

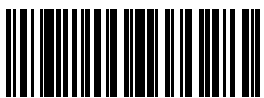
# SOFTAIL® MODELS

2025 HARLEY-DAVIDSON® OWNER'S MANUAL



Harley-Davidson Motor Company  
Service Communications  
Milwaukee WI 53208 USA

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## WARRANTIES AND RESPONSIBILITIES

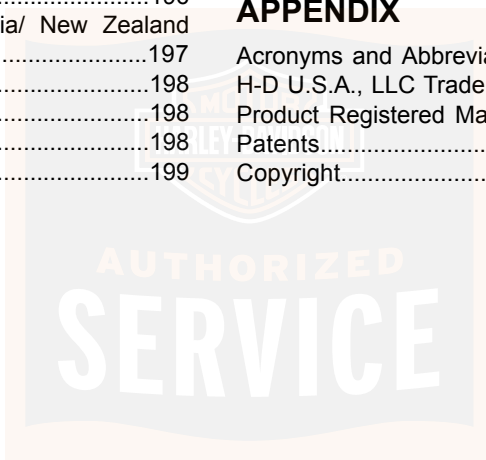
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# YOUR OWNER'S MANUAL

## 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 and your abilities. 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 Harley-Davidson dealer has the facilities, experience and Genuine Harley-Davidson parts necessary to properly render this valuable service. We recommend that any emission system maintenance be performed by an authorized Harley-Davidson dealer.

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](http://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](http://www.msf-usa.org).

## United States Owners

Your Harley-Davidson motorcycle conforms to all applicable U.S. Federal Motor Vehicle Safety Standards and U.S. Environmental Protection Agency regulations effective on the date of manufacture. Protect your privilege to ride by joining the American Motorcyclist Association. Visit [www.americanmotorcyclist.com](http://www.americanmotorcyclist.com) 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.

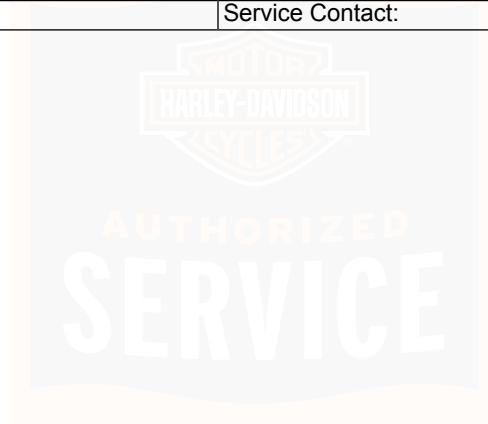
1. Discuss your problem with the appropriate personnel at the dealership in the Sales, Service or Parts area. If that proves unsuccessful, speak to the owner of the dealership or the general manager.

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](http://harley-davidson.com).

**Table 2. 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:

### ▲ 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.*

## SAFE OPERATING RULES

### ▲ WARNING

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.

(00556d)

### ▲ WARNING

Operating a motorcycle requires physical stamina, sensory abilities, motor coordination, and mental alertness. It is the responsibility of the operator to perform a self-assessment to determine their ability to safely operate a motorcycle. Avoid operating a motorcycle:

- If you have physical, medical, or mental limitations.
- If you are under the influence of alcohol, drugs, or medications.

- **If you experience drowsiness, exhaustion, confusion, inability to concentrate, impaired reaction time, numbness or loss of sensation.**

**Failure to avoid these, or other conditions that impair your judgment or ability to operate a motorcycle can lead to an accident which could result in death or serious injury. (16804a)**

## **Harley-Davidson Motorcycles Are for On-Road Use Only**

This motorcycle is not equipped with a spark arrester. 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 starting the engine, review the BEFORE RIDING > PRE-RIDE CHECKLIST (Page 37).



**⚠ 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.
- 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.

**⚠ WARNING**

**If Equipped: Front and/or rear guards are not intended to provide protection from bodily injury in a collision with another vehicle or any other object. (00022d)**

## 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)

### ⚠ 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

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 > SPECIFICATIONS (Page 31).

### **⚠ WARNING**

**Improper loading of cargo or installation of accessories can affect motorcycle stability and handling, which could result in death or serious injury.**

- **Keep cargo weight concentrated close to the motorcycle and as low as possible to minimize the change in the motorcycle's center of gravity.**
- **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 load capacity stated on the label for bags, luggage, and racks, if equipped. Combined load of luggage rack and Tour-Pak must not exceed load capacity on the label within the Tour-Pak.**
- **Do not exceed the maximum load capacity stated within the media compartment, when indicated and if equipped.**
- **Check that cargo is secure. The cargo cannot shift while riding. Periodically recheck load.**
- **Close and lock luggage before riding or leaving the vehicle unattended.**

- **Accessories that change the operator's riding position may increase reaction time and affect handling of the motorcycle.**
- **Items with large surface areas, such as fairings, windshields, backrests and luggage racks (if equipped) can adversely affect stability and handling.**

(14717c)

## **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**

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 80 km/h (50 mph) for the first 24 hours after repair, and the repaired tire should NEVER be used over 129 km/h (80 mph). Failure to follow this warning could lead to tire failure and result in death or serious injury. (00015b)

### **⚠ 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)

- Tire pressure will vary with changes in ambient and tire temperature. Always maintain proper tire pressure as specified in OWNER MANUAL > SPECIFICATIONS (Page 31). Do not load tires beyond the GAWR specified in OWNER MANUAL > SPECIFICATIONS (Page 31). Under-inflated, over-inflated or overloaded tires can fail.

## Towing and Trailing

### **⚠ 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)

### **⚠ WARNING**

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

- Never tow a trailer.

## Fuel and Exhaust

### **⚠ WARNING**

Stop the engine when refueling or servicing the fuel system. Do not smoke or allow open flame or sparks near gasoline. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00002a)

### **⚠ WARNING**

**Avoid spills. Slowly open fuel filler cap. Do not fill above bottom of filler neck insert, leaving air space for fuel expansion. Secure filler cap after refueling. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00028b)**

- Refuel in a well-ventilated area with the engine off.
- Remove the fuel filler cap slowly.
- Do not fill fuel tank above the bottom of the filler neck insert. Leave air space to allow for fuel expansion.
- If fuel tank was completely drained, add at least 1 gal (3.79 L) of gas.

### **⚠ WARNING**

**Avoid contact with exhaust system and wear protective clothing that completely covers legs while riding. Exhaust pipes and mufflers get very hot when engine is running and remain too hot to touch, even after engine is turned off. Failure to wear protective clothing could result in burns or other serious injury. (00009a)**

### **⚠ WARNING**

**Do not run motorcycle in a closed garage or confined area. Inhaling motorcycle exhaust, which contains poisonous carbon monoxide gas, could result in death or serious injury. (00005a)**

### **⚠ WARNING**

**Engine exhaust from this product contains chemicals known to the State of California to cause cancer, and birth defects or other reproductive harm. (00004f)**

## **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**

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)

### **⚠ 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. Contact Poison Control. Immediate medical attention required.

- See Safety Data Sheet (SDS) for more details available at [sds.harley-davidson.com](https://sds.harley-davidson.com)

(00240e)

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.

## **Battery**

### **⚠ WARNING**

Batteries, battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the State of California to cause cancer, and birth defects or other reproductive harm. Wash hands after handling. (00019e)

### **⚠ WARNING**

Batteries contain sulfuric acid, which could cause severe burns to eyes and skin. Wear a protective face shield, rubberized gloves and protective clothing when working with batteries. **KEEP BATTERIES AWAY FROM CHILDREN.** (00063a)

### **NOTICE**

It is possible to overload the 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. (00211d)

### **⚠ WARNING**



**CONTAINS BUTTON OR COIN CELL BATTERY. KEEP OUT OF REACH OF CHILDREN.**

Ingestion can result in death or serious injury. Choking, chemical burns and perforation of soft tissue may result. Severe burns can occur within 2 hours of ingestion or placement in any part of the body. Seek medical attention immediately. (13105b)

## **Hazardous Materials**

### **⚠ CAUTION**

Prolonged or repeated contact with used motor oil may be harmful to skin and could cause skin cancer. Promptly wash affected areas with soap and water. (00358b)

## **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)

## NOTICE

**When lifting a motorcycle using a jack, be sure jack contacts both lower frame tubes where down tubes and lower frame tubes converge. Never lift by jacking on cross-members, oil pan, mounting brackets, components or housings. Failure to comply can cause serious damage resulting in the need to perform major repair work. (00586d)**

- A new motorcycle must be operated according to the special break-in procedure. See BEFORE RIDING > BREAK-IN RIDING RULES (Page 38).
- 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 INTERVALS AND RECORDS > SERVICE RECORDS (Page 201).

## 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)**

### ⚠ 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 ACCESSORIES AND CARGO section within the SAFETY FIRST 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. (00021c)**

- 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.



## ANTI-LOCK BRAKE SYSTEM (ABS)

### ⚠ WARNING

If ABS lamp continues flashing at speeds greater than 5 km/h (3 mph) 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)

### ⚠ WARNING

ABS cannot prevent lockup of rear wheel due to engine braking. ABS will not aid in cornering or on loose/uneven surfaces. A locked wheel will skid and can cause loss of vehicle control, which could result in death or serious injury. (00362a)

To operate motorcycles equipped with an anti-lock brake system, see OPERATION > BRAKE SYSTEM (Page 98).

## RULES OF THE ROAD

- Always 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 30.5 m (100 ft) 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.

## NOISE CONTROL SYSTEM

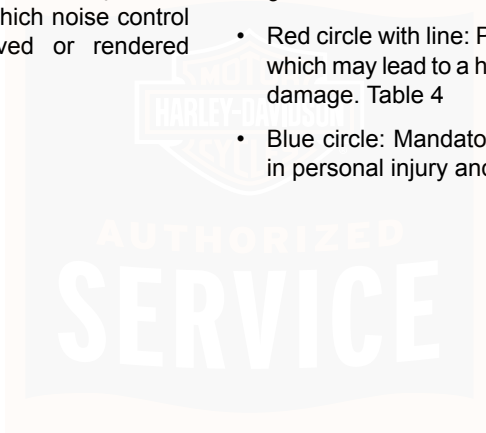
### Tampering

Removal or replacement of any noise control system component may be prohibited by law. This prohibition includes modifications made prior to vehicle sale or delivery to the ultimate purchaser. Use of a vehicle on which noise control system components have been removed or rendered inoperative may also be prohibited by law.








## SAFETY SYMBOL DEFINITIONS

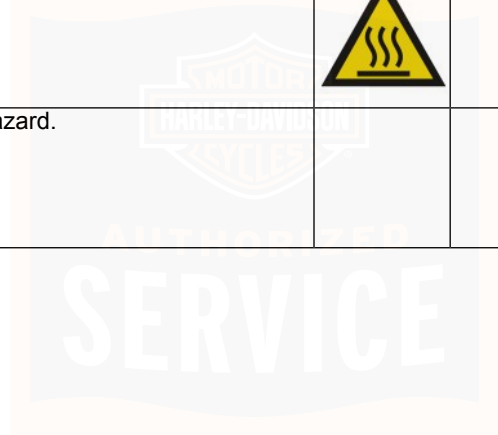
These are some of the symbols that you may see on your motorcycle and may accompany safety words, see SAFETY FIRST > SAFETY DEFINITIONS (Page 3). The symbols indicate potential safety hazards and avoidance actions to prevent a hazardous situation. The symbols may be present in manuals, instructions, on the motorcycle and/or Parts & Accessory product labels. Refer to SAFETY FIRST > 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. Table 3
- Red circle with line: Prohibition symbol to avoid a situation which may lead to a hazard, personal injury and/or property damage. Table 4
- Blue circle: Mandatory action to avoid a hazard resulting in personal injury and/or property damage. Table 5












**Table 3. General Warning Symbols**










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







**Table 4. General Prohibition Symbols**

SYMBOL	SYMBOL DEFINITION	SYMBOL	SYMBOL DEFINITION
	General prohibition sign to signify a prohibited action.		Do not expose to fire.
	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 perform action above indicated temperature.
	Do not touch.		Never tow a trailer.
	Keep away from open flame. Avoid smoking, flames, or sparks.		Do not use an extension cord.
	Do not add weight.		

**Table 5. General Mandatory Action Symbols**

<b>SYMBOL</b>	<b>SYMBOL DEFINITION</b>	<b>SYMBOL</b>	<b>SYMBOL DEFINITION</b>
	General mandatory action.		Wear proper protective riding apparel.
	Keep out of reach of children.		Wear proper hand protection.
	Refer to appropriate manual or instructions.		Wear proper Personal Protective Equipment (PPE).
	Take a rider training course.		Wear proper eye protection.
	Wear a helmet and eye protection.		

**Table 6. General Information Symbols**

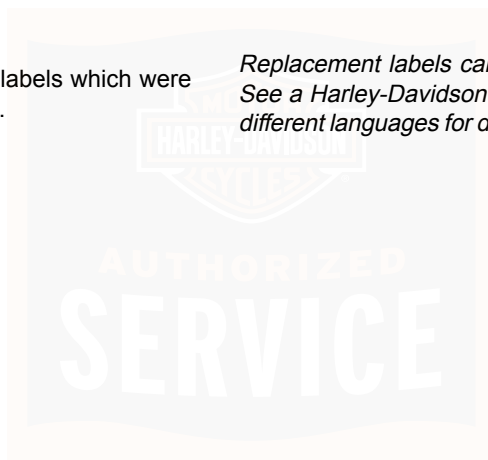
SYMBOL	SYMBOL DEFINITION	SYMBOL	SYMBOL DEFINITION
	Contains button or coin cell battery. Hazardous if swallowed.		Protect from rain or wet conditions.
	First responder cut loop. Emergency Personnel/First Responder use only.		Do not add more weight than specified.

## LABELS

See Figure 1 for safety and maintenance labels which were on the vehicle when new. Refer to Table 7.

### 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.*



1641334

**▲ WARNING**

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](http://www.harley-davidson.com) 14000377

**▲ WARNING**

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.

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- Never tow a trailer.

For a manual, find nearest dealer at 1-414-343-4056 or [www.harley-davidson.com](http://www.harley-davidson.com) 14001624

**▲ WARNING**

A connected battery can cause a spark or motorcycle startup while servicing. Death or serious injury could occur.

- Disconnect negative cable before servicing.
- Keep cable away from terminal while servicing.

15368-01A

**▲ WARNING**

Too much weight in saddlebags can cause loss of control. Death or serious injury could occur.

- Do not put more than 15 pounds (6.8 kg) in each saddlebag.
- Put equal weight in each saddlebag.
- See Accessories and Cargo section of Owner's Manual for more information.

14000050

**▲ WARNING**

THIS ASSEMBLY CONTAINS HIGH-PRESSURE NITROGEN GAS. ANY ATTEMPT TO DISASSEMBLE OR REFILL THIS SHOCK ASSEMBLY MAY RESULT IN AN EXPLOSION, CAUSING SERIOUS INJURY. EXPOSURE TO FLAME OR PUNCTURE MAY ALSO RESULT IN AN EXPLOSION, CAUSING SERIOUS INJURY. REPLACEMENT AND DISPOSAL SHOULD ONLY BE DONE BY YOUR AUTHORIZED DEALER. **SHOWA**

Figure 1. Labels

SERVICE

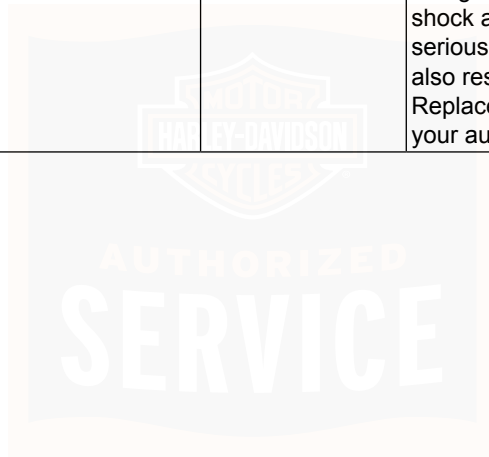
**Table 7. Labels**

ITEM	PART NO.	DESCRIPTION	LOCATION	TEXT
1	14001167	General warning: Chrome round air cleaner	Top of air cleaner cover	<p>WARNING: 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.</p> <ul style="list-style-type: none"> <li>• Take a rider training course.</li> <li>• Read Owner's Manual before riding, adding accessories or servicing.</li> <li>• Wear a helmet, eye protection and protective clothing.</li> <li>• Never tow a trailer.</li> </ul> <p>For a manual, find nearest dealer at 1-414-343-4056 or <a href="http://www.harley-davidson.com">www.harley-davidson.com</a></p>
	14001208	General warning: Black round air cleaner		
	28012-09	General warning: Chrome oval air cleaner		
	14000377	General warning: Black oval air cleaner		
	14001624	General warning: Black cone air cleaner		
2	15368-01A	Battery warning	On battery strap	<p>WARNING: A connected battery can cause a spark or motorcycle startup while servicing. Death or serious injury could occur.</p> <ul style="list-style-type: none"> <li>• Disconnect negative cable before servicing.</li> <li>• Keep cable away from terminal while servicing.</li> </ul>



**Table 7. Labels**

ITEM	PART NO.	DESCRIPTION	LOCATION	TEXT
3	14000069	Saddlebag load limit	Inside saddlebag (equipped models)	<p>WARNING: Too much weight in saddlebags can cause loss of control. Death or serious injury could occur.</p> <ul style="list-style-type: none"> <li>• Do not put more than 15 pounds in each saddlebag.</li> <li>• Put equal weight in each saddlebag.</li> <li>• See Accessories and Cargo section of Owner's Manual for more information.</li> </ul>
4	Not sold separately	Shock absorber label	On shock absorber	<p>WARNING: This assembly contains high-pressure nitrogen gas. Any attempt to disassemble or refill this shock assembly may result in an explosion, causing serious injury. Exposure to flame or puncture may also result in an explosion, causing serious injury. Replacement and disposal should only be done by your authorized dealer.</p>



# NOTES

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## 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 8.

### 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 front downtube.

### Abbreviated VIN

An abbreviated VIN showing the vehicle model, engine type, model year, and sequential number is stamped on the left side of the crankcase between the engine cylinders.

#### NOTE

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

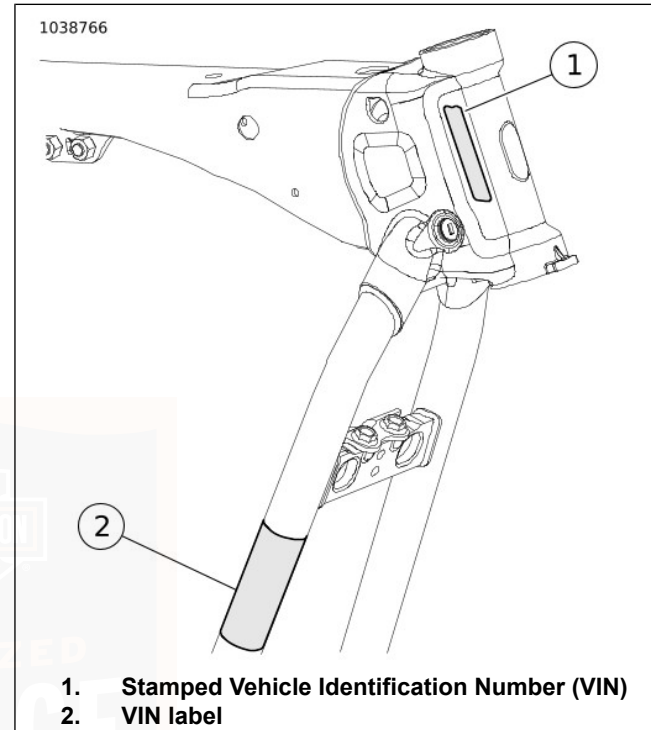


Figure 2. VIN Locations

1860747

1 2 3 4 5 6 7 8 9

**1HD1YAJ13SB111000**

**Figure 3. Typical Harley-Davidson VIN: 2025 Softail Models**

**Table 8. Harley-Davidson VIN Breakdown: 2025 Softail Models**

POSITION	DESCRIPTION	POSSIBLE VALUES
1	World manufacturer identifier	1HD=Originally manufactured in the United States 5HD=Originally manufactured in the United States or Thailand for sale outside of the United States 932=Originally manufactured in Brazil MLY=Originally manufactured in Thailand
2	Motorcycle type	1=Heavyweight motorcycle (901 cm <sup>3</sup> or larger)
3	Model	See VIN model table
4	Engine type	A=Milwaukee Eight™ 117 (1923 cm <sup>3</sup> ) H.O. air-cooled, fuel-injected, balanced 9=Milwaukee Eight™ 117 (1923 cm <sup>3</sup> ) air-cooled, fuel-injected, balanced

**Table 8. Harley-Davidson VIN Breakdown: 2025 Softail Models**

POSITION	DESCRIPTION	POSSIBLE VALUES
5	Calibration/configuration, introduction	1=Domestic (DOM) 2=California (CAL) 3=Canada (CAN) 4=ENG, EN2, HDI, HD2, HD4 5=Japan (JPN) 6=Australia (AUS) 7=Brazil (BRZ) 8=Asia Pacific (APC) 9=India (IND/IN2) 0=ASEAN (AZN) A=China (CHN) G=HD3
6	VIN check digit	Can be 0-9 or X
7	Model year	S=2025
8	Assembly plant	B=York, PA U.S.A. D=H-D Brazil-Manaus, Brazil (CKD) S=Tasit, Pluagdang, Rayong, Thailand
9	Sequential number	Varies

**Table 9. VIN Model Codes: Softail Models**

CODE	MODEL	CODE	MODEL
YA	FLHC Heritage Classic	YJ	FXBB Street Bob®
YF	FLFB Fat Boy®	YW	FXLRS Low Rider® S
YE	FXBR Breakout®	YX	FXLRST Low Rider® ST

## MODELS AND FEATURES

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

## 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*

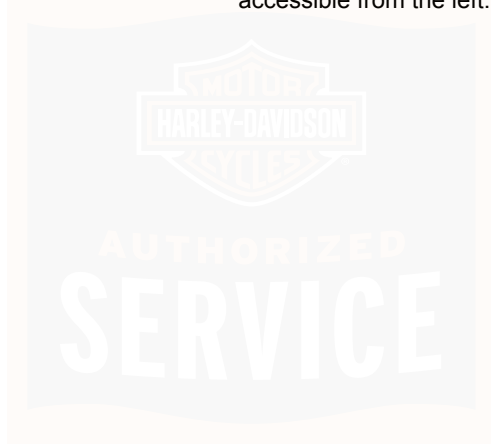
*representations that do not show a specific model of motorcycle.*

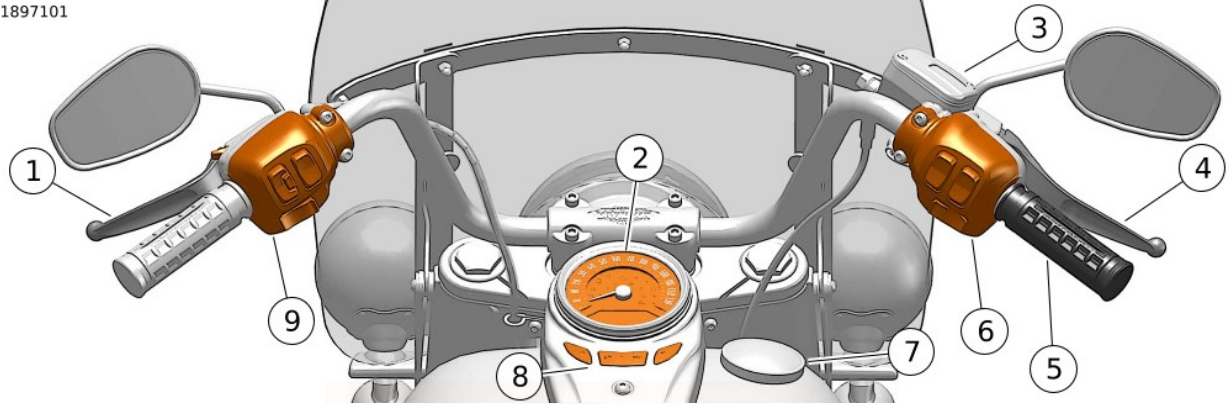
*Harley-Davidson reserves the right to change specifications, equipment or designs at any time without notice and without incurring obligation.*

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.



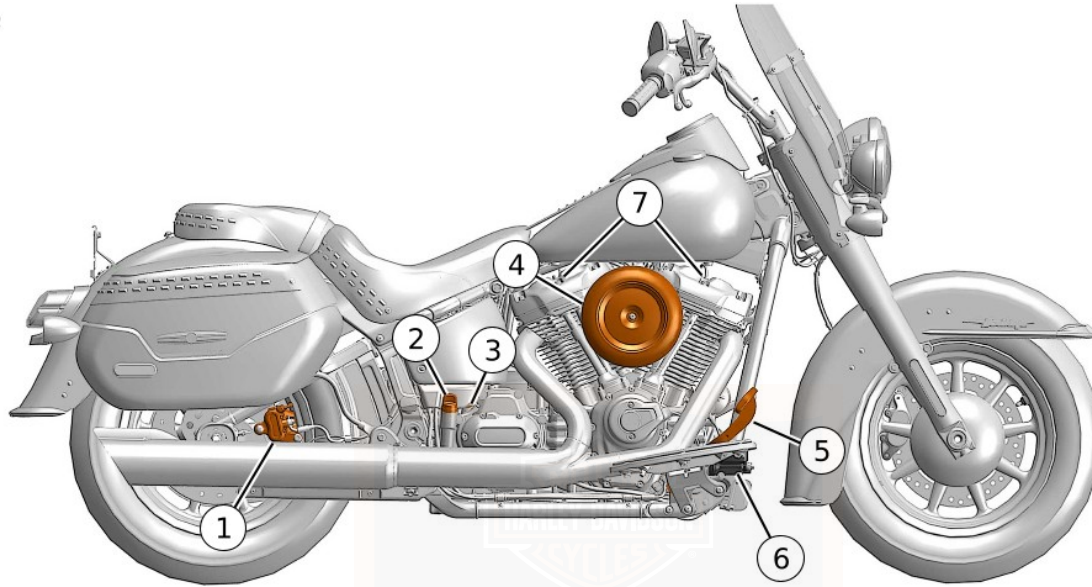


- 1. Clutch hand lever
- 2. Speedometer/odometer
- 3. Front brake fluid reservoir
- 4. Front brake lever
- 5. Throttle twist grip

- 6. Right hand control module
- 7. Fuel filler cap
- 8. Indicator lamps
- 9. Left hand control module

Figure 4. Controls and Service Components (Typical)

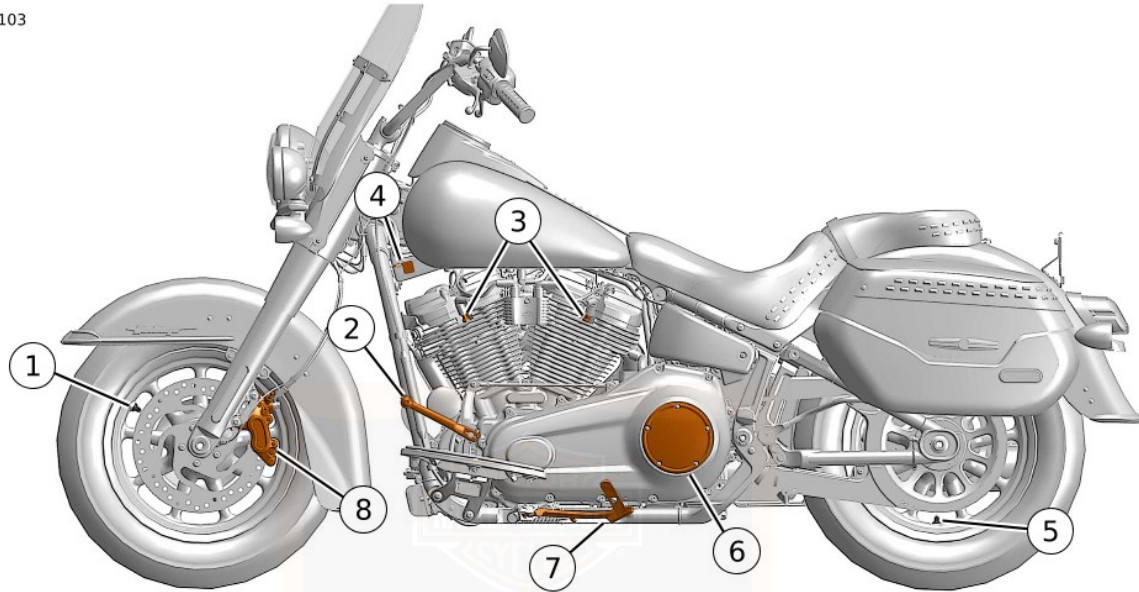




- |                             |                               |
|-----------------------------|-------------------------------|
| 1. Rear brake caliper       | 5. Rear brake pedal           |
| 2. Oil filler cap/dipstick  | 6. Rear brake fluid reservoir |
| 3. Transmission filler plug | 7. Spark plug                 |
| 4. Air cleaner              |                               |

Figure 5. Controls and Service Components Right Side (typical)





1. Air pressure valve
2. Gear shift lever
3. Spark plug
4. USB port (if equipped)

5. Air pressure valve
6. Clutch cover
7. Jiffy stand
8. Front brake caliper

Figure 6. Controls and Service Components Left Side (typical)

# NOTES

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## 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.

## Tires

Table 10. Specified Tires

MODEL	MOUNT	SIZE	SPECIFIED TIRE	PRESSURE (COLD 20 °C (68.0 °F))	
				psi	kPa
FLFB	front	18 in	Michelin Scorcher 11 160/60R18 70V BW	36	248
FLHC	front	16 in	Dunlop D401F 130/90B16 73H BW	36	248
FXBB	front	19 in	Dunlop D401F 100/90B19 57H BW	36	248
FXBR	front	21 in	Michelin Scorcher 11 130/60B21 63H BW	36	248
FXLRS, FXLRST	front	19 in	Michelin Scorcher 31 110/90B19 62H BW	32	221
FLFB, FXBR	rear	18 in	Michelin Scorcher 11 240/40R18 79V BW	42	290
FLHC, FXBB	rear	16 in	Dunlop D401 150/80B16 77H BW	40	276
FXLRS, FXLRST	rear	16 in	Michelin Scorcher 31 180/70B16 77H BW	40	276

**▲ 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 11. Weights: FL Models

Item	Fat Boy® (FLFB)	Heritage Classic (FLHC)
Running weight <sup>(1)</sup>	317 kg (699 lb)	330 kg (728 lb)
Maximum added weight allowed <sup>(2)</sup>	216 kg (476 lb)	196 kg (432 lb)
GVWR	533 kg (1,175 lb)	526 kg (1,160 lb)
GAWR front	204 kg (450 lb)	204 kg (450 lb)
GAWR rear	345 kg (760 lb)	331 kg (730 lb)
<i>(1) The total weight of the motorcycle as delivered with all oil/fluids and approximately 90% of fuel.</i>		
<i>(2) The total weight of accessories, cargo, riding gear, passenger and rider must not exceed this weight.</i>		

SERVICE

**Table 12. Weights: FX Models**

Item	Breakout® (FXBR)	Street Bob® (FXBB)	Low Rider® S (FXLRS)	Low Rider® ST (FXLRST)
Running weight <sup>(1)</sup>	310 kg (683 lb)	297 kg (655 lb)	308 kg (679 lb)	327 kg (721 lb)
Maximum added weight allowed <sup>(2)</sup>	223 kg (492 lb)	229 kg (505 lb)	218 kg (481 lb)	199 kg (439 lb)
GVWR	533 kg (1,175 lb)	526 kg (1,160 lb)	526 kg (1,160 lb)	526 kg (1,160 lb)
GAWR front	204 kg (450 lb)	204 kg (450 lb)	204 kg (450 lb)	204 kg (450 lb)
GAWR rear	331 kg (730 lb)	345 kg (760 lb)	331 kg (730 lb)	331 kg (730 lb)
<i>(1) The total weight of the motorcycle as delivered with all oil/fluids and approximately 90% of fuel.</i>				
<i>(2) The total weight of accessories, cargo, riding gear, passenger and rider must not exceed this weight.</i>				

**Table 13. Dimensions: FL Models**

Item	Fat Boy® (FLFB)	Heritage Classic (FLHC)
Length	2,370 mm (93.3 in)	2,415 mm (95.1 in)
Overall width	985 mm (38.8 in)	930 mm (36.6 in)
Overall height	1,095 mm (43.1 in)	1,370 mm (53.9 in)
Wheelbase	1,665 mm (65.6 in)	1,630 mm (64.2 in)
Road clearance	115 mm (4.5 in)	120 mm (4.7 in)
Seat height <sup>(1)</sup>	658 mm (25.9 in)	668 mm (26.3 in)
<i>(1) With 81.6 kg (180 lb) rider on seat</i>		

**Table 14. Dimensions: FX Models**

<b>Item</b>	<b>Street Bob® (FXBB)</b>	<b>Breakout® (FXBR)</b>	<b>Low Rider® S (FXLRS)</b>	<b>Low Rider® ST (FXLRST)</b>
Length	2,320 mm (91.3 in)	2,370 mm (93.3 in)	2,365 mm (93.1 in)	2,365 mm (93.1 in)
Overall width	865 mm (34.1 in)	950 mm (37.4 in)	870 mm (34.3 in)	870 mm (34.3 in)
Overall height	1,160 mm (45.7 in)	1,085 mm (42.7 in)	1,195 mm (47.0 in)	1,300 mm (51.2 in)
Wheelbase	1,630 mm (64.2 in)	1,695 mm (66.7 in)	1,615 mm (63.6 in)	1,615 mm (63.6 in)
Road clearance	125 mm (4.9 in)	115 mm (4.5 in)	145 mm (5.7 in)	150 mm (5.9 in)
Seat height <sup>(1)</sup>	655 mm (25.8 in)	650 mm (25.6 in)	686 mm (27.0 in)	686 mm (27.0 in)
<i>(1) With 81.6 kg (180 lb) rider on seat</i>				



## Capacities

**Table 15. Capacities**

ITEM		U.S.	L
Fuel tank (total)	Fat Boy (FLFB), Heritage Classic (FLHC), Low Rider S (FXLRS), Low Rider ST (FXLRST), Breakout (FXBR)	5.0 gal	18.9
	Street Bob (FXBB)	3.5 gal	13.25
Low fuel warning light on <sup>(1)</sup>		1.0 gal	3.8
Oil tank with filter <sup>(2)</sup>		5.0 qt	4.73
Transmission (approximate) <sup>(3)</sup>		1.0 qt	0.95
Primary chaincase (approximate) <sup>(4)</sup>	Heritage Classic (FLHC), Street Bob (FXBB), Low Rider S (FXLRS), Low Rider ST (FXLRST)	1.25 qt	1.18
	Fat Boy (FLFB), Breakout (FXBR)	1.43 qt	1.35
<p>(1) When refilling from empty, add at least 3.8 L (1.0 gal).</p> <p>(2) When refilling, initially add 3.78 L (4.0 qt) and add as needed to bring level within specification.</p> <p>(3) When refilling, initially add 0.83 L (28 oz) and add as needed to bring level within specification.</p> <p>(4) When refilling, initially add 1.06 L (36 oz) and add as needed to bring level within specification.</p>			



## Engine and Transmission

Table 16. Engines

ITEM	Milwaukee-Eight™ 117 H.O. Engine	Milwaukee-Eight™ 117 Engine
Cylinders	2	
Type	4-cycle, 45 degree V-type, oil-cooled Single camshaft Dual balance shaft	
Compression ratio	10.3:1	
Bore	4.075 in (103.5 mm)	
Stroke	4.500 in (114.3 mm)	
Displacement	117 in <sup>3</sup> (1923 cm <sup>3</sup> )	
Fuel requirement	Premium unleaded	
Lubrication system	Pressurized, dry sump	
Cooling system	Engine oil with oil cooler	

Table 17. Transmission

TRANSMISSION	SPECIFICATION
Type	Constant mesh, foot shift
Speeds	6 forward

## Electrical

Table 18. Electrical

ITEM	SPECIFICATION
Ignition timing	Not adjustable
Battery	12 V, 17.5 Ah, 315 CCA sealed and maintenance free
Charging system	46–50 A maximum output
USB port	5 V, 2.5 A maximum output
Spark plug size	10 mm
Spark plug gap	0.8–0.9 mm (0.03–0.04 in)
Spark plug torque	10–15 N·m (89–133 <b>in-lbs</b> )



## REMOVING MOTORCYCLE FROM STORAGE

1. Charge and install the battery. See SERVICE PROCEDURES > BATTERY MAINTENANCE (Page 162).
2. Inspect spark plugs. See MAINTENANCE AND LUBRICATION > REPLACING SPARK PLUGS (Page 159).
3. Inspect air filter and replace if necessary. See MAINTENANCE AND LUBRICATION > INSPECTING AIR FILTER (Page 154).
4. Inspect drive belt and sprocket. See MAINTENANCE AND LUBRICATION > CHECK DRIVE BELT DEFLECTION (Page 150).
5. Perform the items in the BEFORE RIDING > PRE-RIDE CHECKLIST (Page 37).

## PRE-RIDE CHECKLIST

1. Check the amount of fuel in the tank. Add fuel if required. See BEFORE RIDING > FILLING THE FUEL TANK (Page 39).
2. Adjust mirrors to proper riding positions. See BEFORE RIDING > ADJUSTING MIRRORS (Page 52).

3. Check the engine oil level. See MAINTENANCE AND LUBRICATION > CHECK ENGINE OIL LEVEL (Page 134).
4. Check brake fluid level. See MAINTENANCE AND LUBRICATION > CHECKING BRAKE FLUID LEVEL AND CHANGING BRAKE FLUID (Page 147).
5. Inspect brake pads and discs for wear. See MAINTENANCE AND LUBRICATION > INSPECTING BRAKE PADS AND DISCS (Page 145).
6. Check the hand and foot controls to be sure they are operating properly. Operate the front and rear brakes, throttle, clutch and shifter. See OWNER MANUAL > OPERATION (Page 71).
7. Inspect brake lines for wear or damage.
8. 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)**

9. Check tire condition, pressure and motorcycle loading. Refer to BEFORE RIDING > CHECKING TIRE PRESSURE AND INSPECTING TIRES (Page 46) for correct tire inflation pressure and motorcycle weight allowances.
10. Check rear shock settings. Adjust if necessary. See BEFORE RIDING > ADJUSTING SHOCK ABSORBERS (Page 53).
11. Check for any fuel, oil or hydraulic fluid leaks.
12. Check drive belt for wear or damage.

### **▲ 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)**

13. Check all electrical equipment and switches including the stop lamp, turn signals and horn for proper operation.
14. Service your motorcycle as necessary.

## **BREAK-IN RIDING RULES**

### **The First 500 Miles (800 Kilometers)**

To allow optimal break-in of your motorcycle's parts, we recommend the following:

At all times:

- Do not lug the engine by running or accelerating at very low rpm. Refer to: OPERATION > SHIFTING GEARS (Page 104).
- Drive slowly and avoid fast starts at wide open throttle until the engine has warmed up.

During the first 160 km (100 mi):

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

During the first 800 km (500 mi):

- Keep the engine speed below 3500 rpm in any gear. Do not run the engine at high rpm longer than needed for shifting or passing.
- Vary the engine speed and load. Avoid operating at any steady engine speed for long periods. Cruise control, if equipped, should not be used.

Perform the initial service called out in SERVICE INTERVALS AND RECORDS > SERVICE RECORDS (Page 201) to adjust for break-in of components and to remove powertrain contaminants.

## FILLING THE FUEL TANK

See SAFETY FIRST > SAFE OPERATING RULES (Page 3) and review the following safety alerts.

### ⚠ WARNING

**Avoid spills. Slowly open fuel filler cap. Do not fill above bottom of filler neck insert, leaving air space for fuel expansion. Secure filler cap after refueling. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00028b)**

### ⚠ WARNING

**Use care when refueling. Pressurized air in fuel tank can force gasoline to escape through filler tube. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00029a)**

### ⚠ WARNING

**Do not store motorcycle with gasoline in tank within the home or garage where open flames, pilot lights, sparks or electric motors are present. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00003a)**

### ⚠ WARNING

**Do not use aftermarket fuel caps. Aftermarket fuel caps may fit improperly and leak, which could lead to death or serious injury. See a Harley-Davidson dealer for approved fuel caps. (00034a)**

### NOTICE

**Do not spill fuel onto the motorcycle while refueling. Immediately wipe up fuel spills on your motorcycle. Fuel can cause damage to cosmetic surfaces. (00147b)**

## NOTICE

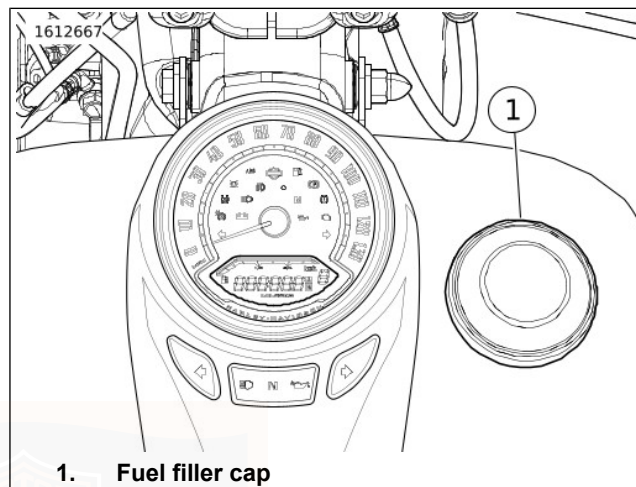
**Use only unleaded fuel in catalytic converter-equipped motorcycles. Using leaded fuel will damage the emission control system. (00150c)**

Modern service station pumps dispense a high flow of gasoline into a motorcycle fuel tank. This can cause air entrapment and pressurization.

## FUEL FILLER CAP

### Removal

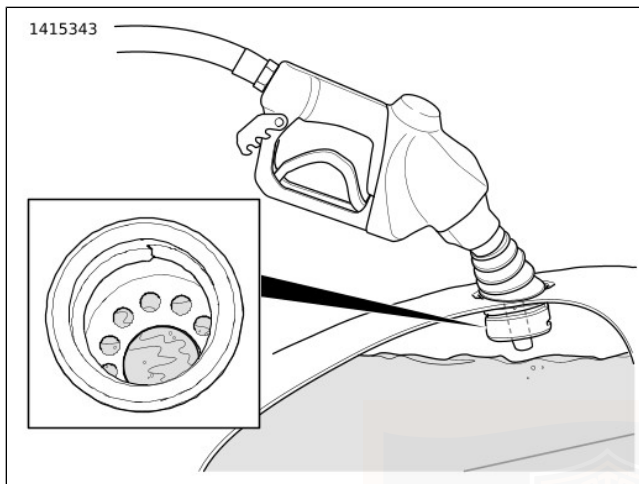
See Figure 7. Turn fuel filler cap (1) counterclockwise to remove. The cap turns approximately three-quarters of a turn before it begins to loosen.



**Figure 7. Fuel Tank**

### Filling

See Figure 8. Do not overfill the fuel tank. Insert the pump nozzle into the filler hole. Do not fill the tank beyond the bottom of the filler neck. A warm engine, the sun or extreme temperatures can cause the fuel to expand. Fuel can spill out of the tank and damage the finish. See SAFETY FIRST > SAFE OPERATING RULES (Page 3).



**Figure 8. Fuel Level below Filler Neck**

## Installation

Turn fuel filler cap clockwise until it clicks to install. The ratchet action of the cap prevents over-tightening.

## LOCKING FUEL FILLER CAP

### Replacement Keys

Find the four-digit key number stamped on the back of the key opposite the H-D logo. Write the key number in the space

provided at the front of this manual. With that number, your Harley-Davidson dealer can order a replacement.

## Removal

1. See Figure 9. Rotate the lock cover to access the key lock.
2. Insert the key.
3. Hold the fuel filler cap in place. Turn the key counterclockwise until it stops.
4. Turn key back to its original position. Remove the key.
5. Turn cap counterclockwise until resistance is felt. Continue to turn cap counterclockwise to remove cap.

om02114a

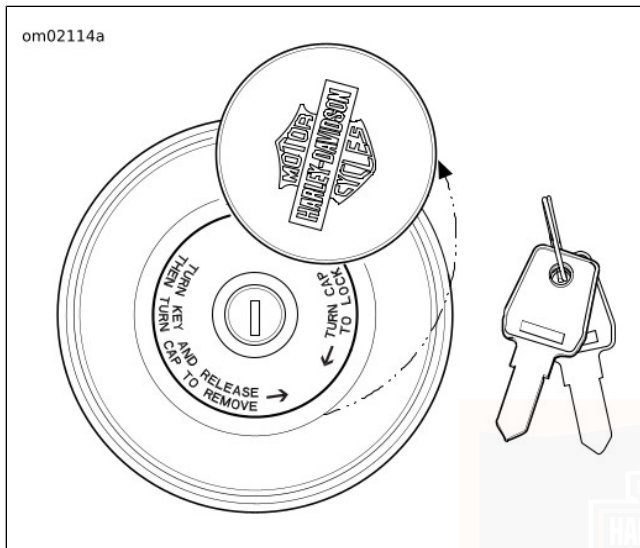


Figure 9. Locking Fuel Filler Cap

## Installation

1. Insert the key into the lock.
2. To make sure that the cap is unlocked, firmly, hold the cap. Turn the key counterclockwise until it stops.
3. Allow the key to return to a neutral position. Remove the key.

42 Before Riding

## NOTE

When installing the fuel cap, rotate the cap one full turn past the audible click.

4. Turn the cap clockwise to install the fuel cap.
5. Close the lock cover.

## FUEL SYSTEM INFORMATION

### Gasoline

Your motorcycle was designed to get the best performance and efficiency using unleaded gasoline. Most gasoline is blended with alcohol and/or ether to create oxygenated blends. The type and amount of alcohol or ether added to the fuel is important.

### NOTICE

**Do not use gasoline that contains methanol. Doing so can result in fuel system component failure, engine damage and/or equipment malfunction. (00148a)**

### NOTICE

**Use only unleaded fuel in catalytic converter-equipped motorcycles. Using leaded fuel will damage the emission control system. (00150c)**




- ETHANOL fuel is a mixture of ethanol (grain alcohol) and unleaded gasoline and can have an impact on fuel mileage.
- REFORMULATED OR OXYGENATED GASOLINES (RFG) describes gasoline blends that are specifically designed to burn cleaner than other types of gasoline. This results in fewer tailpipe emissions. They are also formulated to reduce evaporative losses to the environment. Reformulated gasolines use additives to oxygenate the gas. Your motorcycle will run normally using this type of fuel. Harley-Davidson recommends using it whenever possible as an aid to cleaner air in our environment.
- Some gasoline blends might adversely affect starting, driveability or fuel efficiency. If any of these problems are experienced, try a different brand of gasoline or gasoline with a higher octane blend.

**Table 19. Octane Rating**

SPECIFICATION	RATING
Pump Octane (R+M)/2	91 (95 RON)



**Table 20. Fuel Specification**

<b>Common Identifier</b>	<b>Specification</b>	<b>Rating</b>
MTBE	Methyl Tertiary Butyl Ether	Gasoline/Methyl Tertiary Butyl Ether (MTBE) blends are a mixture of gasoline and as much as 15% MTBE. Gasoline/MTBE blends use in your motorcycle is approved.
Methanol	Methanol or Racing Fuel	Do not use racing fuel or fuel containing methanol; use of these fuels will damage the fuel system.
	5% Ethanol	Fuels with an ethanol content of up to 5% (E5) may be used in your motorcycle without affecting vehicle performance.
	10% Ethanol	Fuels with an ethanol content of up to 10% (E10) may be used in your motorcycle without affecting vehicle performance. United States customers: The United States' Clean Air Act prohibits the use of gasoline blends containing greater than 10% ethanol in motorcycles.
	22% Ethanol	Fuel in the Brazilian market has ethanol content which ranges from 21–27.5%. Harley-Davidson Motorcycles configured for Brazil are equipped with engine control calibrations developed to work properly with these fuels. Use of fuels with high ethanol content in Harley-Davidson motorcycles intended for other regulatory markets may result in poor drivability, setting of the check engine light and potential engine damage.
	85% Ethanol	Do not use fuel containing 85% ethanol. Use of these fuels will damage the fuel system and may lead to engine damage.



## Catalytic Converter

Vehicles in some markets are equipped with catalytic converters.

### NOTICE

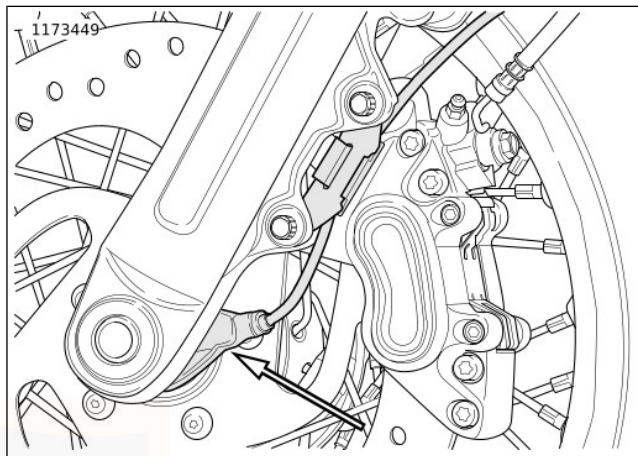
**Do not operate catalytic converter-equipped vehicle with engine misfire. If you operate the vehicle under this condition, the exhaust will become abnormally hot, which can cause vehicle damage, including emission control loss. (00149c)**

## ABS BRAKE SYSTEM IDENTIFICATION

### Identification

See Figure 10 or Figure 11. Models with ABS can be identified by a wheel speed sensor on the left side of the front wheel.

See Figure 12. Models with ABS will also have an ABS module (EHCU).



**Figure 10. Wheel Speed Sensor (ABS identification)  
(standard fork)**

AUTHORIZED  
SERVICE

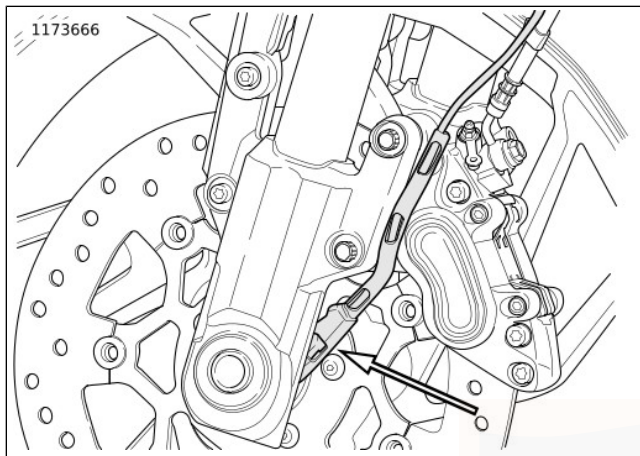


Figure 11. Wheel Speed Sensor (ABS identification) (inverted fork)

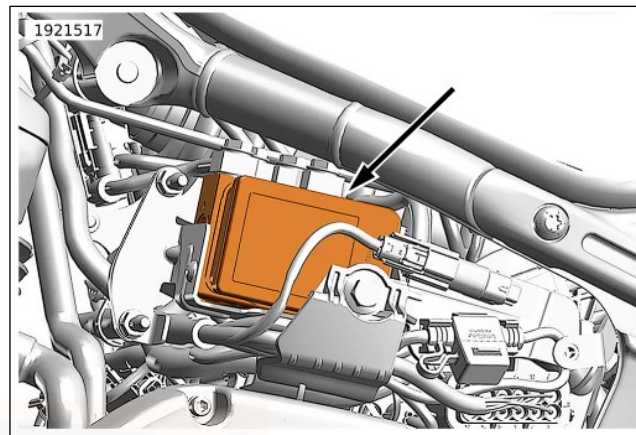


Figure 12. ABS Module (located behind left side cover)

## 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 21 and Table 22. 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 20 °C (68 °F) or less: Table 21

Table 21. Specified Tires

MODEL	MOUNT	SIZE	SPECIFIED TIRE	PRESSURE (COLD 20 °C (68.0 °F))	
				psi	kPa
FLFB	front	18 in	Michelin Scorcher 11 160/60R18 70V BW	36	248
FLHC	front	16 in	Dunlop D401F 130/90B16 73H BW	36	248
FXBB	front	19 in	Dunlop D401F 100/90B19 57H BW	36	248
FXBR	front	21 in	Michelin Scorcher 11 130/60B21 63H BW	36	248
FXLRS, FXLRST	front	19 in	Michelin Scorcher 31 110/90B19 62H BW	32	221
FLFB, FXBR	rear	18 in	Michelin Scorcher 11 240/40R18 79V BW	42	290

**Table 21. Specified Tires**

MODEL	MOUNT	SIZE	SPECIFIED TIRE	PRESSURE (COLD 20 °C (68.0 °F))	
				psi	kPa
FLHC, FXBB	rear	16 in	Dunlop D401 150/80B16 77H BW	40	276
FXLRS, FXLRST	rear	16 in	Michelin Scorcher 31 180/70B16 77H BW	40	276

For Cold Tires with an Ambient Air Temp higher than 20 °C (68 °F): Refer to the first column in Table 22 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 31 °C (88 °F), the recommended front and rear pressures are Table 21 pressures plus 14 kPa (2 psi).

Tires warm due to riding which increases the tire pressure. If the vehicle has been recently ridden, refer to the second column in Table 22 to determine the tire pressure adjustment. For example: If the motorcycle has been recently ridden and

the ambient temperature is 31 °C (88 °F), the recommended front and rear pressures are the Table 21 pressures plus 48 kPa (7 psi).

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 22. Tire Pressure Adjustment**

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

**Table 22. Tire Pressure Adjustment**

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

## Inspecting Tires

### **⚠ WARNING**

**Replace tire immediately with a Harley-Davidson specified tire when wear bars become visible or only 1 mm (1/32 in) 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.

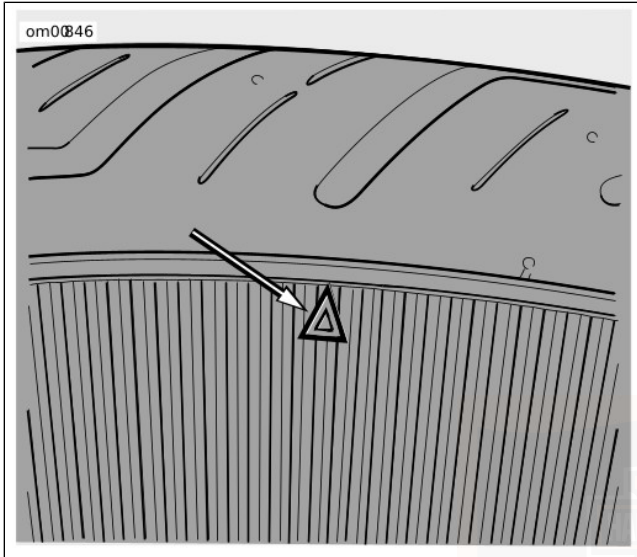
Inspect each tire for punctures, cuts and breaks.

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

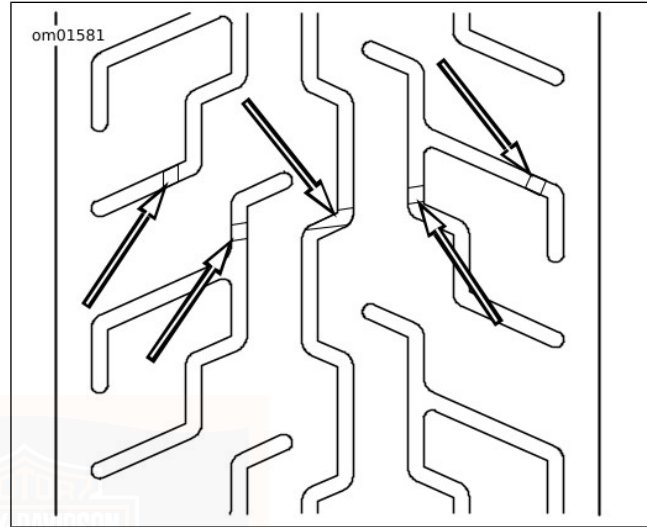
A tire is considered worn when the wear bars are visible or if only 1 mm (0.031 in) tread depth remains. A worn tire can:

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

See Figure 13, Figure 14 and Figure 15. Always replace tires before the tread wear bars appear.



**Figure 13. Dunlop Sidewall Tread Wear Indicator Bar Locator**



**Figure 14. Dunlop Tread Wear Indicator Bar Appearance**

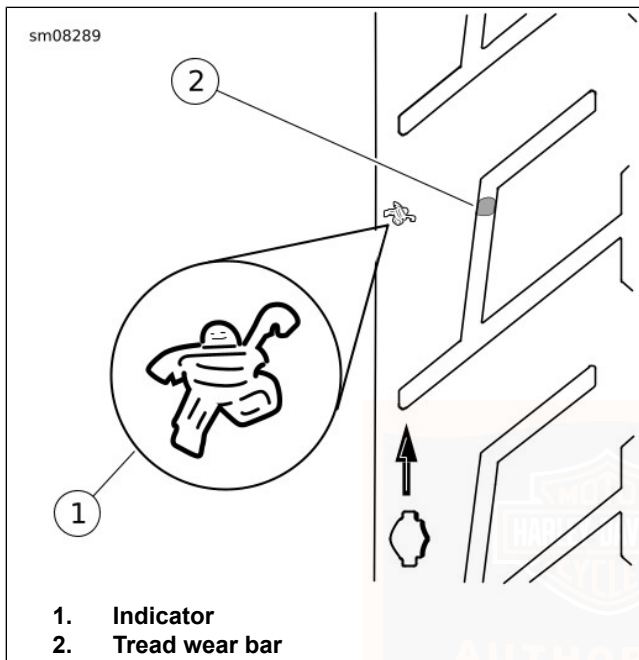


Figure 15. Tread Wear Indicator: Michelin Tires

## 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 80 km/h (50 mph) for the first 24 hours after repair, and the repaired tire should NEVER be used over 129 km/h (80 mph). 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 mm (1/32 in) 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 21 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)

#### *NOTE*

*When parking your motorcycle on a grade, place the transmission in gear after turning off the engine.*

Refer to: YOUR MOTORCYCLE > PRIMARY CONTROLS AND SERVICE COMPONENTS (Page 26). The jiffy stand is located on the left side of the motorcycle.

### **Jiffy Stand Switch: International Models**

Some international models have a jiffy stand interlock switch.

The motorcycle will start and run with the jiffy stand down while the transmission is in neutral. If the jiffy stand is down and the transmission in gear, engaging the clutch stalls the

motorcycle. Raising the jiffy stand or putting the transmission in neutral will permit the engine to run.

While the motorcycle is in motion at speeds greater than 15 km/h (9 mph), lowering the jiffy stand will not stop the engine.

## **ADJUSTING SHOCK ABSORBERS**

### **Calculate Preload Setting**

#### **▲ 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)**

Adjust suspension to suit load conditions, riding style and personal comfort. Increase preload to accommodate the total load. Reduce the preload if carrying less weight. Do not exceed maximum GVWR or GAWR when loading.

#### *NOTE*

*To determine the motorcycle configuration check the model character stamped on the VIN. See YOUR MOTORCYCLE > VEHICLE IDENTIFICATION NUMBER (VIN) (Page 23).*

1. Determine preload setting.
  - a. Add the weight of the rider and riding gear to get the rider weight for the desired table.
  - b. Separately, add the weight of the passenger, their riding gear, intended cargo and any accessories.
  - c. Use the number at the intersection of the RIDER WEIGHT row and the ADDITIONAL WEIGHT OF PASSENGER, CARGO AND ACCESSORIES column to find the recommended preload setting.
2. Use one of the following tables that matches your vehicle to find the proper preload setting.

**Table 23. Suspension Preload Table: Heritage Classic (FLHC), Low Rider ST (FXLRST)**

		ADDITIONAL WEIGHT OF PASSENGER, CARGO AND ACCESSORIES											
		LB	0	20	40	60	80	100	120	140	160	180	200
		KG	0	9	18	27	36	45	54	64	73	82	92
RIDER WEIGHT		Preload Setting											
LB	KG	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	
160	73	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	
180	82	0.5	1.0	1.5	2.0	2.5	3.0	3.5	3.5	4.0	4.5	5.0	
200	91	1.0	1.5	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	
220	100	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	
240	109	1.5	2.0	2.5	3.0	3.5	3.5	4.0	4.5	5.0	5.0	5.0	
260	118	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	NA	NA	
280	127	2.0	2.5	3.0	3.5	NA	NA	NA	NA	NA	NA	NA	
300	136	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	



**Table 24. Suspension Preload Table: Street Bob (FXBB)**

		ADDITIONAL WEIGHT OF PASSENGER, CARGO AND ACCESSORIES											
		LB	0	20	40	60	80	100	120	140	160	180	200
		KG	0	9	18	27	36	45	54	64	73	82	92
RIDER WEIGHT													
LB	KG	Preload Setting											
160	73	1	2	3	4	5	7	7	7	7	7	7	7
180	82	2	3	4	5	6	7	7	7	7	7	7	7
200	91	2	4	5	6	7	7	7	7	7	7	7	7
220	100	3	4	5	7	7	7	7	7	7	7	7	7
240	109	4	5	6	7	7	7	7	7	7	7	7	7
260	118	5	6	7	7	7	7	7	7	7	7	7	7
280	127	5	7	7	7	7	7	7	7	7	7	7	7
300	136	6	7	7	7	7	7	7	7	7	7	7	7

**Table 25. Suspension Preload Table: Low Rider S (FXLRS)**

		ADDITIONAL WEIGHT OF PASSENGER, CARGO AND ACCESSORIES											
		LB	0	20	40	60	80	100	120	140	160	180	200
		KG	0	9	18	27	36	45	54	64	73	82	92
RIDER WEIGHT													
LB	KG	Preload Setting											
160	73	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	4.5	5.0
180	82	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0
200	91	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	5.0
220	100	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	5.0
240	109	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	5.0	5.0
260	118	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	NA	NA	NA
280	127	2.0	2.5	3.0	3.5	NA	NA	NA	NA	NA	NA	NA	NA
300	136	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

**Table 26. Suspension Preload Table: Breakout (FXBR), Fat Boy (FLFB)**

		ADDITIONAL WEIGHT OF PASSENGER, CARGO AND ACCESSORIES											
		LB	0	20	40	60	80	100	120	140	160	180	200
		KG	0	9	18	27	36	45	54	64	73	82	92
RIDER WEIGHT													
LB	KG		Preload Setting										
160	73	0.0	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0
180	82	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0
200	91	1.0	1.5	2.0	2.5	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0
220	100	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	5.0
240	109	1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	5.0	5.0
260	118	2.0	2.5	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	5.0	5.0
280	127	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.0	5.0	NA	NA	NA
300	136	2.5	3.0	3.5	4.0	4.5	5.0	NA	NA	NA	NA	NA	NA

**Adjustment**

*NOTE*

*Adjust the shock with the motorcycle resting on the jiffy stand.*

**1. Cam style:**

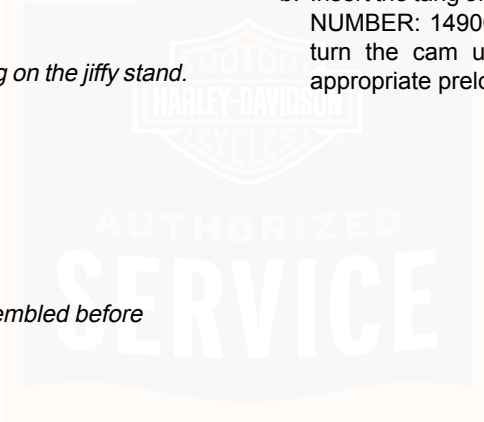
See Figure 16.

a. Remove seat.

*NOTE*

*The provided spanner wrench is to be assembled before use.*

b. Insert the tang of the SPANNER WRENCH KIT (PART NUMBER: 14900102) in the slots in the rear shock, turn the cam until the indicator (1) points to the appropriate preload setting (2).



## 2. Hydraulic under seat:

See Figure 17.

- a. Remove seat.

### NOTE

*The provided spanner wrench is to be assembled before use.*

- b. Using the socket end of the SPANNER WRENCH KIT (PART NUMBER: 14900102), rotate adjustment screw clockwise to increase preload setting, or counterclockwise to decrease preload setting until the indicator shows the appropriate preload setting.

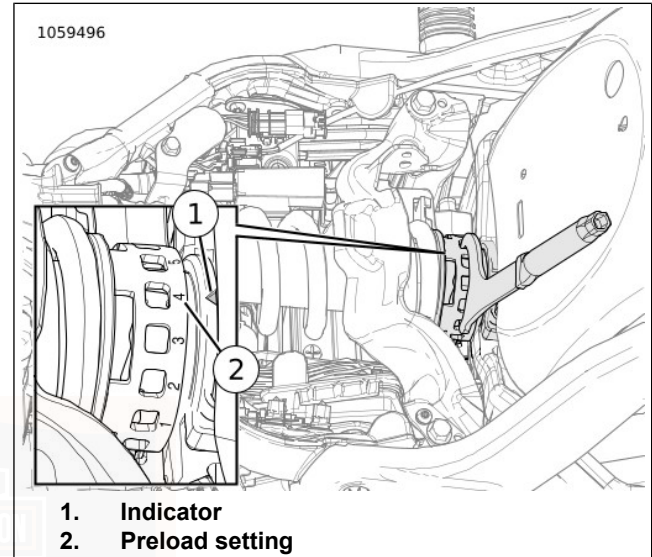
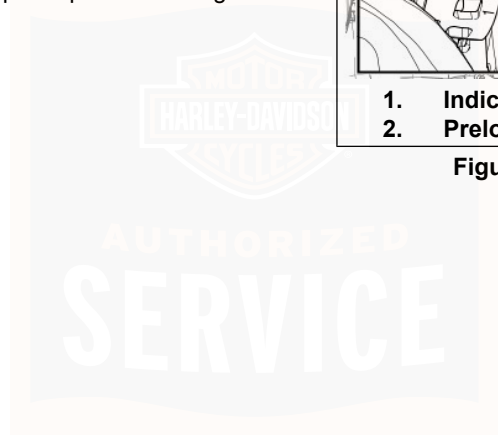
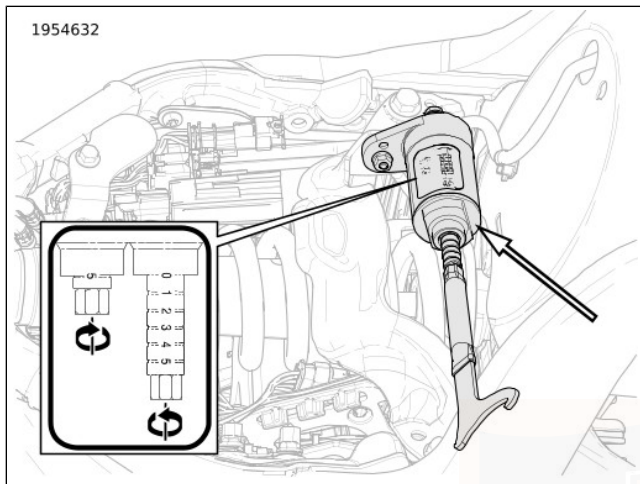
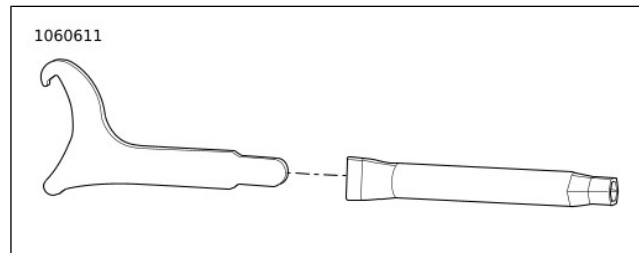


Figure 16. Preload Adjustment Cam

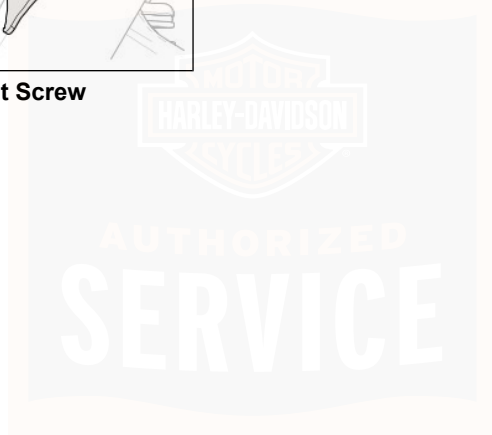




**Figure 17. Preload Adjustment Screw**



**Figure 18. Spanner Wrench Kit**



## 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 speedometer face indicates when security is armed or disarmed.

See SECURITY SYSTEM > ARMING AND DISARMING (Page 64).

### Options

See a Harley-Davidson dealer or [www.harley-davidson.com](http://www.harley-davidson.com) for security system options.

## SECURITY SYSTEM FOB

### Assigning Fob

See Figure 19. 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 19. 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 and on the removable wallet card.*

- If the fob is misplaced or fails, the rider can refer to the wallet card and use the PIN to manually disarm the system. See SECURITY SYSTEM > ARMING AND DISARMING (Page 64) and SECURITY SYSTEM > TROUBLESHOOTING (Page 69).
- The rider can change the PIN at any time. See SECURITY SYSTEM > PERSONAL IDENTIFICATION NUMBER (PIN) (Page 62).

## Fob Battery

### ⚠ WARNING



**CONTAINS BUTTON OR COIN CELL BATTERY. KEEP OUT OF REACH OF CHILDREN.**

**Ingestion can result in death or serious injury. Choking, chemical burns and perforation of soft tissue may result. Severe burns can occur within 2 hours of ingestion or placement in any part of the body. Seek medical attention immediately. (13105b)**

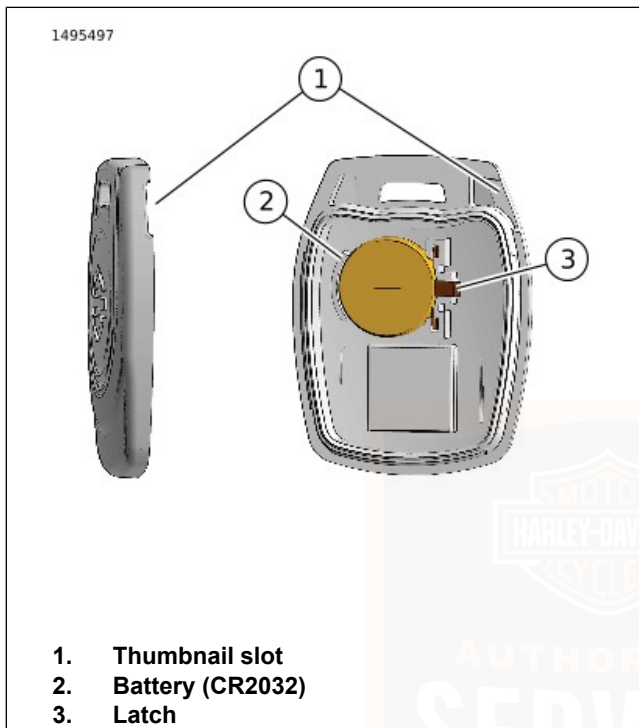
Replace the fob battery every year.

60 SECURITY SYSTEM

### 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 20. The serial number of the fob is also found on the inside of the fob.
1. See Figure 20. 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.





**Figure 20. Replace Fob Battery**

## **Riding with a Fob**

- Always carry the fob when riding, loading, fueling, 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 odometer window temporarily 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 27.

Table 27. Changing the PIN

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
1	Select a 5-digit (1 thru 9) PIN and record it.		
2	With an assigned fob present, turn the OFF/RUN/START switch to <b>RUN</b> .		
3	Cycle the OFF/RUN/START switch twice: <b>OFF - RUN - OFF - RUN</b> .		
4	Press <b>left</b> turn signal switch <b>2 times</b> .	ENTER PIN scrolls through the odometer window.	
5	Press <b>right</b> turn signal switch <b>1 time</b> and release.	Turn signals will flash 3 times. Current PIN will appear in odometer. The first digit will be flashing.	
6	Enter first digit of new PIN by pressing and releasing the <b>left</b> turn signal switch until the selected digit appears.		
7	Press <b>right</b> turn signal switch <b>1 time</b> and release.	The new digit will replace the current in odometer window.	

**Table 27. Changing the PIN**

<b>STEP NO.</b>	<b>ACTION</b>	<b>WAIT FOR CONFIRMATION</b>	<b>NOTES</b>
8	Enter second digit of selected PIN by pressing and releasing the <b>left</b> turn signal switch until the selected digit is present.		
9	Press <b>right</b> turn signal switch <b>1 time</b> and release.	The new digit will replace the current in odometer window.	
10	Enter third digit of the selected PIN by pressing and releasing the <b>left</b> turn signal switch until the selected digit is present.		
11	Press <b>right</b> turn switch <b>1 time</b> and release.	The new digit will replace the current in odometer window.	
12	Enter fourth digit of new PIN by pressing and releasing the <b>left</b> turn signal switch until the selected digit is present.		
13	Press <b>right</b> turn switch <b>1 time</b> and release.	The new digit will replace the current in odometer window.	
14	Enter fifth digit of the new PIN by pressing and releasing the <b>left</b> turn signal switch until the selected digit is present.		

**Table 27. Changing the PIN**

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
15	Press <b>right</b> turn switch <b>1 time</b> and release.	The new digit will replace the current in odometer window.	
16	Push the OFF/RUN/START switch to <b>OFF</b> .		Pushing the OFF/RUN/START switch to <b>OFF</b> stores the new PIN in the module.

## SECURITY STATUS INDICATOR

See OPERATION > INDICATORS (Page 77). The security lamp in the speedometer 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:** If the lamp remains lit continuously, see a Harley-Davidson dealer.

## ARMING AND DISARMING

### Arming

When the motorcycle is parked and the OFF/RUN/START 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 and the siren chirps twice if the siren is in the chirp mode. While armed, the indicator lamp in the speedometer face flashes every three seconds.

#### NOTE

**International models:** The system must be in the chirp mode for the siren to chirp on arming or disarming. Refer to: SECURITY SYSTEM > SIREN CHIRP MODE (CONFIRMATION) (Page 68).

### 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/START switch is moved to RUN.

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

When the system disarms, the siren chirps once and 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.

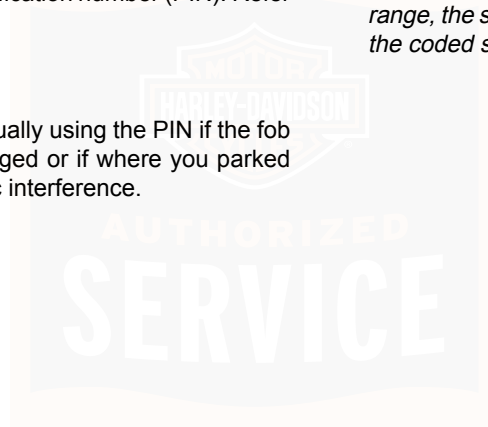
## Disarming with a PIN

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/START 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/START 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**

<b>STEP NO.</b>	<b>ACTION</b>	<b>WAIT FOR CONFIRMATION</b>	<b>NOTES</b>
1	If necessary, verify the current 5-digit Personal Identification Number (PIN).		Should be recorded.
2	Push the <b>OFF/RUN/START switch</b> to <b>RUN</b> .	The odometer window display will show ENTER PIN.	
3	Press and release the <b>left</b> turn signal switch.	In the odometer window, a flashing 1 will appear.	
4	Increment the digit by tapping the <b>left</b> 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 <b>right</b> turn switch <b>1 time</b> .	The first digit is stored and the next digit will flash.	Serves as enter key.
6	Increment the second digit using the <b>left</b> 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 <b>right</b> turn switch <b>1 time</b> .	The second digit is stored and the next digit will flash.	Serves as enter key.
8	Increment the third digit using the <b>left</b> 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 <b>right</b> turn switch <b>1 time</b> .	The third digit is stored and the next digit will flash.	Serves as enter key.
10	Increment the fourth digit using the <b>left</b> 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.	

**Table 28. Entering a PIN to Disarm Security System**

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
11	Press <b>right</b> turn switch <b>1 time</b> .	The fourth digit is stored and the next digit will flash.	Serves as enter key.
12	Increment the fifth digit using the <b>left</b> 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 <b>right</b> turn switch <b>1 time</b> .	The fifth digit is stored.	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 and a chirp of the siren.

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.

#### NOTE

*During warnings and alarms, the starter motor and the ignition circuits remain disabled.*

### 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.
- Sound the siren.

**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 0.8 km (½ mi). 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.

## SIREN CHIRP MODE (CONFIRMATION)

Vehicles with optional siren can be set to chirp upon arming and disarming.

### Chirp Mode

In chirp mode, the siren sounds two chirps when arming, and a single chirp when disarming.

## TRANSPORT MODE

It is possible to arm the security system without enabling the motion detector for one ignition cycle. The motorcycle can be

moved in an armed state. The motorcycle cannot be turned on or started while in transport mode until the fob is present.

## To Enter Transport Mode

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

#### NOTE

When transport mode is enabled the odometer window will display *TSPORT MODE ACTIVE* message.

## To Exit Transport Mode

With the fob present, set the OFF/RUN/START 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 AFTER RIDING > STORING MOTORCYCLE (Page 129).

## 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

### All Models

When disconnecting the battery or removing the main fuse, perform the following steps.

1. Verify that the fob is present.
2. Set the OFF/RUN/START switch to RUN.
3. Pull the main fuse from its holder.

4. Disconnect the battery if needed.

### NOTE

*Set the OFF/RUN/START switch back to OFF before installing main fuse.*

## 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 76 mm (3 in) of any other electronic devices.
  - b. Place the fob on the seat and set the OFF/RUN/START switch to RUN. After the system disarms, return the fob to a convenient location.
  - c. Move motorcycle at least 5 m (15 ft) from the spot of interference.

2. **Discharged fob battery:** Use the PIN to disarm the system. Replace the battery. Refer to: SECURITY SYSTEM > SECURITY SYSTEM FOB (Page 59).

*NOTE*

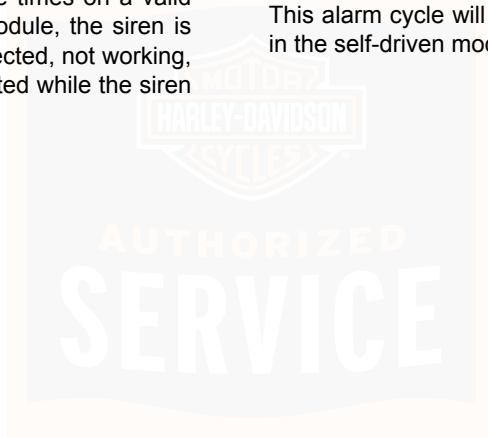
*When fob battery is low the odometer window will display FOB LOW BATT message.*

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

## Siren

- If the siren does not chirp two or three times on a valid arming command from the security module, the siren is either in the Chirpless Mode, not connected, not working, or the siren wiring was opened or shorted while the siren was disarmed.

- If the siren is armed and the internal siren battery is dead, shorted, disconnected, or has been charging for a period longer than 24 hours, the siren will respond with three chirps on arming instead of two.
- The internal siren battery may not charge if the vehicle's battery is less than 12.5 volts.
- If the siren enters the self-driven mode where it is powered from the siren's internal 9 volt battery, the turn signal lamps may or may not alternately flash. If the security module activates the siren, the turn signal lamps will alternately flash. If the siren has been armed and a security event occurs, and the siren is in self-driven mode, the siren will alarm 20-30 seconds and then turn off for 5-10 seconds. This alarm cycle will be repeated ten times if the siren is in the self-driven mode.



## KEYLESS IGNITION

### ▲ 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)**

### ▲ 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)**

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 the motorcycle can be started.

The key supplied with the motorcycle is for the fork lock. Refer to: OPERATION > CONTROLS, INSTRUMENTS AND SWITCHES (Page 72).

### Ignition Mode

With security fob present, set the OFF/RUN/START switch to RUN. The lights and instruments become operational and the motor can be started. To disarm the security system using

the PIN, see SECURITY SYSTEM > ARMING AND DISARMING (Page 64).

The motorcycle remains on (or the engine continues running) until the OFF/RUN/START switch is set to OFF. Taking the security fob out of range will not shut down the engine or turn off the motorcycle after it is turned on. However, the speedometer will display a NO FOB message if the motorcycle begins moving without the fob present.

### NOTE

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

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

### Accessory Mode

See Figure 26. With the security fob present, press and hold the TRIP switch (5). The instruments and accessory circuit are powered. The headlamp (high and low beam) and turn signal lamps remain off. While in accessory mode:

- The speedometer displays the odometer functions.
- Power is supplied to the USB port.

- 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 TRIP 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 TRIP switch.

## CONTROLS, INSTRUMENTS AND SWITCHES

### Clutch Hand 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 4. The clutch hand lever (1) is operated with the fingers of the left hand. See OPERATION > SHIFTING GEARS (Page 104).

### Gear Shift Lever

See Figure 21. The gear shift lever is operated with the left foot. Neutral is found between first and second gear in the six speed shift pattern. Refer to: OPERATION > SHIFTING GEARS (Page 104).

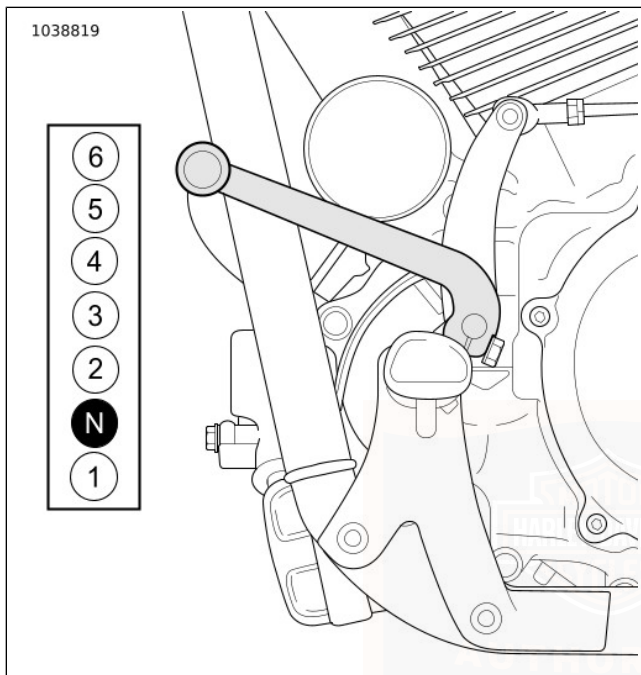


Figure 21. Shift Lever and Shift Pattern

### Left-Hand Control Module

See Figure 4. Operate the switches on the left hand control module (10) with the thumb of the left hand. Refer to:

OPERATION > LEFT HAND CONTROL SWITCHES (Page 82).

### Speedometer/Odometer

See Figure 4. The current road speed is displayed in the speedometer (2). The accumulated mileage and individual trip mileage is displayed in the odometer window in the face of the speedometer. Refer to: OPERATION > INSTRUMENTS (Page 75).

### Right-Hand Control Module

See Figure 4. Operate the switches on the right hand control module (6) with the thumb of the right hand. Refer to: OPERATION > RIGHT HAND CONTROL SWITCHES (Page 85).

### 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 (4) 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 (5) 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 (5) backward (toward rear of motorcycle) to open the throttle.

**Decelerate:** Slowly twist throttle control grip forward (toward the front) to close the throttle.

## OFF/RUN/START Switch

#### NOTE

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

See Figure 27. To start the engine, see OPERATION > STARTING THE ENGINE (Page 93).

## 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 22. The fork lock is located in the steering head on the right side. The fork is locked with the key.

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.

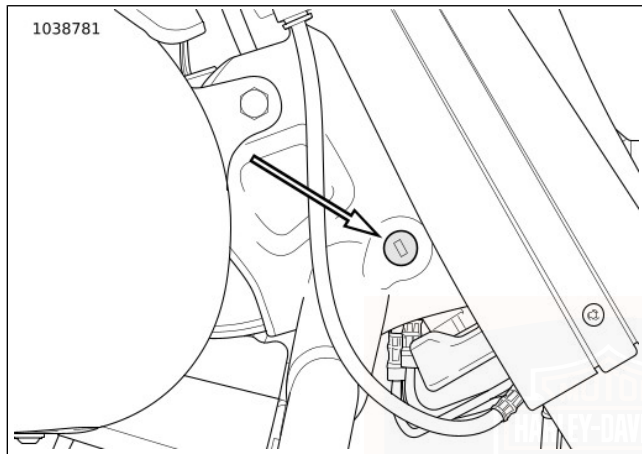


Figure 22. Fork Lock

## INSTRUMENTS

### NOTICE

**There are no serviceable parts inside the unit; leave all servicing to qualified service personnel. Disassembly of the unit could result in equipment damage and/or equipment malfunction. (00172a)**

## 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)**

The speedometer registers miles per hour (U.S. models only), kilometers per hour (international models only) or is dimensioned in both mph and km/h for required markets.

Instrument backlighting activates after a slight delay. Changes to ambient lighting, such as going through a tunnel, may briefly change backlighting.

## Fuel

See Figure 23. The fuel gauge displays eight bars when the fuel tank is full. Each bar represents approximately one-eighth of the total fuel capacity.

## Odometer Display

See Figure 26. Pressing the trip switch (5) with the OFF/RUN/START switch in any position activates the odometer reading.

See Figure 23. The odometer window also provides the following selectable displays:

- Odometer
- Trip odometer A
- Trip odometer B
- Fuel range
- Tachometer
- Clock

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

### **Trip Odometers A and B**

To check mileage or to reset trip odometers, the OFF/RUN/START switch must be in the RUN position. Press and release the trip switch until the desired trip odometer register, A or B is displayed. An A or B on the right of the display window identifies the trip odometer.

To reset or zero trip odometers, have desired trip odometer in display window. Press the trip switch and hold for approximately three seconds. The shown trip odometer resets to zero.

### **Fuel Range**

The fuel range display shows the approximate mileage available with the amount of fuel left in the fuel tank. With OFF/RUN/START switch in the RUN position, press the trip button until range is displayed.

### **Tachometer**

Press and release the trip switch to cycle through the odometer window displays. The tachometer shows the engine speed in revolutions per minute (rpm).

### **Clock**

The clock displays current time in 12/24 hour format. Press and hold trip button with clock displayed to set time and select 12 or 24 hour format. When setting clock, press trip button to cycle through selections, then hold trip button to make selection.

### **Gear Indicator**

The current gear (1-6) shows next to the odometer. The gear number is blank if the vehicle is not moving, the transmission is in neutral, or the clutch lever is pulled in.



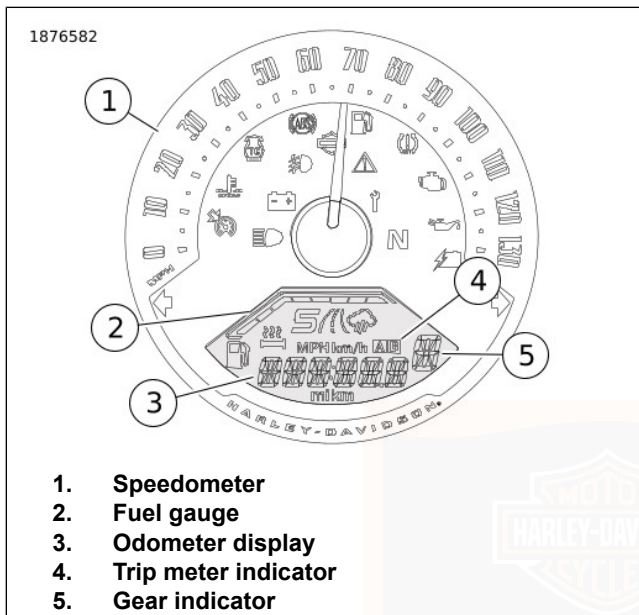


Figure 23. Instruments

## INDICATORS

### Check Engine Lamp

See Figure 24. The check engine lamp indicates the condition of the engine/engine management system.

The check engine lamp normally comes on when the ignition is first turned on. During this time, the engine management system runs a series of self-diagnostics.

If the engine lamp does not turn off after starting the engine or comes on at any other time, see a Harley-Davidson dealer.

### Low Fuel Lamp

**Solid:** See Figure 24. The low fuel warning lamp indicates when the gasoline in the tank reaches the low fuel level (approximate). Refer to OWNER MANUAL > SPECIFICATIONS (Page 31) for the low fuel level. See OPERATION > ODOMETER WINDOW DISPLAYS (Page 88) for fuel range features.

**Flashing:** If the low fuel lamp flashes continuously or remains on after filling the fuel tank, see a Harley-Davidson dealer.

### Battery Discharge Lamp

See Figure 24. The battery discharge lamp indicates overcharging or undercharging of the battery. Refer to SERVICE PROCEDURES > BATTERY MAINTENANCE (Page 162).

### Security Lamp

See Figure 24. The security lamp displays the status of the security system and electrical self-diagnostics for the

motorcycle. Refer to OWNER MANUAL > SECURITY SYSTEM (Page 59) 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

**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 24. The headlamp high beam lamp is on when the high beam or flash to pass switch is activated.

## Neutral Lamp

See Figure 24. The neutral lamp is on when the transmission is in neutral.

## Cruise Control Lamp (If Equipped)

**Off:** Cruise control is not enabled.

**Orange:** Cruise control is enabled. Cruising speed is not set or has been disengaged.

**Green:** Cruising speed is set. Motorcycle speed is maintained by the cruise control system.

## Auxiliary/Fog Lamp Indicator Lamp (If Equipped)

The auxiliary/fog lamp indicator is on when the auxiliary/fog lamps are turned on (for equipped models).

## ABS Lamp

### ⚠ WARNING

**If ABS lamp continues flashing at speeds greater than 5 km/h (3 mph) 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:** See Figure 24. On vehicles with ABS, 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 5 km/h (3 mph). 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 (If Equipped)

See Figure 24.

**Solid:** Traction control has been turned off.

**Slow flashing:** The traction control 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 5 km/h (3 mph). Traction control is not operational until the lamp turns off.

**Rapid 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.

### Brake Fluid Service Indicator

See Figure 24. The brake fluid service Indicator (9) turns on when the vehicle has detected that it requires an ABS bleed procedure to be performed. See a Harley-Davidson dealer for service.

### Load Shedding Indicator

See Figure 24. The load shedding indicator (amber color) turns on when all accessory power has been shut off because of low battery voltage. Refer to: SERVICE PROCEDURES > BATTERY MAINTENANCE (Page 162).

### Oil Pressure Lamp

<b>NOTICE</b>
---------------

**If the oil pressure indicator lamp remains lit, always check the oil supply first. If the oil supply is normal and the lamp is still lit, stop the engine at once and do not ride further until the trouble is located and the necessary repairs are made. Failure to do so may result in engine damage. (00157a)**

See Figure 24. The oil pressure lamp turns on when the ignition is turned on. The lamp remains on until the engine is started.

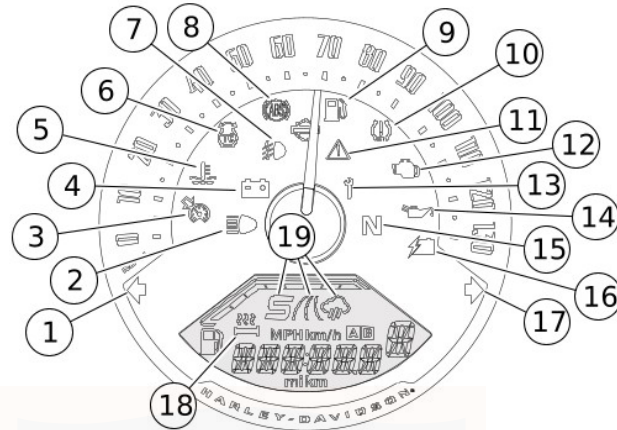
If the lamp is on while the engine is running, sufficient oil is not circulating through the engine.

Check and add engine oil as necessary. Refer to: MAINTENANCE AND LUBRICATION > CHECK ENGINE OIL

LEVEL (Page 134). For other possible causes, see TROUBLESHOOTING > ENGINE (Page 183).

If the engine oil level is sufficient and the lamp remains on, stop the engine immediately. See a Harley-Davidson dealer for service.





- |     |                              |     |                                 |
|-----|------------------------------|-----|---------------------------------|
| 1.  | Left turn signal             | 11. | Fault alert                     |
| 2.  | Headlamp high beam           | 12. | Check engine                    |
| 3.  | Cruise control               | 13. | Brake fluid service             |
| 4.  | Battery discharge            | 14. | Oil pressure                    |
| 5.  | Coolant temperature          | 15. | Neutral indicator               |
| 6.  | Traction control             | 16. | Load shed                       |
| 7.  | Not used                     | 17. | Right turn signal               |
| 8.  | ABS                          | 18. | Heated hand grips (if equipped) |
| 9.  | Low fuel                     | 19. | Ride mode                       |
| 10. | Low tire pressure/TPMS fault |     |                                 |

Figure 24. Instrument Module Indicators (typical)

## LEFT HAND CONTROL SWITCHES

### Trip

See Figure 26. **Vehicle off:** Press the trip switch (5) to display the accumulated mileage in the odometer display in the Instrument Module (IM).

**Vehicle in accessory/ignition mode:** Press the trip switch to cycle through the widget displays.

**If heated hand grips installed:** Press trip switch to cycle through the widget displays to get to HG (LOW, MID or HIGH) in the odometer display. Long Press the Trip switch to turn the grips OFF. It does not matter if the grips are in low, medium or high.

### Headlamp

**High beam:** See Figure 25. Push the headlamp switch up to activate the high beam. The (blue) high beam indicator in the IM is lit when the high beam is on. Refer to Table 29.

**Low beam:** Press the headlamp switch down 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 IM is illuminated as long as the flash to pass switch is pressed.

When in accessory, press the headlamp (flash-to-pass) switch to activate the headlamp. Refer to Table 29.

### Cruise Control Switch Assembly

See Figure 26. The CRUISE/SET/RESUME switch assembly (2, 3, 4) automatically regulates the speed of the vehicle. Refer to: OPERATION > CRUISE CONTROL (Page 107).

**CRUISE:** Press the CRUISE OFF/ON button (3) to enable cruise control. The cruise control indicator in the IM lights orange. Pressing the CRUISE OFF/ON button again turns off cruise control, and the cruise control indicator turns off.

**SET/-:** With cruise control enabled, press SET/- (4) to set the cruising speed. The cruise control indicator in the IM lights green. While at cruising speed, press SET/- to decrease the regulated speed. Tapping SET/- decreases the speed by 1.6 km/h (1 mph). Holding SET/- down gradually decreases cruise speed.

**RES/+:** If cruise control is disengaged (such as a braking event), press RES/+ (2) to resume the previous cruising speed. While at cruising speed, press RES/+ to increase speed. Tapping RES/+ increases the speed by 1.6 km/h (1 mph). Holding RES/+ down gradually increases cruise speed.

Refer to Table 29.

## Auxiliary/Fog Lamps

The auxiliary/fog lamps provide additional light to the road and surrounding environment in dark or rainy conditions. The lamps also give the motorcycle more visibility to other motorists. When the lamps are on, the auxiliary/fog lamp indicator is displayed on the instrument cluster.

See Figure 26. Press the auxiliary/fog lamps switch (7) to activate the auxiliary/fog lamps. Refer to Table 29.

**Domestic/Canada configurations:** The auxiliary/fog lamps are configured to automatically turn off when the high beam headlamp is turned on, except as required by state/province.

Auxiliary/fog lamps can be configured to turn on or off with high beam by the dealer, based on legal requirements for each location.

## Left Turn Signal

**Activate:** See Figure 26. Press the left turn signal (8) switch to activate the left turn signal. Refer to Table 29.

**Cancel (manual operation):** If activated, press the left turn signal switch to cancel the left turn signal.

**Cancel (automatic operation):** If activated, 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.

## Horn

See Figure 26. The horn is operated by pressing the horn switch (6). 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 29.

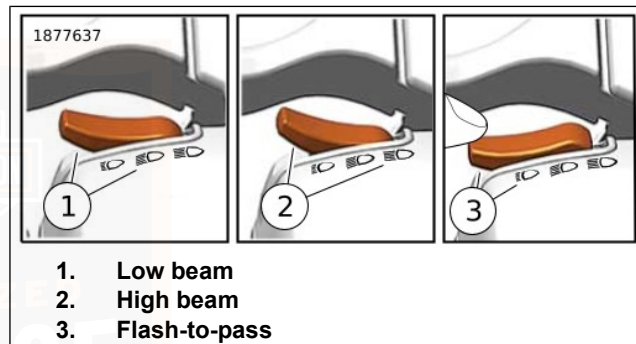


Figure 25. Headlamp Switch

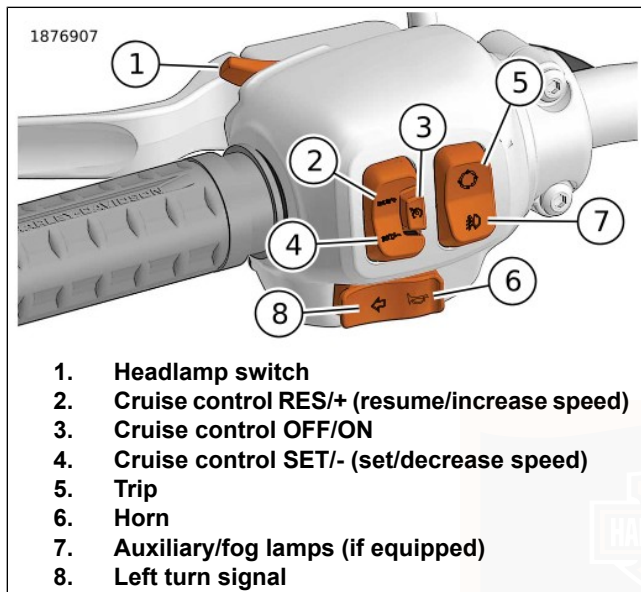


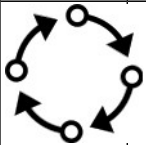



Figure 26. Left Hand Control Module (LHCM)

Table 29. Left-Hand Control Switches

SWITCH	NAME	FUNCTION
	Flash-to-pass	Press and release to flash the high beam. In ACC, press to activate the headlamp.
	Low beam	Press down to switch the headlamp to low beam.
	High beam	Press up to switch the headlamp to high beam.
	Cruise control ON/OFF	Press to turn cruise control ON or OFF.
SET/-	Cruise control set/decrease speed	Press to set cruise control speed.
RES/+	Cruise control resume/increase speed	Press to resume to a set cruise control speed.



**Table 29. Left-Hand Control Switches**

SWITCH	NAME	FUNCTION
	Trip	Press to display odometer or alternate widgets.
	Horn	Press to sound the horn.
	Auxiliary/fog lamps	Press the switch to activate the auxiliary/fog lamps.
	Left turn	Press to signal a left turn.

## RIGHT HAND CONTROL SWITCHES

### Traction Control Switch

See Figure 27. The traction control switch activates and deactivates the traction control system on equipped vehicles. Refer to Table 30.

**Disable:** Press switch for more than 1 s with engine running and vehicle stopped.

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

#### NOTE

*Traction control is automatically enabled at each ignition start cycle. The system will be enabled to the last active Traction Control mode.*

*For more information on traction control, see OPERATION > TRACTION CONTROL (Page 102).*

### Hazard Warning 4-Way Flasher

See Figure 27. The hazard switch (2) 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 30.

1. With the OFF/RUN/START switch in the RUN (3) position, press the hazard warning switch 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/START switch position. Refer to: OPERATION > STARTING AFTER TIPOVER (Page 95).*

2. Turn OFF/RUN/START switch to the OFF (4). The 4-way flashers continue for 2 hours or until cancelled by the rider.
3. To cancel, turn the OFF/RUN/START switch to RUN. Press the hazard warning switch.

## OFF

See Figure 27. Press the engine OFF/RUN/START switch to OFF (4) to shut off the engine. Refer to Table 30.

## RUN

See Figure 27. Push the engine OFF/RUN/START switch to RUN (3) to enable engine start and run. The engine OFF/RUN/START switch must be in the run position to start or operate the engine. Refer to Table 30.

## Start

1. See Figure 27. Switch the OFF/RUN/START switch to RUN (3). Shift the transmission to neutral. The neutral (green) indicator illuminates. Refer to: OPERATION > STARTING THE ENGINE (Page 93).
2. Press the start switch (5) to operate the starter motor.

### NOTE

- *When the starter is activated, the headlamp is momentarily turned off to reduce battery load.*

- *If the engine does not start, the starter motor runs for ten seconds and stops. Press the start switch to try again. After several unsuccessful attempts to start the engine, see a Harley-Davidson dealer.*

## Right Turn Signal

### Activate:

See Figure 27. Press the right turn signal switch (6) to activate the right turn signal. Refer to Table 30.

**Cancel (manual operation):** If activated, Press the right turn signal switch to cancel the right turn signal.

**Cancel (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.*

## Mode

See Figure 27. Press the mode button (7) to change the ride mode. Refer to: OPERATION > RIDE MODES (Page 92). Refer to Table 30.

### NOTE

*Last active mode is automatically enabled at each ignition start cycle and when enabled.*

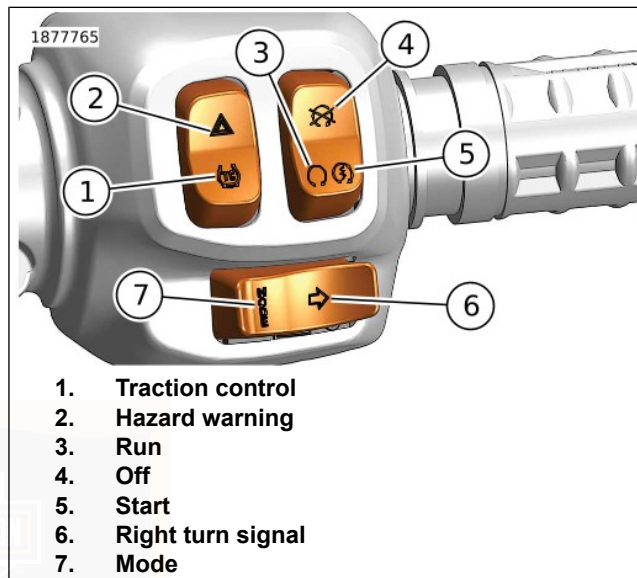
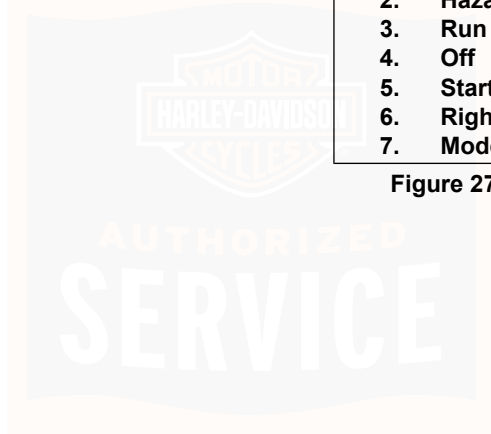







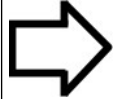
Figure 27. Right Hand Control Module (RHCM)



**Table 30. Right Hand Control Switches**

SWITCH	NAME	FUNCTION
	Hazard	Press to activate the 4-way flashers.
	Traction control	Press the switch to deactivate and activate traction control.
	Off	Press to stop the engine or to prevent the engine from starting.
	Start	Press to start the engine.
	Run	Press to allow the engine to start.

**Table 30. Right Hand Control Switches**

SWITCH	NAME	FUNCTION
	Right turn	Press to signal a right turn.
	Mode	Press to change the ride mode.
	<b>MODE</b>	

## ODOMETER WINDOW DISPLAYS

### Time

Press and release the trip switch to cycle through the odometer window displays to the time display. To set the time:

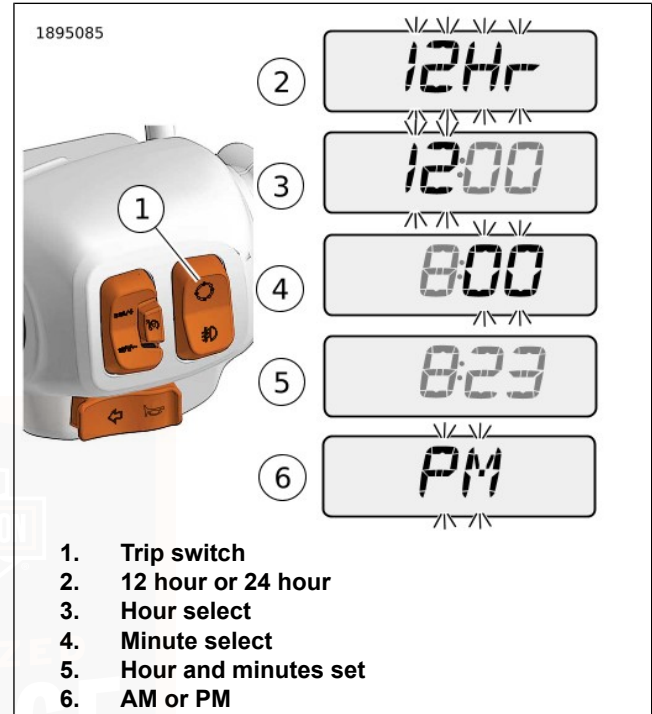
1. Turn OFF/RUN/START switch to RUN.
2. See Figure 28. Press and release the trip switch (1) until time (hour and minutes) is displayed. Press and hold the trip switch until 12Hr (2) begins to blink in the display window. Release the switch.
3. Press and release the trip switch once to advance to a blinking 24Hr or military style time display. Each time you press and release the switch, the display switches between 12Hr and 24Hr.

4. When the desired time style is displayed, press and hold the trip switch until the hours display (3) is blinking.
5. Press and release the trip switch repeatedly to advance the hours.
6. When the correct hour is displayed, press and hold the trip switch until the minutes display (4) starts blinking.
7. Press and release the trip switch repeatedly to advance the minutes display.
8. When the correct minutes are displayed (5), press and hold the trip switch until the display advances to the selection of AM or PM (6).

**NOTE**

*AM or PM does not appear in the regular time display. The motorcycle uses the selection for diagnostic purposes.*

9. In the 12Hr display, AM or PM flashes. Select AM or PM with the trip switch. Press and hold the switch for five seconds.
10. Turn OFF/RUN/START switch to OFF.



**Figure 28. Time Displays**

## Fuel Range

See Figure 29. The fuel range display (1) shows the approximate mileage available with the amount of fuel left in the fuel tank.

With OFF/RUN/START switch in the RUN position, press the trip switch until fuel range is displayed, as indicated by the letter "R" in the left side of the display. The calculated remaining distance (miles or kilometers) to empty is displayed, based on the amount of fuel in tank. Range can be accessed at any time using the trip switch.

## Low Fuel Warning

When the low fuel warning lamp illuminates, the fuel range feature automatically displays in the odometer window. The rider can press the trip switch to return to the cycle of odometer displays. The fuel range warning is not repeated until the OFF/RUN/START switch is cycled to OFF and back to RUN.

See Figure 29. After the fuel range drops to approximately 10 miles or 10 kilometers remaining, the fuel range display will scroll "R LO" (2) to indicate that the motorcycle will shortly run out of fuel.

Resetting the low fuel warning lamp and range requires OFF/RUN/START switch to be cycled. Always turn the OFF/RUN/START switch to OFF when fueling.

**Disable:** To disable this function while riding, press and hold the trip switch while in the fuel range display mode. The automatic range pop-up feature indicates that it is disabled when it blinks twice.

**Enable:** To enable the automatic low fuel warning range display, press and hold the trip switch. The low fuel range blinks once when the automatic feature is enabled.

### NOTE

- *When the low fuel warning lamp turns on, the fuel level is low. Refuel as soon as possible.*
- *The range display is only updated when the vehicle is moving.*
- *The automatic fuel range display is enabled after the ignition is turned OFF-RUN.*

## Tip Indicator

### ⚠ WARNING

**If tip occurs, check all controls for proper operation. Restricted control movement can adversely affect the performance of the brakes, clutch or ability to shift, which could result in loss of vehicle control and death or serious injury. (00350a)**

See Figure 29. Should motorcycle be tipped over, the word "TIP" (3) appears in the odometer window. The engine can not start until reset.

#### NOTE

*The four-way flashers will operate when the vehicle is tipped over.*

**Reset:** Refer to: OPERATION > STARTING AFTER TIPOVER (Page 95).

## No Fob Message

See Figure 29. If the motorcycle is driven off leaving the fob behind, "NO FOB" (4) temporarily displays in the odometer window.

With the motorcycle separated from its assigned fob, the motorcycle can only be started with a manual PIN entry to disarm the security system. See SECURITY SYSTEM > ARMING AND DISARMING (Page 64).

## Sidestand Message

See Figure 29. On international (HDI) models, a "SIDE-STAND" (5) message will scroll across the display if the motorcycle is placed into gear while the jiffy stand is down. See BEFORE RIDING > OPERATING JIFFY STAND (Page 52).

## Stop Lamp Message

### ▲ WARNING

**The stop lamp fault message indicates a potential stop lamp malfunction. Move the motorcycle out of traffic and stop in a safe location. Contact a Harley-Davidson dealer for repair. Operating a motorcycle without a functioning stop lamp can lead to an accident which could result in death or serious injury. (16604a)**

See Figure 29. A "STOP LAMP FAULT" (6) message will scroll across the display if the stop lamp switch is not operating.

Press and release the trip switch to remove the message.

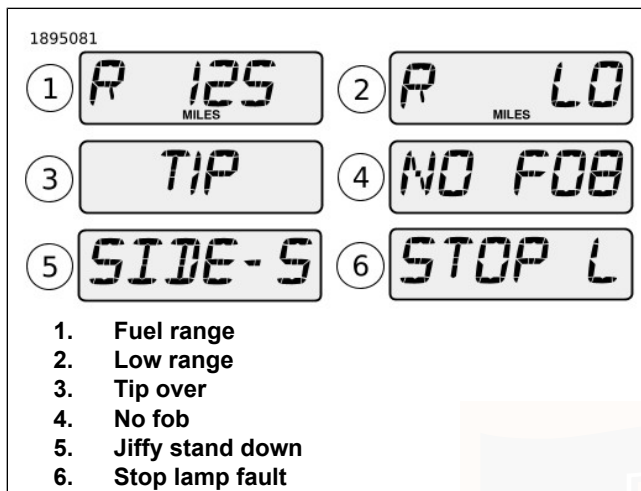


Figure 29. Odometer Window Displays

## RIDE MODES

### Ride Modes

Refer to Table 31. The ride mode icon displays the currently selected ride mode. The selected ride mode can be changed using the mode button on the Right Hand Control Module (RHCM). Refer to: OPERATION > RIGHT HAND CONTROL SWITCHES (Page 85).




### NOTE

*If a fault is detected, the fault alert indicator will illuminate.*

- **Road:** Delivers balanced performance with an intuitive blend of technology for daily use, with Anti-lock Braking System (ABS) and Traction Control System (TCS) intervention that offers peace of mind.
- **Rain:** This mode offers restrained acceleration and limited engine braking with higher levels of ABS and traction control intervention to give the rider greater confidence when riding in the rain or when traction is otherwise limited. The Rain Mode is also an appropriate setting for riders to build confidence as they become familiar with the motorcycle.
- **Sport:** Delivers the full performance potential of the motorcycle in a direct and precise manner, with full power and the quickest throttle response on tap. Traction control is set to its lowest level of intervention intended/appropriate for on-road use, and engine braking is increased. Sport Mode maximizes the rider connection to the motorcycle for a direct and visceral performance riding experience.



**Table 31. Ride Modes**

ICON	Ride Mode
	Road
	Rain
	Sport

## ELECTRONIC THROTTLE CONTROL (ETC)

This motorcycle has an Electronic Throttle Control (ETC). Instead of using a mechanical cable connection to the throttle body, this technology uses redundant grip sensors to indicate rider requested throttle position to the Electronic Control Module (ECM). The ECM then regulates proper fuel/air intake and ignition timing based on the rider's actions.

The Electronic Control Module (ECM) monitors the status of the grip sensors, throttle plate actuation and airflow. If Trouble Codes are detected, the ECM disables cruise control, illuminates the check engine lamp and will transition to one of the following modes.

## ETC Limited Performance Mode

The rider experiences near-normal operation. The motorcycle operates with provisions to guard against unintended acceleration.

## ETC Power Management Mode

The throttle plate actuator returns to an "idle detent" or "limp-home" position, which provides enough torque to achieve speed of about 40 km/h (25 mph). The motorcycle's response to grip sensor input is reduced.

## ETC Forced Idle Mode

The throttle plate actuator is forced to a "fast idle" position, which provides enough torque to crawl, but not enough torque to operate at traffic speeds.

## ETC Forced Shut Down Mode

The engine is forced to shut down.

## STARTING THE ENGINE

### **▲ WARNING**

**Shift transmission to neutral before starting engine to prevent accidental movement, which could result in death or serious injury. (00044a)**

## NOTICE

**The engine should be allowed to run slowly for 15-30 seconds. This will allow the engine to warm up and let oil reach all surfaces needing lubrication. Failure to comply can result in engine damage. (00563b)**

### NOTE

*Do not open the throttle before starting the engine.*

1. Bring an assigned fob within range.
2. See Figure 30. Switch the OFF/RUN/START switch to the RUN (3) position.

### NOTE

- *When ignition is ON the check engine light will light and stay on until engine is started. Service would be required when the engine is started and the check engine light stays on.*
- *The fuel pump may run for a few seconds to prime the fuel system prior to starting.*
- *As the switch is placed in the RUN position a click noise will be heard as the automatic compression release (ACR) valve opens allowing for easier starting. If the engine is not started within approximately 10 seconds a second click will be heard as the ACR valve closes.*

3. Though the illuminated green neutral lamp indicates that the transmission is in neutral, verify neutral by rolling the motorcycle back and forth with the clutch lever out.
4. Squeeze the clutch lever against the handlebar.
5. Press the start switch (5).
6. When the engine has started, you can operate your motorcycle as you normally would after raising the jiffy stand.

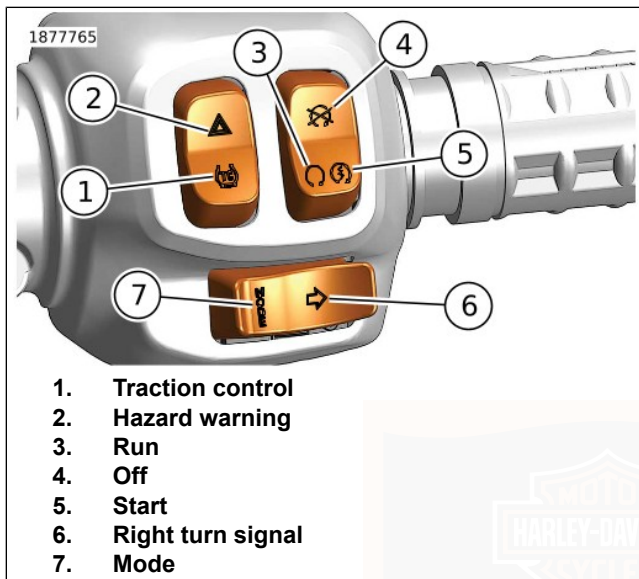


Figure 30. Right Hand Control Module (RHCM)

## STARTING AFTER TIPOVER

### ▲ WARNING

If tip occurs, check all controls for proper operation. Restricted control movement can adversely affect the performance of the brakes, clutch or ability to shift, which could result in loss of vehicle control and death or serious injury. (00350a)

### NOTE

- If the motorcycle is tipped over, the word "tIP" appears in the odometer window and four-way flashers activate.
- The engine cannot start 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/START switch to OFF.
3. Wait 45 seconds.
4. Cycle the OFF/RUN/START switch to RUN.
5. Push hazard switch to turn four-way flashers off.

## ENGINE IDLE TEMPERATURE MANAGEMENT SYSTEM (EITMS)

The Engine Idle Temperature Management System (EITMS) can provide limited cooling of the rear cylinder for riders who

frequently find themselves in prolonged idle conditions or traffic congestion.

## Operation

When engine temperature reaches a predetermined point, the EITMS turns off the rear cylinder fuel injector. The rear cylinder becomes an "air pump" which works to cool the engine.

EITMS activates (rear cylinder turns off) when **all** of the following conditions are met:

- Ambient temperature or engine temperature exceeds temperature threshold.
- Throttle control is at idle.
- Vehicle speed under 2 km/h (1 mph).
- Engine speed under 1200 rpm.

### NOTE

*EITMS does not activate within the first four minutes after starting the vehicle.*

EITMS disables (rear cylinder begins firing again) if **any one** of the following occurs:

- Ambient temperature or engine temperature falls below temperature threshold.

- Throttle control is above idle.
- Vehicle speed exceeds 3 km/h (2 mph).
- Engine speed exceeds 1350 rpm.
- Clutch is released with vehicle in gear.

When the engine is in EITMS operation, you may notice a difference in idle cadence. Additionally, there may be a unique exhaust odor. These are both considered to be normal conditions.

## Enabling/Disabling EITMS

### NOTE

*EITMS is enabled from the factory.*

**Enabled:** The EITMS engine cooling feature automatically activates whenever the vehicle comes to a complete stop and is idling during elevated temperature conditions. When the feature is enabled, it may not activate under cool riding conditions.

**Disabled:** The EITMS feature is not active under any conditions.

EITMS can be enabled or disabled by performing the following procedure.

1. Bring an assigned fob within range. Push the engine OFF/RUN/START switch on the right handlebar to the RUN position (the motorcycle may be running or not running).
2. Push the throttle to roll-off position and hold.
3. See Figure 24. After approximately 6 seconds, the cruise control lamp will either flash green (EITMS enabled) or orange (EITMS disabled).
4. Repeat the procedure as necessary to enable or disable EITMS.

#### NOTE

- A flashing cruise lamp indicates the EITMS setting. A solid (non-flashing) lamp indicates the cruise control setting.
- The EITMS setting remains in effect until it is changed by the rider or dealer. There is no need to reconfigure EITMS at each startup.

## STOPPING THE ENGINE

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

#### NOTE

If the engine stalls or stops for any reason, push the OFF/RUN/START switch to OFF to prevent battery discharge.

## SIDE-MOUNTED LICENSE PLATE

See Figure 31. Some models have a side-mounted license plate assembly. The license plate must be in the extended position during operation. This feature may not be available in all markets.

The side-mounted license plate assembly includes an LED lamp module. If the LED lamp fails, see a Harley-Davidson dealer for assembly replacement.

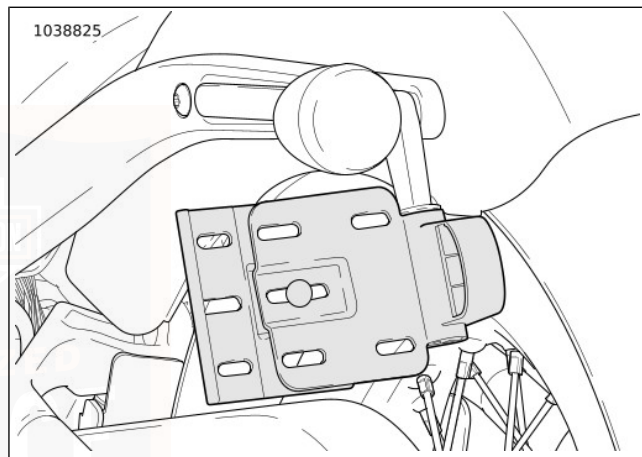


Figure 31. Side-Mounted License Plate Assembly

## BRAKE SYSTEM

### 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 32. The front brake hand lever (1) controls the front wheel brake. The brake lever is located on the right handlebar. Operate the hand lever with the fingers of the right hand.

### Rear Brake Pedal

See Figure 32. The rear brake pedal (2) controls the rear wheel brake. The brake pedal is located on the right side. Operate the rear brake pedal with the right foot.

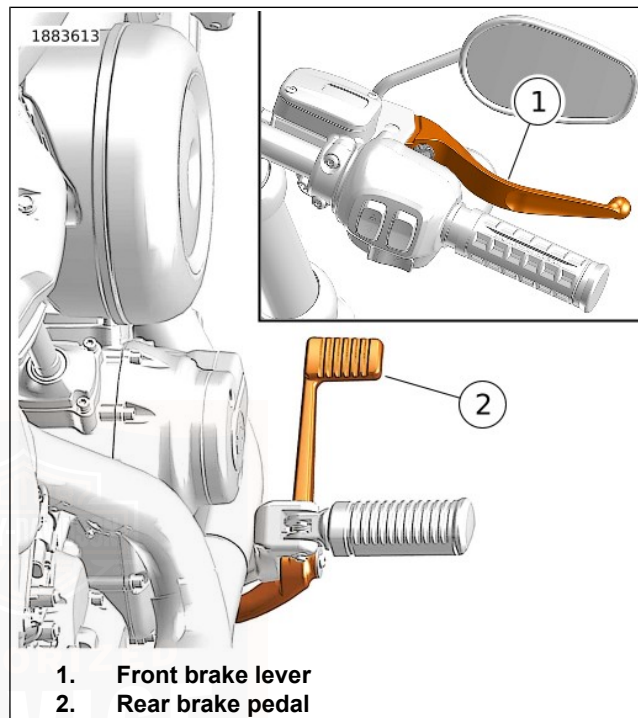
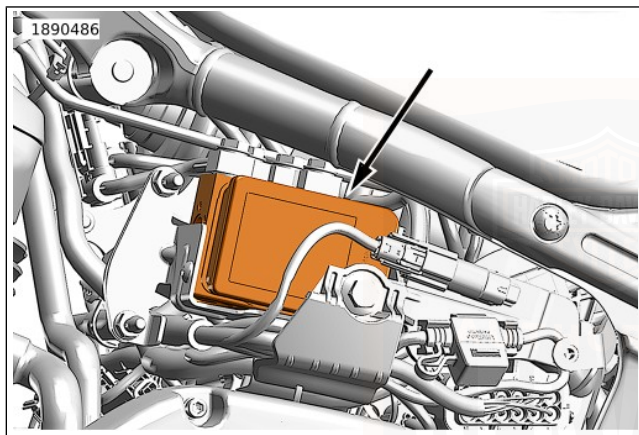


Figure 32. Brake Controls (typical)

## Anti-lock Brake System (ABS)

Harley-Davidson's anti-lock brake system assists the rider in maintaining control when braking in a straight-line emergency situation. ABS operates independently on 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.

See Figure 33. Models with ABS have ABS module (EHCU) located behind left side cover.



**Figure 33. ABS Module (EHCU)**

## How ABS Works

The ABS monitors sensors at the front and rear wheels to determine wheel speed. If the system detects one or both wheels are slowing down too quickly, which indicates they are close to locking, the ABS reacts. If the deceleration rate does not match a criteria stored in memory, the ABS also reacts. The system rapidly opens and closes valves to modulate the brake caliper pressure utilizing only the brake lever/pedal pressure being applied by the rider. During ABS activation, the system provides the electronic equivalent of manually pumping the brakes. ABS is capable of cycling up to seven times per second.

The rider recognizes ABS activation by the slight pulsing sensation in the hand lever or the rear brake pedal. The pulsing sensation may also be accompanied by a clicking sound from the ABS module. Both are the result of normal operation. Refer to Table 32.

For more information visit [www.harley-davidson.com/abs](http://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 upright with both wheels straight.

Harley-Davidson ABS is a manual assist system. When stopping in 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 reaches approximately 6 km/h (4 mph) and ABS is no longer needed.

**⚠ WARNING**

**ABS cannot prevent lockup of rear wheel due to engine braking. ABS will not aid in cornering or on loose/uneven surfaces. A locked wheel will skid and can cause loss of vehicle control, which could result in death or serious injury. (00362a)**

**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-sized tires can alter the rotational speed. This 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 specified in Refer to: OWNER MANUAL > SPECIFICATIONS (Page 31). can reduce ABS braking performance.

**Table 32. ABS Symptoms and Conditions**

SYMPTOM	CONDITION
ABS lamp continuously lit	ABS malfunction 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 5 km/h (3 mph). ABS is not operational until the lamp turns off. If the lamp continues flashing at speeds greater than 5 km/h (3 mph), 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.



**Table 32. ABS Symptoms and Conditions**

<b>SYMPTOM</b>	<b>CONDITION</b>
"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, engine braking (high engine RPMs causing the rear wheel to slow down), 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. Engine braking (high engine RPMs causing the rear wheel to slow down) or down shifting 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 5 km/h (3 mph) or on rear wheel below 8 km/h (5 mph).

## **CORNERING RIDER SAFETY ENHANCEMENTS**

### **Cornering Enhanced ABS (C-ABS) Functions**

The Cornering Anti-lock Braking System (C-ABS) is a variant of the ABS that takes into consideration the lean angle of the motorcycle. While cornering, the available grip for braking is reduced and C-ABS automatically compensates for this.

For additional ABS information, see OPERATION > BRAKE SYSTEM (Page 98).

### **Tire Pressure Monitoring System (TPMS) (If Equipped)**

TPMS alerts the rider to low tire air pressure. Maintaining proper tire air pressure is important both for safety and for tire life. The TPMS displays current front and rear tire pressure

on the IM and displays an indicator to alert the rider when tire pressure is low, and the pressure should be checked.

## **Cornering Enhanced Traction Control (C-TCS), and Front Lift Mitigation (FLM)**

### **How Cornering Enhanced Traction Control Works**

The Cornering Enhanced Traction Control System (C-TCS) is a variant of TCS that takes into consideration the lean angle of the motorcycle. C-TCS is designed to prevent the rear wheel from excessive spinning under acceleration while cornering. The action of C-TCS is tailored when cornering based on lean angle. Each pre-programmed ride mode has a specific level of C-TCS. For models equipped with customizable ride modes the rider can select from three levels of C-TCS intervention.

C-TCS is also designed to support Front-Wheel Lift Mitigation (FLM) 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 Ride Mode, with Rain being the most-restrictive and Sport being the least-restrictive of the standard modes. Turning off TCS fully disables both TCS and FLM.

For additional TCS information see OPERATION > TRACTION CONTROL (Page 102).

## **Cornering Enhanced Drag-Torque Slip Control System (C-DSCS)**

The Cornering Enhanced Drag-Torque Slip Control System (C-DSCS) is a variant of Drag-Torque Slip Control System (DSCS) that uses the lean angle of the motorcycle while cornering to tailor the action of Cornering Drag-Torque Slip Control System (C-DSCS) to prevent rear wheel lock.

For additional DSCS information, see OPERATION > TRACTION CONTROL (Page 102).

For additional information on Cornering Rider Safety Enhancements Refer to: [www.h-d.com/rdrs](http://www.h-d.com/rdrs)

## **TRACTION CONTROL**

### **How Traction Control Works**

The TCS is designed to prevent the rear wheel from “spinning out” while accelerating. Traction-control can improve rider confidence when available traction is reduced due to wet weather, a change in road surface or unpaved roads. Each pre-programmed ride mode has a specific level of TCS intervention.

During start-up, the traction-control lamp flashes simultaneously with the ABS lamp to indicate that the system is performing a wheel speed sensor check. The traction control system is operational during the wheel speed sensor check.

After the sensor check is complete the traction control lamp should turn 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 ignition start cycle.

See Figure 27. The TCS can be disabled by pressing and holding the traction control switch for one full second anytime the vehicle is at a complete stop and the engine is running.

Changing to Rain Mode will automatically re-enable TCS, but TCS may be disabled again after Rain Mode has been selected. TCS can be re-activated with the push of a button on the right hand control when the motorcycle is stopped or underway. The traction control indicator will illuminate and remain illuminated to indicate traction control and front lift mitigation are disabled. However, if the TCS lamp remains

on with the fault alert indicator, it means the traction control system has faulted, if this occurs see an authorized Harley-Davidson dealer.

During some fault conditions Traction Control will be enabled with degraded function and cannot be disabled.

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

## Drag-Torque Slip Control System (DSCS)

Drag-Torque Slip Control (DSCS) is designed to reduce excessive rear-wheel slip and help prevent rear-wheel lock under deceleration, which typically occurs when the rider makes an abrupt down-shift gear change or decelerates on wet or slippery road surfaces.

When DSCS detects excessive rear wheel slip under deceleration it will adjust engine torque delivery to better match rear-wheel speed to road speed.

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

**Table 33. Traction Control Symptoms and Conditions**

SYMPTOM	CONDITION
Traction control lamp off	Traction control system active.
Traction control lamp continuously lit	Traction control system deactivated by user.

**Table 33. Traction Control Symptoms and Conditions**

<b>SYMPTOM</b>	<b>CONDITION</b>
Traction control lamp and security/fault indicator lamp continuously lit	Traction control system faulted.
Traction control lamp flashing	Normal condition. Traction control intervention.
Reduction of throttle response during a traction control event	Normal condition. Traction control intervention.
"Surge" sensation while decelerating	Normal condition. Drag torque slip control intervention.

## SHIFTING GEARS

### NOTICE

**The clutch must be fully disengaged before attempting a gear shift. Failure to fully disengage the clutch can result in equipment damage. (00182a)**

### Stopped, Engine Off

Slowly pull clutch hand lever in against handlebar grip to fully disengage clutch. Gears do not engage because the transmission shafts are not turning and shifter components are not lined up. Rock the motorcycle backward and forward while lightly pressing the shift lever.

### Starting from a Stop

#### NOTE

*Always start the engine with the transmission in neutral. Always start forward motion in first gear.*

1. With the engine running and the jiffy stand retracted, pull the clutch hand lever against the handlebar grip to disengage the clutch.
2. Press the gear shift lever down to the end of its travel and release. The transmission is now in first gear.
3. Ease out the clutch lever and at the same time, gradually open the throttle.

### Upshift (Acceleration)

See Figure 34. Engage the next higher gear when the motorcycle reaches the shifting speed. Refer to Table 34.

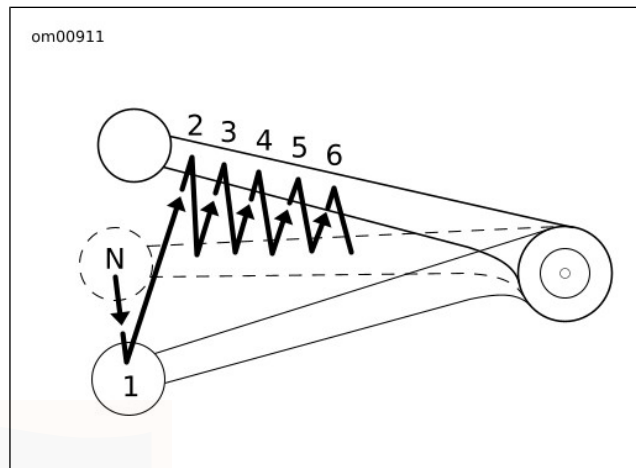
**Table 34. Recommended Upshift Speeds**

<b>GEAR CHANGE</b>	<b>mph</b>	<b>km/h</b>
First to second	15	25
Second to third	25	40
Third to fourth	35	55
Fourth to fifth	45	70
Fifth to sixth	55	85

1. Close the throttle.
2. Slowly pull clutch hand lever in against handlebar grip to fully disengage clutch.
3. Lift the gear shift lever up to the end of its travel and release.
4. Ease out the clutch lever and gradually open the throttle.
5. Repeat the previous steps to engage remaining gears.

**NOTE**

- *Disengage the clutch completely before each gear change.*
- *Partially open the throttle so the engine does not drag when the clutch lever is released.*



**Figure 34. Shifting Sequence: Upshift**

**Downshift (Deceleration)**

**⚠ WARNING**

**Do not downshift at speeds higher than those listed. Shifting to lower gears when speed is too high can cause the rear wheel to lose traction and lead to loss of vehicle control, which could result in death or serious injury. (00045b)**

See Figure 35. When speed decreases, as when climbing a hill or slowing for a turn, shift to the next lower gear. Refer to Table 35.

**Table 35. Recommended Downshift Speeds**

GEAR CHANGE	mph	km/h
Sixth to fifth	50	80
Fifth to fourth	40	65
Fourth to third	30	50
Third to second	20	30
Second to first	10	15

**NOTE**

*The shifting points shown in the table are recommendations. Individual shifting points can differ from the table.*

1. Close the throttle.
2. Slowly pull clutch hand lever in against handlebar grip to fully disengage clutch.
3. Press the gear shift lever down to the end of its travel and release.
4. Ease out the clutch lever and gradually open the throttle.
5. Repeat the previous steps to engage remaining gears.

**NOTE**

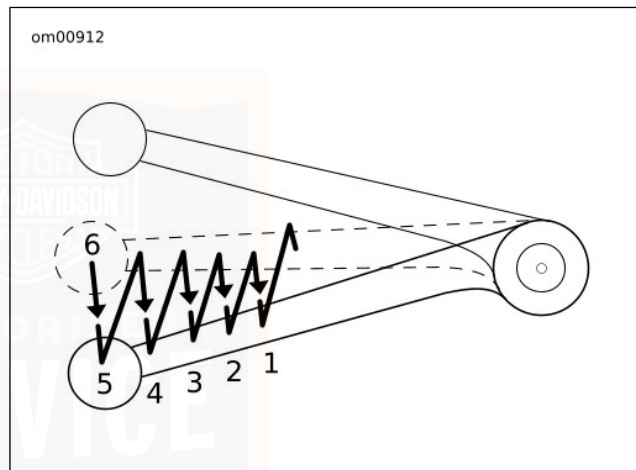
- *Disengage the clutch completely before each gear change.*

- *Partially open the throttle so the engine does not drag when clutch lever is released.*

**NOTICE**

**Shift to neutral before stopping engine. Shifting mechanism can be damaged by shifting gears while engine is stopped. (00183a)**

The gear shifter mechanism permits shifting the transmission to neutral from either first or second gear.



**Figure 35. Shifting Sequence: Downshift**

## CRUISE CONTROL

### NOTE

*Cruise control is optional on some models and may not have been installed.*

### ⚠ 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 engine was started.*

- *Vehicle speed is between 40–145 km/h (25–90 mph) in second or higher gear.*

See Figure 36. Press the CRUISE switch to turn on cruise (1). When on, the cruise icon in the speedometer face glows amber.

## Set Cruise Speed

See Figure 36. When the motorcycle reaches your intended speed, press the SET/- switch to set the cruise speed (2). The amber cruise icon changes to green.

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

## Increase/Decrease Cruise

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

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

## Disengage Cruise

See Figure 36. To drop out of cruise speed, roll the throttle closed through the roll-off switch (3).

Cruise also disengages when the rider:

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

## Resume Cruise

### NOTE

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

See Figure 36. If cruise has been disengaged yet the cruise indicator is amber, pressing the RES/+ switch resumes cruise (4). The icon glows green. The motorcycle automatically resumes cruise at the set speed.

## Turn Cruise Off

Press the CRUISE switch to turn off cruise control. The cruise icon goes blank.





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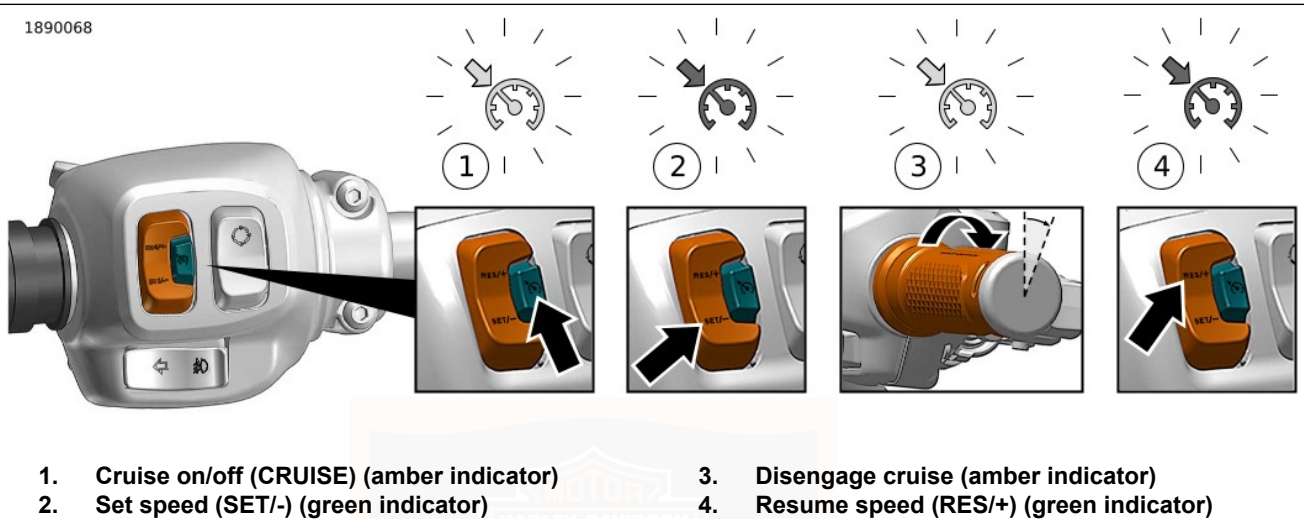


Figure 36. Cruise Control (typical)

## 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. Your motorcycle may be equipped with a USB port to connect with a phone or media device. 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.


Keep USB port covered when not in use.

### NOTE

Do not leave items connected to the USB port unattended.

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

## WINDSHIELD

APPLICABILITY	
	• 2025 HERITAGE CLASSIC (FLHC)

### NOTICE

Polycarbonate windshields/wind deflectors require proper attention and care to maintain. Failure to maintain polycarbonate properly can result in damage to the windshield/wind deflector. (00483e)

### NOTICE

Use only Harley-Davidson recommended products on Harley-Davidson windshields. Do not use harsh chemicals or rain sheeting products, which can cause windshield surface damage, such as dulling or hazing. (00231c)

## Removal

### NOTE

Avoid contact with headlamp assembly to prevent cosmetic damage.

1. See Figure 37. Move the TOP of the windshield assembly (1) forward, until the TOP bracket (2) notches slide away from the grommets (3).
2. Carefully lift the windshield bracket BOTTOM notches off the bottom grommets.

## Installation

1. See Figure 37. Verify grommets (3) and brackets (2) are in place and in good condition.

### NOTE

If damage or wear is noticed, see a Harley-Davidson dealer.

2. Slide the BOTTOM windshield bracket (2) notches onto the bottom grommets (3).
3. Slide the TOP bracket notches onto the top grommets.

### NOTE

Ensure all four mounting points are fully seated into the mounting grommets.

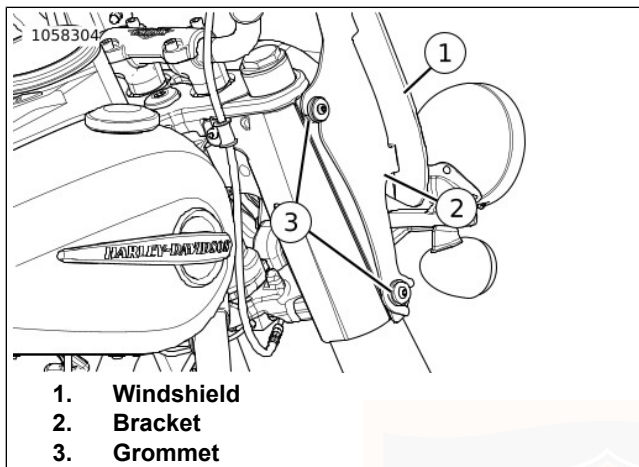


Figure 37. Windshield Assembly

## FAIRING

APPLICABILITY	
<input checked="" type="checkbox"/>	• 2025 LOW RIDER S (FXLRS)

## Removal

1. See Figure 38. Remove fairing.
  - a. Remove the screws and washers (1).

- b. Pull fairing forward to release mounting studs (2) from grommets (3).
- c. Remove fairing.

## Installation

1. Install fairing.
  - a. Place fairing over headlamp and align mounting studs and grommets.
  - b. Push fairing straight back until fully seated.
  - c. Align the clips (2) with holes in bracket.
  - d. Install washers and screws (1). Tighten. 2.3–3.3 N·m (20–30 in-lbs)

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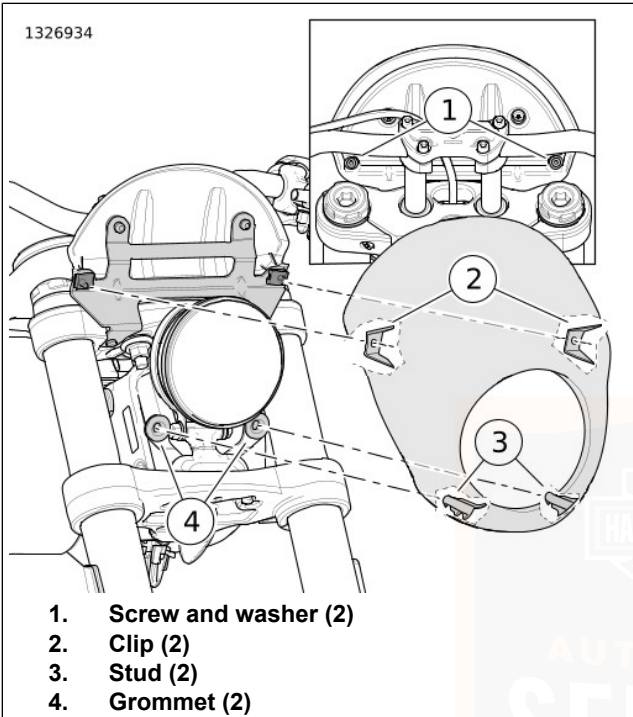


Figure 38. Fairing

## SADDLEBAGS

### APPLICABILITY



- 2025 HERITAGE CLASSIC (FLHC)

### NOTICE

Check that saddlebag frame(s) are fully seated and tightly secured with mounting hardware. Failure to do so could result in the saddlebags becoming detached and/or damaged. (00171b)

### ▲ WARNING

Do not exceed saddlebag weight capacity. Put equal weight in each bag. Too much weight in saddlebags can cause loss of control, which could result in death or serious injury. (00383a)

### NOTE

Maximum saddlebag weight capacity is 6.80 kg (15 lb) in each saddlebag.

## Opening

1. See Figure 39. Unlock saddlebag.
  - a. Insert key into latch button (7) and rotate one-half turn counterclockwise.
  - b. Remove key
2. Press latch button.
3. Lift the lid from the inner side of the saddlebag.

## Closing

1. Close the saddlebag lid.
2. Check that the lid is secure.
3. See Figure 39. Lock saddlebag.
  - a. Insert key into latch button (7) and rotate one-half turn clockwise.
  - b. Remove key

## Removal

1. See Figure 39. Open saddlebags.
2. Use one hand to support the saddlebag and another hand to remove the saddlebag mounting screws (1).

### NOTE

*It is not necessary to remove the O-ring (3) and spacer (2) from the saddlebag mounting screws. O-ring is used to help keep spacer in place but does not need to be present.*

3. Lift saddlebag to disengage the saddlebag docking rod (6) from the mounting bracket grommet (5).

## Installation

1. See Figure 39. Verify spacers (2), O-rings (3), and grommets (5) are in place and in good condition.

### NOTE

*If damage or wear is noticed, see a Harley-Davidson dealer.*

2. Align the saddlebag docking rod with the mounting bracket grommet (5).
3. Align the saddlebag with the mounting holes on the fender support (4).

4. Install saddlebag mounting screws. Tighten.  
Torque: 28.5–36.5 N·m (21–27 ft-lbs) *Saddlebag mounting screws*
5. Close saddlebag.
6. Check that the lid is secure.

**⚠ WARNING**

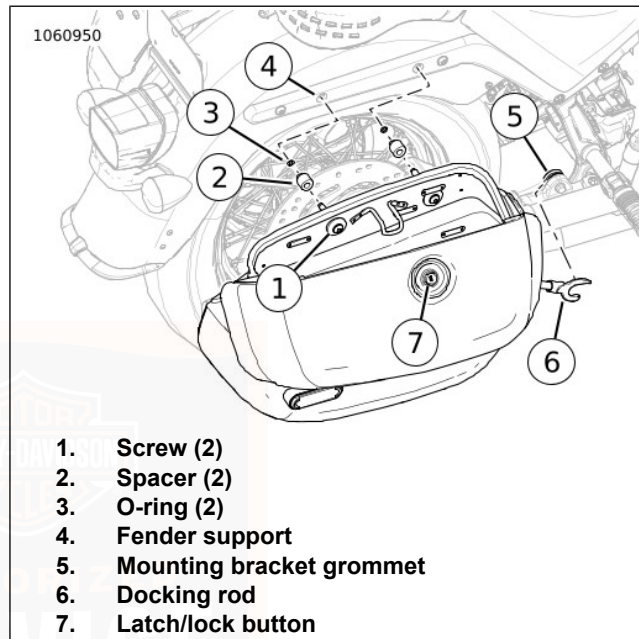
Do not allow passenger to use saddlebags as grab handles. Failure to use a grab strap, designed for passengers to hold onto when riding, could result in death or serious injury. (00081a)

**⚠ WARNING**

See **ACCESSORIES AND CARGO** section within the **SAFETY FIRST** 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. (00021c)

For proper saddlebag loading, see the Accessories and Cargo section of **SAFETY FIRST > SAFE OPERATING RULES** (Page 3).

For proper saddlebag maintenance, see **AFTER RIDING > LEATHER AND VINYL CARE** (Page 127).



**Figure 39. Saddlebag Assembly**

APPLICABILITY	
<input checked="" type="checkbox"/>	• 2025 LOW RIDER ST (FXLRST)

### NOTICE

**Check that saddlebag frame(s) are fully seated and tightly secured with mounting hardware. Failure to do so could result in the saddlebags becoming detached and/or damaged. (00171b)**

### ⚠ WARNING

**Do not exceed saddlebag weight capacity. Put equal weight in each bag. Too much weight in saddlebags can cause loss of control, which could result in death or serious injury. (00383a)**

#### NOTE

*Maximum saddlebag weight capacity is 6.80 kg (15 lb) in each saddlebag.*

## Opening

1. See Figure 40. Unlock saddlebag.
  - a. Insert key into lock (1) and rotate one-quarter turn counterclockwise.

b. Remove key.

2. Lift latch lever (2).

3. Open saddlebag by pulling outer clamshell (3) away from inner clamshell.

## Closing

1. See Figure 40. Close saddlebag.

a. Close clamshell by lifting outer clamshell (3).

b. While holding saddlebag outer clamshell closed lower latch lever (2).

2. Lock saddlebag.

a. Insert key into lock (1) and rotate one-quarter turn clockwise.

b. Remove key.

## Removal

1. See Figure 40. Open saddlebag outer clamshell (3).

2. Pull out and turn lock knob (4) to the unlocked position (5).
3. Close saddlebag outer clamshell and lower latch lever (2).
4. See Figure 42. Slide saddlebag rearward to disengage the saddlebag docking rod (4) from the mounting bracket grommet (5).
5. Lift saddlebag outward away from motorcycle.

## Installation

1. See Figure 40. Open saddlebag outer clamshell (3).
2. Pull out and turn lock knob (4) to the unlocked position (5).
3. See Figure 41 and Figure 42. Place saddlebag mounting bracket (2) on mounting studs (3) while aligning the saddlebag docking rod (4) with the mounting bracket grommet (5). Slide saddlebag completely forward.

## 4. *NOTE*

*Indicator flag is for showing when lock knob is unlocked only. Do not use indicator flag (1) to lock or unlock saddlebag from motorcycle.*

Rotate lock knob to the locked position until a click is heard. Without pulling out on the knob, verify that knob cannot rotate back to the unlocked position.

5. Verify the indicator flag (1) is not showing and saddlebag is securely fastened.
6. Pull saddlebag rearward to verify it is secure.
7. Close saddlebag.

## **▲ WARNING**

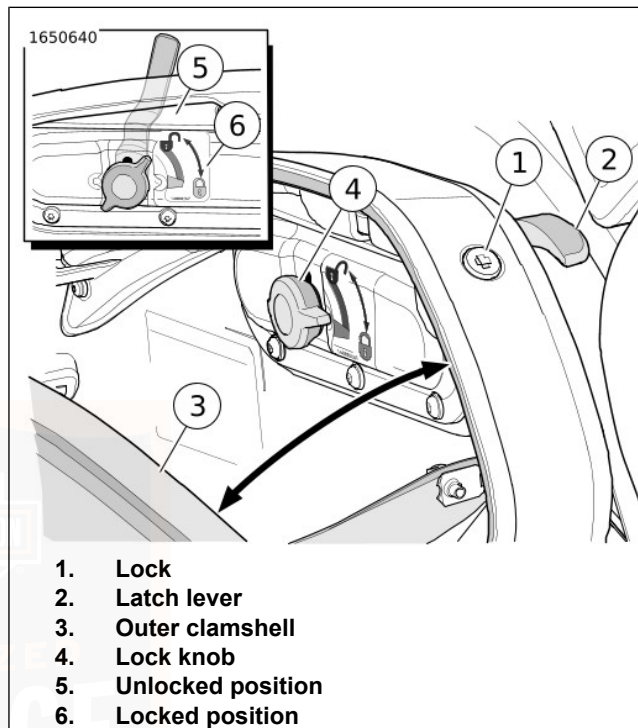
**Do not allow passenger to use saddlebags as grab handles. Failure to use a grab strap, designed for passengers to hold onto when riding, could result in death or serious injury. (00081a)**



**▲ WARNING**

See **ACCESSORIES AND CARGO** section within the **SAFETY FIRST** 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. (00021c)

For proper saddlebag loading, see the Accessories and Cargo section of **SAFETY FIRST > SAFE OPERATING RULES** (Page 3).



**Figure 40. Saddlebag Lock Knob**

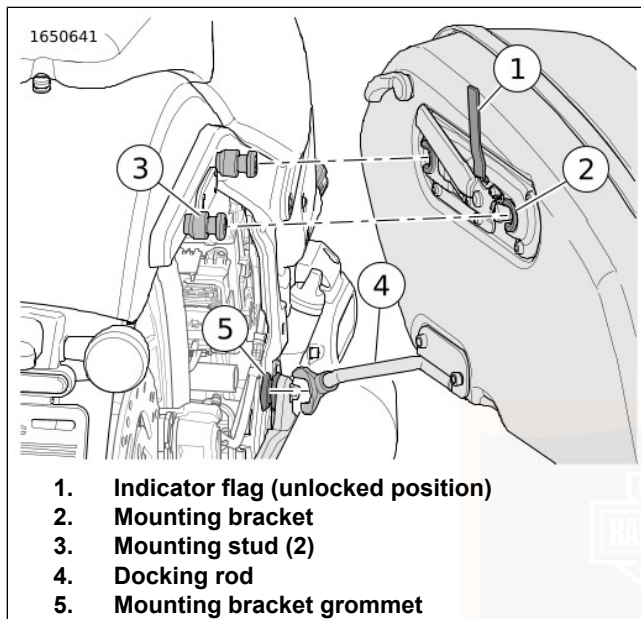


Figure 41. Saddlebag Mounting Bracket

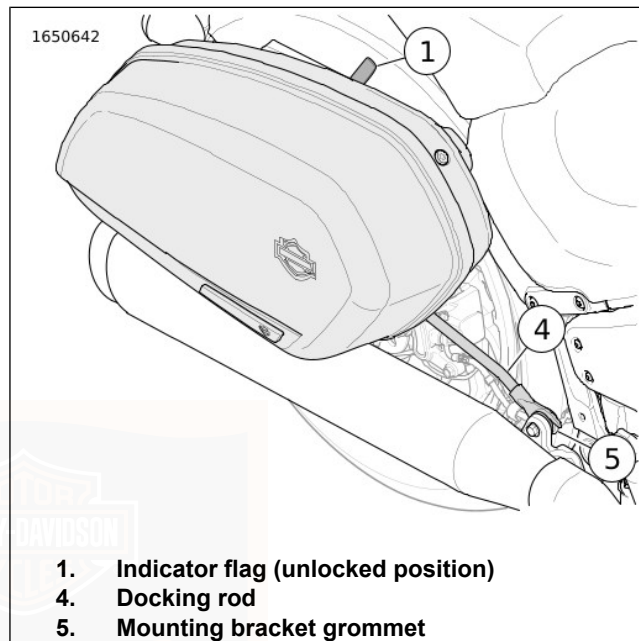


Figure 42. Saddlebag Docking Rod

## 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](http://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 Portable Document Format (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 **AFTER RIDING > RECOMMENDED CLEANING PRODUCTS** (Page 120).
- 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.*

- Fat Boy® (FLFB) bare aluminium wheels are equipped with corrosion protection coating, do not use Bare Metal Polish or corrosion protection coating will be removed.
- 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 AFTER RIDING > RECOMMENDED CLEANING PRODUCTS (Page 120).

## **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 36. Recommended Cleaning and Care Products**

<b>PRODUCT PART NO.</b>	<b>PURPOSE</b>	<b>FRAME</b>	<b>BODY PANELS</b>	<b>WHEELS</b>	<b>DENIM FINISH</b>	<b>OTHER</b>
BARE METAL POLISH 93600028 (U.S.) 93600083 (Non-U.S.)	Polishes non-clear coated polished aluminum or polished stainless steel surfaces. <sup>(1)</sup>	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
BUG REMOVER 93600122 (U.S.) 93600140 (Non-U.S.)	Removes bugs from metal, plastic or painted surfaces.	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 93600124 (U.S.) 93600127 (Non-U.S.)	Waterless quick cleaner and detailer.	Yes	Yes	Yes	Yes	
ENGINE BRIGHTENER 93600002 (U.S.) 93600068 (Non-U.S.)	Rejuvenates wrinkle black engine finish.	No	No	No	No	Wrinkle black engines
EVERYDAY DETAILER 93600157 (U.S.) 93600158 (Non-U.S.)	Cleans, shines, brightens and protects in a short amount of time.	Yes	Yes	Yes	No	

**Table 36. Recommended Cleaning and Care Products**

<b>PRODUCT PART NO.</b>	<b>PURPOSE</b>	<b>FRAME</b>	<b>BODY PANELS</b>	<b>WHEELS</b>	<b>DENIM FINISH</b>	<b>OTHER</b>
GRAPHENE SPRAY COATING 93600166 (U.S.) 93600169 (Non-U.S.)	Provides a protective barrier for glossy paint surfaces and chrome. Repels water and dust.	Yes	Yes	As applicable	No	
GLOSS DETAILER 93600123 (U.S.) 93600125 (Non-U.S.)	Produces high gloss with UV protection. Allows chrome to breathe, unlike wax. Good for windshields.	Yes	Yes	Yes	No	
HARLEY TRAVEL CARE KIT 93600149 (U.S. only)	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 93600162 (U.S.) 93600171 (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 93600155 (U.S.) 93600156 (Non-U.S.)	Removes fine scratches and swirls.	Yes	Yes	No	No	
SEAT, SADDLEBAG & TRIM CLEANER 93600167 (U.S.) 93600170 (Non-U.S.)	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 36. Recommended Cleaning and Care Products**

<b>PRODUCT PART NO.</b>	<b>PURPOSE</b>	<b>FRAME</b>	<b>BODY PANELS</b>	<b>WHEELS</b>	<b>DENIM FINISH</b>	<b>OTHER</b>
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. <sup>(1)</sup>	Yes	Yes	Yes	No	
SUNWASH BIKE SOAP 93600129 (U.S.) 93600141 (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 93600121 (U.S.) 93600126 (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
<i>(1) DO NOT use BARE METAL POLISH or SPRAY CLEANER &amp; POLISH on coated aluminum wheels, protective coating will be removed.</i>						

**Table 37. Recommended Surface Care Products**

<b>PRODUCT PART NO.</b>	<b>PURPOSE</b>
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.

**Table 37. Recommended Surface Care Products**

<b>PRODUCT PART NO.</b>	<b>PURPOSE</b>
BIKE WASH BUCKET 93600133	Wash bucket. Includes GRIT GUARD insert.
HOG BLASTER MOTORCYCLE DRYER 94651-09A	Blows a stream of warm dry filtered air. Reduces streaks and water spots.
MICROFIBER APPLICATORS (4 pack) 93600168	Use to apply most wax, coating, sealant, and dressing products.
MICROFIBER DETAILING CLOTH 94663-02	Highly absorbent detailing cloth for polishing and sealing. Contains no nylon fibers.
MICROFIBER DETAILING CLOTHS (3 pack) 93600136	Highly absorbent detailing cloths for polishing and sealing.
MICROFIBER SOFT DRYING TOWEL 93600132	Washable and reusable. Provides a lint- and streak-free drying action for a professional results.
MICROFIBER WASH MITT 93600130	Premium quality microfiber washing mitten. Use with either hand.
WHEEL & SPOKE BRUSH 43078-99	Cone-shaped scrub brush for wheels.

**Table 38. Wheel Polish and Sealing Products**

<b>WHEELS</b>	<b>PRODUCT</b>	<b>DESCRIPTION</b>
Anodized	GRAPHENE	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.



**Table 38. Wheel Polish and Sealing Products**

<b>WHEELS</b>	<b>PRODUCT</b>	<b>DESCRIPTION</b>
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 and bare aluminum or stainless steel	BARE METAL POLISH <sup>(1)</sup>	Microabrasive polish to refurbish polished wheels. Do not use on chrome.
<i>(1) DO NOT use BARE METAL POLISH on coated aluminum wheels, protective coating will be removed.</i>		

## WASHING THE MOTORCYCLE

Use only recommended cleaning and care products. Refer to AFTER RIDING > RECOMMENDED CLEANING PRODUCTS (Page 120).

### 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.

## WINDSHIELD CARE

### NOTICE

**Polycarbonate windshields/wind deflectors require proper attention and care to maintain. Failure to maintain polycarbonate properly can result in damage to the windshield/wind deflector. (00483e)**

### NOTICE

**Use only Harley-Davidson recommended products on Harley-Davidson windshields. Do not use harsh chemicals or rain sheeting products, which can cause windshield surface damage, such as dulling or hazing. (00231c)**

- Powdered, abrasive or alkaline cleanser can damage windscreen/windshields. Ammonia-based window cleaners cause permanent yellow effects to windshields.
- Do not use gas station windshield cleaner as finish can be damaged.
- Do not use a brush or squeegee as finish can be damaged.
- Do not clean in hot sun or high temperature.

Windshields require special care. However, windshields can be washed with WINDSHIELD CLEANER - INDIVIDUAL WIPES, SUNWASH BIKE SOAP or QUICK WASH when

washing the entire motorcycle. Refer to AFTER RIDING > RECOMMENDED CLEANING PRODUCTS (Page 120).

### NOTE

- Use *BUG REMOVER* to soften bug splatters. Wipe clean with a *BUG EATER SPONGE*.
- Covering windshields with a clean, wet cloth for approximately 15-20 minutes before washing makes dried bug removal easier.

1. Use WINDSHIELD CLEANER to detail windshields.
2. Wipe dry with a clean MICROFIBER DETAILING CLOTH.

### NOTE

*To minimize swirl marks, clean windshield when the motorcycle is cool and parked in the shade. Faint swirl marks are normal. Swirl marks are more visible on tinted windshields.*

## 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 AFTER RIDING > RECOMMENDED CLEANING PRODUCTS (Page 120).

- 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.

## EXHAUST CARE

Allow exhaust components to cool before cleaning.

For chrome exhaust surfaces, apply Boot Mark Remover to remove boot marks, melted plastic or asphalt resin. Allow the gel to set for a few minutes, scrape off the melted material, and rinse clean.

For black-coated exhaust surfaces, apply Wheel & Tire Cleaner while motorcycle is wet during washing. Wipe or scrub exhaust surfaces and rinse clean.

### NOTE

*There is no warranty on exhaust pipes and mufflers with regard to any discoloration. Blueing is caused by tuning characteristics, cam timing, over-heating, and so on. It is not caused by defective manufacturing.*

## WHITEWALL TIRES

Use HARLEY-DAVIDSON WHEEL & TIRE CLEANER to clean whitewall tires following directions on the bottle.

## STORING MOTORCYCLE

If the motorcycle will not be operated for several months, take steps to protect the motorcycle. Always protect parts against corrosion, preserve the battery and prevent the build-up of gum and varnish in the fuel before storage.

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.

### ⚠ WARNING

**Do not store motorcycle with gasoline in tank within the home or garage where open flames, pilot lights, sparks or electric motors are present. Gasoline is extremely flammable and highly explosive, which could result in death or serious injury. (00003a)**

1. Fill fuel tank and add a gasoline stabilizer. Use one of the commercially available gasoline stabilizers and follow the manufacturer's instructions.
2. Warm motorcycle to operating temperature. Change oil and turn engine over to circulate the new oil. See MAINTENANCE AND LUBRICATION > CHANGE OIL AND OIL FILTER (Page 136).
3. Prepare battery for storage. See SERVICE PROCEDURES > BATTERY MAINTENANCE (Page 162).
4. To protect the body panels, engine, chassis and wheels from corrosion, follow the cosmetic care procedures before storage. See AFTER RIDING > CLEANING AND GENERAL CARE (Page 119).

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



## 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 OWNER MANUAL > SERVICE INTERVALS AND RECORDS (Page 201).

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 INTERVALS AND RECORDS > SERVICE RECORDS (Page 201).

## 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 1,600 km (1000 mi), visit an authorized Harley-Davidson dealer for initial service. Refer to SERVICE INTERVALS AND RECORDS > SERVICE RECORDS (Page 201).

## 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, fuel, 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.

## ENGINE LUBRICATION

### Engine Lubrication

#### ▲ CAUTION

**Prolonged or repeated contact with used motor oil may be harmful to skin and could cause skin cancer. Promptly wash affected areas with soap and water. (00358b)**

#### ▲ CAUTION

**If engine oil is swallowed, do not induce vomiting. Contact a physician immediately. In case of contact with eyes, immediately flush with water. Contact a physician if irritation persists. (00357d)**

#### NOTICE

**Do not switch lubricant brands indiscriminately because some lubricants interact chemically when mixed. Use of inferior lubricants can damage the engine. (00184a)**

Always use the proper grade of oil for the lowest temperature expected before the next scheduled oil change. Refer to Table 39.

This motorcycle was originally equipped with GENUINE HARLEY-DAVIDSON H-D 360 MOTORCYCLE OIL 20W50. H-D 360 is the preferred oil under normal operating conditions. If operation under extreme cold or heat are expected, refer to Table 39 for alternative choices.

If necessary and H-D 360 is not available, add oil certified for diesel engines. Acceptable designations include: CH-4, CI-4 and CJ-4. The preferred viscosities, in descending order are: 20W50, 15W40 and 10W40.

At the first opportunity, see an authorized dealer to change back to 100 percent Harley-Davidson oil.



**Table 39. Recommended Engine Oils**

TYPE	VISCOSITY	LOWEST AMBIENT TEMPERATURE	COLD-WEATHER STARTS BELOW 50 °F (10 °C)
Screamin' Eagle SYN3 Full Synthetic Motorcycle Lubricant	SAE 15W50	Above -1 °C (30.2 °F)	Excellent
Screamin' Eagle SYN3 Full Synthetic Motorcycle Lubricant	SAE 20W50	Above -1 °C (30.2 °F)	Excellent
Genuine Harley-Davidson H-D 360 Motorcycle Oil	SAE 20W50	Above 4 °C (39.2 °F)	Good
Genuine Harley-Davidson H-D 360 Motorcycle Oil	SAE 50	Above 16 °C (60.8 °F)	Poor
Genuine Harley-Davidson H-D 360 Motorcycle Oil	SAE 60	Above 27 °C (80.6 °F)	Poor

### Low Temperature Lubrication

Change engine oil often in colder climates. If motorcycle is frequently ridden less than 24 km (15 mi), in ambient temperatures below 16 °C (60 °F), reduce oil change intervals to 2,400 km (1500 mi).

#### NOTE

*Lower ambient temperatures require more frequent oil changes.*

Water vapor is a normal by-product of combustion. During cold-weather operation, some water vapor condenses to liquid form on the cool surfaces inside the engine. In freezing weather, this water becomes slush or ice. If the engine is not warmed to operating temperature, accumulated slush or ice blocks the oil lines and causes engine damage. Over time, water will accumulate, mix with the engine oil and form a sludge that is harmful to the engine.

If the engine is allowed to warm to normal operating temperature, most of the water evaporates and exits through the crankcase breather.

## CHECK ENGINE OIL LEVEL

### ▲ CAUTION

**Prolonged or repeated contact with used motor oil may be harmful to skin and could cause skin cancer. Promptly wash affected areas with soap and water. (00358b)**

### NOTICE

**Do not overfill oil. Doing so can result in oil carryover to the air cleaner leading to equipment damage and/or equipment malfunction. (00190b)**

#### NOTE

*Check engine oil level at each complete fuel refill.*

### Oil Level Cold Check

1. Place vehicle on level ground resting on the jiffy stand.

#### NOTE

*Oil level on a cold engine should never be above the midway point.*

2. See Figure 43. Check engine oil level.
  - a. Remove filler plug/dipstick.
  - b. Wipe off the dipstick.

- c. Insert the dipstick and tighten into the fill spout.
  - d. Remove filler plug/dipstick.
  - e. See Figure 44. Check oil level. The correct cold oil level is midway (2) between the ADD QT (1) and FULL HOT (3) marks on the dipstick.
3. If oil level is at or below the ADD QT mark, add only enough oil to bring the level to the ADD QT mark.
  4. Start and idle engine on jiffy stand for two minutes. Turn off engine.
  5. Check oil level. Add only enough to bring level midway between the ADD QT (1) and FULL HOT (3).

### Oil Level Hot Check

### NOTICE

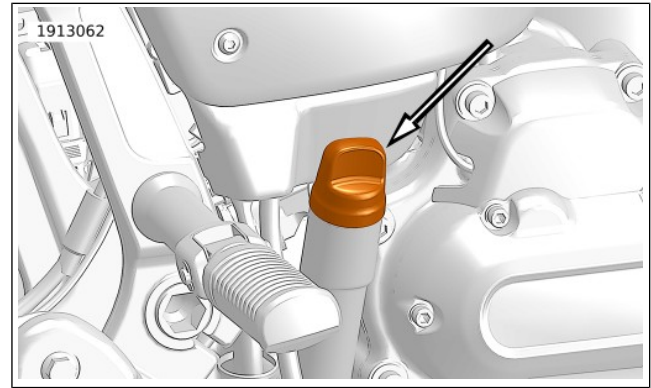
**Do not allow hot oil level to fall below Add/Fill mark on dipstick. Doing so can result in equipment damage and/or equipment malfunction. (00189a)**

#### NOTE

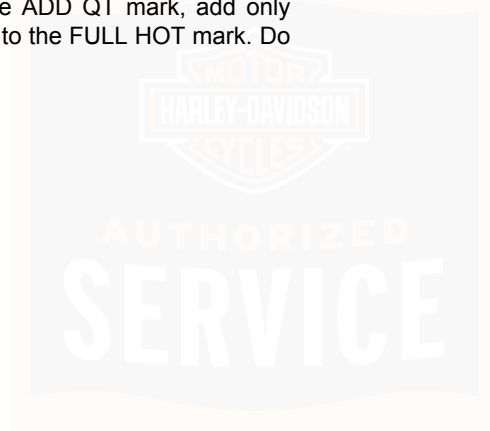
*Perform engine oil level hot check only with engine oil at normal operating temperature.*

1. Ride motorcycle until engine oil reaches at least 93 °C (200 °F) or higher.

2. Allow engine to idle for 1-2 minutes on jiffy stand. Turn off engine.
3. See Figure 43. Check oil level.
  - a. Remove filler plug/dipstick.
  - b. Wipe off the dipstick.
  - c. Insert the dipstick and tighten into the fill spout.
  - d. Remove filler plug/dipstick.
  - e. See Figure 44. Check oil level. Oil level must register between the ADD QT and FULL HOT marks on the dipstick.
4. If oil level is at or below the ADD QT mark, add only enough oil to bring the level to the FULL HOT mark. Do not overfill.



**Figure 43. Engine Oil Filler Plug**



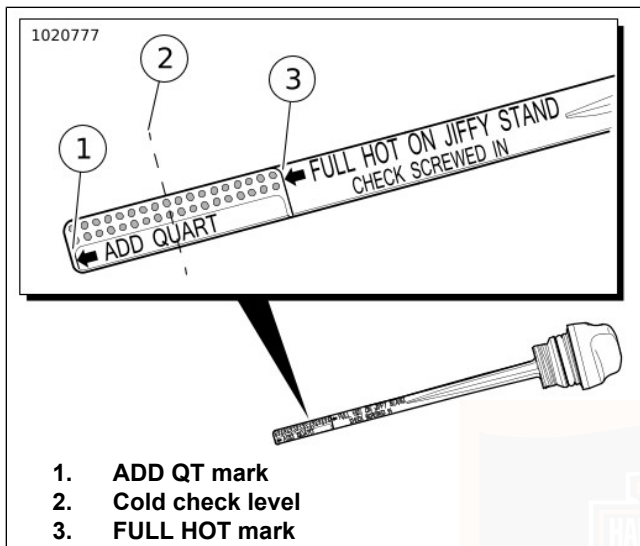


Figure 44. Engine Oil Dipstick

## CHANGE OIL AND OIL FILTER

### ⚠ WARNING

Be sure that no lubricants or fluids get on tires, wheels or brakes when changing fluid. Traction can be adversely affected, which could result in loss of control of the motorcycle and death or serious injury. (00047d)

### NOTICE

Do not switch lubricant brands indiscriminately because some lubricants interact chemically when mixed. Use of inferior lubricants can damage the engine. (00184a)

### ⚠ CAUTION

Prolonged or repeated contact with used motor oil may be harmful to skin and could cause skin cancer. Promptly wash affected areas with soap and water. (00358b)

- Change engine oil at the first 1,600 km (1000 mi) for a **new** engine. After the initial service, change oil at regular intervals in normal service at warm or moderate temperatures. Refer to SERVICE INTERVALS AND RECORDS > SERVICE RECORDS (Page 201).
- Change oil at more frequent intervals in cold weather or severe operating conditions. See Winter Lubrication in MAINTENANCE AND LUBRICATION > ENGINE LUBRICATION (Page 132).

1. Run motorcycle until engine is at normal operating temperature. Turn off engine.
2. Remove filler plug/dipstick.

### NOTE

Replace drain plug O-ring.

3. See Figure 45. Remove the oil drain plug (2) and O-ring. Allow oil to drain completely.

**NOTE**

*Use P&A Oil Catcher (Part No. 62700199) or equivalent to keep drain oil off crankcase when removing oil filter. Residual drain oil could falsely appear as a crankcase oil leak at a later time.*

4. Remove the oil filter using oil filter wrench and hand tools. Do not use with air tools.

Special Tool: OIL FILTER WRENCH (94863-10)

Special Tool: OIL FILTER WRENCH (94686-00)

5. Clean the oil filter mount flange.
6. Clean any residual oil for crankcase and transmission housing.
7. See Figure 46. Install **new** oil filter.
  - a. Lubricate gasket with a thin film of clean engine oil.
  - b. Install **new** oil filter.
  - c. Hand-tighten oil filter one-half to three-quarters of a turn after gasket first contacts filter mounting surface. Do NOT use oil filter wrench for installation.

8. Install engine oil drain plug and **new** O-ring.

Torque: 19–28.5 N·m (14–21 ft-lbs) *Engine oil drain plug*

**NOTE**

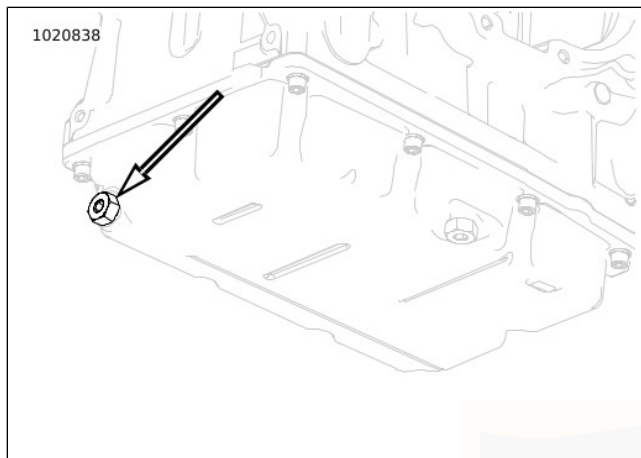
*Use the proper grade of oil for the lowest temperature expected before the next oil change. Refer to Table 39 for recommended oil.*

9. Add an initial volume of engine oil. Refer to Table 40.

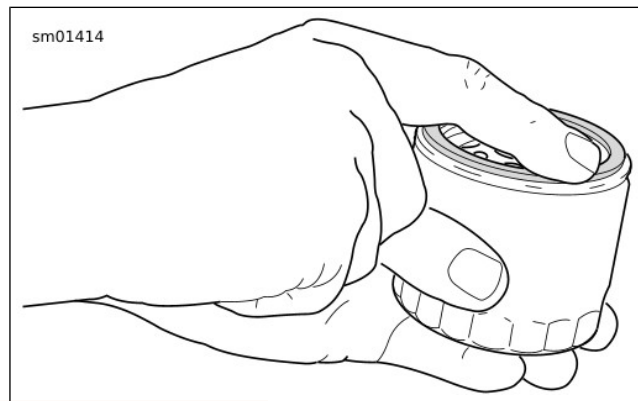
**Table 40. Initial Oil Fill**

ITEM	QUANTITY
Engine oil initial fill	3.8 L (4.0 qt)

10. Verify proper oil level. See MAINTENANCE AND LUBRICATION > CHECK ENGINE OIL LEVEL (Page 134).
  - a. Perform engine oil level **cold check**.
  - b. Start engine and carefully check for oil leaks around drain plug and oil filter.
  - c. Perform engine oil level **hot check**.



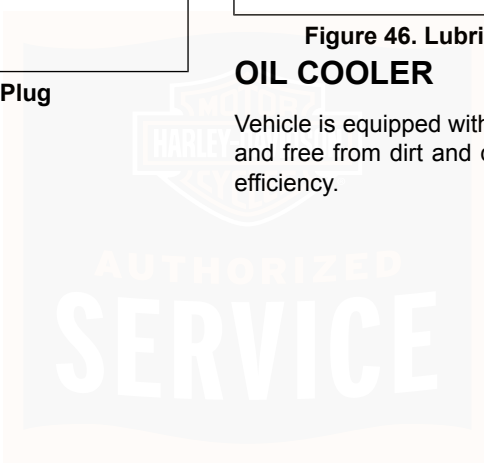
**Figure 45. Engine Oil Drain Plug**

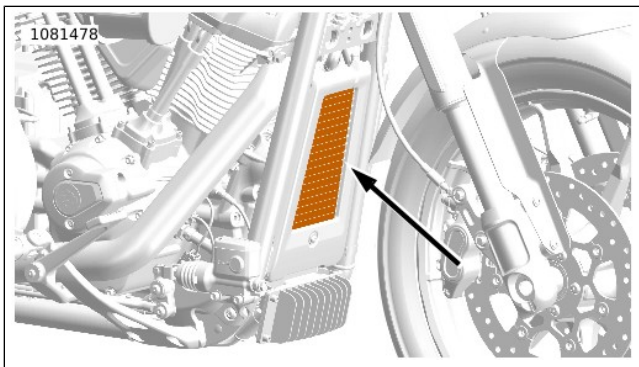


**Figure 46. Lubricating New Oil Filter Gasket**

## **OIL COOLER**

Vehicle is equipped with an oil cooler. Keep the cooler clean and free from dirt and debris to maintain maximum cooling efficiency.





**Figure 47. Oil Cooler**

## CHECK TRANSMISSION LUBRICANT

### NOTE

*Check transmission fluid with the motorcycle at ambient temperature. Inspect transmission dipstick O-ring. Replace if necessary.*

1. Park motorcycle on a level surface on jiffy stand.
2. Remove right side cover. Refer to: SERVICE PROCEDURES > SIDE COVERS (Page 169).

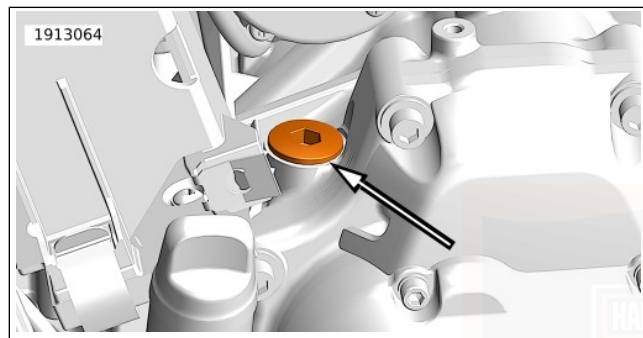
3. Remove close out cover and move Body Control Module (BCM) caddy out of the way. Refer to: SERVICE PROCEDURES > BATTERY REPLACEMENT (Page 165).
4. See Figure 48. Remove transmission filler plug/dipstick. Wipe dipstick clean.
5. Install filler plug/dipstick until O-ring contacts the case. Do not tighten.
6. Figure 49 Remove filler plug/dipstick. Check lubricant level on dipstick. Proper oil level is between the Add (A) (1) and Full (F) (2) marks.

### NOTICE

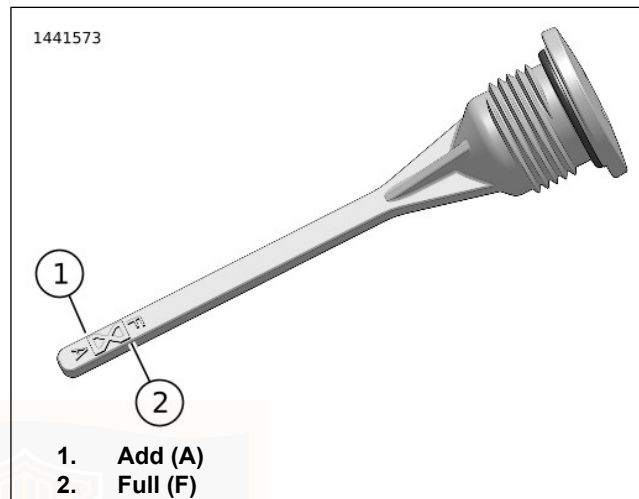
**Mixing mineral-based lubricants with SYN-3 in the transmission can damage the transmission. (00452b)**

7. If lubricant level is low, add recommended Harley-Davidson lubricant to bring level to between the A mark and the F marks. Refer to Table 41.
8. Install filler plug/dipstick. Tighten.  
Torque: 2.8–8.5 N·m (25–75 **in-lbs**) *Transmission filler plug/dipstick*

9. Install BCM with caddy and close out cover. Refer to: SERVICE PROCEDURES > BATTERY REPLACEMENT (Page 165).
10. Install right side cover. Refer to: SERVICE PROCEDURES > SIDE COVERS (Page 169).



**Figure 48. Transmission Filler Plug/Dipstick Location**



**Figure 49. Transmission Lubricant Level**

**Table 41. Recommended Transmission Lubricants**

LUBRICANT	QUANTITY *	
	fl oz	L
FORMULA+ TRANSMISSION AND PRIMARY CHAINCASE LUBRICANT	28	0.83
SCREAMIN' EAGLE SYN3 FULL SYNTHETIC MOTORCYCLE LUBRICANT 20W50	28	0.83
* Fill quantity for a transmission lubricant change.		



## CHANGE TRANSMISSION LUBRICANT

1. Remove transmission filler plug/dipstick. Refer to: MAINTENANCE AND LUBRICATION > CHECK TRANSMISSION LUBRICANT (Page 139).

### ⚠ WARNING

**Be sure that no lubricants or fluids get on tires, wheels or brakes when changing fluid. Traction can be adversely affected, which could result in loss of control of the motorcycle and death or serious injury. (00047d)**

2. See Figure 50. Remove transmission drain plug. Drain transmission.
3. Clean and inspect drain plug and O-ring.

### NOTICE

**Do not over-tighten filler or drain plug. Doing so could result in a lubricant leak. (00200b)**

4. Install drain plug with **new** O-ring. Tighten. Do not over-tighten.  
Torque: 19–28.5 N·m (14–21 ft-lbs) *Transmission drain plug*

5. Fill the transmission with recommended Harley-Davidson lubricant. Refer to Table 41.

Volume: 0.83 L (28 fl oz)

6. Check lubricant level. Add enough lubricant to bring the level between the add (A) and full (F) marks. See Figure 49.
7. Install transmission filler plug/dipstick. Refer to: MAINTENANCE AND LUBRICATION > CHECK TRANSMISSION LUBRICANT (Page 139).

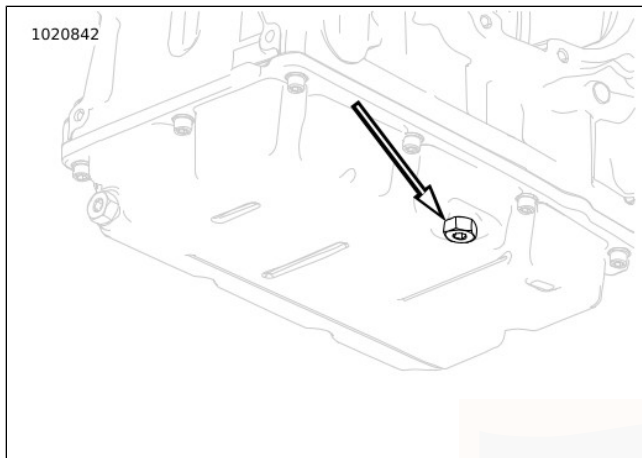


Figure 50. Transmission Drain Plug

## CHANGE PRIMARY CHAINCASE LUBRICANT

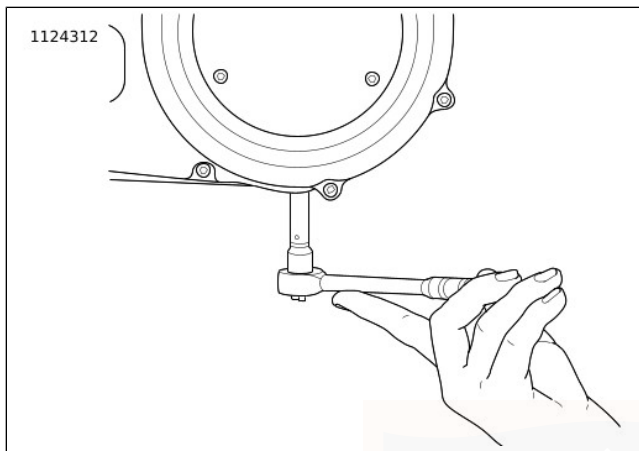
1. Run motorcycle until engine is at normal operating temperature. Turn off engine.

### **⚠ WARNING**

**Be sure that no lubricants or fluids get on tires, wheels or brakes when changing fluid. Traction can be adversely affected, which could result in loss of control of the motorcycle and death or serious injury. (00047d)**

2. Secure motorcycle upright (not leaning on jiffy stand) on a level surface.
3. See Figure 51. Drain primary chaincase.
4. Clean drain plug magnet. If plug has excessive debris, inspect the condition of chaincase components.
5. Install drain plug and **new** O-ring. Tighten.

Torque: 19–28.5 N·m (14–21 ft-lbs) *Primary chaincase drain plug*



**Figure 51. Removal/Installation of Chaincase Drain Plug**

6. See Figure 53. Remove screws (3) and clutch inspection cover (2).
7. Remove seal (1). Wipe oil from primary cover and groove in inspection cover.

**NOTE**

*Seal installed in groove in primary cover.*

**NOTICE**

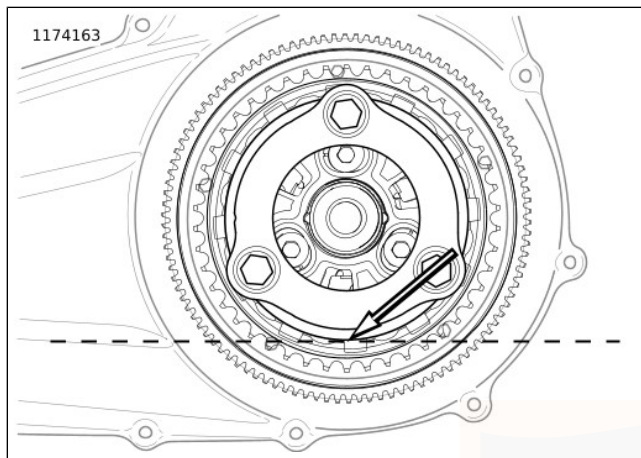
**Do not overfill the primary chaincase with lubricant. Overfilling can cause rough clutch engagement, incomplete disengagement, clutch drag and/or difficulty in finding neutral at engine idle. (00199b)**

8. Add lubricant.
  - a. Pour specified amount of FORMULA+ TRANSMISSION AND PRIMARY CHAINCASE LUBRICANT through clutch inspection cover opening. Refer to Table 42.
  - b. See Figure 52. Proper level is approximately at bottom of pressure plate OD.

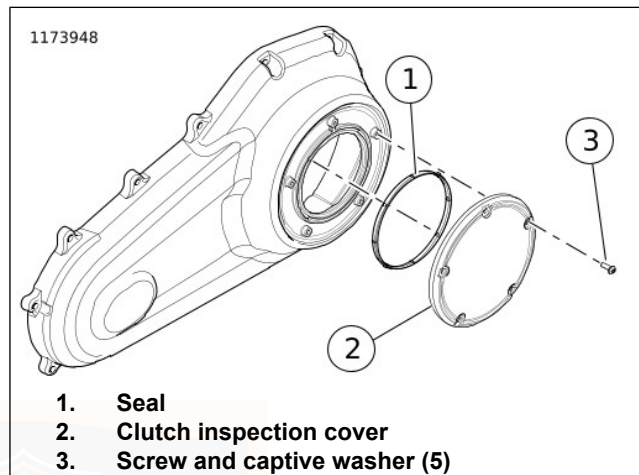
**Table 42. Primary Chaincase Lubricant**

ITEM	DRY FILL <sup>(2)</sup>		WET FILL <sup>(3)</sup>	
	Oz	L	Oz	L
Amount <sup>(1)</sup>	40	1.18	36	1.06

*(1) Amount is approximate. Fill to bottom of pressure plate OD with vehicle upright.*  
*(2) Cover was removed and installed.*  
*(3) Lubricant was drained through the drain plug only.*



**Figure 52. Primary Chaincase Lubricant Level**



**Figure 53. Clutch Cover (Typical)**

9. Install clutch inspection cover and **new** seal:
  - a. See Figure 53. Install **new** seal (1) in groove in cover.
  - b. Secure clutch inspection cover with screws with captive washers (3).
  - c. See Figure 54. Tighten in sequence shown.

Torque: 2.8–3.9 N·m (25–35 **in-lbs**) *Clutch inspection cover screws*

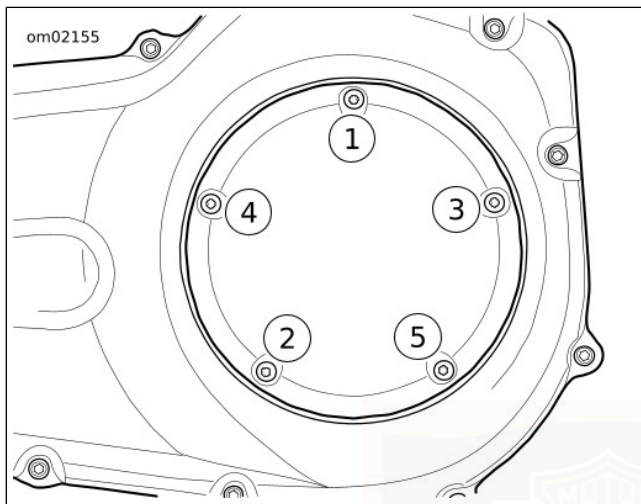


Figure 54. Clutch Cover Tightening Sequence

## 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

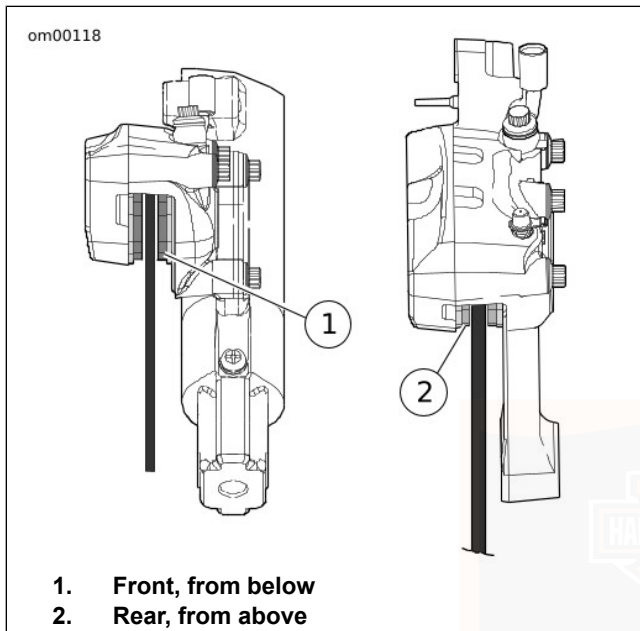
**Always replace brake pads in complete sets for correct and safe brake operation. Improper brake operation could result in death or serious injury. (00111a)**

1. Check the brake disc as it spins. The disc should run true in the brake caliper.
2. See Figure 55. Measure the thickness of the brake pad friction material.

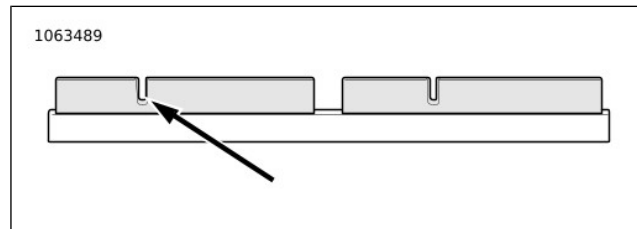
### NOTE

*The pads do not necessarily wear evenly. The grooves on the brake pads are no longer visible when the pads are near the end of service life. See Figure 56.*

3. Refer to Table 43. 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.



**Figure 55. Brake Friction Material**



**Figure 56. Brake Pad Wear Grooves**

**Table 43. Minimum Brake Pad Friction Material Thickness**

MODEL	in	mm
All	0.040	1.02

## CHECKING SYSTEMS FOR LEAKS OR ABRASIONS

Check all lines and hoses for leaks, damage or abrasions. Refer to SERVICE INTERVALS AND RECORDS > SERVICE RECORDS (Page 201) for the appropriate intervals.

- Fuel system and fuel lines
- Engine cooling system and coolant lines
- Oil cooling system and oil lines
- Brake system and brake lines

## 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 MAINTENANCE AND LUBRICATION > INSPECTING BRAKE PADS AND DISCS (Page 145).*

### ⚠ WARNING

**Clean reservoir filler cap or cover before removing. Use only DOT 4 brake fluid from a sealed container. Contaminated fluid can adversely affect braking, which could result in death or serious injury. (13720a)**

## Checking Brake Fluid Level

1. Set motorcycle upright. Verify that the fluid in the reservoir is level. See MAINTENANCE AND LUBRICATION > PREPARING THE MOTORCYCLE FOR MAINTENANCE (Page 131).
2. **Front:** See Figure 57. Check level in front reservoir sight glass. Level must be above minimum mark on side of reservoir.
3. **Rear:** See Figure 57. Check level on side of rear brake reservoir. Level must be above minimum mark on side of reservoir.

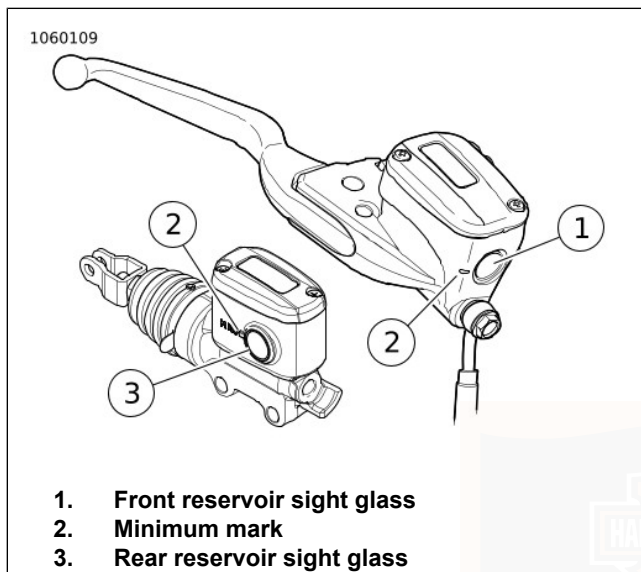


Figure 57. Brake Fluid Reservoirs

## 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. Contact Poison Control. Immediate medical attention required.
- See Safety Data Sheet (SDS) for more details available at [sds.harley-davidson.com](https://sds.harley-davidson.com)

(00240e)

### ⚠ 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 CLUTCH AND BRAKE CONTROLS

### Clutch Hand Lever

The clutch hand lever should move smoothly through its full range.

See a Harley-Davidson dealer for service.

### 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.

## MISCELLANEOUS LUBRICATION

Refer to SERVICE INTERVALS AND RECORDS > SERVICE RECORDS (Page 201) for all maintenance schedules.

### NOTE

*Use recommended SPECIAL PURPOSE GREASE for steering head bearings. Use a multipurpose chassis grease for other applications.*

1. Lubricate clutch control cable with HARLEY LUBE.
2. Lubricate front brake hand lever and clutch control hand lever only if necessary.
3. Inspect rear fork pivot shaft bearings.
4. Pack the steering head bearings with SPECIAL PURPOSE GREASE at recommended service intervals.
5. Lubricate the jiffy stand mechanism with SILVER GRADE ANTI-SEIZE.

### NOTE

For model specific information regarding the chassis lubrication, see the service manual or a Harley-Davidson dealer.

## CHECK DRIVE BELT DEFLECTION

### NOTE

Always use BELT TENSION GAUGE (PART NUMBER: HD-35381-A) 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 deflection:

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

### ▲ WARNING

To prevent accidental vehicle start-up, which could cause death or serious injury, remove main fuse before proceeding. (00251b)

1. Disarm security system. Remove main fuse. See SERVICE PROCEDURES > FUSES (Page 180).
2. Shift transmission to neutral.

### NOTE

When adjusting a **new** belt, rotate rear wheel a few revolutions prior to setting the tension.

3. See Figure 58. Measure belt deflection using BELT TENSION GAUGE (PART NUMBER: HD-35381-A):
  - a. Slide O-ring (4) to zero mark (3).
  - b. **Models equipped with belt deflection window:** Fit belt cradle (2) against bottom of drive belt in line with belt deflection window.
  - c. **All other models:** Fit belt cradle (2) against bottom of drive belt halfway between drive pulleys.
  - d. Press upward on knob (6) until O-ring slides down to 4.54 kg (10 lb) mark (5) and hold steady.
4. Measure belt deflection:
  - a. **Models equipped with belt deflection window:** See Figure 59. Measure belt deflection as viewed through belt deflection viewing window while holding gauge steady. Each deflection graduation is approximately 1.6 mm (1/16 in).

- b. **All other models:** See Figure 60. Measure amount of deflection (4) while holding gauge steady.

**NOTE**

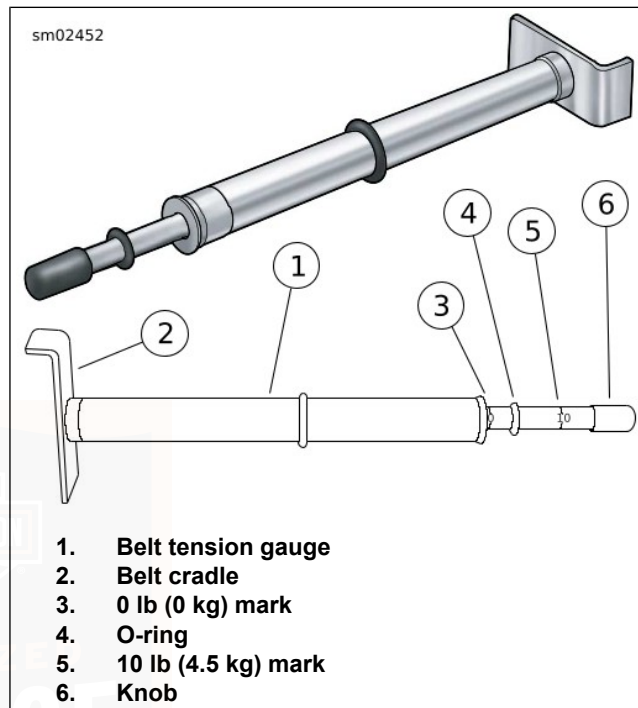
*Service belt tension specification is for belts with more than 1,600 km (1000 mi). Set belt to new belt tension specification if the belt has less than 1,600 km (1000 mi).*

5. Compare with specifications. Refer to Table 44. If not within specifications, see a Harley-Davidson dealer.
6. Install main fuse.

**Table 44. Drive Belt Deflection**

MODEL	DEFLECTION <sup>(1)</sup>	
	in	mm
Service belt tension	1/2-9/16	12.7-14.2
New belt tension	3/16-1/2	4.7-12.7

*(1) Deflection measured at 10 lb (4.5 kg) tension.*



**Figure 58. Belt Tension Gauge**

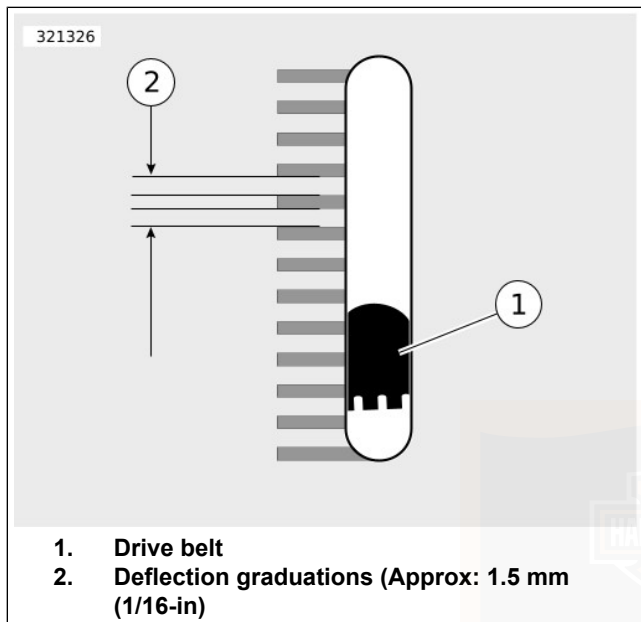


Figure 59. Belt Deflection Window

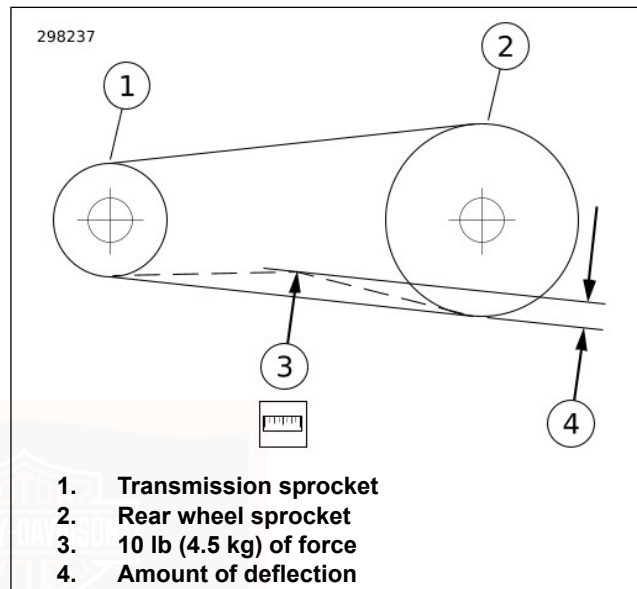


Figure 60. Checking Belt Deflection

## MECHANICAL CLUTCH

### NOTICE

The clutch control cable must be oiled and adjusted periodically to compensate for lining wear. Failure to oil and adjust the clutch control cable can result in equipment damage. (00203c)

Adjust the clutch control cable at specified intervals. Refer to SERVICE INTERVALS AND RECORDS > SERVICE RECORDS (Page 201).

If the clutch slips under load or drags when released, the control cable may need to be adjusted or clutch service may need to be performed. See a Harley-Davidson dealer for service.

## HYDRAULIC LIFTERS

The hydraulic lifters are self-adjusting. They automatically adjust length to compensate for engine expansion and valve mechanism wear. This keeps the valve mechanism free of lash when the engine is running.

When starting an engine which has been turned off even for a few minutes, the valve mechanism may be slightly noisy until the hydraulic units completely refill with oil. If at any time the valve mechanism becomes abnormally noisy, other than for a short period immediately after engine is started, it is an indication that one or more of the hydraulic units may not be functioning properly.

Always check the engine oil level first since normal circulation of oil through the engine is necessary for proper operation of the hydraulic lifters.

If engine oil is at the proper level, the lifters may not be functioning properly because of dirt in the oil supply passages

leading to the lifter units. See a Harley-Davidson dealer for service.

## 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 INTERVALS AND RECORDS > SERVICE RECORDS (Page 201) 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 INTERVALS AND RECORDS > SERVICE RECORDS (Page 201) for all maintenance schedules.

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

## CHECKING FOR EXHAUST LEAKS

Refer to SERVICE INTERVALS AND RECORDS > SERVICE RECORDS (Page 201) for all maintenance schedules.

1. Allow exhaust components to cool.
2. Check exhaust system for obvious signs of leakage such as carbon marks or marks at pipe joints.
  - a. Check for loose or missing fasteners.
  - b. Check for fractured pipe clamps or brackets.
  - c. Check for loose or fractured exhaust shields.

3. Correct any detected leaks. See a Harley-Davidson dealer.

## 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.

## INSPECTING AIR FILTER

### Removal

#### Round air cleaner

1. See Figure 61. Remove air cleaner cover.
  - a. Remove screw (1).
  - b. Remove cover (2).

2. Remove filter element (3).
3. Remove seal (4). Inspect for damage or wear.
4. Clean and inspect the filter element. Replace if necessary.

### Open front air cleaner

1. See Figure 62. Remove air cleaner cover.
  - a. Remove screw (1).
  - b. Remove cover (2).
2. Remove filter element.
  - a. Move filter element (4) to the rear at an upward angle to disengage from snorkel.
  - b. Remove filter element.
  - c. Remove seal (3). Inspect for damage or wear.
3. Clean and inspect the filter element. Replace if necessary.

### Cone air cleaner

1. See Figure 63. Remove air cleaner cover.
  - a. Remove two outer screws (1).
  - b. Remove inner screw (4).
  - c. Remove air cleaner cover (3) and remove air filter element (2).

2. Clean and inspect the filter element. Replace if necessary.

## Cleaning Filter Element

### NOTE

- *Do not strike filter element on a hard surface to dislodge dirt.*
- *Do not use air cleaner filter oil on the Harley-Davidson paper/wire mesh or synthetic air filter element.*

### ⚠ WARNING

**Do not use gasoline or solvents to clean filter element. Flammable cleaning agents can cause an intake system fire, which could result in death or serious injury. (00101a)**

### ⚠ WARNING

**Compressed air can pierce the skin and flying debris from compressed air could cause serious eye injury. Wear safety glasses when working with compressed air. Never use your hand to check for air leaks or to determine air flow rates. (00061a)**

1. Clean filter element.
    - a. Wash the breather tubes(if equipped) and filter element in lukewarm water with a mild detergent.
    - b. **Synthetic element:** Rinse filter element with clean water. The filter element is sufficiently clean when water running from the filter element appears clear.
    - c. Allow filter element to air dry or use low-pressure compressed air from the inside.
    - d. **Paper/wire mesh element:** Hold the filter element up to a strong light source. The element is sufficiently clean when light is uniformly visible through the media.
    - e. Replace the filter element if damaged or if filter media cannot be adequately cleaned.
  - b. Place filter element in position.
4. Install cover.
    - a. Apply to threads of cover screw (1).  
LOCTITE 243 MEDIUM STRENGTH  
THREADLOCKER AND SEALANT (BLUE)  
(99642-97)
    - b. Install cover (2).
    - c. Install cover screw (1). Tighten.  
Torque: 10.4–11 N·m (92–97 **in-lbs**) *Round air filter cover screw*

## Installation

### Round air cleaner

1. See Figure 61. Clean seal location groove of all residual oil and debris.
2. Replace seal (4) if damaged or worn.
3. Install filter element.
  - a. Align filter element (3) with pin (5) in housing.

### Open front air cleaner

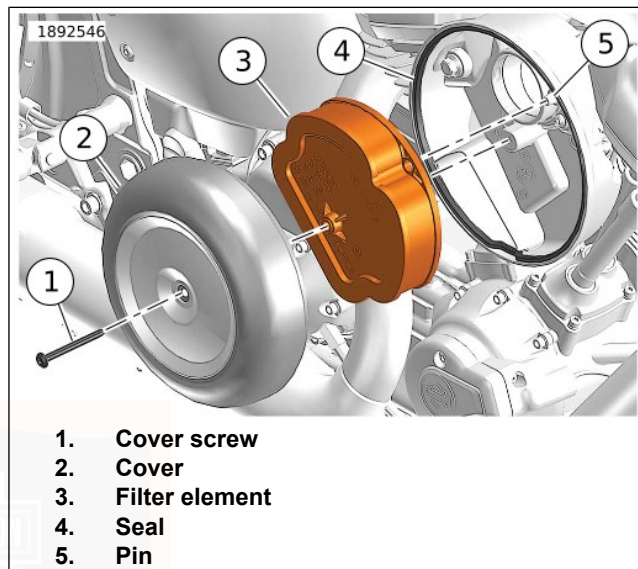
1. See Figure 62. Clean seal location groove of all residual oil and debris.
2. Replace seal (3) if damaged or worn.
3. Install filter element.
  - a. Install filter element (4) onto snorkel and press forward into position.



- b. Align seal (3) with groove in air filter housing. Install seal.
  - c. Verify seal is not twisted.
4. Install air cleaner cover.
- a. Install cover (2).
  - b. Install screw (1). Tighten.  
Torque: 10.4–11 N·m (92–97 **in-lbs**) *Open front air filter cover screw*

#### **Cone air cleaner**

1. See Figure 63. Install air filter element (2) into cover (3).
2. Install air cleaner cover.
  - a. Install inner screw (4). Tighten.  
Torque: 2–2.7 N·m (18–24 **in-lbs**) *Filter cover inner screw*
  - b. Install outer screws (1). Tighten.  
Torque: 2–2.7 N·m (18–24 **in-lbs**) *Filter cover outer screws*



**Figure 61. Air Cleaner: Round**

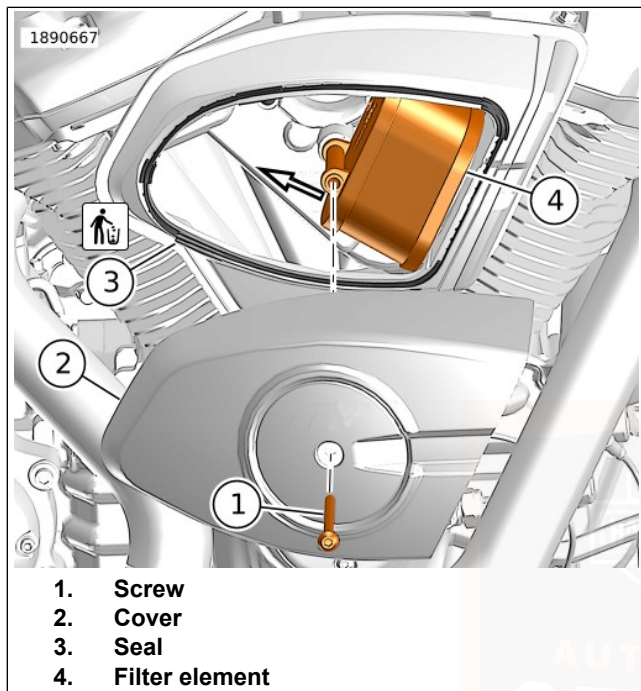


Figure 62. Air Filter: Open Front

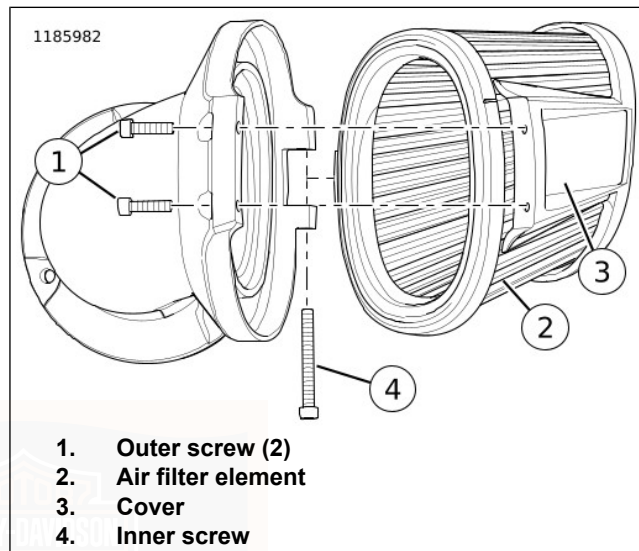


Figure 63. Air Cleaner: Cone

## LUBRICATING FUEL CAP LOCK

Lubricate fuel cap lock with HARLEY LUBE.

## CLEANING BATTERY

See SERVICE PROCEDURES > BATTERY MAINTENANCE (Page 162) for cleaning instructions.

## REPLACING SPARK PLUGS

### ⚠ WARNING

**Disconnecting spark plug cable with engine running can result in electric shock and death or serious injury. (00464b)**

### ⚠ CAUTION

**Do NOT pull on any electrical wires. Pulling on electrical wires may damage the internal conductor causing high resistance, which may result in minor or moderate injury. (00168a)**

### NOTE

*Fuel tank removal improves access to the center spark plug. Refer to the service manual or see a Harley-Davidson dealer for service.*

Check the spark plugs at proper intervals. Refer to SERVICE INTERVALS AND RECORDS > SERVICE RECORDS (Page 201).

1. Disconnect spark plug cables from plugs by pulling up on the molded connector caps.

2. Check spark plug type. Only use spark plugs specified for your model motorcycle.
3. Check spark plug gap against specifications. Refer to Table 18.
4. Always tighten to the proper torque. Spark plugs must be tightened to the torque specified for proper heat transfer. Refer to Table 18.
5. Connect each molded connector cap until the cap snaps firmly into place over the spark plug.

## 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.

# NOTES

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## BATTERY TENDER CONNECTOR

See Figure 64. Maintaining the battery between rides and while stored can maintain battery charge and extend the life of the battery. Connect the battery tender connector to a battery tender during storage or to a battery charger if the battery voltage drops below specification. Refer to: SERVICE PROCEDURES > BATTERY MAINTENANCE (Page 162).

Refer to: SERVICE PROCEDURES > SIDE COVERS (Page 169). Remove the right side cover to access the battery tender (2) connector. Remove the battery tender cap (1). Connect the battery through the connector to an automatic, constant monitoring battery charger/tender. The connector is compatible with all Harley-Davidson battery tender/chargers.

When storing the connector, replace the connector cap to prevent moisture damage when not in use. Properly stow connector back in caddy and install right side cover. Refer to: SERVICE PROCEDURES > SIDE COVERS (Page 169).

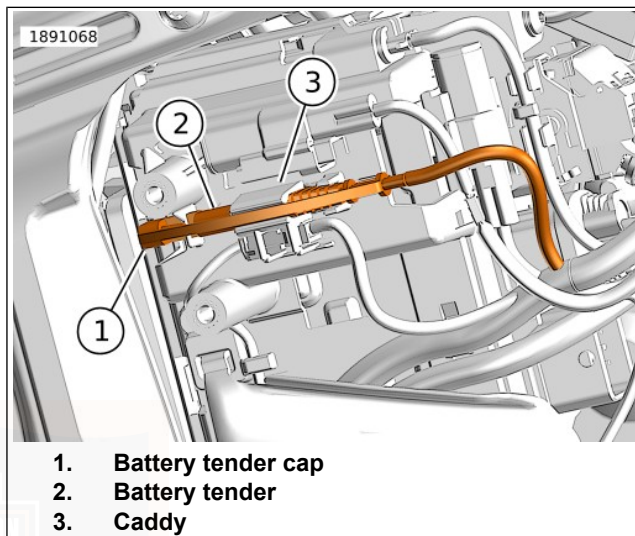


Figure 64. Battery Tender

AUTHORIZED  
SERVICE

## BATTERY MAINTENANCE

### Battery Safety

#### ⚠ WARNING

Batteries contain sulfuric acid, which could cause severe burns to eyes and skin. Wear a protective face shield, rubberized gloves and protective clothing when working with batteries. **KEEP BATTERIES AWAY FROM CHILDREN.** (00063a)

#### ⚠ WARNING

Explosive hydrogen gas, which escapes during charging, could cause death or serious injury. Charge battery in a well-ventilated area. Keep open flames, electrical sparks and smoking materials away from battery at all times. **KEEP BATTERIES AWAY FROM CHILDREN.** (00065a)

#### ⚠ WARNING

Batteries, battery posts, terminals and related accessories contain lead and lead compounds, and other chemicals known to the State of California to cause cancer, and birth defects or other reproductive harm. Wash hands after handling. (00019e)

#### ⚠ WARNING

Never remove warning label from battery. Failure to read and understand all precautions contained in warning, could result in death or serious injury. (00064b)

### Absorbed Glass Mat (AGM) Battery Charging Information

The motorcycle has a permanently sealed, maintenance-free Absorbed Glass Mat (AGM) battery design that is superior to conventional flooded lead acid batteries. This battery design will provide many years of dependable service when the proper battery charging equipment and storage procedures are used. Because of the sealed, nonspillable battery design, an automatic, constant monitoring battery charger/tender with a charging rate of 5 amps or less at less than 14.6 volts is recommended to prevent overcharging conditions that will dry out the cells of the battery. Constant current battery chargers (including trickle chargers) are not recommended and can damage AGM batteries. Do not attempt to open the battery for any reason.

A Harley-Davidson constant monitoring battery charger or tender is recommended to maintain a full charge between rides or when your motorcycle will not be ridden for more than two weeks. The best practice is installing the charger/tender any time the motorcycle is not in use. Harley-Davidson offers a variety of fully automatic charger/tenders (North American

and international versions available). These battery charger/tenders include a quick disconnect cable, allowing easy connection to charge the battery without disassembly of the motorcycle.

Lack of regular battery charging or use of constant current battery chargers may void battery warranty.

## Cleaning and Inspecting

Battery top must be clean and dry. Dirt and electrolyte on top of the battery can cause battery to self-discharge.

1. Clean top of battery.
2. Clean cable connectors and battery terminals using a wire brush or fine grit sandpaper to remove any oxidation.
3. Inspect and clean the battery screws, clamps and cables. Check for breakage, loose connections and corrosion.
4. Check the battery posts for melting or damage caused by over-tightening.
5. Inspect the battery for discoloration, a raised top or a warped or distorted case. Any of these conditions indicate that the battery has been frozen, overheated or overcharged.
6. Inspect the battery case for cracks or leaks.

## Charging and Storing the Battery

A battery that is left in the motorcycle can either self-discharge or discharge from parasitic loads. Parasitic loads occur from things like diode leakage and maintaining computer memory. A battery that is removed from the motorcycle can also self-discharge. It is not necessary to remove battery from vehicle for storage.

- Batteries self-discharge at a faster rate at higher ambient temperatures.
- To reduce the self-discharge rate, store battery in a cool, dry place.

An automatic, constant monitoring battery charger/tender with a charging rate of 5 amps or less at less than 14.6 volts is recommended. The use of constant current chargers (including trickle chargers) to charge sealed AGM batteries is not recommended. Any overcharge will cause dry-out and premature battery failure. Never charge a battery without first reviewing the instructions for the charger being used. In addition to the manufacturer's instructions, follow the general safety precautions.

Charge the battery when:

- Motorcycle lights appear dim.
- Electric starter sounds weak.
- Battery has not been used for two weeks or more.

**▲ WARNING**

**Unplug or turn OFF battery charger before connecting charger cables to battery. Connecting cables with charger ON can cause a spark and battery explosion, which could result in death or serious injury. (00066a)**

*NOTE*

*Make sure that the ignition and all electrical accessories are turned off.*

*Always follow charging instructions supplied with the charger/tender.*

1. With battery in the motorcycle.
  - a. Connect battery charger/tender lead to motorcycle battery tender connector. See SERVICE PROCEDURES > BATTERY TENDER CONNECTOR (Page 161).
  - b. When charging is completed turn OFF the charger. Disconnect the motorcycle battery tender connector.
2. With battery removed from motorcycle.
  - a. Place the battery on a level surface.

- b. Connect battery charger/tender lead to battery connector adapter lead supplied with the battery charger/tender.

**NOTICE**

**Do not reverse the charger connections described in the following steps or the charging system of the motorcycle could be damaged. (00214a)**

- c. Connect the red battery charger lead to the positive terminal of the battery.
- d. Connect the black battery charger lead to the negative terminal of the battery.
- e. Step away from the battery and turn on the charger.

**▲ WARNING**

**Unplug or turn OFF battery charger before disconnecting charger cables from battery. Disconnecting clamps with charger ON can cause a spark and battery explosion, which could result in death or serious injury. (00067a)**

- f. When charging is completed turn OFF the charger. Disconnect the black battery charger lead. Disconnect the red battery charger lead.



## BATTERY REPLACEMENT

### Removing the Battery

1. Remove seat. Refer to: SERVICE PROCEDURES > SEAT (Page 175).
2. **If equipped with siren:**
  - a. Remove left side cover. Refer to: SERVICE PROCEDURES > SIDE COVERS (Page 169).
  - b. Disconnect power. Refer to: SECURITY SYSTEM > DISCONNECTING POWER (Page 69).
3. Remove right side cover. Refer to: SERVICE PROCEDURES > SIDE COVERS (Page 169).
4. See Figure 65. Remove close-out cover (1)
5. See Figure 66. Move BCM and caddy out of the way.

#### NOTE

*Use caution when moving BCM and wiring around hot exhaust or damage can occur.*

- a. Remove screws (4).

#### NOTE

*Use caution when removing Wheel Speed Sensor (WSS) wiring from BCM caddy, or damage to wiring and retainers can occur.*

- b. Disconnect WSS connector (1).
  - c. Remove wiring from retainers (2).
  - d. Remove engine oil dipstick (3).
  - e. Cover oil fill spout with a clean rag to prevent oil contamination.
  - f. Place wiring, caddy and BCM out of the way.
  - g. **If necessary:** Cut and discard cable strap (5).
6. See Figure 67. Disconnect negative battery cable (1).
  7. See Figure 68. Remove battery strap.
    - a. Unlock retaining clip (7).
    - b. Disconnect back tab (1) from battery strap (3) to battery tray (4).

- c. Disconnect front left tab (2) from battery strap to battery tray.
  - d. Remove battery strap.
8. See Figure 67. Disconnect positive battery cable (2).
  9. Using one hand, push up and back on top of battery with palm of hand.
  10. Place other hand under battery, grasp with both hands and remove battery.
  11. Remove battery.

## Installing Battery

### **▲ WARNING**

**Connect positive (+) battery cable first. If positive (+) cable should contact ground with negative (-) cable connected, the resulting sparks can cause a battery explosion, which could result in death or serious injury. (00068a)**

### **NOTICE**

**Connect the cables to the correct battery terminals. Failure to do so could result in damage to the motorcycle electrical system. (00215a)**

1. 

*NOTE*

*Verify battery is under tab on the sub-component caddy, upper left corner on back side.*

See Figure 68. Install battery into battery tray (4).

2. See Figure 67. Connect the positive battery cable (2) to the positive battery terminal. Tighten.  
*Torque: 8.1–10.8 N·m (72–96 in-lbs) Positive battery terminal*
3. Install battery strap (3).
  - a. Position battery strap.
  - b. Connect front left tab (2) on battery strap to battery tray.
  - c. Connect back tab (1) on battery strap to battery tray.
  - d. Lock retaining clip (7).
4. See Figure 67. Connect negative battery cable (1) to negative battery terminal. Tighten.  
*Torque: 8.1–10.8 N·m (72–96 in-lbs) Negative battery terminal*

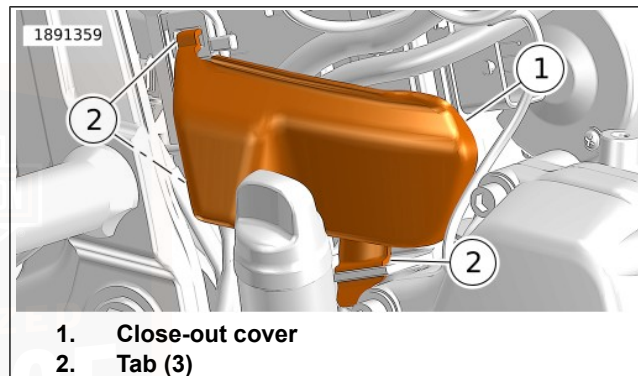
5. See Figure 66. Install BCM and caddy.
  - a. Install screws (4). Tighten.  
Torque: 7.7–9.4 N·m (68–83 **in-lbs**) *BCM caddy screws*
  - b. Connect WSS connector (1).
  - c. Install WSS wiring into retainers (2).
  - d. Remove rag covering oil fill spout.
  - e. Install engine oil dip stick (3).
  - f. **If necessary:** Install new cable strap (5).
6. See Figure 65. Install close-out cover (1).

**NOTE**

*Verify all close-out tabs (2) are fully seated into BCM caddy.*

7. Install right side cover. Refer to: SERVICE PROCEDURES > SIDE COVERS (Page 169).

8. **If removed:** Install main fuse and left side cover.
  - a. Refer to: SECURITY SYSTEM > DISCONNECTING POWER (Page 69).
  - b. Refer to: SERVICE PROCEDURES > SIDE COVERS (Page 169).
9. Install seat. Refer to: SERVICE PROCEDURES > SEAT (Page 175).



**Figure 65. Close-Out Cover**

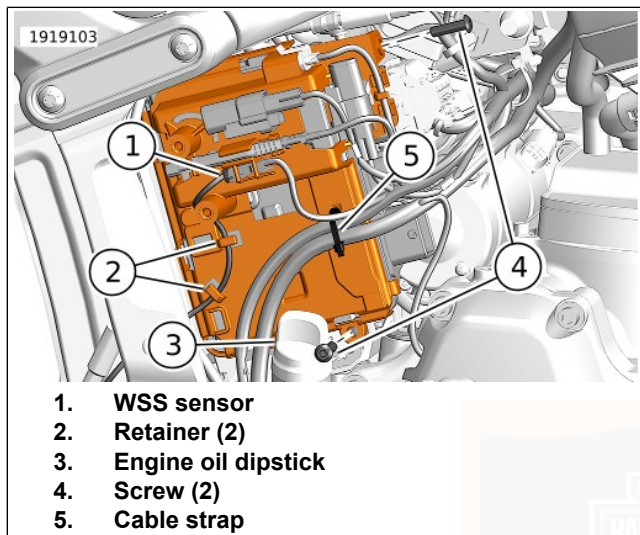


Figure 66. BCM Caddy

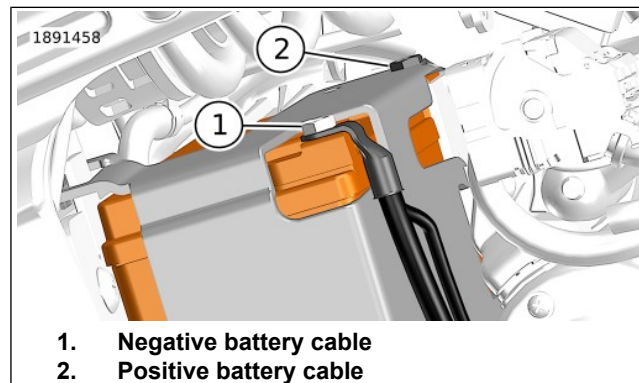
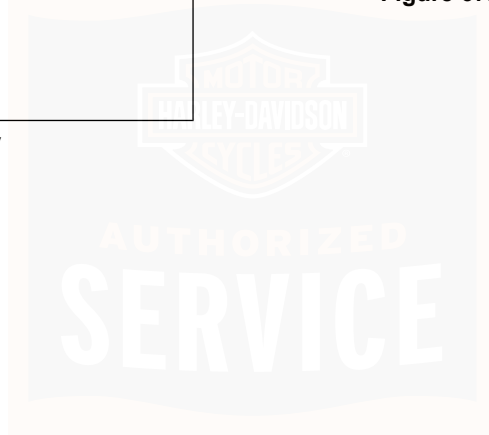
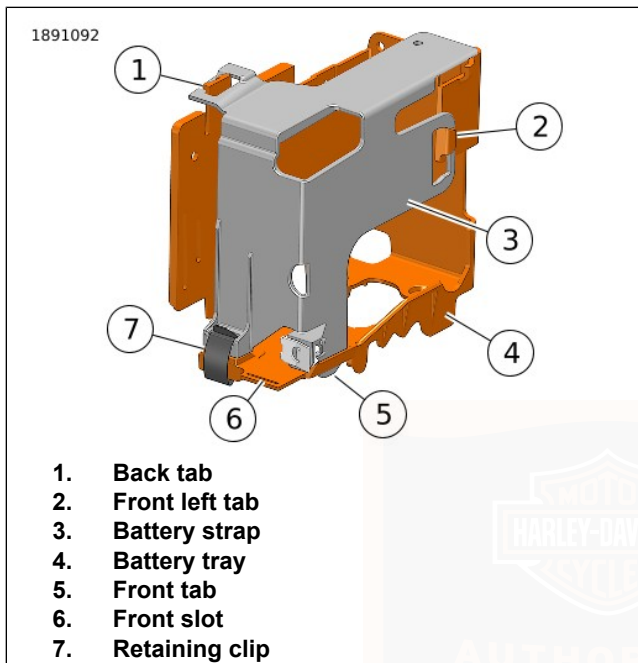


Figure 67. Battery Connections





**Figure 68. Battery Strap and Tray: (Removed for clarity)**

## **SIDE COVERS**

See Figure 69. The procedure for removing the side cover is similar for left and right sides.

1. **Remove:** Remove screw(s) (1) and pull side cover (2) from mounting stud(s) (3).
2. **Install:** Align side cover grommets with mounting stud(s) (3) on the frame and press side cover (2) until mounting stud(s) are fully seated in grommets. Secure side cover with screw(s) (1).
3. Tighten screws.  
Torque: 2.7–4.1 N·m (24–36 **in-lbs**) *Side cover screw, vertical and single*

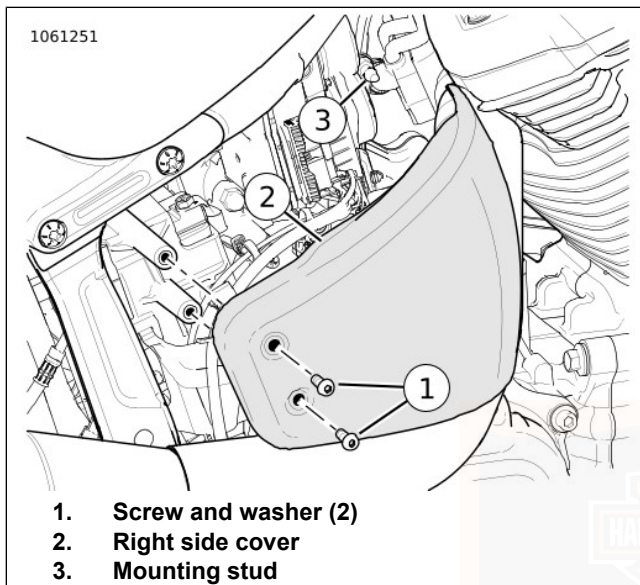


Figure 69. Right Side Cover

## HEADLAMP

### ▲ 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)

## Prepare

1. Check tire pressure. Refer to: BEFORE RIDING > CHECKING TIRE PRESSURE AND INSPECTING TIRES (Page 46).
2. Adjust rear shock preload for rider/passenger and intended load. Refer to: BEFORE RIDING > ADJUSTING SHOCK ABSORBERS (Page 53).
3. Fill fuel tank or add an equal amount of ballast.

## Check Alignment

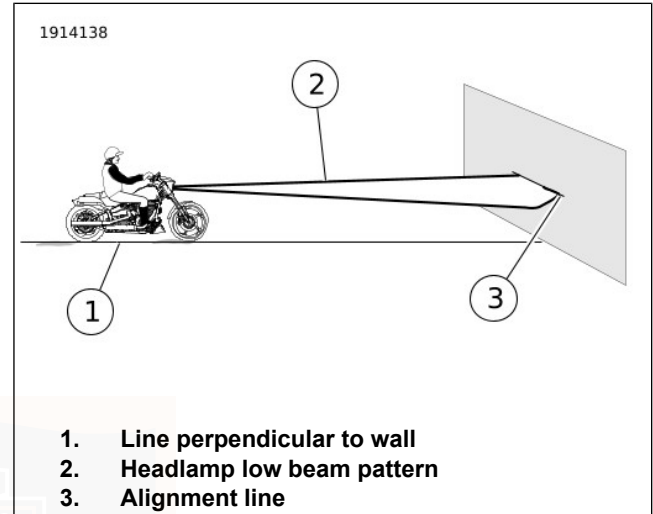
1. See Figure 70. Park the motorcycle on a line perpendicular to the wall (1) so front tire is pointed straight forward at the wall.
2. See Figure 71. Set motorcycle to the specified distance from the front of headlamp to wall (1).
3. Calculate alignment line.
  - a. **FXLRST:** See Figure 75. Remove headlamp trim ring for access to headlamp.
  - b. With intended rider on motorcycle, measure distance from corner of lens or trim ring (2) to floor.

- c. Use measured distance and distance shown in table to calculate alignment line. Refer to Table 45.

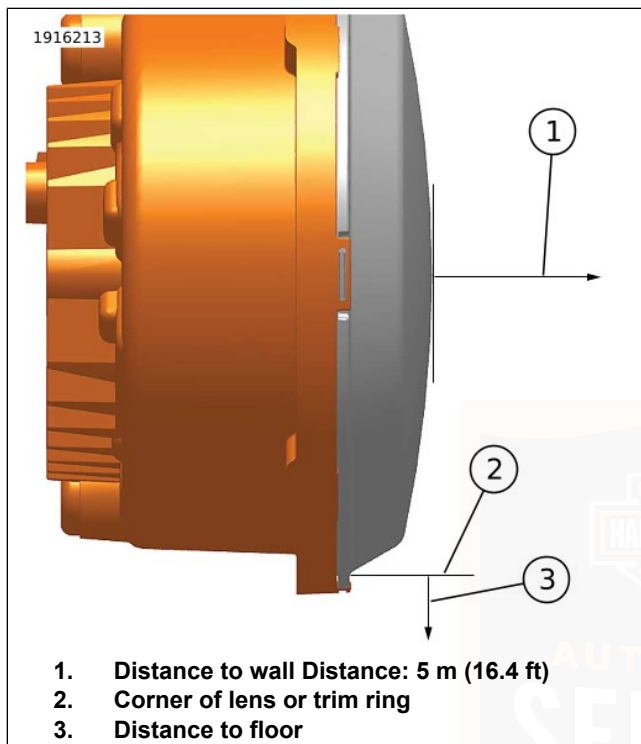
**Table 45. Distance To Add From Floor**

Model	Distance To Add
FXBB, FXBR, FXLRS, FXLRST	74.8 mm (2.9 in)
FLHC, FLFB	90.8 mm (3.6 in)

4. See Figure 70. Draw an alignment line (3) at the calculated distance, on the wall directly in front of motorcycle.
5. Turn **off** any high beam and auxiliary lights to confirm low beam alignment.
6. Verify low beam alignment.
- a. Low beam is aligned when top of low beam pattern (2) cut off line is aligned with alignment line (3).
7. Adjust headlamp, if necessary.
8. **FXLRST:** See Figure 75. Install headlamp trim ring.



**Figure 70. Headlamp Alignment**



**Figure 71. Headlamp Alignment Measuring Points**

## Adjust

**Round: Heritage Classic (FLHC), Street Bob (FXBB), and Low Rider S (FXLRS):**

1. Low Rider<sup>®</sup> S (FXLRS): Remove fairing. See OPERATION > FAIRING (Page 111).
2. See Figure 72. Adjust headlamp horizontal alignment.
  - a. Loosen horizontal adjustment screw (2). Adjust headlamp horizontally to direct light beam straight ahead.
  - b. Tighten horizontal adjustment screw:  
 Torque: 25–40.6 N·m (18–30 ft-lbs) *Heritage Classic 114(FLHC)*  
 Torque: 29.8–37.9 N·m (22–28 ft-lbs) *Street Bob (FXBB), Low Rider S (FXLRS)*
3. Adjust headlamp vertical alignment.
  - a. Loosen vertical adjustment screw (1). Adjust headlamp vertically until beam centers on horizontal line.
  - b. Tighten vertical adjustment screw (1):  
 Torque: 36.6–43.3 N·m (27–32 ft-lbs)



4. Low Rider<sup>®</sup> S (FXLRS): Install fairing.

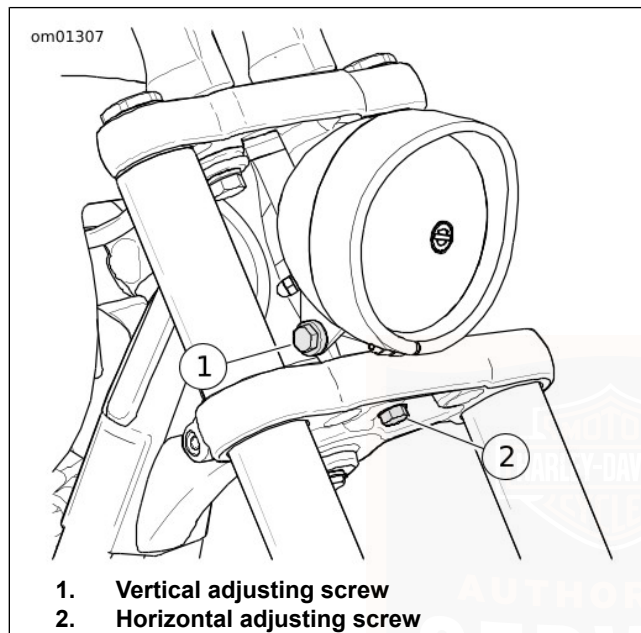


Figure 72. Headlamp Adjustment

Breakout (FXBR)

1. See Figure 73. Loosen vertical adjustment screw (3). Adjust headlamp vertically until beam centers on horizontal line.
2. Tighten vertical adjustment screw (3):  
Torque: 36.3–43.3 N·m (27–32 ft-lbs) *Breakout (FXBR)*

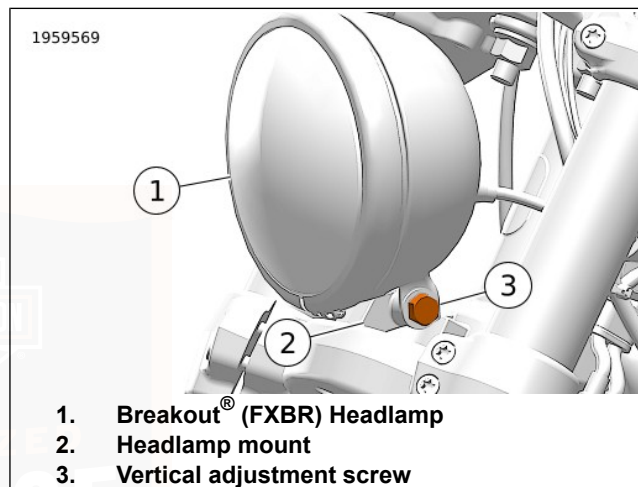
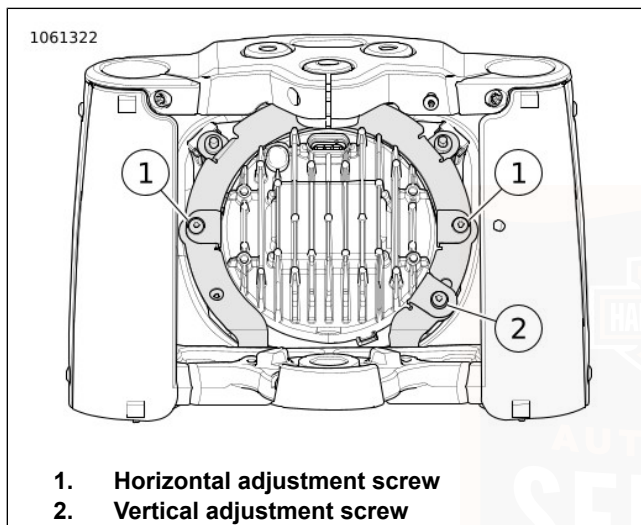


Figure 73. Headlamp Adjustment

Fat Boy (FLFB)

1. See Figure 74. Rotate horizontal adjustment screw (1). Adjust headlamp horizontally to direct light beam straight ahead.
2. Rotate vertical adjustment screw (2). Adjust headlamp vertically until beam centers on horizontal line.



**Figure 74. Headlamp Adjustment**

**Low Rider ST (FXLRST)**

1. See Figure 75. Rotate trim ring (3) counterclockwise to disengage trim ring hooks (4) from docking points (5) and remove.
2. Rotate horizontal adjustment screw (1). Adjust headlamp horizontally to direct light beam straight ahead.
3. Rotate vertical adjustment screw (2). Adjust headlamp vertically until beam centers on horizontal line.
4. Install trim ring.
  - a. Align trim ring hooks (4) with docking points (5).
  - b. Rotate trim ring (3) clockwise into position.
  - c. Pull out on trim ring to verify that it is locked at all docking points.

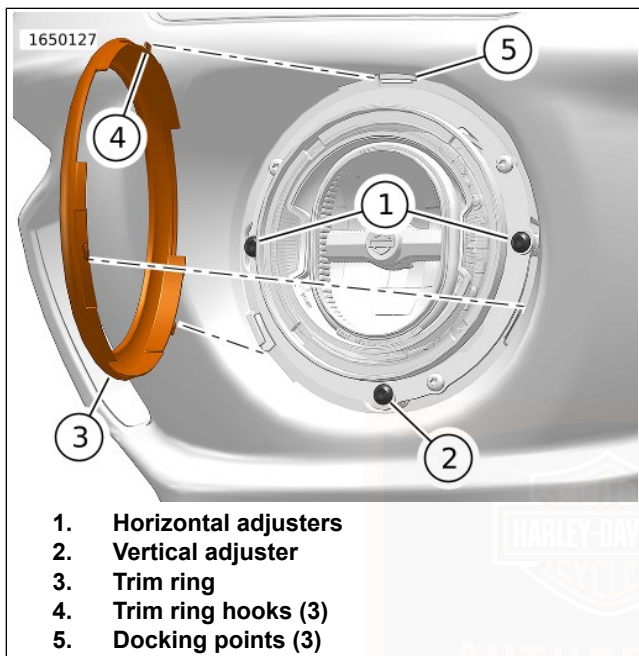


Figure 75. Headlamp Adjusters: FXLRST

## Replacing Headlamp

The headlamp contains no replaceable bulbs. The entire assembly must be replaced upon failure. See a Harley-Davidson dealer for service.

## TAIL LAMP BULB REPLACEMENT: LED

The tail lamp is a Light Emitting Diode (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.

## SEAT

### General

See Figure 76 and Figure 77. The seat has a tongue which engages a slot in the back end of the frame. Follow the appropriate procedure for your model motorcycle to remove or install the seat.

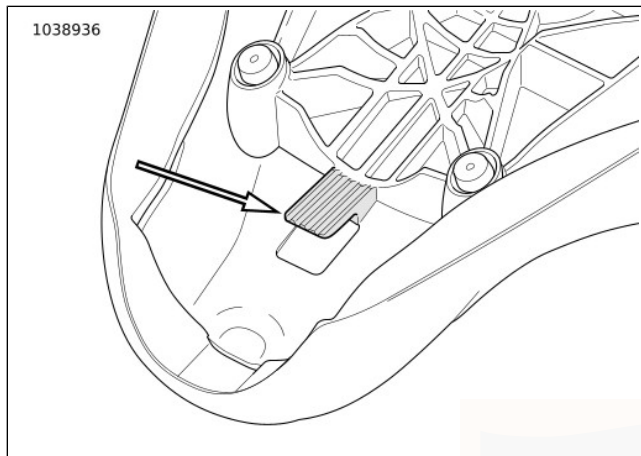


Figure 76. Seat Tongue (Typical)

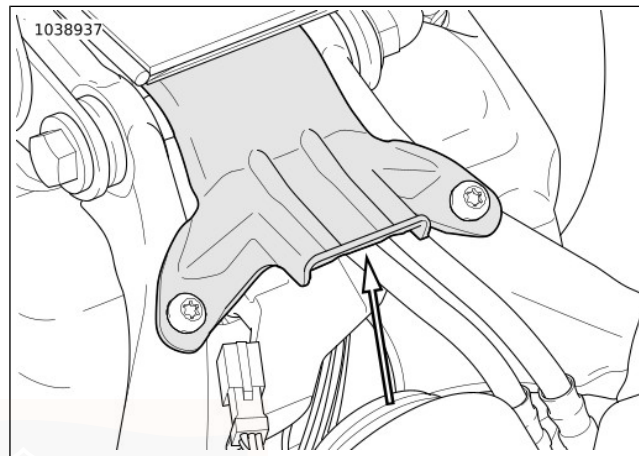


Figure 77. Seat Mounting Bracket

## Removal

1. See Figure 78.
2. Two-up One-piece Seat:
  - a. Remove the screw (1) and washer (9).
  - b. Raise the rear of the seat (5) and slide seat tongue out of the bracket.

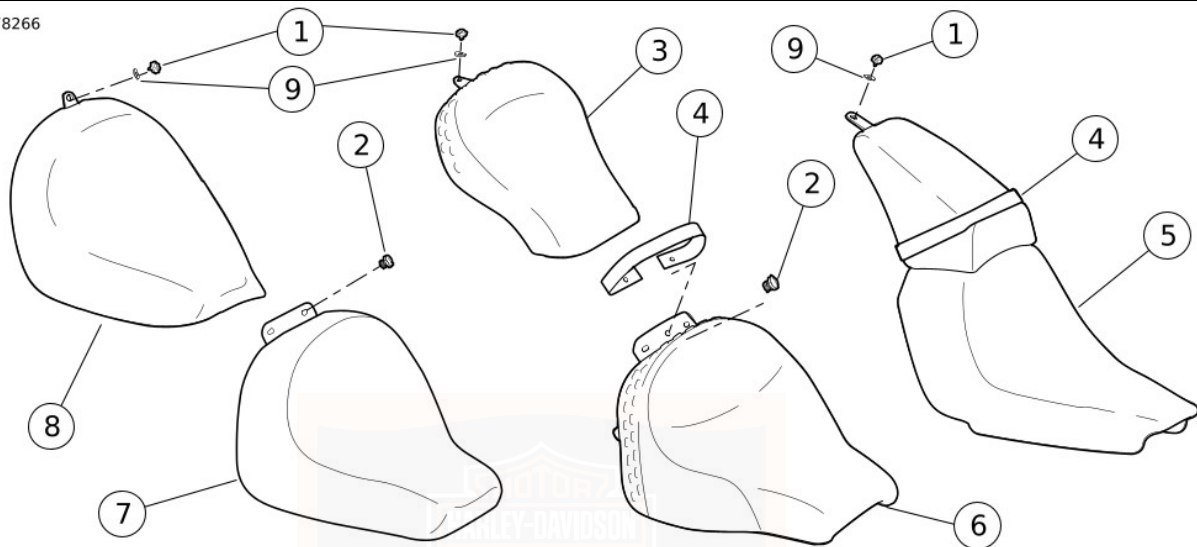
- c. Slide seat forward to remove from grab strap (4).
  - d. Remove grab strap (4) if needed.
3. Two-up Two-piece Seat (Three fastener):
- a. Remove the screw (1) and washer (9).
  - b. Remove the passenger pillion (3) by moving rearward.
  - c. Remove mounting nuts (2).
  - d. Raise the rear of the seat (6) off the mounting posts and slide seat tongue out of the bracket.
  - e. Remove grab strap (4) if needed.
4. Solo Seat:
- a. Remove the screw (1) and washer (9), or mounting nuts (2).
  - b. Raise the rear of the seat (7 or 8) and slide seat tongue out of the bracket.
5. Two-up Two-piece Seat (Two Fastener):
- a. Figure 79
  - b. Remove front screw (1) and washer (2).
  - c. Raise the rear of the rider seat (4) and slide seat tongue out of the bracket.
  - d. Remove top hat washer (3).
  - e. Remove rear screw (1) and washer (2).
  - f. remove passenger pillion (5).

## Installation

1. See Figure 78.
2. Two-up One-piece Seat:
- a. Install grab strap (4) if needed.
  - b. Install seat (5) rearward through the grab strap.
  - c. Move seat forward to engage seat tongue in frame and lower rear of seat.

- d. Install screw (1) and washer (9). Tighten.  
Torque: 5.4–8.1 N·m (48–72 **in-lbs**)
3. Two-up Two-piece Seat (Three fastener):
- a. Install grab strap (4) if needed.
- b. Insert tongue at front of seat into the seat mounting bracket.
- c. Install mounting nuts (2).
- d. Slide slots on passenger pillion (3) to engage the seat mounting nuts.
- e. Install screw (1) and washer (9). Tighten.  
Torque: 5.4–8.1 N·m (48–72 **in-lbs**)
4. Solo Seat:
- a. Insert tongue at front of seat into the seat mounting bracket.
- b. Install screw (1) and washer (9) or mounting nuts (2). Tighten.  
Torque: 5.4–8.1 N·m (48–72 **in-lbs**) *Seat screw*  
Torque: 1.7–3.4 N·m (15–30 **in-lbs**) *Seat nut*
5. Two-up Two-piece Seat (Two fastener):
- a. Insert tongue at front of seat into the seat mounting bracket.
- b. See Figure 79. Place the rear mounting bracket of the rider seat (4) over the front mounting bracket of the passenger pillion (5).
- c. Place the top hat washer (3) between the two brackets with the smaller diameter facing up.
- NOTE**  
*If installing rider seat only, top hat washer is not used.*
- d. Install front screw (1) and washer (2). Tighten.  
0.9–1.7 N·m (8–15 **in-lbs**)
- e. Install rear screw (1) and washer (2). Tighten.  
Torque: 0.9–1.7 N·m (8–15 **in-lbs**) *Seat thumbscrew*

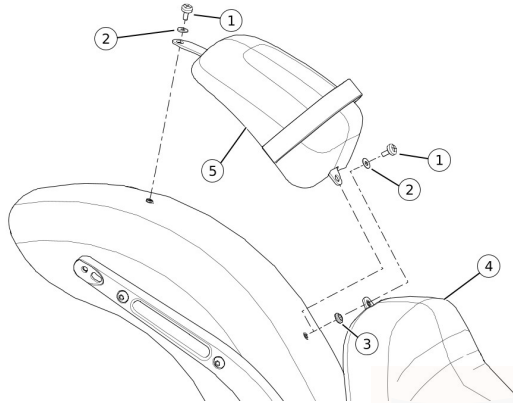
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1. Screw
2. Mounting nut (2)
3. Pillion
4. Grab strap
5. Two-up one-piece seat

6. Two-up two-piece seat (three fastener)
7. Solo seat dual fastener
8. Solo seat single fastener
9. Nylon washer

Figure 78. Seat: Softail Models



1. Screw (2)
2. Washer (2)
3. Top hat washer
4. Rider seat
5. Passenger pillion

Figure 79. Two-up Two-piece Seat (Two fastener)

## FUSES

For electrical problems, see a Harley-Davidson 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 and type.

## Main Fuse

### NOTE

The amperage of the main fuse is 50A.

Remove the main fuse whenever you perform maintenance on your motorcycle.

1. Set OFF/RUN/START switch to OFF.
2. Remove left side cover. Refer to: SERVICE PROCEDURES > SIDE COVERS (Page 169).
3. See Figure 80. Remove cover of main fuse holder (1).
4. Remove the main fuse.
5. Install the main fuse when maintenance is complete.
6. Install main fuse holder cover.
7. Install left side cover.



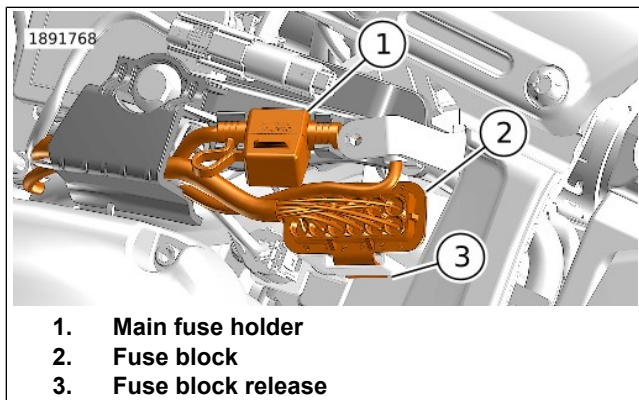


Figure 80. Fuse Mounts

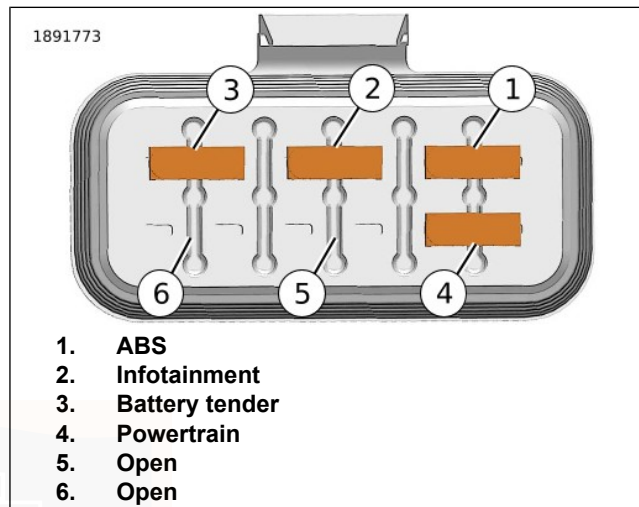


Figure 81. Fuses

## Replacing Fuses

1. Set OFF/RUN/START switch to OFF.
2. Remove left side cover. Refer to: SERVICE PROCEDURES > SIDE COVERS (Page 169).
3. See Figure 80 and Figure 81. Remove fuse block from caddy on motorcycle.

4. Remove the suspect fuse and inspect the element. Replace the fuse if the element is burned or separated.
5. Install fuse block to caddy so the release snaps into place.
6. Install left side cover.



## 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.

## ENGINE

### Starter Does Not Operate or Does Not Turn Engine Over

1. Engine OFF/RUN/SART switch off.
2. Discharged battery or loose or corroded connections (solenoid chatters).
3. Clutch lever not squeezed against handlebar or transmission not in neutral.
4. Jiffy stand not in retracted position (for models equipped with jiffy stand interlock).
5. Blown fuse.

### Engine Turns Over But Does Not Start

1. Fuel tank empty.
2. Fuel filter clogged.
3. Discharged battery or loose or damaged battery terminal connections.
4. Fouled spark plugs.
5. Spark plug cable connections loose or in bad condition and shorting.
6. Loose or corroded wire or cable connection at coil or battery.
7. Fuel pump inoperative.
8. Blown fuse.

### Starts Hard

1. Spark plugs in bad condition, have improper gap or are partially fouled.
2. Spark plug cables in bad condition and leaking.
3. Battery nearly discharged.
4. Loose wire or cable connection at one of the battery terminals or at coil.
5. Engine oil too heavy (cold weather).

6. Fuel tank vent plugged or fuel line closed off, restricting fuel flow.
7. Water or dirt in fuel system or filter.
8. Fuel pump inoperative.

### **Starts But Runs Irregularly or Misses**

1. Spark plugs in bad condition or partially fouled.
2. Spark plug cables in bad condition and leaking.
3. Spark plug gap too close or too wide.
4. Battery nearly discharged.
5. Damaged wire or loose connection at battery terminals or coils.
6. Intermittent short circuit due to damaged wire insulation.
7. Water or dirt in fuel system or filter.
8. Fuel vent system plugged. See dealer.
9. One or more injectors fouled.

### **A Spark Plug Fouls Repeatedly**

1. Fuel mixture too rich.
2. Incorrect spark plug for service

### **Pre-ignition or Detonation (Knocks or Pings)**

1. Incorrect fuel.
2. Incorrect spark plug for service

### **Overheats**

1. Insufficient oil supply or oil not circulating.
2. Heavy carbon deposit from lugging engine. See dealer.
3. Insufficient air flow over cylinder heads during extended periods of idling or parade duty.

### **Excessive Vibration**

1. Rear fork pivot shaft loose. See dealer.
2. Front engine mounting bolts loose. See dealer.
3. Front chain or links tight as a result of insufficient lubrication or belt badly worn.
4. Engine to transmission mounting bolts loose (applicable models). See dealer.
5. Damaged frame. See dealer.
6. Wheels and/or tires damaged. See dealer.
7. Vehicle not properly aligned. See dealer.

## **Engine Oil Not Circulating (Oil Pressure Lamp Lit)**

1. Insufficient or diluted oil supply.
2. Oil feed clogged with ice and sludge in freezing weather.
3. Grounded oil signal switch wire or faulty signal switch. See dealer.
4. Damaged or improperly installed check valve. See dealer.
5. Oil pump problem. See dealer.

## **ELECTRICAL SYSTEM**

### **Alternator Does Not Charge**

1. Regulator not grounded. See dealer.
2. Engine ground wire loose or damaged. See dealer.
3. Loose or damaged wires in charging circuit. See dealer.

### **Alternator Charge Rate is Below Normal**

1. Weak battery.
2. Excessive use of add-on accessories.
3. Loose or corroded connections.
4. Extensive periods of idling or low speed riding.

## **TRANSMISSION**

### **Transmission Shifts Hard**

1. Bent shifter rod. See dealer.

### **Transmission Jumps Out of Gear**

1. Worn shifter dogs in transmission. See dealer.

### **Clutch Slips**

1. Clutch controls improperly adjusted. See dealer.
2. Worn friction discs. See dealer.
3. Insufficient clutch spring tension. See dealer.

### **Clutch Drags or Does Not Release**

1. Clutch controls improperly adjusted. See dealer.
2. Primary chaincase overfilled.
3. Clutch discs warped. See dealer.

### **Clutch Chatters**

1. Friction discs or steel discs worn or warped. See dealer.

## **BRAKES**

### **ABS System Behavior**

1. ABS lamp does not shut off above 5 km/h (3 mph). See dealer.
2. Other ABS symptoms. Refer to Table 32.

### **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.



## MAINTENANCE RESPONSIBILITIES

This owner's manual contains 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.

1. Make an appointment with a Harley-Davidson dealer for inspection and service prior to the first 1,600 km (1,000 mi), 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.

While you may elect to use non genuine Harley-Davidson parts for maintenance and/or repair services, Harley-Davidson is not obligated to pay for repairs of the non genuine

Harley-Davidson parts or for repairs of any damage resulting from the use of non genuine parts.

### NOTICE

**It is possible to overload the 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. (00211d)**

## FINDING AN AUTHORIZED DEALER

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, refer to Refer to: [www.harley-davidson.com](http://www.harley-davidson.com). The fact that an authorized Harley-Davidson dealership performs warranty repairs does not create an agency relationship between Harley-Davidson and the authorized dealership.

## 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. Refer to Refer to: [www.harley-davidson.com](http://www.harley-davidson.com).

## 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).





# 2025 HARLEY-DAVIDSON LIMITED MOTORCYCLE WARRANTY

## 24 Months/Unlimited Miles

### 36 Months/Unlimited Kilometers for Portugal, Spain, Sweden and Japan

Harley-Davidson Motor Company Inc. warrants for any new 2025 Harley-Davidson<sup>®</sup> motorcycle that an authorized Harley-Davidson dealer will repair or replace without charge any parts found under normal use to be defective in factory materials or workmanship. To the extent permitted by law, such repair or replacement of defective parts will be Harley-Davidson's sole obligation and your sole and exclusive remedy under this limited warranty (hereinafter "limited warranty" or "motorcycle limited warranty"). This limited warranty applies only for the duration identified in the "Warranty Period" section below.

No person, including Harley-Davidson dealers, may modify, extend, or waive any part of this warranty. As a condition of this limited warranty, you are responsible for properly using, maintaining, and caring for your motorcycle as outlined in your Owner's Manual. Harley-Davidson recommends that you maintain copies of all maintenance records and receipts.

Except as described in the following paragraphs, taking your motorcycle to be serviced by a repair shop that is not an authorized Harley-Davidson dealer will not void this warranty,

and using non-genuine Harley-Davidson parts alone will not void this warranty.

Harley-Davidson may, however, exclude warranty coverage for defects or damage caused by unauthorized (a) parts, (b) service, or (c) use of the vehicle, including defects or damage caused by use of non-Genuine Harley-Davidson parts, unapproved Genuine Harley-Davidson parts or use of the vehicle for racing or competition. Denial of coverage may be based on installation of parts designed for unauthorized uses of the vehicle, such as a trailer hitch.

Additionally, Harley-Davidson shall exclude warranty coverage and deny all warranty claims for functional defects of powertrain components for any Harley-Davidson motorcycle registered in your country if Harley-Davidson or any authorized Harley-Davidson dealer has any information showing that the vehicle was tuned using a tuning product not covered by the local governmental authorities.

## Disclaimers & Limitations

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 APPLICABLE LAW, WHICHEVER IS SHORTER. EXCEPT WHERE PROHIBITED BY LAW, 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.

TO THE FULLEST EXTENT ALLOWED BY LAW, NEITHER HARLEY-DAVIDSON NOR ITS AFFILIATES 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.

Neither Harley-Davidson nor its affiliates nor its authorized dealers are responsible for any time or income that you lose, any inconvenience, loss of your transportation or use of your motorcycle, cost of a rental motorcycle, fuel, 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.

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This motorcycle Limited Warranty gives you specific legal rights, and you may also have other rights which vary from country to country except decisions based on your local Customer Protection Laws arbitration awards and/or dispute resolution awards supersede Company policy.

## Warranty Period

1. The duration of this limited warranty is 24 months.
  - a. Portugal, Spain, Sweden and Japan duration is 36 months.
2. The warranty period for all coverages begins on the date of initial retail purchase of a new motorcycle from an authorized Harley-Davidson dealer.
3. Any unexpired portion of the motorcycle Limited Warranty will be transferred to subsequent owners, upon the resale of the motorcycle during the warranty period.
  - a.

### NOTE

*For rental, H.O.G.™, H-D® Company Owned Vehicles (COV), or Police motorcycles, the warranty period will begin when the motorcycle is first placed into service, and initial retail purchasers will receive any unexpired portion of the motorcycle Limited Warranty*

## Owner's Obligations

To obtain warranty service, return your motorcycle at your expense within the limited warranty period to an authorized Harley-Davidson dealer. The authorized Harley-Davidson 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.

## Exclusions

**For On-Road Motorcycles, this Limited warranty will not cover claims arising from the following:**

1. Failure to operate or maintain your motorcycle as specified in the owner's manual, including the Maintenance Responsibilities, Service Intervals & Records, and Maintenance & Lubrication sections.
2. Abuse, neglect, misuse, improper storage, use "off the highway," or used for racing or competition of any kind.
3. Motorcycles which are not manufactured to comply with the laws of the market in which they are registered.
4. Defects or damage caused by installation of off-road parts or competition parts installed to enhance performance, or making other unapproved modifications, including but not limited to a trailer hitch. This includes the use of genuine Harley-Davidson parts in unapproved applications.
5. 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.
6. A motorcycle which has been in an accident or collision, dropped or struck.
7. 7. Damage to the radio and/or electronic display caused by abnormal use, unauthorized modifications, computer viruses, or installation of unauthorized software, peripherals and attachments (accessories, GPS/Satellite units), including but not limited to syncing issues or improper functioning devices, caused by an incompatible phone, incompatible media software, or other media storage device (MP3, jump drive, etc.).
  - a. Replacement parts under this warranty may include a refurbished radio.

## On-Road/Off-Road Vehicles

Harley-Davidson's Pan America was designed for on-road and moderate off-road use. This entails use on paved and gravel roads and groomed trails, but does not include competition courses, rally routes or similar uses.

**For On-Road/Off-Road Motorcycles, this limited warranty will not cover claims arising from the following:**

1. Failure to operate or maintain your motorcycle as specified in the Owner's Manual, including the Maintenance Responsibilities, Service Intervals & Records, and Maintenance & Lubrication sections.
2. Abuse, neglected, misused, improper storage, or use for racing or competition of any kind.
3. Motorcycles not equipped to comply with the laws of the market in which they are registered.
4. Defects or damage caused by installation of off-road or competition parts installed to enhance performance, or making other unapproved modifications, including but not limited to a trailer hitch. This includes the use of genuine Harley-Davidson parts in unapproved applications.
5. 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.

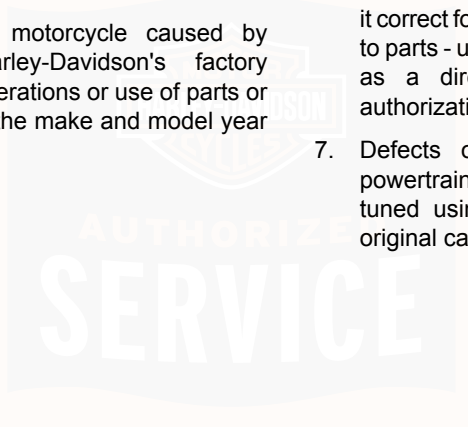
6. A motorcycle which has been in an accident, collision, dropped or struck.
7. Damage to the radio and/or electronic display caused by abnormal use, unauthorized modifications, computer viruses, or installation of unauthorized software, peripherals and attachments (accessories, GPS/Satellite units), including but not limited to syncing issues or improper functioning devices, caused by an incompatible phone, incompatible media software, or other media storage device (MP3, jump drive, etc.).
  - a. Replacement parts under this warranty may include a refurbished radio.

## Other Limitations

This limited warranty does not cover:

1. Parts and labor for normal maintenance as recommended in the owner's manual, or the replacement of parts due to normal wear and tear including, but not limited to, the following: light bulbs, tires, lubrication, oil and filter change, fuel system cleaning, battery maintenance, engine tune-up, spark plugs, brake pads, brake discs, clutches and components, chain/belt adjustment, and chain/belt replacement.

2. Cosmetic damage that arises as a result of owner misuse or abuse, lack of proper maintenance as described in the Owner's Manual, 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), including but not limited to windshield cracking or other damage caused by road debris, overtightened fasteners, or use of cleaning products other than those approved by Harley-Davidson.
3. Any cosmetic damage allegedly existing at the time of retail delivery that has not been documented by the authorized Harley-Davidson selling dealer prior to retail delivery.
4. Defects or damage to the motorcycle caused by alterations outside of Harley-Davidson's 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-genuine Harley-Davidson parts, or unapproved genuine Harley-Davidson parts, even those installed by an authorized Harley-Davidson dealership, that cause a genuine Harley-Davidson part to fail. Examples include, but are not limited to performance-enhancing powertrain components or software, exhaust systems, trailer hitches, non-approved tires, lowering kits, handlebars, and add-ons connected to the factory electrical system.
6. Upgraded parts as a warranty replacement. The limited warranty allows for repair or replacement of failed parts to put the vehicle, component, or part back to its original condition with factory supplied materials and as delivered. We will take all steps to repair/replace the part to make it correct for the customer. This does not include upgrades to parts - unless no other suitable component is available as a direct replacement. This would require an authorization prior to repair.
7. Defects or damage impacting the functionality of powertrain components in a motorcycle that has been tuned using a tuner or calibration different from the original calibration installed at factory.



## Important: Read Carefully

1. Authorized Harley-Davidson dealers 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, service plan, or service contract you may receive or purchase from an authorized Harley-Davidson dealer. No authorized Harley-Davidson dealer is 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 dealers 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 obligates 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 Harley-Davidson dealer to learn whether such programs are available to you.
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 your motorcycle. The use of parts not designed and tested for your motorcycle may have negative consequences on the performance of your motorcycle and may cause damage or defects not covered by this limited warranty.

6. 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.

## Environmental Factors

### **This limited warranty will cover rust/corrosion and/or pitting:**

1. 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. On multiple components, if they are the same component (i.e. both mirrors, both rider footboards, etc.)

### **This limited warranty will not cover rust/corrosion and/or pitting:**

1. On wheels, unless the condition has been properly documented during the Pre-Delivery inspection.
2. As a result of damage from road debris, hazards, neglect, chemical exposure or abuse/misuse of the motorcycle.
3. Inside fuel tanks.

4. The results from off-road use.

The owner is responsible for protecting the motorcycle from any cosmetic concerns that result from use and/or from exposure to the elements.

## Worldwide Tourist Warranty

Every owner of a Harley-Davidson® motorcycle, who has maintained his or her vehicle according to the warranty and maintenance procedure outlined in the Owner's Manual, is entitled to full warranty service while traveling the world.

### *NOTE*

*Kilometers are approximately one third less than a mile, so appropriate adjustments must be made when considering warranty statements written in terms of miles only. The dealer may not charge the customer for repairs made under the H-D Motorcycle Warranty.*

## 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.
- Harley-Davidson Motor Company, Inc. Attention: Harley-Davidson Customer Support Center P.O. Box 653 Milwaukee, Wisconsin 53201 1-414-343-4056.

Harley Davidson's limited 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 motorcycle Limited Warranty in order to remedy any such defects that result in a component malfunction or failure during the warranty period. Except where prohibited by law, 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.

The rights and benefits conferred upon you and the obligations of Harley-Davidson as set forth in the motorcycle Limited Warranty 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.

## **Emissions and Noise Regulations**

### **Tampering with noise control / exhaust emissions control system prohibited:**

Federal law in your country prohibits the following acts or the causing thereof: (1) the removal or rendering inoperative by any person other than for the purposes of maintenance, repair, or replacement of any device or element of design incorporated into any new vehicle for the purpose of controlling emissions of pollutant gases or noise prior to its sale or delivery to the ultimate purchaser or while it is in use, or (2) the use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

Among those acts presumed to constitute tampering are the following:



1. Replacing the muffler(s) and/or the entire exhaust system with parts not certified for gas pollutant emissions and/or noise legal for street use.
2. Removing or modifying the muffler internal baffles in any way.
3. Replacing the air intake/cleaner assembly with one not certified as legal in terms of pollutant gas emissions and/or noise legal for street use.
4. Modifying the air intake/cleaner assembly in such a way as to make the vehicle no longer legal in terms of polluting gas emissions and/or noise for street use.

### **Limited Motorcycle Warranty Australia/ New Zealand Only**

This Harley-Davidson 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 2025 Harley-Davidson motorcycle that an authorized Harley-Davidson 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 outlined above.

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 below.

#### **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.*

### **Your Consumer Rights Australia/ New Zealand Only**

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.

## China 3R Warranty Period

Pursuant to the China Motorcycle 3R Rules, the 3R warranty period for motorcycles starts on the date when the official invoice is issued and ends on the earlier of either the date that is the first anniversary or the date the mileage meter hits 6,003 km (3730 mi), both dates inclusive. If the ending date is a public holiday in China, it will automatically extend to the next business day ("3R Warranty Period").

However, the following time periods should be excluded for the purpose of determining the 3R Warranty Period:

1. Time taken for repair pursuant to the warranty obligations under the China Motorcycle 3R rules;
2. Waiting time due to lack of spare parts needed for repair; and
3. Any time of delay in repair caused by force majeure.

## Repair obligations

The Dealer or Distributor has an obligation to perform repairs of the motorcycle, either by itself or through the designated repairers for any performance malfunction occurring during the 3R Warranty Period, provided that the China Motorcycle 3R Rules specify its seller's obligation to conduct a free repair with respect to such performance malfunction, and customers do not need to pay any repair costs such as parts costs and service fees.

## Replacement obligations

The Dealer/Distributor has an obligation to provide a new replacement motorcycle of same type to the customer in any of the following circumstances:

1. The motorcycle has any specific malfunction as defined by China Motorcycle 3R Rules within Day 7 (inclusive of Day 7) following the sale of the motorcycle (which shall be defined as the "Invoicing Date" throughout this Warranty Manual), unless the customer elects to have the motorcycle repaired or returned instead;
2. The motorcycle has any specific malfunction as defined by China Motorcycle 3R Rules during Day 8 to Day 15 (both dates inclusive) following the sale of the motorcycle, unless the customer elects to have the motorcycle repaired instead;
3. The motorcycle has any of the specific malfunction as defined by China Motorcycle 3R Rules after Day 15 following the sale of the motorcycle and such motorcycle still cannot be used for its normal purpose after being repaired twice;
4. The motorcycle has not been fully repaired within 90 days after being sent for repair due to the manufacturer's failure to provide the necessary spare parts in accordance with the sales contract;

5. In the event that the Dealer/Distributor acts as the repairer of the motorcycle, the motorcycle has not been repaired within 30 days (inclusive of the 30th day) after being sent for repair due to the Dealer/Distributor's own reason;
  6. The 3R warranty period shall restart for the replacement motorcycle from the date of replacement and the Dealer/Distributor shall provide a new warranty voucher.
3. Any of the circumstances (2), (3) and (4) under the Section "Replacement Obligations" arise and the customer demands for refund in any way despite the fact that Dealer/Distributor can provide a replacement motorcycle of the same type.

In the circumstance (1) above, the Dealer/Distributor shall also refund not only the purchase price of the motorcycle (which shall be defined in this Warranty Manual as the VAT tax included prices as indicated on the official invoice issued to the customer by the Dealer/Distributor for the returned motorcycle) but shall also bear any reasonable costs, including any surcharges, the vehicle use tax, insurance expense, license plate fees, inspection and examination fees, road maintenance charges, etc.

## Return obligations

The Dealer/Distributor has an obligation to accept the return of the motorcycle and refund the customer in full or partially in any of the following circumstances:

1. The motorcycle has any of the specific malfunction as defined by China Motorcycle 3R Rules within 7 days (inclusive of Day 7) following the sale of the motorcycle, unless the customer elects to have the motorcycle repaired or replaced;
2. Any of the circumstances (2), (3) and (4) under the Section "Replacement Obligations" arise but the Dealer/Distributor does not have any motorcycle of same type for replacement, and consequently the customer demands for refund; or

In the circumstance (2) above, the Dealer/Distributor shall only refund the customer with the purchase price, but the customer shall bear all other reasonable costs as described in above paragraph. In the circumstance (3) above, the Dealer/Distributor shall only refund the customer with the purchase price after deducting depreciation of the motorcycle calculated at the rate of 2% of the purchase price per day and based on actual days elapsed (which calculated from the invoicing date to the date of returning the motorcycle to the customer, both dates are inclusive, while excluding any time of repair and any waiting period due to lack of repair parts) meanwhile the customer shall bear all other reasonable costs as described in above paragraph.

## **Exclusions for China Motorcycle 3R Rules**

**The China Motorcycle 3R Rules shall not be applied to the motorcycle if any of the following conditions is satisfied:**

1. Purchased more than 1 year upon the invoicing date.
2. The mileage is more than 6,003 km (3730 mi).
3. Damages caused by the customer that the customer does not use, maintain or take care of the motorcycle according to the Owner's Manual.
4. Damages caused by the dismantle movement of a repairer who is not an authorized Harley-Davidson Dealer/Distributor for repairing the motorcycle.
5. Lack of "three guarantees" certificate or the effective invoice (except for those who can prove that the motorcycle is within the 3R Warranty Period).
6. With the "three guarantees" certificate altered or the production model, VIN or the engine number on the "three guarantees" certificate is inconsistent with such information of the motorcycle.

7. Damages caused by force majeure.

## **Limited Motorcycle Warranty Japan Only**

The Policy Manual is in relation to the global warranty policy applicable to the customers of Harley-Davidson Japan K.K. (hereinafter referred to as "HDJ"). The Manual lays down the policies to be adopted by the authorized dealers of Harley-Davidson while servicing warranty claims made by the customers of Harley-Davidson and the process for claiming reimbursement from Harley-Davidson in relation to the services provided to its customers. In case of any conflict between the provisions of the Authorized Harley-Davidson Dealer Contract (hereinafter referred to as the "Dealer Contract") and this Manual, the provisions of the Dealer Contract shall prevail.

## **36 Months/Unlimited Kilometers**

The following is a re-statement of the express Limited Warranty. In the event there is a discrepancy between the summary here and the terms of the Limited Warranty contained in the Warranty Manual, the terms and conditions outlined in the Owner's Manual shall govern.

## SERVICE RECORDS

### Regular Service Intervals

Service must be performed at specified intervals to keep your Harley-Davidson motorcycle operating at peak performance. Refer to Service Intervals table.

Refer to Service Actions for service action definitions used in the service interval table.

#### NOTE

- *Whenever a vehicle is in for maintenance:*
  - a. *always check for and complete recalls and open product programs.*
  - b. *always verify that the latest calibration is installed.*
- *After completing the final service interval, repeat the service schedule starting at the 8000 km (5000 mi) interval.*

## Service Intervals

### Service Actions

**Table 46. Service Action Definitions**

ACTION	DEFINITION
Inspect	Carefully examine component for excess wear, abnormality, contact, or leaks.
Check	Verify the component is within the owner's manual or service manual service limits. Adjust or repair as necessary.
Lubricate	Lubricate the component as specified in the owner's or service manual with Harley-Davidson approved product.
Replace	Replace the component at the specified intervals.
Clean	Clean the component as specified in the owner's or service manual.
Rebuild	Rebuild the component according to the procedures in the service manual.

### Maintenance Records

Maintain a record of this service to keep your new motorcycle limited warranty in force. Refer to Table 47.

**Table 47. Owner's Maintenance Records**

SERVICE MILE INTERVAL	DATE	DEALER NUMBER	TECHNICIAN NAME	TECHNICIAN SIGNATURE
1,600 km (1,000 mi)				
8,000 km (5,000 mi)				
16,000 km (10,000 mi)				
24,000 km (15,000 mi)				
32,000 km (20,000 mi)				
40,000 km (25,000 mi)				
48,000 km (30,000 mi)				
56,000 km (35,000 mi)				
64,000 km (40,000 mi)				
72,000 km (45,000 mi)				
80,000 km (50,000 mi)				

**Table 48. Regular Service Intervals: Harley-Davidson Softail Models**

COMPONENT	ACTION	1600 KM 1000 MI	8000 KM 5000 MI	16000 KM 10000 MI	24000 KM 15000 MI	32000 KM 20000 MI	40000 KM 25000 MI	48000 KM 30000 MI	56000 KM 35000 MI	64000 KM 40000 MI	72000 KM 45000 MI	80000 KM 50000 MI	NOTES
<b>Service Intervals</b>													
Electrical equipment and switches	Inspect	x	x	x	x	x	x	x	x	x	x	x	
Front tire pressure and tread	Check	x	x	x	x	x	x	x	x	x	x	x	1
Front wheel spoke tightness (if equipped)	Check	x	x			x			x			x	2, 4, 3
Front brake fluid level	Inspect	x	x	x	x	x	x	x	x	x	x	x	7

**Table 48. Regular Service Intervals: Harley-Davidson Softail Models**

COMPONENT	ACTION	1600 KM 1000 MI	8000 KM 5000 MI	16000 KM 10000 MI	24000 KM 15000 MI	32000 KM 20000 MI	40000 KM 25000 MI	48000 KM 30000 MI	56000 KM 35000 MI	64000 KM 40000 MI	72000 KM 45000 MI	80000 KM 50000 MI	NOTES
Front brake fluid moisture content	Check	x	x	x	x	x	x	x	x	x	x	x	1, 2
Steering head bearings	Adjust	x		x		x		x		x		x	2
Steering head bearings	Lubricate							x					2
Windshield bushings (if applicable)	Inspect			x		x		x		x		x	
Upper and lower switch housing screw torque	Tighten	x		x		x		x		x		x	1, 2, 5
Clutch lever handlebar clamp screw torque	Tighten	x		x		x		x		x		x	1, 2, 5
Master cylinder handlebar clamp screw torque	Tighten	x		x		x		x		x		x	1, 2, 5
Front brake handlebar clamp screw torque	Tighten	x		x		x		x		x		x	1, 2, 5
Air cleaner filter	Inspect		x	x	x	x	x	x	x	x	x	x	3
Engine oil and filter	Replace	x	x	x	x	x	x	x	x	x	x	x	1, 3
Oil cooler	Clean	x	x	x	x	x	x	x	x	x	x	x	
Primary chaincase lubricant	Replace	x		x		x		x		x		x	3, 2
Transmission lubricant	Replace	x				x				x			3, 2
Oil and brake lines	Inspect	x	x	x	x	x	x	x	x	x	x	x	1, 2, 6
Fuel lines and fittings	Inspect	x	x	x	x	x	x	x	x	x	x	x	1, 2, 6
Rear brake fluid level	Inspect	x	x	x	x	x	x	x	x	x	x	x	7
Rear brake fluid moisture content	Check	x	x	x	x	x	x	x	x	x	x	x	1, 2
Brake systems	Replace	..... Flush brake systems and replace DOT 4 hydraulic brake fluid every two years or sooner if moisture content is 3 percent or greater. ....											2

**Table 48. Regular Service Intervals: Harley-Davidson Softail Models**

COMPONENT	ACTION	1600 KM 1000 MI	8000 KM 5000 MI	16000 KM 10000 MI	24000 KM 15000 MI	32000 KM 20000 MI	40000 KM 25000 MI	48000 KM 30000 MI	56000 KM 35000 MI	64000 KM 40000 MI	72000 KM 45000 MI	80000 KM 50000 MI	NOTES
Brake pads and discs	Inspect	x	x	x	x	x	x	x	x	x	x	x	
Front axle nut torque	Tighten	x		x		x		x		x		x	1, 2, 5
Jiffy stand	Lubricate	x	x	x	x	x	x	x	x	x	x	x	2, 3
Clutch system	Adjust	x	x	x	x	x	x	x	x	x	x	x	2, 3
Brake and clutch controls	Lubricate	x	x	x	x	x	x	x	x	x	x	x	2, 8
Rear wheel spoke tightness (if equipped)	Check	x	x			x			x			x	2, 3, 4
Rear tire pressure and tread	Check	x	x	x	x	x	x	x	x	x	x	x	1
Drive belt and sprockets	Inspect	x	x	x	x	x	x	x	x	x	x	x	2
Drive belt	Adjust	x	x	x	x	x	x	x	x	x	x	x	2
Rear axle nut torque	Tighten	x		x		x		x		x		x	1, 2, 5
Exhaust system, fasteners and shields	Inspect	x	x	x	x	x	x	x	x	x	x	x	1, 3
12 volt battery	Check	_____ Check battery, terminal torque and clean connections annually. Lubricate terminals with ELECTRICAL CONTACT LUBRICANT. _____											1
Spark plugs	Replace	_____ Replace spark plugs every two years or every 30,000 mi (48,000 km), whichever comes first. _____											
Front forks	Rebuild											x	2, 3
Fuel filter	Replace	_____ Replace fuel filter element every 100,000 mi (161,000 km). _____											2, 3
Component and system functions	Road Test	x	x	x	x	x	x	x	x	x	x	x	
<b>NOTES</b>													
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.													



**Table 48. Regular Service Intervals: Harley-Davidson Softail Models**

COMPONENT	ACTION	1600 KM	1000 MI	8000 KM	5000 MI	16000 KM	10000 MI	24000 KM	15000 MI	32000 KM	20000 MI	40000 KM	25000 MI	48000 KM	30000 MI	56000 KM	35000 MI	64000 KM	40000 MI	72000 KM	45000 MI	80000 KM	50000 MI	NOTES
<p>3. Perform maintenance more frequently in severe riding conditions. This includes extreme temperatures, dusty environments, mountainous or rough roads, long storage conditions, short runs, heavy stop/go traffic or poor fuel quality.</p> <p>4. Perform spoke tension check at 1,000 mi (2,000 km), 5,000 mi (8,000 km), 20,000 mi (32,000 km) services and every 15,000 mi (24,000 km) interval thereafter. Not all vehicles have spoked wheels. Consult appropriate topic in the service manual.</p> <p>5. For torque instructions, see Shop Practices in the service manual.</p> <p>6. Check for leaks, contact or abrasion.</p> <p>7. Brake fluid level drops as brake pads wear.</p> <p>8. Use HARLEY LUBE.</p>																								



# NOTES

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## ACRONYMS AND ABBREVIATIONS

Table 49. Acronyms and Measurement Symbols

ITEM	DEFINITION
A	Amperes
ABS	Anti-lock braking system
AC	Alternating current
ACR	Automatic compression release
AGM	Absorbed glass mat (battery)
Ah	Ampere-hour
BCM	Body control module
°C	Celsius (Centigrade)
CCA	Cold cranking amps
CI	Cubic inch
cm	Centimeters
cm <sup>3</sup>	Cubic centimeters (cc)
CVO	Custom vehicle operations
DC	Direct current
DLC	Data link connector
DOM	Domestic
DT II	Digital Technician II
DTC	Diagnostic trouble code
ECM	Electronic control module
EFI	Electronic fuel injection
EHCU	Electro hydraulic control unit
EITMS	Engine idle temperature management system

Table 49. Acronyms and Measurement Symbols

ITEM	DEFINITION
EHCU	Electro hydraulic control unit
ETC	Electronic throttle control
EV	Electric vehicle
EVAP	Evaporative emissions control system
EVPT	Electric vehicle powertrain
EVSE	Electric vehicle supply equipment
°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
HP	Horsepower
HV	High voltage
Hz	Hertz
IGN	Ignition light/key switch position
IM	Instrument module

**Table 49. Acronyms and Measurement Symbols**

ITEM	DEFINITION
IMU	Inertia measurement unit
in	inch
in <sup>3</sup>	Cubic inch
<b>in-lbs</b>	Inch pounds
kg	Kilogram
km	Kilometer
km/h	Kilometers per hour
kPa	Kilopascal
kW	Kilowatt
L	Liter
lb	Pounds
LED	Light emitting diode
Li-ion	Lithium-Ion
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	Onboard charger
oz	Ounce

**Table 49. Acronyms and Measurement Symbols**

ITEM	DEFINITION
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
PTT	Push to talk
qt	Quart
RDRS	Reflex defensive rider systems
RESS	Rechargeable energy storage system
rpm	Revolutions per minute
SDS	Safety data sheet
SoC	State of charge
SoH	State of health
SW	Software
TCS	Traction control system
TCU	Telematic Control Unit
TPMS	Tire pressure monitoring system
USB	Universal serial bus
USB-C	Universal serial bus - type C
V	Volt
VAC	Volts of alternating current
VDC	Volts of direct current
VHC	Vehicle hold control
VIN	Vehicle identification number

**Table 49. Acronyms and Measurement Symbols**

<b>ITEM</b>	<b>DEFINITION</b>
VR	Voice recognition
W	Watt
WSS	Wheel speed sensor
Wh	Watt-hour
WHIM	Wireless Headset Interface Module

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