/RUN switch in the RUN position the sidebar lights are yellow when propulsion is not enabled.

Propulsion enabled: With the OFF/RUN switch in the RUN position the sidebar lights are green when propulsion is enabled.

Propulsion Enabled

See Figure 30. The Propulsion enabled Indicator replaces the settings icon on the IM when propulsion has been enabled.

Bluetooth

See Figure 30. The bluetooth indicator displays the connection status of the IM. When connected to a device the indicator will be blue, when no connection is detected the indicator will be grey.

Propulsion Limited

See Figure 30. The Propulsion limited Indicator illuminates when there is a fault that requires performance to be limited.

12 V Battery Discharge

See Figure 30. The battery discharge lamp indicates overcharging or undercharging of the 12 V battery.

Coolant Temperature

⚠ WARNING

Do not loosen or remove pressure cap when cooling system is hot. The cooling system is under pressure and hot coolant and steam can escape from pressure cap, which could cause severe burns. Allow motorcycle to cool before servicing the cooling system. (00091c)

See Figure 30. The coolant temperature Indicator illuminates when the coolant has exceeded threshold temperature.

If coolant level is sufficient and the lamp remains on, see a Harley-Davidson dealer for service.

Ride Mode

See Figure 30. The ride mode Indicator displays the current selected ride mode. See Widgets (Page 95).

Security/Fault Lamp

See Figure 30. The security lamp displays the status of the security system and electrical self-diagnostics for the motorcycle. Refer to SECURITY SYSTEM (Page 65) for security system operation.

Flashing: The security system is armed.

Solid (security system armed): The alarm has been activated.

Solid (security system disarmed): If the lamp remains on after the security system has been disarmed, see a Harley-Davidson dealer.

Turn Signal Indicator Lamps

See Figure 30.

Flashing: A turn signal is activated. When the 4-way hazard flashers are operating, both turn indicators flash simultaneously.

Rapid flashing: A turn signal bulb is not operating. Exercise caution and use hand signals. Replace inoperative components at earliest opportunity.

Headlamp High Beam Lamp

See Figure 30. The headlamp high beam lamp is on when the high beam or flash to pass switch is activated.

Cruise Control

See Figure 30.

Off: Cruise control is not enabled.

Enabled - speed not set: Cruise control is enabled, cruising speed is not set. Cruise indicator shown in amber color without speed setting.

Enabled - speed set: Cruising speed is set. Motorcycle speed is maintained by the cruise control system. Cruise indicator and speed setting shown in green color.

Enabled - speed set disengaged: Cruising speed is set but has been disengaged. Motorcycle speed is not maintained by the cruise control system. Cruise indicator and speed setting is shown in red color.

ABS Lamp

See Figure 30.

⚠ WARNING

If ABS lamp continues flashing at speeds greater than 3 mph (5 km/h) or remains on continuously, the ABS is not operating. The standard brake system is operational, but wheel lock up can occur. Contact a Harley-Davidson Dealer to have ABS repaired. A locked wheel will skid and can cause loss of vehicle control, which could result in death or serious injury. (00361b)

Flashing: The ABS lamp begins flashing when the vehicle is turned on. The flashing lamp indicates that the system is in self-diagnosis mode. It continues to flash until motorcycle speed exceeds 3 mph (5 km/h). ABS is not operational until the lamp turns off.

Solid: Continuous illumination of the lamp indicates an ABS malfunction. The ABS is disabled and the brakes are operating as if they were non-ABS brakes. See a Harley-Davidson dealer for service.

Traction Control Lamp

See Figure 30.

Solid: Traction control has been turned off.

Flashing: Traction control system active intervention.

Off: Traction control system is on.

Solid with Security/Fault indication lamp On: Continuous illumination of the lamp with the Security/Fault indication lamp indicates a traction control fault. Traction control is disabled and the motorcycle is operating as traction control turned off. See a Harley-Davidson dealer for service.

LEFT HAND CONTROL SWITCHES

Trigger Switch

See Figure 31. **Vehicle off:** Press the trigger switch (1) to display the accumulated mileage on the IM. **Vehicle in accessory/ignition mode:** Press the trigger switch to cycle through the odometer functions. Refer to Table 35.

High Beam

See Figure 31. Press the high beam switch (2) to activate the high beam. The (blue) high beam indicator lamp is lit when the high beam is on. Refer to Table 35.

Low Beam/Flash to Pass

Low beam: See Figure 31. Press the bottom of the low beam/flash to pass switch (3) to activate the low beam.

Flash to pass: When the low beam switch is on, press and release the flash to pass switch to flash the high beam before passing another vehicle. The high beam indicator lamp on the instrument cluster is illuminated as long as the flash to pass switch is pressed.

When in accessory, press the flash to pass switch to activate the headlamp. Refer to Table 35.

Voice Recognition Switch

See Figure 31. The voice recognition switch (4) activates voice recognition features on a connected device (if supported). With a headset connected, press the voice command switch. Speak the desired command into the headset microphone.

Cruise Control Switch

See Figure 31. The CRUISE/SET/RESUME switch (5) automatically regulates the speed of the vehicle. See Cruise Control (Page 112) for detailed operation.

CRUISE: Press the CRUISE switch straight in to enable cruise control. The cruise control indicator is displayed green without speed setting. Pressing the CRUISE switch again turns off cruise control and indicator.

SET/-: With cruise control enabled, press SET/- to set the cruising speed. The cruise indicator will now have the green set speed shown next to it. While at cruising speed, press SET/- to decrease the regulated speed.

RESUME/+: If cruise control is disengaged (such as a braking event), press RESUME/+ to resume the previous cruising speed. While at cruising speed, press RESUME/+ to increase speed.

Play/Pause/Volume/Previous/Next Switch

See Figure 31. The Play/Pause/Volume/Previous/Next (6) five-way switch operates radio features.

Play/Pause: Press the Play/Pause switch straight in to pause or resume audio.

Volume: Press the switch up to increase volume or down to decrease volume.

Previous/Next : Press the switch to the left or right to seek up/down to select the previous/next media file.

Left Turn Signal

Activate: See Figure 31. Press the left turn signal switch (7) to activate the left turn signal. Refer to Table 35.

Cancel:

Manual Operation: Press the left turn signal switch to cancel the right turn signal.

Automatic Operation: The turn signal lamps automatically cancel when a full turn has been detected based on speed, acceleration and turn completion.

The lamps also cancel if the turn signal has been activated for a prolonged period (20 flashes) while the motorcycle speed is greater than 7 mph (11 km/h). If the motorcycle is stopped or moving slower than this speed, the turn signal continues flashing.

NOTE

Front turn signal lamps also function as running lamps. This feature may not be available in all markets.

Horn

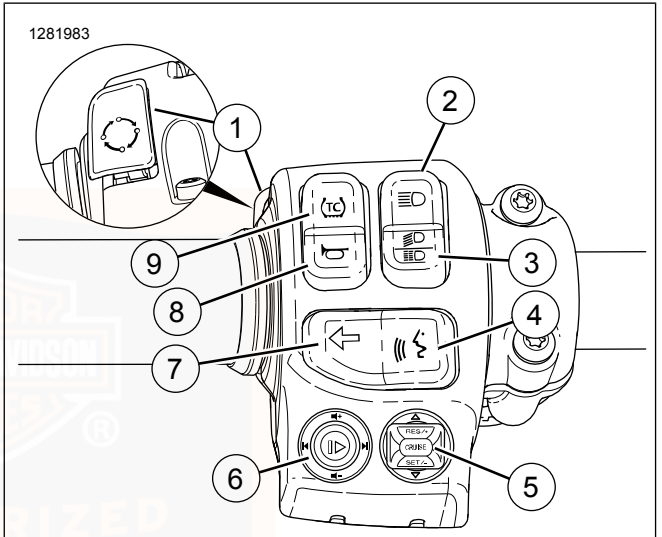
See Figure 31. The horn is operated by pressing the horn switch (8). The horn can be activated for up to 10 seconds at a time. If the horn switch is held for a longer period, the horn automatically deactivates. Refer to Table 35.

Traction Control Switch

See Figure 31. The traction control switch (9) activates and deactivates the traction control system. Refer to Table 35.

Disable: Press switch for 1 s with propulsion enabled and vehicle stopped.

Enable: Press switch at anytime to resume traction control operation.



1. **Trigger**
2. **High beam**
3. **Low beam/flash to pass**
4. **Voice recognition**
5. **Cruise control**
6. **Play/Pause/volume/previous/next**
7. **Left turn signal**
8. **Horn**
9. **Traction control**

Figure 31. Left Hand Control Module

Table 35. Left-Hand Control Switches

SWITCH	NAME	FUNCTION
	Trigger	Press the switch to alternate odometer displays.
	High beam	Press the switch to switch the headlamp to high beam.
	Low beam/ flash to pass	Press the switch to switch the headlamp to low beam. Press and release to flash the high beam. In ACC, press to activate the headlamp.
	Voice recognition	Initiates a voice recognition session on connected device (if supported).
	Cruise control	Three-way switch, operates cruise control functions.
	Play/Pause/volume /previous/next	Five-way switch, operates music functions.
	Left turn	Press the switch to signal a left turn.

Table 35. Left-Hand Control Switches

SWITCH	NAME	FUNCTION
	Horn	Press the switch to sound the horn.
	Traction control	Press the switch to deactivate and activate traction control.

RIGHT HAND CONTROL SWITCHES

Hazard Warning 4-Way Flasher

See Figure 32. The hazard switch (1) is used to leave a stranded motorcycle in the 4-way flashing mode. With the flashers, the motorcycle can be left with the ignition off until assistance is found. Refer to Table 36.

1. With the OFF/RUN switch in the RUN position, press on the hazard warning triangle to activate the 4-way flashers.

NOTE

- *The fob must be present when turning on the 4-way flashers and when canceling the flashers.*
- *The four-way flashers will operate when the vehicle is tipped over regardless of OFF/RUN switch position. See Starting after Tipover (Page 107).*

2. Turn OFF/RUN switch to the OFF position. The 4-way flashers continue for 2 hours or until cancelled by the rider.

3. To cancel, turn the OFF/RUN switch to the RUN position. Press the warning triangle above the start switch.

OFF

See Figure 32. Press the OFF/RUN switch to OFF (2) to disable propulsion. Refer to Table 36.

RUN

See Figure 32. Push the OFF/RUN switch to RUN (3) to enable start switch. The OFF/RUN switch must be in the RUN position to enable propulsion. Refer to Table 36.

Right Turn Signal

Activate:

See Figure 32. Press the right turn signal switch (4) to activate the right turn signal. Refer to Table 36.

Cancel:

Manual Operation: Press the right turn signal switch to cancel the right turn signal.

Automatic Operation: The turn signal lamps automatically cancel when a full turn has been detected based on speed, acceleration and turn completion.

The lamps also cancel if the turn signal has been activated for a prolonged period (20 flashes) while the motorcycle speed is greater than 7 mph (11 km/h). If the motorcycle is stopped or moving slower than this speed, the turn signal continues flashing.

NOTE

Front turn signal lamps also function as running lamps. This feature may not be available in all markets.

Cursor/Select Switch

See Figure 32. The CURSOR/SELECT five-way switch (5) operates IM features. Refer to Table 36.

SELECT: Press the SELECT switch straight in to select or toggle a feature on the IM.

CURSOR: Press the switch in the desired direction to move the selection on the IM.

MODE switch

See Figure 32. Press the MODE switch (6) to cycle through and select the desired ride mode. Refer to Table 36.

Start

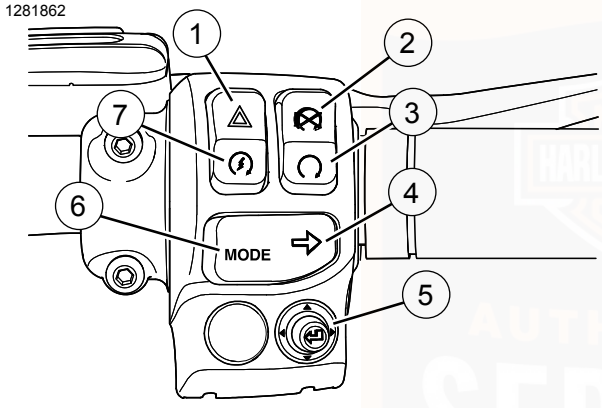
See Figure 32. The start switch (7) is on the right handlebar control module. Refer to Table 36.

1. Switch the OFF/RUN switch to the RUN position (3). See Starting Motorcycle (Page 106).

NOTE

Start switch must be held for a minimum of one second to activate propulsion.

2. Press the start switch (7) to activate propulsion.



1. **Hazard warning**
2. **Off**
3. **Run**
4. **Right turn signal**
5. **Cursor/select**
6. **Mode**
7. **Start**

Figure 32. Right Hand Switch Module

Table 36. Right Hand Control Switches

SWITCH	NAME	FUNCTION
	Hazard	Press to activate the 4-way flashers.
	Off	Press to turn off power.
	Run	Press to turn on power.
	Right turn	Press to signal a right turn.
	Cursor/Select	Five-way switch, operates instrument functions.
MODE	Mode	Press to cycle through and select ride modes.
	Start	Press to enable propulsion.

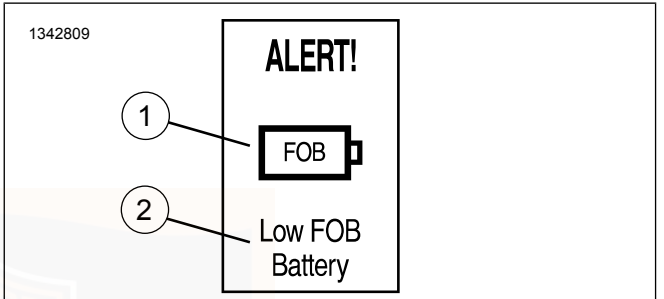
WIDGETS

Widgets are small customizable displays that allow the rider to see select additional information on the IM. Widgets are customizable through the settings menu on the IM. Widgets can be changed using the Cursor/Select switch on the Right Hand Control Module (RHCM). Left selection moves through enabled widgets on the left side of the IM, right selection moves

through enabled widgets on right side of the IM. See Instruments (Page 78).

Alert

See Figure 33. The alert widget displays information related to specific vehicle faults. The alert widget displays an alert icon which will match the illuminated indicator lamp, and the alert description, which will give more information related to the current fault.



1. **Alert icon**
2. **Alert description**

Figure 33. Alert Widget

Table 37. Alert Widget Displays

Widget Text	Cause	Action
Alert – Shutdown Alert	Propulsion will start disable sequence	See dealer
Alert – HV Disconnected	High voltage connection issue	See dealer
Alert – Motor Fault	Motor or inverter fault	See dealer
Alert – RESS Fault	Rechargeable Energy Storage System (RESS) internal fault	See dealer
Alert – Charge Bike Fault	RESS too low to enable propulsion	Charge motorcycle
Alert – Charger Fault	On-Board Charger (OBC) general fault	See dealer
Alert – RESS Significantly Out of Balance	RESS at significant level of imbalance	See dealer

Table 37. Alert Widget Displays

Widget Text	Cause	Action
Alert – Jiffy Stand Not Trusted	Jiffy stand sensor fault	Cycle jiffy stand down and back up, if the alert is not corrected see dealer
Alert – 12 V Battery Faulted	12 V Battery needs replacement	See dealer
Alert – 12 V Battery Weak	12 V Battery needs replacement	See dealer
Alert – 12 V Battery Disconnected	12 V battery leads loose or disconnected	See dealer
Alert – Load Shedding	12 V battery fault	See dealer
Alert – OBC Over Temperature	OBC overheating	Shutdown motorcycle and allow to cool
Alert – Coolant Pump Fault	Coolant pump fault.	See dealer
Alert – Propulsion Inhibited	General fault	See dealer
Alert – Low Charge	Low State of Charge (SOC)	Charge motorcycle
No FOB	No assigned fob detected	Bring assigned fob within range
Low FOB battery	Battery in fob low	Replace fob battery

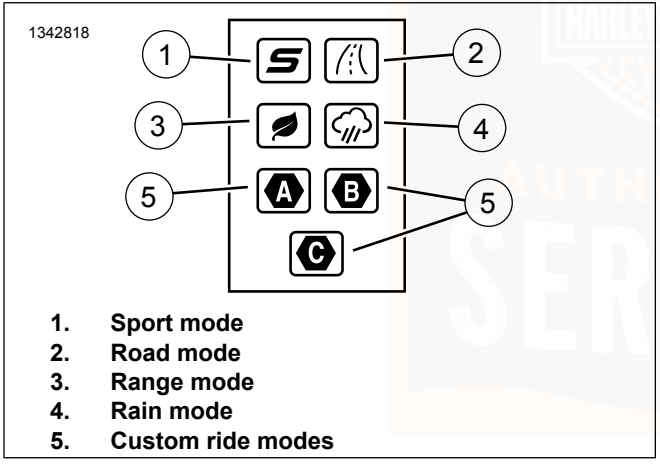
Ride Mode

See Figure 34. The ride mode widget displays the seven available ride mode icons, four pre-set (1,2,3,4) and three custom (5). Current selectable ride modes will be shown in color, disabled ride mode icons are gray and the active ride mode will be highlighted.

Ride Modes

- **Sport:** Delivers the full potential of the motorcycle for a performance oriented riding experience.
- **Road:** Delivers balanced performance with a blend of technology for daily use.

- **Range:** A combination of settings that results in smooth riding to get the most range out of a charge.
- **Rain:** Smooth acceleration with higher levels of traction control intervention, giving the rider greater confidence in poor conditions. This is also an appropriate setting for riders to become familiar with the motorcycle.
- **Custom A, Custom B, Custom C:** There are three possible customizable ride mode selections. When setting up a custom ride mode, the available level of power, regen and throttle response can be adjusted. Refer to Table 30.

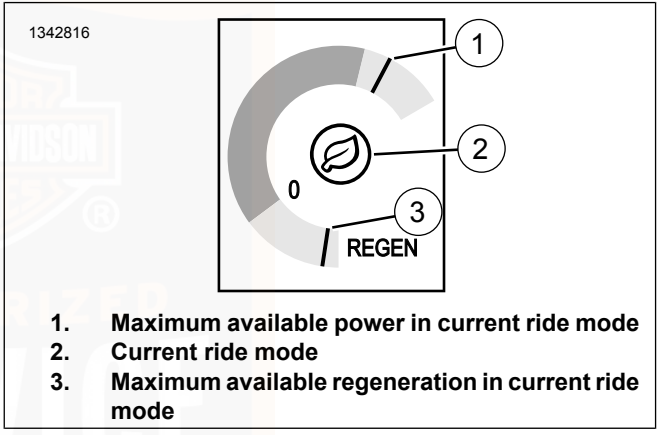


1. **Sport mode**
2. **Road mode**
3. **Range mode**
4. **Rain mode**
5. **Custom ride modes**

Figure 34. Ride Mode Widget

Power/Torque

See Figure 35. The Power/Torque widget displays power and torque information related to the current ride mode. The Power/Torque widget displays the current ride mode (2), maximum available power (1) and maximum available regen (3).

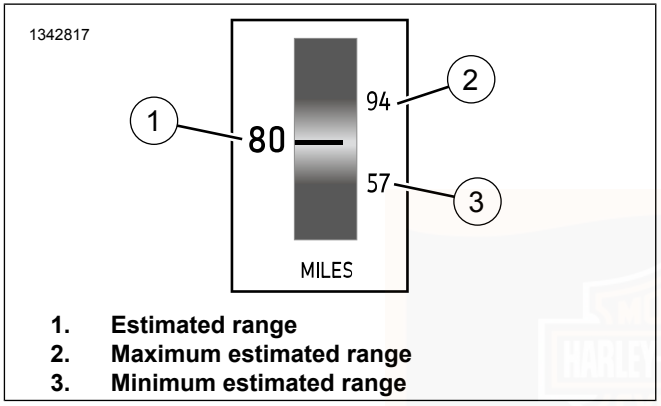


1. **Maximum available power in current ride mode**
2. **Current ride mode**
3. **Maximum available regeneration in current ride mode**

Figure 35. Power/Torque Widget

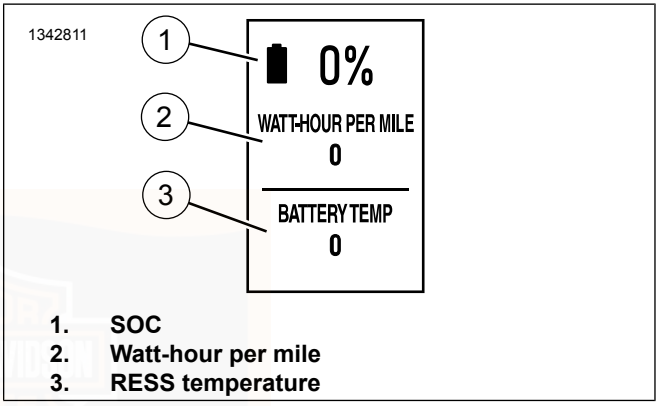
Range

See Figure 36. The Range widget displays estimated remaining range (1), maximum estimated range (2) and minimum estimated range (3) based on current riding behavior.



1. **Estimated range**
2. **Maximum estimated range**
3. **Minimum estimated range**

Figure 36. Range Widget



1. **SOC**
2. **Watt-hour per mile**
3. **RESS temperature**

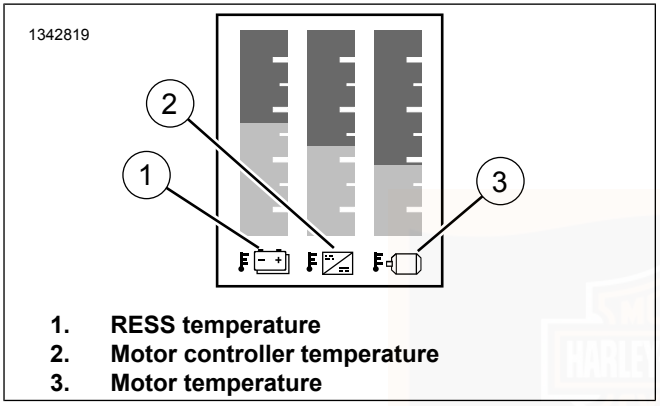
Figure 37. Battery Widget

Battery (RESS)

See Figure 37. The battery widget displays SOC (1), watt-hour per mile (2), and RESS temperature (3).

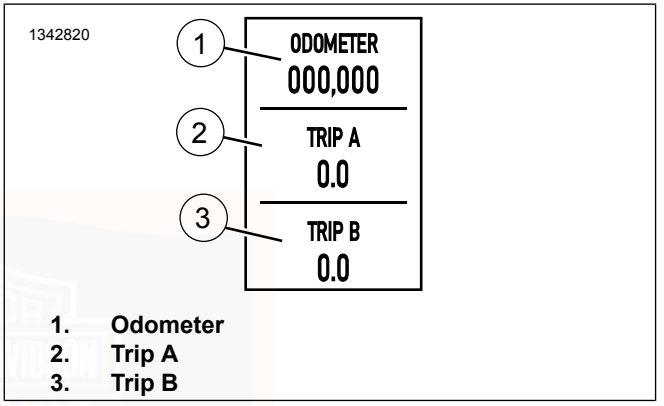
Temp

See Figure 38. The temperature widget displays RESS temperature (1), motor controller temperature (2) and motor temperature (3).



1. RESS temperature
2. Motor controller temperature
3. Motor temperature

Figure 38. Temperature Widget



1. Odometer
2. Trip A
3. Trip B

Figure 39. Trip Widget

Trip

See Figure 39. The trip widget displays the odometer reading (1), trip A (2) and trip B (3) mileage. The trip widget can also be configured from the settings menu to display trip K.

Bluetooth

In order to leverage Bluetooth enabled functions such as Navigation, Media display and controls, the phone must be paired through the H-D Connect Mobile App.

Once paired, the bluetooth widget displays phone connection status, device name and battery percentage.

Navigation

The navigation widget is intended to assist you when traveling. Always use personal judgment and observation of the actual road conditions while riding. In some circumstances, information provided in the navigation widget may be incomplete, incorrect

or outdated. Road conditions, traffic laws and restrictions (such as no left turns, street closures, one way streets, road construction detours, and so on) can frequently change. Before following any instruction from the widget, check that the instruction can be done safely and legally.

If necessary, safely park the vehicle if there is difficulty following the route guidance or if there is a need to program a new route.

Program and review navigation routes with the vehicle stopped. Follow these steps to load navigation instructions.

1. Ensure the H-D app is in proper state before pairing.

    a. **Apple:** H-D app must be **closed** before pairing.

    b. **Android:** H-D app must be **open** before pairing.

2. Verify the phone is connected via Bluetooth to the Livewire instrument module (Bluetooth icon is blue).

3. Select the Navigation widget on the left side of the instrument display. It's normal to see "No Nav" in the display prior to a route being pushed to the instrument.

4. Open the H-D App on your phone.

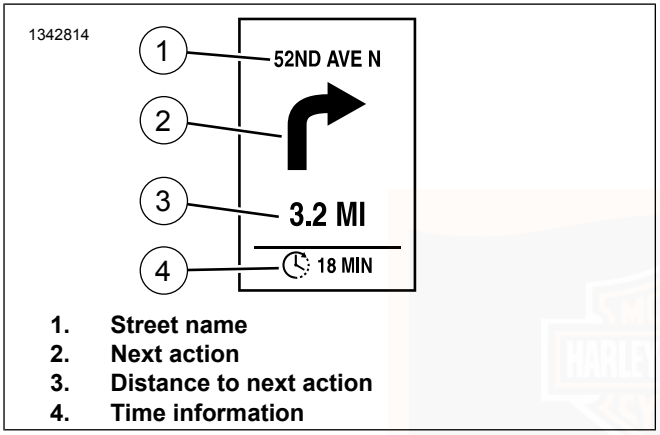
5. Select a route or a POI, then click the action boxes: **Take Me There** (not "send to bike"), then **Continue**, **Start**, and finally **Let's Ride**

    a. Turn By Turn (TBT) navigation should be running on the app and appear on left side widget of the instrument display in place of where "No Nav" was previously displayed.

    b. If TBT does not push to the instrument, close the app and re-open it and repeat step 3.

Plan and review the route before riding the motorcycle.

See Figure 40. The navigation widget displays turn by turn navigation information that has been entered into the connected device using the HD-Connect app. This information includes street name (1), Next action icon (2), distance to next action (3) and time information (4) (either arrival time or trip duration).



1. **Street name**
2. **Next action**
3. **Distance to next action**
4. **Time information**

Figure 40. Navigation Widget

Table 38. Navigation Icons

ICON	DESCRIPTION
	Start
	Finish
	Ended

Table 38. Navigation Icons

ICON	DESCRIPTION
	Navigation paused
	Navigation cancelled
	No signal
	Unidentified
	Straight
	Turn left
	Turn right
	Light left

Table 38. Navigation Icons

ICON	DESCRIPTION
	Light right
	Heavy left
	Heavy right
	U-Turn left
	U-Turn Right
	Keep left
	Keep right
	Keep middle

Table 38. Navigation Icons

ICON	DESCRIPTION
	Enter highway left
	Enter highway right
	Keep left highway
	Keep right highway
	Leave highway left
	Leave highway right
	Roundabout left(1)

Table 38. Navigation Icons

ICON	DESCRIPTION
	Roundabout right[1]
	Ferry

(1) The number in the center of the icon corresponds to the exit to be taken, counted from the entry into the roundabout.

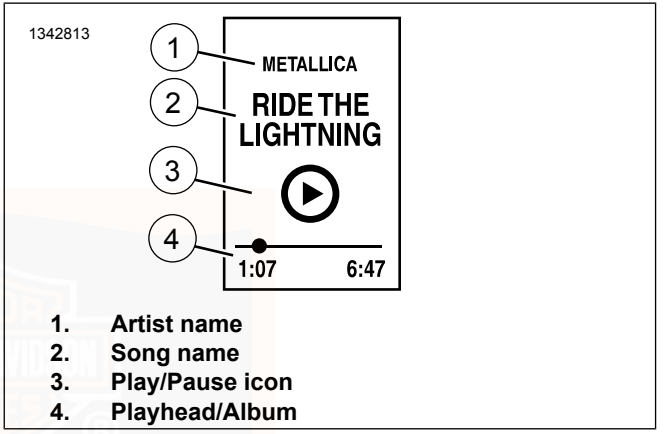
Music

See Figure 41. The music widget displays music information from a connected device. This information includes artistt name (1), Song name (2), play pause icon (3) and either a playhead or album name (4).

NOTE

Must be used with a connected device through a connected headset.

Integration with hand control functionality (play, pause, volume. etc) is only through H-D mobile app.



1. **Artist name**
2. **Song name**
3. **Play/Pause icon**
4. **Playhead/Album**

Figure 41. Audio Widget

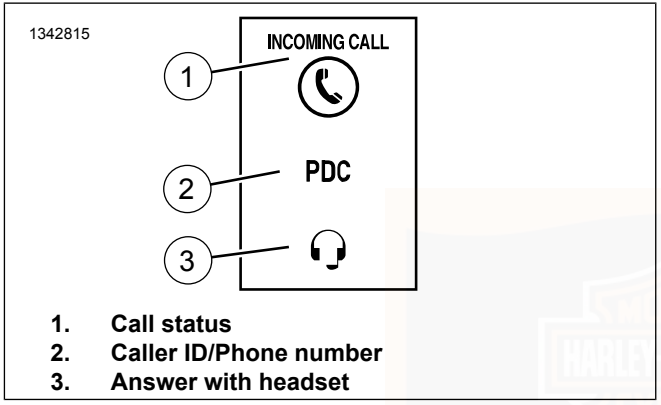
Phone

See Figure 42. The phone widget displays current call status (1), caller ID or phone number (2), and answer with headset icon (3) (If connected to a supported phone).

NOTE

Must be used with a connected device through a connected headset.

Incoming call must be answered through controls on a connected headset.

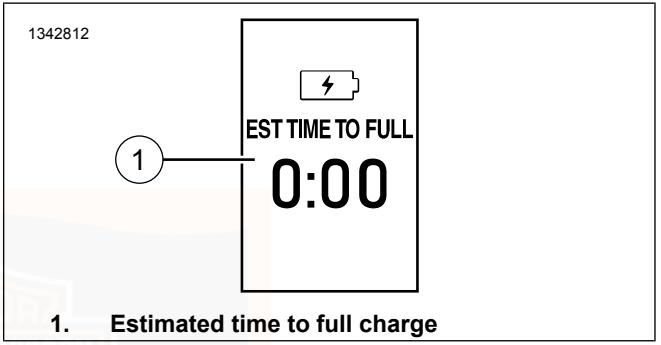


1. **Call status**
2. **Caller ID/Phone number**
3. **Answer with headset**

Figure 42. Phone Widget

Charging

See Figure 43. The charging widget displays estimated time to full charge (1).



1. **Estimated time to full charge**

Figure 43. Charging Widget

TELEMATICS

Telematic System

Your motorcycle may be equipped with cellular telematic connectivity via the H-D Connect service. This allows you to link to the motorcycle remotely through your smart phone. Use the Harley-Davidson App to check your motorcycle's status and receive notifications. See www.h-d.com/connect for the latest version of the app and for information on subscription activation.

NOTE

- *Perform system set-up and get familiar with the controls and features of HD-Connect before operating the motorcycle on the road.*

USB PORT

⚠ WARNING

Set volume levels and other controls on audio and electronic devices before riding. Distractions can lead to loss of control, resulting in death or serious injury. (00088b)

See Figure 6. The motorcycle has a USB-C port for charging a phone or media device and data transfer. Use an interface cable to connect with these devices. The USB port is powered and operational when the vehicle is turned on or in accessory mode.

NOTE

USB port cannot be used for playing music stored on a device.

Do not leave items connected to the USB-C port unattended.

Do not use media players with hard drives. Vibration may cause internal damage.

STARTING MOTORCYCLE

1. Bring an assigned fob within range.
2. Disconnect vehicle from charger.
3. Unlock fork.
4. Raise the jiffy stand.
5. See Figure 44. Press the OFF/RUN switch to the RUN (3) position.
6. Ensure twist grip is released.
7. Verify no propulsion interlock alerts are displayed. See Instruments (Page 78).

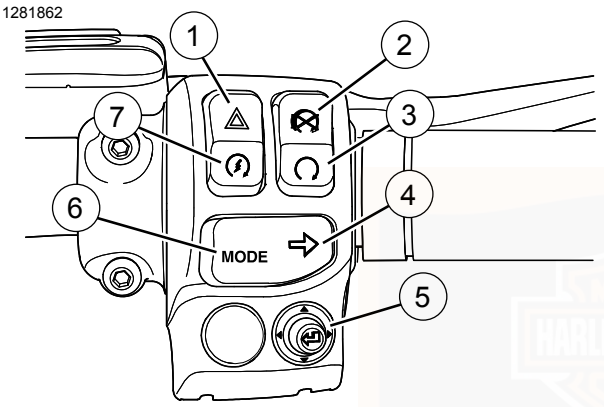
NOTE

The vehicle has propulsion interlocks, Propulsion interlocks are conditions that must be met before propulsion can be enabled. Propulsion interlocks will be displayed on the IM (instrument module) when conditions are not met to enable propulsion.

8. Press and hold the start switch (7) until side bar lamps are green. See Indicators (Page 88).

NOTE

Once propulsion is enabled the motorcycle will provide haptic feedback to the rider through the EVPT when the motorcycle is stopped. The rider will feel a slight pulsing in the EVPT similar to a heartbeat.



1. **Hazard warning**
2. **Off**
3. **Run**
4. **Right turn signal**
5. **Cursor/select**
6. **Mode**
7. **Start**

Figure 44. Right Hand Switch Module

STARTING AFTER TIPOVER

⚠ WARNING

If tip occurs, check all controls for proper operation. Restricted control movement can adversely affect the performance of the brakes, which could result in loss of vehicle control and death or serious injury. (08707a)

NOTE

- *If the motorcycle is tipped over, the word TIPPED appears on the instrument module and four-way flashers activate.*
- *Propulsion cannot be enabled until the tip condition is reset.*
- *The ignition must be reset to turn four-way flashers off.*

1. Set motorcycle upright.
2. Cycle the OFF/RUN switch to OFF then RUN.
3. Push hazard switch to turn four-way flashers off.

STOPPING MOTORCYCLE

1. Push the OFF/RUN switch to OFF.
2. Remove assigned fob from range.

REFLEX DEFENSIVE RIDER SYSTEMS

Front Brake Lever

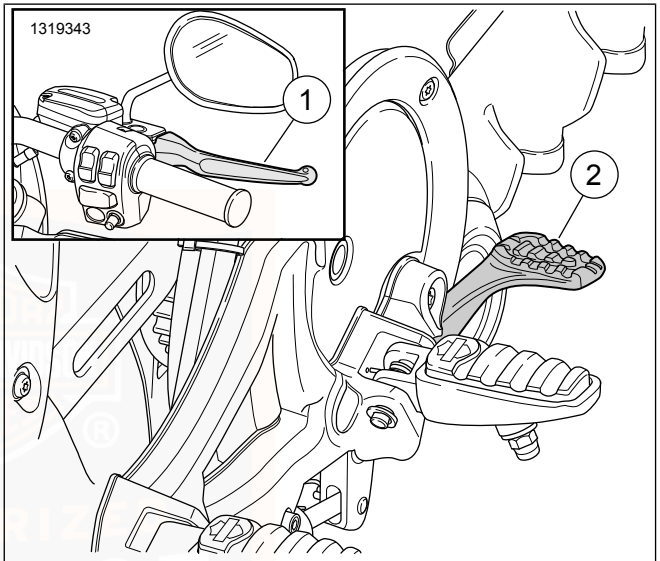
⚠ WARNING

Do not position fingers between hand control lever and handlebar grip. Improper hand positioning can impair control lever operation and cause loss of vehicle control, which could result in death or serious injury. (00032a)

See Figure 45. The front brake hand lever (1) controls the front wheel brake. The lever is on the right handlebar. Operate the hand lever with the fingers of the right hand.

Rear Brake Pedal

See Figure 45. The rear brake pedal (2) controls the rear wheel brake. The pedal is on the right side. Operate the rear brake pedal with the right foot.



1. **Front brake lever**
2. **Rear brake pedal**

Figure 45. Brake Controls

Reflex Defensive Rider System (ABS)

Harley-Davidson's ABS assists the rider in maintaining control when braking in an emergency situation. ABS monitors front and rear brakes to keep the wheels rolling and prevent uncontrolled wheel lock-ups either on dry pavement or on slick surfaces such as gravel, leaves or when riding in wet

conditions. ABS provides a specific level of intervention when the motorcycle is leaned into a turn. Rear-wheel Lift Mitigation utilizes on-board components to manage rear-wheel lift during heavy braking and further balance deceleration and rider control.

How ABS Works

The ABS monitors sensors at the front and rear wheels to determine wheel speed. If the system detects one or more wheels are slowing down too quickly, which indicates they are close to locking, or if the deceleration rate does not match a criteria stored in memory, the ABS reacts. The system rapidly opens and closes valves to modulate the brake pressure. During ABS activation, the system provides the electronic equivalent of manually pumping the brakes. The system can cycle many times per second.

The rider recognizes ABS activation by the slight pulsing sensation in the hand lever or the rear brake pedal. A clicking sound from the ABS module can also be heard. Both are the result of normal operation. Refer to Table 39.

For additional ABS information visit www.harley-davidson.com/abs.

How To Use ABS

While an advantage in emergency braking, ABS is not a substitute for safe riding. The safest way to stop a motorcycle is using both brakes.

Harley-Davidson ABS is a manual assist system. During an emergency stopping situation, maintain pressure on the brakes through all ABS events. Do not modulate or "pump" the brake controls. The wheels do not lock until the end of the stop when motorcycle speed slows to a rate at which ABS is no longer needed.

ABS: Tires and Wheels

Motorcycles equipped with ABS must always use Harley-Davidson tires and wheels. The ABS monitors the rotational speed of the wheels through individual wheel speed sensors. Changing to different diameter wheels or different size tires can alter the rotational speed. Different-sized wheels and tires can upset the calibration of the ABS and have an adverse effect on its ability to detect and prevent uncontrolled wheel lockups. Operating at tire pressures other than those pressures specified can reduce ABS braking performance. Refer to Specifications (Page 35).

Table 39. ABS Symptoms and Conditions

SYMPTOM	CONDITION
ABS lamp continuously lit	ABS fault detected. See a Harley-Davidson dealer for service.
ABS lamp flashing	This indicates a normal self-diagnostics process when the motorcycle is first turned on and the speed is under 3 mph (5 km/h). ABS is not operational until the lamp turns off. If the lamp continues flashing at speeds greater than 3 mph (5 km/h), see a Harley-Davidson dealer for service.
Pulsing brake lever or pedal during an ABS event	Normal condition.
Clicking sound during an ABS event	Normal condition.
"Surge" sensation while braking	Normal condition. This is most noticeable when braking with one brake (front only or rear only). Result of a reduction in deceleration which can be caused by cracks or bumps in road, hard braking at slow speeds, and other conditions. This is due to ABS modulating caliper brake pressure to prevent uncontrolled wheel lock.
Temporarily stiff rear brake pedal	Normal condition. Regenerative braking (causing the rear wheel to slow down) can activate ABS if applying the rear brake at the same time or immediately after. The ABS may be closing a valve to prevent pressure to the rear brake. This is due to ABS modulating caliper brake pressure to prevent uncontrolled wheel lock.
Tire chirp	Normal condition. Depending on surface, tire can chirp without locking the wheel.
Black mark on pavement	Normal condition. Depending on surface, tire can leave a black mark without locking the wheel.
Wheel lock at low speed	Normal condition. ABS does not activate on front wheel below 3 mph (5 km/h) or on rear wheel below 5 mph (8 km/h).

TRACTION CONTROL

Traction Control System

While an advantage in certain situations, traction control is not a substitute for safe riding.

Harley-Davidson's cornering traction control system can detect when the drive wheel loses traction. In wet or slippery conditions, or under abrupt acceleration, the traction-control system will limit torque to the drive wheel.

By reducing tire spin, the Traction Control System will help the rider maintain control, while allowing maximum acceleration.

The vehicle is also equipped with a Drag Torque Slip Control System to help maintain control under deceleration. When you deliver an abrupt reduction in acceleration to the vehicle, or when the powertrain decelerates on wet or slippery surfaces, the vehicle may experience rear wheel slip.

How Traction Control Works

The cornering traction control system constantly monitors the vehicles lean angle during turns, and will adjust torque to the drive wheel when it senses a loss of traction, or when necessary to improve vehicle control while cornering.

This adjustment is designed to limit wheel spin and help the rider maintain the desired course of travel in corners.

During start up, the traction-control lamp flashes simultaneously with the ABS lamp, this indicates that both systems are waiting for the vehicle to complete a wheel speed sensor check. The traction control system is operational after start up even during the wheel speed sensor check. The traction control lamp should turn off when the sensor check is complete.

If the drag torque slip control system senses rear wheel slip under powertrain deceleration, in straight-aways or corners, it may decrease drag torque, by increasing motor Revolutions Per Minute (rpm), to limit the slip and help the rider maintain control.

The traction control system is also designed to support front-wheel lift mitigation to reduce the height and duration of front-wheel lift (wheelie). The height and duration of front-wheel lift is tied to the rider-selected TCS mode, with Rain being the most restrictive and Sport being the least restrictive. Front-Wheel Lift Mitigation is turned off when TCS is turned off.

How To Use Traction Control

NOTE

When running a vehicle on a dyno it is advised that traction control be disabled to prevent intervention based on tire speed differences front to rear.

Traction control is automatically enabled at each start cycle. The rider may choose to disable traction control anytime the

vehicle is at a complete stop and operational by pressing and holding the traction control switch for one full second.

The rider may find it beneficial to disengage traction control in low speed low traction situations such as, riding in deep sand, riding uphill on wet grass, or similar situations. The traction control lamp will illuminate and remain illuminated to indicate traction control is disabled. However, if the TC lamp remains on in conjunction with the fault indicator lamp, it means the traction control system has faulted, if this occurs see an authorized Harley-Davidson dealer.

The rider may again enable traction control at any time during vehicle operation by pressing and releasing the Traction control switch.

If the traction control lamp begins fast-blinking while riding, it means the traction-control system is intervening.

Intervention of the Drag Torque Slip Control is indicated by fast-blinking of the traction control lamp. However, disabling your Traction Control will not disable Drag Torque Slip Control.

CRUISE CONTROL

⚠ WARNING

Do not use the cruise control system in heavy traffic, on roads with sharp or blind curves or on slippery roads of any kind. Using the cruise control in these circumstances can cause loss of control, which could result in death or serious injury. (00083a)

⚠ WARNING

Travel at speeds appropriate for road and conditions and never travel faster than posted speed limit. Excessive speed can cause loss of vehicle control, which could result in death or serious injury. (00008a)

Turn Cruise On

NOTE

Cruise control operates when:

- *At least 10 seconds have lapsed since the propulsion was enabled.*
- *Vehicle speed is between 25–90 mph (40–145 km/h).*

See Figure 46. Press the CRUISE switch to turn on cruise (1). When on, the cruise indicator on the IM will be displayed in green color without speed.

Set Cruise Speed

See Figure 46. When the motorcycle reaches your intended speed, press the SET/- switch down to set the cruise speed (2). The cruise indicator will now have the set speed shown next to it in green.

If necessary, adjust the cruise speed to match the speed limit or traffic conditions:

Increase/Decrease Cruise

Tapping the RES/+ switch up increases speed by 1 mph (1.6 km/h). Holding up the RES/+ switch gradually increases cruise speed.

Tapping the SET/+ switch down decreases speed by 1 mph (1.6 km/h). Holding the switch down gradually decreases cruise speed.

Disengage Cruise

See Figure 46. To drop out of cruise speed, roll the throttle closed through the roll-off switch (3). The cruise indicator and set speed will change to a red color.

Cruise also disengages when the rider:

- Squeezes the front brake lever or presses the rear brake pedal.
- Rolls the throttle open more than 10 mph (16 km/h) above the set speed.

Resume Cruise

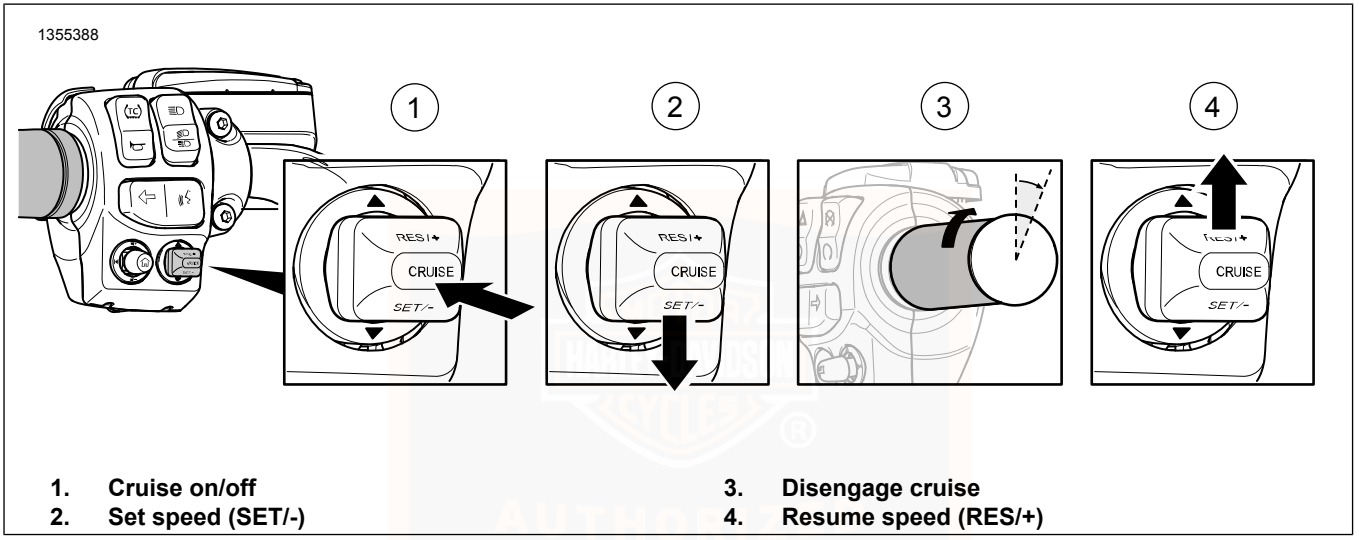
NOTE

If the current speed is more than 15 mph (24 km/h) below the cruise speed, cruise will not resume.

See Figure 46. If cruise has been disengaged yet the cruise icon is still shown, pressing the RES/+ switch up resumes cruise (4). The motorcycle automatically resumes cruise at the set speed and the indicator and set speed change back to a green color.

Turn Cruise Off

Press the CRUISE switch to turn off cruise control. The cruise icon and set speed go blank.



1. **Cruise on/off**
2. **Set speed (SET/-)**
3. **Disengage cruise**
4. **Resume speed (RES/+)**

Figure 46. Cruise Control

SEAT

Opening

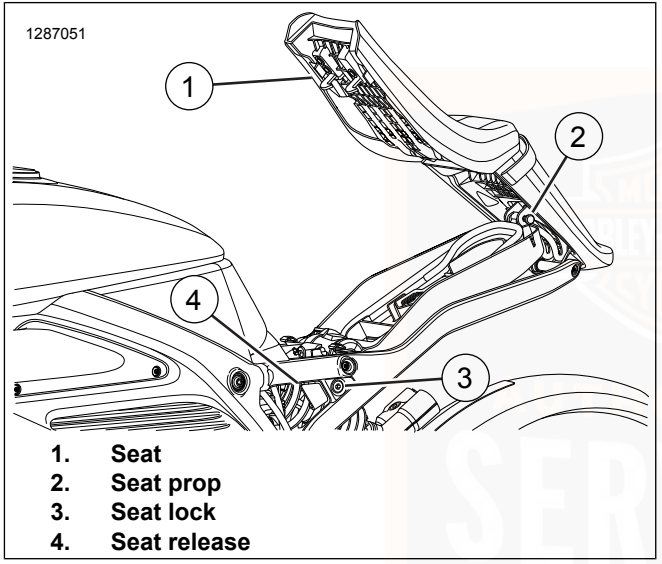
1. See Figure 47. Unlock seat.
   a. Insert key into seat lock (3) and turn counterclockwise.
2. Pull seat release lever (4) and lift front of seat (1).

Closing

1. Close seat.
   a. Support seat.
   b. Press head of seat prop locking pin (2).
   c. Let seat down and push down on front of seat to make sure latch is engaged.

2. Lock seat.

   a. Insert key into seat lock and turn clockwise.



1. Seat
2. Seat prop
3. Seat lock
4. Seat release

Figure 47. Seat

HELMET LOCKS

See Figure 48. The helmet locks are located on the right and left side of the motorcycle under the seat.

1. Lift seat. See Seat (Page 114).
2. Insert D-ring from helmet over open hook.
3. Latch and lock seat to secure helmet. See Seat (Page 114).

NOTE

Do not operate the motorcycle with a helmet in the helmet lock.

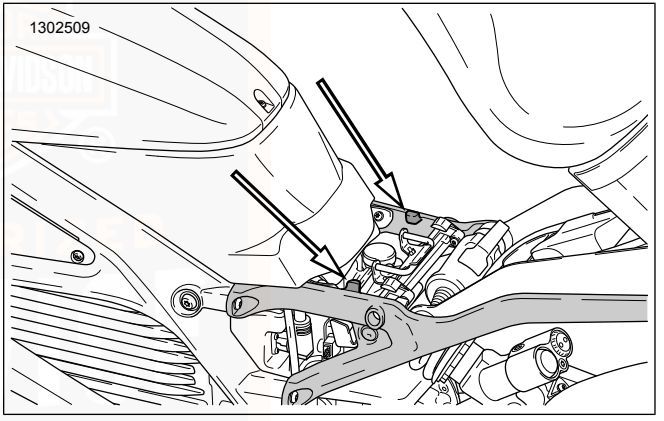


Figure 48. Helmet Locks

NOTES

GENUINE MOTOR PARTS AND ACCESSORIES

Stop at your Harley-Davidson dealer to pick up a copy of the Genuine Motor Parts and Accessories catalog or go to **www.harley-davidson.com** to view thousands of Genuine Motor Accessories that are available for Harley-Davidson motorcycles.

The website includes the following tools and resources for accessorizing and personalizing your motorcycle.

Online Catalog

The full Genuine Motor Parts and Accessories catalog is available online in PDF format. The catalog includes hundreds of pages of Harley-Davidson accessories and maintenance products.

Shop for Your Bike

Browse through categories of accessories and options available specifically for your motorcycle. View product descriptions, pricing, fitment and online instruction sheets for many of the available products.

CLEANING AND GENERAL CARE

- Harley-Davidson cleaning products are tested extensively for use on motorcycle surfaces. These products are formulated to be compatible with one another. See a Harley-Davidson dealer to purchase recommended cleaning products. Refer to Table 40 and Table 41.
- Care, cleaning and protection of the vehicle surfaces is the responsibility of the owner.
- Clean and protect the cosmetic surfaces on your motorcycle as often as possible to inhibit rust and corrosion.
- Some painted finishes and other surfaces may be scratched if gravel, dirt or grime are rubbed across the surface during washing. Use clean towels and avoid rubbing sediment across gloss finishes.
- Do not use paper towels, cloth diapers or other materials with nylon fibers which can cause fine scratches to surfaces.
- For repair of scratched surfaces, see a Harley-Davidson dealer.

⚠ WARNING

Observe warnings on labels of cleaning compounds. Failure to follow warnings could result in death or serious injury. (00076a)

⚠ WARNING

Do not wash brake discs with cleaners containing chlorine or silicone. Cleaners containing chlorine and silicone can impair brake function, which could result in death or serious injury. (00077a)

NOTICE

Do not use a pressure washer to clean motorcycle. Using a pressure washer can result in equipment damage. (00489c)

NOTICE

Use of abrasive products or powered buffing equipment will cause permanent cosmetic damage to body panels. Use only recommended products and techniques outlined in this manual to avoid damaging body panels. (00245b)

Cleaning Wheels and Tires

NOTE

Corrosion to wheels is not considered to be a defect in materials or workmanship.

- Wheels can corrode or be cosmetically damaged if they are not properly cleaned, polished and preserved.
- Harley-Davidson recommends that wheels be cared for weekly.
- Keep wheels clean from harsh chemicals, acid-based wheel cleaners, salt, and accumulated brake dust.
- After washing wheels with WHEEL & TIRE CLEANER, use the polish and sealing products according to the type of wheels on your motorcycle. Refer to Table 40.

Radiator

See Cleaning Radiator (Page 141) for important information regarding the cleaning of the radiator.

RECOMMENDED CLEANING PRODUCTS

The following products are recommended for Harley-Davidson motorcycles, parts and accessories. Your motorcycle may not have all the components shown in the tables.

Table 40. Recommended Cleaning and Care Products

PRODUCT PART NO.	PURPOSE	FRAME	BODY PANELS	WHEELS	DENIM FINISH	OTHER
BARE ALUMINUM WHEEL PROTECTANT - INDIVIDUAL WIPES 93600063	Corrosion control for bare aluminum surfaces.	No	No	Yes	No	"Burst" collection
BARE METAL POLISH 93600028 (U.S.) 93600083 (Non-U.S.)	Polishes non-clear coated polished aluminum or polished stainless steel surfaces.	As applicable				
BLACK LEATHER REJUVENATOR 93600033 (U.S.) 93600081 (Non-U.S.)	Rejuvenates black leather products so they look brand new.	No	No	No	No	Black leather goods
BOOT MARK REMOVER 93600001 (U.S.) 93600069 (Non-U.S.)	Removes boot marks from chrome exhaust components.	No	No	No	No	Exhaust system
BUG REMOVER 93600022 (U.S.) 93600075 (Non-U.S.)	Removes bugs from metal, plastic or painted surfaces. Also available as individual wipes (97400-10).	Yes	Yes	Yes	Yes	
CHROME CLEAN & SHINE 93600031 (U.S.) 93600082 (Non-U.S.)	Shines chrome-plated surfaces and cleans brushed aluminum or stainless steel surfaces.	As applicable				
DENIM PAINT CLEANER 93600064 (U.S.) 93600078 (Non-U.S.)	Waterless quick cleaner and detailer.	Yes	Yes	Yes	Yes	

Table 40. Recommended Cleaning and Care Products

PRODUCT PART NO.	PURPOSE	FRAME	BODY PANELS	WHEELS	DENIM FINISH	OTHER
ENGINE BRIGHTENER 93600002 (U.S.) 93600068 (Non-U.S.)	Rejuvenates wrinkle black engine finish.	No	No	No	No	Wrinkle black engines
GLAZE POLY SEALANT 93600026 (U.S.) 93600079 (Non-U.S.)	Provides a protective barrier for glossy paint surfaces and chrome.	Yes	Yes	As applicable	No	
GLOSS DETAILER 93600062 (U.S.) 93600073 (Non-U.S.)	Produces high gloss with UV protection. Allows chrome to breathe, unlike wax. Good for windshields. Also available as individual wipes (97401-10).	Yes	Yes	Yes	No	
HARLEY TRAVEL CARE KIT 93600007	Travel size cleaning and care products. (Not for use on denim finishes.)	Yes	Yes	Yes	No	
LEATHER PROTECTANT 93600034 (U.S.) 93600080 (Non-U.S.)	Weatherproofs and preserves leather products.	No	No	No	No	Leather goods
QUICK WASH 93600012 (U.S.) 93600071 (Non-U.S.)	A quick wash for a lightly soiled motorcycle. Cleans all surfaces, sheeting action prevents spots.	Yes	Yes	Yes	Yes	
SCRATCH & SWIRL REPAIR 93600025 (U.S.) 93600074 (Non-U.S.)	Removes fine scratches and swirls.	Yes	Yes	No	No	
SEAT, SADDLEBAG & TRIM CLEANER 93600010	Cleans and conditions vinyl, leather and plastic. Use on seats, saddlebags, inner fairings and any other trim.	No	No	No	No	Seats, saddlebags and trim

Table 40. Recommended Cleaning and Care Products

PRODUCT PART NO.	PURPOSE	FRAME	BODY PANELS	WHEELS	DENIM FINISH	OTHER
SPRAY CLEANER & POLISH 93600029 (U.S.) 93600084 (Non-U.S.)	Aerosol quick cleaner and detailer. Reduces static attraction to dust. Works great for removing bugs.	Yes	Yes	Yes	No	
SUNWASH BIKE SOAP 93600023 (U.S.) 93600077 (Non-U.S.)	Thorough washing of all surfaces with a wash mitt. Reduces hard water spots when washing a motorcycle in the sun.	Yes	Yes	Yes	Yes	
WHEEL & TIRE CLEANER 93600024 (U.S.) 93600076 (Non-U.S.)	Removes brake dust and road grime from wheels, tires and whitewalls. Do not use on frames or anodized parts.	No	No	Yes	No	Black-coated exhaust pipes and mufflers
WINDSHIELD CLEANER 93600067	Quick windshield cleaner in convenient single use wipe.	Yes	Yes	No	No	Windshield

Table 41. Recommended Surface Care Products

PRODUCT PART NO.	PURPOSE
BUG EATER SPONGE 93600110	When paired with water and BUG REMOVER, the BUG EATER SPONGE breaks down and dissolves baked on bugs and road grime.
CLEANING BRUSH KIT 94844-10	Brush kit for detailing your motorcycle.
DETAILING SWABS 93600107	Large cotton swabs for cleaning crevices and detailed surfaces.
DISPOSABLE DETAILING SOFT CLOTH 93600114	Non-absorbent cloth for applying and buffing SWIRL & SCRATCH REPAIR and GLAZE POLY SEALANT to painted surfaces or chrome.

Table 41. Recommended Surface Care Products

PRODUCT PART NO.	PURPOSE
HARLEY WASH BUCKET 94811-10	Wash bucket with apron to hold your supplies. Includes GRIT GUARD insert.
HOG BLASTER MOTORCYCLE DRYER 94651-09 (120 V) 94865-09 (220 V)	Blows a stream of warm dry filtered air. Reduces streaks and water spots.
MICROFIBER DETAILING CLOTH 94663-02	Highly absorbent detailing cloth for polishing and sealing. Contains no nylon fibers.
SYNTHETIC DRYING CHAMOIS 94791-01	Extra-absorbent, non-streaking synthetic towel for drying. Dampen towel and wring out before using for greatest absorbency.
WASH MITT 94760-99	Absorbent wool-blended washing mitten.
WHEEL & SPOKE BRUSH 43078-99	Cone-shaped scrub brush for wheels.

Table 42. Wheel Polish and Sealing Products

WHEELS	PRODUCT	DESCRIPTION
Anodized	GLAZE POLY SEALANT	Cleans surface, removes fine scratches. Provides a breathable sealant against acid, chemicals, salt and brake dust.
	GLOSS DETAILER	Seals and protects against harsh chemicals, salt and other sediments to prevent corrosion.
Bare aluminum	BARE ALUMINUM WHEEL PROTECTANT	Creates a protective coating for bare aluminum wheels to prevent oxidation. Individual wipe.

Table 42. Wheel Polish and Sealing Products

WHEELS	PRODUCT	DESCRIPTION
Chrome	CHROME CLEAN & SHINE	Non-abrasive cleaner to brighten chrome wheels.
	GLOSS DETAILER	Seals and protects against harsh chemicals, salt and other sediments to prevent oxidation.
Polished aluminum or stainless steel	BARE METAL POLISH	Microabrasive polish to refurbish polished wheels. Do not use on chrome.

WASHING THE MOTORCYCLE

Use only recommended cleaning and care products. Refer to Table 40 and Table 41.

NOTE

During rinsing and washing, avoid direct spray on electrical components and any luggage or saddlebag sealing areas (if equipped). Avoid spraying water under leather saddlebag covers (if equipped).

Preparation

1. Allow motorcycle to cool before rinsing or washing. Spraying water on hot surfaces can leave water spots and mineral deposits.
2. Rinse the motorcycle from the bottom up.
3. To loosen dried bugs or hardened dirt, allow surfaces to soak under a damp towel.

Cleaning Wheels and Tires

1. Rinse wheel and tire surfaces. Avoid splashing brake dust on chrome or painted parts.
2. Apply WHEEL & TIRE CLEANER. Allow cleaner to set for one minute.
3. Clean the wheel with a BUG EATER SPONGE or WHEEL & SPOKE BRUSH. Thoroughly scrub all brake dust and other sediments off the wheel. Accumulated brake dust can trap moisture and dirt, which leads to wheel corrosion.
4. Rinse well.

Washing the Motorcycle

NOTE

See the appropriate instructions in this section for cleaning leather, denim (flat) finishes, windshields or other special surfaces.

1. If necessary, use BUG REMOVER to remove bug splatters.
   a. Rinse the affected surfaces during preparation.
   b. Spray the area with BUG REMOVER.
   c. Wait one minute while the BUG REMOVER penetrates the bug splatters.
   d. Use the BUG EATER SPONGE while washing to easily remove bugs.
2. Prepare the wash.
   a. Fill a HARLEY WASH BUCKET with clean water.
   b. Add SUNWASH BIKE SOAP, following the directions on the package.
   c. Soak the WASH MITT and/or a BUG EATER SPONGE in the SUNWASH solution.
3. Wash all surfaces starting at the top working down toward the ground.
4. Rinse the motorcycle twice in both directions:
   a. Rinse from the bottom up.
   b. Rinse from the top down.

Drying the Motorcycle

1. Dry the surfaces from the top down using a SYNTHETIC DRYING CHAMOIS or a HOG BLASTER MOTORCYCLE DRYER. Avoid using any type of forced air on speakers or other sensitive components.
2. Dampen chamois in clean water and wring out the excess. The chamois is more absorbent when wet.
3. Wipe across the vehicle surface.
4. Repeat as necessary until surface is dry.

Polishing and Sealing

NOTE

If motorcycle has denim finish, skip the Polishing and Sealing procedure.

1. Apply GLAZE POLY SEALANT with a DISPOSABLE DETAILING SOFT CLOTH or MICROFIBER DETAILING CLOTH, following the instructions on the package.
2. Buff with a DISPOSABLE DETAILING SOFT CLOTH.
3. Polish and seal the wheels to prevent corrosion.

LEATHER AND VINYL CARE

NOTICE

Do not use bleach or detergents containing bleach on saddlebags, seats, tank panels or painted surfaces. Doing so can result in equipment damage. (00229a)

Do not use ordinary soap to clean leather or fur. It could dry or remove the oils from the leather.

Leather, vinyl and other synthetic surfaces must be periodically cleaned and treated to maintain its appearance and extend its life. Clean and treat these surfaces once a season or more frequently under adverse conditions.

These surfaces are not designed for long-term exposure to inclement weather. Protect these surfaces with a Harley-Davidson Seat Rain Cover or Motorcycle Storage Cover (sold separately).

1. Vacuum or blow dust off surface.
2. Thoroughly clean surfaces with SEAT, SADDLEBAG & TRIM CLEANER, following directions on the bottle.
3. Allow the material to dry naturally and completely at room temperature before applying other products to the material. Do not use artificial means to dry the material quickly.
4. For leather only, rejuvenate faded black surfaces with BLACK LEATHER REJUVENATOR, and apply LEATHER PROTECTANT to weatherproof and preserve the leather.

NOTE

Many Harley-Davidson accessories and seats are made of either treated or untreated leather or have leather inserts. Natural materials age differently and require different care than man-made materials. Seat covers and panels made of leather gain "character", such as wrinkles, with age. Leather is porous and organic. Each leather product settles into its own distinct form with use. Your leather product matures into its own custom shape and style from the sun, rain and time. This maturing is natural and enhances the custom quality of your Harley-Davidson motorcycle.

DENIM FINISH

Some motorcycles have a denim (flat or matte) finish. The denim finish has qualities which differ from high gloss finishes on all other Harley-Davidson motorcycles. Like denim fabric, denim paint will burnish or mar with age and use, thus adding character and personality to the finish. For recommended products, refer to Table 40.

- If scratched, the color coat of paint does nick/scuff and these marks cannot be rubbed out.
- If polished, the finish will become less matte and more glossy over time.

Cleaning Denim Finish

For Light deposits: Use DENIM PAINT CLEANER and a SOFTCLOTH.

For heavier deposits: Use either SUNWASH BIKE SOAP and a clean H-D WASH MITT or QUICK WASH. Rinse thoroughly with clean water.

MOLDED-IN-COLOR BODY PANEL CARE

Molded-In-Color Surfaces

NOTICE

Use of abrasive products or powered buffing equipment will cause permanent cosmetic damage to body panels. Use only recommended products and techniques outlined in this manual to avoid damaging body panels. (00245b)

NOTICE

Do not use touch-up paint on molded-in-color body panels. Use of touch-up paint can damage finish. (00246a)

The body panels feature molded-in-color technology. The color pigment is mixed in with the material when the part is made, not applied over the surface. Molded-in-color panels require different maintenance than painted surfaces to maintain their original shine. Using methods that work on painted surfaces may ruin the finish of molded-in-color parts.

Recommended Products

Harley-Davidson cleaning products are tested extensively for use on motorcycle surfaces. These products are formulated to be compatible with one another. See a Harley-Davidson dealer to purchase recommended cleaning products. Refer to Recommended Cleaning Products (Page 118).

Washing

To wash molded-in-color panels follow the instructions below:

1. Rinse surface with water.
2. Wash with QUICK WASH or SUNWASH BIKE SOAP.
3. Rinse surface thoroughly with water.
4. Dry with a clean chamois or soft dry natural fiber cloth.

Cleaning Between Washings

Untreated molded-in-color body panels sometimes have a static charge that attracts dust. Applying GLOSS DETAILER or GLAZE POLY SEALANT to molded-in-color surfaces will eliminate this condition.

To keep a high gloss finish on molded-in-color panels follow the instructions below:

1. Spray GLOSS DETAILER onto surface and wipe with a clean soft natural fiber cloth or Harley Softcloth.

NOTE

Rain or water will remove GLOSS DETAILER from body panels.

2. Reapply GLOSS DETAILER as required to keep surfaces looking their best.

Polishing

Polishing molded-in-color body panels results in greater surface gloss and a protective coating.

Apply GLAZE POLY SEALANT every six months or as required to keep molded-in-color panels protected and looking their best.

1. Clean and dry surfaces to be polished. See Washing.
2. Apply GLAZE POLY SEALANT to clean, slightly dampened cloth or sponge and apply to surface with a light overlapping motion. Make sure to cover all areas.
3. Let GLAZE POLY SEALANT dry to a haze and buff off residue with a DISPOSABLE DETAILING SOFT CLOTH or a clean soft cloth.

Minor Scratch Removal

NOTICE

Use of abrasive products or powered buffing equipment will cause permanent cosmetic damage to body panels. Use only recommended products and techniques outlined in this manual to avoid damaging body panels. (00245b)

To remove minor scratches from body panels follow the instructions below:

1. To remove light surface scratches and rubs, use SCRATCH & SWIRL REPAIR as recommended.
2. Make sure SCRATCH & SWIRL REPAIR is applied with a moist cloth and by hand (not by machine).
3. After scratch or rub has been repaired, polish surface lightly with GLAZE POLY SEALANT.

NOTE

Black body panels are more prone to suffer permanent cosmetic damage if attempts to remove scratches are overdone.

Major Scratch Removal

There is no repair procedure for severely scratched surfaces. Severely scratched body panels must be replaced.

STORING MOTORCYCLE

If the motorcycle will not be operated for a period of time, take steps to protect the motorcycle.

1. Refer to Table 43 for RESS storage instructions. Refer to Charging Motorcycle (Page 40) for State of Charge (SOC) and battery charging instructions.
2. Check and fill the cooling system. See Coolant (Page 139).

3. To protect the body panels, engine, chassis and wheels from corrosion, follow the cosmetic care procedures before storage. See Cleaning and General Care (Page 117).

4. Set the state of the security system. Refer to SECURITY SYSTEM (Page 65).

5. Cover the motorcycle with a material such as light canvas that breathes. Plastic materials that do not breathe promote condensation and corrosion.

Make a list of everything you do and fasten it to a handlebar grip. When you take the motorcycle out of storage, this list is your reference/checklist to get your motorcycle in operating condition.

Table 43.

Length of Storage	Storage Procedure
Less than 30 days	Plug the bike into the EVSE. Set the security system to the desired state.
Longer than 30 days	Ensure the RESS SOC is between 70%-30% before a 30 day or longer storage event. Set the security system to the desired state. Monitor the SOC and ensure it does not dip below 30%. Recharge if necessary.

MAINTENANCE

⚠ WARNING

Perform the service and maintenance operations as indicated in the regular service interval table. Lack of regular maintenance at the recommended intervals can affect the safe operation of your motorcycle, which could result in death or serious injury. (00010a)

⚠ WARNING

If you operate your motorcycle under adverse conditions (severe cold, extreme heat, very dusty environment, very bad roads, through standing water, etc.), you should perform the regular maintenance intervals more frequently to ensure the safe operation of your motorcycle. Failure to maintain your motorcycle could result in death or serious injury. (00094a)

Service your motorcycle at the regular service intervals. Road conditions like dust, rain or riding styles can require servicing the motorcycle at more frequent intervals. See Service Records (Page 175).

Though some of these procedures can be performed with a minimum of tools, always consult your Harley-Davidson dealer for updates. Remember, your authorized Harley-Davidson dealer always services your motorcycle with the latest factory approved methods and equipment.

Record each service to maintain the new motorcycle warranty. See Service Records (Page 175).

BREAK-IN MAINTENANCE

NOTE

The performance of new motorcycle initial service is required to keep your new motorcycle warranty in force and for proper emissions system operation.

After a new motorcycle has been ridden 1000 mi (1,600 km), visit an authorized Harley-Davidson dealer for initial service. Refer to Service Records (Page 175).

PREPARING THE MOTORCYCLE FOR MAINTENANCE

⚠ WARNING

Be sure to check capacity rating and condition of hoists, slings, chains and cables before use. Exceeding capacity ratings or using lifting devices that are in poor condition can lead to an accident, which could result in death or serious injury. (00466c)

NOTE

Always support a motorcycle that is being serviced with blocks or stands.

Setting Motorcycle Upright

1. Place motorcycle upright on a level surface or suitable lift, if available.
2. Verify that the motorcycle is level.
3. Secure with tie-downs.

DISPOSAL AND RECYCLING

Help protect our environment! Many communities maintain facilities for recycling used fluids, plastics and metals. Dispose of or recycle used oil, lubricants, coolant, brake fluid and batteries in accordance with local regulations. Many Harley-Davidson parts and accessories are made of plastics and metals which can also be recycled.

BATTERY MAINTENANCE

Safety Precautions

⚠ WARNING

Contact with internal battery contents can have serious health effects. Wear protective face shield, rubberized gloves, respiratory protection, and protective clothing when handling damaged batteries. Failure to wear proper protective gear while handling a damaged battery could result in death or serious injury.

See Safety Data Sheet (SDS) for more details available at sds.harley-davidson.com (07728b)

- Do not use motorcycle if battery gives off an odor, generates heat, releases gas, smoke or liquid, becomes discolored, deformed or appears abnormal in any way.
- Never attempt to open or disassemble a battery.
- Do not pierce the battery case with a nail or other sharp objects, do not break it open, do not step on it.
- Do not immerse the motorcycle in water.
- Do not strike or subject the battery to severe physical shock.

The following first aid measures are required only in case of exposure to internal battery contents after damage of the external battery casing.

Table 44. Battery Electrolyte Antidote

Physical Location	Procedure
After Inhalation	• Remove to fresh air • Wash mouth and nasal passages with water • If patient is not breathing, apply artificial respiration • Do not perform mouth-to-mouth resuscitation • Call a physician immediately
After Contact with Skin	• Wash off immediately with plenty of water and soap for at least 15 minutes • Take off contaminated clothing and wash it before reuse • Call a physician immediately
After Contact with Eyes	• Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes • Remove contact lenses, if present and easy to do. Continue rinsing • Seek medical treatment by eye specialist

Table 44. Battery Electrolyte Antidote

Physical Location	Procedure
After Ingestion	• Rinse mouth • Drink plenty of water or milk • Never give anything by mouth to an unconscious person • Do not induce vomiting • Call a physician immediately

Both batteries on the LiveWire motorcycle are monitored by the motorcycles' operating system. If your IM indicates a battery fault or your motorcycle will not properly operate, see your Authorized Harley-Davidson Electric Vehicle (EV) dealer.

Rechargeable Energy Storage System (RESS)

LiveWire is powered by a Lithium-Ion RESS that is superior to conventional lead acid batteries. This battery design will provide many years of dependable service and, other than normal charging, does not require any special maintenance.

Before riding the motorcycle:

1. Inspect battery for visible damage.

NOTE

If damage is found see your Authorized Harley-Davidson EV dealer.

12 Volt System Battery

The motorcycle has a permanently sealed, maintenance-free 12 V Lithium-Ion battery for powering the motorcycle's 12 V systems. The RESS onboard DC-to-DC charger handles all charging and maintenance of the 12 V battery, no special maintenance is required for this battery. See your Authorized Harley-Davidson EV dealer if the battery or motorcycle is not functioning properly.

Storing the Batteries

If you will not be riding your motorcycle for a while.

See Storing Motorcycle (Page 127) for storage instructions.

CHECK TRANSMISSION LUBRICANT

The transmission does not require any operator maintenance. After a new motorcycle has been ridden 1,000 mi (1,600 km), visit an authorized Harley-Davidson EV dealer for initial service. Refer to Service Records (Page 175) for all maintenance schedules.

MISCELLANEOUS LUBRICATION

Refer to Service Records (Page 175) for all maintenance schedules.

For specific information for lubricating the following items, see the service manual or a Harley-Davidson dealer.

- Brake controls
- Steering head bearing
- Jiffy stand
- Front and rear brake caliper pins and bushings

CHECK DRIVE BELT DEFLECTION

Belt deflection can be measured either manually with a gauge or harmonically by using a frequency meter or a downloadable phone app.

Manual Belt Deflection Measurement

NOTE

Always use the required special tool to measure belt deflection. Failure to use tension gauge may cause under-tensioned belts. Loose belts can fail due to "ratcheting" (jumping a tooth) which causes tensile cord crimping and breakage.

Check belt deflection:

- With motorcycle at ambient temperature.
- With motorcycle upright or on jiffy stand with rear wheel on the ground.
- With the vehicle unladen, no rider and no luggage.

1. Deactivate electrical system. See Disconnecting Power (Page 71).

2. See Figure 49. Measure belt deflection using:

Special Tool: BELT TENSION GAUGE (HD-35381-A)

a. Slide O-ring (4) to zero mark (3).

b. Fit belt cradle (2) against bottom of drive belt in line with belt deflection window.

c. Press upward on knob (6) until O-ring slides down to 10 lb (4.54 kg) mark (5) and hold steady.

3. Measure belt deflection:

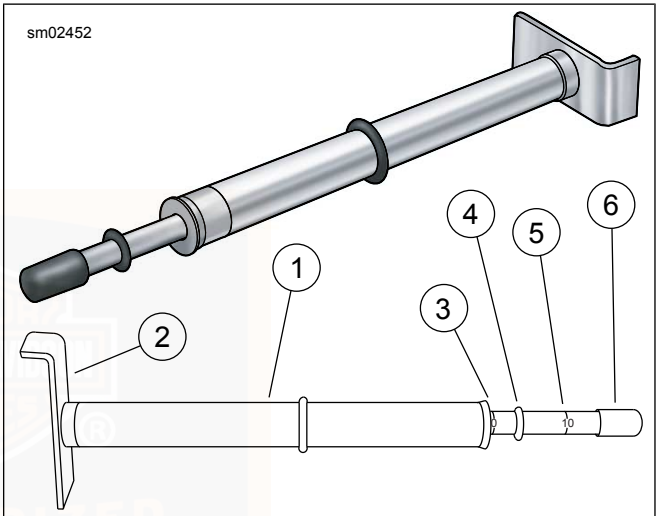
   a. See Figure 50. Measure belt deflection as viewed through belt deflection viewing window while holding gauge steady. Each deflection graduation is approximately 1/16 in (1.6 mm).

4. Compare with specifications. Refer to Table 45. If not within specifications, see a Harley-Davidson dealer.

5. Reactivate electrical system. See Disconnecting Power (Page 71).

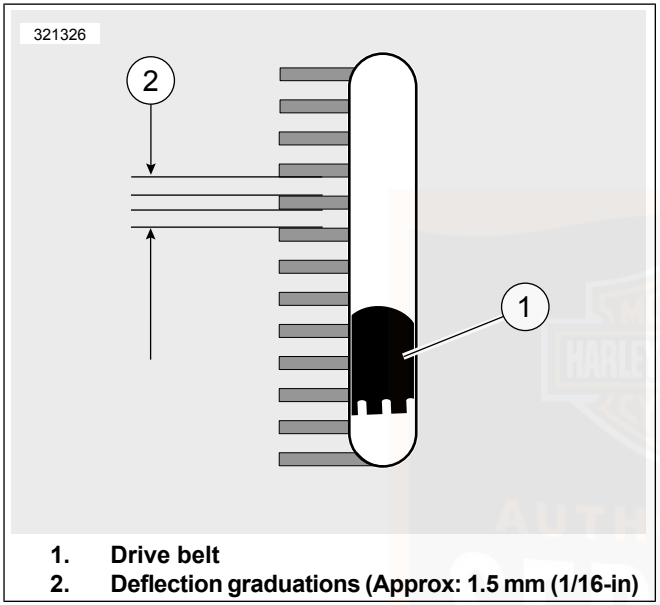
Table 45. Drive Belt Deflection

DEFLECTION [1]	
in	**mm**
1/8-3/16	3.2-4.8
(1) Deflection measured at 10 lb (4.5 kg) tension.	



1. **Belt tension gauge**
2. **Belt cradle**
3. **0 lb (0 kg) mark**
4. **O-ring**
5. **10 lb (4.5 kg) mark**
6. **Knob**

Figure 49. Belt Tension Gauge



1. **Drive belt**
2. **Deflection graduations (Approx: 1.5 mm (1/16-in)**

Figure 50. Belt Deflection Window

Harmonic Belt Deflection Measurement

Check belt deflection:

- With motorcycle at ambient temperature.
- With motorcycle upright or on jiffy stand with rear wheel on the ground.
- With the vehicle unladen: no rider and no luggage.

1. Deactivate electrical system. See Disconnecting Power (Page 71).

2. *NOTE*

Use Gates® Carbon Drive™ Smartphone application to measure drive belt frequency. Digital frequency meters operate in the same manner by placing sensor close to belt.

   Measure belt tension with phone app:

   a. Open phone app.

   b. Turn on phone's microphone.

   c. Hold phone near belt deflection window.

   d. See Figure 51. Use finger or thumb to pluck back side of lower belt at belt deflection window.

   e. Measure frequency of belt.

   f. Take multiple measurements to ensure measurement is consistent.

3. Rotate rear wheel 90 degrees and repeat procedure.

4. Compare with specifications. Refer to Table 46. If not within specifications, see Adjust Belt in this section.

5. Reactivate electrical system. See Disconnecting Power (Page 71).

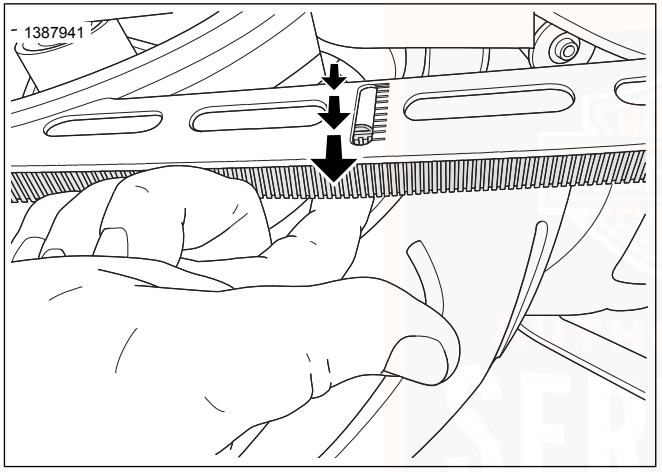


Figure 51. Belt Pluck

Table 46. Drive Belt Frequency

Frequency
Hz
78-90

CHECKING BRAKE CONTROLS

Rear Brake Pedal

- The rear brake pedal should move smoothly through its full range.
- Verify the rear brake pedal has a firm feel when applied.

See a Harley-Davidson dealer for service.

Front Brake Hand Lever

- The brake hand lever should move smoothly through its full range.
- Verify the brake hand lever has a firm feel when applied.

See a Harley-Davidson dealer for service.

INSPECTING BRAKE PADS AND DISCS

Brake Pads

Harley-Davidson has provided your new motorcycle with the optimum brake pad friction material available. It is selected to give the best performance possible under dry, wet and high operating temperature conditions. It exceeds all regulatory requirements currently in effect. However, during some braking conditions you may experience noise. This is normal for this friction material.

⚠ WARNING

Always replace brake pads in complete sets for correct and safe brake operation. Improper brake operation could result in death or serious injury. (00111a)

1. Check the brake disc as it spins. The disc should run true in the brake caliper.
2. See Figure 52. Measure the thickness of the brake pad friction material.

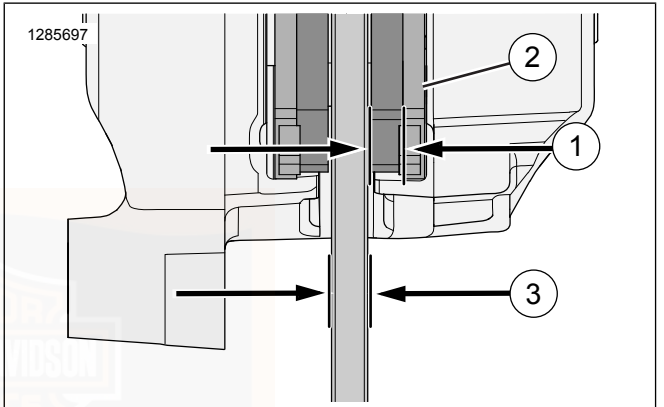
NOTE

The pads do not necessarily wear evenly. The grooves on the front brake pads are no longer visible when the pads are near the end of service life.

3. Refer to Table 47. If the brake pad friction material is at the minimum thickness or less, replace the pads. Always replace brake pads in pairs. See a Harley-Davidson dealer.

Table 47. Brake Specifications

MINIMUM THICKNESS	mm	in
Brake pads	0.5	0.020
Front brake discs	4.5	0.177
Rear brake disc	4.5	0.177



1. Brake pad thickness
2. Backplate
3. Brake disc thickness

Figure 52. Brake Thickness

Brake Disc

1. Refer to Table 47. Check brake disc thickness and compare to value indicated in table.
2. Replace if necessary. See a Harley-Davidson dealer.

CHECKING BRAKE FLUID LEVEL AND CHANGING BRAKE FLUID

NOTE

- *At every service, check moisture content of fluid using DOT 4 BRAKE FLUID MOISTURE TESTER (PART NUMBER: HD-48497-A). Follow the instructions included with tool.*
- *Flush brake system and replace DOT 4 fluid every two years or sooner if brake fluid test shows moisture content is 3% or greater.*
- *Do not add or remove fluid from the brake system to compensate for normal wear. Reservoir volume is adequate to provide fluid to the wear limits of the pads and discs.*
- *Fluid level in reservoir will decrease with brake wear. If fluid level is low, check brake pads and discs for wear. See Inspecting Brake Pads and Discs (Page 135).*

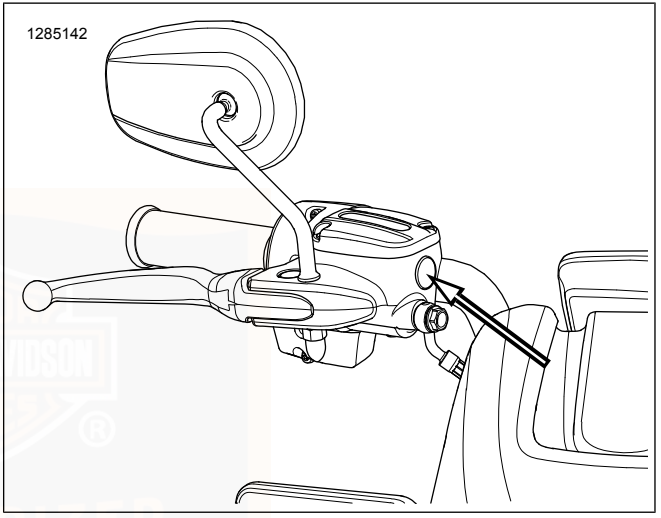


Figure 53. Front Master Cylinder Reservoir Sight Glass

Checking Brake Fluid Level

1. Set motorcycle upright. Verify that the fluid in the reservoir is level. See Preparing the Motorcycle for Maintenance (Page 129).
2. **Front:** See Figure 53. Check level in front reservoir sight glass. Fluid level must be at or above the minimum mark on glass.
3. **Rear:** See Figure 54. Check level on side of rear brake reservoir. Level must be above MIN.

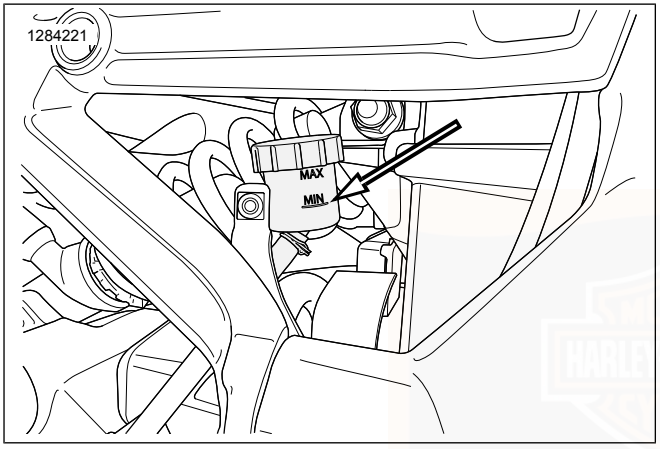


Figure 54. Rear Master Cylinder Reservoir MIN Level

Changing Brake Fluid

⚠ WARNING

Contact with DOT 4 brake fluid can have serious health effects. Failure to wear proper skin and eye protection could result in death or serious injury.

- **If inhaled: Keep calm, remove to fresh air, seek medical attention.**
- **If on skin: Remove contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. If irritation develops, seek medical attention.**
- **If in eyes: Wash affected eyes for at least 15 minutes under running water with eye lids held open. If irritation develops, seek medical attention.**
- **If swallowed: Rinse mouth and then drink plenty of water. Do not induce vomiting. Immediate medical attention required.**
- **See Safety Data Sheet (SDS) for more details available at sds.harley-davidson.com**

(00240d)

⚠ WARNING

DOT 4 brake fluid absorbs moisture from the atmosphere over time, changing the properties of the fluid. Check brake fluid moisture content at every service interval or annually (whichever comes first). Flush and replace the brake fluid every two years, or sooner if moisture content is 3% or greater. Failure to flush and replace fluid can adversely affect braking, which could result in death or serious injury. (06304b)

NOTICE

DOT 4 brake fluid will damage painted and body panel surfaces it comes in contact with. Always use caution and protect surfaces from spills whenever brake work is performed. Failure to comply can result in cosmetic damage. (00239c)

To ensure the brake system is performing to design, check the moisture content of the brake fluid at every service interval or at least annually using a DOT 4 brake fluid moisture tester (part number HD-48497-A or equivalent) following the instructions included with the tool. Flush DOT 4 fluid every 2 years or sooner if the brake system fluid test shows moisture content is 3% or greater.

Harley-Davidson recommends using Harley-Davidson Platinum Label DOT 4 Brake Fluid because of its superior moisture and corrosion inhibiting properties

CHECKING SYSTEMS FOR LEAKS OR ABRASIONS

Check all lines and hoses for leaks, damage or abrasions. For the appropriate intervals see Service Records (Page 175).

- Cooling system and coolant hoses
- Brake system and brake lines

COOLANT

General

NOTICE

Use only Genuine Harley-Davidson Extended Life Antifreeze and Coolant. Use of other coolants/mixtures may lead to motorcycle damage. (00179c)

GENUINE HARLEY-DAVIDSON EXTENDED LIFE ANTIFREEZE AND COOLANT is pre-diluted and ready to use full strength. It provides temperature protection to -34.0 °F (-36.7 °C). DO NOT add water.

NOTICE

De-ionized water must be used with the antifreeze in the cooling system. Hard water can cause scale accumulation in water passages which reduces cooling system efficiency, leading to overheating and motorcycle damage. (00195b)

⚠ WARNING

Do not loosen or remove pressure cap when cooling system is hot. The cooling system is under pressure and hot coolant and steam can escape from pressure cap, which could cause severe burns. Allow motorcycle to cool before servicing the cooling system. (00091c)

If GENUINE HARLEY-DAVIDSON EXTENDED LIFE ANTIFREEZE AND COOLANT is unavailable, a mixture of de-ionized water and ethylene glycol-based antifreeze may be used. At the first opportunity, change back to GENUINE HARLEY-DAVIDSON EXTENDED LIFE ANTIFREEZE AND COOLANT.

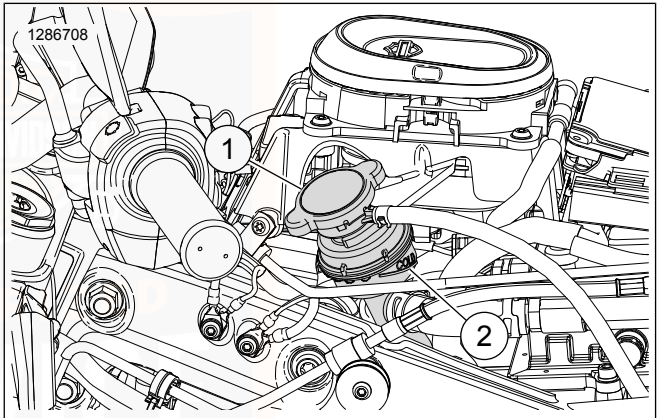
Checking Coolant Level

1. Position vehicle on level ground resting on the jiffy stand.
2. Allow motorcycle to cool.
3. Remove top cover. See Top Cover (Page 143).
4. See Figure 55. Check that coolant level is at or slightly above the "COLD FILL" line (2).

NOTE

If the coolant reservoir is empty when the motorcycle is cold, inspect the system for leaks. Repair as needed. Fill system with coolant and purge any trapped air.

5. If level is below "COLD FILL" line on tank, remove coolant reservoir cap (1).
6. Add GENUINE HARLEY-DAVIDSON EXTENDED LIFE ANTIFREEZE AND COOLANT until fluid level reaches, or is slightly above the "COLD FILL" line.
7. Install coolant reservoir cap.



1. Coolant reservoir cap
2. Cold fill level

Figure 55. Coolant Reservoir

CLEANING RADIATOR

⚠ CAUTION

At operating temperature, radiators and oil coolers contain hot fluids. Contact with a radiator or oil cooler can result in minor or moderate burns. (00141b)

NOTICE

Using a pressure washer to clean radiators or oil coolers can damage cooling fins and reduce airflow. Reduced airflow can lead to overheating, resulting in motorcycle damage. (00056c)

NOTICE

Clean the inlet surface of the radiator regularly. Leaves and other debris can collect on the radiator surface and degrade radiator performance which could lead to overheating and motorcycle damage. (00197d)

1. Clean debris from radiator fins.

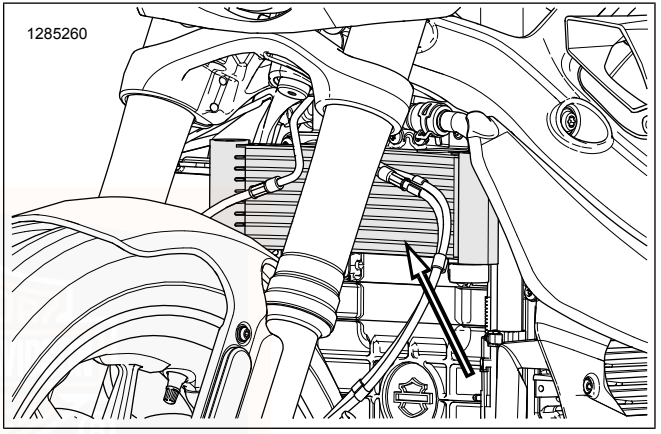


Figure 56. Radiator

REPLACING COOLANT

See a Harley-Davidson dealer for coolant replacement.

MAINTAINING FRONT FORK

⚠ WARNING

Regularly inspect shock absorbers and front forks. Replace leaking, damaged or worn parts that can adversely affect stability and handling, which could result in death or serious injury. (00012a)

Have a Harley-Davidson dealer drain the front fork oil and refill at proper intervals.

Rebound action of the fork will be impaired if the fork oil level is low.

If fork does not appear to be working properly or a significant oil leak should develop, see a Harley-Davidson dealer.

Refer to Service Records (Page 175) for all maintenance schedules.

ADJUSTING STEERING HEAD BEARINGS

⚠ WARNING

Adjustments to steering head bearings should be performed by a Harley-Davidson dealer. Improperly adjusted bearings can adversely affect handling and stability, which could result in death or serious injury. (00051b)

Refer to Service Records (Page 175) for all maintenance schedules.

See a Harley-Davidson dealer to adjust the steering head bearings.

SHOCK ABSORBERS

Inspect shock absorbers and rubber bushings for leaks and bushing deterioration at proper intervals.

⚠ WARNING

Shock absorber cannot be serviced. Attempting service can cause an explosion, which could result in death or serious injury. (00602d)

- Do not refill, disassemble, puncture or expose shock to flames.
- Replacement and disposal should only be done by an authorized Harley-Davidson dealer.

CHECKING ELECTRICAL EQUIPMENT AND SWITCHES

⚠ WARNING

Be sure headlamp, tail and stop lamp and turn signals are operating properly before riding. Poor visibility of rider to other motorists can result in death or serious injury. (00478b)

Check all electrical equipment and switches including the tail lamps, turn signals, headlamp and horn for proper operation.

TOP COVER

Remove

⚠ WARNING

Risk of electric shock or burn. Do not touch with fingers, jewelry or other metal objects. Only to be serviced by a qualified technician. Failure to follow instructions can result in death or serious injury. (08804b)

⚠ DANGER

This vehicle contains a high voltage Rechargeable Energy Storage System (RESS). An improperly handled or damaged RESS can cause electrical shock and/or fire, which will result in death or serious injury.

- **RESS must only be serviced by a qualified technician using proper Personal Protective Equipment (PPE).**
- **Do not touch RESS connecter terminals with fingers, tools, jewelry, or other metal objects.**
- **Do not disconnect, disassemble, or use RESS for other than its intended use.**
- **Improper charging, impact or exposure to fire can damage the RESS.**
- **A damaged RESS can leak electrolyte and/or generate flammable gas.**

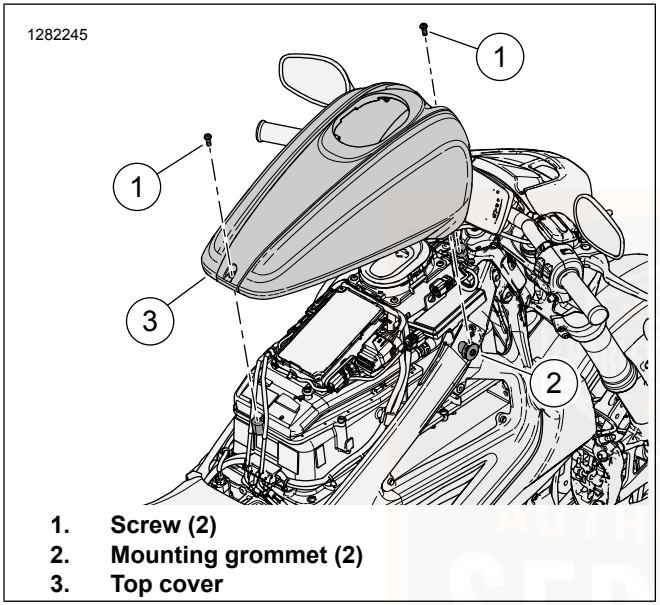
(08705a)

1. Unplug charging cord.
2. Place OFF/RUN switch in OFF position.
3. See Figure 57. Remove screws (1).
4. Lift top cover (3) straight up to disengage from mounting grommets (2).

Install

1. See Figure 57. Install top cover (3) to mounting grommets (2).
2. Install screws (1). Tighten.

   Torque: 44–62 **in-lbs** (5–7 N·m)



1. **Screw (2)**
2. **Mounting grommet (2)**
3. **Top cover**

Figure 57. Top Cover

BATTERY REPLACEMENT

Both batteries, RESS and 12 V, on the LiveWire motorcycle are monitored by the motorcycle's operating system. If your IM indicates a battery fault or your motorcycle will not properly operate, see your Authorized Harley-Davidson Electric Vehicle (EV) dealer.

FUSES

For electrical problems, see an Authorized Harley-Davidson EV dealer who has the necessary parts and equipment to perform electrical services.

NOTE

- *Fuses do not reset.*
- *Only replace a fuse with a fuse of the same rating.*
- *Use only automotive type ATO fuses as replacements.*

Removing/Replacing Main Fuse

For removing or replacing the Main Fuse, see your Authorized Harley-Davidson EV dealer.

Replacing System/ABS Fuses

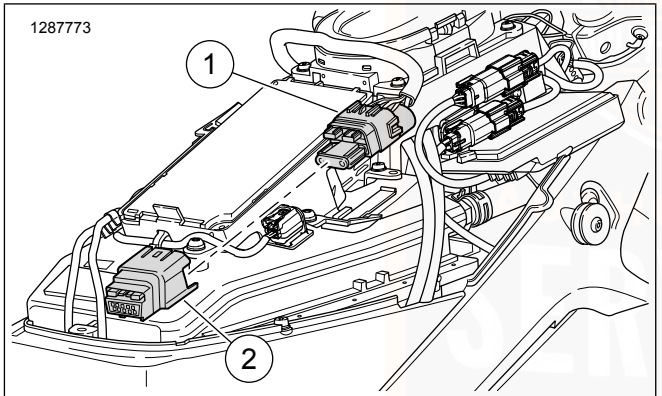
1. Set OFF/RUN switch to OFF.
2. Remove top cover. See Top Cover (Page 143).
3. See Figure 58. Remove fuse block from caddy on motorcycle.
4. Remove the cover from the fuse block.

5. See Figure 59. Remove the suspect fuse and inspect the element. Replace the fuse if the element is burned or separated.

6. Install the fuse block cover so the tabs snap into place.

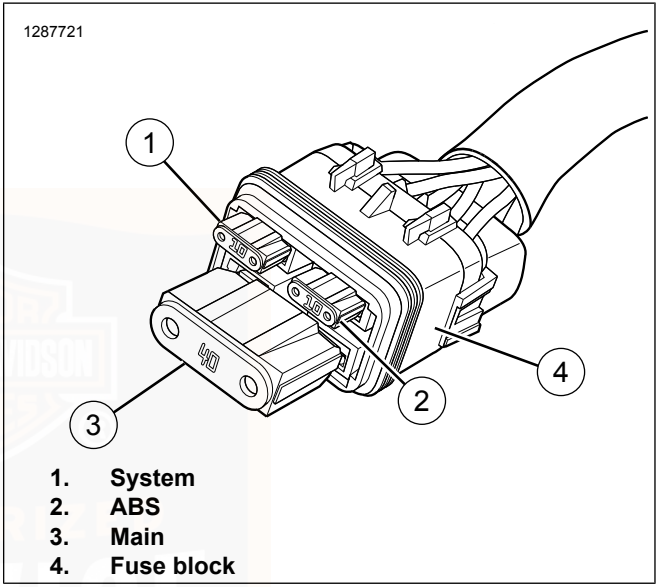
7. Install fuse block to caddy.

8. Install top cover. See Top Cover (Page 143).



1. Fuse block
2. Cover

Figure 58. Fuse Block and Cover



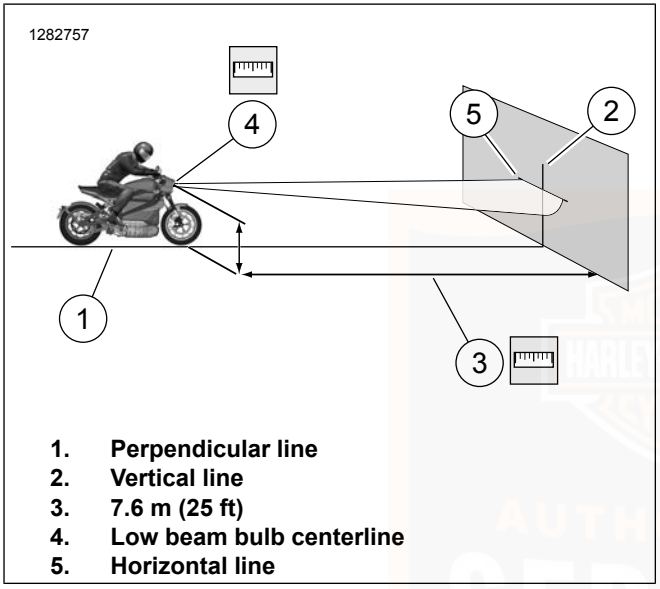
1. System
2. ABS
3. Main
4. Fuse block

Figure 59. Fuse Block

HEADLAMP

Prepare

1. Check tire pressure. Refer to Specifications (Page 35).
2. Adjust rear shock for the rider and intended load. See Before Riding (Page 39).



1. **Perpendicular line**
2. **Vertical line**
3. **7.6 m (25 ft)**
4. **Low beam bulb centerline**
5. **Horizontal line**

Figure 60. LED Headlamp Alignment

Check Alignment

1. See Figure 60. Park the motorcycle in a line (1) perpendicular to the wall.
2. Position motorcycle with front axle 25 ft (7.6 m) from wall.
3. Draw a vertical centerline (2) on the wall aligned with line (1).
4. With the motorcycle loaded, point the front wheel straight forward at wall. Measure the distance (4) from the floor to the center of headlamp.
5. Draw a horizontal line (5) through vertical line (2) using the same height measurement as low beam bulb centerline (4).
6. Align the top of the hot spot to horizontal line (5) with headlamp set to low beam.
7. Adjust headlamp, if necessary.

Adjusting Headlamp

1. See Figure 61. Remove fairing (1).
   a. Pull fairing away from mounting bracket.
2. Loosen vertical adjustment screw (3).
3. Adjust headlamp vertically until beam centers on horizontal line.
4. Tighten vertical adjustment screw (3)

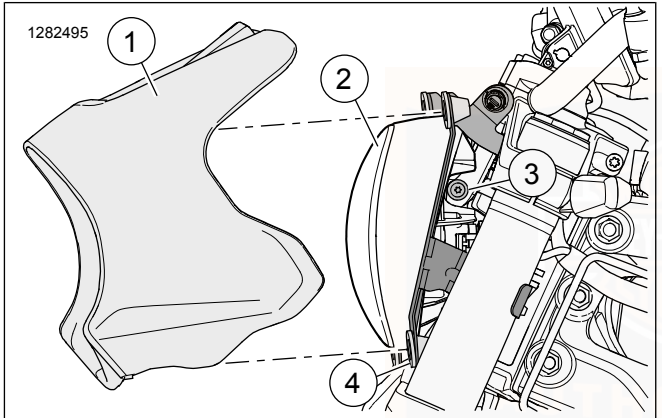
   Torque: 10–13 ft-lbs (13.5–17.6 N·m) *Headlamp adjustment screw*

NOTE

Perform all adjustments before installing speed screen.

5. Install fairing.

   a. Align fairing posts to grommets (4) and push.



1. **Fairing**
2. **Headlamp**
3. **Screw**
4. **Grommet (4)**

Figure 61. Headlamp Adjustment

Replacing Headlamp

The headlamp is a sealed assembly. Replace the headlamp as a unit. See a Harley-Davidson dealer for service.

TAIL LAMP BULB REPLACEMENT: LED

The tail lamp is an LED assembly. Replace the tail lamp as a unit. See a Harley-Davidson dealer.

TURN SIGNAL BULB REPLACEMENT: LED

The LED turn signal lamp is a sealed assembly. Replace the turn signal lamp as a unit. See a Harley-Davidson dealer.

NOTES

TROUBLESHOOTING: GENERAL

⚠ WARNING

The troubleshooting section of the Owner's Manual is a guide to diagnose problems. Read the service manual before performing any work. Improper repair and/or maintenance could result in death or serious injury. (00080a)

Use the following checklists for troubleshooting. Carefully check each cause because more than one condition can cause trouble.

POWERTRAIN

Motorcycle Does Not Operate

1. Check RESS state of charge. Charge battery.
2. Check Main fuse. See Fuses (Page 144) for removal/replacement of Main fuse.
3. See your authorized Harley-Davidson Electric Vehicle (EV) dealer.

TRANSMISSION

Motorcycle Will Not Move

1. Check RESS state of charge. Charge battery.
2. See authorized Harley-Davidson EV dealer.

Transmission Makes Noise

1. See authorized Harley-Davidson EV dealer.

COOLING SYSTEM

Overheats

1. Low coolant level or improper coolant.
2. Air flow through the radiator is obstructed.
3. Blocked coolant passages.
4. Radiator cap problem.

ELECTRICAL SYSTEM

Battery Does Not Charge

1. See authorized Harley-Davidson EV dealer.

BRAKES

ABS System Behavior

1. ABS lamp does not shut off above 3 mph (5 km/h). See dealer.
2. Other ABS symptoms. Refer to Table 39.

Brakes Do Not Hold Normally

1. Master cylinder low on fluid. See dealer.
2. Brake line contains air bubbles. See dealer.

3. Master cylinder or caliper piston worn. See dealer.
4. Brake pads contaminated with grease or oil. See dealer.
5. Brake pads badly worn. See dealer.
6. Brake disc badly worn or warped. See dealer.
7. Brake fades because of heat build up. Excessive braking or brake pads dragging. See dealer.
8. Brake drags. Insufficient hand lever free play. See dealer.

WARRANTY AND MAINTENANCE

This owner's manual contains your new motorcycle limited warranty and your owner's maintenance record.

It is your responsibility as the owner to follow the maintenance schedule at the mileage intervals as specified in the owner's manual. All of the specified maintenance services must be performed on schedule to keep your limited warranty valid.

Some countries, states or other locations may require all regular maintenance and service work to be done by an authorized Harley-Davidson dealer for your limited warranty to remain in effect. Check with your authorized Harley-Davidson dealer for local requirements.

1. Make an appointment with a Harley-Davidson dealer for inspection and service prior to the first 1000 mi (1,600 km), and as soon as possible after any issue arises.
2. Bring this owner's manual with you when you visit your authorized Harley-Davidson dealer to have your motorcycle inspected and serviced.
3. Have the dealer technician sign the maintenance record in the owner's manual at the proper mileage interval. These records should be retained by the owner as proof of proper maintenance.
4. Keep receipts covering any parts, service or maintenance performed.

These records should be transferred to each subsequent owner.

Use only Harley-Davidson approved parts and accessories that have been designed, tested and approved for your model and model year motorcycle.

Use of aftermarket performance parts may void all or parts of your limited warranty. See an authorized Harley-Davidson dealer for details.

Harley-Davidson authorized dealerships are independently owned and operated and may sell and install parts and accessories that are not manufactured or approved by Harley-Davidson for use on your motorcycle. Therefore, you should understand that Harley-Davidson is not and cannot be responsible for the quality, suitability, or safety of any non-Harley-Davidson part, accessory or design modification, including labor, which may be sold and/or installed by authorized Harley-Davidson dealerships.

KEEPING IT ALL HARLEY-DAVIDSON

Genuine Harley-Davidson parts are engineered and tested specifically for use on your motorcycle. Insist that your authorized Harley-Davidson dealer uses only genuine Harley-Davidson replacement parts and accessories to keep your Harley-Davidson motorcycle and its limited warranty intact. Not all Harley-Davidson parts and accessories are appropriate for your model or model year motorcycle.

NOTICE

It is possible to overload your vehicle's charging system by adding too many electrical accessories. If the combined electrical accessories operating at any one time consume more electrical current than the vehicle's charging system can produce, the electrical consumption can discharge the battery and cause damage to the vehicle's electrical system. See an authorized Harley-Davidson dealer for advice about the amount of current consumed by additional electrical accessories or for necessary wiring changes. (00211c)

NOTE

Installing off-road or competition parts to enhance performance may void all or parts of your limited warranty. See the Harley-Davidson Motorcycle Limited Warranty in this owner's manual or an authorized Harley-Davidson dealer for details.

WARRANTY/SERVICE INFORMATION

Any authorized Harley-Davidson dealer may provide warranty repair work on your motorcycle. The fact that an authorized Harley-Davidson dealership performs warranty repairs does not create an agency relationship between Harley-Davidson and the authorized dealership. If you have any questions regarding warranty obligations contact your authorized Harley-Davidson dealer.

For normal service work or warranty work under the above conditions, you may obtain the name and location of your nearest U.S. authorized Harley-Davidson dealer by calling 1-800-258-2464 (U.S. only). To find dealers worldwide, see www.harley-davidson.com.

REPORTING SAFETY DEFECTS IN THE UNITED STATES

Safety defects must be reported to the National Highway Traffic Safety Administration (NHTSA) and Harley-Davidson.

NHTSA Statement

If you believe that your motorcycle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying Harley-Davidson.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of motorcycles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your authorized Harley-Davidson dealer, or Harley-Davidson.

You can contact NHTSA through the following means. Additional information about motor vehicle safety is available through the website.

Telephone: Vehicle Safety Hotline (toll-free) at 1-888-327-4236 (TTY: 1-800-424-9153).

Website: www.safercar.gov

Address: Administrator, NHTSA, 400 Seventh Street SW, Washington, DC 20590

REPORTING SAFETY CONCERNS IN CANADA

Safety concerns may be reported to the Canadian Department of Transportation and Harley-Davidson.

You can contact the Canadian Department of Transportation through the following means.

Mailing Address:

Transport Canada - ASFAD

330 Sparks Street

Ottawa, ON

K1A 0N5

Telephone: 819-994-3328 (Gatineau-Ottawa area or internationally)

Toll free:1-800-333-0510 (in Canada)

Online:

http://www.tc.gc.ca/recalls

REQUIRED DOCUMENTATION FOR IMPORTED MOTORCYCLES

If a Harley-Davidson motorcycle is imported into the United States, additional documentation is required for that motorcycle to be eligible for the United States Harley-Davidson Motorcycle Limited Warranty. An authorized Harley-Davidson dealer can provide a form explaining the requirements.

OWNER CONTACT INFORMATION

If you move from your present address, sell your motorcycle, or purchase a pre-owned Harley-Davidson motorcycle, see an authorized Harley-Davidson dealer to update your owner contact information.

This will provide Harley-Davidson with an accurate registration (as required by law in some countries), and will allow Harley-Davidson to notify you in the event of a recall or product program.

The rights and benefits conferred upon you and the obligations of Harley-Davidson as set forth herein are separate and distinct from any rights and duties set forth in any service contract you may have purchased from a dealership and/or third-party insurance company. Harley-Davidson does not authorize any entity to expand Harley-Davidson's warranty obligations in connection with your motorcycle or this limited warranty.

When updating your contact information, your authorized Harley-Davidson dealer will need your Vehicle Identification

Number (VIN), odometer mileage, and date of vehicle transfer (if applicable).

QUESTIONS AND CONCERNS

If you have questions or concerns regarding the performance of your motorcycle or the application of the limited warranty described here, or are not satisfied with the service you are receiving from an authorized Harley-Davidson dealership, do the following:

1. Contact the selling and/or servicing dealership and speak to the sales and/or service manager.
2. If your concern cannot be addressed to your satisfaction by the dealership, contact the Harley-Davidson Customer Support Center by mailing your concern to the following address or calling the phone number below.

In the U.S., state warranty laws, often referred to as lemon laws, may provide you with certain rights not specifically mentioned here. To the extent allowed by your state, Harley-Davidson requests that you first send written notification of any defect or warranty non-conformity that you have experienced with your motorcycle to Harley-Davidson. Harley-Davidson appreciates the opportunity to investigate your concerns and restore your satisfaction in your motorcycle by making the necessary repairs consistent with the terms of Harley-Davidson's limited warranty. Harley-Davidson requests that you send your complaint to the Harley-Davidson Customer Support Center.

- Harley-Davidson Motor Company Attention: Harley-Davidson Customer Support Center P.O. Box 653 Milwaukee, Wisconsin 53201 1-800-258-2464 (U.S. only) 1-414-343-4056

This warranty does not mean that each Harley-Davidson motorcycle is free from defects. Defects may be unintentionally introduced into motorcycles during the design and manufacturing processes and such defects could result in the need for repairs. For this reason, Harley-Davidson provides the Limited Warranty in order to remedy any such defects that result in a component malfunction or failure during the warranty period. The remedy under this written warranty, and any implied warranty, is limited to repair, replacement or adjustment of the defective part. This exclusive remedy shall not be deemed to have failed its essential purpose so long as Harley-Davidson, through its authorized dealers, is willing and able to repair, replace or adjust defective parts in the prescribed manner. Harley-Davidson's liability, if any, shall in no event exceed the cost of correcting any defect as herein provided and upon expiration of this warranty, any such liability shall terminate.

2020 HARLEY-DAVIDSON LIMITED EV (ELECTRIC VEHICLE) MOTORCYCLE WARRANTY

24 Months/Unlimited Miles

Harley-Davidson warrants for any new 2020 LiveWire™ motorcycle that an Authorized LiveWire™ Dealer will repair or replace, without charge, any parts on your motorcycle that malfunction or fail during normal use during the applicable coverage period due to an issue with factory supplied materials or factory workmanship. Such repair or replacement of failed parts will be Harley-Davidson's sole obligation and your sole and exclusive remedy under this limited warranty. This limited warranty applies only for the duration identified below.

No person, including Harley-Davidson dealers, may modify, extend or waive any part of this warranty. As a condition of this warranty, you are responsible for properly using, maintaining, and caring for your motorcycle as outlined in your Owner Manual. Harley-Davidson recommends that you maintain copies of all maintenance records and receipts.

ASIDE FROM THE SEPARATE RESS LIMITED WARRANTY DISCUSSED BELOW, THERE IS NO OTHER EXPRESS WARRANTY ON THE MOTORCYCLE. Any implied warranty of merchantability or fitness for particular purpose is limited to the duration of the express warranty, or to the duration set forth in your state's warranty statutes, whichever is shorter. Any implied warranty is not transferred to subsequent purchasers/buyers of the motorcycle.

The implied warranty of fitness for a particular purpose does not apply if your motorcycle is used for racing, even if the motorcycle is equipped for racing. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

TO THE FULLEST EXTENT ALLOWED BY LAW, NEITHER HARLEY-DAVIDSON, NOR ITS AUTHORIZED DEALERS SHALL BE LIABLE FOR LOSS OF TIME, INCONVENIENCE, LOSS OF MOTORCYCLE USE, COMMERCIAL LOSS OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Harley-Davidson and your dealer are not responsible for any time or income that you lose, any inconvenience, the loss of your transportation or use of your motorcycle, the cost of a rental motorcycle, travel, meals, or lodging, or for any other incidental or consequential damages you may have.

Punitive, exemplary, or multiple damages may not be recovered unless applicable law prohibits their disclaimer. You may not bring any warranty-related claim as a class representative, a private attorney general, a member of a class of claimants or in any other representative capacity. Harley-Davidson shall not be liable for any damages caused by delay in delivery or furnishing of any products and/or services.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state

(Country/Market/Region). Decisions based on state lemon laws, state arbitration awards and/or dispute resolution awards supersede Company policy.

The following terms and conditions apply to this warranty:

Duration

1. The duration of this limited warranty is 24-months on the vehicle chassis systems, drive train systems and electrical system, **excluding** the high voltage Rechargeable Energy Storage System (RESS), starting from the earlier of (a) the date of initial retail purchase and delivery of the motorcycle from an authorized LiveWire™ retailer, or (b) the third anniversary of the last day of the model year of the motorcycle. Your Authorized LiveWire™ Dealer will submit an electronic Sales and Warranty Registration form to initiate your limited warranty.
2. Any unexpired portion of this limited warranty will be transferred to subsequent owners, upon the resale of the motorcycle during the limited warranty period.

Owner's Obligations

To obtain warranty service, return your motorcycle at your expense within the limited warranty period to an Authorized LiveWire™ Dealer. The Authorized LiveWire™ Dealer should be able to provide warranty service during normal business hours, depending upon the workload of the authorized dealer's service department and the availability of necessary parts. Note that due to the vehicle's features and components, the diagnosis may take longer and some replacement parts may take longer than traditional replacement parts to obtain. Specifically, the high voltage (HV) battery (also referenced as the RESS) requires special shipping due to it being a lithium ion battery and may require up to five (5) business days to receive.

Exclusions

This limited warranty will **not** apply to any electric motorcycle which:

1. Has not been operated or maintained as specified in the Owner Manual.
2. Has been abused, neglected, misused (e.g., wheelies, stoppies, burnouts), improperly stored, used "off the highway," or used for racing or competition of any kind.
3. Has had stock components (e.g., duct work, covers, fairings, fender(s)) that impact the overall vehicle performance, including airflow during operation, removed or altered.
4. Is not equipped to comply with the laws of the market in which it is registered.

5. Has off-road or competition parts and or software (SW) installed to enhance performance, a trailer hitch, or has other unapproved modifications (even if these modifications include genuine Harley-Davidson® parts and accessories that are not approved for use on your motorcycle). These modifications may void all or parts of your new motorcycle limited warranty. See an Authorized LiveWire™ Dealer for details.
6. Has been subjected to an act of God, war, riot, insurrection, nuclear contamination, natural disasters, including, but not limited to, lightning, forest fires, dust storms, hail storms, ice storms, earthquakes, or floods, or other circumstances out of Harley-Davidson's control.
7. Has been in an accident, collision, dropped or struck.

Other Limitations

This limited warranty does not cover:

1. Parts and labor for normal maintenance as recommended in the Owner Manual, or the replacement of parts due to normal wear and tear including, but not limited to, the following: tires, lubrication, coolant, battery maintenance (both operating battery and RESS), brake (pads & rotors), belt adjustments and belt replacement.
2. Cosmetic concerns that arise as a result of owner abuse, lack of proper maintenance or environmental conditions (except concerns that result from defects in factory materials or workmanship, which are covered by this limited warranty for the duration of the limited warranty period).
3. Any cosmetic condition existing at the time of retail delivery that has not been documented by the Authorized LiveWire™ Dealer prior to retail delivery.
4. Defects or damage to the motorcycle caused by alterations outside of Harley-Davidson factory specifications or caused by alterations or use of parts or accessories not approved for the make and model year of your motorcycle.
5. Damage caused by installation or use of non-Harley-Davidson components, even those installed by an authorized Harley-Davidson dealership that causes a Harley-Davidson® part to fail. Examples include but are not limited to performance-enhancing powertrain (gear box) components or software, including tuners, altered gear & sprocket ratio(s), non-approved tires (changing the rolling radius), lowering kits, tow packages, certain flag mounts, handlebars, add-ons connected to the factory electrical system, and so on.

6. Abuse or misuse associated with operation, including:
    a. Defects due to either ignoring warning lights display or by not immediately seeking service at an Authorized LiveWire™ Dealers.
    b. Running without factory certified fluids (coolant and lube).
    c. Use of charge plugs not meant for the vehicle conversion kits and non-certified Electrical Vehicle Supply Equipment (EVSE) will void the warranty to the system.
    d. Extension cords used in conjunction with the EVSE (from an outlet to the EVSE) are not covered by the limited warranty.
        i. The EVSE must be plugged directly into a wall outlet to properly charge.
        ii. Bypassing any of the charging/EVSE safety features will void the system warranty.

Important: Read Carefully

1. Authorized LiveWire™ Dealer(s) are independently owned and operated and may sell non-Harley-Davidson products. Because of this, HARLEY-DAVIDSON IS NOT RESPONSIBLE FOR THE SAFETY, QUALITY, OR SUITABILITY OF ANY NON-HARLEY-DAVIDSON PART, ACCESSORY OR DESIGN MODIFICATION INCLUDING, BUT NOT LIMITED TO, LABOR WHICH MAY BE SOLD AND/OR INSTALLED BY AUTHORIZED HARLEY-DAVIDSON DEALERS.
2. This limited warranty is a contract between you and Harley-Davidson. It is separate and apart from any warranty or service plan you may receive or purchase from an Authorized LiveWire™ Dealer. An Authorized LiveWire™ Dealer is not authorized to alter, modify, expand, or in any way change the terms and conditions of this limited warranty.
3. Any warranty work or parts replacement authorized by Harley-Davidson will not preclude Harley-Davidson from later relying on any exclusion where applicable.

4. Harley-Davidson and its Authorized LiveWire™ Dealer reserve the right to modify or service motorcycles designed and manufactured by Harley-Davidson at any time without incurring any additional obligation to make the same alteration or change to a motorcycle previously built and sold. Harley-Davidson reserves the right to provide post-warranty repairs, conduct repair campaigns, offer good-will or customer satisfaction repairs or extend the warranty coverage for certain motorcycles at its sole discretion. Said repairs or extensions of warranty coverage in no way obligate Harley-Davidson to provide similar accommodations to other owners of similar motorcycles. Sometimes Harley-Davidson may offer a special adjustment program to pay all or part of the cost of certain repairs beyond the terms of your limited warranty. Check with your Authorized LiveWire™ Dealer to learn whether such programs are available. Your state may prohibit these types of offers, in which case, they may not be available.
5. The fact that a part is labeled or branded Harley-Davidson® does not necessarily make it appropriate or warranted for the make and model of the motorcycle. The use of parts not designed and tested for the motorcycle may have negative consequences on the performance of the motorcycle and may create conditions not covered by the limited warranty.

Environmental Factors

1. Warranty will cover rust/corrosion and/or pitting on one component, one time only, under appropriate conditions. If a vehicle is exhibiting any of these conditions on more than one component, warranty coverage will be denied.
2. Warranty will cover rust/corrosion and/or pitting on multiple components only if they are the same component (i.e. both mirrors, both rider footboards, etc.)
3. Warranty will **not** cover rust/corrosion and/or pitting on wheels at any time unless condition had been properly documented in the DPQA. For warrantable conditions see Cosmetic Quality Guide.
4. Warranty will **not** cover rust/corrosion and/or pitting as a result of damage from road debris, hazards, neglect, chemical exposure or abuse/misuse of the motorcycle.

NOTES

2020 AUSTRALIA/NEW ZEALAND HARLEY-DAVIDSON MOTORCYCLE LIMITED WARRANTY

Your Consumer Rights

The benefits given to you under this H-D Motorcycle Warranty are additional to, and do not detract from, other rights and remedies that you may have in respect of the motorcycle under Australian and New Zealand laws, including consumer protection laws.

In Australia, our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

In New Zealand, our goods also come with guarantees that cannot be excluded under the New Zealand Consumer Guarantees Act.

Warranty

This H-D Motorcycle Warranty is provided by **Harley-Davidson Motor Company**, P.O. Box 653, Milwaukee, Wisconsin 53201, U.S.A, phone: +1 (414) 343-4056, ("Harley-Davidson").

Harley-Davidson warrants for any new 2020 LiveWire™ motorcycle that an Authorized LiveWire™ Dealer will repair or replace without charge any parts found to be defective in factory materials or workmanship under normal use during the warranty period set out below. Such repair or replacement of parts will be Harley-Davidson's sole obligation and your sole remedy under this H-D Motorcycle Warranty, however you may have other rights under Australian and New Zealand laws, as described above.

NOTE

Goods presented for repair may be replaced by refurbished goods of the same type rather than being repaired. Refurbished parts may be used to repair goods.

The following terms and conditions apply to this warranty:

Warranty Period: 24 Months/Unlimited Miles

1. The duration of this H-D Motorcycle warranty is 24-months on the vehicle chassis systems, drivetrain systems and electrical system, excluding the high-voltage Rechargeable Energy Storage System (RESS), starting from the earlier of:

   a. the date of initial retail purchase and delivery of the motorcycle from an authorized LiveWire™ retailer, or

   b. the third anniversary of the last day of the model year of the motorcycle (if not sold to a retail purchaser before that date).

Your Authorized LiveWire™ Dealer will submit an electronic Sales and Warranty Registration form to initiate your H-D Motorcycle warranty.

NOTE

If the motorcycle was used as a demonstrator or company motorcycle, then the warranty period may have started and/or expired prior to the initial retail sale. See an authorized Harley-Davidson dealer for details.

Any unexpired portion of this H-D Motorcycle warranty will be transferred to subsequent owners, upon the resale of the motorcycle during the H-D Motorcycle warranty period. See the OWNER CONTACT INFORMATION section of the Owner's Manual for information regarding notification of ownership changes.

Obtaining Warranty Service

To obtain warranty service, return your motorcycle at your expense within the H-D Motorcycle warranty period to an Authorized LiveWire™ Dealer.

The Authorized LiveWire™ Dealer should be able to provide warranty service during normal business hours, depending upon the workload of the authorized dealer's service department and the availability of necessary parts. Note that due to the vehicle's features and components, the diagnosis may take longer and some replacement parts may take longer than traditional replacement parts to obtain. Specifically, the high voltage (HV) battery (also referenced as the RESS) requires special shipping due to being a lithium ion battery and may require up to five (5) business days to receive.

Exclusions

This limited warranty will **not** apply to any electric motorcycle (or part or accessory) which:

1. Has not been operated or maintained as specified in the Owner Manual.
2. Has been abused, neglected, misused (e.g., wheelies, stoppies, burnouts), improperly stored, used "off the highway," or used for racing or competition of any kind.
3. Has had stock components (e.g., duct work, covers, fairings, fender(s)) that impact the overall vehicle performance, including airflow during operation, removed or altered.
4. Was not originally manufactured for use or sold in Australia and New Zealand and/or does not comply with Australian and New Zealand homologation requirements.
5. Has off-road or competition parts and or software (SW) installed to enhance performance, a trailer hitch, or has other unapproved modifications (even if these modifications include genuine Harley-Davidson® parts and accessories that are not approved for use on your motorcycle). These modifications may void all or parts of your new motorcycle limited warranty. See an Authorized LiveWire™ Dealer for details.

6. Has been subjected to an act of God, war, riot, insurrection, nuclear contamination, natural disasters, including, but not limited to, lightning, forest fires, dust storms, hail storms, ice storms, earthquakes, or floods, or other circumstances out of Harley-Davidson's control.
7. Has been in an accident, collision, dropped or struck.

Other Limitations

This warranty does not cover:

1. Parts and accessories not manufactured by Harley-Davidson, or any damage caused to the motorcycle by the installation of such parts and accessories, even if such parts and accessories are installed on the motorcycle at the date of initial retail purchase. A separate third-party warranty may apply to such parts and accessories. See an authorized Harley-Davidson dealer for details.
2. Parts and labor for normal maintenance as recommended in the Owner Manual, or the replacement of parts due to normal wear and tear including, but not limited to, the following: bulbs, tires, lubrication, coolant, battery maintenance (both operating battery and RESS), brake (pads & rotors), belt adjustments and belt replacement.
3. Cosmetic concerns that arise as a result of owner abuse, lack of proper maintenance or environmental conditions (except concerns that result from defects in factory materials or workmanship, which are covered by this limited warranty for the duration of the limited H-D Mortorcycle warranty period).
4. Any cosmetic condition existing at the time of retail delivery that has not been documented by the Authorized LiveWire™ Dealer prior to retail delivery.
5. Defects or damage to the motorcycle caused by alterations outside of Harley-Davidson factory specifications or caused by alterations or use of parts or accessories not approved for the make and model year of your motorcycle.
6. Damage caused by installation or use of non-Harley-Davidson components, even those installed by an authorized Harley-Davidson dealership that causes a Harley-Davidson part to fail. Examples include but are not limited to performance-enhancing powertrain (gear box) components or software, including altered gear & sprocket ratio(s), non-approved tires (changing the rolling radius), lowering kits, tow packages, certain flag mounts, handlebars, add-ons connected to the factory electrical system, and so on.

7. Abuse or misuse associated with operation, including:
    a. Defects due to either ignoring warning lights display or by not immediately seeking service at an Authorized LiveWire™ Dealers.
    b. Running without factory certified fluids (coolant and lube).
    c. Use of charge plugs not meant for the vehicle conversion kits and non-certified Electrical Vehicle Supply Equipment (EVSE) will void the warranty to the system.
    d. Extension cords used in conjunction with the EVSE (from an outlet to the EVSE) are not covered by the limited warranty.
        i. The EVSE must be plugged directly into a wall outlet to properly charge.
        ii. Bypassing any of the charging/EVSE safety features will void the system warranty.

NOTE

Even though this H-D Motorcycle Warranty does not cover the circumstances set out above, you may still have rights under Australian and New Zealand laws, including the Australian Consumer Law.

Important: Read Carefully

1. Authorized LiveWire™ Dealer(s) are independently owned and operated and may sell non-Harley-Davidson products. Because of this, HARLEY-DAVIDSON IS NOT RESPONSIBLE FOR THE SAFETY, QUALITY, OR SUITABILITY OF ANY NON-HARLEY-DAVIDSON PART, ACCESSORY OR DESIGN MODIFICATION WHICH MAY BE SOLD AND/OR INSTALLED BY AUTHORISED HARLEY-DAVIDSON® DEALERS OR LABOUR CARRIED OUT BY DEALERS.
2. This H-D Motorcycle warranty is a contract between you and Harley-Davidson. It is separate and apart from any warranty or service plan you may receive or purchase from an Authorized LiveWire™ Dealer. An Authorized LiveWire™ Dealer is not authorized to alter, modify, expand, or in any way change the terms and conditions of this H-D Motorcycle warranty.
3. Any warranty work or parts replacement authorized by Harley-Davidson will not preclude Harley-Davidson from later relying on any exclusion where Harley-Davidson later becomes aware that exclusion applied, or the warranty claim did not otherwise comply with the terms of the H-D Motorcycle Warranty.

4. Harley-Davidson and its Authorized LiveWire™ Dealer reserve the right to modify or service motorcycles designed and manufactured by Harley-Davidson at any time without incurring any additional obligation to make the same alteration or change to a motorcycle previously built and sold. Harley-Davidson reserves the right to provide post-warranty repairs, conduct repair campaigns, or extend the warranty coverage for certain motorcycles at its sole discretion. Said repairs or extensions of warranty coverage in no way obligate Harley-Davidson to provide similar accommodations to other owners of similar motorcycles. Sometimes Harley-Davidson may offer a special adjustment program to pay all or part of the cost of certain repairs beyond the terms of your H-D™ Motorcycle Warranty. Check with your Authorized LiveWire™ Dealer to learn whether such programs are available.
5. The fact that a part is labeled or branded Harley-Davidson® does not necessarily make it appropriate or warranted for the make and model of the motorcycle. The use of parts not designed and tested for the motorcycle may have negative consequences on the performance of the motorcycle and may create conditions not covered by the limited warranty.

Environmental Factors

The H-D Motorcycle Warranty:

1. will cover rust/corrosion and/or pitting on one component, under appropriate conditions one time only. If a vehicle is exhibiting any of these conditions on more than one component, warranty coverage will be denied.
2. will cover rust/corrosion and/or pitting on multiple components only if they are the same component (i.e. both mirrors, both rider footboards, etc.)
3. will not cover rust/corrosion and/or pitting because of damage from road debris, hazards, neglect, chemical exposure or abuse/misuse of the motorcycle.
4. will not cover rust/corrosion and/or pitting on wheels at any time unless condition had been properly documented in the DPQA. For warrantable conditions see Cosmetic Quality Guide.

NOTE

Even though this H-D RESS Warranty does not apply in the circumstances set out above, you may still have rights under Australian and New Zealand laws, including the Australian Consumer Law in such circumstances.

NOTES

2020 HARLEY-DAVIDSON RESS (RECHARGEABLE ENERGY STORAGE SYSTEM) WARRANTY

60 Months/Unlimited Miles

Harley-Davidson warrants for any new 2020 LiveWire™ Rechargeable Energy Storage System (RESS) that an Authorized LiveWire™ Dealer will repair or replace without charge any parts on your motorcycle that malfunction or fail during normal use during the applicable coverage period due to an issue with factory supplied materials or factory workmanship. Such repair or replacement of failed parts will be Harley-Davidson's sole obligation (including a factory certified RESS as an option for replacement) and your sole and exclusive remedy under this limited warranty. This limited warranty applies only for the duration identified below.

No person, including Harley-Davidson dealers, may modify, extend or waive any part of this warranty. As a condition of this warranty, you are responsible for properly using, maintaining, and caring for your motorcycle as outlined in your Owner Manual. Harley-Davidson recommends that you maintain copies of all maintenance records and receipts.

THERE IS NO OTHER EXPRESS WARRANTY (OTHER THAN THE SEPARATE LIMITED WARRANTIES) ON THE MOTORCYCLE. Any implied warranty of merchantability or fitness for particular purpose is limited to the duration of the express warranty, or to the duration set forth in your state's warranty statutes, whichever is shorter. Any implied warranty is not transferred to subsequent purchasers/buyers of the motorcycle.

The implied warranty of fitness for a particular purpose does not apply if your motorcycle is used for racing, even if the motorcycle is equipped for racing. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

TO THE FULLEST EXTENT ALLOWED BY A LAW, NEITHER HARLEY-DAVIDSON, NOR ITS AUTHORIZED DEALERS SHALL BE LIABLE FOR LOSS OF TIME, INCONVENIENCE, LOSS OF MOTORCYCLE USE, COMMERCIAL LOSS OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Harley-Davidson and your dealer are not responsible for any time or income that you lose, any inconvenience, the loss of your transportation or use of your motorcycle, the cost of a rental motorcycle, travel, meals, or lodging, or for any other incidental or consequential damages you may have.

Punitive, exemplary, or multiple damages may not be recovered unless applicable law prohibits their disclaimer. You may not bring any warranty-related claim as a class representative, a private attorney general, a member of a class of claimants or in any other representative capacity. Harley-Davidson shall not be liable for any damages caused by delay in delivery or furnishing of any products and/or services.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state (Country/Market/Region). Decisions based on state lemon laws, state arbitration awards and/or dispute resolution awards supersede Company policy.

The following terms and conditions apply to this warranty:

Duration

1. The Rechargeable Energy Storage System (RESS) warranty is 60-months starting from the date the VIN is registered.
2. Any unexpired portion of this limited warranty will be transferred to subsequent owners, upon the resale of the motorcycle during the limited warranty period.

Other Limitations

To obtain warranty service, return your motorcycle at your expense within the limited warranty period to an authorized LiveWire™ Dealer. The Authorized LiveWire™ Dealer should be able to provide warranty service during normal business hours, depending upon the workload of the authorized dealer's service department and the availability of necessary parts. Note that due to the vehicle's features and components, the diagnosis may take longer and some replacement parts may take longer than traditional replacement parts to obtain. Specifically, the RESS requires special shipping due to being a lithium ion battery and may require up to five (5) business days to receive.

NOTE

The RESS will exhibit capacity degradation over time as a result of both physical and chemical design limitations. Factors such as high temperature, high charge/discharge rates, or extended time at low state of charge (SOC) conditions. The battery may degrade as much as 20% of original capacity over the warranty period (5 years). This condition is not considered a warranty condition or failure but a normal characteristic of a rechargeable lithium ion battery.

Exclusions

This limited warranty will **not** apply to any RESS where there is evidence or failure due to abuse, neglect, improper maintenance or unapproved modifications or:

1. Which has been tampered with in any manner whereby the original RESS case has noticeable mechanical tampering evidence, including:
   a. Opening or attempting to open the case of the RESS. The RESS is not a customer serviceable component (or dealer service), no attempt should be made to open the RESS.
   b. Any products tampered with, modified, adjusted, or repaired by any unauthorized party, including the owner or a non-Authorized LiveWire™ Dealer.
   c. Any damage caused or resulting from the use of inappropriate tools.

2. Unauthorized reprogramming of the RESS electronic controller, or any other vehicle controller. This includes any modification that changes the charge rate into the RESS that is not factory specific.
3. Failure to maintain the RESS State-of-Charge above zero percent.
4. Which has been modified or evidence of impact deforming the RESS housing or surrounding chassis protection.
5. Which has not been operated or maintained as specified in the Owner Manual.
6. On which any additional accessory has been installed by the owner which causes defect of additional parts, or condition that negatively affects the designed performance.
7. Which has a damaged or altered on board charger (OBC) that no longer allows the EVSE to properly be secured, including:
   a. adaptors not approved for use on the vehicle.
   b. home-made – non-branded and aftermarket adaptors.
   c. vehicle inlet assembly (charge port) tampering.
8. Which has been in an accident, collision, dropped or struck.
9. Which has been subjected to an act of God, war, riot, insurrection, nuclear contamination, natural disasters, including, but not limited to, lightning, forest fires, dust storms, hail storms, ice storms, earthquakes, or floods, or other circumstances out of Harley-Davidson's control.
10. Which has been subjected to extended storage of the motorcycle at excessive (hot or cold) ambient temperatures which can cause accelerated battery cell capacity degradation.

a. Which has not been properly and regularly charged with an approved charger and provided Electrical Vehicle Supply Equipment (EVSE).

b. Warranty coverage of an RESS which has been exposed to extreme weather conditions (above 60°C (140°F) or below -40°C (-40°F)) for a prolonged period of time without proper maintenance, charging, or storage could be at risk for permanent loss of range or state of health (SoH).

2020 AUSTRALIA/NEW ZEALAND HARLEY-DAVIDSON RESS (RECHARGEABLE ENERGY STORAGE SYSTEM) WARRANTY

60 Months/Unlimited Mileage

The Rechargeable Energy Storage System (RESS) consists of the high voltage lithium battery. See Service Manual for details on the RESS and service procedures.

This limited Warranty for Rechargeable Energy Storage System (RESS) warranty, referred to below as the "H-D™ RESS Warranty" applies to all persons who purchase a new 2020 or prior-model Harley-Davidson motorcycle in Australia and New Zealand only after 1st January 2020.

Your Consumer Rights

The benefits given to you under this H-D RESS Warranty are additional to, and do not detract from, other rights and remedies that you may have in respect of the RESS under Australian and New Zealand laws, including consumer protection laws.

In Australia, our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

In New Zealand, our goods also come with guarantees that cannot be excluded under the New Zealand Consumer Guarantees Act.

Warranty

Harley-Davidson warrants for any new 2020 LiveWire™ Rechargeable Energy Storage System (RESS) that an Authorized LiveWire™ Dealer will repair or replace without charge any parts found to be defective in factory materials or workmanship under normal use during the warranty period set out below. Such repair or replacement of failed parts will be Harley-Davidson's sole obligation (including a factory certified RESS as an option for replacement) and your sole) and your sole remedy under this H-D RESS Warranty, however you may have other rights under Australian and New Zealand laws, as described above.

NOTE

Goods presented for repair may be replaced by refurbished goods of the same type rather than being repaired. Refurbished parts may be used to repair goods.

The following terms and conditions apply to this warranty:

Warranty Period

1. The Rechargeable Energy Storage System (RESS) warranty is 60-months starting from the date the VIN is registered.
2. Any unexpired portion of this limited warranty will be transferred to subsequent owners, upon the resale of the motorcycle during the RESS warranty period.

Obtaining Warranty Service

To obtain warranty service, return your motorcycle at your expense within the RESS warranty period to an authorized LiveWire™ Dealer. The Authorized LiveWire™ Dealer should be able to provide warranty service during normal business

hours, depending upon the workload of the authorized dealer's service department and the availability of necessary parts.

NOTE

that due to the vehicle's features and components, the diagnosis may take longer and some replacement parts may take longer than traditional replacement parts to obtain. Specifically, the RESS requires special shipping due to being a lithium ion battery and may require up to five (5) business days to receive.

NOTE

The RESS will exhibit capacity degradation over time as a result of both physical and chemical design limitations. Factors such as high temperature, high charge/discharge rates, or extended time at low state of charge (SOC) conditions. The battery may degrade as much as 20% of original capacity over the warranty period (5 years). This condition is not considered a warranty condition or failure but a normal characteristic of a rechargeable lithium ion battery.

Exclusions

This limited warranty will **not** apply to any RESS where there is evidence or failure due to abuse, neglect, improper maintenance or unapproved modifications or:

1. Which has been tampered with in any manner whereby the original RESS case has noticeable mechanical tampering evidence, including:
   a. Opening or attempting to open the case of the RESS. The RESS is not a customer serviceable component (or dealer service), no attempt should be made to open the RESS.
   b. Any products tampered with, modified, adjusted, or repaired by any unauthorized party, including the owner or a non-Authorized LiveWire™ Dealer.
   c. Any damage caused or resulting from the use of inappropriate tools.
2. Unauthorized reprogramming of the RESS electronic controller, or any other vehicle controller. This includes any modification that changes the charge rate into the RESS that is not factory specific.
3. Failure to maintain the RESS State-of-Charge above zero percent.
4. Which has been modified or evidence of impact deforming the RESS housing or surrounding chassis protection.
5. Which has not been operated or maintained as specified in the Owner Manual.
6. On which any additional accessory has been installed by the owner which causes defect of additional parts, or condition that negatively affects the designed performance.

7. Which has a damaged or altered on board charger (OBC) that no longer allows the EVSE to properly be secured, including:

   a. adaptors not approved for use on the vehicle.

   b. home-made – non-branded and aftermarket adaptors.

   c. vehicle inlet assembly (charge port) tampering.

8. Which has been in an accident, collision, dropped or struck.

9. Which has been subjected to an act of God, war, riot, insurrection, nuclear contamination, natural disasters, including, but not limited to, lightning, forest fires, dust storms, hail storms, ice storms, earthquakes, or floods, or other circumstances out of Harley-Davidson's control.

10. Which has been subjected to extended storage of the motorcycle at excessive (hot or cold) ambient temperatures which can cause accelerated battery cell capacity degradation.

a. Which has not been properly and regularly charged with an approved charger and provided Electrical Vehicle Supply Equipment (EVSE).

b. Warranty coverage of an RESS which has been exposed to extreme weather conditions (above 60°C (140°F) or below -40°C (-40°F)) for a prolonged period of time without proper maintenance, charging, or storage could be at risk for permanent loss of range or state of health (SoH).

NOTE

Even though this H-D RESS Warranty does not apply in the circumstances set out above, you may still have rights under Australian and New Zealand laws, including the Australian Consumer Law in such circumstances.

Rechargeable Energy Storage System (RESS) – Factory Certified

Harley-Davidson® may at times use a factory certified RESS as a warranty replacement component. All factory certified parts are inspected and tested for quality. Replacement parts and products are covered for the remaining period of the limited warranty for the vehicle's original RESS. When making warranty repairs on your motorcycle, the dealer will use new Harley-Davidson parts or remanufactured/reconditioned parts that are authorized by Harley-Davidson, at the discretion of Harley-Davidson. Nothing in this warranty should be construed as requiring failed parts to be replaced with new parts, or parts of a different type or design than the original part, so long as the vehicle functions properly with the replacement part. Moreover, Harley-Davidson and its authorized dealers are entitled to a reasonable time and a reasonable number of attempts within which to diagnose and repair any failure covered by this warranty.

If a factory certified RESS is available for customer purchase (non-warranty) this option will be made available at a reduced cost from the cost of a new RESS.

Pro-rated warranty coverage

Harley-Davidson reserves the right to supply a factory certified RESS with a Pro-Rated SOH for a RESS that has depleted some useful life during normal operation of the vehicle beyond design expectations.

Harley-Davidson will not apply a pro-rated amount within the first 24 months after the vehicle is first put into service. After the 24-months has expired, Harley-Davidson reserves the right to apply SOH proration up to 20% under conditions where battery exhibits capacity degradation over time as a result of both physical and chemical aging under normal vehicle use.

If the RESS is completely non-functioning (the vehicle is unable to be ridden due to the RESS failure) the RESS will be replaced with a new RESS. If the RESS is functioning, but at a diminished level (the vehicle can be ridden) beyond design expectations, the pro-ration of SOH will be applied based on the remaining useable life of the RESS.

The state of health (SoH) and charge will be determined during dealer diagnostic evaluation based on the history of the vehicle and the RESS data. The pro-rated amount will be disclosed at the time of authorization for replacement with the dealer.

Increments of pro-ration will be applied at 10% increments and will always favor the customer versus Harley-Davidson.

- Example: RESS life has diminished 18% in the first 36 months of use. Factory Certified pro-rate amount applied will be 90% battery SOH.
- Example 2: RESS life has diminished 28% in the first 40 months of use. Factory Certified pro-rate amount applied will be 80% battery SOH.

Where a RESS has been replaced, the customer will receive the remaining warranty on the original RESS.

NOTES

SERVICE RECORDS

Regular Service Intervals

Service must be performed at specified intervals to keep your Harley-Davidson motorcycle operating at peak performance. Refer to Table 48.

NOTE

- *The use of parts and service procedures other than Harley-Davidson approved parts and service procedures may void the limited warranty.*
- *Some countries, such as Brazil, may require all regular maintenance to be performed by an authorized Harley-Davidson dealer for your limited warranty to remain in effect. Check with your authorized Harley-Davidson dealer.*
- *Some countries, such as Brazil, may require additional annual (or semi-annual) regular maintenance steps to be performed to keep your limited warranty in effect and/or comply with vehicle regulations. Check with your authorized Harley-Davidson dealer as well as the motorcycle regulations in your country.*
- *After completing the final service interval, repeat the service schedule starting at the 8000 km (5000 mi) interval.*
- *Whenever a vehicle is in for maintenance, always check for and complete recalls and open product programs.*
- *Whenever a vehicle is in for maintenance, always verify that the latest calibration is installed.*

Table 48. Regular Service Intervals: Harley-Davidson LiveWire

ITEM SERVICED	1000 mi 1600 km	5000 mi 8000 km	10000 mi 16000 km	15000 mi 24000 km	20000 mi 32000 km	25000 mi 40000 km	30000 mi 48000 km	35000 mi 56000 km	40000 mi 64000 km	45000 mi 72000 km	50000 mi 80000 km	NOTES
Check operation of electrical equipment and switches	X	X	X	X	X	X	X	X	X	X	X	
Check front tire pressure, inspect tread	X	X	X	X	X	X	X	X	X	X	X	1
Inspect front brake fluid level	X	X	X	X	X	X	X	X	X	X	X	
Check DOT4 front brake fluid for moisture	X	X	X	X	X	X	X	X	X	X	X	
Check hand control switch housing screw torque	X		X		X		X		X		X	1, 2, 4

Table 48. Regular Service Intervals: Harley-Davidson LiveWire

ITEM SERVICED	1000 mi 1600 km	5000 mi 8000 km	10000 mi 16000 km	15000 mi 24000 km	20000 mi 32000 km	25000 mi 40000 km	30000 mi 48000 km	35000 mi 56000 km	40000 mi 64000 km	45000 mi 72000 km	50000 mi 80000 km	NOTES
Check master cylinder and left side handlebar clamp screw torque	X		X		X		X		X		X	1, 2, 4
Inspect and adjust steering head bearings	X		X		X		X		X		X	2
Lubricate steering head bearings							X					2, 5
Check coolant system freeze point and inspect for leaks	X	X	X	X	X	X	X	X	X	X	X	
Coolant	Replace coolant every 80,000 km (50,000 mi)											2
Clean radiator	X	X	X	X	X	X	X	X	X	X	X	
Replace transmission lubricant	X				X				X			3
Inspect brake system for leaks, contact or abrasion	X	X	X	X	X	X	X	X	X	X	X	1, 2
Inspect high voltage cables for contact or abrasion	X	X	X	X	X	X	X	X	X	X	X	
Inspect rear brake fluid level	X	X	X	X	X	X	X	X	X	X	X	
Check DOT4 rear brake fluid for moisture	X	X	X	X	X	X	X	X	X	X	X	
Brake system flush	Flush brake system and replace DOT 4 hydraulic brake fluid every two years or sooner if moisture content is 3% or greater.											2
Inspect brake pads and discs for wear	X	X	X	X	X	X	X	X	X	X	X	
Check front axle nut torque	X		X		X		X		X		X	1, 2, 4
Inspect and lubricate jiffy stand	X	X	X	X	X	X	X	X	X	X	X	2, 3
Lubricate brake controls	X	X	X	X	X	X	X	X	X	X	X	
Check rear tire pressure, inspect tread	X	X	X	X	X	X	X	X	X	X	X	1
Inspect drive belt and sprockets, adjust belt	X	X	X	X	X	X	X	X	X	X	X	2
Check rear axle torque	X		X		X		X		X		X	1, 2, 4

Table 48. Regular Service Intervals: Harley-Davidson LiveWire

ITEM SERVICED	1000 mi 1600 km	5000 mi 8000 km	10000 mi 16000 km	15000 mi 24000 km	20000 mi 32000 km	25000 mi 40000 km	30000 mi 48000 km	35000 mi 56000 km	40000 mi 64000 km	45000 mi 72000 km	50000 mi 80000 km	NOTES
12 volt battery	Check battery, terminal torque and clean connections annually. Lubricate terminals with ELECTRICAL CONTACT LUBRICANT.											1
Rebuild front forks											X	2, 6
Road test to verify component and system functions	X	X	X	X	X	X	X	X	X	X	X	
NOTES:	1. Perform annually or at specified intervals, whichever comes first. 2. Should be performed by an authorized Harley-Davidson dealer, unless you have the proper tools, service data and are mechanically qualified. 3. Perform maintenance more frequently in severe riding conditions (such as extreme temperatures, dusty environments, mountainous or rough roads, long storage conditions, short runs, or heavy stop/go traffic). 4. For torque instructions, see Shop Practices in the service manual. 5. Disassemble, lubricate and inspect every 30000 mi (48,000 km). 6. Disassemble, inspect, rebuild forks and replace fork oil every 50000 mi (80,000 km).											

Maintenance Records

Maintain a record of this service to keep your new motorcycle limited warranty in force. Refer to Table 49.

Table 49. Owner's Maintenance Records

SERVICE MILE INTERVAL	DATE	DEALER NUMBER	TECHNICIAN NAME	TECHNICIAN SIGNATURE
1,000 mi (1,600 km)				
5,000 mi (8,000 km)				
10,000 mi (16,000 km)				
15,000 mi (24,000 km)				
20,000 mi (32,000 km)				
25,000 mi (40,000 km)				
30,000 mi (48,000 km)				
35,000 mi (56,000 km)				

Table 49. Owner's Maintenance Records

SERVICE MILE INTERVAL	DATE	DEALER NUMBER	TECHNICIAN NAME	TECHNICIAN SIGNATURE
40,000 mi (64,000 km)				
45,000 mi (72,000 km)				
50,000 mi (80,000 km)				

ACRONYMS AND ABBREVIATIONS

Table 50. Acronyms and Measurement Symbols

ITEM	DEFINITION
A	Amperes
ABS	Anti-lock braking system
AC	Alternating current
AGM	Absorbed glass mat (battery)
Ah	Ampere-hour
BCM	Body control module
°C	Celsius (Centigrade)
CCA	Cold cranking amps
cm	Centimeters
cm^3	Cubic centimeters (cc)
CVO	Custom vehicle operations
DC	Direct current
DLC	Data link connector
DOM	Domestic
DTC	Diagnostic trouble code
ECM	Electronic control module
EHCU	Electro hydraulic control unit
EITMS	Engine idle temperature management system
EHCU	Electro hydraulic control unit
ETC	Electronic throttle control
EV	Electric vehicle
EVAP	Evaporative emissions control system
EVPT	Electric vehicle power-train
EVSE	Electric vehicle supply equipment

Table 50. Acronyms and Measurement Symbols

ITEM	DEFINITION
°F	Fahrenheit
fl oz	Fluid ounce
ft	Feet
ft-lbs	Foot pounds
FTP	Flash to pass
g	Gram
gal	Gallon
GAWR	Gross axle weight rating
GND	Ground (electrical)
GPS	Global positioning system
GVWR	Gross vehicle weight rating
H-DSSS	Harley-Davidson smart security system
HCU	Hydraulic control unit
HDI	Harley-Davidson International
HV	High voltage
Hz	Hertz
IGN	Ignition light/key switch position
IMU	Inertia measurement unit
in	inch
in^3	Cubic inch
in-lbs	Inch pounds
kg	Kilogram
km	Kilometer
km/h	Kilometers per hour
kPa	Kilopascal
kW	Kilowatt

Table 50. Acronyms and Measurement Symbols

ITEM	DEFINITION
L	Liter
lb	Pounds
LED	Light emitting diode
LV	Low voltage
mA	Milliampere
mi	Mile
MIL	Malfunction indicator lamp
Min	Minimum
mL	Milliliter
mm	Millimeter
mph	Miles per hour
ms	Millisecond
Nm	Newton-meter
OBC	On board charger
oz	Ounce
P&A	Parts and Accessories
PA	Public address
Part No.	Part number
PIN	Personal identification number
PPE	Personal protective equipment
psi	Pounds per square inch
qt	Quart
RDRS	Reflex defensive rider systems
RESS	Rechargeable energy storage system
rpm	Revolutions per minute
SDS	Safety data sheet
SoC	State of charge

Table 50. Acronyms and Measurement Symbols

ITEM	DEFINITION
SoH	State of health
SW	Software
TCS	Traction control system
TPMS	Tire pressure monitoring system
USB	Universal serial bus
V	Volt
VAC	Volts of alternating current
VDC	Volts of direct current
VIN	Vehicle identification number
VR	Voice recognition
W	Watt
Wh	Watt-hour

H-D U.S.A., LLC TRADEMARK INFORMATION

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Open Source Notices - H-D

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