

SOFTAIL® MODELS

2013 HARLEY-DAVIDSON® INTERNATIONAL OWNER'S MANUAL



Harley-Davidson Motor Company
Service Communications
Milwaukee WI 53208 USA

2025-02-17



99469-131A

English

Printed in the USA

2013 HARLEY-DAVIDSON® INTERNATIONAL OWNER'S MANUAL
SOFTAIL® MODELS - 99469-131A



99469-131A



SOFTAIL® MODELS

2013 HARLEY-DAVIDSON® INTERNATIONAL OWNER'S MANUAL



99469-131A

2013 HARLEY-DAVIDSON® INTERNATIONAL OWNER'S MANUAL - SOFTAIL® MODELS

TABLE OF CONTENTS

INTRODUCTION

Safety Definitions.....	1
Your Owner's Manual.....	1
We Care About You.....	1
United States Owners.....	2
Customer Service Assistance.....	2

SAFETY FIRST

Safe Operating Rules.....	5
Anti-Lock Brake System (ABS).....	11
Rules of the Road.....	12
Accessories and Cargo.....	12
Accessories and Cargo Guidelines.....	13
Noise Control System.....	15
Tampering.....	15
Labels.....	15

IDENTIFICATION

Vehicle Identification Number (VIN).....	19
General.....	19
Location.....	19
Abbreviated VIN.....	19
Models and Features.....	22
Anniversary Models.....	22

SPECIFICATIONS

Specifications.....	23
Tire Data.....	29
Gasoline Blends.....	31
Fuel.....	32
Catalytic Converter.....	32

CONTROLS AND INDICATORS

General: Controls and Indicators.....	35
Ignition Switch.....	35
General.....	35
All Models Except FXS and FXSB.....	36
FXS and FXSB Models.....	36
Hand Controls.....	38
Electric Starter Switch.....	38
Hazard Warning 4-Way Flasher.....	38
Engine OFF/RUN Switch.....	39
Throttle Control Grip.....	39
Clutch Hand Lever.....	40
HORN/TRIP Switch.....	40
Headlamp Dimmer Switch.....	40
Turn Signal Switches.....	41
Turn Signal Switch Operation.....	43
Operating.....	43
Automatic Canceling.....	43

TABLE OF CONTENTS

Manual Canceling.....	43	Location.....	50
Instruments.....	43	Shift Pattern.....	50
Speedometer.....	43	Neutral.....	50
Odometer.....	43	Heel-Toe Foot Shifter.....	51
Trip Odometers A and B.....	44	Anti-Lock Brake System (ABS).....	52
Gear Selection/Tachometer.....	44	Identification.....	52
Time.....	44	Brake System.....	52
Fuel Range.....	45	General.....	52
Low Fuel Warning.....	45	Non-ABS Brake System.....	53
Tip Indicator.....	46	Anti-Lock Brake System (ABS).....	53
No Fob Message.....	46	ABS: How It Works.....	53
Sidestand Message.....	46	ABS: How To Use.....	53
Instrument Lamps.....	48	ABS: Tires and Wheels.....	54
Check Engine Lamp.....	48	Jiffy Stand.....	55
Low Fuel Lamp.....	48	Jiffy Stand Interlock: International Models.....	56
Sixth Gear Lamp.....	48	Rear View Mirrors.....	56
Battery Discharge Lamp.....	48	Fuel Filler Cap.....	57
Electrical System Lamp.....	48	Fuel Gauge.....	57
Anti-Lock Brake System (ABS) Lamp.....	48	Fuel Filler Cap.....	57
INDICATOR LAMPS.....	49	Fork Lock.....	58
Turn Indicator Lamps.....	49	To Lock Fork.....	58
Headlamp High Beam Indicator Lamp.....	49	Shock Absorbers.....	59
Neutral Indicator Lamp.....	49	Calculate Number of Turns.....	59
Oil Pressure Indicator Lamp.....	49	Adjustment.....	60
Gear Shift Lever.....	50	Saddlebags: FLSTC Models.....	61

TABLE OF CONTENTS

Removal.....	61	Disarming.....	72
Installation.....	62	Disarming with a PIN.....	73
Saddlebag Operation.....	63	Alarm.....	75
Opening.....	63	Ignition Disabled.....	75
Closing.....	63	Warnings.....	75
Windshield: FLSTC Models.....	64	The Alarm.....	75
Removal.....	64	Deactivate the Alarm.....	76
Installation.....	64	Siren Chirp Mode (Confirmation).....	76
Auxiliary/Fog Lamps: FLSTC/FLSTN Models.....	65	Chirp Mode.....	76
Side-Mounted License Plate.....	65	Chirpless Mode.....	76
HARLEY-DAVIDSON SMART SECURITY SYSTEM		Switching Modes.....	76
HARLEY-DAVIDSON SMART SECURITY SYSTEM.....	67	Transport Mode.....	76
Components.....	67	To Enter Transport Mode.....	77
Options.....	67	To Exit Transport Mode.....	77
FCC Regulations.....	67	Storage and Service Departments.....	77
Security System Fob.....	68	Long-Term Parking.....	77
Fob Assignment.....	68	Service Departments.....	77
Riding with a Fob.....	68	Fob Battery.....	77
Riding without a Fob.....	69	Replacing the Battery.....	77
Personal Identification Number (PIN).....	69	Disconnecting Power.....	78
Changing the PIN.....	70	Siren Equipped Models.....	78
Security Status Indicator.....	72	Troubleshooting.....	78
Arming and Disarming.....	72	Security System Indicator.....	78
Arming.....	72	Fob.....	78
		Siren.....	79

TABLE OF CONTENTS

OPERATION

Operating Recommendations.....	81
Break-in Riding Rules.....	82
The First 500 Miles (800 Kilometers).....	82
Pre-Riding Checklist.....	83
Starting the Engine.....	84
General.....	84
Starting.....	85
Automatic Compression Release (ACR).....	86
Engine Idle Temperature Management System.....	86
Stopping the Engine.....	86
Shifting Gears.....	87
Stopped, Engine Off.....	87
Starting from a Stop.....	87
Upshift (Acceleration).....	87
Downshift (Deceleration).....	88

MAINTENANCE AND LUBRICATION

Safe Operating Maintenance.....	91
Break-in Maintenance.....	91
Disposal and Recycling.....	91
Engine Lubrication.....	92
Checking Oil Level.....	93
Oil Level Cold Check.....	94

Oil Level Hot Check.....	94
Changing Oil and Oil Filter.....	96
Winter Lubrication.....	99
Transmission Lubricant.....	99
Changing Transmission Lubricant.....	101
Primary Chaincase Lubrication.....	102
Chaincase Lubricant.....	102
Changing Chaincase Lubricant.....	102
Checking Drive Belt Deflection.....	105
Chassis Lubrication.....	106
Oil Applications.....	107
Front Fork Oil.....	107
Fuel Filter.....	107
CLUTCH.....	107
Hydraulic Lifters.....	108
STEERING HEAD BEARINGS.....	108
BRAKES.....	108
Brake Fluid.....	109
Brake Pads.....	110
Tires.....	112
Rim Seals.....	113
Tire Replacement.....	113
Inspection.....	113
When To Replace Tires.....	114
Shock Absorbers.....	115

TABLE OF CONTENTS

Spark Plugs.....	116	Positive Cable.....	138
Ignition.....	116	Negative Cable.....	138
Air Cleaner.....	116	Fuses.....	140
Headlamp Bulb Replacement.....	119	Fuses.....	140
Bulb Removal.....	119	Removal.....	140
Bulb Installation.....	120	Installation.....	140
Headlamp Alignment.....	122	Seats.....	141
Headlamp Adjustment.....	123	General.....	141
LED Rear Turn Signal/Tail Lamps: International FXS, FLS and FXSB Models.....	124	Seats: FLSTN/FLSTF/FLSTFB/FXSB/FLSTC.....	143
Turn Signal Bulb Replacement: Bullet Style.....	124	Removal.....	143
Turn Signal Bulb Replacement: Flat Lens Style.....	125	Installation.....	143
Tail Lamp Bulb Replacement: Standard Style.....	126	Seats: FLS/FXS/FXST.....	145
Tail Lamp Bulb Replacement: Tombstone Style.....	127	Removal.....	145
Alternator/Voltage Regulator.....	128	Installation.....	145
Charging Rate.....	128	Motorcycle Storage.....	147
Battery.....	129	Placing Motorcycle in Storage.....	147
Type.....	129	Removing Motorcycle From Storage.....	148
Voltmeter Test.....	132	CARE AND CLEANING	
Cleaning and Inspection.....	132	Cleaning and General Care.....	151
Charging.....	133	Washing the Motorcycle.....	156
Storage.....	135	Preparation.....	156
Battery Access.....	136	Cleaning the Wheels and Tires.....	156
Disconnection and Removal.....	136	Washing the Motorcycle.....	157
Installation and Connection.....	136	Drying the Motorcycle.....	157
Jump Starting.....	137	Polishing and Sealing.....	157

TABLE OF CONTENTS

Finishing Tires.....	158
Denim Finish Care.....	158
How to Clean.....	158
Leather and Vinyl Care.....	158
Wheel Care.....	159
Windshield Care.....	160

TROUBLESHOOTING

Troubleshooting: General.....	163
Engine.....	163
Starter Does Not Operate or Does Not Turn Engine Over.....	163
Engine Turns Over But Does Not Start.....	163
Starts Hard.....	163
Starts But Runs Irregularly or Misses.....	164
A Spark Plug Fouls Repeatedly.....	164
Pre-ignition or Detonation (Knocks or Pings).....	164
Overheats.....	164
Excessive Vibration.....	164
Engine Oil Not Circulating (Oil Pressure Lamp Lit).....	165
Electrical System.....	165
Alternator Does Not Charge.....	165
Alternator Charge Rate is Below Normal.....	165
Transmission.....	165
Transmission Shifts Hard.....	165

Transmission Jumps Out of Gear.....	165
Clutch Slips.....	165
Clutch Drags or Does Not Release.....	165
Clutch Chatters.....	165
Brakes.....	166
Brakes Do Not Hold Normally.....	166

ACCESSORIES

Genuine Motor Parts and Accessories.....	167
Online Catalog.....	167
Shop For Your Bike.....	167
Customizer.....	167
Fit Shop.....	167
Custom Seats.....	167
Custom Coverage.....	167
Add Accessories To Your New Ride.....	167

WARRANTIES AND RESPONSIBILITIES

Warranty and Maintenance.....	169
Keeping It All Harley-Davidson.....	169
California and Select International Markets Evaporative Emission Controls: 2013 Models.....	170
Warranty/Service Information.....	170
Required Documentation for Imported Motorcycles.....	170
Owner Contact Information.....	171

TABLE OF CONTENTS

Questions and Concerns.....	171
-----------------------------	-----

LIMITED MOTORCYCLE WARRANTY

2013 HARLEY-DAVIDSON MOTORCYCLE LIMITED WARRANTY.....	173
24 Months/Unlimited Miles.....	173
Duration.....	173
Owner's Obligations.....	174
Exclusions.....	174

Other Limitations.....	174
------------------------	-----

Important: Read Carefully.....	175
--------------------------------	-----

MAINTENANCE SCHEDULING

Regular Service Intervals.....	177
Service Literature.....	181
H-D Michigan, Inc. Trademark Information.....	182
Product Registered Marks.....	182



NOTES



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

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

HARLEY-DAVIDSON MOTORCYCLES ARE FOR ON-ROAD USE ONLY

This motorcycle is not equipped with a spark arrester and is designed to be used only on the road. Operation of off-road usage in some areas may be illegal. Obey local laws and regulations. This manual should be considered a permanent part of the motorcycle and should remain with the motorcycle when resold.

VISIT THE HARLEY-DAVIDSON WEB SITE

<http://www.harley-davidson.com>

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. In the United States, for information about Motorcycle Safety Foundation rider courses, call 1-800-446-9227 or visit www.msf-usa.org.

United States Owners

Your Harley-Davidson motorcycle conforms to all applicable U.S. Federal Motor Vehicle Safety Standards and 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 for more information.

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

CUSTOMER SERVICE ASSISTANCE

Most sales or service issues are resolved at the dealership.

1. Discuss your problem with the appropriate personnel at the dealership in the Sales, Service or Parts area. If that proves unsuccessful, speak to the owner of the dealership or the general manager.
2. If you cannot resolve the issue with the dealership, contact the Harley-Davidson Customer Support Center. Harley-Davidson Motor Company Attention: Harley-Davidson Customer Support Center P.O. Box 653 Milwaukee, Wisconsin 53201 1-800-258-2464 (U.S. only) 1-414-343-4056

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

Table 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:



NOTES



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)

- 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.

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

- Know and respect the rules of the road. See **SAFETY FIRST > RULES OF THE ROAD** (Page 12). Carefully read and familiarize yourself with the motorcycle safety information that is provided by your country or state. In the United States, read the **RIDING TIPS** booklet that is provided with your Owner's Manual and the **MOTORCYCLE HANDBOOK** which is made available by your state.
- Before starting engine, check for proper operation of brake, clutch, shifter, throttle controls, correct fuel and oil supply.

⚠ 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

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)

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

When refueling your motorcycle, observe the following rules.

- Refuel in a well ventilated area with the engine turned off.
- Remove fuel filler cap slowly.
- Do not smoke or allow open flames or sparks when refueling or servicing the fuel system.
- Do not fill fuel tank above the bottom of the filler neck insert.
- Leave air space to allow for fuel expansion.

⚠ 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

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

⚠ 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

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)

- A new motorcycle must be operated according to the special break-in procedure. See OPERATION > BREAK-IN RIDING RULES (Page 82).
- Operate motorcycle only at moderate speed and out of traffic until you have become thoroughly familiar with its operation and handling characteristics under all conditions.

NOTE

We recommend that you obtain information and formal training in the correct motorcycle riding technique. In the United States, the Motorcycle Safety Foundation® offers beginning and advanced rider safety courses. Call 800-446-9227 for information.

⚠ 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.
- 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 and do not load bulky items too far behind the rider or add weight to the handlebars or front forks. Do not exceed maximum specified load in each saddlebag.

NOTE

New riders should gain experience under various conditions while riding at moderate speeds.

- Operate your motorcycle defensively. Remember, a motorcycle does not afford the same protection as an automobile in an accident. One of the most common accident situations occurs when the driver of the other vehicle fails to see or recognize a motorcycle and turns left into the on-coming motorcyclist. Operate only with headlamp on.

⚠ 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)

- Wear an approved helmet, clothing, and foot gear suited for motorcycle riding. Bright or light colors are best for greater visibility in traffic, especially at night. Avoid loose, flowing garments and scarves.
- When carrying passengers, it is your responsibility to instruct them on proper riding procedures. (See the RIDING TIPS booklet included in your Harley-Davidson Owner's Kit.)

- Do not allow other individuals, under any circumstances, to operate your motorcycle unless you know they are experienced, licensed riders and are thoroughly familiar with the operation of your particular motorcycle.
- Protect your motorcycle against theft. After parking your motorcycle, lock the steering head and remove the key from the motorcycle.
- Safe motorcycle operation requires alert mental judgment combined with a defensive driving attitude. Do not allow fatigue, alcohol or drugs to endanger your safety or that of others.
- Vehicles equipped with a sound system should have the volume adjusted to a non-distracting level before operating vehicle.
- Maintain your motorcycle in proper operating condition in accordance with Table 38. Proper care and maintenance, including tire pressure, condition and tread depth plus proper adjustment to steering head bearings are particularly important to the stability and safe operation of the motorcycle.

⚠ 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

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

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

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

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

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 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 axle.
- Refer to weight table(s). See OWNER MANUAL > SPECIFICATIONS (Page 23).

⚠ WARNING

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

⚠ 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

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**

(00240e)

⚠ 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

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

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)

- Be sure all equipment required by federal, state and local law is installed and in good operating condition.

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)

See CONTROLS AND INDICATORS > BRAKE SYSTEM (Page 52) to properly operate motorcycles equipped with an Anti-lock Brake System.

RULES OF THE ROAD

- Always sound your horn, actuate your turn signals, and exercise caution when passing other vehicles going in the same direction. Never try to pass another vehicle 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 it is your turn.
- Always signal when preparing to stop, turn or pass.
- All traffic signs, including those used for the control of traffic at intersections, should be obeyed promptly. SLOW DOWN signs near schools and CAUTION signs at railroad crossings should always be observed and your actions governed accordingly.
- 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) in the traffic control systems at intersections, slow down and wait for the light to change. Never run through a yellow or red traffic light.

- While turning either right or left, watch for pedestrians, animals, as well as vehicles.
- Do not leave the curb or parking area without signaling. Be sure your way is clear to enter moving traffic. A moving line of traffic always has the right-of-way.
- Be sure your license plate is installed in the position specified by law and is clearly visible at all times. Keep the 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.

ACCESSORIES AND CARGO

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.

⚠ 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)

⚠ 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.
- GAWR is the maximum amount of weight that can be safely carried on each axle.
- The GVWR and GAWR are shown on the information label which is located on the frame down tube in some destinations.
- Refer to weight table(s). See **OWNER MANUAL > SPECIFICATIONS** (Page 23).

⚠ 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)

Accessories and Cargo Guidelines

The following guidelines should be used when equipping a motorcycle, carrying passengers and/or cargo.

⚠ 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.
- Keep cargo weight concentrated close to the motorcycle and as low as possible. This minimizes 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 specified load in each saddlebag.
- Luggage racks are designed for lightweight items. Do not overload racks.
- Be sure cargo is secure and will not shift while riding and recheck the cargo periodically. Accessories that change the operator's riding position may increase reaction time and affect handling of the motorcycle.

- Additional electrical equipment may overload the motorcycle's electrical system possibly resulting in electrical system and/or component failure.

⚠ 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)

- Large surfaces such as fairings, windshields, backrests, and luggage racks can have an adverse affect on stability and handling.
- Only properly installed Genuine Harley-Davidson accessories designed specifically for your motorcycle model should be used.
- Pay particular attention to the weights of accessories, cargo, riding gear, passenger and rider and how the sum total of all these weights affect the loading capacity of your motorcycle.

⚠ 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

Only Touring Harley-Davidson Motorcycles are suitable for sidecar use. Consult a Harley-Davidson dealer. Use of motorcycles other than Touring models with sidecars could result in death or serious injury. (00040a)

NOISE CONTROL SYSTEM

Tampering

Owners are warned that removal or replacement of any noise control system component may be prohibited by law. This prohibition applies 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.

LABELS

See Figure 1 for safety and maintenance labels which were on the vehicle when new. If removed, replacement labels may be purchased for your motorcycle. Refer to Table 3.

NOTE

Some labels may be available in different languages for destinations outside the United States. See a Harley-Davidson dealer for all labels available for purchase.

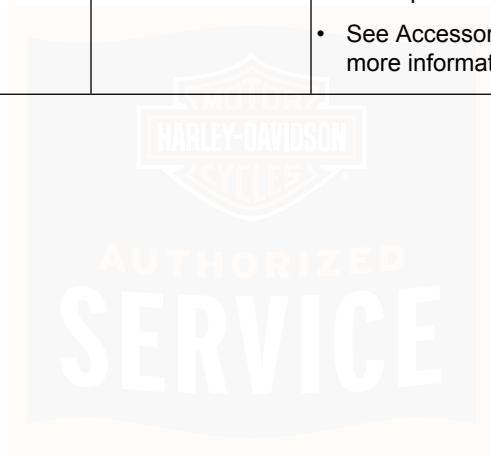


Table 3. Labels

ITEM	PART NO.	DESCRIPTION	LOCATION	TEXT
1	29404-01A	General warnings (FLS, FLSTFB)	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">• 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. <p>For a manual, find nearest dealer at 1-800-443-2153 or www.harley-davidson.com</p>
	29127-95B	General warnings (other models)		
2	15368-01A	Battery warning	On frame, left of battery	<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">• Disconnect negative cable before servicing.• Keep cable away from terminal while servicing.

Table 3. Labels

ITEM	PART NO.	DESCRIPTION	LOCATION	TEXT
3	Not sold separately	Shock absorber label	On shock absorbers	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.
4	14000069	Saddlebag load limits	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">• Do not put more than 15 pounds in each saddlebag.• Put equal weight in each saddlebag.• See Accessories and Cargo section of Owner's Manual for more information.



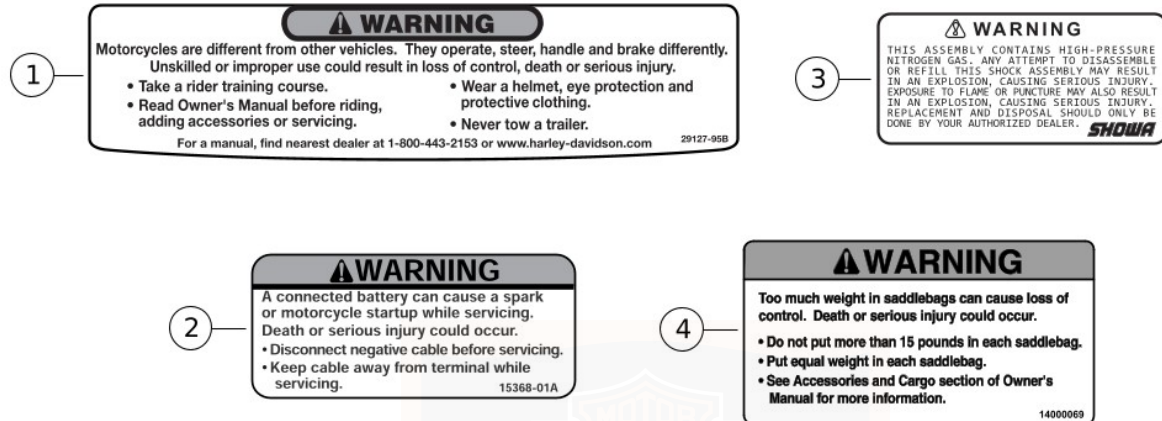


Figure 1. Labels

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 4.

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 to the right 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.

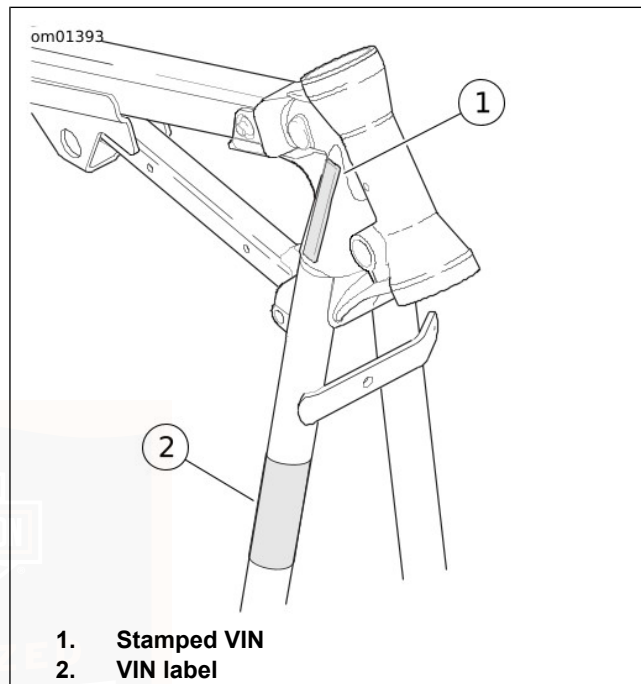


Figure 2. VIN Locations

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
1HD 1 BW V 1 3 D B 111000

Figure 3. Typical Harley-Davidson VIN: 2013 Softail Models

Table 4. Harley-Davidson VIN Breakdown: 2013 Softail Models

POSITION	DESCRIPTION	POSSIBLE VALUES
1	World manufacturer identifier	1HD=Originally manufactured for sale within the United States 5HD=Originally manufactured for sale outside of the United States 932=Originally manufactured in and for sale only in Brazil market MEG=Originally manufactured in and for sale only in India market
2	Motorcycle type	1=Heavyweight motorcycle (901 cm ³ or larger)
3	Model	See VIN model table
4	Engine type	5=Twin Cam 96B [™] , 1585 cm ³ air-cooled, fuel-injected, balanced V=Twin Cam 103B [™] , 1690 cm ³ air-cooled, fuel-injected, balanced

Table 4. Harley-Davidson VIN Breakdown: 2013 Softail Models

POSITION	DESCRIPTION	POSSIBLE VALUES	
5	Calibration/configuration, introduction	Normal Introduction 1=Domestic (DOM) 3=California (CAL) A=Canada (CAN) C=HDI E=Japan (JPN) G=Australia (AUS) J=Brazil (BRZ) L=Asia Pacific (APC) N=India (IND)	Mid-year or Special Introduction 2, 4=Domestic (DOM) 5, 6=California (CAL) B=Canada (CAN) D=HDI F=Japan (JPN) H=Australia (AUS) K=Brazil (BRZ) M=Asia Pacific (APC) P=India (IND)
6	VIN check digit	Can be 0-9 or X	
7	Model year	D=2013	
8	Assembly plant	B=York, PA U.S.A. D=H-D Brazil-Manaus, Brazil (CKD) N=Haryana India (Bawal District Rewari)	
9	Sequential number	Varies	

Table 5. VIN Model Codes: 2013 Softail Models

CODE	MODEL	CODE	MODEL
BF	FXSB Softail® Breakout™	JH	FLSTC Heritage Softail® Classic Shrine
BV	FXST Softail® Standard (Australia only)	JP	FXS Blackline®
BX	FLSTF Fat Boy®	JR	FLS Softail® Slim™

Table 5. VIN Model Codes: 2013 Softail Models

CODE	MODEL	CODE	MODEL
BW	FLSTC Heritage Softail® Classic FLSTC ANV Heritage Softail® Classic 110th Anniversary Edition	JN	FLSTFB Fat Boy® Lo FLSTFB ANV Fat Boy® Lo 110th Anniversary Edition FLSTFB Fat Boy® Special (some international markets)
JD	FLSTN Softail® Deluxe		

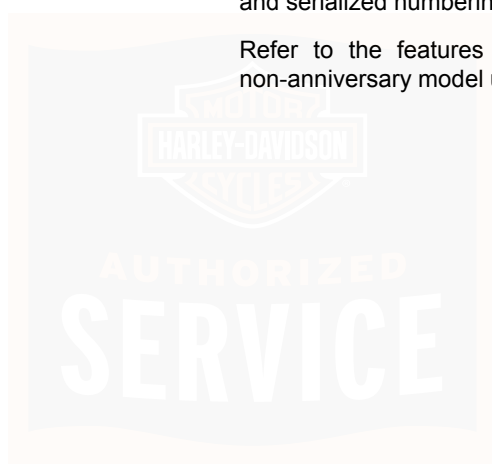
MODELS AND FEATURES

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

ANNIVERSARY MODELS

Anniversary model motorcycles have special badging, paint and serialized numbering.

Refer to the features and instructions for the standard non-anniversary model unless otherwise noted.



SPECIFICATIONS

Table 6. Engine: Twin Cam 96B™

ITEM	SPECIFICATION	
Number of cylinders	2	
Type	4-cycle, 45 degree V-Type, balanced, air cooled	
Compression ratio	9.2:1	
Bore	3.750 in	95.25 mm
Stroke	4.38 in	111.1 mm
Displacement	96.0 in ³	1585 cm ³
Lubrication system	Pressurized, dry sump	

Table 7. Engine: Twin Cam 103B™

ITEM	SPECIFICATION	
Number of cylinders	2	
Type	4-cycle, 45 degree V-Type, balanced, air cooled	
Compression ratio	9.6:1	
Bore	3.875 in.	98.42 mm
Stroke	4.38 in.	111.1 mm
Displacement	103.0 in ³	1690 cm ³
Lubrication system	Pressurized dry sump	

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 vehicle differences. Customers seeking officially recognized regulatory specifications for their vehicle should refer to certification documents and/or contact their respective dealer or distributor.

Table 8. Electrical

COMPONENT	SPECIFICATION	
Ignition timing	Not adjustable	
Battery	12 V, 19 Ah, 315 CCA sealed and maintenance-free	
Charging system	Three-phase, 38 A system (439W @ 13V, 2000 rpm, 489W max power @ 13V)	
Spark plug type	6R12	
Spark plug size	12 mm	
Spark plug gap	0.038-0.043 in	0.97-1.09 mm
Spark plug torque	12-18 ft-lb	16.3-24.4 Nm

Table 9. Transmission

TRANSMISSION	SPECIFICATION
Type	Constant mesh, foot shift
Speeds	6 forward

Table 10. Sprocket Teeth

DRIVE	ITEM	NUMBER OF TEETH
Primary	Engine	34
	Clutch	46
Final	Transmission	32
	Rear wheel	66*
*64 teeth on Japanese models		

Table 11. Overall Drive Ratios

GEAR	RATIO	
	DOMESTIC AND INTERNATIONAL	JAPANESE MODELS
1st Gear	9.311	9.029
2nd Gear	6.454	6.259
3rd Gear	4.793	4.648
4th Gear	3.882	3.764
5th Gear	3.307	3.207
6th Gear	2.790	2.706

Table 12. Capacities

ITEM	U.S.	L
Fuel tank (total)	5.0 gal	18.9
Low fuel warning light on	1.0 gal	3.8
Oil tank with filter	3.0 qt	2.8
Transmission (approximate)	1.0 qt	0.95
Primary chaincase (approximate)	1.0 qt	0.95

Table 13. Dimensions: FLSTFB, FLSTC, FLSTF, and FLSTN

ITEM	FLSTFB		FLSTC		FLSTF		FLSTN	
	in	mm	in	mm	in	mm	in	mm
Length	94.3	2395	94.5	2400	94.3	2395	94.7	2405
Overall Width	39.0	990	37.6	955	39.0	990	38.6	980
Overall Height	43.1	1095	55.2	1402	43.1	1095	44.3	1125
Wheel base	64.5	1638	64.5	1638	64.5	1638	64.5	1638
Road clearance	4.8	122	5.1	130	5.1	130	4.8	122

Table 13. Dimensions: FLSTFB, FLSTC, FLSTF, and FLSTN

ITEM	FLSTFB		FLSTC		FLSTF		FLSTN	
	in	mm	in	mm	in	mm	in	mm
Saddle height*	24.3	616	25.5	648	25.0	635	24.5	622
*With 81.6 kg (180 lb) rider on seat								

Table 14. Dimensions: FLS, FXST, FXS and FXSB

ITEM	FLS		FXST		FXS		FXSB	
	in	mm	in	mm	in	mm	in	mm
Length	94.7	2405	94.9	2410	93.0	2362	96.3	2445
Overall Width	39.0	990	36.0	915	34.0	864	36.0	915
Overall Height	43.3	1100	48.4	1230	47.3	1201	40.9	1040
Wheel base	64.5	1638	66.9	1700	66.5	1689	67.3	1710
Road clearance	4.8	121	6.2	159	5.25	133	4.7	120
Saddle height*	24.2	615	26.1	663	24.0	610	24.7	627.4
*With 81.6 kg (180 lb) rider on seat.								

⚠ 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.
- GAWR is the maximum amount of weight that can be safely carried on each axle.
- The GVWR and GAWR are shown on the information plate, located on the frame down tube.

NOTE

The maximum additional weight allowed on the motorcycle equals the Gross Vehicle Weight Rating (GVWR) minus the running weight. For example, a motorcycle with GVWR of

544 kg (1,200 lb) having a running weight of 363 kg (800 lb), would allow a maximum of an additional 181 kg (400 lb) combined weight of the rider, passenger, riding gear, cargo and installed accessories.

Table 15. Weights: FLSTC, FLSTF, FLSTFB and FLSTN

ITEM	FLSTC		FLSTF		FLSTFB		FLSTN	
	lb	kg	lb	kg	lb	kg	lb	kg
Running weight*	761	345.2	725	328.8	731	331.5	726	329.3
Maximum added weight allowed**	399	181.0	435	197.4	429	194.7	434	196.9
GVWR	1160	526.2	1160	526.2	1160	526.2	1160	526.2
GAWR front	430	195.0	430	195.0	430	195.0	430	195.0
GAWR rear	730	331.1	730	331.1	730	331.1	730	331.1

*The total weight of the motorcycle as delivered with all oil/fluids and approximately 90% of fuel.

**The total weight of accessories, cargo, riding gear, passenger and rider cannot exceed this weight.

Table 16. Weights: FLS, FXST, FXS and FXSB

ITEM	FLS		FXST		FXS		FXSB	
	lb	kg	lb	kg	lb	kg	lb	kg
Running weight*	700	317.5	699	317.0	682.5	310.0	701	318
Maximum added weight allowed**	460	208.7	426	193.3	441.5	199.8	474	215
GVWR	1160	526.2	1125	510.3	1124	509.8	1175	533
GAWR front	430	195.0	415	188.2	414	187.7	415	188
GAWR rear	730	331.1	710	322.1	710	322.1	760	345

*The total weight of the motorcycle as delivered with all oil/fluids and approximately 90% of fuel.

**The total weight of accessories, cargo, riding gear, passenger and rider cannot exceed this weight.

Table 17. Bulb Chart

LAMP	DESCRIPTION (ALL LAMPS 12 V)	BULBS REQUIRED	CURRENT DRAW (AMPERAGE)		HARLEY-DAVIDSON PART NUMBER
Headlamp	High beam/low beam	1	4.7 (high beam)	4.3 (low beam)	68329-03
	Position lamp international	1	0.32		53436-97
Tail and stop lamp (FLSTN)	Tail/stop lamp	1	0.59/2.10		68168-89A
	Tail/stop lamp international	1	0.59/2.10		68169-90A
	License plate lamp	1	0.35		52441-95
	License plate lamp international	1	0.37		53436-97
	Tail and stop lamp (Canada FLS, FXSB, and FXS)	Tail/stop lamp	Illuminated with LEDs. Replace entire assembly upon failure.		
Tail and stop lamp (other models, except international FLS, FXSB and FXS)	Tail/stop lamp	1	0.59/2.10		68167-04
License plate lamp	Domestic/Canada FLS, FXSB and FXS	Illuminated with LEDs. Replace entire assembly upon failure.			
	International FLS, FXSB and FXS	2	.35		52441-95

Table 17. Bulb Chart

LAMP	DESCRIPTION (ALL LAMPS 12 V)	BULBS REQUIRED	CURRENT DRAW (AMPERAGE)		HARLEY-DAVIDSON PART NUMBER
Turn signal lamps	Front/running	2	2.25 (turn signals)	0.59 (front run- ning)	68168-89A
	Front international (except FLSTC)	2	1.75		68163-84
	Front international (FLSTC)	2	1.75		68572-64B
	Rear (FLSTC)	2	2.25		68572-64B
	Rear (Domestic/Canada FLS, FXSB and FXS)	2	2.25		68168-89A
	Rear turn signal (international FXS, FLS and FXSB)	Illuminated with LEDs. Replace entire assembly upon failure.			
	Rear (other models)	2	1.75		68163-84
Auxiliary/fog lamps (FLSTC/FLSTN)	Domestic	2	2.50		68453-05
	International	2	2.10		68000056
Fender tip lamp	FLSTC	2	0.10		68193-95
Instrument panel lamps	Illuminated with LEDs. Replace entire assembly upon failure.				

Table 18. Specified Tires

MODEL	MOUNT	SIZE	SPECIFIED TIRE	PRESSURE (COLD)	
				psi	kPa
FLSTC, FLS	front	16 in	Dunlop D402F MT90B16	36	248
FLSTN, FLSTC (whitewall)	front	16 in	Dunlop D402F MT90B16	36	248
FLSTF, FLSTFB	front	17 in	Dunlop D408F 140/75R17	36	248
FXST	front	21 in	Dunlop D408F MH90-21	30	207

Table 18. Specified Tires

MODEL	MOUNT	SIZE	SPECIFIED TIRE	PRESSURE (COLD)	
				psi	kPa
FXS	front	21 in	Dunlop D402F MH90-21	30	207
FXSB	front	21 in	Dunlop D408F 130/60B21	36	248
FLSTC	rear	16 in	Dunlop D401 150/80B16	40	276
FLSTN, FLSTC (whitewall)	rear	16 in	Dunlop D402 MU85B16	40	276
FXS, FLS	rear	16 in	Dunlop D402 MU85B16	40	276
FLSTF, FXST, FLSTFB	rear	17 in	Dunlop D407 200/55R17	42	290
FXSB	rear	18 in	Dunlop D407 240/40R18	42	290

TIRE DATA

⚠ 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 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)

Refer to Table 18 for specified tires and recommended pressures.

⚠ WARNING

Install new seal before mounting tire. Riding motorcycle without seal in place can sever valve stem causing rapid air loss leading to the loss of control, which could result in death or serious injury. (00622b)

Some 2012 and later Softail motorcycles with profile laced wheels (wire spoked wheels with smooth round rims) are fitted with a special rim seal, a rim strip and a tubeless tire. An inner tube is not used. These rims are unique and identified by the letters MTM and the word TUBELESS etched into the rim. Never install a tire with an inner tube on these type wheels. Install a new rim seal and rim strip each time a tire is mounted on a profile laced wheel with the MTM and TUBELESS markings.

Steel laced rims use an inner tube and rim strip. Tubeless tires fitted with the correct size inner tubes may be used with these wheels. Install a new inner tube and rim strip each time a new tire is installed on a steel laced wheel.

Tubeless tires are used on all Harley-Davidson cast and disc wheels.

Tire sizes are molded on the tire sidewall. Inner tube sizes are printed on the tube.

⚠ 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)

⚠ 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)

Always maintain proper tire pressure as specified in Table 18. Do not load tires beyond GAWR specified in Table 15 and Table 16. Under-inflated, over-inflated or overloaded tires can fail.

⚠ 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)

Harley-Davidson tires are equipped with wear bars that run horizontally across the tread. When a tire is worn to the point that the wear bars are visible, or 0.8 mm (1/32 in) tread depth remains, the tire can:

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

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.

India Tire Compliance Statement: Harley-Davidson Motor Company declares that the tires listed in the specifications section meet the Indian Standard 15627 requirement of the Bureau of Indian Standards (as amended from time to time) required for registration of vehicles assembled in India. These tires also comply with the Central Motor Vehicle Rules requirements, 1989.

GASOLINE BLENDS

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)

- 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.
- ETHANOL fuel is a mixture of ethanol (grain alcohol) and unleaded gasoline and can have an impact on fuel mileage. Fuels with an ethanol content of up to 10% may be used in your motorcycle without affecting vehicle performance. U.S. EPA regulations currently indicate that fuels with 15% ethanol (E15) are restricted from use in motorcycles at the time of this publication. Some motorcycles are calibrated to operate with higher ethanol concentrations to meet the fuel standards in certain countries.

- **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 evaporate less when filling the tank. 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.
- Do not use racing fuel or fuel containing methanol. Use of these fuels will damage the fuel system.
- The only octane booster Harley-Davidson recommends is **SCREAMIN' EAGLE SUPER OCTANE BOOST** (available only in the U.S.). This is the only octane booster that has been extensively tested and approved for use with Harley-Davidson engines and components.

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.

FUEL

Always use a good quality unleaded gasoline. Octane ratings are usually found on the pump. Refer to Table 19.

⚠ 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)

Modern service station pumps dispense a high flow of gasoline into a motorcycle fuel tank making air entrapment and pressurization a possibility.

Table 19. Octane Ratings

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

CATALYTIC CONVERTER

The motorcycle is equipped with catalytic converters (except Australia).

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)

NOTICE

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



NOTES



GENERAL: CONTROLS AND INDICATORS

⚠ WARNING

Identify and understand the specific features of your vehicle. Failure to understand how these features affect the vehicle's operation can lead to an accident, which could result in death or serious injury. (00043b)

Some features explained are unique to certain models. These features may be available as accessories for your Harley-Davidson motorcycle. See a Harley-Davidson dealer for a complete list of accessories that will fit your specific motorcycle.

IGNITION SWITCH

General

⚠ 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)

Refer to Table 20. The ignition switch controls electrical functions of the motorcycle.

See the "YOUR OWNER'S MANUAL" section at the front of this book. Be sure to record all your key numbers in the space provided. The key number is under the plastic cover on the top of the key.

NOTE

The lamps work when the switch is in the IGN position, as required by law in some localities.

NOTICE

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

⚠ 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

Do not lubricate barrel locks with petroleum based lubricants or graphite. Inoperative locks may result. (00152a)

All Models Except FXS and FXSB

See Figure 4. The ignition switch is located on the instrument panel on top of the tank.

Unlock: To unlock the switch, insert key and turn clockwise to unlock position. Remove the key from ignition switch before operating motorcycle. If you do not remove key, it can fall out while riding.

Operate: Rotate switch to desired position. Refer to Table 20 for ignition switch functions.

Lock: The switch can be locked in the OFF or ACC position. To lock the switch, raise the switch cover, insert key, and turn counterclockwise to LOCK position.

NOTICE

Turn the ignition switch to the OFF position before locking the motorcycle. Leaving the switch in the ACC position will keep the instrument lights on and result in a discharged battery. (00492b)

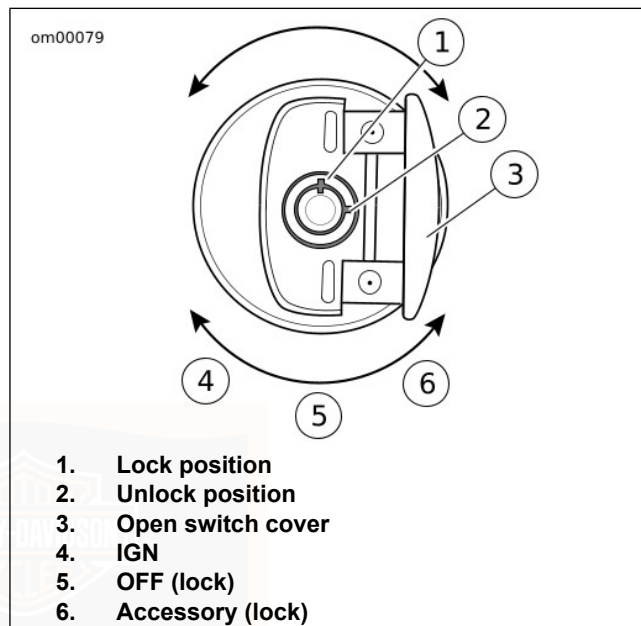


Figure 4. Ignition Switch: Softail Models (Except FXS and FXSB)

FXS and FXSB Models

See Figure 5. The ignition switch is located on the left side of the vehicle between the engine cylinders.

Unlock: Insert key and turn clockwise to unlock the thumb lever. Remove the key from ignition switch before operating motorcycle. If you do not remove key, it can fall out while riding.

Operate: Use the thumb lever to select the ACC or IGN positions. Refer to Table 20 for ignition switch functions.

Lock: Turn the thumb lever to OFF. Insert the key and turn counterclockwise to lock the thumb lever. Remove the key.

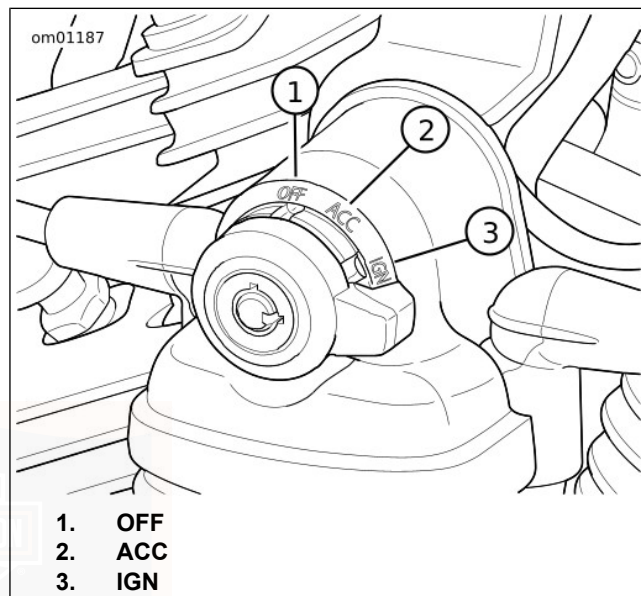


Figure 5. Ignition Switch: FXS and FXSB Models

Table 20. Ignition Switch Positions

SWITCH POSITION	FUNCTION
OFF	Ignition, lamps and accessories are off.
ACC*	Accessories are on. Hazard warning flashers can be operated. Instrument lamps are on. The headlamp switch can be switched between HI and LO. Brake lamp and horn can be activated.

Table 20. Ignition Switch Positions

SWITCH POSITION	FUNCTION
IGNITION*	Ignition, lamps and accessories are on.
*International models have an additional function - position lamp and tail lamp are also on. NOTE: Leaving the motorcycle in ACC for an extended amount of time can discharge the battery. If in ACC, the motorcycle will be automatically turned OFF after two hours to prevent battery from complete discharge. To resume normal operation turn the ignition switch back to OFF and then to the desired position.	

HAND CONTROLS

Electric Starter Switch

See Figure 6. The electric starter switch (5) is located on the right handlebar control group. See OPERATION > STARTING THE ENGINE (Page 84).

1. Put the engine OFF/RUN switch (6) in the RUN position and the transmission in neutral. Neutral (green) indicator lamp should be illuminated.
2. See Figure 4. Turn the ignition switch to IGN and push the START switch to operate starter motor.

NOTE

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

- *If the engine does not start, the starter motor will operate for five seconds and then stop. Release and press the START switch. After several unsuccessful start attempts, see a Harley-Davidson dealer.*

Hazard Warning 4-Way Flasher

The hazard warning switch (5) is located above the electric starter switch. This system allows a stranded motorcycle to be left in the 4-way flashing mode and secured until help is found.

1. With the ignition switch in the IGN or ACC position, press on the hazard warning triangle to activate the 4-way flashers.

NOTE

If equipped with the optional security system, the fob must be present when turning the 4-way flashers on and when canceling the flashers.

2. Turn the ignition to OFF. The 4-way flashers will continue for two hours or until the operation is cancelled by the rider.
3. To cancel, turn the ignition to ACC or ON and press the warning triangle above the electric starter switch.

Engine OFF/RUN Switch

See Figure 6. The engine OFF/RUN switch (6) turns the engine power on or off. The engine OFF/RUN switch is located on the right handlebar control. Push the top portion of the engine OFF/RUN switch to turn off engine power and shut the engine off. Push the bottom portion of the engine OFF/RUN switch to enable engine start and run.

NOTE

- *The engine OFF/RUN switch must be in the RUN position to start or operate the engine.*
 - *The engine OFF/RUN switch should be used to shut the engine off.*
1. To shut the engine off, push the top of the OFF/RUN switch to the OFF position.
 2. See Figure 4. Turn the ignition switch to the OFF position to turn the electric power completely OFF.

Throttle Control Grip

See Figure 6. The throttle control grip (8) is located on the right handlebar control and is operated with the right hand.

To reduce rider fatigue on long trips, a spring-loaded throttle friction adjustment screw (10) is located at the bottom of the throttle grip clamp on non-cruise equipped models.

1. Slowly turn throttle control grip clockwise (toward the front of the motorcycle) to close the throttle (decelerate).
2. Slowly turn throttle control grip counterclockwise (toward rear of motorcycle) to open the throttle (accelerate).

⚠ WARNING

Do not tighten throttle friction adjustment screw to the point where the engine will not return to idle automatically. Over-tightening can lead to loss of vehicle control, which could result in death or serious injury. (00031b)

3. Loosen the throttle friction adjustment screw so the throttle returns to the idle position when the hand is removed from the grip.

4. Screw the throttle adjustment screw in to increase friction on the grip. This provides a damping effect on throttle motion.

NOTE

The throttle friction adjustment screw should not be used under normal stop and go operating conditions.

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 6. The clutch hand lever (1) is located on the left handlebar and is operated with the fingers of the left hand.

1. Slowly pull clutch hand lever in against handlebar grip to fully disengage clutch.
2. Shift to first gear using the gear shifter lever. See CONTROLS AND INDICATORS > GEAR SHIFT LEVER (Page 50).
3. Slowly release the clutch hand lever to engage clutch.

A clutch switch is incorporated into the left handlebar switch assembly. It enables the rider to start the vehicle in any gear (or in neutral) as long as the clutch lever is pulled in. If the clutch is not disengaged and the vehicle is in gear, the vehicle will not start.

HORN/TRIP Switch

HORN: See Figure 6. The horn is operated by pressing on the HORN switch (2) located on the left handlebar control. 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 will automatically deactivate.

TRIP: The TRIP switch activates the trip odometers and is used to activate the odometer display to scroll through different screens of the display. With the ignition switch in OFF, the trip switch can activate time or odometer displays.

Headlamp Dimmer Switch

See Figure 6. The headlamp dimmer switch (3) is located on the left handlebar.

High beam: Press the top of the switch to activate the high beam. The (blue) high beam indicator lamp in the speedometer will be lit when the high beam is on.

Low beam: Press the bottom of the switch to activate the low beam.

Flash to pass: Press and hold the bottom of the switch to flash the high beam lamp.

Turn Signal Switches

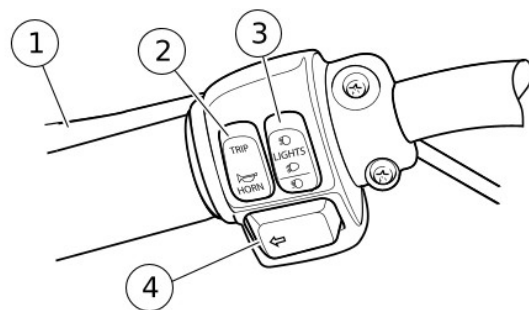
See Figure 6. Each handlebar control group contains a turn signal switch.

- The right turn signal switch (9) operates the right front and right rear flashing lamps.
- The left turn signal switch (4) operates the left front and left rear flashing lamps.

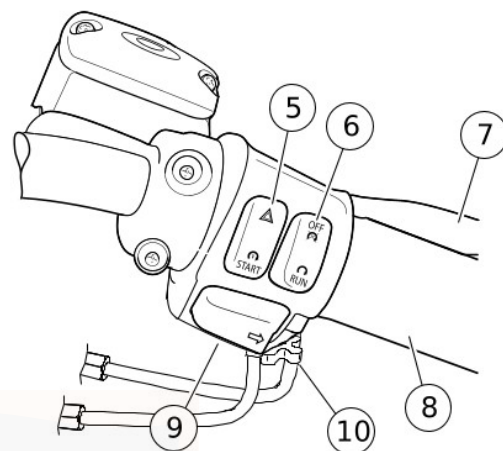
NOTE

Front turn signal lamps also function as running lamps. Due to local regulations, this feature may not be available in all locations.





1. Clutch hand lever
2. Horn/trip switch
3. Headlamp dimmer switch
4. Left turn signal switch
5. Electric starter/hazard warning switch



6. Engine off/run switch
7. Brake hand lever
8. Throttle control grip
9. Right turn signal switch
10. Friction adjustment screw

Figure 6. Handlebar Controls

TURN SIGNAL SWITCH OPERATION

Operating

Press and release the left or right turn signal switch to activate the turn signal lamps. The lamps flash until they are automatically canceled or manually canceled by the rider.

NOTE

If a turn signal indicator flashes rapidly, a turn signal bulb is not operating. Exercise caution and use hand signals. Replace defective components at earliest opportunity.

Automatic Canceling

The turn signal lamps automatically cancel when a full turn has been detected (based on vehicle speed, vehicle acceleration, and turn completion).

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

Manual Canceling

To cancel the turn signal, press and release the turn signal switch a second time.

To activate the opposite turn signal, press and release the turn signal switch for the new direction. The first turn signal cancels and the opposite turn signal lamps begin flashing.

INSTRUMENTS

Speedometer

⚠ WARNING

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

See Figure 7. The speedometer registers miles per hour (U.S. models only) or kilometers per hour (international models only).

Instrument backlighting activates after a slight delay. The backlighting may briefly fluctuate when ambient lighting changes (such as going through a tunnel).

Odometer

Pressing the TRIP switch with the ignition switch in any position will activate the odometer reading.

The odometer window in the speedometer face also provides the following selectable displays:

- Odometer
- Trip odometer A
- Trip odometer B
- Fuel range
- Time
- Gear number and tachometer

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 ignition switch must be in the ACC or IGN position. Press and release the TRIP switch until the desired trip odometer register (A or B) is displayed. An A or B in the upper left of the display window identifies the trip odometer.

To reset or zero trip odometers, have desired (A or B) odometer in display window. Press the TRIP switch and hold for approximately three seconds. The trip odometer will be reset to zero.

Gear Selection/Tachometer

Press and release the TRIP switch to cycle through the odometer displays to select the gear number and the

tachometer display. The odometer shows the current gear (1-6) and the engine speed in revolutions per minute (RPM).

When the transmission is in neutral or the clutch lever is pulled in, the gear number will be blank.

Time

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

1. Turn the ignition switch to ACC or IGN.
2. See Figure 7. Press and release the TRIP switch until time (hour and minutes) is displayed. Press and hold the TRIP switch until 12HR begins to blink in the speedometer 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 will switch between 12HR and 24HR.
4. When the desired time style is displayed, press and hold the TRIP switch for until the hours display 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 starts blinking.

7. Press and release the TRIP switch repeatedly to advance the minutes display.
8. When the correct minutes are displayed, press and hold the TRIP switch until the display advances to the selection of AM or PM.

NOTE

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

9. In the 12HR display, AM or PM will appear flashing. Select AM or PM with the TRIP switch and press and hold the switch for five seconds.
10. Turn the ignition switch OFF.

Fuel Range

The fuel range display shows the approximate mileage available with the amount of fuel left in the fuel tank.

With the ignition switch in the ACC or IGN 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 will automatically be displayed in the odometer window. The rider can press the TRIP switch to return to the cycle of odometer displays. The fuel range warning will not be repeated until the ignition switch is cycled off and back on.

After the fuel range drops to 16 km (10 mi) remaining, the fuel range display will scroll "LO RNG" to indicate that the motorcycle will shortly run out of fuel.

Resetting the low fuel warning lamp and range requires an ignition cycle change. Always turn the ignition 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. Automatic range pop-up feature will show that it is disabled by blinking twice.

Enable: To enable the automatic low fuel warning range display, press and hold the TRIP switch. The low fuel range will blink 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-IGN.*

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)

Should motorcycle be tipped over, the word "tIP" will appear in the odometer window. The engine will not start until reset.

Reset: To reset, set the motorcycle upright and turn the ignition switch OFF-IGN.

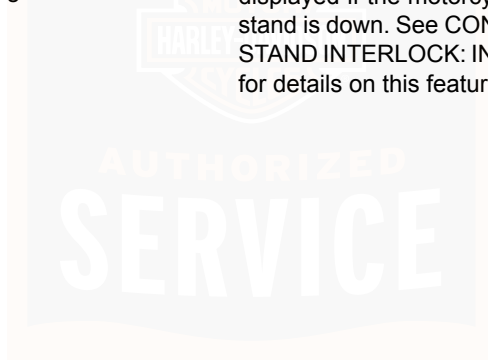
No Fob Message

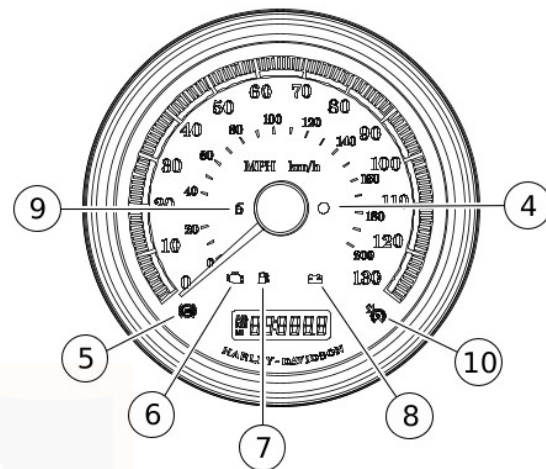
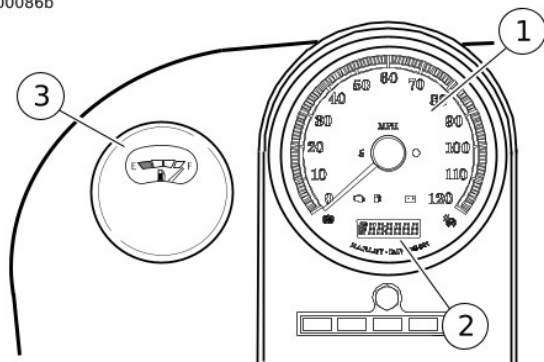
If the motorcycle is equipped with a security system and is driven off leaving the fob behind, 'NO FOB' will be displayed in the odometer window as soon as the motorcycle starts moving. The display will last for 10 seconds as a reminder to retrieve the fob.

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 HARLEY-DAVIDSON SMART SECURITY SYSTEM > ARMING AND DISARMING (Page 72).

Sidestand Message

On international (HDI) models, a 'SidEstAnd' message is displayed if the motorcycle is placed into gear while the jiffy stand is down. See CONTROLS AND INDICATORS > JIFFY STAND INTERLOCK: INTERNATIONAL MODELS (Page 56) for details on this feature.





- | | |
|---|--|
| 1. Speedometer | 6. Check engine lamp |
| 2. Odometer/tachometer | 7. Low fuel warning lamp |
| 3. Fuel gauge (equipped models) | 8. Battery lamp |
| 4. Electrical system lamp (security system) | 9. Sixth gear indicator |
| 5. Anti-Lock Brake System (ABS) lamp | 10. Cruise control enabled lamp (not used) |

Figure 7. Speedometer/Odometer/Tachometer (Typical)

INSTRUMENT LAMPS

Check Engine Lamp

See Figure 7. The check engine lamp (6) is located inside the instrument cluster. Its purpose is to indicate whether or not the engine/engine management system is operating normally. The check engine lamp color is amber.

The check engine lamp normally comes on when the ignition is first turned on and remains on for approximately 4 seconds, as the engine management system runs a series of self-diagnostics.

If the check engine lamp comes on at any other time, see a Harley-Davidson dealer.

Low Fuel Lamp

Solid: See Figure 7. The amber low fuel warning lamp (7) illuminates when the gasoline in the tank reaches the low fuel level. Refer to Table 12.

Flashing: If the low fuel lamp flashes continuously, it indicates the presence of a fault in the fuel level circuitry. See a Harley-Davidson dealer.

Sixth Gear Lamp

See Figure 7. The sixth gear lamp (9) indicates when the transmission is in sixth gear.

Battery Discharge Lamp

See Figure 7. The battery lamp (8) indicates either overcharging or undercharging of the battery. Refer to MAINTENANCE AND LUBRICATION > BATTERY (Page 129).

Electrical System Lamp

See Figure 7. On motorcycles equipped with the security system, the electrical system lamp flashes when the security system is armed. Refer to HARLEY-DAVIDSON SMART SECURITY SYSTEM > HARLEY-DAVIDSON SMART SECURITY SYSTEM (Page 67).

If the electrical system lamp remains lit after the security system is disarmed, first check all the motorcycle's lighting for a failed bulb and replace as required. Otherwise, if all bulbs are operating and the electrical system lamp remains lit, see a Harley-Davidson dealer.

Anti-Lock Brake System (ABS) Lamp

Flashing: See Figure 7. On ABS equipped models, the amber ABS indicator lamp (5) flashes when the ignition switch is turned to IGN to indicate that the system is operational. It

continues to flash until motorcycle speed exceeds 5 km/h (3 mph).

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

⚠ 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)

INDICATOR LAMPS

See Figure 8. Five indicator lamps are provided in the instrument panel.

Turn Indicator Lamps

The turn indicators flash when a turn signal is activated. When the 4-way hazard flashers are operating, both turn indicators will flash simultaneously.

Headlamp High Beam Indicator Lamp

The headlamp high beam indicator lamp is lit when the high beam or flash to pass switch is activated.

Neutral Indicator Lamp

The neutral indicator lamp is lit when the transmission is in neutral gear.

Oil Pressure Indicator Lamp

The oil pressure indicator lamp is lit when sufficient oil is not circulating through the engine.

The lamp is lit when the ignition is turned on prior to starting engine. With engine running, lamp should be off when engine speed is above idle.

Circumstances that could cause the oil indicator lamp to illuminate:

- Low oil level. Stop engine immediately. Add oil.
- Diluted oil. Change oil as soon as possible.
- Incorrect oil for the operating temperature. Change oil as soon as possible.
- See OWNER MANUAL > TROUBLESHOOTING (Page 163) for further information.

NOTICE

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)

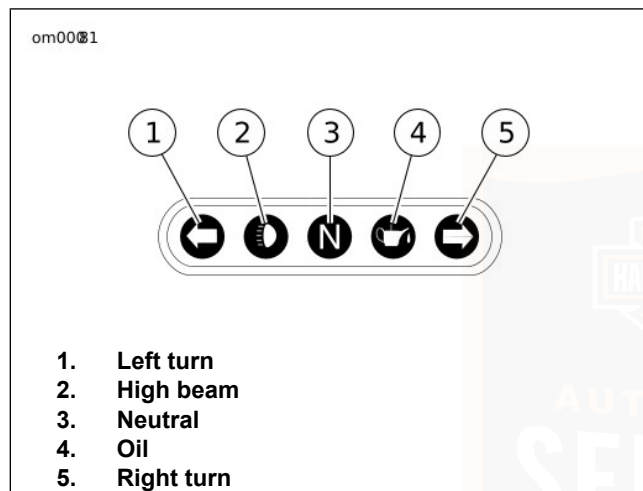


Figure 8. Indicator Lamps (Typical)

GEAR SHIFT LEVER

Location

See Figure 9. The gear shift lever is located on the left side of the motorcycle and is operated with the left foot. The shift lever changes gears in a sequential six-speed transmission.

Shift Pattern

NOTICE

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

See Figure 9. Each gear must be engaged in sequence. Lift the gear shift lever to upshift and press the lever to downshift. After each gear change, release the gear shift lever to allow it to return to its resting position. See OPERATION > SHIFTING GEARS (Page 87).

Neutral

Neutral is located between first and second gear. The transmission can be shifted to neutral from either first or second gear. Lift or press the gear shift lever 1/2 of its stroke. In neutral, the indicator lamp will light.

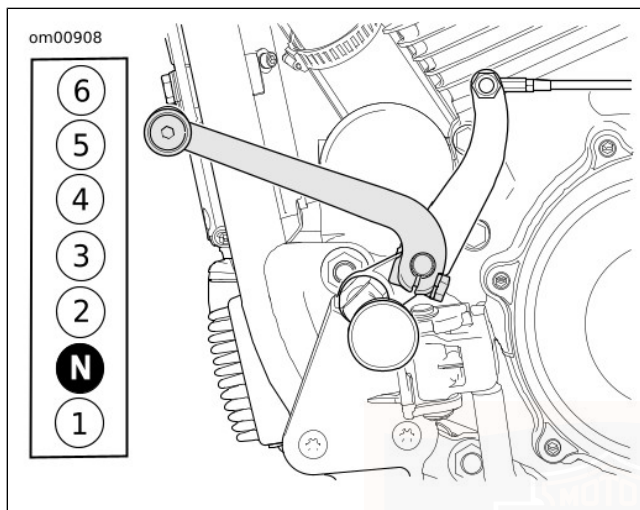


Figure 9. Shift Lever and Shift Pattern

HEEL-TOE FOOT SHIFTER

See Figure 10. Some motorcycles have a heel-toe shifter lever. With this shift lever, upshifts can be made with the heel of the left foot. Downshifts can be made with the toe.

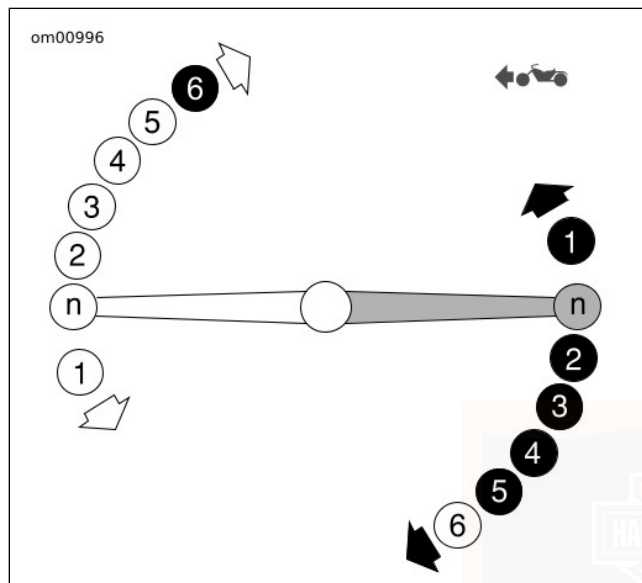
- Pushing toe shift lever all the way down (full stroke) shifts the transmission to the next lower gear.
- Lifting the toe shift lever all the way up (full stroke) shifts the transmission into the next higher gear.

- Pushing the heel shift lever all the way down (full stroke) shifts the transmission to the next higher gear.

Release the foot shift lever after each gear change to allow the lever to return to its center position before another gear change.

NOTE

The heel shifter height can be adjusted for rider preference. Verify that full lever movement is available after adjustment. See the service manual.



**Figure 10. Heel-Toe Foot Shift Lever
ANTI-LOCK BRAKE SYSTEM (ABS)**

Identification

See Figure 11. Models that are equipped with the ABS option can be identified by the presence of a hydraulic control unit as shown.

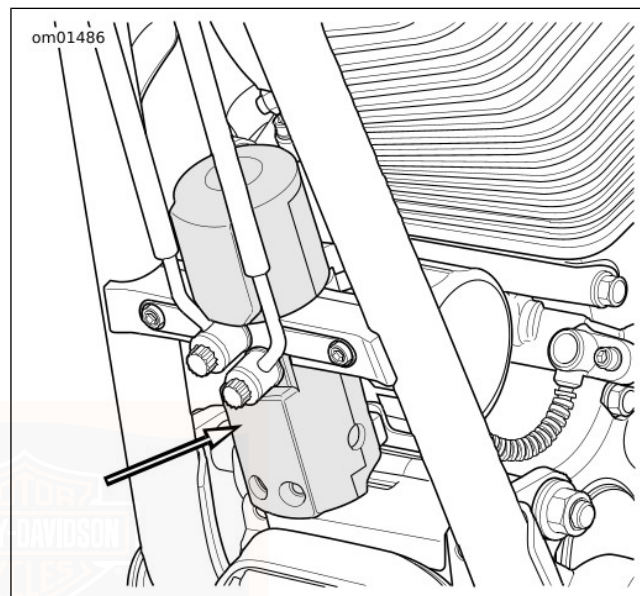


Figure 11. Hydraulic Control Unit

BRAKE SYSTEM

General

The rear brake pedal controls the rear wheel brake and is located on the motorcycle's right side. Operate the rear brake pedal with the right foot.

The front brake hand lever controls the front wheel brake and is located on the right handlebar. Operate the hand lever with the fingers of the right hand.

⚠ 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)

Some models are equipped with an anti-lock braking system.

Non-ABS Brake System

Apply brakes uniformly and evenly to prevent wheels from locking. Use front and rear brakes equally for best results.

⚠ 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)

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.

ABS: How It 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, or if the deceleration rate does not match a criteria stored in memory, the ABS reacts. The system rapidly opens and closes valves to modulate the brake 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 and is capable of cycling up to seven times per second.

The rider will recognize 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 21.

ABS: How To Use

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 in an emergency stopping situation, maintain pressure on the brakes through all ABS events. Do not modulate or "pump" the brake controls. The wheels won't 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)

More information is available at www.harley-davidson.com/abs.

ABS: Tires and Wheels

ABS motorcycles must always use Harley-Davidson specified 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 Table 18 can reduce ABS braking performance.

Table 21. ABS Symptoms and Conditions

SYMPTOM	CONDITION
Pulsing brake lever or pedal during an ABS event	Normal condition.
Clicking sound during an ABS event	Normal condition.
ABS lamp flashing	Normal condition - motorcycle turned on - speed under 5 km/h (3 mph).
"Surge" sensation while braking	Normal condition - 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.

Table 21. ABS Symptoms and Conditions

SYMPTOM	CONDITION
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 will not activate on front wheel below 5 km/h (3 mph) or on rear wheel below 8 km/h (5 mph).

JIFFY STAND

⚠ WARNING

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

The jiffy stand is located on the left side of the motorcycle and swings outward to support the motorcycle for parking.

⚠ 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)

JIFFY STAND INTERLOCK: INTERNATIONAL MODELS

Some international models are equipped with a jiffy stand interlock feature.

The vehicle will start and run with the jiffy stand down while the transmission is in neutral. If the jiffy stand is down, the transmission is in gear, and the clutch is released, the vehicle will stall. The message "SidE StAnd" will scroll across the odometer to indicate this to the rider. Raising the jiffy stand (or putting the transmission in neutral) will permit the engine to run and clear the message.

If the jiffy stand falls out of the fully retracted position while riding at speeds greater than 15 km/h (10 mph), then the jiffy stand interlock system will maintain engine operation and alert the rider about this by illuminating the indicators (flash twice) and scroll the message "SidE StAnd" across the odometer. The message will remain until the system detects the jiffy stand in the fully retracted position again. The rider may continue to operate the vehicle while in this mode.

The rider may clear the text messages at any time by pressing the TRIP switch once while the vehicle is powered up.

REAR VIEW 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)

Your vehicle is equipped with two convex rear view mirrors.

This type of mirror is designed to give a much wider view to the rear than a flat mirror. However, cars and other objects seen in this type of mirror will look smaller and farther away than they actually are.

- Use caution when judging the size or relative distance of objects seen in rear view mirrors.
- Always adjust the rear view mirrors to clearly reflect the area behind the motorcycle before riding.

NOTE

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.

FUEL FILLER CAP

Fuel Gauge

See Figure 12. Some models have a fuel gauge on the left side of the tank. The fuel gauge is not removable.

The fuel range feature may also be used to determine the remaining fuel. See CONTROLS AND INDICATORS > INSTRUMENTS (Page 43).

Fuel Filler Cap

⚠ 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)

See Figure 12. To remove, turn fuel filler cap counterclockwise. The cap turns approximately three-quarters of a turn before it begins to loosen.

To install, turn fuel filler cap clockwise until it clicks. The ratchet action of the cap prevents overtightening.

See SAFE OPERATING RULES section and review safety procedures listed below.

⚠ 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)

om0091b

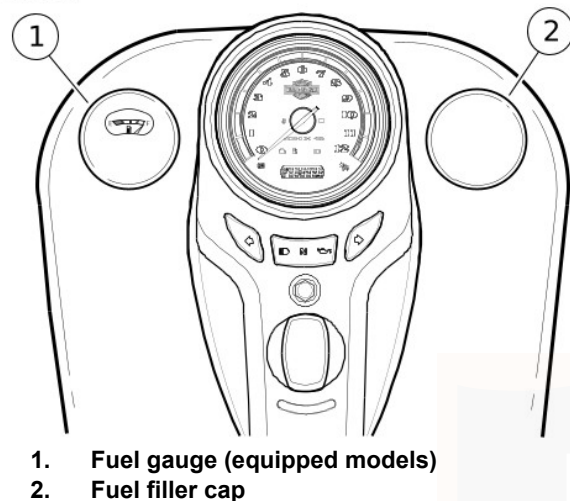


Figure 12. Fuel Tank

FORK LOCK

NOTICE

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

⚠ 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)

See Figure 13. The fork lock is incorporated in the steering head on the right side.

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

To Lock Fork

1. Turn fork to full left position.
2. Insert key into fork lock.
3. Push in on fork lock and turn to left position.
4. Remove key.

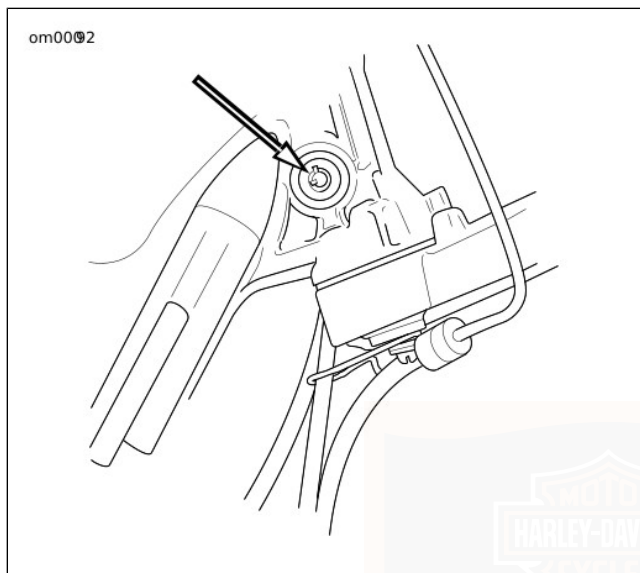


Figure 13. Fork Lock

SHOCK ABSORBERS

Calculate Number of Turns

Softail models feature adjustable rear shock absorbers located under the motorcycle. The rear shock spring preload is adjusted to the total load or may be varied to suit your own personal comfort.

NOTE

Refer to Table 4. To determine the motorcycle configuration for an FLS or FLSTFB, check the configuration/calibration character stamped on the VIN.

1. Identify the number of preload turns for the weight of the rider.
 - a. **FLSTC, FLSTF, FXST, FLS (APC/AUS), FLSTFB (HDI/ENG/IND/BRZ)**: Refer to Table 22.
 - b. **FXS, FXSB, FLSTN, FLS (all except APC/AUS), FLSTFB (all except HDI/ENG/IND/BRZ)**: Refer to Table 23.
2. Calculate the number of turns for the intended passenger and cargo.
3. Add the number of turns for the rider to the number of additional turns required for the total weight of the passenger and/or cargo.

Table 22. Shock Preload: FLSTC, FLSTF, FXST, FLS (APC/AUS), FLSTFB (HDI/ENG/IND/BRZ)

RIDER WEIGHT*	TURNS**
Less than 75 kg (165 lb)	0
75–100 kg (165–220 lb)	1
100–125 kg (220–275 lb)	2
125–152 kg (275–335 lb)	3

Table 22. Shock Preload: FLSTC, FLSTF, FXST, FLS (APC/AUS), FLSTFB (HDI/ENG/IND/BRZ)

RIDER WEIGHT*	TURNS**
152–179 kg (335–395 lb)	4
179 kg (395 lb) to maximum added weight allowed (refer to Table 15 and Table 16)	5
* Passenger/Cargo: For every 18.1 kg (40 lb) increase preload one turn.	
**Turns out (counterclockwise) from minimum preload.	

Table 23. Shock Preload: FXS, FXSB, FLSTN, FLS (all except APC/AUS), FLSTFB (all except HDI/ENG/IND/BRZ)

RIDER WEIGHT*	TURNS**
Less than 84 kg (185 lb)	0
84–107 kg (185–235 lb)	1
107–129 kg (235–285 lb)	2
129–154 kg (285–340 lb)	3
154 kg (340 lb) to maximum added weight allowed (refer to Table 15 and Table 16)	4
* Passenger/Cargo: For every 15.8 kg (35 lb) increase preload one turn.	
**Turns out (counterclockwise) from minimum preload.	

Adjustment

NOTE

- *Adjust the shocks with the motorcycle resting on the jiffy stand.*

- *Adjust both shocks the same number of turns.*

1. See Figure 14. Hold the shaft with a wrench on the flats of the shock shaft and loosen the jamnut (2).
2. Use the tangs of the SHOCK ADJUSTMENT SPANNER (PART NUMBER: 94448-82B) in the holes in the rear shock canister (1) to turn the canister clockwise until it stops. This is the minimum preload position.
3. Mark the face of the canister for reference.
4. Turn the canister counterclockwise the number of turns calculated for the total load.
5. Tighten the jamnut.

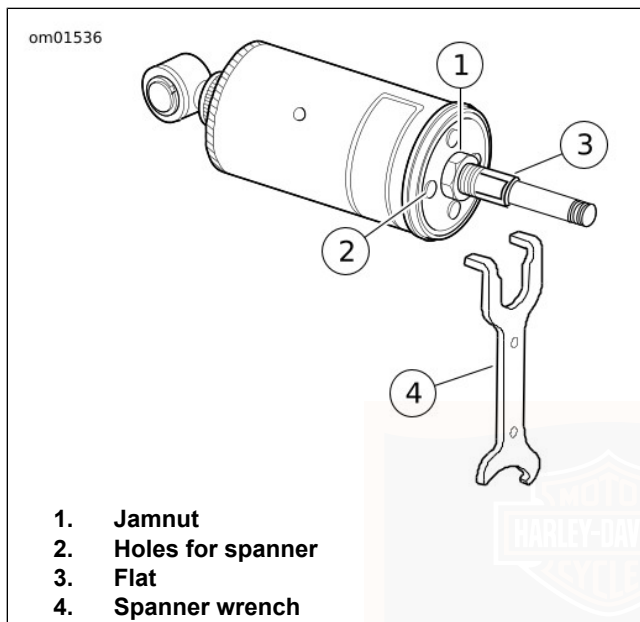


Figure 14. Shock Absorber Adjustment

SADDLEBAGS: FLSTC MODELS

⚠ 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)

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)

Removal

1. See Figure 15. Unbuckle the saddlebag straps.
2. Use one hand to support the saddlebag and another hand to remove the flanged locknuts from the saddlebag mounting bracket.
3. Remove flanged locknuts, washers, acorn nuts and the saddlebag from the fender support.

Installation

1. See Figure 15. Align the saddlebag with the mounting holes on the fender support.
2. Push the mounting studs, washers and flanged locknuts through the saddlebag mounting holes, saddlebag mounting bracket and fender support as shown.
3. Tighten fasteners to 13.6–16.3 N·m (120–144 **in-lbs**).
4. Buckle saddlebag straps.

⚠ 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)

For proper saddlebag maintenance, see CARE AND CLEANING > LEATHER AND VINYL CARE (Page 158).

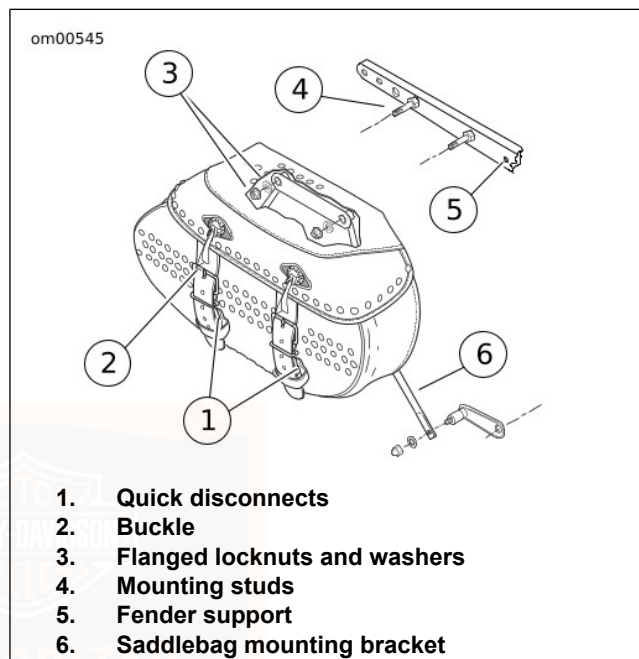


Figure 15. Saddlebag Assembly: FLSTC Shown

SADDLEBAG OPERATION

Opening

See Figure 16. Some saddlebags have a quick disconnect feature. To use the quick disconnect strap feature:

1. Lift up the strap end to expose the quick release buckle.
2. Press on the lock tabs as shown.

NOTE

The straps may also be opened and closed using the buckle in a conventional manner.

Closing

1. Insert the male strap end into the receptacle on the bag.
2. Push until a positive click is felt.

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)

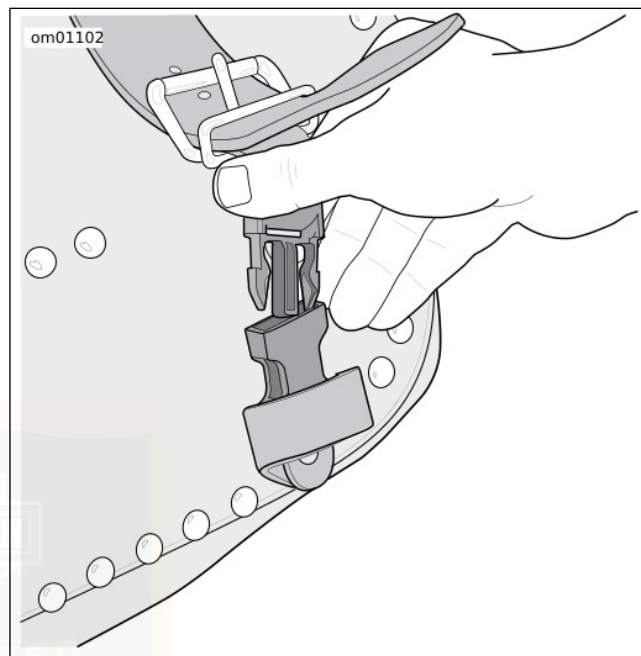


Figure 16. Saddlebag Quick Disconnect

WINDSHIELD: FLSTC MODELS

Removal

1. See Figure 17. Insert your fingers into the wireform latch springs at either side of the windshield and move the TOP of the windshield assembly forward, until the TOP bracket notches slide away from the grommets.
2. Carefully lift the windshield bracket BOTTOM notches off the bottom grommets. Remove windshield.

Installation

1. See Figure 17. Insert your fingers into the wireform latch springs at either side of the windshield and slide the BOTTOM windshield bracket notches onto the bottom grommets.
2. Slide the TOP bracket notches onto the top grommets.

NOTE

For proper windshield maintenance, see CARE AND CLEANING > WINDSHIELD CARE (Page 160).

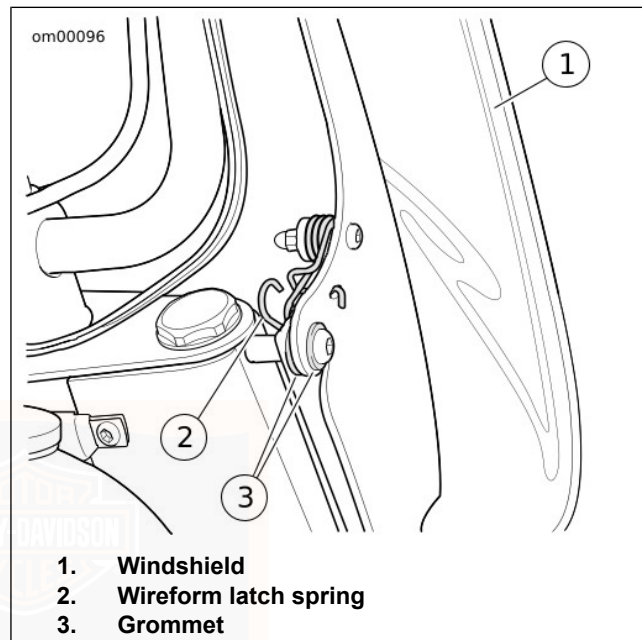


Figure 17. Windshield Assembly

AUXILIARY/FOG LAMPS: FLSTC/FLSTN MODELS

See Figure 18. The auxiliary/fog lamp switch is located on the left steering head panel. Turn on the auxiliary/fog lamps as needed.

When the headlamp is on high beam, the auxiliary/fog lamps turn off (except for Japan configuration motorcycles).

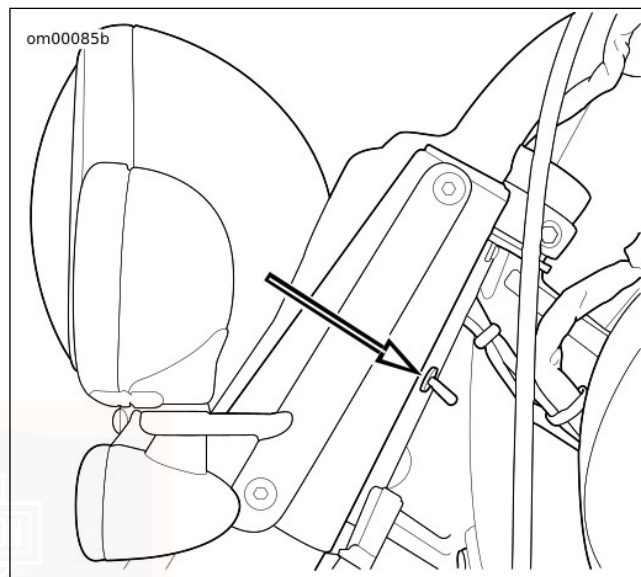


Figure 18. Auxiliary/Fog Lamp Switch
SIDE-MOUNTED LICENSE PLATE

See Figure 19. Some models are equipped with a side-mounted license plate assembly. The license plate must be in the extended position during operation. Due to local regulations, this feature may not be available in all locations.

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

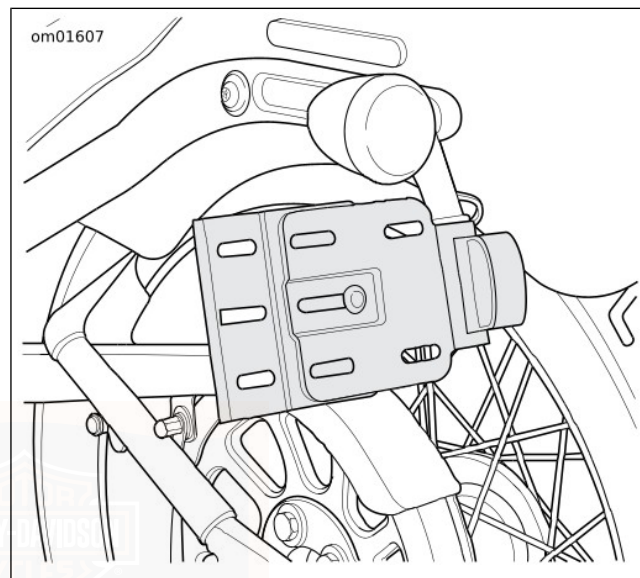


Figure 19. Side-Mounted License Plate Assembly

HARLEY-DAVIDSON SMART SECURITY SYSTEM

Components

The Harley-Davidson Smart Security System consists of a control module, a hands-free antenna mounted on the motorcycle and a hands-free fob **carried** by the rider/passenger.

After parking the motorcycle, turn the ignition to OFF or ACC and the security system will automatically **arm** within five seconds. While armed, the starter and ignition are disabled and the rider may leave the motorcycle knowing that the module will disable the ignition if someone tampers with the ignition switch or activate an alarm if someone attempts to move the motorcycle.

If the fob is present, the module will automatically **disarm** when the ignition is turned to IGN or ACC.

NOTE

- If disconnecting power from the motorcycle battery, see HARLEY-DAVIDSON SMART SECURITY SYSTEM > DISCONNECTING POWER (Page 78) to prevent the optional security system siren from sounding.
- Do not relocate the module or the antenna on the motorcycle.

Options

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

- Smart Siren II.
- Security Pager and Security Pager Receiver II.
- Replacement Fobs.

FCC REGULATIONS

FCC ID: L2C0027TR IC ID: 3432A-0027TR

FCC ID: L2C0028TR IC ID: 3432A-0028TR

This device complies with Part 15 of the FCC Rules and with RSS-210 of Industry Canada rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

NOTE

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met.

SECURITY SYSTEM FOB

Fob Assignment

See Figure 20. Fobs are electronically assigned to the Harley-Davidson Smart Security System by a Harley-Davidson dealer so that the motorcycle can recognize a fob's unique signal. Only two fobs can be assigned at any one time.

Replacement fobs can be purchased from a dealership but can only be assigned to the motorcycle by a trained Harley-Davidson technician.

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.*
- *The serial number of the fob is also found on the inside of the fob. See HARLEY-DAVIDSON SMART SECURITY SYSTEM > FOB BATTERY (Page 77).*

- *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. The PIN should be recorded on the Personal Information page in the front of this Owner's Manual and on the removable wallet card.*
- *Should the rider misplace the fob or if the fob fails, the rider can refer to the wallet card and use the PIN to manually disarm the system. Refer to HARLEY-DAVIDSON SMART SECURITY SYSTEM > ARMING AND DISARMING (Page 72) and HARLEY-DAVIDSON SMART SECURITY SYSTEM > TROUBLESHOOTING (Page 78).*
- *The PIN can easily be changed by the rider at any time. Refer to HARLEY-DAVIDSON SMART SECURITY SYSTEM > PERSONAL IDENTIFICATION NUMBER (PIN) (Page 69).*

Riding with a Fob

- Always carry the fob when riding, loading, fueling, moving, parking or servicing the motorcycle. Carry the fob in a convenient pocket.

- 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 disabling the ignition and activating the alarm. If the ignition switch is unlocked, the ignition switch can be set to IGN and the engine started.
- Do not ride with the fob stored in a metal case or with the fob closer than 76 mm (3.0 in) to a cell 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 off without the fob, the odometer window will display "No Fob" after five seconds at any speed above 8 km/h (5 mph). If the motorcycle is stopped and the ignition turned to OFF, it will require a PIN entry to disarm the security system and restart the motorcycle.

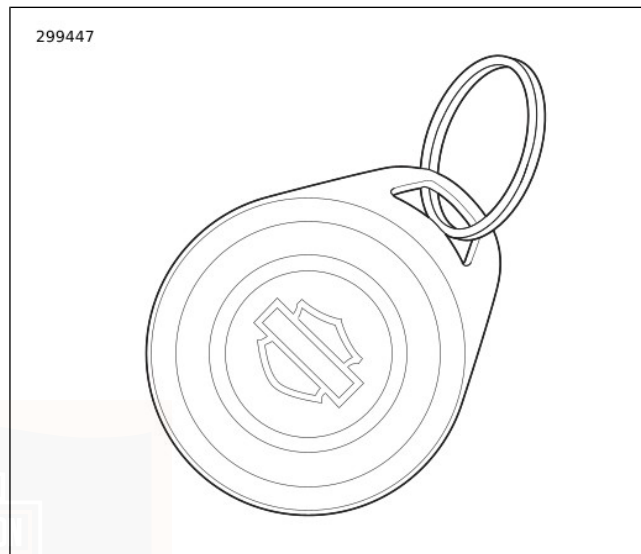


Figure 20. Fob: Smart Security System
PERSONAL IDENTIFICATION NUMBER (PIN)

The Personal Identification Number (PIN) is a number that can be used to disarm the security system in case an 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

To maintain security, the rider can change the PIN at any time. Refer to Table 24.

Table 24. Changing the PIN

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
1	Select a 5-digit (1 thru 9) PIN and record on the wallet card from Owner's Manual.		
2	With an assigned fob present, turn the OFF/RUN switch to OFF .		
3	Turn the ignition switch to IGN .		
4	Cycle the OFF/RUN switch twice: RUN - OFF - RUN - OFF - RUN .		
5	Press left turn signal switch 2 times .	ENTER PIN will scroll through the odometer window.	
6	Press right turn signal switch 1 time and release.	Turn signals will flash 3 times. Current PIN will appear in odometer. The first digit will be flashing.	
7	Enter first digit of new PIN by pressing and releasing the left turn signal switch until the selected digit appears.		
8	Press right turn signal switch 1 time and release.	The new digit will replace the current in odometer window.	
9	Enter second digit of selected PIN by pressing and releasing the left turn signal switch until the selected digit is present.		

Table 24. Changing the PIN

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
10	Press right turn signal switch 1 time and release.	The new digit will replace the current in odometer window.	
11	Enter third digit of the selected PIN by pressing and releasing the left turn signal switch until the selected digit is present.		
12	Press right turn switch 1 time and release.	The new digit will replace the current in odometer window.	
13	Enter fourth digit of new PIN by pressing and releasing the left turn signal switch until the selected digit is present.		
14	Press right turn switch 1 time and release.	The new digit will replace the current in odometer window.	
15	Enter fifth digit of the new PIN by pressing and releasing the left turn signal switch until the selected digit is present.		
16	Press right turn switch 1 time and release.	The new digit will replace the current in odometer window.	
17	Turn the OFF/RUN switch OFF , then turn the ignition switch to OFF .		Pushing the OFF/RUN switch to OFF stores the new PIN in the module.

SECURITY STATUS INDICATOR

See Figure 7. The electrical system lamp in the speedometer face indicates the status of the Harley-Davidson Smart 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:** A lamp that remains illuminated longer than four seconds when the system is disarmed indicates that service of the module is required.

ARMING AND DISARMING

Arming

When the motorcycle is parked and the ignition is turned to OFF or ACC, the security system arms automatically within five seconds if no motion is detected. Even when the fob is present, the system will arm.

On arming, the turn signals will flash twice and the optional siren will chirp twice if the siren is in the chirp mode. While armed, the indicator lamp in the speedometer face will flash every three seconds.

NOTE

International Models: The system must be in the chirp mode for the siren to chirp on arming or on disarming. See HARLEY-DAVIDSON SMART SECURITY SYSTEM > SIREN CHIRP MODE (CONFIRMATION) (Page 76).

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 ignition switch is turned to IGN or ACC.

When the system disarms, the optional siren will chirp once and the security indicator lamp will illuminate for a solid four seconds and then turn off.

NOTE

On any motion, like lifting the motorcycle up off of its jiffy stand or turning the ignition to ON, the system will electronically "poll" for the presence of the fob. If the fob is present, the system disarms.

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).

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, turn the ignition 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 will remain disarmed until the ignition is turned to OFF.
- At any time during a PIN disarm if the fob is brought within range of the motorcycle, the security system will disarm as the module receives the coded signal from the fob.

Table 25. Entering a PIN to Disarm Harley-Davidson Smart Security System

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
1	If necessary, verify the current 5-digit PIN.		Should be recorded on wallet card.
2	Turn ignition to IGN .	If armed, the odometer window display will read: ENTER PIN and the security lamp will be flashing at a fast rate. The headlight will not be on.	
3	Press and release the left turn signal switch.	In the odometer window, a flashing 1 will appear.	
4	Increment the digit by tapping the left turn signal until the odometer window displays the first digit of the PIN.	The first digit in the odometer will be the first digit in the PIN.	

Table 25. Entering a PIN to Disarm Harley-Davidson Smart Security System

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

ALARM

Ignition Disabled

When the fob is not present and the system is armed, if the ignition switch is turned to IGN or ACC, the security lamp will flash at a fast rate and the odometer window display will scroll "ENtER PIN". The headlamp will not turn on.

After approximately 10 seconds, if the system does not receive a left turn signal switch input, the display will go blank. The ignition system will remain disabled until the fob is present or the current PIN is entered.

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 optional siren.

Within four seconds, if the motorcycle is back on its jiffy stand and no further motion is detected and/or the ignition is turned to OFF, 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 are disabled.

The Alarm

If the security system is still detecting motion and/or if the ignition has not been turned back to OFF after a second warning, the system will activate the alarm.

When activated, the security system will:

- Alternately flash the four turn signals.
- Sound the optional 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 a Harley-Davidson Security Pager. A pager can operate either in silent or in combination with an optional siren. The range of a pager can be up to 0.8 km (0.5 mi). See a Harley-Davidson dealer for details.

Deactivate the Alarm

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

SIREN CHIRP MODE (CONFIRMATION)

Chirp Mode

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

Chirpless Mode

In chirpless mode, the siren does not chirp on arming or disarming.

The siren will still provide warning chirps and sound the alarm if the motorcycle is moved or the ignition switch is turned on without the fob present.

Switching Modes

Cycling quickly through three armings and disarmings will switch the system from one mode to the other.

1. With the fob present, turn the ignition switch to IGN.
2. When the security lamp turns off, turn the ignition switch to OFF.

3. When the security lamp turns off (but before the turn signals flash twice), immediately turn the ignition switch to IGN.
4. When the security lamp turns off, immediately turn the ignition switch to OFF.
5. When the security lamp turns off (but before the turn signals flash twice), immediately turn the ignition switch to IGN.
6. When the security lamp turns off, immediately turn the ignition switch to OFF.
7. When the security lamp turns off (but before the turn signals flash twice), immediately turn the ignition switch to IGN.

TRANSPORT MODE

When transporting the motorcycle, place the system in the Transport Mode. Otherwise, the alarm activated by motion detection can discharge the battery.

In the transport mode, the security system is armed without enabling the motion detector for one ignition cycle. This allows the vehicle to be picked up and moved in an armed state, however, any attempt to start the engine when the fob is not within range will trigger the alarm.

To Enter Transport Mode

1. With an assigned fob within range, turn the ignition switch to IGN.
2. Before the security system lamp goes out, turn the ignition switch to OFF.
3. Within three seconds, simultaneously press both the left and the right turn signal switches.
4. After the turn signals flash once, the system enters the transport mode. With the fob removed, the motorcycle can be moved without setting off the alarm.

To Exit Transport Mode

With the fob present, turn the ignition switch to IGN to disarm the system.

STORAGE AND SERVICE DEPARTMENTS

Long-Term Parking

To maintain arming, store the fob beyond the range of the antenna. The antenna range is approximately 6 m (20 ft). If the motorcycle is to be moved while parked, have the fob present.

If the motorcycle will not be operated for several months, such as during the winter season, refer to MAINTENANCE AND LUBRICATION > MOTORCYCLE STORAGE (Page 147).

Service Departments

When the motorcycle is to be 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.

FOB BATTERY

Replacing the Battery

Replace the fob battery every year.

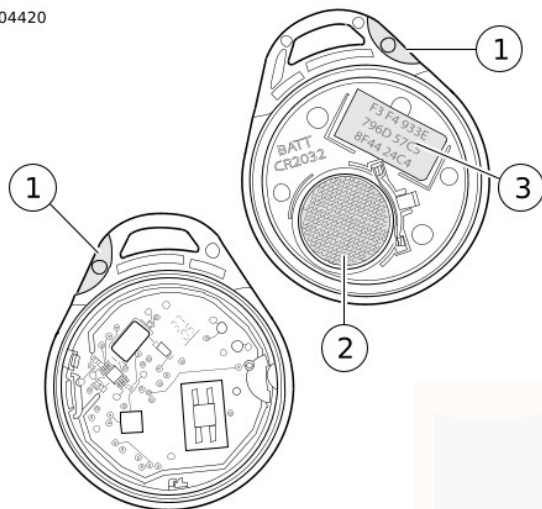
1. See Figure 21. Slowly turn a thin blade in the thumbnail slot (1) on the side of the fob to separate the two halves.
2. Remove the battery (2) and discard.

NOTE

Dispose of the old battery in accordance with local regulations.

3. Install a **new** battery (Panasonic 2032 or equivalent) with the positive (+) side down.
4. Align the two halves of the fob and snap together.

304420



1. Thumb nail slot
2. Battery
3. Fob serial number

Figure 21. Fob Battery

DISCONNECTING POWER

Siren Equipped Models

When disconnecting the battery or removing the main fuse, perform the following steps to prevent the optional siren from sounding.

1. Verify that the fob is present.
2. Turn the ignition switch to IGNITION.
3. Pull the main fuse from its holder or disconnect the battery.

TROUBLESHOOTING

Security System Indicator

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

Fob

If the Smart Security System continues to actuate warnings and alarms with the fob present, one of the following can be the cause:

1. **Electromagnetic interference:** Other electronic devices, power lines, or other electromagnetic sources can cause the Smart Security System to operate inconsistently.
 - a. Verify that the fob is not in a metal enclosure or within 76 mm (3.0 in) of any other electronic devices.
 - b. Place the fob on the seat and turn the ignition to IGN. 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.
 - d. Use the PIN to disarm the system.

NOTE

Leaving a fob next to a computer monitor can run down the battery.

2. **Discharged fob battery:** Use the PIN to disarm the system. Replace the battery. Refer to HARLEY-DAVIDSON SMART SECURITY SYSTEM > FOB BATTERY (Page 77).
3. **A 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 for 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.

NOTES



OPERATING RECOMMENDATIONS

⚠ 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)

- 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.

⚠ 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)

NOTICE

Do not run the engine at extremely high RPM with clutch disengaged or transmission in neutral. Running an engine at high RPM can result in engine damage. (00177a)

NOTICE

Do not exceed the maximum safe RPM specified below under any conditions. Exceeding the maximum safe engine RPM can result in equipment damage. (00248a)

- The maximum recommended safe engine speed is 5500 rpm.
- Do not idle engine unnecessarily for more than a few minutes with motorcycle standing still.

NOTICE

Air-cooled engines require air movement over the cylinders and heads to maintain proper operating temperature. Extended periods of idling or parade duty can overheat the engine, resulting in serious engine damage. (00178a)

An engine running long distances at high speed must be given closer than ordinary attention to avoid overheating and possible engine damage.

This applies particularly to a motorcycle equipped with windshield and fairing.

NOTE

Have the engine checked regularly and keep it well tuned.

⚠ 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)

NOTE

When descending upon a long, steep grade, downshift and use engine compression together with intermittent application of both brakes to slow the motorcycle.

⚠ WARNING

Continuous use of brake causes overheating and reduced efficiency, which could result in death or serious injury. (00042a)

⚠ WARNING

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

BREAK-IN RIDING RULES

The First 500 Miles (800 Kilometers)

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

To allow your engine to wear-in its critical parts, we recommend that you observe the riding rules provided below for the first 800 km (500 mi).

1. During the first 80 km (50 mi) of riding, keep the engine speed below 3000 rpm in any gear. Do not lug the engine by running or accelerating at very low rpm, or by running at high rpm longer than needed for shifting or passing.
2. Up to 800 km (500 mi), vary the engine speed and avoid operating at any steady engine speed for long periods. Engine speed up to 3500 rpm in any gear is permissible.
3. Drive slowly and avoid fast starts at wide open throttle until the engine has warmed up.
4. Avoid lugging the engine by not running the engine at very low speeds in higher gears.
5. Avoid hard braking. Break-in new brakes with moderate use for the first 300 km (200 mi).

PRE-RIDING CHECKLIST

⚠ WARNING

Identify and understand the specific features of your vehicle. Failure to understand how these features affect the vehicle's operation can lead to an accident, which could result in death or serious injury. (00043b)

Before riding your motorcycle at any time, make a general inspection to be sure it is in safe riding condition.

⚠ 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)

⚠ 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)

1. Verify fuel is present in tank and add fuel if required.
2. Adjust mirrors to proper riding positions.
3. Check the oil level. Add oil if necessary.

4. Check controls to make sure they operate properly. Operate the front and rear brakes, throttle, clutch and shifter. All controls should operate freely without binding.
5. Check steering for proper operation by turning the handlebars through the full operating range. Handlebars should turn smoothly without binding.

⚠ 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)

6. Check tire condition, pressure and motorcycle loading. Incorrect pressure and excessive loading can lead to tire or wheel failure, and can affect handling and stability. Refer to Table 18 for correct inflation pressure.

⚠ 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)

7. Check all electrical equipment and switches including the headlamp, stop lamp, turn signals and horn for proper operation.
8. Check for any fuel, oil or hydraulic fluid leaks.
9. Visually check drive belt for wear or damage.
10. Service your motorcycle as necessary.

STARTING THE ENGINE

General

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)

Do not roll the throttle before starting. Rolling the throttle before starting the motorcycle is unnecessary.

Starting

WARNING

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

1. Turn the ignition switch to IGN. Do not roll the throttle.
2. See Figure 22. Turn the OFF/RUN switch to RUN position.

NOTE

The engine lamp will light for approximately 4 seconds and you will hear the fuel pump purr for approximately two (2) seconds as it operates to fill the fuel lines with gasoline.

3. Pull in clutch lever.

NOTE

To activate the starting system, the clutch interlock circuitry requires that the clutch be disengaged. The clutch lever must be pulled in against the left handlebar grip and/or the transmission must be shifted to the neutral position (with the green neutral lamp lit).

4. Raise the jiffy stand (required on international models).
5. Press the starter button to start the motorcycle.

NOTE

If the engine does not start, the starter will operate for 5 seconds and stop. Release the starter button and reapply. If after two 5 second starting attempts, the motorcycle still will not start, see a Harley-Davidson dealer.

6. When the engine has started, you can operate your motorcycle as you normally would after raising the jiffy stand.

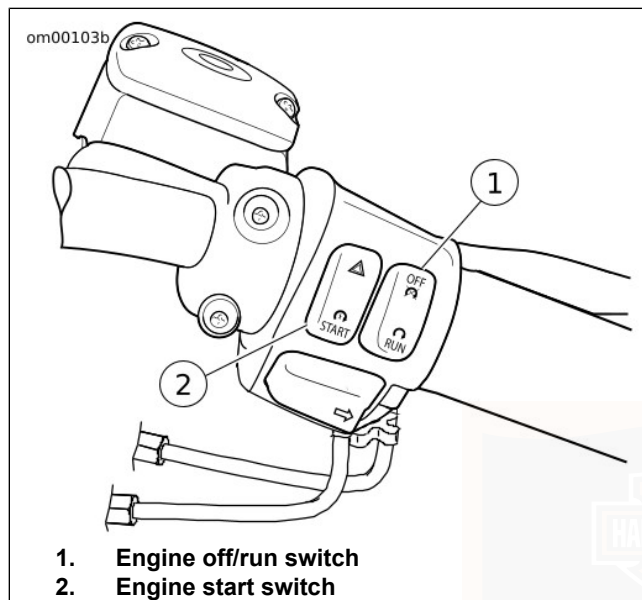


Figure 22. Right Handlebar Controls

AUTOMATIC COMPRESSION RELEASE (ACR)

Vehicles with Twin Cam 103 and larger engines are equipped with an Automatic Compression Release (ACR). During starting, a small auxiliary valve in the cylinder head is opened automatically by the ECM. The open valve releases the air

compressed in the cylinder heads and allows the starter motor to turn the high compression engine over at a faster rate to aid starting.

After starting and during normal operation, the ACR valves remain closed.

ENGINE IDLE TEMPERATURE MANAGEMENT SYSTEM

For those riders who frequently find themselves in riding conditions where the vehicle is subjected to prolonged idle conditions or traffic congestion, an optional dealer enabled engine calibration is available. This calibration offers limited rear cylinder cooling with the vehicle stopped while the engine is left at idle.

This option is available for original equipment engine calibrations only. Motorcycles are delivered from the factory with the engine idle temperature management disabled. Engine idle temperature management can be enabled and disabled by your dealer.

STOPPING THE ENGINE

1. Stop the engine by turning the engine OFF/RUN switch on the right handlebar to OFF.
2. Turn the ignition switch to OFF. If the engine should be stalled or stopped in any way, turn the ignition switch to OFF at once to prevent battery discharge.

SHIFTING GEARS

Stopped, Engine Off

Squeeze in the clutch lever to fully disengage the clutch. Gears may 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 on the shift lever.

Starting from a Stop

NOTICE

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

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 in against the handlebar grip to fully disengage the clutch.
2. Press the gear shift lever down to 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 23. Engage the next higher gear when the motorcycle reaches the shifting speed. Refer to Table 26.

Table 26. Upshift (Acceleration) Gear Speeds: Six Speed

GEAR CHANGE	mph	km/h
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. Disengage the clutch (pull the clutch lever in).
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.

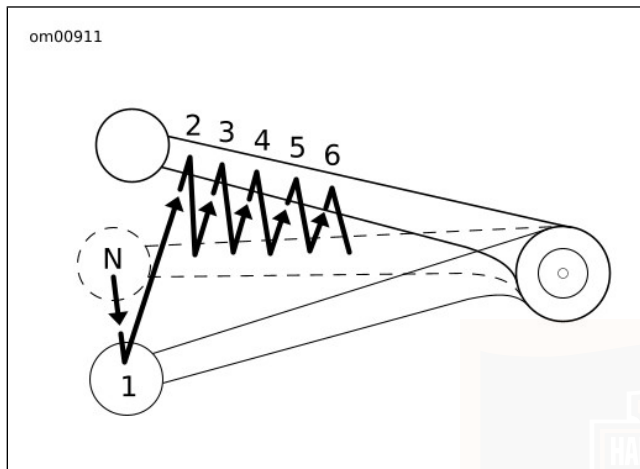


Figure 23. Shifting Sequence: Upshift

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 24. When engine speed decreases, as when climbing a hill or slowing for a turn, shift to the next lower gear. Refer to Table 27.

Table 27. Downshift (Deceleration) Gear Speeds: Six Speed

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. Vehicle owners may determine that their own individual shifting patterns may differ from those stated and are additionally appropriate for individual riding styles.

1. Close the throttle.
2. Disengage the clutch (pull the clutch lever in).
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.

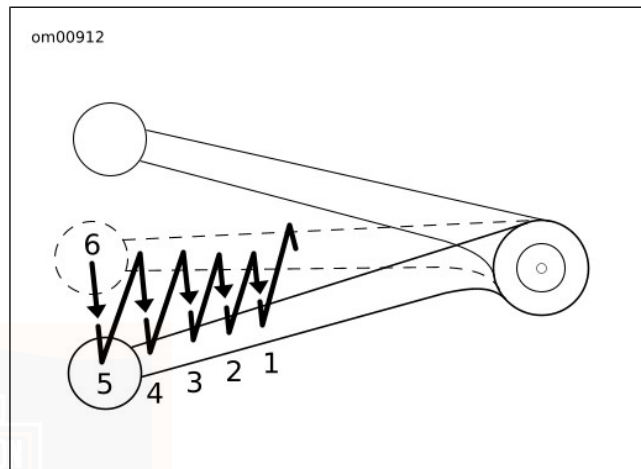


Figure 24. Shifting Sequence: Downshift

NOTES



SAFE OPERATING 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)

Good maintenance leads to safe motorcycling. A careful check of certain equipment must be made after periods of storage. Also, frequently inspect the motorcycle between the regular service intervals to determine if additional maintenance is necessary.

Check the following items:

1. Tires for correct pressure, excessive wear or any signs of tire damage.

2. Drive belt for proper tension, wear or damage.
3. Brakes, steering and throttle for responsiveness and freedom from binding.
4. Brake fluid level and condition. Hydraulic lines and fittings for leaks. Also, check brake pads and discs for wear.
5. Cables for fraying or crimping and free operation.
6. Engine oil and primary chaincase/transmission fluid levels.
7. Headlamp, tail lamp, brake lamp and turn signals for proper operation.

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 its first 1,600 km (1000 mi), it should be taken to an authorized Harley-Davidson dealer for initial service operations. Refer to Table 38.

DISPOSAL AND RECYCLING

When servicing the motorcycle, properly recycle or dispose of all fluids, bulbs, batteries, filters and other scrap materials according to local regulations.

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)

Engine oil is a major factor in the performance and service life of the engine. Always use the proper grade of oil for the lowest temperature expected before the next scheduled oil change. Refer to Table 28.

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 28 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 28. Recommended Engine Oils

TYPE	VISCOSITY	RATING	LOWEST AMBIENT TEMPERATURE	COLD WEATHER STARTS BELOW 50 °F (10 °C)
Screamin' Eagle SYN 3 Full Synthetic Motorcycle Lubricant	SAE 20W50	HD 360	Above 30 °F (-1 °C)	Excellent
Genuine Harley-Davidson H-D 360 Motorcycle Oil	SAE 20W50	HD 360	Above 4 °C (40 °F)	Good

Table 28. Recommended Engine Oils

TYPE	VISCOSITY	RATING	LOWEST AMBIENT TEMPERATURE	COLD WEATHER STARTS BELOW 50 °F (10 °C)
Genuine Harley-Davidson H-D 360 Motorcycle Oil	SAE 50	HD 360	Above 16 °C (60 °F)	Poor
Genuine Harley-Davidson H-D 360 Motorcycle Oil	SAE 60	HD 360	Above 27 °C (80 °F)	Poor
Genuine Harley-Davidson H-D 360 Motorcycle Oil	SAE 10W40	HD 360	Below 4 °C (40 °F)	Excellent

CHECKING OIL LEVEL

Engine oil level should be checked only when engine is at normal operating temperature.

- Check engine oil supply at each complete fuel refill.
- Refer to Table 38. Oil should be changed at proper intervals in normal service at warm or moderate temperatures.
- Oil change intervals should be shorter in cold weather. See MAINTENANCE AND LUBRICATION > WINTER LUBRICATION (Page 99).

NOTICE

Oil level cannot be accurately measured on a cold engine. For pre-ride inspection, with motorcycle leaning on jiffy stand on level ground, oil should register on dipstick between arrows when engine is cold. Do not add oil to bring the level to the FULL mark on a COLD engine. (00185a)

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)

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)

Oil Level Cold Check

Perform engine oil level **COLD CHECK** as follows:

1. For pre-ride inspection with the vehicle on jiffy stand on level ground, remove and wipe off the dipstick. Push the dipstick into the oil tank until the cap is fully seated against the spout.
2. See Figure 26. Remove the dipstick and verify oil registers on the dipstick between the two marks.
 - a. If oil level registers on the dipstick, proceed to Oil Level Hot Check.
 - b. If oil does not register on the dipstick, proceed to step 3.

3. With the dipstick removed, look into the dipstick opening and verify the oil level is at the filler neck weld.
 - a. If the oil level is at or near the filler neck weld, proceed to Oil Level Hot Check.
 - b. If the oil level is not at or near the filler neck weld, add only enough oil to bring the level to the filler neck weld. Then proceed to Oil Level Hot Check.

Oil Level Hot Check

Perform engine oil level **HOT CHECK** as follows:

1. Ride motorcycle until engine is at normal operating temperature.

NOTE

The engine will require a longer warm up period in colder weather.

2. With the vehicle upright on level ground, allow engine to idle for 1-2 minutes. Turn engine off.
3. With vehicle on jiffy stand remove and wipe off the dipstick. Install the dipstick back into the oil tank.
4. See Figure 26. Remove the dipstick and note the level of the oil. Add only enough oil to bring the level to the FULL mark on the dipstick. Do not overfill.

NOTE

Refer to Table 28. Use only recommended oil specified under MAINTENANCE AND LUBRICATION > ENGINE LUBRICATION (Page 92).

5. Start engine and carefully check for oil leaks around drain plug and oil filter.

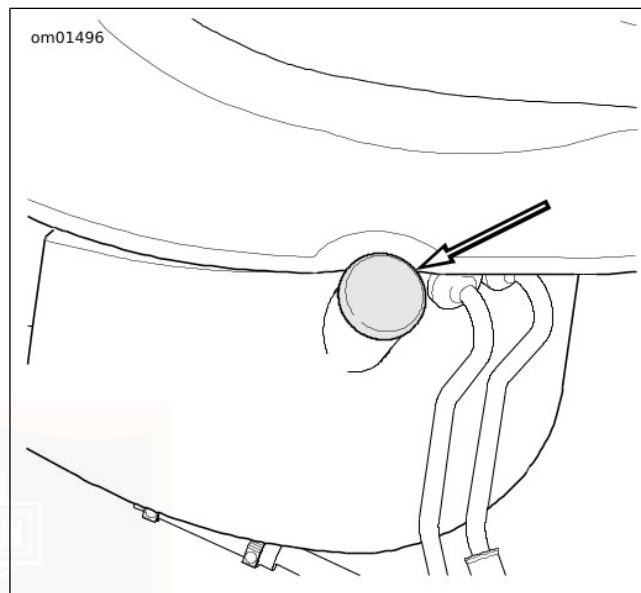
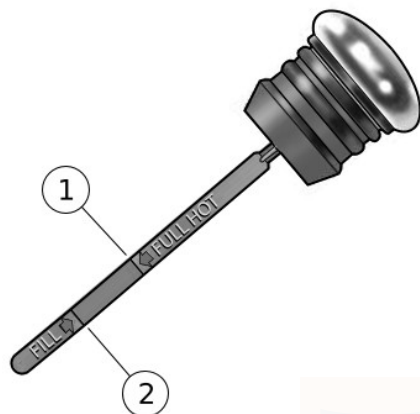


Figure 25. Engine Oil Filler Cap/Dipstick

om00107



1. FULL HOT
2. FULL

Figure 26. Engine Oil Level

CHANGING OIL AND OIL FILTER

Oil filter is located on an oil filter mount in front of the engine.

NOTICE

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

⚠ 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)

Twin Cam equipped vehicles require the premium oil filter (Part No. 63798-99A Chrome or Part No. 63731-99A Black).

1. See Figure 25. Pull on filler cap while moving plug back and forth to remove.
2. See Figure 27. Remove engine oil drain plug with O-ring (2). Allow oil to completely drain into a suitable container.

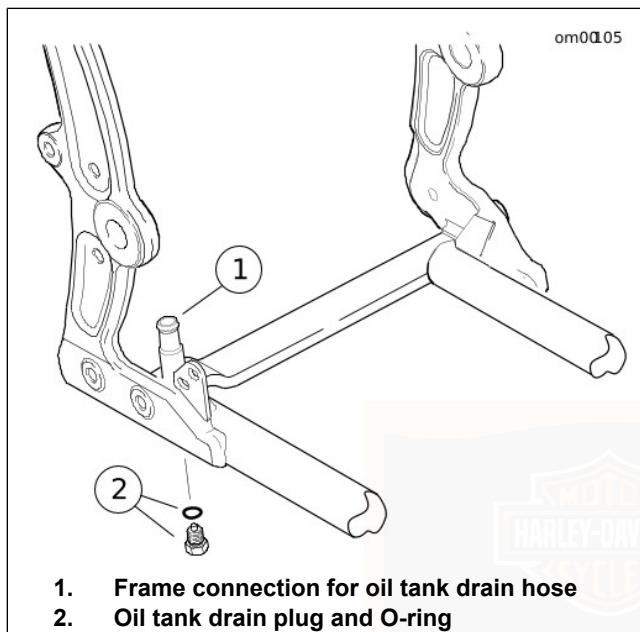


Figure 27. Oil Tank Drain Plug: Softail Models

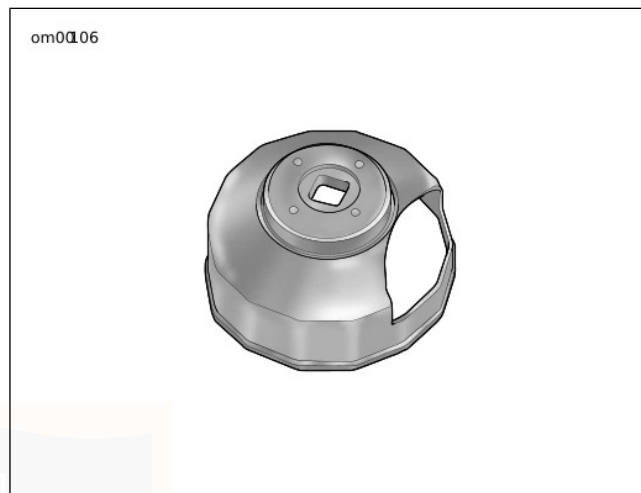


Figure 28. Oil Filter Wrench (Part No. HD-44067)

NOTICE

Use Harley-Davidson oil filter wrench for filter removal. This tool can prevent damage to crankshaft position sensor and/or sensor cable. (00192b)

NOTE

Dispose of oil and oil filter in accordance with local regulations.

3. See Figure 28. Remove the oil filter using the OIL FILTER WRENCH (PART NUMBER: HD-44067). Clean the oil filter mount flange of any old gasket material (surface should be smooth and free of any debris or old gasket material).
4. Inspect O-ring for tears or damage. Replace if required. Wipe any foreign material from plug.
5. Install O-ring and drain plug and tighten to 19–28.5 N·m (14–21 ft-lbs).
6. See Figure 29. Apply a thin film of oil to gasket contact surface on mounting plate, gasket and new oil filter.
7. Screw filter onto adapter until gasket contacts plate surface, then apply another three-quarter to one full turn.
8. Fill oil tank with no more than 2.8 L (3.0 qt) of oil. Use the proper grade of oil for the lowest temperature expected before next oil change.
9. Install the filler cap.
10. Start engine and carefully check for oil leaks around drain plug and oil filter.
11. Check engine oil level. Install filler cap.

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)

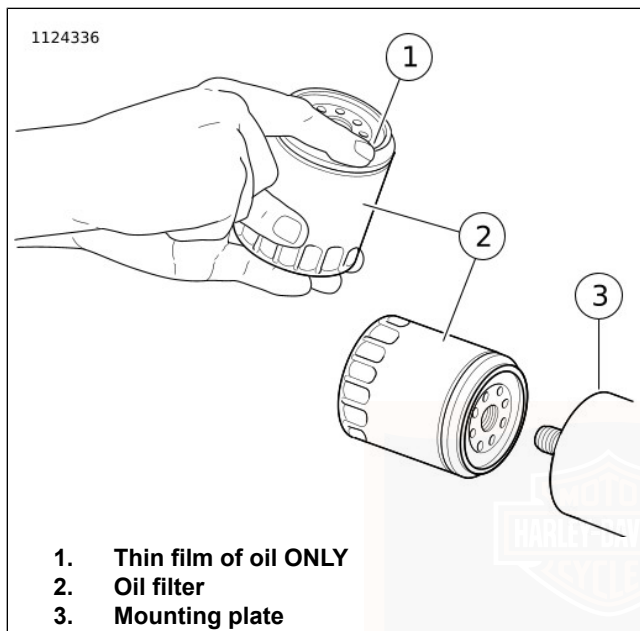


Figure 29. Applying Thin Oil Film

WINTER LUBRICATION

Change engine oil often in colder climates. If motorcycle is frequently used for trips 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

The further below freezing the temperature drops, the shorter the oil change interval should be.

Water vapor is a normal by-product of combustion in any engine. During cold weather operation, some water vapor condenses to liquid form on the cool metal surfaces inside the engine. In freezing weather this water will become slush or ice. Over time, accumulated slush or ice may block the oil lines and cause engine damage.

If the engine is run frequently and allowed to thoroughly warm up, most of this water will become vapor again and will be blown out through the crankcase breather.

If the engine is not run frequently and not allowed to thoroughly warm up, this water will accumulate, mix with the engine oil and form a sludge that is harmful to the engine.

TRANSMISSION LUBRICANT

NOTE

Check transmission fluid at room temperature.

1. Park on level ground on the jiffy stand.
2. See Figure 30. Remove transmission lubricant dipstick. Wipe dipstick clean.

3. Insert dipstick into transmission. Thread dipstick in until O-ring makes contact with case. Do not tighten.
4. See Figure 31. Remove dipstick. Check lubricant level on dipstick.

NOTICE

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

5. The level should be between the A and F marks. Add only enough lubricant to bring level to between the A mark and the F mark. Refer to Table 29.
6. Install dipstick. Tighten to 2.8–8.5 N·m (25–75 in-lbs).

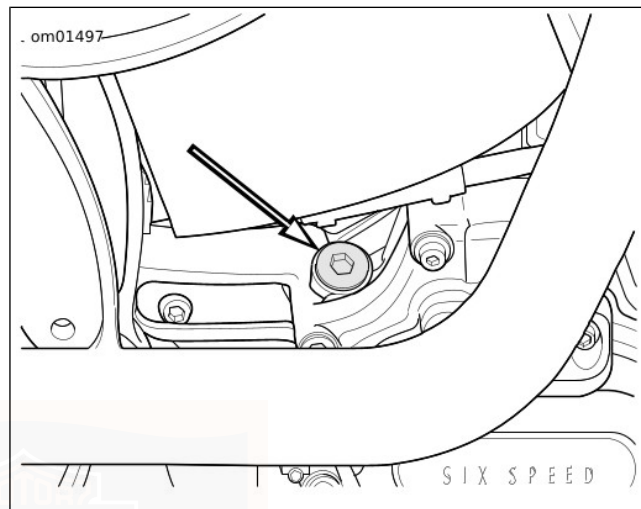


Figure 30. Transmission Filler Plug/Dipstick Location

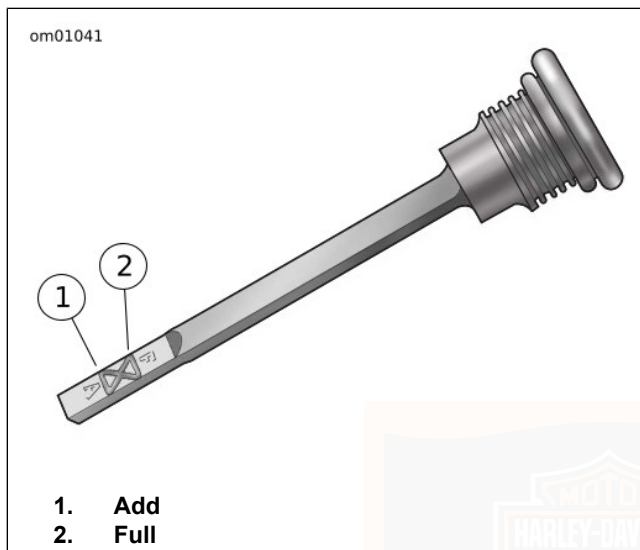


Figure 31. Transmission Dipstick Lubricant Level

Table 29. Transmission Lubricant

MODEL	LUBRICANT
All	FORMULA+ TRANSMISSION AND PRIMARY CHAIN LUBRICANT

CHANGING TRANSMISSION LUBRICANT

1. See Figure 30. Remove transmission filler plug/dipstick.

NOTICE

When draining or adding lubricant, do not allow dirt, debris or other contaminants to enter the engine. (00198a)

⚠ 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 32. Remove transmission drain plug. Drain lubricant into a suitable container.
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 O-ring. Tighten to 19–28.5 N·m (14–21 ft-lbs). Do not over-tighten.
5. Fill the transmission with 0.83 L (28 fl oz) of recommended Harley-Davidson lubricant. Refer to Table 29.

6. Check lubricant level and add enough lubricant to bring the level between the A(dd) and F(ull) marks. See MAINTENANCE AND LUBRICATION > TRANSMISSION LUBRICANT (Page 99).
7. Install filler plug/dipstick. Tighten to 2.8–8.5 N·m (25–75 in-lbs).

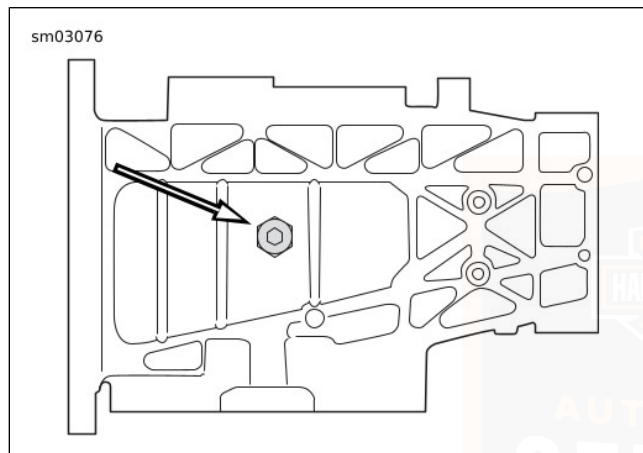


Figure 32. Transmission Drain Plug (Bottom View)

PRIMARY CHAINCASE LUBRICATION

Lubrication is a major factor in the performance and service life of the clutch components.

Refer to Table 38. The primary chaincase should be drained and refilled with fresh lubricant at proper intervals.

NOTE

Use only GENUINE Harley-Davidson FORMULA+ TRANSMISSION AND PRIMARY CHAINCASE LUBRICANT (Part No. 99851-05 qt) when changing primary chaincase lubricant.

CHAINCASE LUBRICANT

Refer to Table 38. The chaincase lubricant should be drained and refilled with fresh lubricant at proper intervals.

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)

Changing Chaincase Lubricant

1. Ride motorcycle until engine is warmed up to normal operating temperature.

NOTICE

When draining or adding lubricant, do not allow dirt, debris or other contaminants to enter the engine. (00198a)

2. See Figure 33. Using a T27 TORX drive head, remove five screws (3) (with captive washers) to free clutch inspection cover (2) from primary chaincase cover.
3. See Figure 34. Remove magnetic drain plug at bottom of inner primary chaincase cover. Drain lubricant into suitable container.

NOTE

Dispose of chaincase lubricant in accordance with local regulations.

4. Clean drain plug. If plug has accumulated a lot of debris, inspect the condition of the chaincase components.
5. Install **new** o-ring on drain plug.
6. Install drain plug back into inner primary chaincase cover. Tighten plug to 19–28 N·m (14–21 ft-lbs).

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)

7. Pour 0.95 L (32 fl oz) of GENUINE Harley-Davidson FORMULA+ TRANSMISSION AND PRIMARY CHAINCASE LUBRICANT (Part No. 99851-05 qt) through the clutch inspection cover opening.

NOTE

Use only GENUINE Harley-Davidson FORMULA+ TRANSMISSION AND PRIMARY CHAINCASE LUBRICANT (Part No. 99851-05 quart).

⚠ 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

When draining or adding lubricant, do not allow dirt, debris or other contaminants to enter the engine. (00198a)

8. Install clutch inspection cover and **new** gasket as follows:

- a. Thoroughly wipe all lubricant from cover mounting surface and groove in primary cover.
- b. Position gasket in groove in primary cover and press each of the nubs on gasket into the groove. The nubs will retain the seal in position.
- c. Insert screw (with captive washer) through clutch inspection cover and thread it into the top cover screw hole.
- d. Start the remaining four screws (with captive washers).
- e. Using a T27 TORX drive head, alternately tighten screws to 9.5–12.2 N·m (84–108 **in-lbs**).

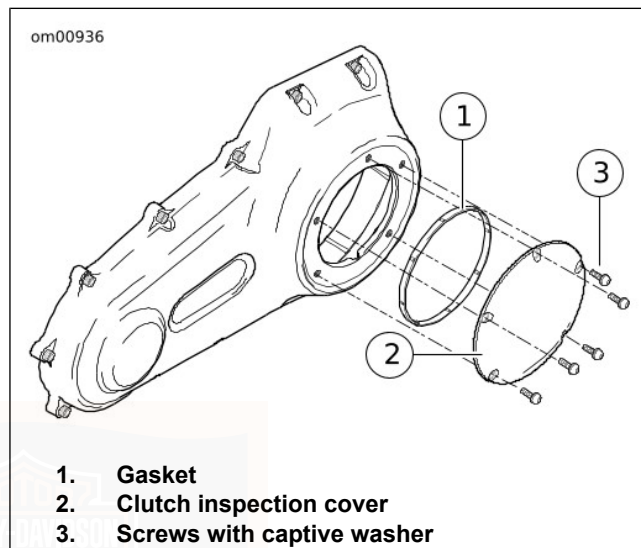


Figure 33. Clutch Cover

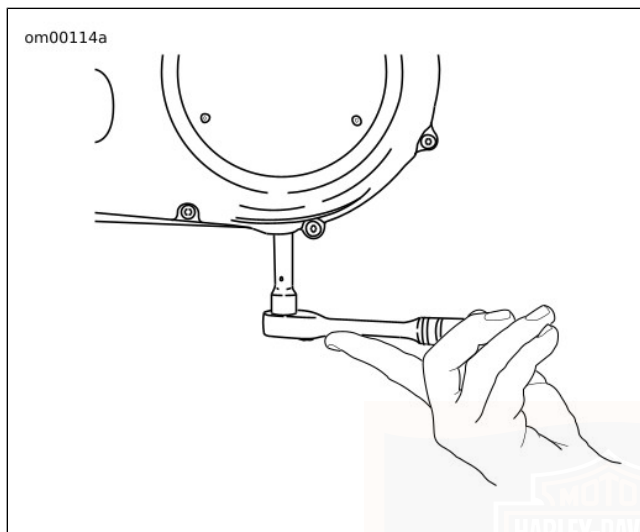


Figure 34. Removing Chaincase Drain Plug
CHECKING DRIVE BELT DEFLECTION

NOTE

Always use BELT TENSION GAUGE (PART NUMBER: HD-35381-A) to measure belt deflection. Do not rely on "feel" as this can result in belts that are under tensioned. Loose belts will fail due to "ratcheting" (jumping a tooth).

Check belt deflection:

- With transmission in neutral.
- At loosest spot in belt.
- With motorcycle at room temperature.
- With the rear wheels elevated or on the ground without rider or luggage.

⚠ WARNING

To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. (00048a)

1. Disconnect battery negative cable. See MAINTENANCE AND LUBRICATION > BATTERY (Page 129).
2. Slide O-ring on gauge toward 0 lbs (0 kg) mark.
3. See Figure 35. Fit cradle against bottom of belt midway between transmission sprocket and rear sprocket.
4. Push upward on knob until O-ring slides to the 4.5 kg (10 lb) mark on the tool and compare belt deflection to scale on debris deflector.
5. Rotate rear wheels and measure deflection at several locations around the belt. Select the loosest measurement and compare with specifications in Table 30. Belt must be adjusted if not within specification.

Table 30. Drive Belt Deflection

VEHICLE	FXS, FXSB, FLSTN, FLS*, FLSTFB**	OTHER MODELS
With motorcycle on jiffy stand without rider or luggage	6.4–7.9 mm (1/4–5/16 in)	14.3–15.9 mm (9/16–5/8 in)
Vehicle upright with rear wheel in air	7.9–9.5 mm (5/16–3/8 in)	17.5–19.1 mm (11/16–3/4 in)
*FLS (DOM/CAL/CAN/HDI/JPN configurations) **FLSTFB (DOM/CAL/CAN/JPN/AUS configurations) Refer to Table 4 to determine vehicle configuration.		

6. Connect battery negative cable. Tighten to 6.8–7.9 N·m (60–70 in-lbs).

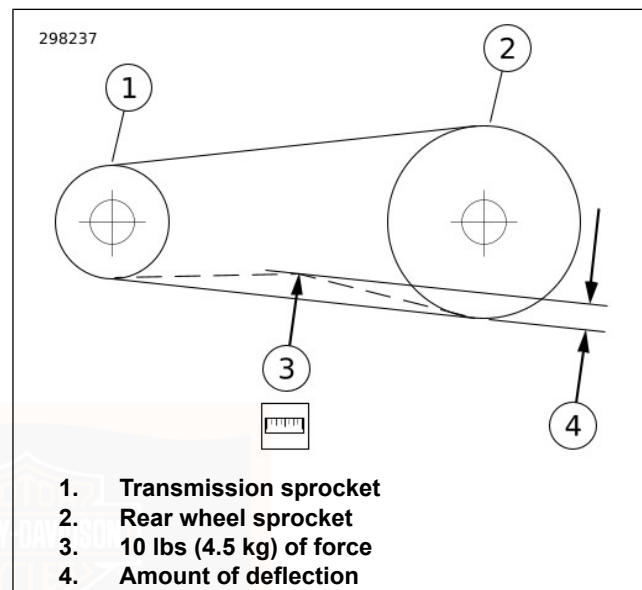


Figure 35. Checking Belt Deflection

CHASSIS LUBRICATION

Refer to Table 38 for all maintenance schedules.

NOTE

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

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

NOTE

For model specific information regarding the chassis lubrication, refer to the appropriate Service Manual or see a Harley-Davidson dealer.

OIL APPLICATIONS

Refer to Table 38 for all control connections and parts. Vehicle should be lubricated at regular intervals, particularly after washing motorcycle or driving in wet weather.

FRONT FORK OIL

Refer to Table 38. Have a Harley-Davidson dealer drain the front fork oil and refill at proper intervals. If fork does not appear to be working properly or an appreciable amount of oil leakage should develop, see a Harley-Davidson dealer. If there is insufficient oil in either side of fork, the rebound action will be incorrect.

FUEL FILTER

A fuel filter is attached to the fuel pump. See a service manual or Harley-Davidson dealer for fuel filter maintenance.

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)

The need for attention to clutch and controls will be indicated by the clutch slipping under load or dragging when released. In this situation, check the control cable adjustment first. See a Harley-Davidson dealer for proper 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.

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)

Check for proper steering head bearing adjustment and lubricate bearings using SPECIAL PURPOSE GREASE at proper intervals. Refer to MAINTENANCE SCHEDULING > REGULAR SERVICE INTERVALS (Page 177).

With motorcycle front end raised off the floor, be sure front fork turns freely without any binding or interference and that there is no appreciable front to rear fork movement indicating excessive bearing looseness. Steering head bearings should be adjusted according to service manual procedure, if necessary.

BRAKES

Refer to Table 38. Inspect brake fluid level and check brake pads and discs for wear at proper intervals.

Brake Fluid

⚠ 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 or clutch disengagement, which could result in death or serious injury. (00504d)

⚠ 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

(00240e)

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)

NOTICE

Do not allow dirt or debris to enter the master cylinder reservoir. Dirt or debris in the reservoir can cause improper operation and equipment damage. (00205c)

1. See Figure 36. Look through the sight glass on the front and rear brake fluid reservoirs to check for the presence of brake fluid. If necessary, turn the handlebars from side to side or gently shake the vehicle to agitate the fluid.
- The sight glass will darken when fluid is present.
 - If the sight glass remains clear, see a Harley-Davidson dealer.

NOTE

- If the brake system is not leaking, there should never be a need to add fluid. If the fluid level is low, the pads are probably worn and need to be replaced. By replacing the pads, the fluid level will rise.
 - Use only DOT 4 BRAKE FLUID and replace the brake fluid every 2 years. See a Harley-Davidson dealer.
2. Verify that the front brake lever and rear brake pedal have a firm feel when applied. If brakes are not firm, the brake system must be bled.

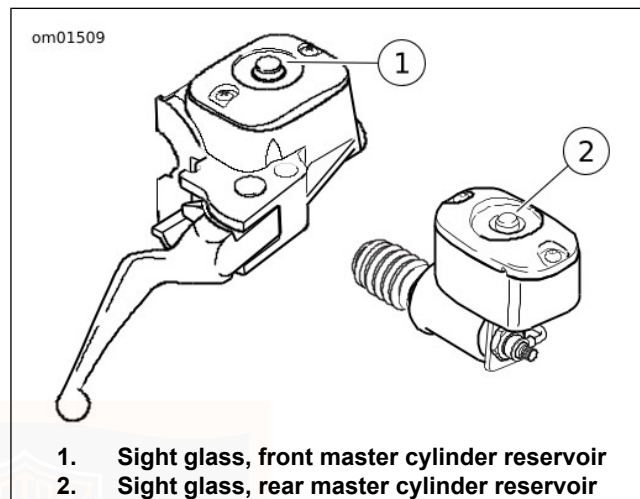


Figure 36. Brake Fluid Sight Glass (typical)

Brake Pads

⚠ WARNING

Inspect brake pads for wear at service maintenance intervals. If you ride under adverse conditions (steep hills, heavy traffic, etc.), inspect more frequently. Excessively worn brake pads can lead to brake failure, which could result in death or serious injury. (00052a)

⚠ 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)

⚠ 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

Perform routine scheduled brake maintenance. Lack of maintenance at recommended intervals can adversely affect brake performance, which could result in death or serious injury. (00055a)

⚠ WARNING

Be sure wheel and brake caliper are aligned. Riding with a misaligned wheel or brake caliper can cause the brake disc to bind and lead to loss of control, which could result in death or serious injury. (00050a)

Harley-Davidson has provided your new motorcycle with the optimum brake pad friction material available. It is selected

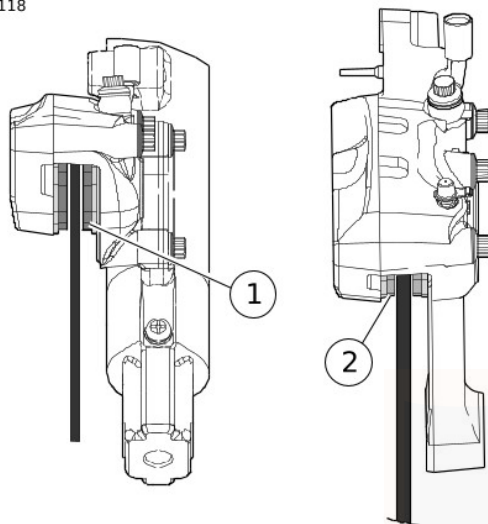
to give the best performance possible under dry, wet and high operating temperature conditions. It exceeds all regulatory requirements currently in effect. However, during some braking conditions you may experience noise. This is normal for this friction material.

1. See Figure 37. Check the brake disc as it spins. The disc should run true in the brake caliper.
2. Measure the thickness of the brake pad friction material.
3. Refer to Table 31. If the brake pad friction material is at the minimum thickness or less, replace the pads. Always replace brake pads in pairs. See a Harley-Davidson dealer.

Table 31. Minimum Brake Pad Friction Material Thickness

MODEL	in	mm
Softail models	0.040	1.02

om00118



1. Front, from below
2. Rear, from above

Figure 37. Brake Friction Material

TIRES

Refer to Table 18 for tires and pressures.

- Be sure to keep tires properly inflated.
- Maintain correct tire pressure.

- Follow tire data for correct cold tire inflation pressure.
- Check before riding when tires are cold.

⚠ 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

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)

Check tires for correct pressure, excessive wear, or any signs of tire damage at least weekly if in daily use. Check before each trip if only used occasionally.

Use only Harley-Davidson specified tires. Refer to Table 18 Tire Specifications. Other tires may not fit correctly and could adversely affect stability, handling and performance.

⚠ 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

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

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)

RIM SEALS

Some Softail motorcycles with profile laced wheels (wire spoked wheels with smooth round rims) are fitted with a special rim seal, a rim strip and a tubeless tire. An inner tube is not used. These rims are unique and identified by the letters MTM and the word TUBELESS etched into the rim. Never install a tire with an inner tube on these type wheels. Install a new rim seal and rim strip each time a new tire is mounted on a profile laced wheel with MTM and TUBELESS markings.

Steel laced rims use an inner tube and rim strip. Tubeless tires fitted with the correct size inner tubes may be used with these wheels. Install a new inner tube and rim strip each time a tire is installed on a steel laced wheel.

TIRE REPLACEMENT

Inspection

⚠ 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 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)

Harley-Davidson tires are equipped with wear bars that run horizontally across the tread. When a tire is worn to the point the tread wear indicator bars become visible on the tread surfaces, or 0.8 mm (1/32 in) tread depth remains, the tire can:

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

See Figure 38. Arrows on the tire sidewalls pinpoint location of wear bar indicators.

See Figure 39. Always replace tires before the tread wear indicator bars appear.

When To Replace Tires

▲ 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)

New tires are needed if any of the following conditions exist (refer to Table 18 for the specified replacement tires):

1. Tread wear indicator bars become visible on the tread surfaces.
2. Tire cords or fabric become visible through cracked sidewalls, snags or deep cuts.
3. Bumps, bulges or slits in the tire.
4. 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.

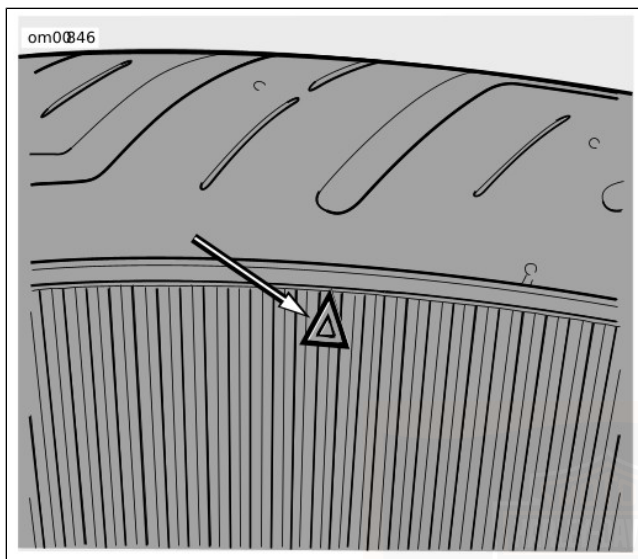


Figure 38. Dunlop Sidewall Tire Wear Bar Locator

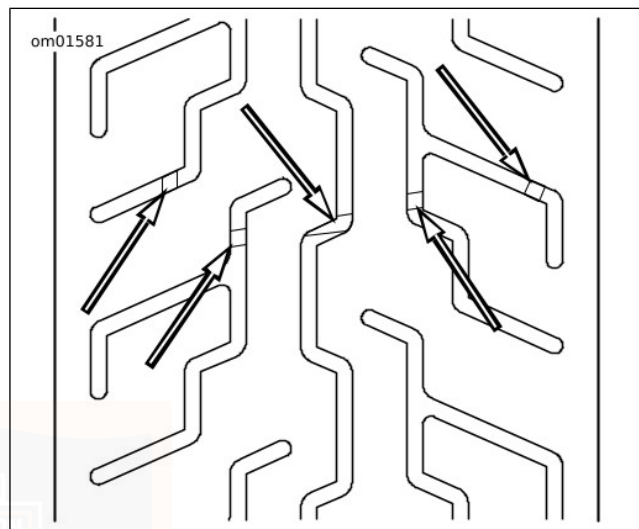


Figure 39. Dunlop Tire Wear Bar Appearance
SHOCK ABSORBERS

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.

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)

Check the spark plugs at proper intervals. Refer to Table 38.

1. Disconnect spark plug cables from plugs by pulling up on the molded connector caps.
2. Check spark plug type. Only use those spark plugs specified for your model motorcycle.
3. Check spark plug gap against specifications table.

NOTE

*If a torque wrench is not available, tighten **new** spark plugs finger-tight and then tighten an additional one-quarter turn with a spark plug wrench.*

4. Always tighten to the proper torque. Spark plugs must be tightened to the torque specified for proper heat transfer. Refer to Table 8.
5. Connect each molded connector cap until the cap snaps firmly into place over the spark plug.

IGNITION

The engine in your motorcycle has been designed specifically to achieve optimum fuel economy within exhaust emission controls. Factory programmed ignition characteristics provide maximum engine performance and driveability.

AIR CLEANER

⚠ 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)

NOTICE

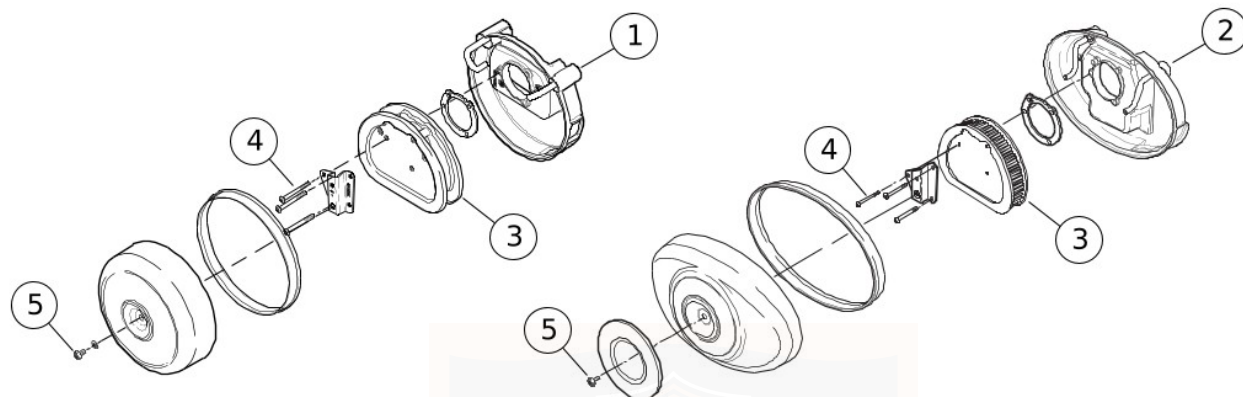
Install air filter before running engine. Failure to do so can draw debris into the engine and could result in engine damage. (00207a)

1. Refer to Table 38. Remove air cleaner cover and inspect filter element at proper intervals. When operated under dusty conditions, inspect more often.
2. Wash the paper/wire mesh filter element in lukewarm water with a mild detergent. Do not strike filter element on a hard surface to dislodge dirt.

3. Allow filter element to either air dry or blow it dry, from the inside, with low pressure air. Do NOT use air cleaner filter oil on the Harley-Davidson paper/wire mesh air filter element.
4. Hold the filter element up to a strong light source. The element is sufficiently clean if light is uniformly visible through the media.
5. Replace the filter element if damaged or if filter media cannot be adequately cleaned.
6. Install baseplate gasket, air filter element and bracket if removed. Tighten bracket screws. Refer to Table 32.
7. Install air cleaner cover. Apply a drop of LOCTITE THREADLOCKER 243 (blue) to the threads of the cover screw and tighten. Refer to Table 32.

Table 32. Air Cleaner Fastener Torque

FASTENER	TORQUE
Air filter element bracket screws	12.2–14.9 N·m (108–132 in-lbs)
Air filter cover screw	4.1–6.8 N·m (36–60 in-lbs)



- | | |
|--|-----------------------|
| 1. Air cleaner assembly (Domestic/Canada FLS and FXS models) | 4. Bracket screws (3) |
| 2. Air cleaner assembly (Other Softail models) | 5. Cover screw |
| 3. Air filter element | |

Figure 40. Air Cleaner

HEADLAMP BULB REPLACEMENT

⚠ WARNING

Handle bulb carefully and wear eye protection. Bulb contains gas under pressure, which, if not handled carefully, could cause serious eye injury. (00062b)

NOTICE

When replacement is required, use only the specified sealed beam unit or bulb, available from a Harley-Davidson dealer. An improper wattage sealed beam or bulb, can cause charging system problems. (00209a)

If a headlamp bulb filament burns out, the bulb must be discarded and a **new** bulb installed. Refer to Table 17 for bulbs.

Bulb Removal

⚠ WARNING

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

NOTE

Make note of components during disassembly to aid in correct assembly.

1. Remove main fuse. See MAINTENANCE AND LUBRICATION > FUSES (Page 140)
2. See Figure 41. Remove trim ring hardware (1). Remove trim ring (2).
3. Remove mounting ring (3) and bumper, if equipped.
4. Disconnect headlamp connector (8) from bulb (5).
5. Remove rubber boot (6), if equipped, from back of headlamp lens (4).
6. Remove wire retaining clip (7) from headlamp base.
7. Remove bulb from headlamp assembly.
8. **For International Models Only:** Rotate boot (10) one-quarter turn and remove bulb assembly from housing. Pull position bulb (9) to remove from boot.

Bulb Installation

NOTICE

Never touch the quartz bulb. Fingerprints will etch the glass and decrease bulb life. Handle the bulb with paper or a clean, dry cloth. Failure to do so could result in bulb damage. (00210b)

NOTE

*When installing a **new** bulb, be sure connector contacts are clean for good electrical contact.*

1. Install **new** bulb and assemble the headlamp components.
2. **For International Models Only:** Install **new** bulb in boot. Install boot in housing and rotate one-quarter turn.
3. Verify slots and tabs in headlamp and trim ring are aligned.
4. Install rubber boot with word TOP at the top of the headlamp lens assembly.

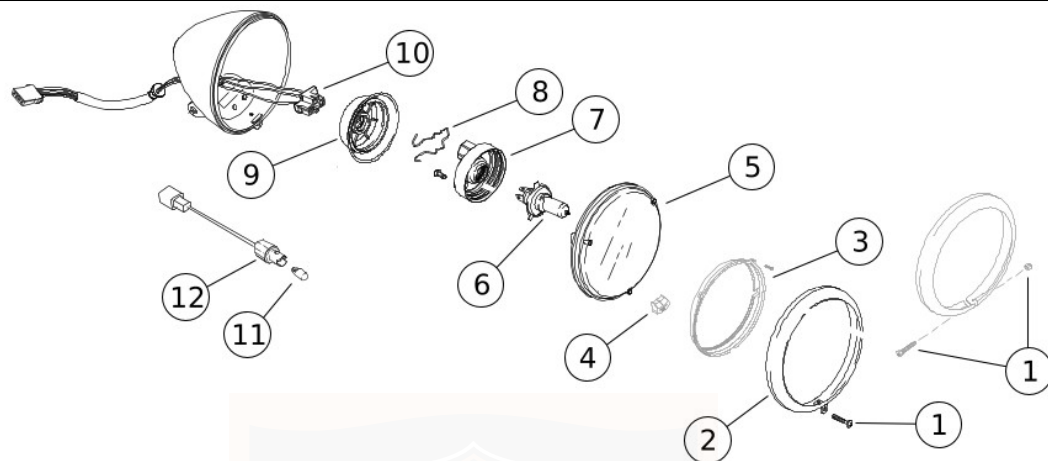
5. Connect the headlamp connector.
6. Install bumper, if equipped.
7. Install trim ring and hardware.
8. Install main fuse.

⚠ WARNING

Be sure that all lights and switches operate properly before operating motorcycle. Low visibility of rider can result in death or serious injury. (00316a)

9. Turn ignition on and test for proper operation.
10. If necessary, align headlamp assembly. See MAINTENANCE AND LUBRICATION > HEADLAMP ALIGNMENT (Page 122).

om01384a



- 1. Trim ring hardware
- 2. Trim ring
- 3. Mounting ring
- 4. Headlamp lens
- 5. Bulb
- 6. Rubber boot

- 7. Wire retaining clip
- 8. Headlamp connector
- 9. Bulb, position - HDI models only
- 10. Boot - HDI models only
- 11. Base
- 12. Bumper

Figure 41. Headlamp Bulbs (Typical)

HEADLAMP ALIGNMENT

⚠ 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)

NOTE

Adjust beam headlamps to converge into one pattern.

1. Check the tire pressure.
2. Adjust the suspension to the weight of the rider.
3. Fill fuel tank or add ballast to equal the weight of the fuel needed.

NOTE

See Figure 42. Draw a perpendicular line (1) on the floor. For best results, choose an area with minimum light.

4. Draw a vertical line (2) on the wall.
5. Position the front axle 7.6 m (25 ft) from wall.

NOTE

As the weight of the rider will compress the suspension slightly, have a person whose weight is approximately the same as that of the rider sit on the motorcycle.

6. With the vehicle laden and upright, point the front wheel straight forward at wall. Measure the distance (4) from the floor to the center of the HIGH BEAM bulb.
7. Draw a horizontal line (5) through the vertical line on the wall that is 53.3 mm (2.1 in) lower than the measured bulb centerline.
8. Verify headlamp alignment. With the motorcycle on, set the headlamp switch to HIGH beam.
 - a. The center of the hot spot (brightest area of light beam) should be centered where the two lines intersect.
 - b. Adjust headlamp alignment if necessary.

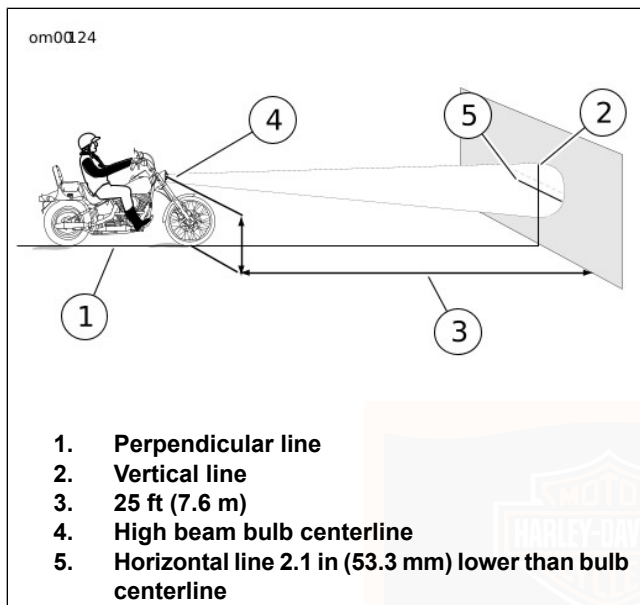


Figure 42. Headlamp Alignment

HEADLAMP ADJUSTMENT

1. See Figure 43. Loosen horizontal adjustment fastener (2). Tilt headlamp left or right to direct light beam straight ahead.

2. Tighten horizontal adjustment fastener (2) to 40.7–47.5 N·m (30–35 ft-lbs).
3. Loosen vertical adjustment fastener (1). Tilt headlamp up or down in relationship to the horizontal line from the headlamp alignment inspection.
4. Tighten vertical adjustment fastener (1) to:
 - a. **FXS, FXSB:** 40.7–47.5 N·m (30–35 ft-lbs).
 - b. **All but FXS, FXSB:** 47.5–61 N·m (35–45 ft-lbs).

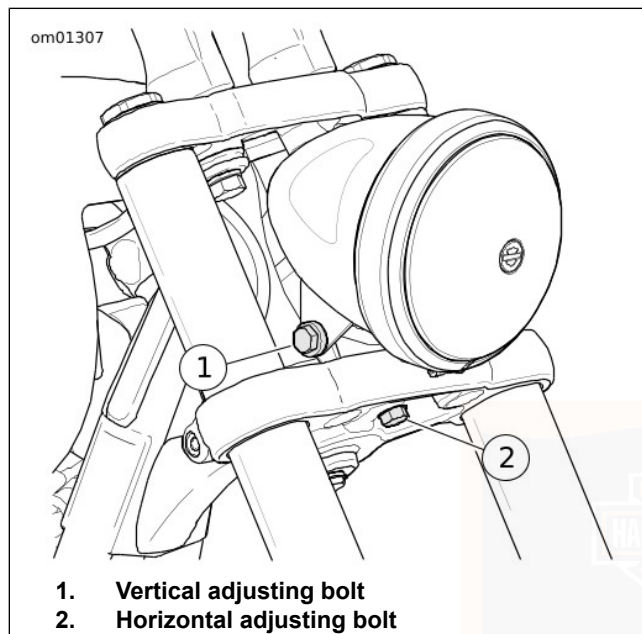


Figure 43. Headlamp Adjustment (typical)

LED REAR TURN SIGNAL/TAIL LAMPS: INTERNATIONAL FXS, FLS AND FXSB MODELS

On FXS, FLS and FXSB models (except Domestic and Canada configurations), the rear turn signal/tail lamps are

LED assemblies with no replaceable bulbs. Caps on rear turn signals are not removable. See an authorized Harley-Davidson dealer for assembly replacement.

TURN SIGNAL BULB REPLACEMENT: BULLET STYLE

1. See Figure 44. Insert a coin or the blade of a small screwdriver into the notch at the bottom of the lens cap. Carefully twist until the lens cap pops out of the lamp housing.
2. Push bulb in and rotate counterclockwise. Pull bulb from socket.
3. Inspect condition of electrical contacts in socket. If necessary, clean with a small wire brush and electrical contact cleaner.
4. Apply ELECTRICAL CONTACT LUBRICANT to contacts in socket and at bottom of **new** bulb.
5. Align pins on **new** bulb with pin guides in bulb socket. Push bulb in and turn clockwise to lock in place.
6. Snap lens cap onto the lamp housing with notch at bottom.

⚠ WARNING

Be sure that all lights and switches operate properly before operating motorcycle. Low visibility of rider can result in death or serious injury. (00316a)

7. Test lamp operation.

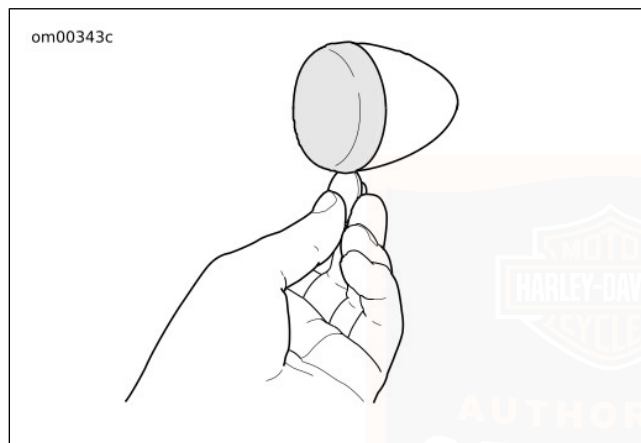


Figure 44. Remove Lens

TURN SIGNAL BULB REPLACEMENT: FLAT LENS STYLE

1. See Figure 45. Remove two screws to release lens from lamp housing.
2. Push bulb in and rotate counterclockwise to remove bulb from socket.
3. Inspect condition of electrical contacts in socket. If necessary, clean with a small wire brush and electrical contact cleaner.
4. Apply ELECTRICAL CONTACT LUBRICANT to contacts in socket and at bottom of **new** bulb.
5. Align index pins on **new** bulb with pin guides in bulb socket. Push bulb in and turn clockwise to lock in place.
6. Seat lens in lamp and install two screws.

⚠ WARNING

Be sure that all lights and switches operate properly before operating motorcycle. Low visibility of rider can result in death or serious injury. (00316a)

7. Test lamp operation.

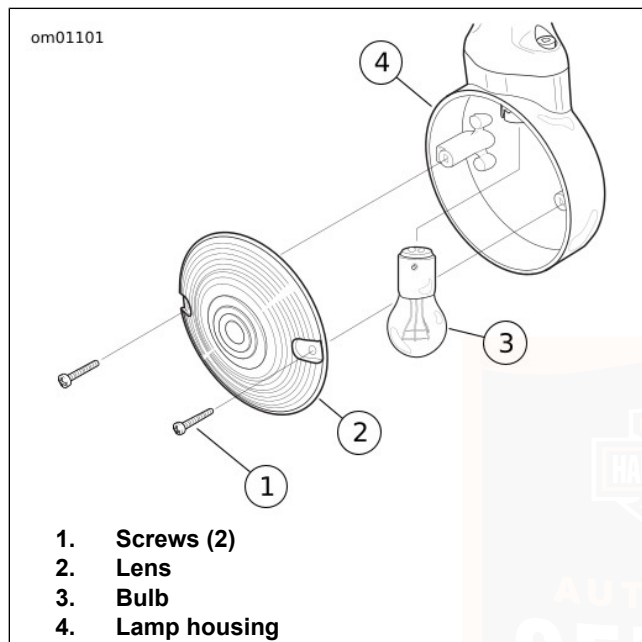


Figure 45. Turn Signal Lamp Assembly: Flat Lens Style

TAIL LAMP BULB REPLACEMENT: STANDARD STYLE

1. See Figure 46. Turn ignition switch off.

2. Remove two screws and lens from base.

NOTE

Disconnect 4-Pin multilock connector from circuit board to simplify bulb removal.

3. Remove bulb assembly from lens. Remove bulb from socket.
4. Coat base of **new** bulb with ELECTRICAL CONTACT LUBRICANT. Install **new** bulb in socket.
5. Install bulb assembly to lens.
6. If removed, connect 4-pin multilock connector to circuit board.
7. Install lens to base with two screws. Tighten to 2.3–2.7 N·m (20–24 in-lbs).

⚠ WARNING

Be sure that all lights and switches operate properly before operating motorcycle. Low visibility of rider can result in death or serious injury. (00316a)

8. Turn ignition on and test for proper tail lamp operation.

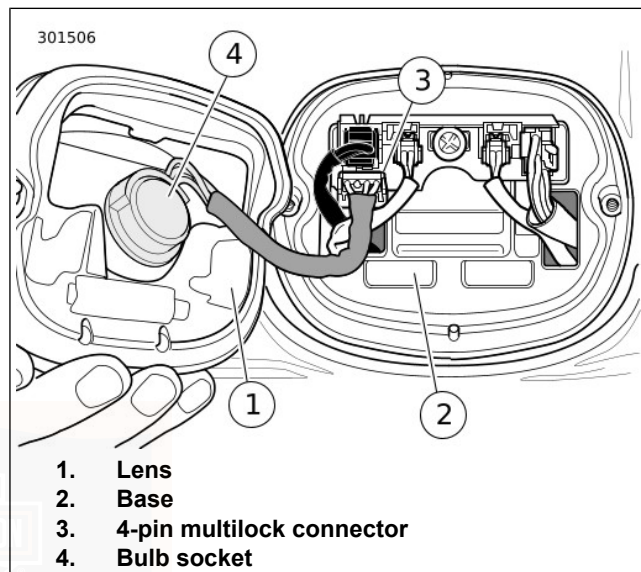


Figure 46. Tail Lamp Assembly

**TAIL LAMP BULB REPLACEMENT:
TOMBSTONE STYLE**

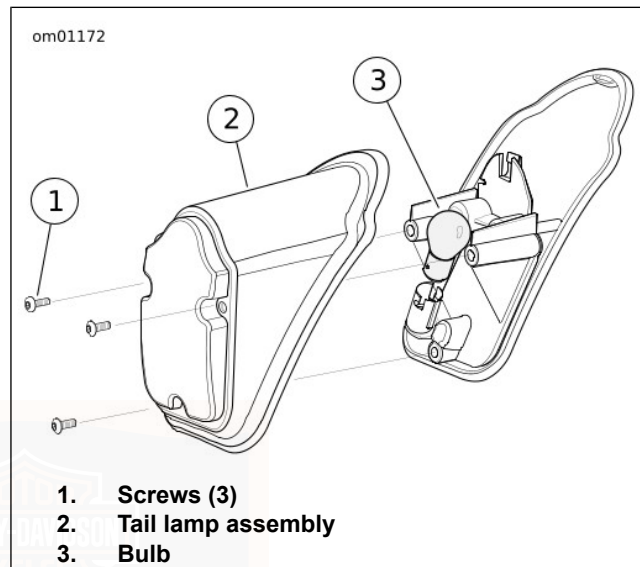
1. See Figure 47. Make certain ignition switch is turned off.
2. Remove three screws (1) to detach the tail lamp assembly (2) from base.

3. Push bulb (3) into socket and rotate one-quarter turn counterclockwise. Pull bulb from socket.
4. Inspect condition of electrical contacts in socket. If necessary, clean with a small wire brush and electrical contact cleaner.
5. Coat base of **new** bulb with ELECTRICAL CONTACT GREASE (Part No. 99861-90).
6. Orient index pins on **new** bulb with pin guides inside bulb socket. Push bulb in and turn clockwise to lock in place.
7. Install tail lamp assembly to base with three screws. Tighten screws to 2.3–2.7 N·m (20–24 **in-lbs**).

⚠ WARNING

Be sure that all lights and switches operate properly before operating motorcycle. Low visibility of rider can result in death or serious injury. (00316a)

8. Turn ignition on and test for proper tail lamp operation.



**Figure 47. Tail Lamp Assembly: Tombstone Style
ALTERNATOR/VOLTAGE REGULATOR**

Charging Rate

The alternator output is controlled and changed to direct current by the voltage regulator.

- The voltage regulator increases charging rate when battery is low or lamps are lit.
- The voltage regulator decreases charging rate when battery charge is up.

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)

NOTE

- *This unit requires no interval attention. If any electrical system trouble is experienced that might be traceable to the alternator or voltage regulator, the motorcycle should be taken to a Harley-Davidson dealer who has the necessary electrical testing equipment to give the required attention.*
- *For model specific information regarding the voltage regulator, refer to the appropriate Service Manual or see a Harley-Davidson dealer.*

BATTERY

Type

Your motorcycle uses an Absorbed Glass Mat (AGM) battery. The AGM battery is permanently sealed, valve regulated, maintenance-free, lead/calcium and sulfuric acid battery. All batteries are shipped precharged and ready to be put into service. Do not attempt to open the battery for any reason.

Table 33. Antidotes for Battery Acid

CONTACT	TREATMENT
External	Flush with water.
Internal	Drink large quantities of milk or water, followed by milk of magnesia, vegetable oil or beaten eggs. Get immediate medical attention.
Eyes	Flush with water. Get immediate medical attention.

⚠ 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)





1



2



3



4



5



6

<p>NON-SPILLABLE</p> <p>This is a ready filled, activated SEALED BATTERY. NEVER remove strip. Refer to owner's manual or instruction sheet for charging procedure.</p>	<p>⚠ DANGER/POISON 3-4580</p> <table border="1"> <tr> <td data-bbox="801 409 982 574"> SHIELD EYES. EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY. </td> <td data-bbox="982 409 1098 574"> NO SPARKS FLAMES SMOKING </td> <td data-bbox="1098 409 1263 574"> SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS. </td> <td data-bbox="1263 409 1428 574"> FLUSH EYES IMMEDIATELY WITH WATER. GET MEDICAL HELP FAST. </td> </tr> </table> <p>KEEP OUT OF REACH OF CHILDREN. DO NOT OPEN BATTERY.</p>	 SHIELD EYES. EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY.	 NO SPARKS FLAMES SMOKING	 SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS.	FLUSH EYES IMMEDIATELY WITH WATER. GET MEDICAL HELP FAST.
 SHIELD EYES. EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY.	 NO SPARKS FLAMES SMOKING	 SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS.	FLUSH EYES IMMEDIATELY WITH WATER. GET MEDICAL HELP FAST.		

1. Contents are corrosive
2. Wear safety glasses
3. Contents are explosive

4. Keep flames away
5. Read instructions
6. Keep away from children

Figure 48. Battery Warning Label

om01163

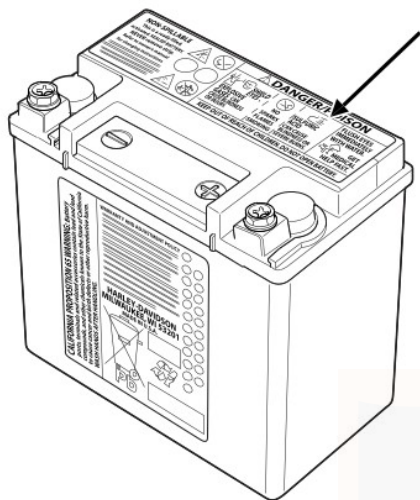


Figure 49. Battery Warning Label

Voltmeter Test

The voltmeter test provides a general indicator of battery condition. Check the voltage of the battery to verify that it is in a 100 percent fully-charged condition. If the open circuit (disconnected) voltage reading is below 12.7 V, charge the

battery and then re-check the voltage after the battery has set for one to two hours. Refer to Table 34.

Table 34. Voltmeter Test

READING IN VOLTS	PERCENT OF CHARGE
12.7	100
12.6	75
12.3	50
12.0	25
11.8	0

Cleaning and Inspection

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

1. Clean battery top.
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 overtightening.
5. Inspect the battery for discoloration, a raised top or a warped or distorted case. This might indicate that the battery has been frozen, overheated or overcharged.

6. Inspect the battery case for cracks or leaks.

Charging

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 these general safety precautions.

Charge the battery if any of the following conditions exist:

- Vehicle lamps appear dim.
- Electric starter sounds weak.
- Battery has not been used for an extended period of time.

⚠ 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 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)

1. Perform a voltmeter test to determine the state of charge. If battery needs to be charged, proceed to the next step.
2. Place the battery on a level surface.

NOTE

- *Do not use chargers with excessively high voltage designed for flooded batteries or excessively high current designed for much larger batteries. Charging should be limited to no more than 5 amps at no more than 14.6 volts.*
- *Most automatic, constant monitoring battery chargers are completely automatic and can be left connected to both AC power and to the battery that is being charged. When leaving this type of charger connected for extended periods of time, periodically check the battery to see if it is unusually warm. This is an indication that the battery may have a weak cell or internal short. Read the manufacturers instructions for the charger being used.*

▲ 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)

▲ 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)

▲ WARNING

Disconnect negative (-) 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. (00049a)

NOTICE

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

3. Connect the red battery charger lead to positive (+) terminal of the battery.

4. Connect the black battery charger lead to negative (-) terminal of the battery.

NOTE

If the battery is still in the vehicle, connect the negative lead to the chassis ground. Make sure that the ignition and all electrical accessories are turned off.

5. 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)

6. After the battery is fully charged, turn OFF the charger and disconnect the black battery charger lead to the negative (-) terminal of the battery.
7. Disconnect the red battery charger lead to the positive (+) terminal of the battery.
8. Mark the charging date on the battery.

Storage

If the motorcycle will not be operated for several weeks, such as during the winter season, remove the battery from the motorcycle and fully charge.

If the motorcycle is to be stored with the battery installed, it will be necessary to connect a automatic, constant monitoring charger/tender to maintain charge. See an authorized dealer for more information.

A battery that is removed from the vehicle is affected by self-discharge. A battery that is stored in the vehicle is affected by both self-discharge and, more significantly, parasitic loads. Parasitic loads occur from things like diode leakage and maintaining computer memory with the vehicle off.

- Batteries self-discharge at a faster rate at higher ambient temperatures.
- To reduce the self-discharge rate, store battery in a cool, dry place.
- Charge the battery every two weeks if stored in the vehicle.
- Charge the battery once per month if stored out of the vehicle.

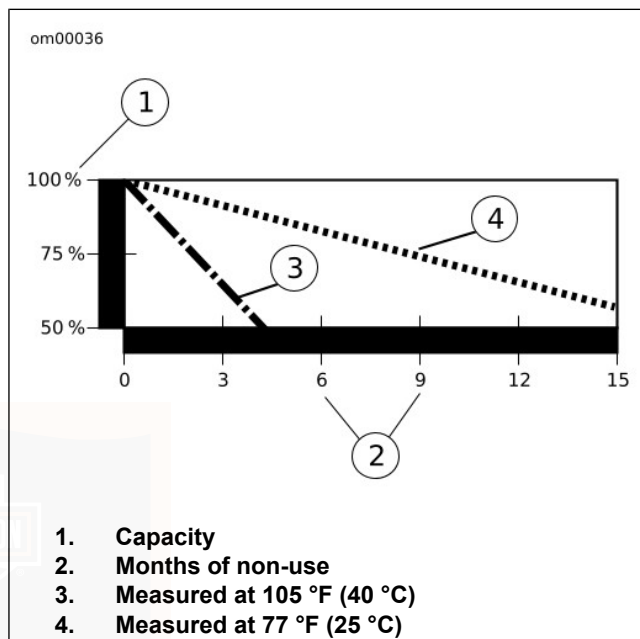


Figure 50. Effective Rate of Temperature on Battery Self-discharging Rate

BATTERY ACCESS

Disconnection and Removal

⚠ WARNING

Disconnect negative (-) 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. (00049a)

1. Remove the seat. See MAINTENANCE AND LUBRICATION > SEATS (Page 141) and follow procedure for the appropriate model.
2. If equipped with security system siren, turn the ignition switch ON with the hands-free fob present to disarm the security system.
3. See Figure 51. Loosen bolt and remove battery negative cable (black) from battery negative (-) terminal.
4. Loosen bolt and remove battery positive cable (red) from battery positive (+) terminal.
5. Lift battery from battery box within oil tank cavity.

Installation and Connection

NOTICE

Do not over-tighten bolts on battery terminals. Use recommended torque values. Over-tightening battery terminal bolts could result in damage to battery terminals. (00216a)

⚠ 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)

⚠ WARNING

Do not allow positive (+) battery cable to contact ground with negative (-) cable connected. Resulting sparks can cause a battery explosion, which could result in death or serious injury. (00069a)

1. Place the fully charged battery into the battery box located within oil tank cavity, terminal side forward.
2. Attach battery positive cable (+) (red) to battery positive (+) terminal.

3. Tighten fastener to 6.8–7.9 N·m (60–70 in-lbs).
4. Attach battery negative cable (black) to battery negative (-) terminal.
5. Tighten fastener to 6.8–7.9 N·m (60–70 in-lbs).

NOTICE

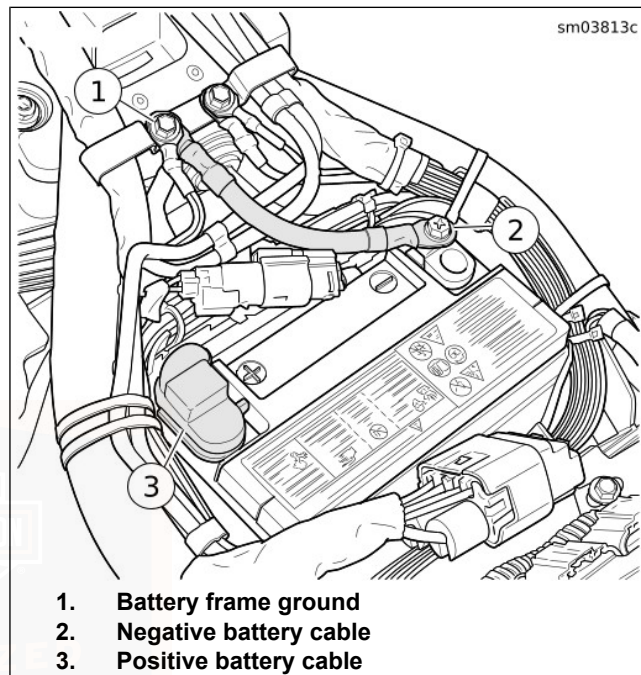
Keep battery clean and lightly coat terminals with petroleum jelly to prevent corrosion. Failure to do so could result in damage to battery terminals. (00217a)

6. Apply a light coat of petroleum jelly or corrosion retardant material to both battery terminals.

⚠ WARNING

After installing seat, pull upward on seat to be sure it is locked in position. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. (00070b)

7. Install seat. See MAINTENANCE AND LUBRICATION > SEATS (Page 141) and follow procedure for the appropriate model.



1. Battery frame ground
2. Negative battery cable
3. Positive battery cable

Figure 51. Battery Connections

JUMP STARTING

Jump starting a motorcycle is typically not recommended. However, there may be circumstances when it is necessary

to do so. If a jump-start is necessary, use the following procedure.

⚠ WARNING

Be sure jumper cables touch only appropriate battery terminals or ground. Allowing jumper cables to touch each other can result in sparks and a battery explosion, which could result in death or serious injury. (00072a)

⚠ 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)

NOTICE

Be sure both vehicles have the same battery voltage when jump starting. Connecting vehicles with different system voltages can result in vehicle damage. (00220c)

NOTE

- *This procedure presumes the BOOSTER battery is in another vehicle. DO NOT jump start from a running booster vehicle. The high output charging systems on some vehicles can damage the electrical components on the motorcycle.*

- *Make sure the motorcycle and the BOOSTER vehicle are not touching one another.*

1. Turn off all unnecessary lamps and accessories.

Positive Cable

1. See Figure 52. Connect one end of a jumper cable to the DISCHARGED battery positive (+) terminal (1).
2. Connect the other end of the same cable to the BOOSTER battery positive (+) terminal (2).

Negative Cable

⚠ WARNING

Do not connect negative (-) cable to or near the discharged battery negative (-) terminal. Doing so could cause a spark and explosion, which could result in death or serious injury. (00073a)

1. Connect one end of a jumper cable to the BOOSTER battery negative (-) terminal (3).

NOTICE

Do not connect the negative (-) cable to painted or chrome parts. Doing so could result in discoloration at the attachment point. (00221a)

2. Connect other end of the same cable (4) to a safe ground, (away from the DISCHARGED battery).
3. Start motorcycle.
4. Disconnect cables in reverse order of Steps 2, 3, 4, 5; that is: Steps 5, 4, 3, 2.

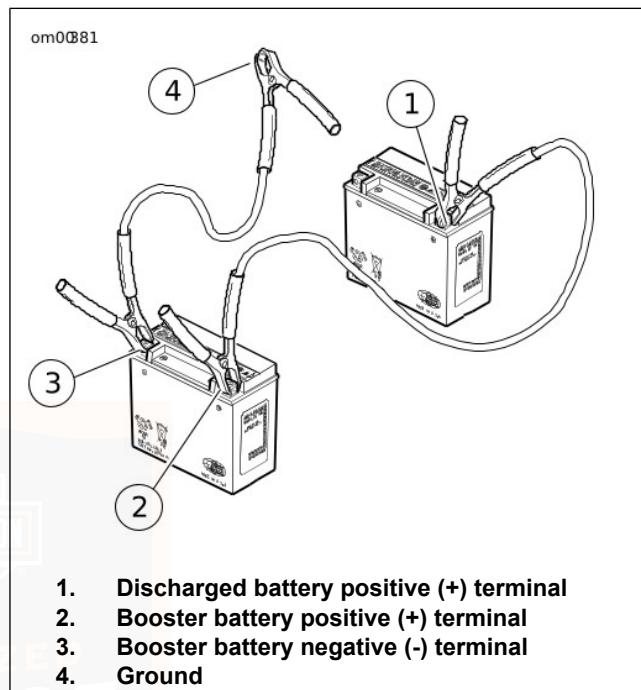


Figure 52. Jump Start Cable Connections

FUSES

Fuses

See Figure 53. The electrical circuits are protected by three fuses. Individual vehicle circuits are protected by the Body Control Module (BCM).

Main (1): A 40A fuse that protects all the circuits including those protected by the 15A Battery fuse. Failure of this fuse will cause the motorcycle to stop running. See a Harley-Davidson dealer.

P&A (2): A 15A fuse protects the circuits of any installed accessories.

Battery (3): A 15A fuse that protects all the circuits. If the battery fuse fails while the engine is running, the engine will continue to run and critical circuits like the ABS brakes will continue to function. The failure of this fuse will trigger a diagnostic code. See a Harley-Davidson dealer.

Removal

1. If equipped with security system siren, turn the ignition to ON with the fob present to disarm the security system.
2. Remove the seat. See MAINTENANCE AND LUBRICATION > SEATS (Page 141).
3. See Figure 54. Pull cover off fuse block.

4. See Figure 53. Remove suspect fuse.

Installation

NOTICE

Always use replacement fuses that are of the correct type and amperage rating. Use of incorrect fuses can result in damage to electrical systems. (00222a)

1. Install **new** fuse.
2. Place cover on fuse block.

⚠ WARNING

After installing seat, pull upward on seat to be sure it is locked in position. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. (00070b)

3. Install seat. See MAINTENANCE AND LUBRICATION > SEATS (Page 141).

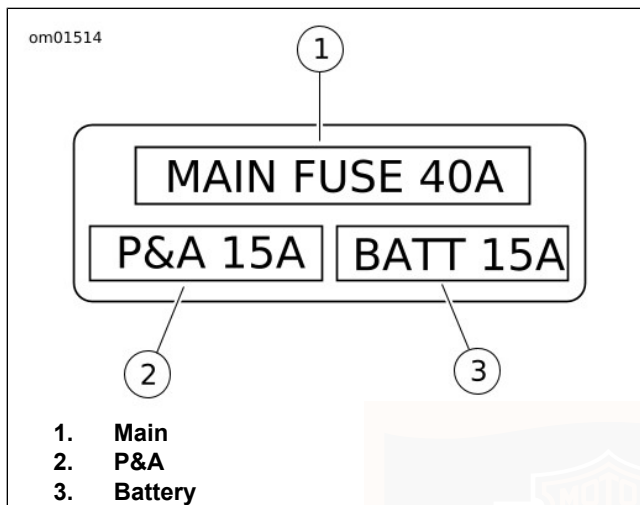


Figure 53. Fuse Block

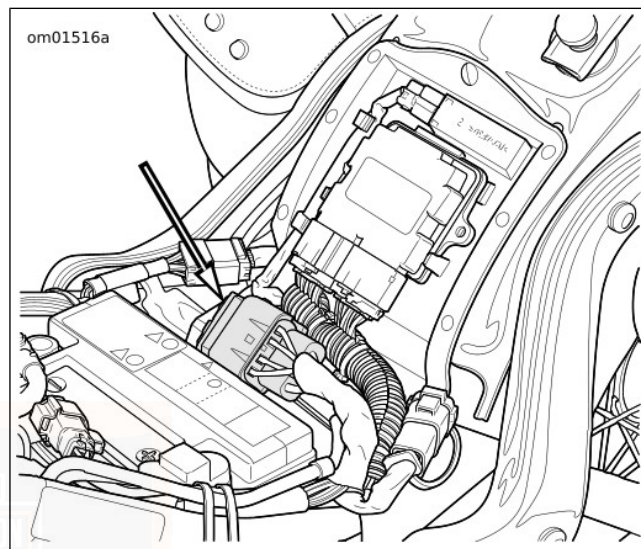


Figure 54. Fuse Block Location

SEATS

General

See Figure 55 and Figure 56. 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.

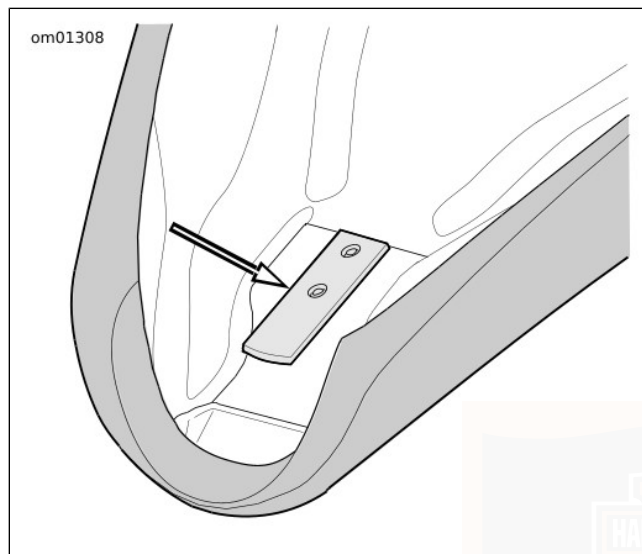


Figure 55. Seat Tongue (typical)

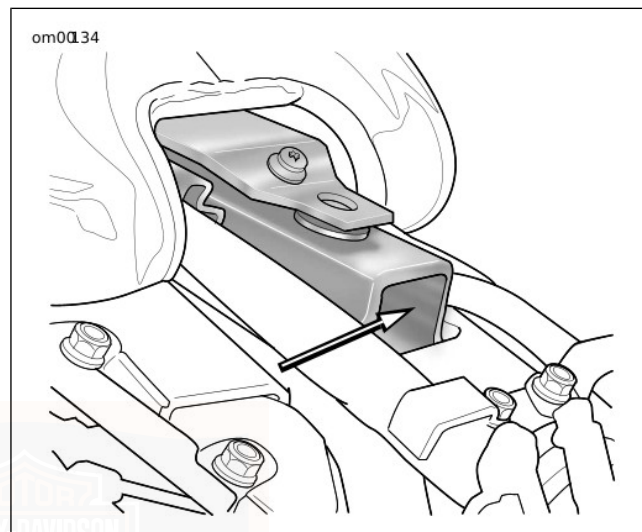


Figure 56. Frame Back

SEATS: FLSTN/FLSTF/FLSTFB/FXSB/FLSTC

Removal

⚠ WARNING

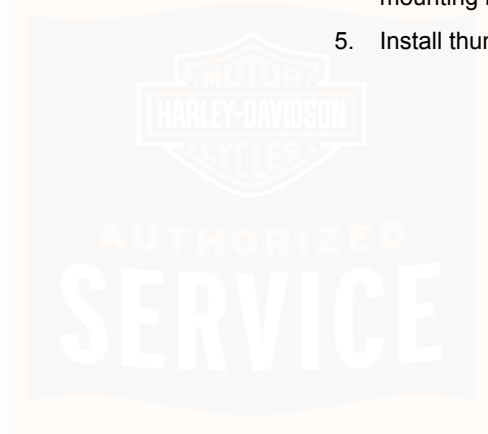
After installing seat, pull upward on seat to be sure it is locked in position. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. (00070b)

1. See Figure 57. Remove the thumbscrew (1).
2. Remove the passenger pillion (2).
3. Remove mounting nuts (4).

4. Raise the rear of the seat (5, 6, 7, or 8) off the mounting posts and slide seat tongue out of the frame.
5. Remove grab strap (3).

Installation

1. See Figure 57. Install seat strap (3) on the mounting posts on rear fender.
2. Insert tongue at front of seat into the channel in the frame.
3. Install rear of seat on the mounting posts on rear fender. Install mounting nuts (4) and tighten.
4. Slide slots on passenger pillion (2) to engage the seat mounting nuts.
5. Install thumbscrew (1) and tighten.



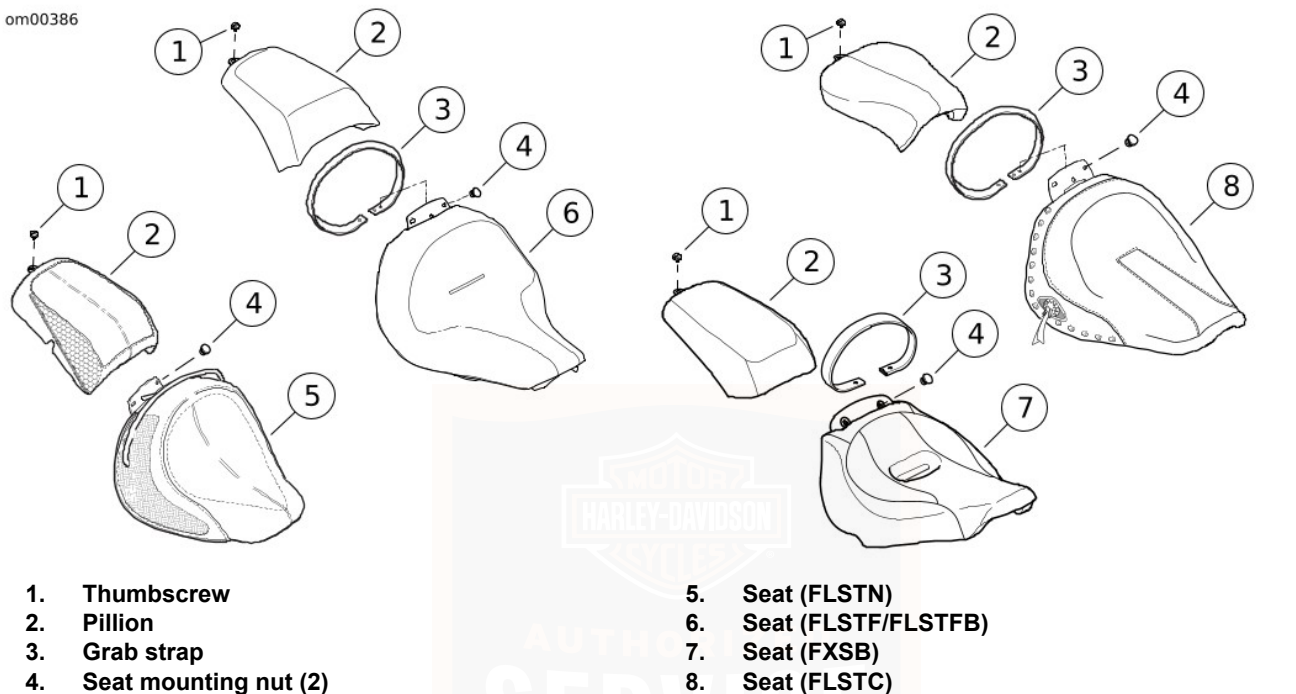


Figure 57. Seat: FLSTN/FLSTF/FLSTFB/FXSB/FLSTC

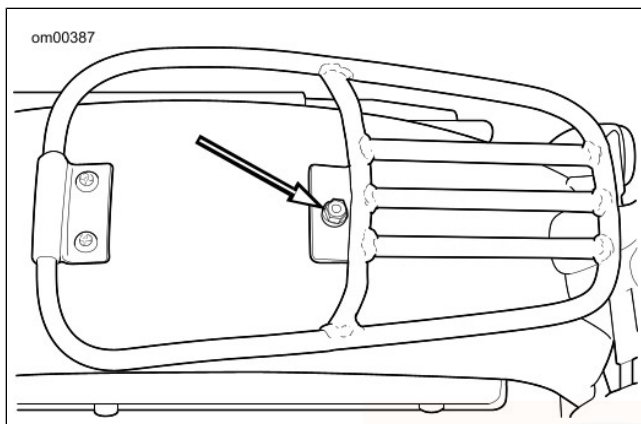


Figure 58. Seat Mounting Stud (FLSTN)

SEATS: FLS/FXS/FXST

Removal

1. See Figure 59. Remove seat mounting screw from top of rear fender.
2. See Figure 55. Push seat rearward to free tongue at front of seat from slot or bracket in frame back.
3. Gently slide seat out of grab strap (FXS/FXST).

4. Remove seat from frame.

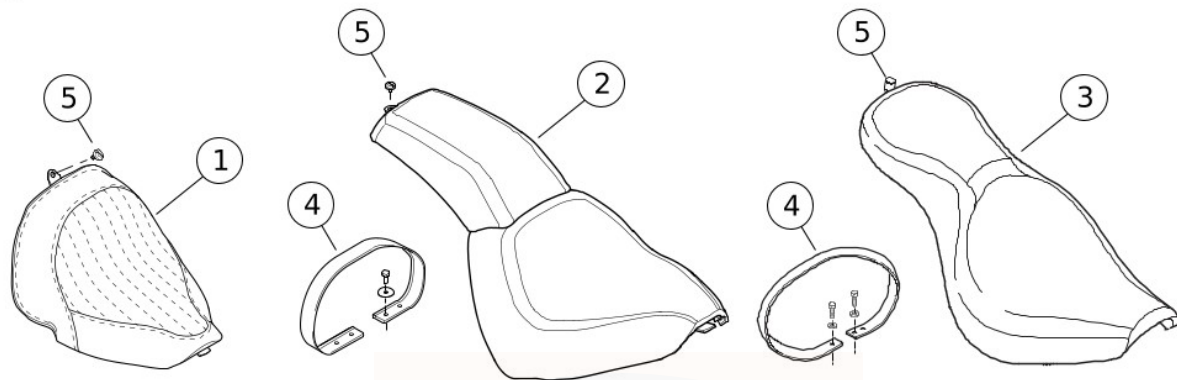
Installation

1. Slide seat into grab strap (FXS/FXST).
2. Place seat on frame back.
3. Slide seat toward front of motorcycle until the tongue locks into the bracket or slot in the frame back.
4. Push seat forward until rear fender seat retention nut is centered in hole of mounting bracket.
5. Hand-tighten the seat mounting screw.

⚠ WARNING

After installing seat, pull upward on seat to be sure it is locked in position. While riding, a loose seat can shift causing loss of control, which could result in death or serious injury. (00070b)

6. Pull up on seat to verify that it is properly secured.



- 1. Seat (FLS)
- 2. Seat (FXS)
- 3. Seat (FXST)

- 4. Grab strap
- 5. Seat mounting screw

Figure 59. Seat: FLS/FXS/FXST

AUTHORIZED
SERVICE

MOTORCYCLE STORAGE

Placing Motorcycle in Storage

NOTICE

Proper storage is important for the trouble-free operation of your motorcycle. See your Owner's Manual for storage recommendations or see a Harley-Davidson dealer. Improper storage procedures can lead to equipment damage. (00046a)

If the motorcycle will not be operated for several months, such as during the winter season, there are several tasks which should be performed. These steps will protect parts against corrosion, preserve the battery and prevent the build-up of gum and varnish in the fuel system.

Store the motorcycle in a dry area with a stable temperature (if possible), away from any harsh chemicals or other substances such as fertilizers or salt.

⚠ 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)

NOTE

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

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.
3. Check and adjust belt if necessary.
4. Check tire pressure. Refer to Table 18 for specified pressure.
5. To protect the vehicle's body panels, engine, chassis and wheels from corrosion, follow the cosmetic care procedures described in the OWNER MANUAL > CARE AND CLEANING (Page 151) section of this owner's manual prior to storage.
6. Prepare battery for winter storage. See MAINTENANCE AND LUBRICATION > BATTERY (Page 129).

NOTE

- If the motorcycle will be stored with the security system armed, connect a 750MA SUPERSMART BATTERY TENDER (PART NUMBER: 94654-98B) to maintain battery charge.
- If the motorcycle will be stored with the security system disarmed, turn the motorcycle on while the hands-free fob is present. This will prevent the optional siren from sounding. Disconnect the negative battery cable and prepare battery for storage. See MAINTENANCE AND LUBRICATION > BATTERY (Page 129).

⚠ 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)

7. If motorcycle is to be covered, use a material such as light canvas that will breathe. Plastic materials that do not breathe promote the formation of condensation. Do not bend or tuck antennas under the cover. Either remove the antennas (if equipped) or allow them to protrude through the cover.

Removing Motorcycle From Storage

⚠ WARNING

The clutch failing to disengage can cause loss of control, which could result in death or serious injury. Prior to starting after extended periods of storage, place transmission in gear and push vehicle back and forth several times to assure proper clutch disengagement. (00075a)

NOTE

When lubricants have been contaminated by water, they often take on a milky white appearance. Always drain contaminated lubricants and refill with the appropriate Harley-Davidson lubricant prior to motorcycle operation.

1. See MAINTENANCE AND LUBRICATION > BATTERY (Page 129) for proper battery care. Charge and install the battery.
2. Start the engine and run until it reaches normal operating temperature. Turn off engine.
3. Check engine oil level.
4. Check the transmission lubricant level.

5. Check controls to be sure they are operating properly. Operate the front and rear brakes, throttle, clutch and shifter.
6. Check steering for smoothness by turning the handlebars through the full operating range.
8. Check overall tire condition. See MAINTENANCE AND LUBRICATION > TIRE REPLACEMENT (Page 113).
9. Check all electrical equipment and switches including the stop lamp, turn signals and horn for proper operation.
10. Check for any fuel, oil or brake fluid leaks.

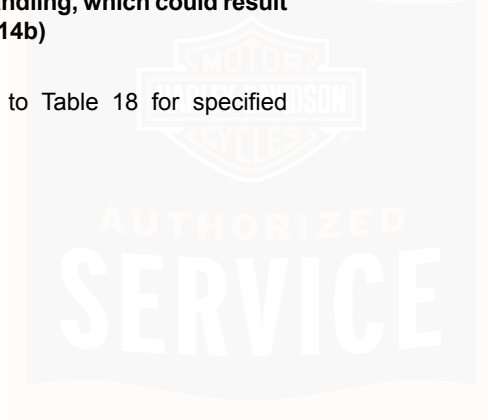
⚠ WARNING

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)

7. Check tire pressure. Refer to Table 18 for specified pressure.

NOTICE

Turn engine over a few times to be sure there is no oil in the crankcase and that all oil has been pumped back into the oil tank. Stop engine and re-check oil level. Failure to do so can result in engine damage. (00071a)



NOTES



CLEANING AND GENERAL CARE

Clean and protect the cosmetic surfaces on your motorcycle as often as possible to inhibit rust and corrosion. After the motorcycle is cleaned, polish and seal the motorcycle to create a sacrificial barrier of protection against the weather and harsh substances.

Refer to Table 35 and Table 36. Harley-Davidson cleaning products are tested extensively for use on vehicle surfaces and are formulated to be compatible with one another. See a Harley-Davidson dealer to purchase recommended cleaning products.

NOTE

- *Use recommended surface care products. Do not use paper towels, terry cloths, cloth diapers or other materials with nylon fibers which can create fine scratches to surfaces.*
- *Some painted finishes and other surfaces may be scratched if gravel, dirt or grime are scraped across the surface during washing. Use clean towels and avoid rubbing sediments across gloss finishes.*
- *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)

Table 35. Recommended Cleaning and Care Products

PRODUCT	PART NO.	PURPOSE	FRAME	BODY PANELS	WHEELS	DENIM FINISH	OTHER
Sunwash® Bike Soap	93600023 (U.S. Market) 93600077 (Non-U.S. Market)	Thorough washing of all surfaces with a wash mitt. Reduces hard water spots when washing a motorcycle in the sun.	Yes	Yes	Yes	Yes	
Quick Wash	93600011 (16 oz) 93600012 (32 oz) (U.S. Market) 93600071 (16 oz) (Non-U.S. Market)	A quick wash for a lightly soiled motorcycle. Cleans all surfaces, sheeting action prevents spots.	Yes	Yes	Yes	Yes	
Bug Remover	93600022 (U.S. Market) 93600075 (Non-U.S. Market)	Removes bugs from metal, plastic or painted surfaces. Also available as individual wipes (93600065).	Yes	Yes	Yes	Yes	
Glaze Poly Sealant	93600026 (U.S. Market) 93600079 (Non-U.S. Market)	Polishes windshields, painted surfaces and chrome.	Yes	Yes	As applicable	No	

Table 35. Recommended Cleaning and Care Products

PRODUCT	PART NO.	PURPOSE	FRAME	BODY PANELS	WHEELS	DENIM FINISH	OTHER
Gloss Detailer	93600062 (U.S. Market) 93600073 (Non-U.S. Market)	Produces high gloss with UV protection. Allows chrome to breathe, unlike wax. Good for windshields. Also available as individual wipes (93600066).	Yes	Yes	Yes	No	
Spray Cleaner & Polish	93600029 (U.S. Market) 93600084 (Non-U.S. Market)	Aerosol quick cleaner and detailer. Reduces static attraction to dust. Works great for removing bugs.	Yes	Yes	Yes	No	
Wheel & Tire Cleaner	93600024 (U.S. Market) 93600076 (Non-U.S. Market)	Cleans wheels, tires, whitewalls and black-coated exhaust pipes and mufflers. Do not use on frames or anodized parts.	No	No	Yes	No	
Chrome Clean & Shine	93600031 (U.S. Market) 93600082 (Non-U.S. Market)	Shines chrome-plated surfaces and cleans brushed aluminum or stainless steel surfaces.	As applicable				
Bare Metal Polish	93600028 (U.S. Market) 93600083 (Non-U.S. Market)	Polishes non-clear coated polished aluminum or polished stainless steel surfaces.	As applicable				
Scratch & Swirl Repair	93600025 (U.S. Market) 93600074 (Non-U.S. Market)	Removes fine scratches and swirls.	Yes	Yes	No	No	

Table 35. Recommended Cleaning and Care Products

PRODUCT	PART NO.	PURPOSE	FRAME	BODY PANELS	WHEELS	DENIM FINISH	OTHER
Denim Paint Cleaner	93600064 (U.S. Market) 93600078 (Non-U.S. Market)	Waterless quick cleaner and detailer.	Yes	Yes	Yes	Yes	
Windshield Cleaner Individual Wipes	97406-10	Quick windshield cleaner in convenient single use wipe.	Yes	Yes	No	No	Windshield
H-D Black Tire Sidewall Protectant	94628-05	Restores luster to black tire sidewalls.	No	No	No	No	Tires
Harley Preserve Bare Aluminum Corrosion Protectant	99845-07	Corrosion control for bare aluminum surfaces. Also available as individual wipes (93600063).	As applicable				
Windshield Water Repellent	93600032 (Global)	Allows water to bead and dissipate from the windshield.	No	No	No	No	Windshield
Leather Protectant	93600034 (U.S. Market) 93600080 (Non-U.S. Market)	Weatherproofs and preserves leather products.	No	No	No	No	Leather goods
Black Leather Rejuvenator	93600033 (U.S. Market) 93600081 (Non-U.S. Market)	Rejuvenates black leather products so they look brand new.	No	No	No	No	Black leather goods
Engine Brightener	93600002 (U.S. Market) 93600068 (Non-U.S. Market)	Rejuvenates wrinkle black engine finish.	No	No	No	No	Wrinkle black engines

Table 35. Recommended Cleaning and Care Products

PRODUCT	PART NO.	PURPOSE	FRAME	BODY PANELS	WHEELS	DENIM FINISH	OTHER
Boot Mark Remover	93600001 (U.S. Market) 93600069 (Non-U.S. Market)	Removes boot marks from chrome exhaust components.	No	No	No	No	Exhaust system
Travel Care Kit	93600007	Travel size cleaning and care products.	Yes	Yes	Yes	Yes	
Seat, Saddlebag & Trim Cleaner	93600010 (U.S. Market) 93600070 (Non-U.S. Market)	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
NOVUS 1 Cleaner/Protectant	99837-94T	Cleans windshields, tail lamps and all plastics. Resists fingerprints, fogging, smears and repels dust.	No	No	No	No	Windshield
NOVUS 2 Scratch Remover	99836-94T	Minor scratch remover for windshields and plastics. Apply after NOVUS 1.	No	No	No	No	Windshield

Table 36. Recommended Surface Care Products

PRODUCT	PART NO.	DESCRIPTION
Wash Mitt	94760-99	Absorbent wool-blended washing mitten.
Soft Detailing Pad	94790-01	Soft pad for removing bugs and debris without scratching the surface finish.
Softstrips	94680-99	For cylindrical surfaces such as handlebars, forks, pushrod covers and spokes.
Softcloth	94656-98	Non-absorbent cloth for applying and buffing Swirl & Scratch treatment and Harley Glaze to painted surfaces or chrome.

Table 36. Recommended Surface Care Products

PRODUCT	PART NO.	DESCRIPTION
Soft Drying Towel	94791-01	Extra-absorbent, non-streaking synthetic towel for drying. Dampen towel and wring out before using for greatest absorbency.
Harley-Davidson Hog Blaster Motorcycle Dryer	94651-09	Blows a stream of warm dry filtered air. Reduces streaks and water spots.
Wheel & Spoke Brush	43078-99	Cone-shaped scrub brush for wheels.
Microfiber Detailing Cloth	94663-02	Highly absorbent detailing cloth for polishing and sealing. Contains no nylon fibers.
Detailing Swabs	93600107	Large cotton swabs for cleaning crevices and detailed surfaces.
Cleaning Brush Kit	94844-10	Brush kit for detailing your motorcycle.
H-D Bike Wash Bucket and Apron	94811-10	Wash bucket with apron to hold your supplies. Includes grit guard.

WASHING THE MOTORCYCLE

Use only recommended cleaning and care products. Refer to Table 35 and Table 36.

NOTE

During rinsing and washing, avoid direct spray on radio, speakers, saddlebags, trunk or Tour-Pak 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 the 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 SOFT DETAILING PAD or WHEEL & SPOKE BRUSH. Use SOFTSTRIPS to clean wheel spokes. 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

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

1. Fill a bucket with clean water.
2. Fill an H-D WASH BUCKET with water and add SUNWASH BIKE SOAP, following the directions on the package.
3. Soak the H-D WASH MITT in the SUNWASH solution. Wash all surfaces from the top working down.
4. Spray BUG REMOVER to remove any bugs.

5. Rinse the motorcycle:
 - 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 SOFT DRYING TOWEL or a HARLEY-DAVIDSON HOG BLASTER MOTORCYCLE DRYER. Avoid using any type of forced air on speakers or other sensitive components.
2. Dampen towel in clean water and wring out the excess. The towel is more absorbent when wet.
3. Wipe across the vehicle surface.
4. Repeat as necessary until surface is completely dry.

Polishing and Sealing

NOTE

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

1. Apply GLAZE POLY SEALANT with a SOFTCLOTH or MICROFIBER DETAILING CLOTH, following the instructions on the package.
2. Buff with a SOFTCLOTH.

3. Polish and seal the wheels as described in CARE AND CLEANING > WHEEL CARE (Page 159) to prevent corrosion.

NOTE

Bare aluminum wheels do not have a protective coating. The wheels corrode if not properly treated. Apply HARLEY PRESERVE BARE ALUMINUM CORROSION PROTECTANT when purchasing the motorcycle and at least twice per year to prevent cosmetic damage to bare aluminum wheels.

Finishing Tires

Apply H-D BLACK TIRE SIDEWALL PROTECTANT to tires, following the instructions on the package.

DENIM FINISH CARE

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 of the motorcycle. Refer to Table 35 for recommended products.

- 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.

How to Clean

For light deposits: Use DENIM PAINT CLEANER and a SOFTCLOTH. This helps remove finger prints and light soil.

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

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 and should be protected 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 will gain "character", such as wrinkles, with age. Leather is porous and organic and each leather product will settle into its own distinct form with use. Your leather product will mature into its own custom shape and style from the sun, rain and time. This maturing is natural and will enhance the custom quality of your Harley-Davidson motorcycle.

WHEEL CARE

Wheels can corrode or be cosmetically damaged if they are not properly cleaned, polished and preserved. Cleaning and sealing wheels with the proper treatment will guard against pitting, corrosion, spots and stains. Harley-Davidson recommends that wheels be cared for weekly. Corrosion to wheels is not considered to be a defect in materials or workmanship.

NOTE

Bare aluminum wheels do not have a protective coating and will corrode if not properly treated. Apply HARLEY PRESERVE BARE ALUMINUM CORROSION PROTECTANT when purchasing the motorcycle and at least twice per year to prevent cosmetic damage to bare aluminum wheels.

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 in Table 37 according to the type of wheels on your motorcycle.

SERVICE

Table 37. Wheel Polish and Sealing Products

WHEELS	PRODUCT	DESCRIPTION
Bare aluminum	HARLEY PRESERVE™ BARE ALUMINUM CORROSION PROTECTANT	Creates a protective coating for bare aluminum wheels to prevent oxidation.
Polished aluminum or stainless steel	BARE METAL POLISH	Microabrasive polish to refurbish polished wheels. Do not use on chrome.
	GLOSS DETAILER	Seals and protects against harsh chemicals, salt, and other sediments to prevent oxidation.
Anodized	GLAZE POLY SEALANT	Cleans surface, removes fine scratches, and provides a breathable sealant against acid, chemicals, salt, and brake dust.
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.

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 will damage the windscreen/windshield. Ammonia-based window cleaners cause permanent yellow effects to windshields.
- Do not use gas station windshield cleaner as finish may be damaged.

- Do not use a brush or squeegee as finish may be damaged.
- Do not clean in hot sun or high temperature.

Windshields require special care. Harley-Davidson recommends using WINDSHIELD CLEANER to clean your windshield. Refer to Table 35 for recommended cleaning products.

NOTE

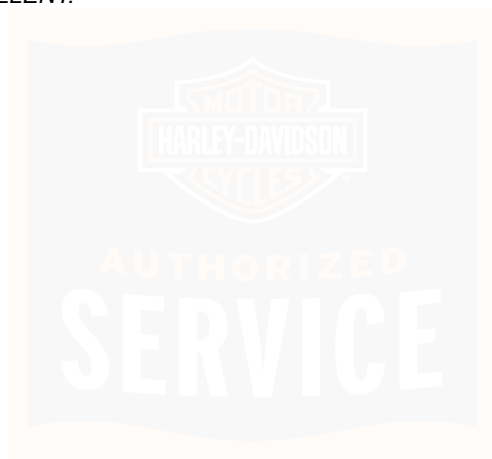
- Use NOVUS 2 SCRATCH REMOVER to remove minor scratches.
- To treat the windshield with water repellent use WINDSHIELD WATER REPELLENT.

- *Covering the windshield with a clean, wet cloth for approximately 15-20 minutes before washing will make dried bug removal easier.*

1. Use mild soap and warm water to wash the windshield.
2. Wipe dry with a clean SOFT DRYING TOWEL.

NOTE

To minimize swirl marks, cleaning should be done when motorcycle is cool and parked in the shade. Faint swirl marks are normal and may be more visible on tinted windshields.



NOTES



TROUBLESHOOTING: GENERAL

⚠ WARNING

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

The following checklist of possible operating troubles and their probable causes will be helpful in keeping your motorcycle in good operating condition. More than one of these conditions may be causing trouble and should be carefully checked.

ENGINE

Starter Does Not Operate or Does Not Turn Engine Over

1. Engine OFF/RUN switch in OFF position.
2. Ignition switch not ON.
3. Discharged battery or loose or corroded connections (solenoid chatters).
4. Clutch lever not squeezed against handlebar or transmission not in neutral.

5. Jiffy stand not in retracted position (for models equipped with jiffy stand interlock).
6. 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(s) 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(s) at one of the battery terminals or at coil.
5. Engine oil too heavy (winter operation).
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.

Pre-ignition or Detonation (Knocks or Pings)

1. Incorrect fuel.
2. Incorrect spark plug for kind of 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 nuts 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

Brakes Do Not Hold Normally

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



GENUINE MOTOR PARTS AND ACCESSORIES

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

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

Online Catalog

The full Genuine Motor Parts and Accessories catalog is available online in PDF format. The catalog includes hundreds of pages of Harley-Davidson accessories and maintenance products. For performance parts, check out the Screamin' Eagle Pro Racing Parts catalog.

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.

Customizer

Virtually redesign your motorcycle with parts and accessories using the Customizer. This tool allows you to experiment with different accessory and color combinations and shows how your motorcycle would look with the accessories installed. You can easily create a custom list of accessories to print out for your dealer.

Fit Shop

Learn how to customize your motorcycle to fit you personally. See how making changes to the suspension, seat, handlebars or foot controls can enhance the ergonomics and comfort of your motorcycle.

Custom Seats

Create a custom seat using selected designs, colors and textured materials. Custom seat specifications can be easily printed out for your dealer.

CUSTOM COVERAGE

Add Accessories To Your New Ride

Harley-Davidson is offering a limited opportunity to purchase new accessories and have them installed at an authorized Harley-Davidson dealership **and** receive the Custom Coverage extended Limited Warranty rather than the standard one year

Parts and Accessories post purchase over-the-counter warranty.

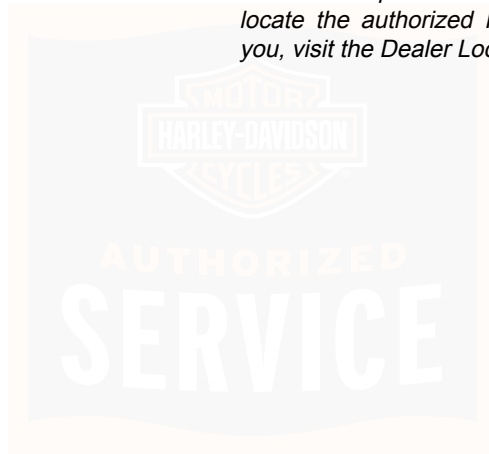
- Limited warranty for eligible *street legal* Genuine Harley-Davidson Motor Parts and Genuine Harley-Davidson Motor Accessories to run concurrent with the remainder of the motorcycle's 24-month manufacturer's warranty.
- Visit an authorized Harley-Davidson dealership within 60 days to qualify for Custom Coverage.
- Parts and accessories must be purchased and installed at an authorized Harley-Davidson dealership to qualify for Custom Coverage.

- Visit any authorized Harley-Davidson dealership as often as you like during the 60 days after purchase to select, purchase and install accessories.

Ride, personalize, customize. Take advantage of this Custom Coverage extended Limited Warranty offer today to make your bike your Custom ride.

NOTE

Customers have 60 days after the motorcycle purchase date to participate in Custom Coverage extended Limited Warranty offer. Parts and Accessories must be purchased and installed at an authorized Harley-Davidson dealership. Parts and Accessories purchased via the internet are not eligible. To locate the authorized Harley-Davidson dealership nearest you, visit the Dealer Locator on www.harley-davidson.com.



WARRANTY AND MAINTENANCE

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

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

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

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

4. Keep receipts covering any parts, service or maintenance performed.

These records should be transferred to each subsequent owner.

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

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

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

KEEPING IT ALL HARLEY-DAVIDSON

Genuine Harley-Davidson parts are engineered and tested specifically for use on your motorcycle. Insist that your authorized Harley-Davidson dealer uses only genuine Harley-Davidson replacement parts and accessories to keep

your Harley-Davidson motorcycle and its limited warranty intact.

NOTE

Installing off-road or competition parts to enhance performance may void all or part of your new motorcycle limited warranty. See the Harley-Davidson Motorcycle Limited Warranty in this manual or an authorized Harley-Davidson dealer for details.

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)

CALIFORNIA AND SELECT INTERNATIONAL MARKETS EVAPORATIVE EMISSION CONTROLS: 2013 MODELS

All new 2013 Harley-Davidson motorcycles sold in the State of California and select international markets are equipped with an evaporative emission control system. This system is designed to meet CARB and local regulations in effect at the time of manufacture.

The system requires a small amount of maintenance. Periodic inspection is required to make sure hoses are properly routed, not kinked or blocked and that all fittings are secure. Mounting hardware should also be checked periodically for tightness.

WARRANTY/SERVICE INFORMATION

Any authorized Harley-Davidson dealer is responsible for providing the warranty repair work on your motorcycle. The fact that a dealership performs warranty repairs does not create an agency relationship between Harley-Davidson Motor Company and the authorized dealership. If you have any questions regarding warranty obligations contact your authorized Harley-Davidson dealer.

For normal service work or warranty work under the above conditions, you may obtain the name and location of your nearest U.S. authorized Harley-Davidson dealer by calling 800-258-2464 (U.S. only). To find dealers worldwide, see www.harley-davidson.com.

REQUIRED DOCUMENTATION FOR IMPORTED MOTORCYCLES

If a Harley-Davidson motorcycle is imported into the United States, additional documentation is required to be eligible for the United States Harley-Davidson's Limited Warranty. A Harley-Davidson dealer can provide a form explaining the requirements.

OWNER CONTACT INFORMATION

If you move from your present address, sell your motorcycle, or purchase a pre-owned Harley-Davidson motorcycle, see an authorized Harley-Davidson dealer to update your owner contact information.

This will provide Harley-Davidson with an accurate registration (as required by law in some countries), and will allow Harley-Davidson to notify you in the event of a recall or product program.

The rights and benefits conferred upon you and the obligations of Harley-Davidson as set forth herein are separate and distinct from any rights and duties set forth in a service contract you may have purchased from a dealership and/or third-party insurance company. Harley-Davidson does not authorize any entity to expand the warranty obligations in connection with your motorcycle or this limited warranty.

When updating your contact information, your authorized Harley-Davidson dealer will need your vehicle identification number (VIN), odometer mileage, and date of vehicle transfer (if applicable).

QUESTIONS AND CONCERNS

If you have questions or concerns regarding the performance of your motorcycle or the application of the limited warranty

described here, or are not satisfied with the service you are receiving from an authorized Harley-Davidson dealership, do the following:

1. Contact the selling and/or servicing dealership and speak to the sales and/or service manager.
2. If your concern cannot be addressed to your satisfaction by the dealership, contact the Harley-Davidson Enterprise Contact Center by mailing your concern to the following address or calling the phone number below.

In the U.S., state warranty laws, often referred to as lemon laws, may provide you with certain rights not specifically mentioned here. To the extent allowed by your state, Harley-Davidson requires that you first send written notification of any defect or warranty non-conformity that you have experienced with your motorcycle to Harley-Davidson. Harley-Davidson appreciates the opportunity to investigate your concerns and restore your satisfaction in your motorcycle by making the necessary repairs consistent with the terms of the limited warranty. Harley-Davidson requests that you send your complaint to the Harley-Davidson Enterprise Contact Center.

- Harley-Davidson Motor Company Attention:
Harley-Davidson Enterprise Contact Center P.O. Box 653
Milwaukee, Wisconsin 53201 (800) 258-2464 (U.S. only)
(414) 343-4056

NOTES



2013 HARLEY-DAVIDSON MOTORCYCLE LIMITED WARRANTY

24 Months/Unlimited Miles

Harley-Davidson warrants for any new 2013 Harley-Davidson motorcycle/sidecar 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. Such repair or replacement of parts will be Harley-Davidson's sole obligation and your sole remedy under this limited warranty.

THERE IS NO OTHER EXPRESS WARRANTY (OTHER THAN THE SEPARATE EMISSIONS AND NOISE LIMITED WARRANTIES) ON THE MOTORCYCLE/SIDECAR. Any implied warranty of merchantability or fitness for particular purpose is limited to the duration of the express warranty, or to the duration set forth in your state's warranty statutes, whichever is shorter. The implied warranty is not transferred to subsequent purchasers/buyers.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

TO THE FULLEST EXTENT ALLOWED BY LAW, NEITHER HARLEY-DAVIDSON NOR ITS AUTHORIZED DEALERS SHALL BE LIABLE FOR LOSS OF TIME, INCONVENIENCE, LOSS OF MOTORCYCLE/SIDECAR USE, COMMERCIAL

LOSS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This limited warranty gives you specific legal rights, and you may have other rights which vary from state to state.

The following terms and conditions apply to this limited warranty:

Duration

1. The duration of this limited warranty is twenty-four months, starting from the earlier of (a) the date of initial retail purchase and delivery from an authorized Harley-Davidson dealer, or (b) the third anniversary of the last day of the model year of the motorcycle/sidecar. Your authorized Harley-Davidson dealer will submit an electronic Sales and Warranty Registration form to initiate your limited warranty.
2. Any unexpired portion of this limited express warranty will be transferred to subsequent owners, upon the resale of the motorcycle/sidecar during the limited warranty period.

Owner's Obligations

To obtain warranty service, return your motorcycle/sidecar at your expense within the limited warranty period to an authorized dealer. The authorized Harley-Davidson dealer should be able to provide warranty service during normal business hours and as soon as possible, depending upon the workload of the authorized dealer's service department and the availability of necessary parts.

Exclusions

This limited warranty will not apply to any motorcycle/sidecar as follows:

1. Which has not been operated or maintained as specified in the Owner's Manual.
2. Which has been abused, neglected, misused, improperly stored, used "off the highway," or used for racing or competition of any kind.
3. Which is not manufactured to comply with the laws of the market in which it is registered.
4. Which has off-road or competition parts installed to enhance performance, or has other unapproved modifications (even if these modifications include genuine Harley-Davidson parts and accessories that are not approved for use on your motorcycle). These modifications may void all or part of your new motorcycle/sidecar limited warranty. See an authorized Harley-Davidson dealer for details.
5. Acts of God, war, riot, insurrection, natural disasters, including, but not limited to, nuclear contamination, lightning, forest fires, dust storms, hail storms, ice storms, earthquakes, floods, or for other circumstances out of Harley-Davidson's control.
6. Which has been in an accident, collision, dropped or struck.

Other Limitations

This 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: tires, lubrication, oil and filter change, fuel system cleaning, battery maintenance, engine tune-up, spark plugs, brake, clutch, chain/belt adjustment and chain replacement.

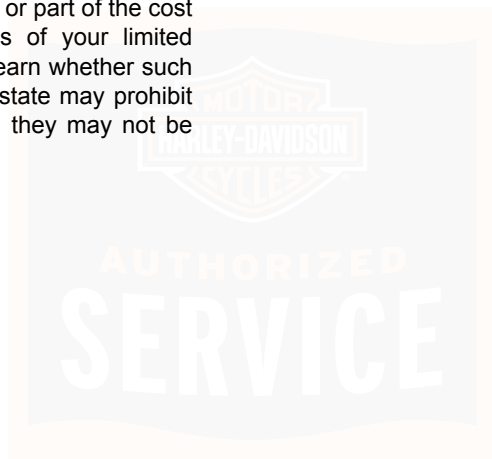
2. Cosmetic concerns that arise as a result of owner abuse, lack of proper maintenance or environmental conditions (except concerns that result from defects in factory materials or workmanship, which are covered by this limited warranty for the duration of the limited warranty period).
3. Any cosmetic condition existing at the time of retail delivery that has not been documented by the authorized Harley-Davidson selling dealer prior to retail delivery.
4. Defects or damage to the motorcycle/sidecar caused by alterations outside of Harley-Davidson's factory specifications or caused by alterations or use of non-Harley-Davidson approved parts or accessories.
5. Damage caused by installation or use of non-Harley-Davidson components, even those installed by an authorized dealership, that cause a Harley-Davidson part to fail. Examples include, but are not limited to performance-enhancing powertrain components or software, exhaust systems, non-approved tires, lowering kits, handlebars, add-ons connected to the factory electrical system, etc.

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 you may receive or purchase from an authorized Harley-Davidson dealer. An authorized Harley-Davidson dealer is not authorized to alter, modify, 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.

SERVICE

4. Harley-Davidson and its 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 dealer to learn whether such programs are available to you. Your state may prohibit these types of offers, in which case, they may not be 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 create conditions not covered by the limited factory warranty.



REGULAR SERVICE INTERVALS

Refer to Table 38. Regular maintenance must be performed at specified intervals to help keep your new Harley-Davidson motorcycle operating at peak performance and keep your new motorcycle limited warranty in force. Your authorized Harley-Davidson dealer knows best how to service your motorcycle with factory approved methods and equipment assuring you of thorough and competent workmanship.

Some maintenance items should be done at least once per year as specified, even if the next mileage interval has not been reached. In severe riding conditions, some maintenance items may need to be performed more frequently. Refer to the notes in Table 38.

NOTE

- *The use of parts and service procedures other than Harley-Davidson approved parts and service procedures may void the limited warranty. Any alterations to the emission system components, such as the intake and exhaust system, may be in violation of motor vehicle laws.*
- *Some countries, such as Brazil, may require all regular maintenance to be performed by an authorized Harley-Davidson dealer for your limited warranty to remain in effect. Check with your authorized Harley-Davidson dealer.*

- *Some countries, such as Brazil, may require additional annual (or semi-annual) regular maintenance steps to be performed to keep your limited warranty in effect and/or comply with vehicle regulations. Check with your authorized Harley-Davidson dealer and check the motorcycle regulations in your country for local requirements.*
- *After completing the final service interval in Table 38, repeat the service schedule starting at the 8,000 km (5000 mi) interval.*

⚠ 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)

Table 38. Regular Service Intervals: 2013 Softail Models

ITEM SERVICED	PROCEDURE	1000 MI 1600 KM	5000 MI 8000 KM	10000 MI 16000 KM	15000 MI 24000 KM	20000 MI 32000 KM	25000 MI 40000 KM	30000 MI 48000 KM	35000 MI 56000 KM	40000 MI 64000 KM	45000 MI 72000 KM	50000 MI 80000 KM	NOTES
Engine oil and filter	Replace	X	X	X	X	X	X	X	X	X	X	X	3, 7
Oil lines and brake system	Inspect for leaks, contact, or abrasion	X	X	X	X	X	X	X	X	X	X	X	1, 3
Air cleaner	Inspect, service as required		X	X	X	X	X	X	X	X	X	X	7
Tires	Check pressure, inspect tread	X	X	X	X	X	X	X	X	X	X	X	3
Wheel spokes (if equipped)	Check tightness	X	X			X			X			X	1, 5, 7
Primary chaincase lubricant	Replace	X		X		X		X		X		X	7
Transmission lubricant	Replace	X				X				X			7
Clutch	Check adjustment	X	X	X	X	X	X	X	X	X	X	X	1, 7
Drive belt and sprockets	Inspect, adjust belt	X	X	X	X	X	X	X	X	X	X	X	1
Throttle, brake, and clutch controls	Check, adjust and lubricate	X	X	X	X	X	X	X	X	X	X	X	1
Jiffy stand	Inspect and lubricate	X		X		X		X		X		X	1
Fuel lines and fittings	Inspect for leaks, contact or abrasion	X	X	X	X	X	X	X	X	X	X	X	1, 3
Fuel filter element		Replace every 160,000 km (100,000 mi)											1
Brake fluid	Inspect sight glass	X	X	X	X	X	X	X	X	X	X	X	4

Table 38. Regular Service Intervals: 2013 Softail Models

ITEM SERVICED	PROCEDURE	1000 MI 1600 KM	5000 MI 8000 KM	10000 MI 16000 KM	15000 MI 24000 KM	20000 MI 32000 KM	25000 MI 40000 KM	30000 MI 48000 KM	35000 MI 56000 KM	40000 MI 64000 KM	45000 MI 72000 KM	50000 MI 80000 KM	NOTES
Brake pads and discs	Inspect for wear	X	X	X	X	X	X	X	X	X	X	X	
Spark plugs	Replace							X					6
Electrical equipment and switches	Check operation	X	X	X	X	X	X	X	X	X	X	X	
Front forks	Rebuild											X	1, 8
Steering head bearings	Adjust	X		X		X		X		X		X	1
Steering head bearings	Lubricate			X		X		X		X		X	2
Windshield bushings (if equipped)	Inspect			X		X		X		X		X	1
Critical fasteners	Check tightness	X		X		X		X		X		X	1, 3
Battery		Check battery and clean connections annually.											
Exhaust system	Inspect for leaks, cracks, and loose or missing fasteners or exhaust shields	X	X	X	X	X	X	X	X	X	X	X	3, 7



Table 38. Regular Service Intervals: 2013 Softail Models

ITEM SERVICED	PROCEDURE	1000 MI 1600 KM	5000 MI 8000 KM	10000 MI 16000 KM	15000 MI 24000 KM	20000 MI 32000 KM	25000 MI 40000 KM	30000 MI 48000 KM	35000 MI 56000 KM	40000 MI 64000 KM	45000 MI 72000 KM	50000 MI 80000 KM	NOTES
Road test	Verify component and system functions	X	X	X	X	X	X	X	X	X	X	X	
NOTES:		1. Should be performed by an authorized Harley-Davidson dealer, unless you have the proper tools, service data and are mechanically qualified. 2. Disassemble, lubricate and inspect every 48,000 km (30000 mi). 3. Perform annually or at specified intervals, whichever comes first. 4. Change DOT 4 brake fluid and flush system every two years. 5. Perform spoke tension check at the 1,600 km (1000 mi), 8,000 km (5000 mi), 32,000 km (20000 mi) services and every 24,000 km (15000 mi) interval thereafter. Not all vehicles are equipped with spoke wheels. Consult appropriate topic in service manual. 6. Perform every two years or at specified intervals, whichever comes first. 7. Perform maintenance more frequently in severe riding conditions (such as extreme temperatures, dusty environments, mountainous or rough roads, long storage conditions, short runs, heavy stop/go traffic or poor fuel quality). 8. Disassemble, inspect, rebuild forks and replace fork oil every 80,000 km (50000 mi).											

Table 39. Owner's Maintenance Records

SERVICE MILE INTERVAL	DATE	DEALER NUMBER	TECHNICIAN NAME	TECHNICIAN SIGNATURE
1,600 km (1000 mi)				
8,000 km (5000 mi)				
16,000 km (10000 mi)				
24,000 km (15000 mi)				
32,000 km (20000 mi)				
40,000 km (25000 mi)				
48,000 km (30000 mi)				
56,000 km (35000 mi)				

Table 39. Owner's Maintenance Records

SERVICE MILE INTERVAL	DATE	DEALER NUMBER	TECHNICIAN NAME	TECHNICIAN SIGNATURE
64,000 km (40000 mi)				
72,000 km (45000 mi)				
80,000 km (50000 mi)				

SERVICE LITERATURE

Refer to Table 40. Visit any Harley-Davidson dealer or go to www.harley-davidson.com to purchase a service or parts

manual for your motorcycle. Factory authorized manuals are the most complete and detailed source of information outside of your Harley-Davidson dealer.

Table 40. Service Literature: 2013 Softail Models

DOCUMENT	LANGUAGE	PART NUMBER
Service Manual	English	99482-13A
	French	99482-13FRA
	German	99482-13DEA
	Spanish	99482-13ESA
	Italian	99482-13ITA
	Simplified Chinese	99482-13ZH
	Japanese	99482-13JAA

Table 40. Service Literature: 2013 Softail Models

DOCUMENT	LANGUAGE	PART NUMBER
Electrical Diagnostic Manual	English	99498-13A
	French	99498-13FRA
	German	99498-13DEA
	Spanish	99498-13ESA
	Italian	99498-13ITA
	Simplified Chinese	99498-13ZH
	Japanese	99498-13JAA
Parts Catalog	English	99455-13A

H-D MICHIGAN, INC. TRADEMARK INFORMATION

Bar & Shield, Cross Bones, Digital Tech, Digital Technician, Digital Technician II, Dyna, Electra Glide, Evolution, Fat Bob, Fat Boy, Forty-Eight, Glaze, Gloss, H-D, H-Dnet.com, Harley, Harley-Davidson, HD, Heritage Softail, Iron 883, Low Rider, Night Rod, Nightster, Night Train, Profile, Revolution, Road Glide, Road King, Road Tech, Rocker, Screamin' Eagle, Seventy-Two, Softail, Sportster, Street Glide, Street Rod, Sun Ray, Sunwash, Super Glide, SuperLow, Switchback, SYN3, TechLink, TechLink II, Tour-Pak, Twin Cam 88, Twin Cam 88B, Twin Cam 96, Twin Cam 96B, Twin Cam 103, Twin Cam 103B, Twin Cam 110, Twin Cam 110B, Ultra Classic, V-Rod, VRSC and Harley-Davidson Genuine Motor Parts and

Genuine Motor Accessories are among the trademarks of H-D Michigan, Inc.

PRODUCT REGISTERED MARKS

Apple, Alcantara S.p.A., Allen, Amp Multilock, Bluetooth, Brembo, Delphi, Deutsch, Dunlop, Dynojet, Fluke, G.E. Versilube, Garmin, Gunk, Hydroseal, Hylomar, iPhone, iPod, Kevlar, Lexan, Loctite, Lubriplate, Keps, K&N, Magnaflux, Marson Thread-Setter Tool Kit, MAXI fuse, Molex, Michelin, MPZ, Multilock, nano, NGK, Novus, Packard, Pirelli, Permatex, Philips, PJ1, Pozidriv, Robinair, S100, Sems, Snap-on, Teflon, Threadlocker, Torca, Torco, TORX, Tufoil, Tyco, Ultratorch, Velcro, X-Acto, XM Satellite Radio, and zumo are among the trademarks of their respective owners.

Index

A

Accessories.....	167,167
Accessories and Cargo Guidelines.....	5,12
Accessory and Cargo Guidelines.....	12
ACR (Automatic Compression Release).....	86
Advanced Audio System.....	38
Air Cleaner Filter.....	116
Alarm.....	75
Alternator/Voltage Regulator.....	128
Anniversary Model Motorcycles.....	22
Anti-Lock Brake System (ABS).....	11
Automatic Compression Release (ACR).....	86

B

Battery.....	48,78,129,136,137
Belt Deflection.....	105
Brakes.....	38,52,52,108,166
Break-in.....	91
Break-in Maintenance.....	91
Break-in Riding Rules.....	82
Bulb Replacement.....	119,125,126,127

C

California Evaporative Emission Controls.....	170
Catalytic Converters.....	32
Chaincase Lubricant.....	102
Changing Engine Oil.....	96
Changing Transmission Lubricant.....	101
Chassis Lubrication.....	106
Checking Engine Oil.....	93
Clean.....	156
Cleaning.....	151,156,158,158,159,160
Clutch.....	107
Controls.....	38,51,52
Coolant.....	23
Cruise Control.....	38,48
Custom Coverage.....	167
Customer service.....	2

D

Dealer Locator.....	170
Dealer Locator Phone Number.....	170
Denim Finish.....	158
Disposal and Recycling.....	91

Index

Drive Belt Deflection.....105

E

Electrical System.....165
Engine.....48,86,86,163
Engine Idle Temperature Management System.....86
Engine Oil.....49,92,93,96,99
Engine Oil and Filter.....96

F

Factory Replacement Parts.....169
Fob.....68,77
Front Fork Bearings.....108
Front Fork Oil.....107
Fuel.....31,32,48,57,116
Fuel and Oil.....31
Fuel Filter.....107
Fuses.....78,140
Fuses and Relays.....78

G

Gasoline.....31,32
Gasoline Blends.....31
GAWR.....12
GAWR/GVWR.....12
Gear Shift Lever.....51
Genuine Motor Parts and Accessories.....167
GVWR.....12

H

Hand Controls.....38
Hazard Warning 4-Way Flasher.....72
Headlamp.....38,49,119,122,123
Headlamp Adjustment.....122
Headlamp Alignment.....122
Heel-Toe Foot Shifter.....51
Heel-Toe Shift Lever.....51
Hydraulic Lifters.....108

Index

I

Ignition System.....	116
Importing a Motorcycle.....	170
Indicator Lamps.....	48,49
Instruments.....	43,48,49,56

J

Jiffy Stand.....	55,56
Jump-Starting Battery.....	137

K

Key Fob.....	77
--------------	----

L

Labels.....	15
Leather.....	158
Leather and Vinyl Care.....	158
Leather Care.....	158
License Plate Bracket.....	65
License Plate Bracket (VRSCF).....	65

Limited Warranty.....	173
Lubrication.....	106
Luggage.....	12

M

Maintenance.....	91,91,92,93,96, 101, 105, 106, 107, 107, 107, 108, 108, 115, 116, 116, 122, 125, 127, 128, 169
Manual.....	1
Mirror Adjustment.....	56
Mirrors.....	56
Motorcycle Cleaning Products.....	151
Motorcycle Storage.....	147

N

Noise Control System.....	15
---------------------------	----

O

Octane Rating.....	32
Oil.....	92
Oil Applications.....	107

Index

Oil Level.....	93
Operation.....	52,83,86
Owner Contact Information.....	171

P

Polishing.....	156
Power Disconnect.....	78
Pre-Riding Checklist.....	83
Preload.....	59
Primary Chaincase.....	23,102
Primary Chaincase Lubrication.....	102

R

Reverse.....	38,48
Rules of the Road.....	12

S

Saddlebags.....	63
Saddlebags (FLSTC Models).....	61
Saddlebags: FLSTC.....	61,63

Safe Operating Rules.....	5
Safety.....	12,15,91
Safety Definitions.....	1
Seat: FLS, FLSS.....	145
Seats.....	141
Seats (FLSTC/FLSTN/FLSTF).....	143
Seats (FLSTC/FLSTN/FLSTF/FLSTFB).....	143
Seats (FLSTN/FLSTF/FLSTFB/FXSB/FLSTC).....	143
Seats (FLSTSC/FLSTN Models).....	143
Seats (FX Softail Models).....	145
Seats (FXST/FXSTB/FXSTC).....	145
Seats (FXST/FXSTC).....	145
Seats: FLS/FXS/FXST.....	145
Seats: FLS/FXST.....	145
Seats: FLSTC, FLSTF, FLSTFB, FLSTFBS, FLSTN, FXSB.....	143
Seats: FXS/FXST.....	145
Seats: FXST.....	145
Security System.....	48,67,67,68,69, 72, 72, 75, 76, 77, 77, 78, 78
Service Intervals.....	177
Service Literature.....	181
Shifting Gears.....	51,87
Shock Absorber.....	59
Shock Absorbers.....	59,115

Index

Sidestand.....	55
Sidestand Interlock.....	56
Siren Chirp Mode (Confirmation).....	76
Smart Security System.....	67,67,68,69,72, 72, 75, 76, 77, 77, 78, 78
Spark Plug Replacement.....	116
Spark Plugs.....	116
Specifications.....	23,32,92
Starting the Engine.....	84
Stopping the Engine.....	86
Storage.....	147

T

Tail Lamp.....	124,126,127
Throttle Control Grip.....	38
Tire Replacement.....	113
Tires.....	29,112,113,113
Trademarks.....	182,182
Transmission.....	23,99,101,165
Troubleshooting.....	49,78,163,165,165, 166
Turn Signal Bulbs (Bullet Style).....	124
Turn Signal Bulbs (Flat Lens Style).....	125
Turn Signal Lamps.....	124,125

Turn Signal Switches.....	43
Turn Signals.....	38,43,49,124,125

V

V.I.N.....	19
Vehicle Identification Number.....	19
Vehicle Identification Number (VIN).....	19
VIN.....	19
VIN codes.....	19
Voltage Regulator/Alternator.....	128

W

Warranty.....	167,169,170,171,173
Warranty Repair Work.....	170
Washing.....	156
Wheel Care.....	159
Wheels.....	159
Windshield.....	160
Windshield Cleaning.....	160
Windshield (FLSTC Models).....	64
Windshield: FLSTC.....	64
Winter Lubrication.....	99

NOTES

