

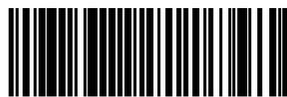
FLHXSE3 MODELS

2012 HARLEY-DAVIDSON® INTERNATIONAL OWNER'S MANUAL



Harley-Davidson Motor Company
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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 new 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 read through 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, the following rules should be observed.

- 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 112).
- 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 driving 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 39. 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

⚠ 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: ABS-EQUIPPED MODELS (Page 49) to properly operate motorcycles equipped with an Anti-lock Brake System (ABS).

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 plate which is located on the frame down tube.

⚠ 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, back rests, and luggage racks can have an adverse affect on stability and handling.
- Only Genuine Harley-Davidson accessories designed specifically for the 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 the 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

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

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.



NOTES



VEHICLE IDENTIFICATION NUMBER (VIN)

General

See Figure 2. A unique 17-digit serial or Vehicle Identification Number (VIN) is assigned to each motorcycle. For a description of each item in the VIN, refer to Table 3.

Location

See Figure 1. The full 17-digit VIN (1) is stamped on the right side of the frame near the steering head. In some destinations, a printed VIN label (2) is also attached to the front downtube.

Abbreviated VIN

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

NOTE

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

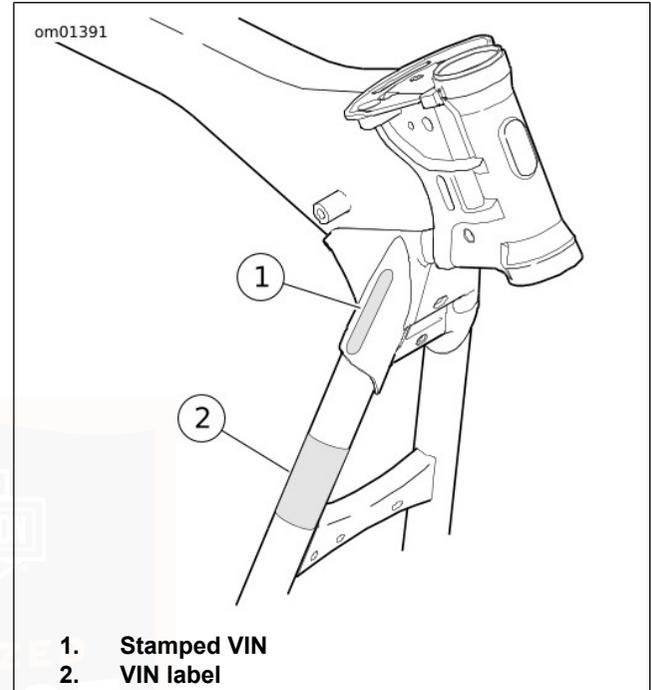


Figure 1. VIN Locations

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1HD 1 PZ 8 1 3 C B 8500

Figure 2. Typical Harley-Davidson VIN: 2012 FLHXSE3 Models

Table 3. Harley-Davidson VIN Breakdown: 2012 FLHXSE3 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	PZ=FLHXSE3 CVO Street Glide®
4	Engine type	8=110 in ³ (1802 cm ³) air-cooled, fuel-injected



Table 3. Harley-Davidson VIN Breakdown: 2012 FLHXSE3 Models

POSITION	DESCRIPTION	POSSIBLE VALUES	
5	Introduction date/ Configuration and calibration recognition	Normal Introduction 1=Domestic 3=California A=Canada C=HDI E=Japan G=Australia J=Brazil L=Asia Pacific N=India	Mid-year or Special Introduction 2, 4=Domestic 5, 6=California B=Canada D=HDI F=Japan H=Australia K=Brazil M=Asia Pacific P=India
6	VIN check digit	Can be 0-9 or X	
7	Model year	C=2012	
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	

LABELS

See Figure 3 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 4.

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 4. Labels

ITEM	PART NO.	DESCRIPTION	LOCATION
1	28012-09	General warnings	Top of air cleaner cover
2	15368-01A	Battery warning	Under seat, behind fuel tank on main harness trough
3	14148-86	Engine guard warning	On front of engine guard below center mount
4	14000069	Saddlebag load limits	Inside saddlebag
5	14810-03 (not sold)	Hydraulic clutch service notice	On clutch cover



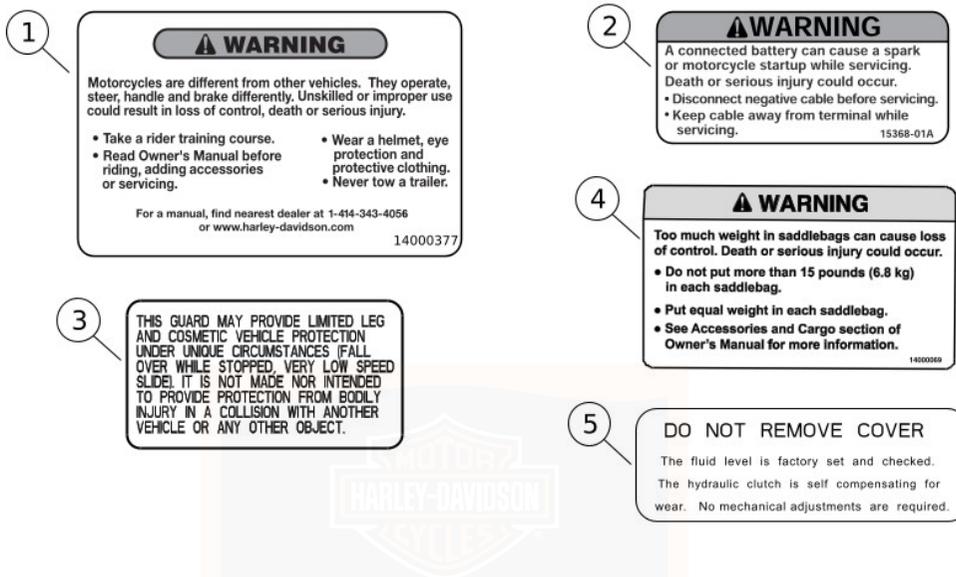


Figure 3. Labels

NOTES



SPECIFICATIONS

Table 5. Engine: Twin Cam 110™

ITEM	SPECIFICATION	
Number of cylinders	2	
Type	4-cycle, 45 degree V-type, air cooled	
Compression ratio	9.15:1	
Bore	4.00 in	101.6 mm
Stroke	4.38 in	111.3 mm
Displacement	110.0 in ³	1802 cm ³
Lubrication system	Pressurized dry sump with oil cooler	

Table 6. Electrical

COMPONENT	SPECIFICATION	
Ignition timing	Not adjustable	
Battery	12 V, 28 Ah, 270 CCA sealed and maintenance free	
Charging system	Three-phase, 50 A system (585 W @ 13 V, 2000 rpm, 650 W max power @13 V)	
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-lbs	16.3-24.4 Nm

Table 7. Transmission

TRANSMISSION	SPECIFICATION
Type	Constant mesh, foot shift
Speeds	6 forward

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. Sprocket Teeth

DRIVE	ITEM	NUMBER OF TEETH
Primary	Engine	34
	Clutch	46
Final	Transmission	32
	Rear wheel	68

Table 9. Gear Ratios

GEAR	RATIO
1st Gear	9.593
2nd Gear	6.650
3rd Gear	4.938
4th Gear	4.000

Table 9. Gear Ratios

GEAR	RATIO
5th Gear	3.407
6th Gear	2.875

Table 10. Capacities

ITEM	U.S.	L
Fuel tank (total)	6.0 gal	22.7
Low fuel warning light on	1.0 gal	3.8
Engine oil with filter *	4.00 qt	3.79
Transmission ** (approximate)	1.00 qt	0.95
Primary chaincase (approximate)	1.40 qt	1.32
* When refilling, initially add 2.84 L (3.0 qt) and add as needed to bring level within specification.		
** When refilling, initially add 0.83 L (28 fl oz) and add as needed to bring level within specification.		

▲ 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, 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 11. Weights

ITEM	lb	kg
Running weight*	858	389.2
Maximum added weight allowed**	502	227.7
GVWR	1360	616.9
GAWR front	500	226.8

Table 11. Weights

ITEM	lb	kg
GAWR rear	927	420.5
*The total weight of the motorcycle as delivered with oil/fluids and approximately 90% of fuel.		
**The total weight of accessories, cargo, riding gear, passenger and rider cannot exceed this weight.		

Table 12. Dimensions

ITEM	in	mm
Wheel base	63.5	1613
Road clearance	5.1	130
Saddle height*	26.5	673
*With 81.7 kg (180 lb) rider.		

Table 13. Bulb Chart

LAMP	DESCRIPTION (ALL LAMPS 12 VOLT)	BULBS REQUIRED	CURRENT DRAW AMPERAGE	HARLEY-DAVIDSON PART NUMBER
Headlamp	Headlamp - high (US, Canada)	1	2.7	67717-01
	Headlamp - low (US, Canada)	1	4.3	68881-01
	Headlamp - (international)	1	4.58/5.0	68329-03
	Position lamp (international)	1	0.32	53436-97
Tail/stop/rear turn signal lamps	Rear fascia	Illuminated with LEDs. Replace entire left or right tail lamp assembly upon failure.		
	Tail/stop lamp (Canada, HDI)	1	0.59/2.10	68167-04
Turn signal lamp	Front/running	2	2.10/0.59	69331-02
	Front (international)	2	1.75	68163-84
Auxiliary lighting	License plate lamp	Illuminated with LEDs. Replace the entire assembly upon failure.		
Instrument panel lamps	High beam indicator	Illuminated with LEDs. Replace the entire assembly upon failure.		
	Oil pressure indicator			
	Neutral indicator			
	Turn signal indicator			

Table 13. Bulb Chart

LAMP	DESCRIPTION (ALL LAMPS 12 VOLT)	BULBS REQUIRED	CURRENT DRAW AMPERAGE	HARLEY-DAVIDSON PART NUMBER
Gauge lamps	Speedometer	Illuminated with LEDs. Replace the entire assembly upon failure.		
	Tachometer	Illuminated with LEDs. Replace the entire assembly upon failure.		
	Voltmeter	1	0.24	67454-04
	Oil pressure gauge	1	0.24	67454-04
	Fuel gauge	Illuminated with LEDs. Replace the entire assembly upon failure.		
Fuel tank console lamp	Illuminated with LEDs. Replace the entire assembly upon failure.			

Table 14. Specified Tires

MOUNT	SIZE	SPECIFIED TIRE	PRESSURE (COLD)	
			psi	kPa
Front	19 in	Dunlop D408F 130/60B19	36	248
Rear	18 in	Dunlop D407 180/55B18	40	276

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)

See Table 14 for approved tires and recommended pressures.

Tubeless tires fitted with the correct size inner tubes may be used on Harley-Davidson laced (wire spoked) wheels. Protective rubber rim strips must be used with tubeless tires (fitted with correct size inner tubes) when mounted on laced (wire spoked wheels).

⚠ 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 14. Do not load tires beyond GAWR specified in Table 11. 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 containing METHYL TERTIARY BUTYL ETHER (MTBE): Gasoline/MTBE blends are a mixture of gasoline and as much as 15% MTBE. Gasoline/MTBE blends can be used in your motorcycle.
- ETHANOL fuel is a mixture of ethanol (Grain alcohol) and unleaded gasoline. While ethanol does 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. Motorcycles delivered in some countries are calibrated to operate with higher ethanol concentrations to meet the fuel standards in those countries.

- REFORMULATED OR OXYGENATED GASOLINES (RFG): Reformulated gasoline is a term used to describe gasoline blends that are specifically designed to burn cleaner than other types of gasoline, leaving fewer tailpipe emissions. They are also formulated to evaporate less when you are filling your tank. Reformulated gasolines use additives to oxygenate the gas. Your motorcycle will run normally using this type of gas and Harley-Davidson recommends you use it when possible, as an aid to cleaner air in our environment.
- Do not use race gas. Use of these fuels will damage the fuel system.
- Harley-Davidson recommends using SCREAMIN' EAGLE SUPER OCTANE BOOST to raise fuel octane. 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 the starting, driveability or fuel efficiency of the motorcycle. 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 15.

⚠ 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 15. Octane Ratings

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

CATALYTIC CONVERTER

The motorcycle is equipped with a catalytic converter in the exhaust pipe collector.

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/FORK LOCK

⚠ 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)

See the CUSTOMER SERVICE ASSISTANCE section at the very front of this owner's manual before the TABLE OF CONTENTS. Be sure to record all your key numbers in the space provided.

See Figure 4. The ignition switch (1) controls electrical functions of the motorcycle. The key lock (2) locks the switch in the FORK LOCK or the ACCESS position.

NOTE

- *Harley-Davidson recommends removing key from ignition switch/fork lock before operating motorcycle. If you do not remove key, it can fall out during operation.*
- *ACCESS - Accessories and hazard warning flasher can be turned on. Instrument lamps are on. Brake lamp and horn can be activated. Key may be removed.*
- *The lamps illuminate when the switch is in the IGNITION 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)

NOTICE

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

Table 16. Ignition Switch/Fork Lock Positions

FUNCTION	LABEL	OPERATION
Key lock	LOCK	Locks the switch in either the FORK LOCK or ACCESS switch position. Remove the key for security.
	UNLOCK	Unlocks the switch. Unlocked, the switch can be rotated to any of the 4 positions. To prevent loss when riding, remove the key.
Switch	FORK LOCK	Insert the key, rotate the switch to FORK LOCK and press the switch down. Turn the key to LOCK and the fork is locked. To unlock the fork, insert and rotate the key to UNLOCK and the switch will pop up.
	OFF	When the switch is in the OFF position, the ignition, lamps and accessories are off.
	IGNITION	When the switch is in the IGNITION position, the motorcycle can be started and all lamps and accessories will operate.
	ACCESS	When the switch is in the ACCESS position, all the lamps and accessories will operate but the engine can not be started. In ACCESS, the switch can be locked.

SERVICE

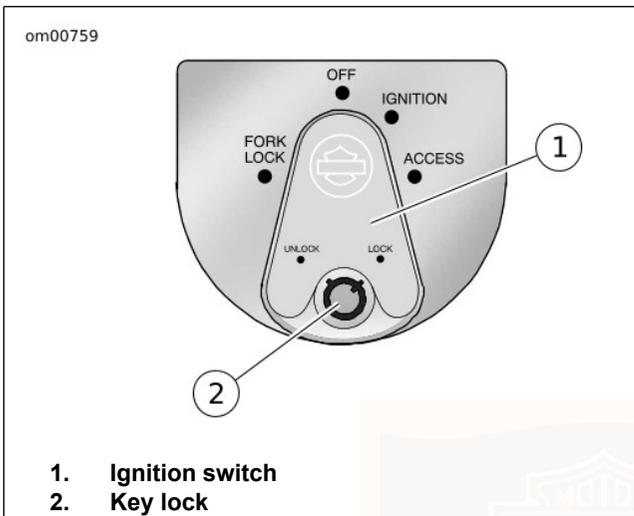


Figure 4. Ignition Switch/Fork Lock

FORK LOCK

NOTICE

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

NOTE

The fork lock is integrated into the ignition switch.

Using the fork lock immediately after parking your motorcycle will discourage unauthorized use or theft when parking your motorcycle. For fork lock detail, refer to Table 16.

▲ 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)

To Lock Fork

NOTE

Forcing the switch into the locked position can damage the switch.

1. Turn fork to **full left** position.
2. Insert key into the key lock.
3. Push down on knob and turn left to FORK LOCK position.
4. Turn key to LOCK position and remove key.

HANDLEBAR CONTROLS

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

1. Squeeze the 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 45).
3. Slowly release the clutch hand lever to engage clutch.

Horn Switch

See Figure 5. The horn is operated by pushing on the horn switch (2) located on the left handlebar control group.

Headlamp Dimmer Switch

See Figure 5. The headlamp dimmer switch (3) is located on the left handlebar. The switch has two positions to activate the headlamps high or low beams.

- Press the top of the headlamp dimmer beam switch to activate the high beam.
- Press the bottom of the headlamp dimmer switch to return to the low beam.

See Figure 7. The (blue) high beam indicator lamp will illuminate when the high beam is on.

Turn Signal Switches

See Figure 5. Each handlebar control group contains a turn signal switch.

- The left turn signal switch (4) operates the left front and left rear flashing lamps.
- The right turn signal switch (10) operates the right front and right rear flashing lamps.

NOTE

Front turn signal lamps also function as running lamps (except international models).

Electric Starter Switch

NOTE

Off/Run switch MUST be in RUN position to operate engine.

See Figure 5. The electric starter switch (6) is located on the right handlebar control group. See OPERATION > STARTING THE ENGINE (Page 114) for detailed operation procedures.

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

Engine OFF/RUN Switch

See Figure 5. The engine OFF/RUN switch (7) turns the ignition 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 ignition power and shut the engine off. Push the bottom portion of the engine OFF/RUN switch to turn on ignition power.

NOTE

- *The engine OFF/RUN switch must be in the ON 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/headlamp key switch to the OFF position to turn the ignition power completely OFF.

Front Brake Lever

See Figure 5. The front brake lever (8) is located on the right handlebar. This lever applies mechanical pressure to the front brake master cylinder and the master cylinder applies hydraulic pressure to the front brake calipers.

Throttle Control Grip

See Figure 5. The throttle control grip (9) is located on the right handlebar control and is operated with the right hand.

Cruise Control Switches

See Figure 5. The cruise control resume/set switch (5) automatically maintains the speed of the motorcycle. Cruise control must be first turned on using the cruise control switch in the inner fairing. Refer to OPERATION > CRUISE CONTROL OPERATION (Page 117) and CONTROLS AND

Audio System Switches

See Figure 5. The audio system switches (11) operate various functions for the Advanced Audio System. Refer to OPERATION > CRUISE CONTROL OPERATION (Page 117).

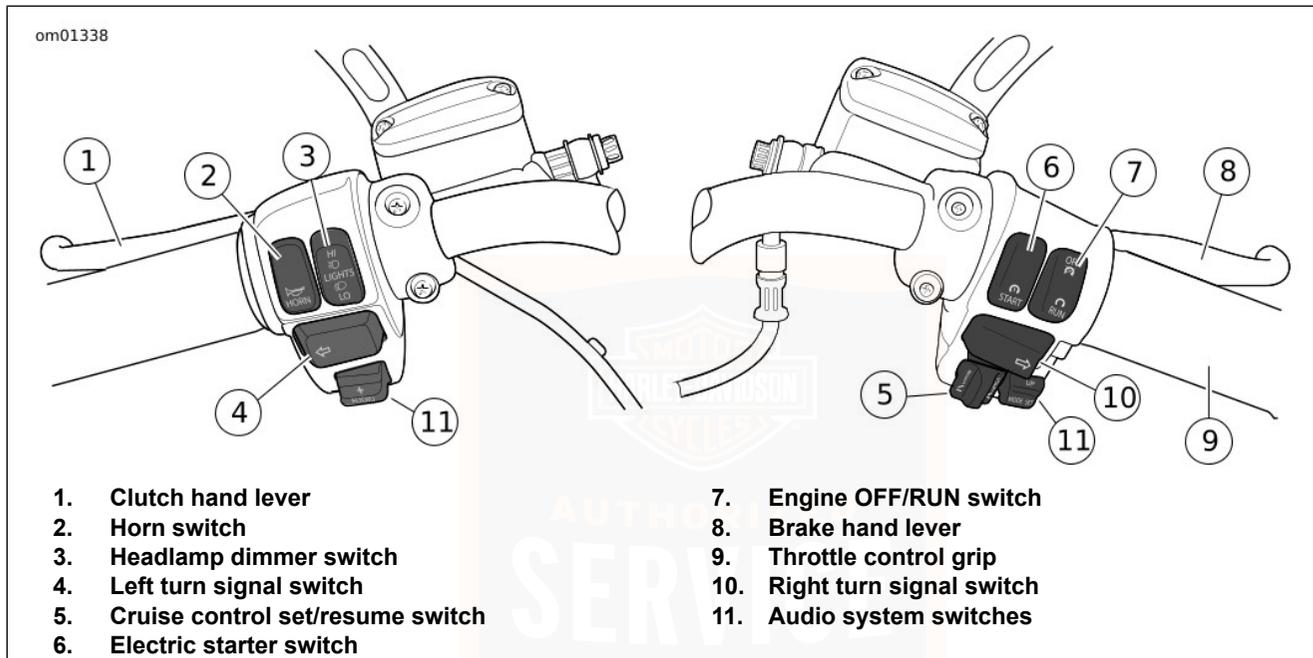


Figure 5. Handlebar Controls

ELECTRONIC THROTTLE CONTROL (ETC)

The motorcycle is equipped with Electronic Throttle Control (ETC). Instead of using a mechanical cable connection to the throttle body, this technology uses redundant grip sensors to indicate rider requested throttle position to the Electronic Control Module (ECM). The ECM then regulates proper fuel/air intake and ignition timing based on the rider request. The grip sensor is manufactured with internal cams and spring retainer for natural feel and operation.

In the event of a component failure, the ETC operation is designed for rider safety and continued motorcycle operation. The Electronic Control Module monitors the status of the grip sensors, throttle plate actuation and airflow. If any problems are detected, the motorcycle will disable cruise control, illuminate the engine check lamp, and revert to one of the following fallback modes.

ETC Limited Performance Mode

The rider will experience near-normal operation. The motorcycle will operate with provisions to guard against unintended acceleration.

ETC Power Management Mode

The throttle plate actuator returns to an "idle detent" or "limp-home" position, which will provide enough torque to

achieve speed of about 40 km/h (25 mph). The motorcycle's response to grip sensor input is significantly reduced.

ETC Forced Idle Mode

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

ETC Forced Shutdown Mode

The engine is forced to shut down.

TURN SIGNAL SWITCH OPERATION

The turn signal switches are used by the turn signal module to control turn signal operation based on vehicle speed, vehicle acceleration and turn completion.

Momentarily press the desired turn signal switch. The turn signal lamps will begin and continue flashing until they are manually or automatically cancelled. As long as the motorcycle is stationary, the signals will flash.

NOTE

- *If you are signaling to turn in one direction and you press the switch for the opposite turn signal, the first signal is cancelled and the opposite side begins flashing.*

- *If you want to stop the lamps from flashing, briefly press the turn signal switch a second time. The turn signal lamps will stop flashing.*
- *If a turn signal indicator is flashing at a high rate, a turn signal bulb is not operating. Exercise caution and use hand signals. Replace defective components immediately.*

HAZARD WARNING

4-Way Flashers

Should it be necessary to park along side a roadway, 4-way flashers can be activated as a hazard warning to traffic.

Activate: Turn the ignition/headlamp key switch to IGNITION and simultaneously press the left and right turn signal switches. The switch can then be turned to the OFF or ACCESSORY position and locked. The flashers will continue for two hours.

Deactivate: Turn the ignition/headlamp key switch to IGNITION and simultaneously press the left and right turn signal switches.

4-Way Flashers with Security System

If it should be necessary to leave the motorcycle parked along side a roadway unattended, the 4-way flashers can be activated and the Harley-Davidson Smart Security System

can be armed. See SMART SECURITY SYSTEM > ARMING AND DISARMING (Page 102).

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 6. The speedometer registers miles per hour (mph) or, on International models, kilometers per hour (km/h).

The speedometer includes a single display window for the odometer, trip odometer A, trip odometer B, and fuel range. Repeatedly press the function button to cycle the display window through each function.

Odometer

See Figure 6. The odometer registers the number of miles/kilometers the vehicle has traveled. Odometer will display mileage when motorcycle is OFF when function button is pressed. There is no need to turn the motorcycle on to check the odometer reading.

Trip Odometer

See Figure 6. Use trip odometer A or trip odometer B to register number of miles/kilometers traveled on a trip or between refueling.

To reset the trip odometer to zero, press button to select the desired reading. Push and hold the function button for approximately 2-3 seconds. The speedometer will reset the display to zero.

NOTICE

Never attempt to tamper with or alter the vehicle odometer. This is illegal. Tampering with or altering a vehicle odometer may cause equipment damage. (00160a)

Fuel Range Function

The fuel range function shows the approximate mileage available based on the amount of fuel remaining in the fuel tank.

See Figure 6. With the ignition switch in the ACC or IGNITION position, repeatedly press the function switch until fuel range function is displayed as indicated by the letter 'r' in the left side of the display window. The calculated remaining distance (miles or kilometers) is displayed. This function can be accessed at any time using the function switch.

When the low fuel warning lamp illuminates, the fuel range feature will automatically appear in the display window. This automatic pop-up feature can be disabled by a press and hold of the function switch while in fuel range display mode. Automatic range pop-up feature will show that it is disabled by blinking twice. Likewise, automatic range pop-up can be reactivated by a press and hold of the function switch. Range will blink once when the automatic pop-up feature is enabled.

NOTE

- *When the low fuel warning lamp turns on, there is approximately 3.8 L (1.0 USgal) of fuel remaining in the tank. Refuel as soon as possible.*
- *The range display is only updated when the vehicle is moving.*

After the calculated range reaches 16 km (10 mi) remaining, the range display will show "r Lo" to indicate that the vehicle will shortly run out of fuel.

Resetting the low fuel warning lamp and fuel range requires the ignition switch be cycled OFF and back ON.

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 display window. Engine will not start until reset. To reset, cycle ignition/headlamp key switch ON-OFF-ON.

Tachometer

NOTICE

See OPERATING RECOMMENDATIONS section. Do not operate the engine above maximum safe RPM as shown under OPERATION (red zone on tachometer). Lower the RPM by upshifting to a higher gear or reducing the amount of throttle. Failure to lower RPM may cause equipment damage. (00159a)

See Figure 6. The tachometer measures the engine speed in revolutions per minute (rpm).

Voltmeter

See Figure 6. The voltmeter indicates electrical system voltage and is found on the front panel of the fairing. The voltmeter should register 13-14.5 V with battery at full charge and the engine running above 1500 rpm.

Oil Pressure Gauge

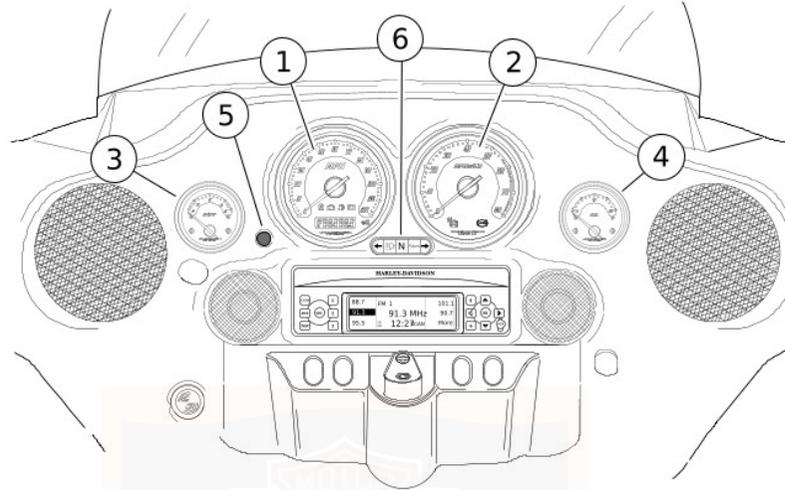
See Figure 6. The oil pressure gauge indicates engine oil pressure and is found on the front panel of the fairing. Engine oil pressure will normally vary from 34 kPa (5 psi) at idle speed to 207–262 kPa (30–38 psi) at 2000 rpm when engine is at normal operating temperature of 110 °C (230 °F).

Clock (In Radio)

The clock runs continuously as long as there is battery power. To reset clock, refer to ADVANCED AUDIO SYSTEM > ADVANCED AUDIO SYSTEM (Page 63).

SERVICE

om00952



1. Speedometer
2. Tachometer
3. Voltmeter

4. Oil pressure
5. Function button
6. Indicator lamps

Figure 6. Instruments

INDICATOR LAMPS

See Figure 7. Five indicator lamps are provided.

- The left and right green TURN indicators, located on the ends of the indicator bar, flash when a turn signal is activated. When the 4-way hazard flashers are operating, both turn indicators will flash simultaneously.

- The blue BEAM indicator lamp, when lit, signals high beam headlamp operation.
- The green NEUTRAL lamp, when lit, signals the transmission is in neutral gear.
- The red OIL indicator lamp, when lit, signals that oil is not circulating through the engine.

NOTE

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

Several other circumstances that could cause the red oil indicator lamp to signal, include the following:

- If the oil pressure indicator lamp does not go off at speeds above idling, it is usually because of an empty oil tank or diluted oil.
- In freezing weather the oil feed may clog with ice and sludge, preventing oil circulation.
- A grounded oil signal switch wire.
- A faulty signal switch.
- A damaged or improperly installed check valve.
- Trouble with the pump.

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)

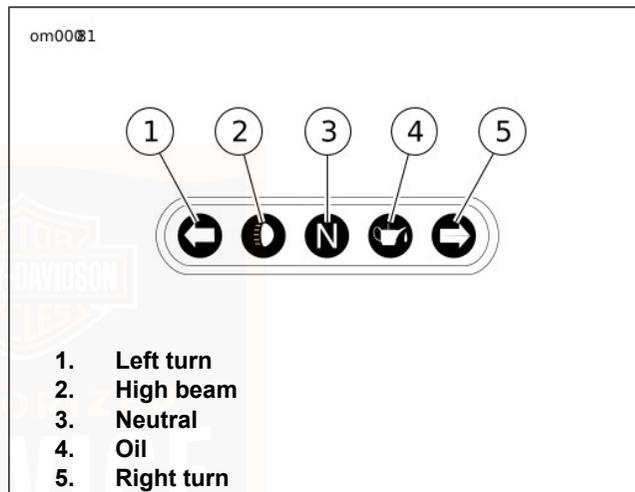


Figure 7. Indicator Lamps (Typical)

INSTRUMENT LAMPS

Engine Check Lamp

See Figure 8. The engine check lamp is located along the bottom of the speedometer face. Its purpose is to indicate whether the engine/engine management system is operating normally. The engine lamp color is amber.

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

Low Fuel Lamp

See Figure 8. The low fuel lamp is located in the speedometer face, lower center by check engine lamp. The low fuel lamp illuminates to indicate that you have approximately 3.8 L (1.0 USgal) of gasoline left in the tank. The low fuel lamp color is amber.

Battery Discharge Lamp

See Figure 8. The red battery charging lamp indicates either overcharging or undercharging of the battery. Refer to

MAINTENANCE AND LUBRICATION > BATTERY: GENERAL (Page 156).

Cruise Control Equipped Models

Cruise control equipped models feature two additional indicator lamps.

- See Figure 8. A green or orange lamp on the tachometer or speedometer face indicates the cruise control is SET (green) or NOT SET (orange).
- See Figure 13. An orange lamp on the cruise control switch which indicates the cruise control is ON or OFF.

Sixth Gear Lamp

See Figure 8. The sixth gear lamp on the speedometer face indicates when the transmission is in sixth gear.

Security System Lamp

See Figure 8. The red security system lamp on the speedometer face indicates when the security system is armed. Refer to SMART SECURITY SYSTEM > HARLEY-DAVIDSON SMART SECURITY SYSTEM (Page 97).

ABS Lamp

See Figure 8. On ABS equipped models, the amber ABS indicator lamp begins to flash at key ON to indicate that the system is operational. It continues to flash until motorcycle speed exceeds 5 km/h (3 mph). Continuous illumination of the lamp will only occur when ABS detects that the system is malfunctioning. In the diagnostic mode, the lamp will also illuminate to indicate the presence of diagnostic trouble codes (DTCs). 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)

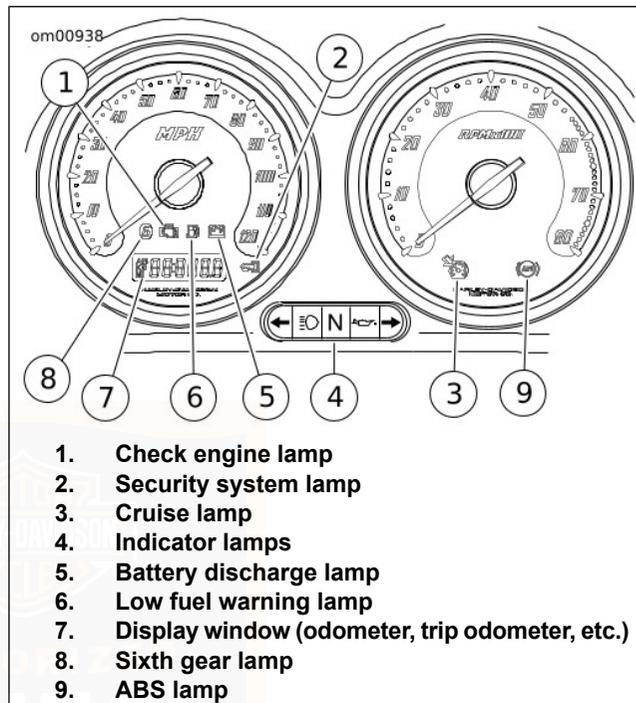


Figure 8. Instrument Lamps

GEAR SHIFT LEVER

NOTICE

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

The gear shift lever is located on the left side of the motorcycle and is operated with the left foot.

1. Push the gear shift lever all the way down (full stroke) to shift the transmission to the next lower gear.
2. Lift the gear shift lever all the way up (full stroke) to shift the transmission to the next higher gear.

NOTE

- *Release the gear shift lever after each gear change.*
- *The lever must return to its central position before another gear change can be made.*

Neutral is located between first and second gear. The green neutral indicator lamp on the dash will illuminate when the transmission is in neutral.

1. To shift from first gear to neutral, lift the gear shift lever 1/2 of its full stroke.

2. To shift from second gear to neutral, push the gear shift lever downward 1/2 of its full stroke.

When the motorcycle is standing still and the engine is not running, shifting gears requires a different technique. Before shifting in this condition, move the motorcycle backward and forward with the clutch fully disengaged (clutch lever pulled in). While maintaining slight pressure on the shift lever, shift from one gear to another.

Even with the engine running and the motorcycle standing still, difficulty may be experienced in shifting gears. This difficulty occurs because transmission gears are not turning and shifting parts are not lined up to permit engagement.

NOTICE

When difficulty of shifting gears is experienced, do not under any circumstances, attempt to force the shift. The results of such abuse will be a damaged or broken shifter mechanism. (00161a)

See OPERATION > SHIFTING GEARS (Page 120) for more information.

HEEL-TOE FOOT SHIFTER

See Figure 9. 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.

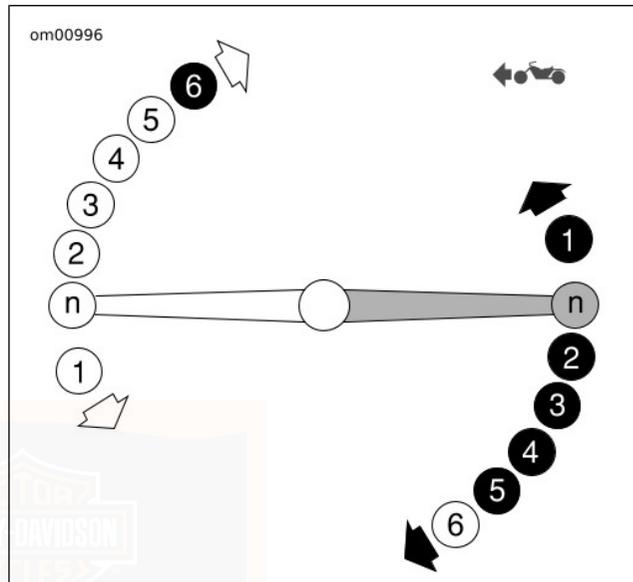


Figure 9. Heel-Toe Foot Shift Lever

FUEL FILLER CAP AND FUEL GAUGE: FLUSH MOUNT

See SAFETY FIRST > SAFE OPERATING RULES (Page 5) and review safety procedures which follow.

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)

⚠ 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

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

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)

NOTE

- *Extended exposure of fuel filler cap to rain/washing may cause a small amount of water to collect between the pop-up cap and the threaded body. Simply remove the fuel cap and tilt to drain water. Water cannot flow through the fuel filler cap.*
- *The fuel gauge is on the left side of the tank is not removable.*

Removing Fuel Filler Cap

See Figure 10 and Figure 11. To remove fuel filler cap, press down on cap and rotate 1/8 turn counterclockwise. Cap will pop up and may be unscrewed with counterclockwise rotation.

Installing Fuel Filler Cap

Screw fuel filler cap clockwise into fuel tank threads firmly. Press down on cap and rotate cap 1/8 turn clockwise to lock cap in down position.

NOTE

There is no ratchet in this fuel cap, so it will not click when you have installed and tightened the cap.

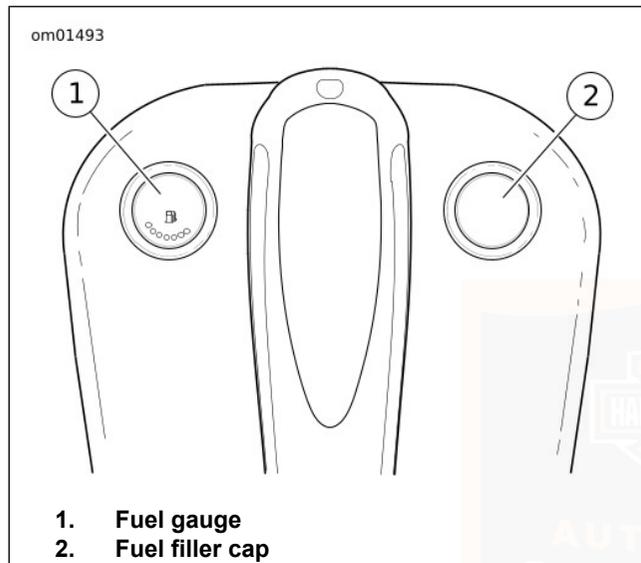


Figure 10. Fuel Tank

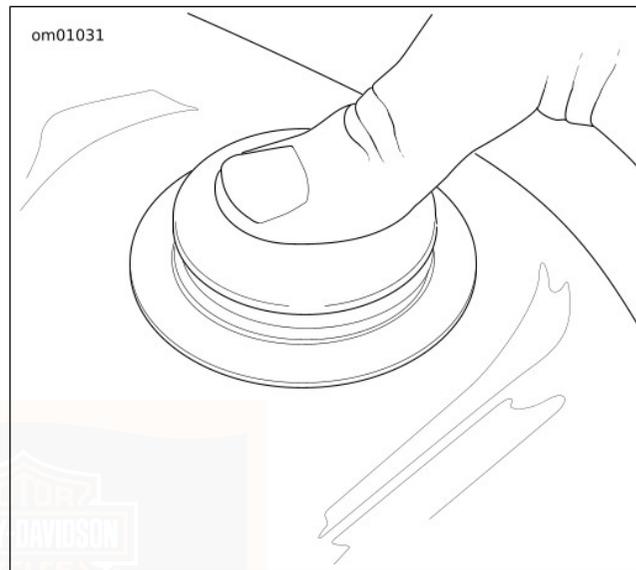


Figure 11. Installing/Removing Fuel Filler Cap: Flush Mount

LED Fuel Gauge

See Figure 10 and Figure 12. The fuel gauge has seven red LEDs which indicate the amount of fuel in the tank. Refer to Table 17.

NOTE

- The fuel gauge is mirror glass. Recommended cleaning is with glass cleaner. Any type of abrasive chrome cleaner could damage the surface and damage surrounding painted surfaces.
- The fuel gauge is equipped with a light-sensitive sensor. The sensor causes the fuel gauge to illuminate brighter in lighted conditions.
- When the fuel tank has less than 3.8 L (1.0 USgal) of fuel remaining, the low fuel lamp lights in the speedometer.
- The gas pump icon on the LED fuel gauge is not a low fuel warning lamp. It will be illuminated at all times when the ignition/headlamp key switch is in the IGNITION position.

Table 17. LED Fuel Gauge Indication

NUMBER OF ILLUMINATED LEDES	AMOUNT OF FUEL IN TANK
7	Full
6	5/6 full
5	2/3 full
4	1/2 full
3	1/3 full
2	1/6 full
1	Less than 1/6 full

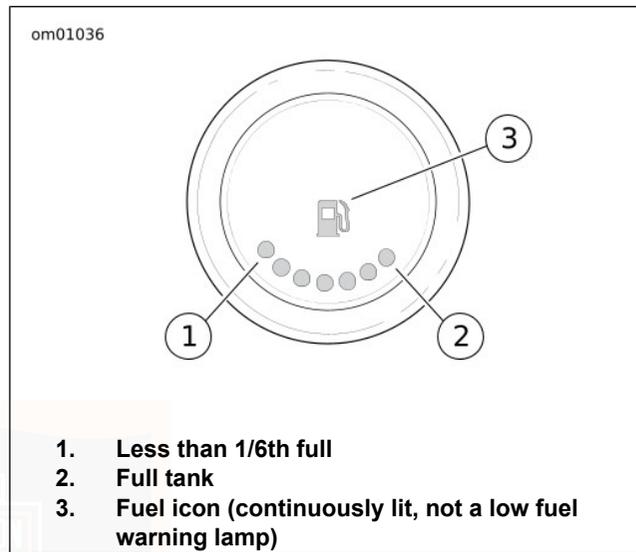


Figure 12. LED Fuel Gauge: Flush Mount
BRAKE SYSTEM: ABS-EQUIPPED MODELS

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)

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

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 18.

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 will not lock until the end of the stop when motorcycle speed reaches approximately 6 km/h (4 mph) and ABS is no longer needed.

▲ WARNING

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

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

ABS: Tires and Wheels

ABS motorcycles must always use tires and wheels that are the same as the original equipment. 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. Tire inflation pressure that is significantly low also can have an adverse effect.

Table 18. 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.
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.

Table 18. ABS Symptoms and Conditions

SYMPTOM	CONDITION
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 moves 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 function 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.

INNER FAIRING CAP ROCKER SWITCHES

CRUISE

The CRUISE rocker switch (1) turns on the cruise control system. Rock the switch forward to activate cruise control. The LED will illuminate when cruise control is active.

Rock the switch rearward to turn cruise OFF.

ACC

The ACC (Accessory) rocker switch (2) controls the power to the accessory connector located under the seat. Various accessories available from the Genuine Motor Accessories and Genuine Motor Parts are powered through this connector. See CONTROLS AND INDICATORS > ACCESSORY SWITCH (Page 54).

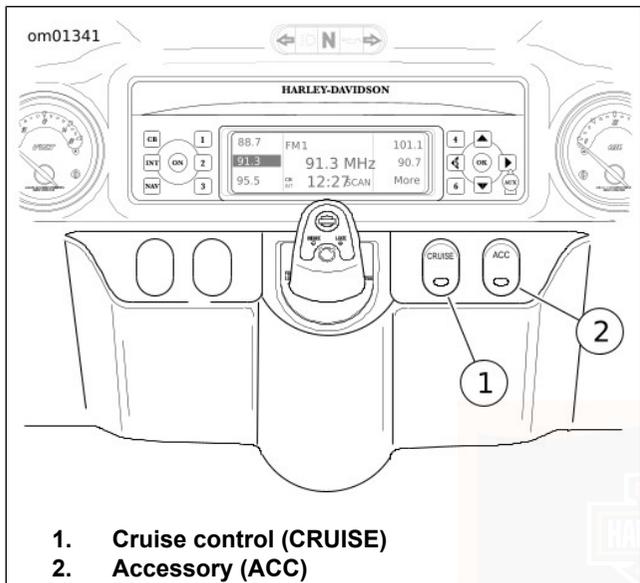


Figure 13. Inner Fairing Cap Rocker Switches
ACCESSORY SWITCH

See Figure 13. The accessory (ACC) rocker switch is located in front of the rider on the inner fairing cap. Rock the switch rearward to turn the accessories circuit ON. The LED in the switch is illuminated when the accessories circuit is ON.

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)

CIGARETTE LIGHTER

NOTICE

Do not use cigarette lighter socket to power electrical devices. Automotive electrical plugs can damage the socket, which can result in improper lighter operation and overheating that could cause equipment damage. (00599b)

See Figure 14. Some models are equipped with a cigarette lighter. The lighter is located on the left side of the fairing. To operate, press lighter into socket. The lighter will pop out when hot.

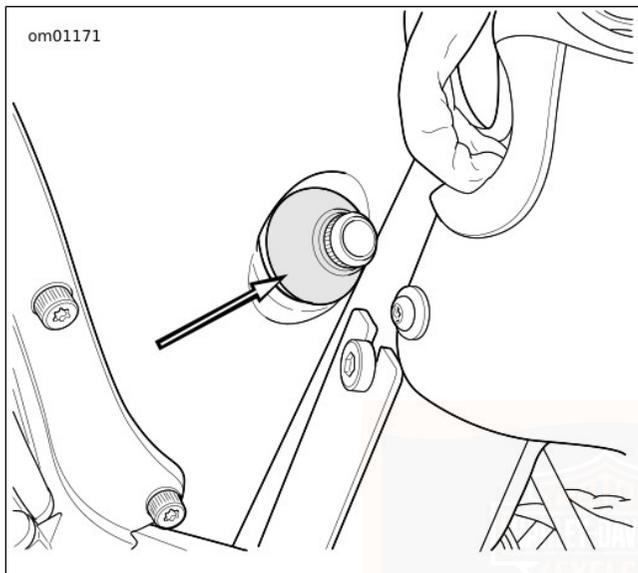


Figure 14. Cigarette Lighter

LUGGAGE

▲ 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 is shown on the information label, located on the frame steering head.

Make sure all storage compartments are secure before operating motorcycle.

Adhere to the weight limits and loading instructions on the labels within the storage compartments.

SADDLEBAGS

Saddlebag Speakers

The saddlebags and speakers are designed to prevent water intrusion and to allow water to drain during washing or riding in all weather. To remove any standing water from the speakers, open the saddlebags and gently shake any remaining water from the speakers.

Lock/Unlock With Ignition Key

Lock: Insert the key into the neutral position of the saddlebag lock and turn the key 1/8th turn to the left. Return the key to the neutral position to remove the key.

Unlock: Insert the key in the neutral position of the saddlebag lock and turn the key 1/8th turn to the right. Return the key to the neutral position to remove the key.

Opening

1. See Figure 16. To open the latch, grab latch with fingers and lift.
2. Place one hand at OUTSIDE CORNER of cover and other hand at opposite outside corner. Lift outside edge of cover, pivoting inside edge of cover in brackets.
3. Lift inside edge of cover to disengage brackets.

4. Bring cover towards you, over saddlebag. As you bring cover toward you, let it flip over, so the inside faces up. Let cover hang from the nylon check strap.

NOTE

The covers stay attached to the saddlebags at all times.

Closing

1. See Figure 16. Use both hands to hold OUTSIDE corners of cover up and slide inside edge back into place so brackets slide together.
2. Close lid and secure latch. Brackets will engage automatically.

NOTE

Saddlebag latch should be closed and locked whenever motorcycle is in operation.

Removing

The saddlebags are secured to the support brackets by 1/4 turn fasteners called bail head studs. Some international models do not have the wire form bail. Use a flat bladed screwdriver to turn the studs.

NOTE

- *Do not ride the motorcycle without the saddlebags installed and the audio harness connector fully locked into place.*
 - *If the saddlebags will remain off the motorcycle (during storage or washing), install the protective weather caps on the audio harness connectors to prevent dirt and water from entering the connectors. Use cable straps to secure the audio harness cables to the top of the saddlebag support bracket and to the other harness cabling along the rear fender to prevent it from dangling.*
 - *Hold saddlebag while removing fasteners to prevent dropping.*
1. See Figure 16. Open saddlebag lid and turn fasteners 1/4 turn counterclockwise.
 2. See Figure 15. Separate the audio harness connector from the side of the saddlebag.
 3. Remove saddlebag.

Installing

1. Carefully place saddlebag in position on saddlebag rail.
2. Mate the audio harness connector to the side of the saddlebag.

3. Align the fasteners with the support bracket holes and push the fasteners into the bracket while turning 1/4 turn clockwise.
4. Check that saddlebag is securely fastened.
5. Close and latch the saddlebag lid.

Adjustments

If the latches become loose, you can adjust the latch fingers.

NOTICE

Adjust the latch fingers only enough to enable them to properly engage the latch hinge. Bending latch fingers back and forth can overstress the metal and weaken the fingers. (00169a)

1. Bend the fingers until they firmly engage the hinge.
2. See MAINTENANCE AND LUBRICATION > MISCELLANEOUS LUBRICATION (Page 138) for lubrication details.

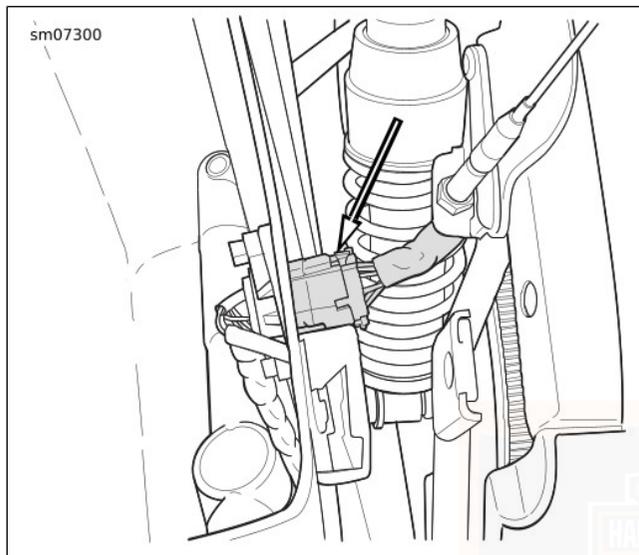
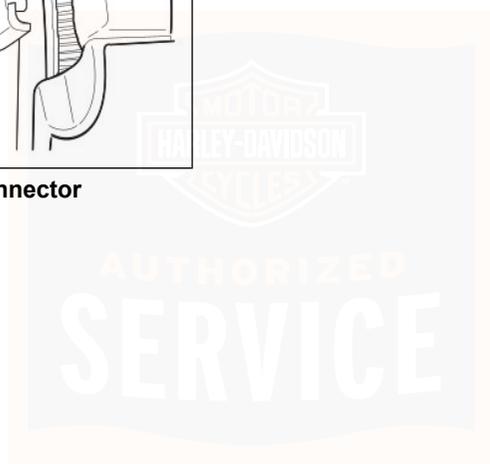


Figure 15. Audio Harness Connector



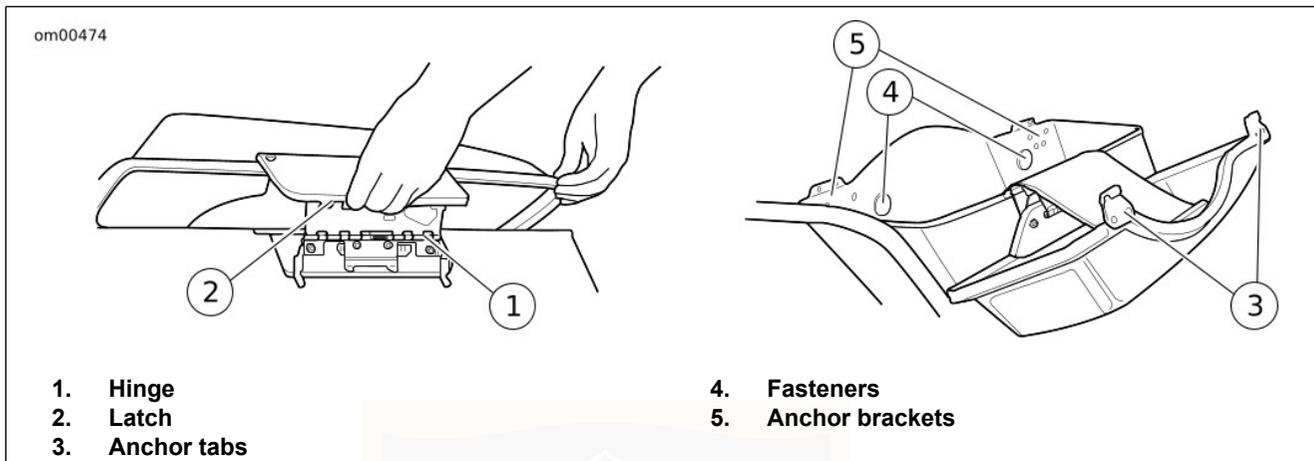


Figure 16. Saddlebags

ADJUSTABLE FOOTRESTS

Passenger footrests may be adjusted to one of three positions. Before moving to a new position, remove plastic plugs from holes in the footrest mount in the frame as necessary.

1. See Figure 17. Remove socket screw with lockwasher to remove footrest bracket from footrest mount in frame.
2. Insert pin on footboard bracket into mount hole at the desired position.

3. Apply a drop of LOCTITE 243 MEDIUM STRENGTH THREADLOCKER AND SEALANT (blue) to the threads of the socket screw. Install socket screw with lockwasher and tighten to 48–56 N·m (36–42 ft-lbs).

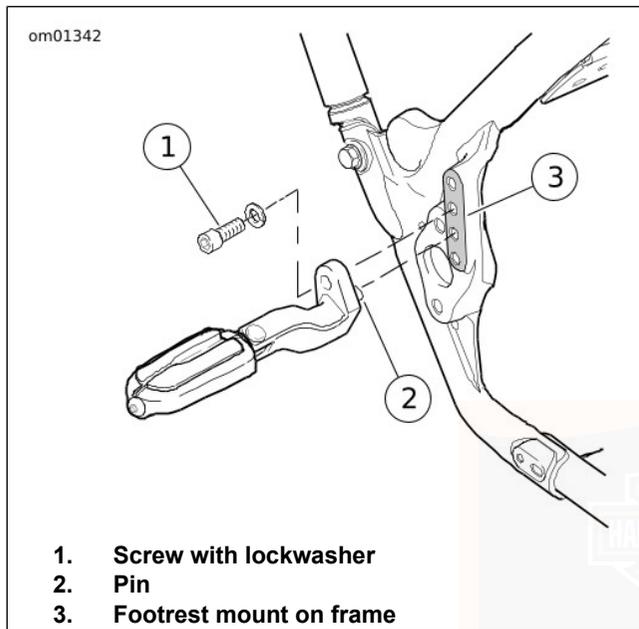


Figure 17. Passenger Footrest

FAIRING LOWER VENTS

Some models are equipped with fairing lowers. The fairing lowers block wind and water from the rider legs, and include a compartment for storing small items.

See Figure 18. Vents in fairing lowers are controlled by the lever shown. Adjust vent openings to control air flow.

Fairing lowers may be removed in warmer ambient temperature to increase rider and passenger comfort.

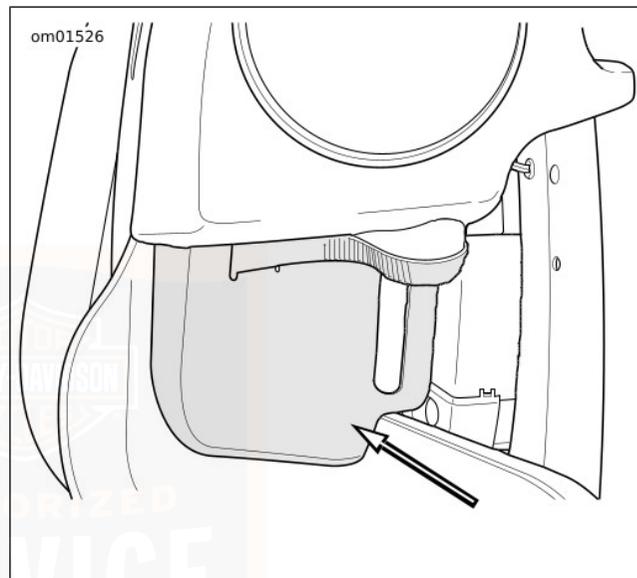


Figure 18. Fairing Lower Vent Control

SHOCK ABSORBER PRELOAD ADJUSTMENT

The shock absorber preload can be adjusted for the weight the motorcycle is to carry. Increase preload to accommodate the total load on the motorcycle. Reduce the preload if carrying less weight.

1. Remove the left saddlebag. See **CONTROLS AND INDICATORS > SADDLEBAGS** (Page 56).
2. See Figure 19. Rotate the preload adjustment knob counterclockwise until it stops. This is the minimum preload position.
3. Refer to Table 19. Rotate the preload adjustment knob clockwise the recommended number of turns to increase the preload for the total weight of the rider, passenger and cargo. The knob will click at each half turn.
4. Install the left saddlebag.

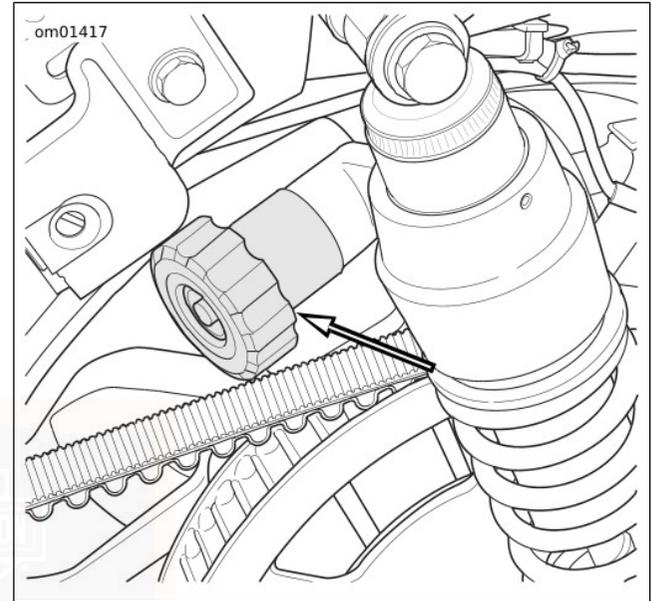
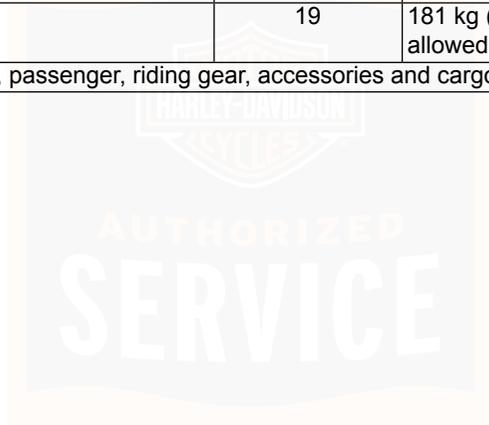


Figure 19. Preload Adjustment Knob

Table 19. Recommended Preload Settings

PRELOAD TURNS FROM MINIMUM	LOAD	PRELOAD TURNS FROM MINIMUM	LOAD
0	Less than 100 kg (220 lb)	10	141 kg (310 lb)
1	100 kg (220 lb)	11	145 kg (320 lb)
2	104 kg (230 lb)	12	150 kg (330 lb)
3	109 kg (240 lb)	13	154 kg (340 lb)
4	113 kg (250 lb)	14	159 kg (350 lb)
5	118 kg (260 lb)	15	163 kg (360 lb)
6	122 kg (270 lb)	16	168 kg (370 lb)
7	127 kg (280 lb)	17	172 kg (380 lb)
8	132 kg (290 lb)	18	177 kg (390 lb)
9	136 kg (300 lb)	19	181 kg (400 lb) to maximum added weight allowed (refer to Table 11)

Load includes the total weight of the rider, passenger, riding gear, accessories and cargo.



ADVANCED AUDIO SYSTEM

The Advanced Audio System by Harman/Kardon® is a multi-band radio receiver that includes a Compact Disc (CD)/MP3 player and an auxiliary (AUX) port for media players.

The receiver is stereo and plays through left and right speakers mounted in the rider fairing.

⚠ WARNING

Do not change compact discs while riding, and do not select a volume level that blocks out traffic noise. Distractions or a volume level that blocks out traffic noise, could cause loss of control resulting in death or serious injury. (00086a)

NOTICE

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

⚠ WARNING

Do not disassemble unit. Laser radiation is present if disc player is disassembled and the interlock fails or is defeated. Exposure to laser radiation could lead to death or serious injury. (00087a)

⚠ WARNING

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

ADVANCED AUDIO SYSTEM FEATURES

Table 20. Advanced Audio System Features

FEATURE
AM/FM Stereo Receiver
CD/MP3 Player
Weather Band
Apple iPod
High Performance Speakers
Audio Amplifier

AUDIO SYSTEM QUICK START GUIDE

See the remaining information in this section for detailed information on all the features for the Advanced Audio System.

⚠ WARNING

Do not change compact discs while riding, and do not select a volume level that blocks out traffic noise. Distractions or a volume level that blocks out traffic noise, could cause loss of control resulting in death or serious injury. (00086a)

▲ WARNING

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

Radio Receiver

1. See Figure 20. With the ignition/headlamp key switch in IGNITION or ACCESS, press the **ON** button (10).
2. **Adjust Volume:** See Figure 21. Adjust volume with the the **AUDIO** switch (1) on the left hand grip. Push **AUDIO** switch up (+) to raise the volume or down (-) to lower the volume.
3. **Manual Tuning:** Press and hold the **Up Arrow** or **Down Arrow** until the desired radio frequency is displayed in the LCD (8).
4. **Preset Tuning:** Manually tune the radio to the desired station. Push and hold any one of the five soft keys (7 or 9).

Compact Disc (CD) Player

1. See Figure 20. Turn radio receiver ON, raise the CD door (2) and gently insert a CD with the label side up. The unit will automatically pull the CD into the player. Close the CD door.

2. **Change Tracks:** Push and release the MODE SEL switch on the right hand grip to select a specific track. Pushing the **Up Arrow** and **Down Arrow** (6) keys will also advance tracks.
3. Push the EJECT button (3) (located under the CD door) to eject the CD from the player.

iPod

1. With the iPod connected to the motorcycle, turn the radio receiver ON.
2. Press the **MODE SEL** switch to select **iPod**.
3. Using soft keys **1** through **6** and the **MODE SEL UP** and **DN** switch settings, select the category and song to be played.

STEREO RECEIVER

The Advanced Audio System stereo receiver is a radio (3 band maximum) with a full function Compact Disc (CD)/MP3 player and an auxiliary (**AUX**) input.

Auxiliary audio devices can play through the receiver's amplifier and speakers when connected to the **AUX** input port. Auxiliary devices include MP3 players, cassette players, and mini-disc players.

Receiver features include:

- Electronic single in-line CD/MP3 player with track up/down, forward and reverse scan, repeat and random play functions.
- CD/CDR/CDRW compatibility. Double-sided CDs will not play in this unit.
- MPEG 2.5 Level III (MP3) file format compatibility.
- More than 10 hours of MP3 music - 150 MP3 songs (10 albums) on one 650MB disc.
- Anti-skip protection (>40 second memory and mechanical dampers).
- Remote controls for frequency tuning, band change, CD select, volume, and bass/treble/fader mixing.
- Automatic Volume Control (AVC) - automatically adjusts volume to compensate for ambient noise due to motorcycle speed.
- Time-of-day clock.
- Weather band frequencies displayed as NOAA channel numbers (active on North American units only).

FRONT PANEL CONTROLS

See Figure 20. The front panel consists of a set of pushbuttons, a liquid crystal display (LCD), a protective door for the Compact Disc (CD/MP3) slot and a covered input port

for auxiliary (AUX) players. Six of the pushbuttons are "soft keys" whose function will change with the display.

ON

Press **ON** to turn the receiver on and off.

1, 2, 3, 4, 5/Left Arrow

For the stereo receiver, the soft keys, **1, 2, 3, 4, and 5/Left Arrow**, are used to store and then recall a selected radio frequency (pre-sets). When combined with any of the Advanced Audio System accessories, the function of any active soft key for that accessory will be displayed next to the soft key in the LCD display.

6

Pressing the **6** soft key will return the display to the previous menu. For **CB** and **Intercom Setup**, the function of the **6** soft key will be displayed in the LCD next to the **6** soft key.

5/Left, Up, Down, Right Arrows

The **5/Left, Up, Down, and Right Arrow** soft keys are used for radio band frequency tuning, Bass and Treble mixing, Fader and Volume. They are also used to scroll and highlight a selection in a list. For an Advanced Audio System accessory module, the arrow keys are active when arrows appear in the display.

OK

With a menu or list item highlighted, press the **OK** pushbutton to confirm the selection and initiate the function.

COM

Not active. Requires installation of optional CB radio kit.

INT

Not active. Requires installation of optional intercom kit.

NAV

Not active. Requires installation of optional navigation system (no longer sold). If an Advanced Audio System GPS positioning module is installed on the motorcycle, see the Advanced Audio GPS Navigation System Owner's Manual (76402-06) for operation.

LCD

The liquid crystal display (LCD) displays the operational status of the stereo receiver and that of any accessory.

CD Door

The CD door is a spring-loaded cover and will stay open when exchanging CDs.

Close the CD door after loading or unloading a CD. To close the door, push the door down until it latches.

EJECT

The CD **EJECT** button is found under the CD cover. Press the **EJECT** pushbutton to eject the CD.

AUX

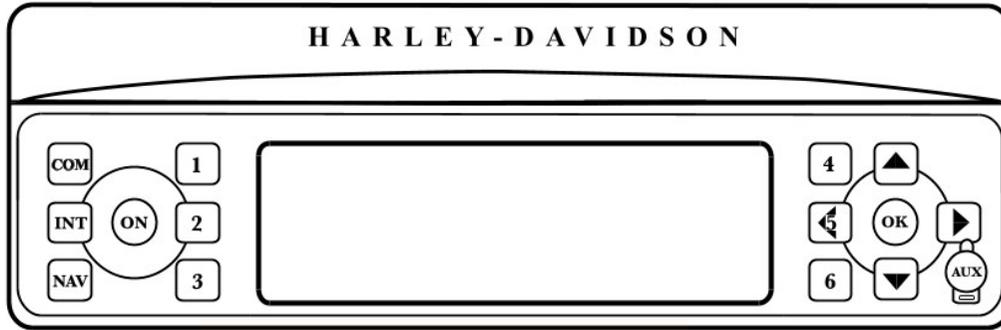
The auxiliary input port under the **AUX** cover connects the receiver to an auxiliary device such as a cassette or MP3 player.

Use a 1/8 in (3.5 mm) male to male extension cord to plug the line out or headset out from the auxiliary device into the **AUX** port. **AUX** appears in the LCD as a mode selectable with the **MODE SEL** switch.

The user has control of Bass, Treble, Fader and Volume, if so equipped, but all other player functions are performed with the auxiliary device. Set the volume level of the **AUX** device to normal or average.

NOTE

*Close the protective cap whenever the **AUX** port is not in use.*



- | | |
|---|--|
| 1. Communications (CB) setup (not active) | 7. Soft keys (4, 5/Left Arrow, 6) |
| 2. CD cover | 8. Liquid crystal display (LCD) |
| 3. EJECT (under cover) | 9. Soft keys (1, 2, 3) |
| 4. OK (Confirm) | 10. ON key |
| 5. Auxiliary connector cover | 11. GPS navigation module (not active) |
| 6. Left (5), Up, Right, Down Arrow Keys | 12. Intercom setup (not active) |

Figure 20. Advanced Audio System Front Panel

LEFT HANDLEBAR CONTROLS

See Figure 21. Easy to operate while riding, audio controls are mounted on the left hand switch housing on the left handgrip. The left hand audio control is an **+ / AUDIO / -** switch.

+ / AUDIO / - Switch

AUDIO: See Figure 21. Press the **AUDIO** switch to access the Audio/Setup menu on the LCD. Press and release **AUDIO** or the press the soft key to toggle to the next displayed function in sequence from Bass, to Treble, to Display, to Volume and then to AVC.

If the **AUDIO** switch is left on any selection the function automatically reverts back to the selected mode after approximately 2-3 seconds.

±: Pressing the **AUDIO** switch upward (+) raises the level for the currently selected Audio/Setup (Bass, Treble, Volume or AVC). Pressing the switch downward (-) lowers the level. The level is raised or lowered as long as the switch is held until the minimum or maximum level is reached.

The LCD displays a horizontal dashed line to indicate the level. In the center of the line is a single thin dash. When the level is at the center, the selected audio is at a mid-point of its range.

The Display function sets the illumination level of the characters in the LCD display.

The AVC (Automatic Volume Control) function sets the volume level to compensate for the ambient noise associated with motorcycle speed.

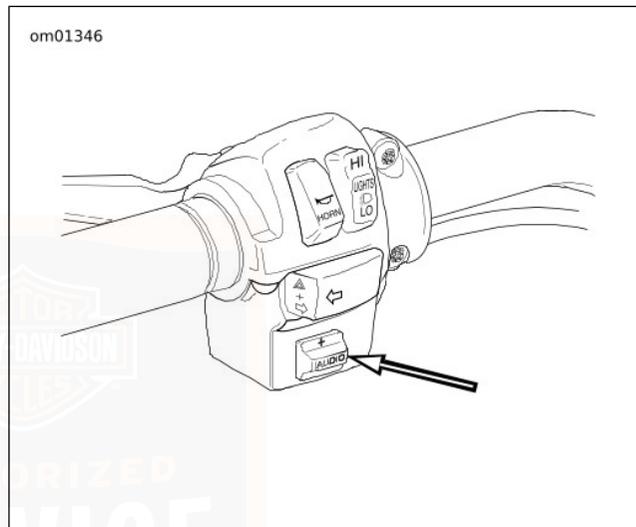


Figure 21. Left Handlebar Control (+ / AUDIO / -)

RIGHT HANDLEBAR CONTROLS

See Figure 22. The mode select (**MODE SEL**) switch is located on the right handlebar switch assembly.

UP/MODE SEL/DN Switch

MODE SEL

With the radio power ON, press and release the **MODE SEL** switch to sequence between the radio bands.

When a audio CD/MP3 disc is inserted into the CD player the **CD** function is added to the selections. When a 3.5 mm (1/8 in) connector is plugged into the **AUX** input port the AUX function is added to the selections.

The LCD display indicates the function selected.

UP/DN

In the receiver mode: **UP/DN** allows up or down radio station SEEK tuning.

In CD/MP3 mode: **UP/DN** changes tracks and performs fast advance and fast reverse.

In the AUX mode: The **UP/DN** switch is inactive.

In iPod mode: The **UP/DN** switch navigates through iPod categories (playlists, artists, albums, genres) during setup and scrolls through songs.

For a detailed description of the various modes, see **ADVANCED AUDIO SYSTEM > RECEIVER OPERATION** (Page 69).

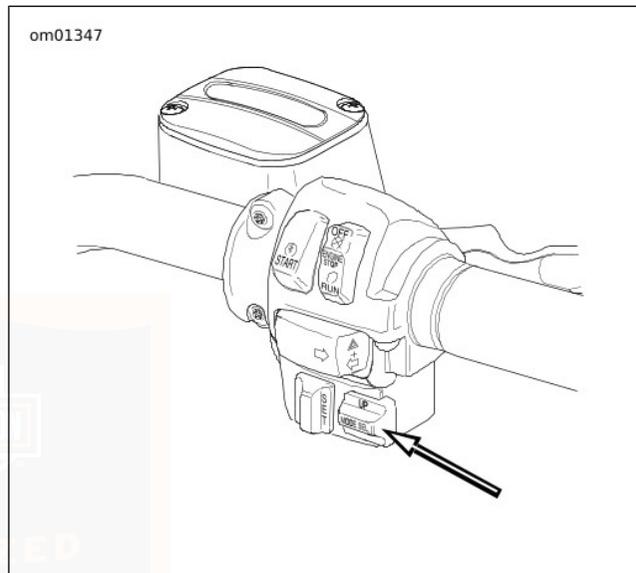


Figure 22. Right Handlebar Controls (UP/MODE SEL/DN) RECEIVER OPERATION

See Figure 20 for an illustration of the stereo receiver front panel.

Set Time-of-Day

Set the time-of-day with the ignition/headlamp key switch turned to **IGNITION** or **ACCESS** but with the stereo receiver OFF.

Press the Set soft key (6) (Set) on the front panel to display the time setup menu.

See A in Figure 23. To increase the hours in the display press the Hrs+ soft key. To decrease hours press the Hrs- soft key. When the hour is correct, release the soft key.

Select a Frequency Band

To increase the minutes in the display press the Min+ soft key. To decrease minutes press the Min- soft key. When the minute is correct, release the soft key.

Turn Receiver ON/OFF

To turn the receiver ON, turn the ignition/headlamp key switch to **IGNITION** or **ACCESS** and press the **ON** button on the front panel. To turn the receiver OFF, press the **ON** button.

If the receiver is ON when the ignition is turned OFF, the receiver will power up when the ignition/headlamp key switch is turned to **IGNITION**.

Table 21. Receiver Frequency Bands

MARKET	BAND	FREQUENCY	STEPS
Domestic	AM	530-1700 kHz	10 kHz
	FM	87.75-107.9 MHz	200 kHz
	WB	162.400-162.550 MHz	25 kHz
International	LW	144-279 kHz	3 kHz
	MW	531-1611 MHz	9 kHz
	FM	87.5-108 MHz	100 kHz
Japanese	MW	522-1629 MHz	9 kHz
	FM	76.0-91.0 MHz	100 kHz

Using the right thumb, press the **MODE SEL** switch on the right hand grip and release to cycle to the desired frequency

band (mode) or press the soft key next to the frequency band displayed in the LCD to select a frequency band.

See B in Figure 23. The LCD highlights the selected band.

NOTE

*Refer to Table 21. When a CD/MP3 disc is present in the CD slot and/or an auxiliary player is plugged into the AUX port, the **MODE SEL** switch will cycle through the CD and AUX modes as well as the frequency bands.*

Volume

See D in Figure 23. At any time the receiver is playing, the volume can be adjusted by pressing the **AUDIO** switch up (+) to increase volume or down (-) to decrease volume.

AM vs FM Reception

Commercial radio broadcasting is either AM (Amplitude Modulation) or FM (Frequency Modulation).

AM

AM radio waves reflect off the ionosphere which results in consistent signal reception at a long range (up to 100 miles or 160 kilometers).

However, AM radio can be displaced by loud humming, popping and crackling noises. This is electrical interference caused by noise from vehicle ignitions, electric signs, power lines and electrical storms.

FM

The advantages of FM radio are high fidelity sound, stereo reception, a wide range of broadcasting formats and a signal that is free of electrical interference.

The disadvantage of FM radio is its short range. FM radio waves travel in straight lines, called "line-of-sight," therefore, FM signals cannot be received over the horizon. At the limit of a station's range, the reception may fade in and out when objects pass between the transmitter and the motorcycle.

FM Stereo vs FM Mono

See E in Figure 23. Normally, the Advanced Audio System plays FM signals in stereo. The LCD will indicate **STEREO**.

However, the stereo receiver has circuits which eliminate or minimize FM flutter due to weak stereo signals. The circuits detect a weak FM stereo signal and automatically blend it into a stronger FM mono signal. The transition is smooth and flutter-free because it occurs over a range of signal conditions, rather than at a minimum threshold.

When the system is automatically blending or is receiving an FM mono signal, the stereo indicator (**STEREO**) will disappear from LCD screen.

WB

See H in Figure 23. Broadcast by the National Oceanic and Atmospheric Administration (NOAA) National Weather Band (WB) frequencies are available in North America only.

To receive NOAA weather alerts while listening to other radio bands, highlight the Alert indicator in the WB display by pressing the soft key. An alert tone will automatically switch the receiver to the announcing WB channel regardless of which frequency band is playing.

When equipped with the CB module, use the soft key to highlight the Alert indicator in the LCD display. Weather alerts are announced over other audio and the **Alert** indicator is highlighted in the display.

iPod

Select iPod mode to access and play files from an installed iPod through the audio system. See ADVANCED AUDIO SYSTEM > IPOD OPERATION (Page 83) for operation.

Tuning a Radio Station

The radio has several tuning modes in each of the frequency bands: Manual, Seek, Scan, Preset Memory and Preset Scan.

Tuning in all three modes continuously wraps around the ends of the band.

Manual Tuning

To manually tune the radio to a different frequency:

Press the **Up Arrow** button or the **Down Arrow** button to select the frequency in that direction. Hold the selected arrow button, and after a short delay of 1.5 seconds, the radio will continue to change frequencies until the selected arrow button is released.

SEEK Tuning

See E in Figure 23. In SEEK, the radio tunes in to the next strong station.

Press and release the **MODE SEL** switch up (**UP**) to tune in the next strong station upward in the band. Press and release the switch down (**DN**) to tune in the next strong station downward in the band.

NOTE

The SEEK icon appears in the display as long as the receiver is seeking the next strong frequency. The SEEK icon disappears as soon as the receiver has tuned in the next station.

SCAN Tuning

In SCAN, the radio continuously tunes from one strong station to the next until the SCAN is cancelled.

See F in Figure 23. Press and hold the **MODE SEL** switch **UP** or **DN** approximately 5 seconds to scan the band for strong station signals. Each strong station remains tuned in for 8 seconds before the radio scans to the next station. The receiver will continue to scan until cancelled.

To select a station, cancel SCAN while the radio is tuned to that station. Press the **MODE SEL** switch **UP** or **DN** to cancel a SCAN moving up the band.

Preset Memory Tuning

Use the soft keys, **1**, **2**, **3**, **4**, and **5/Left Arrow** as preset buttons to store frequently tuned stations.

NOTE

See C in Figure 23. AM can store 6 preset frequencies.

See E and F in Figure 23. Separate FM1 and FM2 bands allow the rider to store 2 sets of 5 preset FM frequencies (10 total). Use the **More** soft key to toggle between FM1 and FM2. The full range of FM frequencies can be selected in either FM1 or FM2.

To store a current station, press and hold any one of the preset buttons for 1.5 seconds. After an audible signal (a chirp), the station's frequency has been stored and the frequency will appear in the display next to the preset soft key.

To tune to a stored station, press and release the preset soft key.

Preset SCAN Tuning

See G in Figure 23. In preset SCAN, the radio continuously tunes from one preset station to the next until the preset SCAN is cancelled. A P.SC icon will display while preset SCAN is active.

In the FM band, press and hold the More soft key for approximately 3 seconds. Each preset station remains tuned in for 10 seconds before the radio moves to the next station.

To select a station, cancel preset SCAN while the radio is tuned to that station. Press the **MODE SEL** switch **UP** or **DN** to cancel a preset SCAN.

Adjusting Volume

Volume can be adjusted in any radio band.

See D in Figure 23. Volume is adjusted with the **AUDIO** switch on the left hand grip. Using left thumb, press the **AUDIO** switch up (+) to raise the volume or down (-) to lower the volume. The LCD displays the word Volume and a bar graph that changes length with the volume.

Press the **MODE SELUP** or **DN** to cancel the Audio/Setup display or wait 5 seconds after the **AUDIO** switch is released, the display switches to the currently selected frequency band.

See K in Figure 23. Volume can also be adjusted in Audio/Setup.

Press and release the **AUDIO** switch to enter the Audio/Setup display. Press and release the **AUDIO** switch to cycle through Bass, Treble, Fade and Display to Volume and the **AUDIO** switch to raise (+) or lower (-) the volume.

Mixing Bass and Treble

Bass and treble range adjustments can be applied to any Advanced Audio System source.

BASS: See I in Figure 23. Press **AUDIO** to display Bass Audio/Setup. Using the left thumb, press the **AUDIO** switch up (+) to increase the bass range or down (-) to lower the bass range. The LCD displays the word Bass and a dashed line that changes length with the setting. The short center dash indicates a middle setting.

TREBLE: See J in Figure 23. From Bass Audio/Setup, press and release **AUDIO** to sequence to Treble. Using the left thumb, press the **AUDIO** switch up (+) to increase the treble range or down (-) to lower the treble range.

See J in Figure 23. The LCD displays the word Treble and a bar graph that changes length with the setting. The short center dash indicates a middle setting.

Adjusting AVC

See L in Figure 23. Automatic Volume Control (AVC) automatically adjusts volume level to compensate for ambient noise associated with motorcycle speed.

If the AVC does not adequately compensate for ambient noise (or if it over compensates), enter the audio setup menu and select AVC. Compensation is adjusted with the **AUDIO** switch on the left hand grip. Using left thumb, press the **AUDIO** switch up (+) to raise the compensation level or down (-) to lower the compensation.

NOTE

Although the receiver AVC is preset at 3 bars, it is adjustable from zero bars (OFF) to four bars. At one bar, the volume does not change with motorcycle speed. The more bars displayed, the higher the volume increases with speed.

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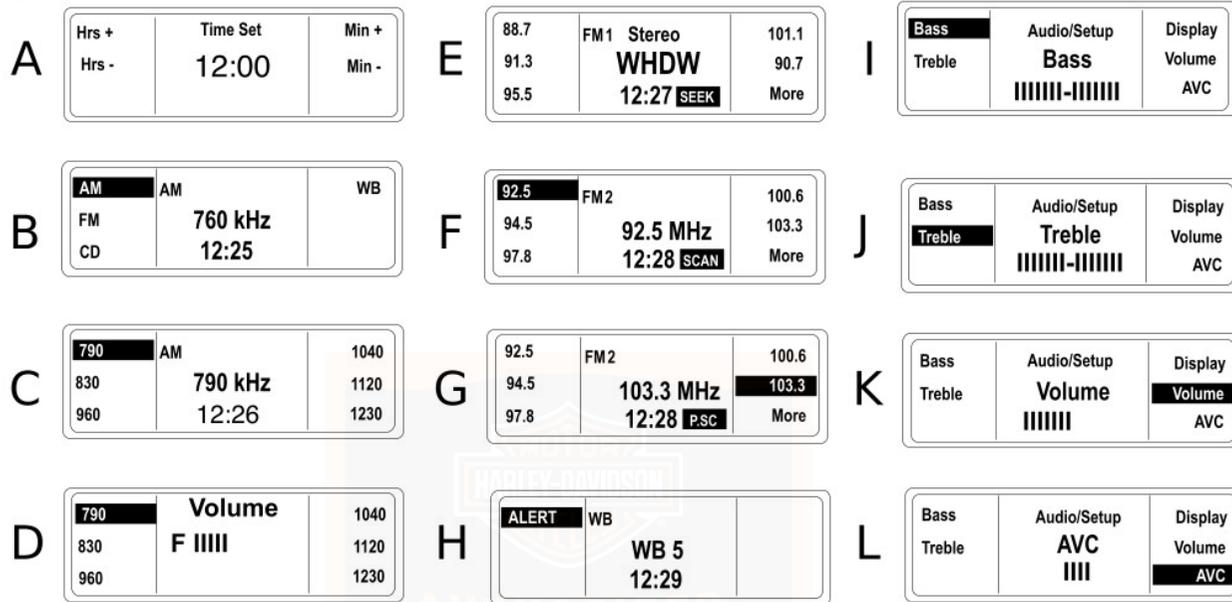


Figure 23. LCD Display Examples

Adjusting Display Contrast

See Figure 24. Select Display from the Audio/Setup menu with the **AUDIO** switch. Press the **AUDIO** up (+) to increase or down (-) to decrease the contrast of the characters in the display.

NOTE

The contrast can be decreased to render the characters invisible against the background. The characters will appear to have disappeared in the display. Before leaving the Display screen, always increase the character illumination to make the characters visible in other modes.

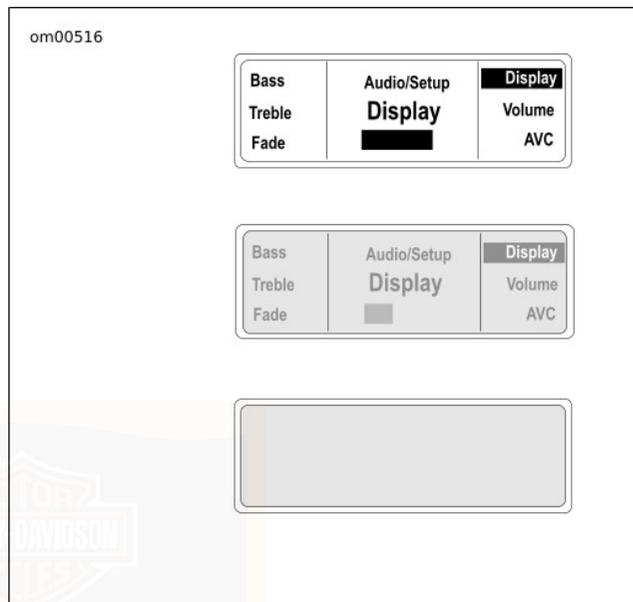


Figure 24. Character Display Illumination

CD/MP3 OPERATION

The CD player will accept commercial audio discs as well as compact discs recorded with MP3 (MPEG 2.5 Level III), files on compact disc read only (CDR) or compact disc read and write (CDRW) formats.

NOTICE

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

⚠ WARNING

Do not change compact discs while riding, and do not select a volume level that blocks out traffic noise. Distractions or a volume level that blocks out traffic noise, could cause loss of control resulting in death or serious injury. (00086a)

⚠ WARNING

Do not disassemble unit. Laser radiation is present if disc player is disassembled and the interlock fails or is defeated. Exposure to laser radiation could lead to death or serious injury. (00087a)

Auto Load

With the receiver power ON, raise the CD door and gently insert a CD, label side up, into the CD slot until the unit automatically pulls the CD into the player. Close the CD door.

NOTE

Do not use double sided CDs in the Advanced Audio stereo receiver. Double-sided CDs may become permanently lodged in the player.

See C in Figure 25. The receiver will automatically switch to CD operation. The CD track number and play time will appear in the LCD display. With a CD in the player, CD is added to the modes selectable with the **MODE SEL** switch.

⚠ WARNING

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

Disc Error 1

See B in Figure 25. If the CD loaded into the CD player is damaged, of incorrect format, or upside down, the LCD will display the Disc Error 1 message.

Eject the CD. Refer to **ADVANCED AUDIO SYSTEM > RECOMMENDATIONS FOR HANDLING CDS** (Page 80).

Eject

▲ WARNING

Do not change compact discs while riding, and do not select a volume level that blocks out traffic noise. Distractions or a volume level that blocks out traffic noise, could cause loss of control resulting in death or serious injury. (00086a)

Press the **EJECT** button found under the CD door to eject a CD. The CD will be partially ejected. Remove the CD. Close and latch the CD door.

The receiver will automatically return to the radio band and frequency playing when the CD was loaded and the CD mode is no longer selectable.

Tracks

To change CD/MP3 tracks, use the right thumb and press and release the **MODE SEL** switch on the right hand grip. Press **UP** and release to select higher numbered tracks or press **DN** and release to select lower number tracks.

Pressing the **Up Arrow** and **Down Arrow** keys will also advance tracks.

NOTE

The player automatically numbers the MP3 files found on a CD in alphabetical order.

*If the **MODE SEL** switch is pressed and held **UP** or **DN** longer than 1.5 seconds, the track selections will fast advance or reverse as long as the switch is held.*

CD track selection wraps around the first and last track.

Fast Advance and Reverse

To fast advance a track, press the **MODE SEL** switch **UP** and hold longer than 1.5 seconds. The current track will fast advance while the switch is pressed **UP**. The audio will advance to the subsequent track as long as the switch is held **UP**.

See D in Figure 25. The play time display in the LCD will also fast advance.

To fast reverse a track, press **MODE SEL DN** and hold longer than 1.5 seconds. The current track will fast reverse while the switch is pressed **DN**.

The play time display in the LCD will also fast reverse.

Random

To play tracks randomly, press the Random soft key on the front panel while in the CD mode. The word Random will remain highlighted in the display. No selection is repeated until all other selections have been played.

NOTE

*The Random soft key toggles between normal and Random play. Press once for random play. Press a second time to return to normal play. Pressing the **MODE SEL** switch **UP** or **DN** will select different tracks at random.*

See D in Figure 25. Random will be highlighted in the display.

Scan

To scan the tracks on an CD/MP3 disk, press the Scan soft key.

NOTE

The tracks will play for 8 seconds and then jump to the next track which will play for 8 seconds.

When a desired track is being played, press the Scan soft key again to cancel the scan operation.

Repeat

To repeat a CD track while it is playing, press the soft key next to the Repeat display.

To cancel Repeat, press the Repeat soft key again or press the **MODE SEL** switch **UP** or **DN** to change tracks.

Repeat will no longer be highlighted in the display.

MP3

The receiver CD player will automatically recognize and play MP3 files.

NOTE

The files will be numbered sequentially.

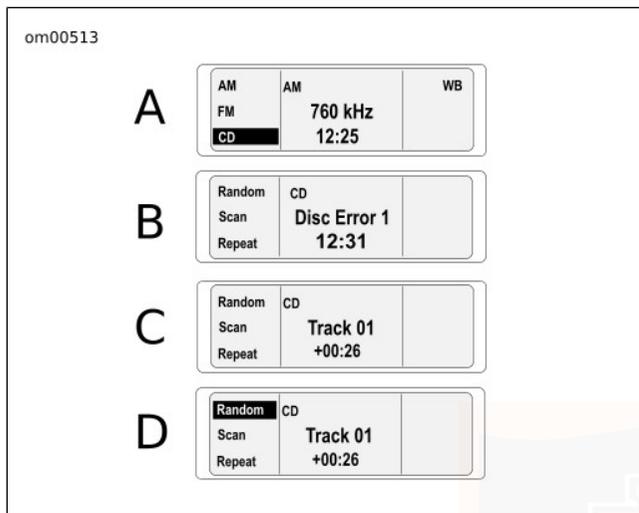


Figure 25. CD/MP3 Display Examples

RECOMMENDATIONS FOR HANDLING CDS

- Use caution when handling a CD. Avoid touching the bottom (shiny) side.
- Store audio CD/MP3 discs in acrylic jewel cases to protect against dust, scratches, light, and changes in humidity.
- Store CDs in a cool dry place away from direct sunlight.
- Use commercially available cleaning tissue to clean the CDs. Never use solvents that can damage the CD.

- Keep protective CD door closed at all times.

NOTE

- *A laser that cannot focus properly may cause skipping. A clouded lens can be caused by dirty CDs, dust, smoke, high humidity, and airborne particles may cause the laser lens to cloud. Operating the CD without allowing the motorcycle to warm up can also cause a CD to skip.*
- *Do not attempt to clean the lens with a cleaning disc. Commercially available cleaning discs may cause damage or become stuck in the CD player.*

APPLE IPOD

An Apple® iPod nano® is provided with the motorcycle. Connecting the iPod® with the connector in the right saddlebag allows songs to be played through the audio system speakers. Navigation and control of the iPod is performed through the audio system soft keys, rider handlebar controls, and passenger audio controls (on equipped models).

The iPod charges while the ignition switch knob is in the IGNITION or ACCESSORY position.

See the documentation provided with the iPod for basic operation of the device. No special setup is required to make the iPod nano operate with the motorcycle. However, some devices require that the music application is running. See **ADVANCED AUDIO SYSTEM > COMPATIBLE IPOD**

DEVICES (Page 81) for compatible devices that may be used with the motorcycle sound system.

NOTE

The model and specifications of the iPod supplied with the motorcycle may change from what is specified in this manual.

COMPATIBLE IPOD DEVICES

Refer to Table 22. The Apple iPod nano has been tested and certified to operate with the Advanced Audio System.

While other devices can operate with the audio system, Harley-Davidson cannot guarantee the functionality or complete compatibility of devices other than the iPod nano. Use of non-certified devices is done at the risk of the owner.

If the audio system recognizes a device other than an iPod nano, a warning message will be displayed. To continue using a non-certified device with the motorcycle, press and hold the **OK** soft key to clear the warning message.

NOTE

*Hard drive-based devices are **not** recommended for use on the motorcycle, as these devices are sensitive to vibration and can become internally damaged. Also, devices which do not have a standard iPod dock interface cannot connect with the audio system cable and are not compatible for use.*

Table 22. iPod Compatibility

Device	Compatibility
iPod nano®	Recommended. Tested and certified for use by Harley-Davidson.
iPod touch®	May be used with the system, but not certified for use by Harley-Davidson. Start the Music application in the iPod before using it with the motorcycle.
iPhone®	May be used with the system, but not certified for use by Harley-Davidson. Start the Music application in the iPhone if using it with the motorcycle. Change the iPhone setting to airplane mode to prevent the phone from ringing through the motorcycle speakers.
iPod classic®	Strongly not recommended. Possible damage to iPod may result.
iPod shuffle®	Does not connect with the system. Not compatible for use.

IPOD INSTALLATION AND REMOVAL

1. Open the right saddlebag.
2. See Figure 26. Open the flap and unzip the tether.
3. Install or remove the iPod.
 - a. **To install:** Remove the cap from the connector. Mate the iPod with the connector. The arrows on the connector should face the front of the iPod.

b. **To remove:** Press the release tabs on the sides of the connector and remove the iPod. Place the cap on the connector. Place the iPod in a dry, secure location to prevent theft or damage.

4. Zip the tether, close the flap, and close the saddlebag.

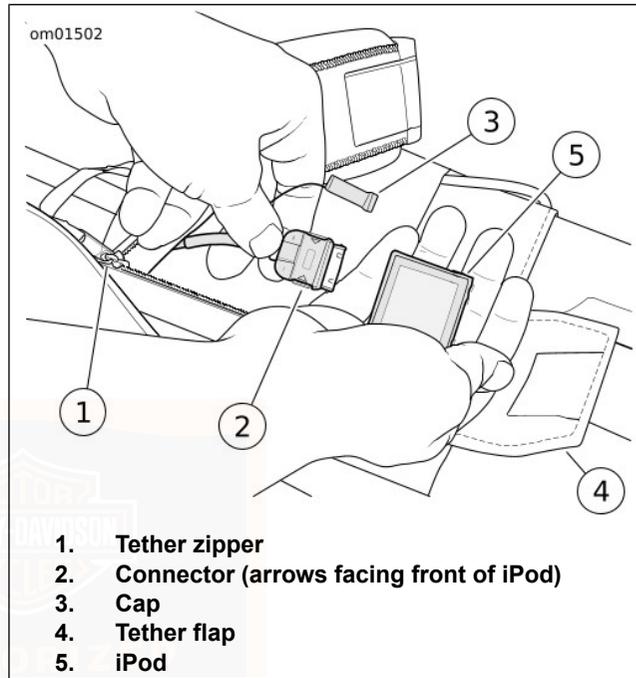


Figure 26. iPod Installation and Removal

SELECTING THE IPOD

See Figure 22. With the radio powered on, press the **MODE SEL** switch on the right handlebar control repeatedly until **iPod** is highlighted as shown in Figure 27.

After the **MODE SEL** switch is pressed, you may also use the appropriate number soft key to select **iPod** on the screen.

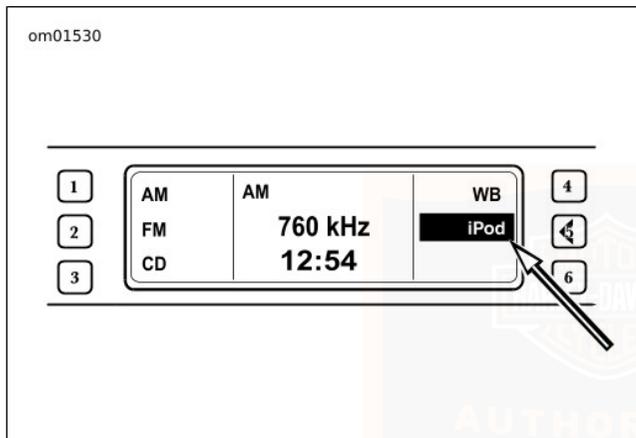


Figure 27. Selecting the iPod

IPOD OPERATION

▲ WARNING

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

While the iPod is connected to the motorcycle and the ignition switch is in the IGNITION or ACCESSORY position, the iPod is controlled by the handlebar switches and audio system soft keys. Refer to Table 23 for a description of the controls used to operate the iPod.

See Figure 28. With the iPod selected, the main iPod menu shows the following four category types, along with the Repeat and Shuffle options.

- Playlist
- Artist
- Album
- Genre

Figure 29 through Figure 32 show how to navigate through the menu structure for each category type. After a category has been selected, use the soft keys or **MODE SEL** switch to scroll through available playlists, artists, albums, or genres

on the iPod. An item is selected and the menu advances to the next screen when no further input is made through the soft keys or **MODE SEL** switch.

Select the return arrow (soft key **6**) to return to a previous menu.

NOTE

Podcasts, audio books, and other category types are not accessible through the motorcycle audio system.

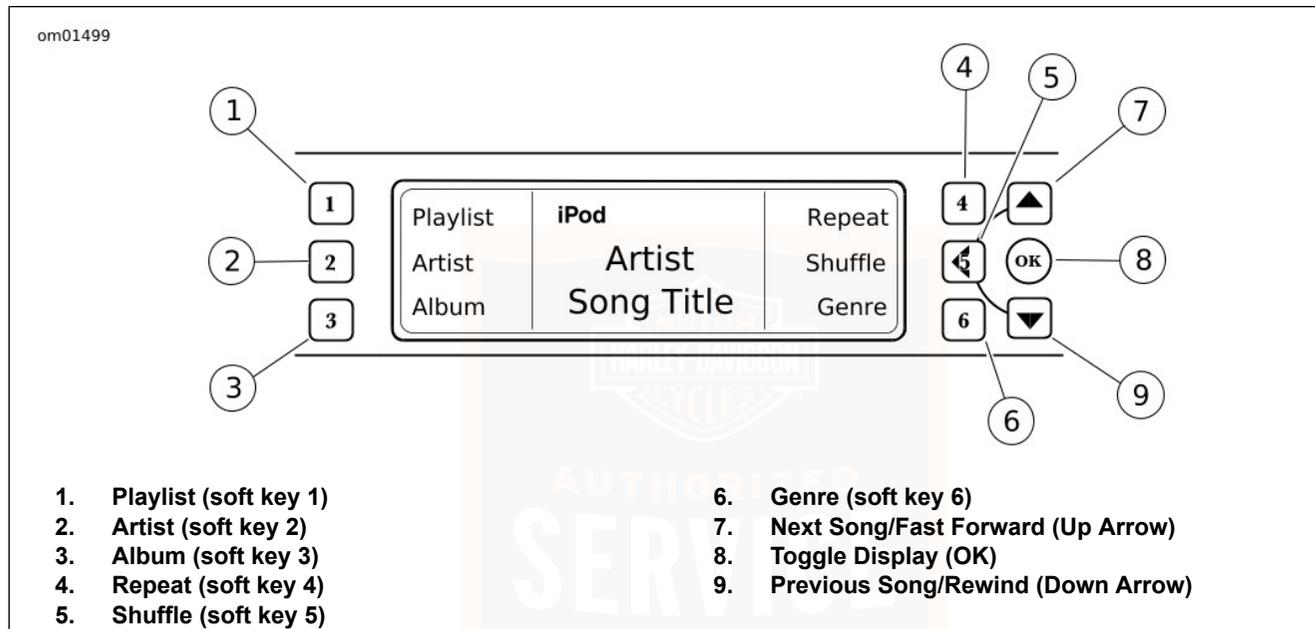


Figure 28. Audio System iPod Controls (Main Menu)

Table 23. iPod Controls

SOFT KEY OR CONTROL	FUNCTION	DESCRIPTION
1	Playlist	<p>Organizes and plays songs according to playlists that have been configured in the iPod. While in Playlist mode:</p> <ul style="list-style-type: none">• Press soft key 1 (Scroll +) to select the next playlist.• Press soft key 3 (Scroll -) to select the previous playlist.• Use the UP/MODE SEL/DN switch to scroll through playlists (during setup) and to scroll through songs within a selected playlist.
2	Artist	<p>Organizes and plays songs according to artist name. While in Artist mode:</p> <ul style="list-style-type: none">• Press soft key 1 (Scroll +) to select the next artist.• Press soft key 3 (Scroll -) to select the previous artist.• Use the UP/MODE SEL/DN switch to scroll through artists and albums (during setup) and to scroll through songs from a selected artist/album.
3	Album	<p>Organizes and plays songs according to the album title. While in Album mode:</p> <ul style="list-style-type: none">• Press soft key 1 (Scroll +) to select the next album.• Press soft key 3 (Scroll -) to select the previous album.• Use the UP/MODE SEL/DN switch to scroll through albums (during setup) and to scroll through songs within a selected album.
4	Repeat	<p>Repeats the currently selected song. The Repeat option remains highlighted until it is toggled off by pressing soft key 4 again.</p>

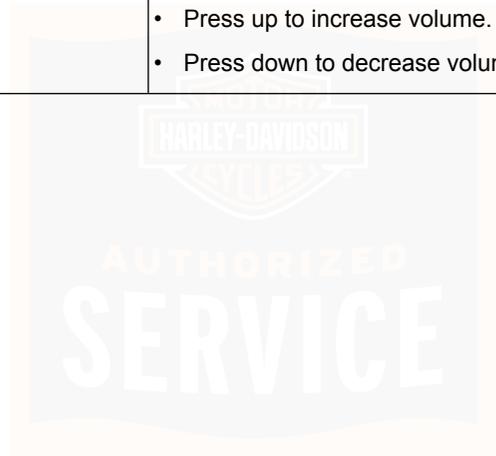
Table 23. iPod Controls

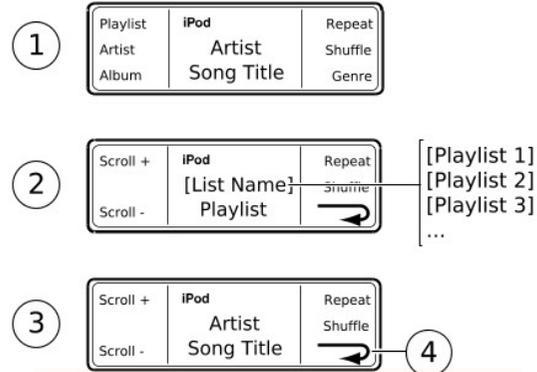
SOFT KEY OR CONTROL	FUNCTION	DESCRIPTION
5	Shuffle	Plays songs from the selected playlist, artist, album, or genre in a random order. The Shuffle option remains highlighted until it is toggled off by pressing soft key 5 again.
6	Genre	Organizes and plays songs according to the genre (music style, such as rock or easy listening). While in Genre mode: <ul style="list-style-type: none"> • Press soft key 1 (Scroll +) to select the next genre. • Press soft key 3 (Scroll -) to select the previous genre. • Use the UP/MODE SEL/DN switch to scroll through genres, artists, and albums (during setup) and to scroll through songs in the selected genre.
Up Arrow	Fast Forward/Next Song	<ul style="list-style-type: none"> • Press and hold to fast forward through the selected song. • Press and release to select the next song (this can also be performed with the UP/MODE SEL/DN switch).
OK	Toggle Display	Toggles between clock, song title, and elapsed time for the current song.
Down Arrow	Rewind/Previous Song	<ul style="list-style-type: none"> • Press and hold to rewind through the selected song. • Press and release to select the previous song (this can also be performed with the UP/MODE SEL/DN switch).



Table 23. iPod Controls

SOFT KEY OR CONTROL	FUNCTION	DESCRIPTION
UP/MODE SEL/DN switch	Next Song/Previous Song	The rider and passenger UP/MODE SEL/DN switches (on equipped models) may be used to scroll through categories and select songs. <ul style="list-style-type: none">• Press up to advance to the next song (during setup, advances to the next playlist, artist, album or genre).• Press down to select the previous song (during setup, selects the previous playlist, artist, album or genre).
+ /AUDIO/- switch	Volume Control	The rider + /AUDIO/- switch adjusts the volume. The passenger + /AUDIO/- switch adjusts the passenger headset volume (on equipped models). <ul style="list-style-type: none">• Press up to increase volume.• Press down to decrease volume.





1. Main iPod menu
2. Playlist category selected (scroll through playlists)
3. Playlist selected (choose song from playlist)
4. Return arrow (soft key 6)

Figure 29. Playlist Category

1893382

1



2



All Albums
[Artist 1]
[Artist 2]
[Artist 3]
...

3



All Songs
[Album 1]
[Album 2]
[Album 3]
...

4



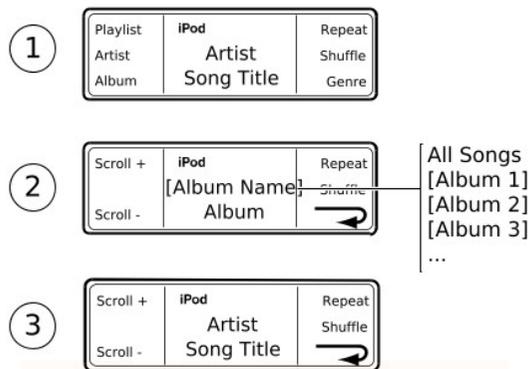
1. Main iPod menu

2. Artist category selected (scroll through artists)

3. Artist selected (scroll through albums by artist)

4. Album selected (choose song on album)

Figure 30. Artist Category



1. iPod main menu
2. Album category selected (scroll through albums)
3. Album selected (choose song on album)

Figure 31. Album Category

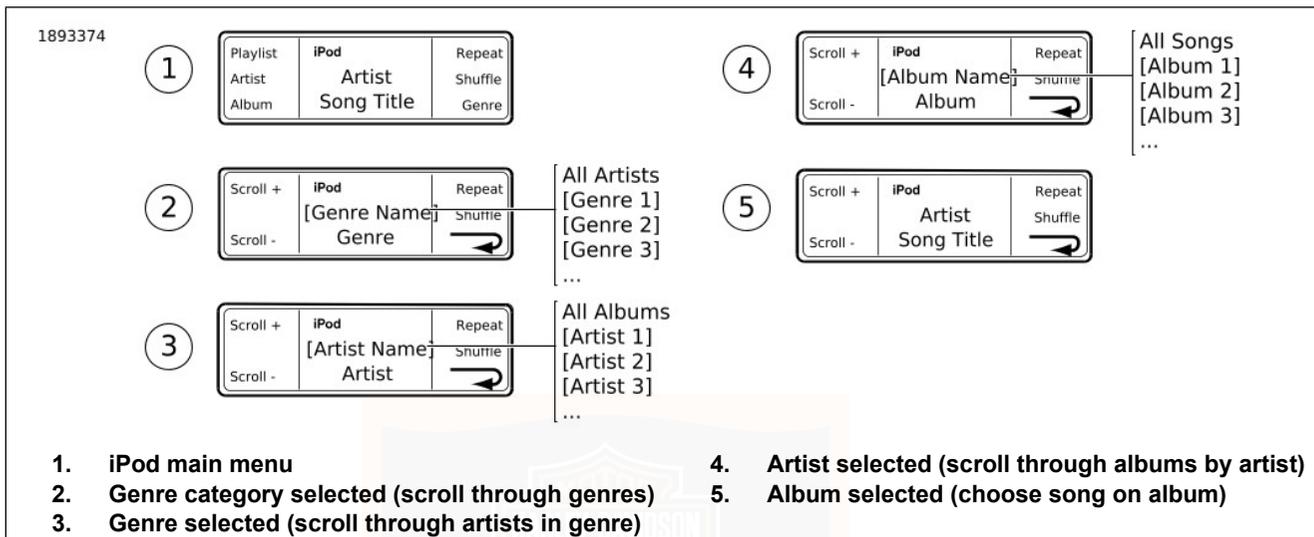


Figure 32. Genre Category

IPOD SERVICE AND WARRANTY

To obtain service or support for the iPod provided with the motorcycle, see apple support site, visit an Apple Retail Store, or contact Apple, Inc. at 1-800-275-2273.

For service and support regarding the audio system operation, see an authorized Harley-Davidson dealer.

Refer to the warranty information provided with the iPod. Send in the warranty card for the iPod to activate your warranty with Apple, Inc. If the warranty card is not sent in, the iPod warranty will begin from the date when the dealer received the motorcycle from the factory.

IPOD TROUBLESHOOTING

manual or support.apple.com for troubleshooting information.

If there is a problem with the iPod device, check the iPod

If there is a problem operating the iPod through the Advanced Audio System, refer to Table 24 for possible solutions.

Table 24. Audio System Troubleshooting for iPod

PROBLEM	POSSIBLE SOLUTION
"iPod not present" message	<ul style="list-style-type: none">• Check the connection to the iPod.• Check the iPod cable connection to the motorcycle wiring harness (outside the luggage, below the seat). Firmly press the connector ends together to check that they are completely mated. If necessary, see a dealer or service manual to check the iPod cable connection inside the fairing.
"iPod determined as hard drive type" or "iPod model not determined" message	<ul style="list-style-type: none">• A hard drive-based iPod has been detected, or the model has not been determined. An iPod containing a hard drive is not recommended for use with the motorcycle, as damage can result in the iPod. If choosing to proceed with using the connected iPod, press and hold the OK soft key on the audio system front panel.• If necessary, disconnect and reconnect the iPod.

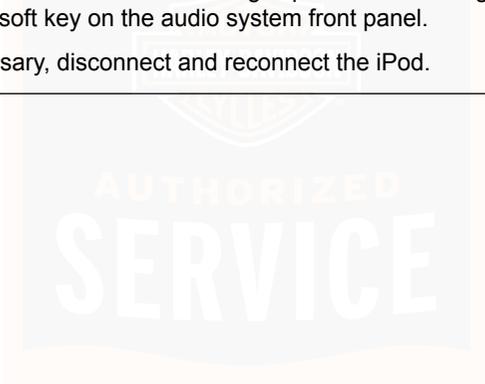
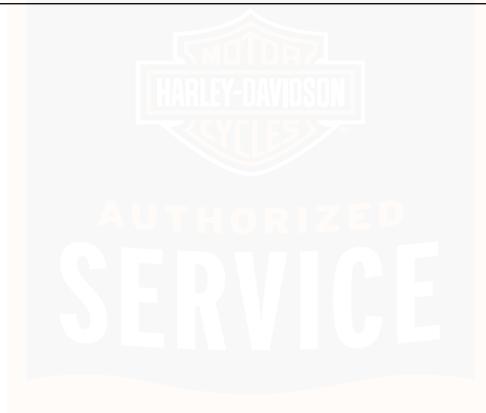


Table 24. Audio System Troubleshooting for iPod

PROBLEM	POSSIBLE SOLUTION
Menus hanging or not operating properly	<ul style="list-style-type: none">• Press the MODE SEL switch to exit iPod mode, then press the MODE SEL switch to reselect iPod mode.
No audio or other audio problems	<ul style="list-style-type: none">• Speaker (SPKR) switch is set for headset operation (on equipped models).• For iPhone or iPod touch, start the iPod or music application on the device.• For iPhone, set to airplane mode.• Vehicle battery has been drained.• Press the MODE SEL switch to exit iPod mode, then press the MODE SEL switch to reselect iPod mode.• Disconnect and reconnect the iPod.



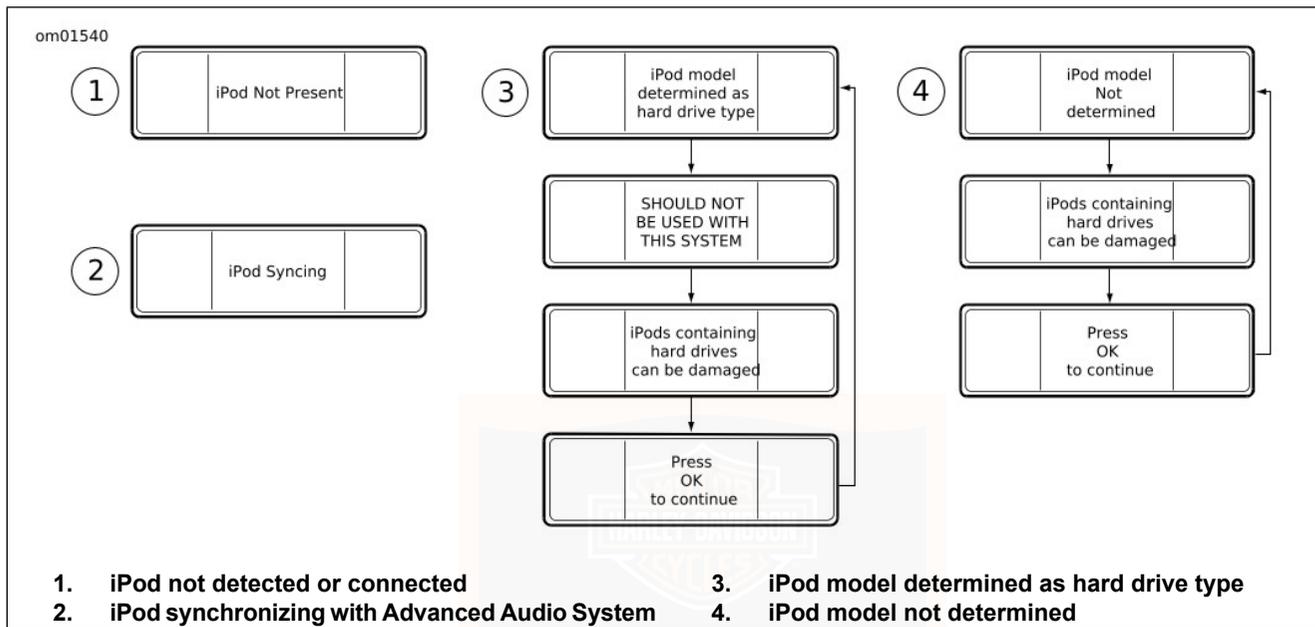


Figure 33. iPod System Messages

AUDIO SYSTEM TROUBLESHOOTING

System Troubleshooting

If having trouble with the Advanced Audio System, check radio settings, control switches, and fuses. See the Electrical

Diagnostic Manual for all system diagnosis and electrical troubleshooting information, or see a Harley-Davidson dealer for service.

NOTICE

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

⚠ WARNING

Do not disassemble unit. Laser radiation is present if disc player is disassembled and the interlock fails or is defeated. Exposure to laser radiation could lead to death or serious injury. (00087a)

Radio Fuses

The radio is protected by fuses in the fuse block. Refer to MAINTENANCE AND LUBRICATION > FUSES AND RELAYS (Page 168) to inspect and replace the radio power fuse, radio memory fuse, or audio amplifier fuse (if equipped), or see your Harley-Davidson Dealer for service.



NOTES



HARLEY-DAVIDSON SMART SECURITY SYSTEM

Components

The Harley-Davidson Smart Security System (H-DSSS) consists of a Hands-Free Security Module (HFSSM) and 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 key to OFF and the Smart 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 activate an alarm if someone tampers with the ignition or attempts to move the motorcycle.

If the fob is present, the module will automatically **disarm** when the ignition key is turned to IGNITION or ACCESS.

NOTE

Do not relocate the module or the antenna on the motorcycle.

Options

Several options are available for the Harley-Davidson Smart Security System from the Harley-Davidson Genuine Motor Accessories and Motor Parts catalog. Options include:

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

See a Harley-Davidson dealer for details.

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 34. Key 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 SMART SECURITY SYSTEM > FOB BATTERY (Page 107).*
- *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 SMART SECURITY SYSTEM > ARMING AND DISARMING (Page 102) and SMART SECURITY SYSTEM > TROUBLESHOOTING (Page 109).*
- *The PIN can easily be changed by the rider at any time. Refer to SMART SECURITY SYSTEM > PERSONAL IDENTIFICATION NUMBER (PIN) (Page 99).*

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 activating the alarm.
- Do not ride with the fob stored in a metal case or with the fob closer than 76 mm (3.0 in) to a 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.

299447



Figure 34. Fob: Smart Security System

PERSONAL IDENTIFICATION NUMBER (PIN)

The Personal Identification Number (PIN) is a number that can be used to disarm the Harley-Davidson Smart 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

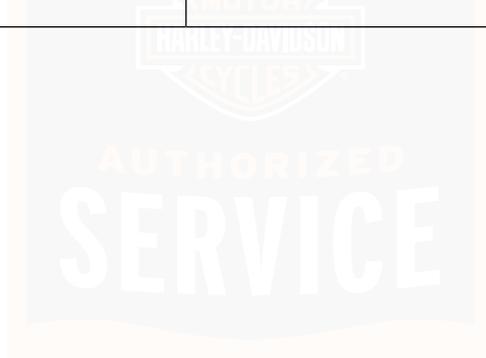
To maintain security, the rider can change the PIN at any time. Refer to Table 25.

Table 25. 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 IGN key IGNITION-OFF-IGNITION-OFF-IGNITION .		
3	Press left turn signal switch 3 times .		
4	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.	See Figure 35.
5	Enter first digit (a) of new PIN by pressing left turn signal switch a times.		
6	Press right turn signal switch 1 time and release.	The new digit (a) will replace the current in odometer window.	
7	Enter second digit (b) of new PIN by pressing left turn signal switch b times.		
8	Press right turn signal switch 1 time and release.	The new digit (b) will replace the current in odometer window.	
9	Enter third digit (c) of new PIN by pressing left turn signal switch c times.		

Table 25. Changing the PIN

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
10	Press right turn switch 1 time and release.	The new digit (c) will replace the current in odometer window.	
11	Enter fourth digit (d) of new PIN by pressing left turn signal switch d times.		
12	Press right turn switch 1 time and release.	The new digit (d) will replace the current in odometer window.	
13	Enter fifth digit (e) of new PIN by pressing left turn signal switch e times.		
14	Press right turn switch 1 time and release.	The new digit (e) will replace the current in odometer window.	
15	Before the module rearms, turn the ignition key to OFF .	The odometer will return to mileage.	Turning the ignition key to OFF stores the new PIN in the module.



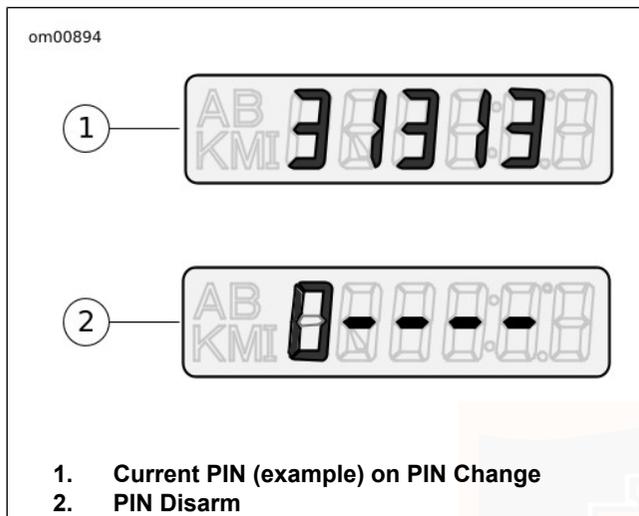


Figure 35. Odometer Windows - PIN

SECURITY STATUS INDICATOR

See Figure 8. The security 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 while the system is disarmed indicates that service of the module is required.

ARMING AND DISARMING

Arming

When the motorcycle is parked and the ignition key is turned to OFF, the Harley-Davidson Smart 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. While armed, the key icon in the speedometer face will flash every three seconds.

NOTE

The HFSM must be in the Chirp Mode for the siren to chirp on arming or on disarming. See SMART SECURITY SYSTEM > SIREN CHIRP MODE (CONFIRMATION) (Page 106).

Disarming

Once disarmed, the rider may ride or move the motorcycle for parking, storage or service without setting off the alarm.

Fob: An armed Smart Security System is automatically disarmed when the ignition key is turned to IGNITION with the fob present.

When the module disarms, the optional siren will chirp once and the key icon will illuminate for a solid four seconds and then turn off.

NOTE

Any motion, like lifting the motorcycle up off of its jiffy stand, or turning the ignition key to IGNITION and the module 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 with the module, the system can be disarmed with the Personal Identification Number (PIN).

Disarming with a PIN

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

Table 26. 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 key to IGNITION .		
3	Quickly (within 2 seconds of turning ignition key) hold both turn signal switches in until confirmation.	Key icon flashes at fast rate. In the odometer window, a flashing dash will be followed by four more dashes.	See Figure 35. Five dashes will appear in the odometer window.
4	Enter first digit (a) in the PIN by pressing left turn switch a times .	The first digit (a) in the odometer will be the first digit in the PIN.	
5	Press right turn switch 1 time .	The first digit is stored and the dash will flash.	Serves as enter key.

Table 26. Entering a PIN to Disarm Harley-Davidson Smart Security System

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
6	Enter second digit (b) in the PIN by pressing left turn switch b times .	The second digit (b) 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	Enter third digit (c) in the PIN by pressing left turn switch c times .	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	Enter fourth digit (d) in the PIN by pressing left turn switch d times .	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	Enter fifth digit (e) in the PIN by pressing left turn switch e times .	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 key icon stops blinking.	Smart Security System is disarmed.

NOTE

- At any time during a PIN disarm, if the fob is brought within range of the motorcycle, the Smart Security System will disarm when the module receives the coded signal from the fob.
- If a mistake is made while entering PIN, wait two minutes before another disarming attempt.

- The Smart Security System will remain disarmed until the ignition key is turned to OFF.

Hazard Warning 4-Way Flasher

If it should be necessary to leave a motorcycle parked along side a roadway, the hazard warning four-way flashers can be turned ON and the Smart Security System armed.

To arm the H-DSSS with the Hazard Warning 4-Way Flashers ON

1. Turn ignition key to ACCESS.
2. Simultaneously press both left and right turn signal switches to turn the four-way flashers ON.
3. Turn the ignition key to OFF to arm the Smart Security System.

To Turn Hazard Warning 4-Way Flashers OFF

1. Turn ignition key to IGNITION.
2. Simultaneously press the left and right turn signal switches.

ALARM

Warnings

Once armed, if the motorcycle is moved or lifted up off of its jiffy stand or if the ignition key is turned to IGNITION 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 key is turned to OFF, the module will remain armed without activating the alarm.

If the motorcycle motion continues or the ignition key is not turned back to OFF, the module 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 Smart Security System is still detecting motion and/or if the ignition key has not been turned back to OFF after a second warning, the system will activate the alarm.

When activated, the Smart 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 Smart 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

Key Fob: Bring the fob to the motorcycle. After the module 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

Perform the following to switch between chirp and chirpless modes.

1. With the fob present, turn the ignition switch ON.
2. When the security lamp turns off, turn the ignition switch OFF.
3. When the security lamp turns off (but before the turn signals flash twice), immediately turn the ignition switch ON.
4. When the security lamp turns off, immediately turn the ignition switch OFF.
5. When the security lamp turns off (but before the turn signals flash twice), immediately turn the ignition switch ON.
6. When the security lamp turns off, immediately turn the ignition switch OFF.
7. When the security lamp turns off (but before the turn signals flash twice), immediately turn the ignition switch ON.

TRANSPORT MODE

It is possible to arm the security system 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 key fob is not within range will trigger the alarm.

To Enter Transport Mode

1. Turn the ignition switch to IGN.
2. Set the engine stop switch to OFF.
3. With an assigned fob within range, turn the ignition switch from IGN to ACC.
4. Simultaneously press both the left and the right turn signal switches. This must be done within five seconds of turning the ignition switch to ACC.
5. After the turn signals flash once, turn the ignition switch to OFF and the module is armed.
6. **Confirmation:** Turn signal blinks three times when armed for one ignition cycle.

To Exit Transport Mode

Return the system to normal operation:

With the fob present, turn the ignition switch to IGN to disarm the system. To cancel the transport mode, set the engine stop switch to RUN.

STORAGE AND SERVICE DEPARTMENTS

Long-Term Parking

To maintain arming, store the fob beyond the range of the antenna - more than 6 m (20 ft) away. 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 174).

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 36. 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.

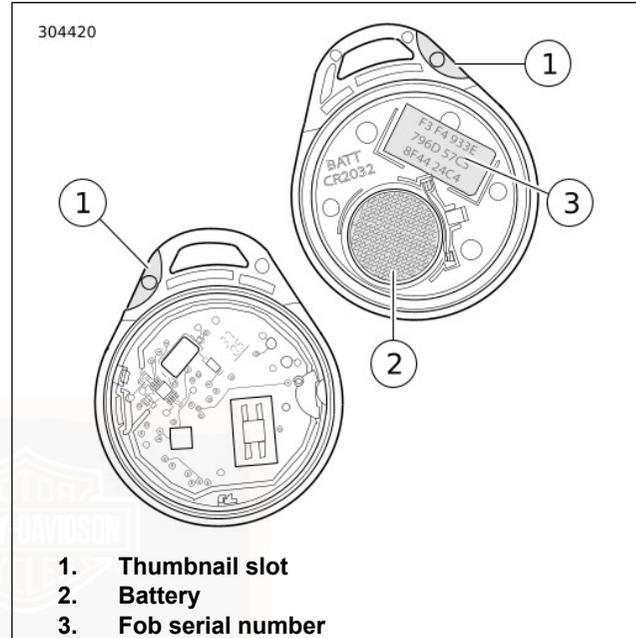


Figure 36. Fob Battery

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 SMART SECURITY SYSTEM > FOB BATTERY (Page 107).
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.



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.

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). Adherence to these suggestions will help to provide good future durability and performance.

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 by 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 14 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 ignition/headlamp key switch to IGNITION position. Do not roll the throttle.

2. See Figure 37. 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 2 seconds as it operates to fill the fuel lines with gasoline.

3. Squeeze the clutch lever in against the handgrip.
4. Raise the jiffy stand (required on international models).
5. Press the starter button to start the motorcycle.
6. When the engine has started, you can operate your motorcycle as you normally would after raising the jiffy stand.

NOTE

- *If it is necessary to start the motorcycle with the transmission in gear (green neutral lamp off), the clutch interlock circuitry requires the clutch be disengaged by pulling the clutch lever in against the left handgrip. The brake should be applied to prevent movement of the motorcycle.*
- *The ABS indicator lamp will remain on until vehicle is moving approximately 5 km/h (3 mph).*

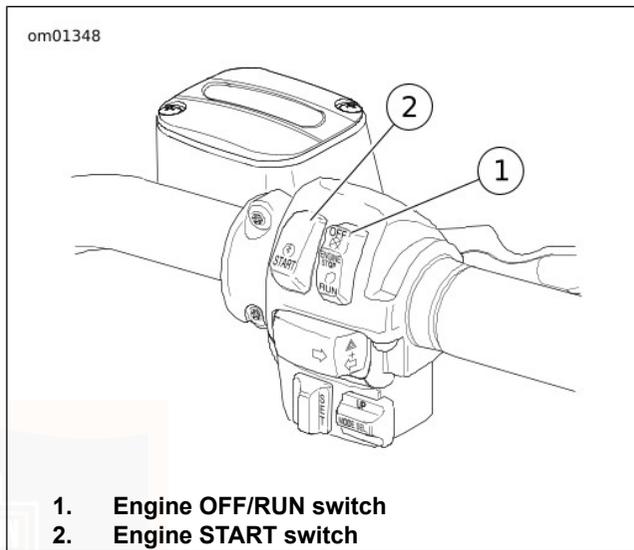


Figure 37. Right Handlebar Controls

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, the motorcycle is equipped with an Engine Idle Temperature Management System (EITMS) to provide limited cooling of the rear cylinder.

Operation

When engine temperature reaches a predetermined point, the EITMS will turn off the rear cylinder fuel injector. Idle speed will be maintained, however the rear cylinder will become an "air pump" which will work to cool the engine.

EITMS will activate (rear cylinder will turn off) when **all** of the following conditions are met:

NOTE

Refer to position 6 in the VIN Breakdown Table 3 to identify configuration calibration.

- Engine temperature exceeds 140 °C (284 °F) (all except configuration J and L) or 162 °C (324 °F) (configuration J and L only)
- Twist grip opening is at idle
- Vehicle speed under 2 km/h (1 mph)
- Engine speed under 1200 rpm

EITMS will disable (rear cylinder will again fire) if **any one** of the following occurs:

- Engine temperature falls below 135 °C (275 °F) (all calibrations)
- Twist grip opening is above idle
- Vehicle speed exceeds 3 km/h (2 mph)
- Engine speed exceeds 1350 rpm
- Clutch is released with vehicle in gear

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

Enabling/Disabling EITMS

Enabled: The EITMS engine cooling feature will automatically activate whenever the vehicle comes to a complete stop and

is idling during elevated temperature conditions. When the feature is enabled, it may not activate under cool riding conditions.

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

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

1. Turn the ignition switch to the ON position and push the engine OFF/RUN switch on the right handlebar to the RUN position (the motorcycle may be running or not running).
2. Push the throttle to roll-off position and hold.
3. See Figure 8. After approximately 3 seconds, the cruise indicator lamp will either flash green (EITMS enabled) or orange (EITMS disabled).

NOTE

A flashing lamp indicates the EITMS setting. A solid (non-flashing) lamp indicates the cruise control setting.

4. Repeat the procedure as needed to enable or disable EITMS.

NOTE

The EITMS setting will remain in effect until it is changed by the rider or dealer. It does not have to be reconfigured at each startup.

CRUISE CONTROL OPERATION

Theory of Operation

The cruise control is designed to be safely operated with minimum movement by the rider and all rider control actions are natural and easy.

NOTE

- *The rider always over-rides and controls the system.*
- *The system will not work at vehicle speeds below 48 km/h (30 mph) or above 145 km/h (90 mph).*
- *The system is managed by the ECM. The tachometer provides information to disengage the system if the engine RPM suddenly increases.*
- *Besides the ECM, the system has other components: a stepper-motor (controlled by the computer) which operates the throttle during CRUISE operation, and several internal switches, all sending information to the computer.*

- *The system will allow rider to increase speed 16 km/h (10 mph) or more (depending on how hard the rider rolls on the throttle and the condition of the vehicle) over the SET point before deactivating. This feature allows the rider to momentarily increase speed, if necessary. Rolling on the throttle to greatly increase speed may deactivate the system.*

Engaging Cruise Control

NOTE

System will NOT work if:

- *Rider operates at vehicle speeds below 48 km/h (30 mph) or above 145 km/h (90 mph).*
- *Brake lamps are on constantly. See dealer.*

Installing non-specified tires or gearing may affect cruise control operation.

1. See Figure 13. Push the CRUISE switch to activate cruise control. The orange icon on the cruise gauge face will light when activated.

2. With the motorcycle traveling at the desired cruise speed of 48–145 km/h (30–90 mph), momentarily push the RESUME/SET switch on the right handlebar to SET. After a delay of about 1-1/2 seconds, the icon will turn green on the face of the gauge to indicate the selected cruising speed is locked in.

Disengaging Cruise Control

The cruise control automatically disengages whenever the cruise control module receives one of the following inputs:

1. Front and/or rear brake is applied.
2. Throttle is rolled back or closed, thereby actuating roll-off (disengage) switch.
3. Motorcycle clutch is disengaged (module senses too great an increase in RPM).
4. Vehicle speed is out of the operating range.

NOTE

Rolling on the throttle more than 16 km/h (10 mph) above the set speed may also deactivate the cruise control.

When the cruise is disengaged, the green cruise engaged icon on the face of the gauge changes to orange. The orange cruise control system icon remains ON until the main switch is turned off.

However, should you decide to SET a cruise speed, RESUME last set speed, ACCELERATE or DECELERATE, simply press the RESUME/SET switch.

Resuming Cruise Speed

If the system is deactivated using one of the methods described under DEACTIVATING CRUISE CONTROL, the system is still ON should you decide to RESUME the set speed. To accomplish this, simply press the RESUME/SET switch to RESUME.

NOTE

The computer will hold the SET speed in memory for the RESUME function. If the vehicle speed drops more than 24 km/h (15 mph) below the SET speed, speed can no longer be RESUMED. If cruise operation is still desired, press the RESUME/SET switch to SET to reset the cruise speed.

Accelerating Above Cruise Speed

1. With the cruise speed set, momentarily press the RESUME/SET switch to RESUME to increase the speed by 1.6 km/h (1 mph).

2. Pressing and holding the RESUME/SET switch at RESUME will cause the system to continue to increase speed in increments of approximately 1.6 km/h (1 mph) until the switch is released. There is a delay of about 2 seconds before the speed increases.

Decelerating Cruise Control

1. With the cruise speed set, momentarily press the RESUME/SET switch to SET to reduce the speed by 1.6 km/h (1 mph).
2. Pressing and holding the RESUME/SET switch at SET will cause the system to continue to reduce speed in increments of approximately 1.6 km/h (1 mph) until the switch is released. There is a delay of about 2 seconds before the speed decreases.

Deactivating Cruise Control

Push the CRUISE switch to turn off cruise control. The orange icon in the gauge is extinguished to indicate the system is OFF.

STOPPING THE ENGINE

1. Stop the engine by turning the engine stop switch on right handlebar to OFF.

2. Turn the ignition/headlamp key switch to OFF. If the engine should be stalled or stopped in any way, turn off the ignition switch at once to prevent battery discharge.

SHIFTING GEARS

Shifting while 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)

1. See Figure 38. 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 close the throttle so the engine will not drag when the clutch lever is released.*

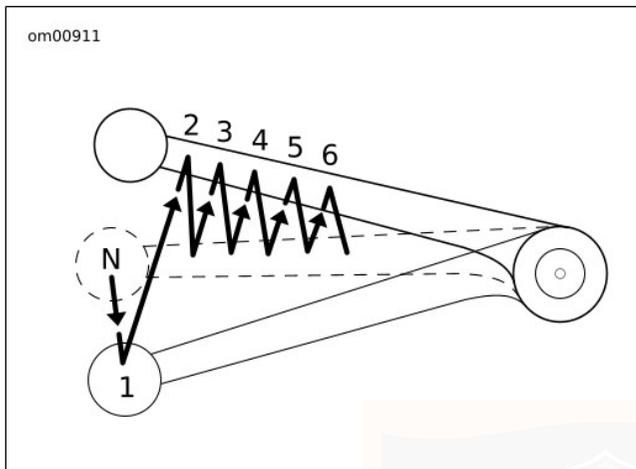


Figure 38. Shifting Sequence: Upshift

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 39. 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 close the throttle so the engine will 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.

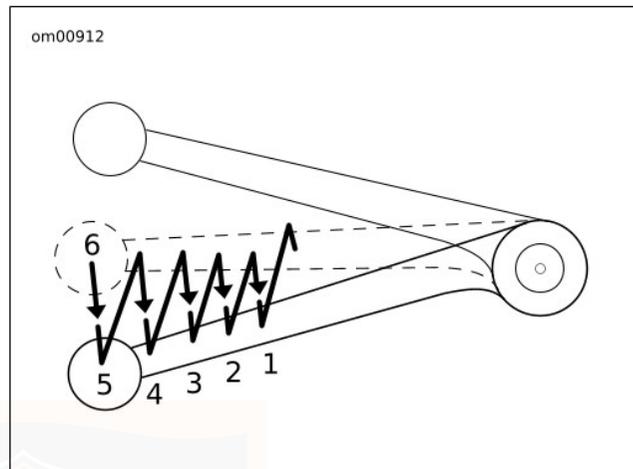


Figure 39. Shifting Sequence: Downshift

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)

NOTICE

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

Good maintenance creates a safe motorcycle. 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, abrasions or cuts.

2. Belt and primary chain 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 39.

ENGINE LUBRICATION: SYNTHETIC OIL

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. Your authorized dealer has the proper oil to suit your requirements.

Your motorcycle comes equipped with SCREAMIN' EAGLE SYN3 FULL SYNTHETIC MOTORCYCLE LUBRICANT 20W50. If SYN3 is not available and addition of motor oil is required, the first choice would be to add GENUINE HARLEY-DAVIDSON H-D 360 MOTORCYCLE OIL 20W50 to the SYN3 for engine lubrication. Although H-D 360 is compatible with SYN3, we suggest the mixture of the fluids be changed as soon as possible.

If H-D 360 is not available, the second choice would be to add an acceptable diesel engine oil. We again suggest the mixture of the fluids be changed as soon as possible. DO NOT add diesel engine oil to the primary chaincase or transmission.

To switch lubricant to H-D 360, completely drain the SYN3 before filling with H-D 360. A residual amount of fluid will remain. It is not required to flush out the residual fluid.

NOTICE

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

Refer to Table 28. If it is necessary to add oil and Screamin' Eagle SYN3 Synthetic Motorcycle Lubricant is not available, use an oil certified for diesel engines. Acceptable diesel engine oil designations include: SH, CH-4, CI-4, and CJ-4.

The preferred viscosities for the diesel engine oils 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 10 °C (50 °F)
Screamin' Eagle SYN3 Full Synthetic Motorcycle Lubricant	SAE 20W50	HD 360	Above 4 °C (40 °F)	Excellent
Screamin' Eagle Synthetic Blend Motorcycle Engine 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 10 °C (50 °F)
Genuine H-D 360 Multi-Grade	SAE 20W50	HD 360	Above 4 °C (40 °F)	Good
Genuine H-D 360 Regular Heavy	SAE 50	HD 360	Above 16 °C (60 °F)	Poor
Genuine H-D 360 Extra Heavy	SAE 60	HD 360	Above 27 °C (80 °F)	Poor
Multi-grade (oil certified for use in diesel engines)	SAE 10W40	SH, CH-4, CI-4, CJ-4	Below 4 °C (40 °F)	Excellent

CHECKING OIL LEVEL

Check engine oil level at each complete fuel refill.

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

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 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

1. For pre-ride inspection, place vehicle on level ground and rest the vehicle on its jiffy stand (unless sidecar is attached).
2. See Figure 40. Remove filler plug/dipstick and wipe off the dipstick. Insert the dipstick and tighten into the fill spout.

NOTE

The oil level marks for checking with motorcycle upright or on jiffy stand are on the same side of the dipstick. Be sure to use the correct portion of dipstick when checking oil level.

3. See Figure 41. Remove the dipstick and verify the level of the oil. The correct oil level should register midway (2) between the FULL and ADD marks on the dipstick.

NOTE

If oil level is at or below the ADD mark, add only enough oil to bring the level to the middle of the two marks on the dipstick.

Oil Level Hot Check

NOTE

- *The engine will require a longer warm up period in colder weather.*
 - *Engine oil level hot check should be performed only when engine is at normal operating temperature.*
1. Ride motorcycle until engine is at normal operating temperature.
 2. Place vehicle on level ground and rest the vehicle on its jiffy stand (unless sidecar is attached). Allow engine to idle for 1-2 minutes. Turn engine off.

3. See Figure 40. Remove filler plug/dipstick and wipe off the dipstick. Insert the dipstick and tighten into the fill spout.

NOTE

The oil level marks for checking with motorcycle upright or on jiffy stand are on the same side of the dipstick. Be sure to use the correct portion of dipstick when checking oil level.

4. See Figure 41. Remove the dipstick and note the level of the oil. The level should be between the ADD (1) and FULL (3) marks. Add oil as necessary to bring the level to the FULL mark on the dipstick. Do not overfill.

NOTE

Refer to Table 28. Use only recommended oil specified in MAINTENANCE AND LUBRICATION > ENGINE LUBRICATION: SYNTHETIC OIL (Page 123).

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

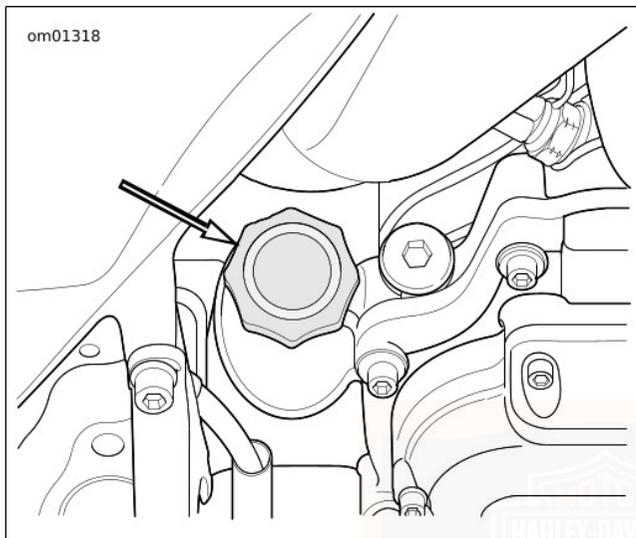


Figure 40. Engine Oil Filler Cap

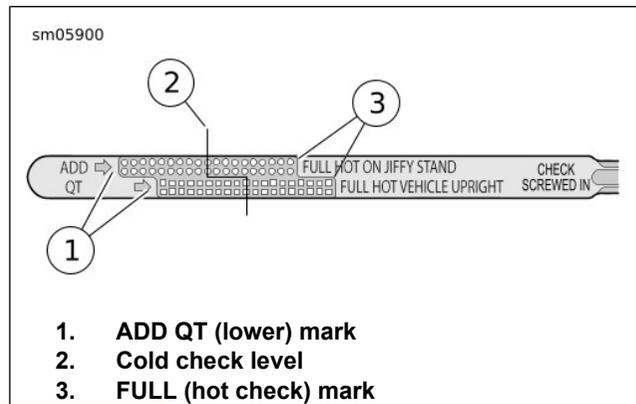


Figure 41. Engine Oil Dipstick

CHANGING OIL AND OIL FILTER

Refer to Table 39. Oil should be changed after the first 1,600 km (1000 mi) for a **new** engine and at regular intervals in normal service at warm or moderate temperatures.

Oil change intervals should be more frequent in cold weather or severe operating conditions. See MAINTENANCE AND LUBRICATION > WINTER LUBRICATION (Page 130).

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

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)

1. Ride motorcycle until oil is at normal operating temperature. Turn engine off.
2. Remove filler plug/dipstick.
3. See Figure 42. Remove the oil drain plug (2). Do not remove hex plug (3) or transmission drain plug (1). Allow oil to drain completely.
4. Inspect the oil drain plug O-ring for cuts, tears or signs of deterioration. Replace as necessary.

NOTICE

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

5. Remove the oil filter using OIL FILTER WRENCH (PART NUMBER: HD-42311) or OIL FILTER WRENCH (PART NUMBER: HD-44067-A) and hand tools. Do not use with air tools.

6. Clean the oil filter mount flange of any old gasket material.

NOTE

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

7. See Figure 43. Lubricate gasket with clean engine oil and install **new** oil filter on filter mount. Hand-tighten oil filter one-half to three-quarters of a turn after gasket first contacts filter mounting surface. Do NOT use oil filter wrench for installation.

8. Install engine oil drain plug and tighten to 19–28.5 N·m (14–21 ft·lbs).

NOTE

Use the proper grade of oil for the lowest temperature expected before the next oil change. Refer to Table 28 for recommended oil.

9. Initially add 2.8 L (3.0 qt) of engine oil.

10. Verify proper oil level. See MAINTENANCE AND LUBRICATION > CHECKING OIL LEVEL (Page 125).

- a. Check engine oil level using **COLD CHECK** procedure.
- b. Start engine and carefully check for oil leaks around drain plug and oil filter.
- c. Check engine oil level using **HOT CHECK** procedure.

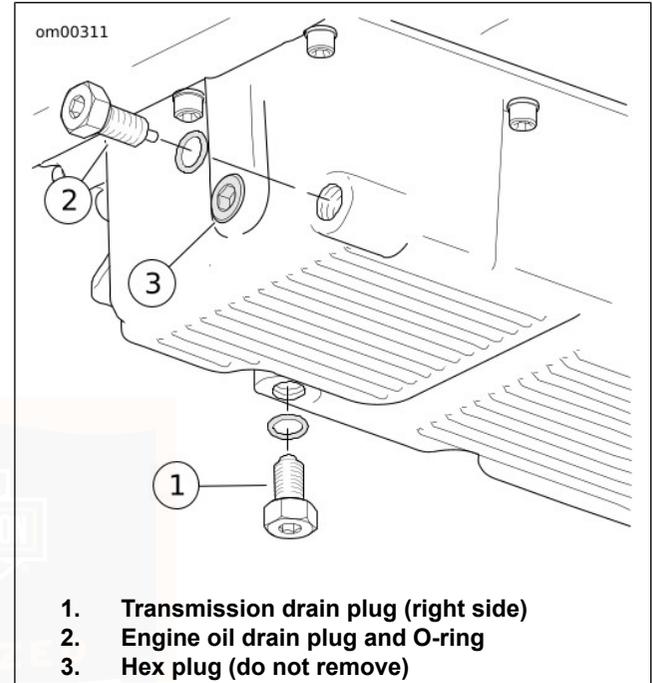
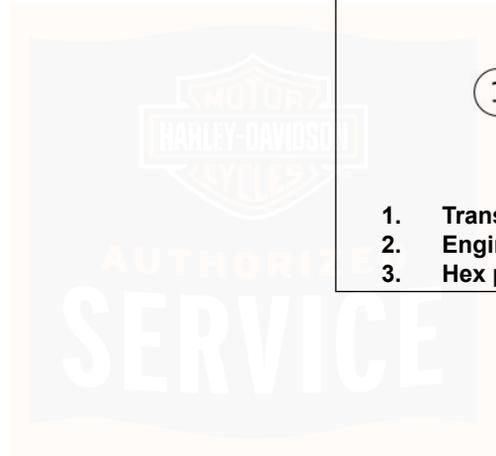


Figure 42. Oil Pan



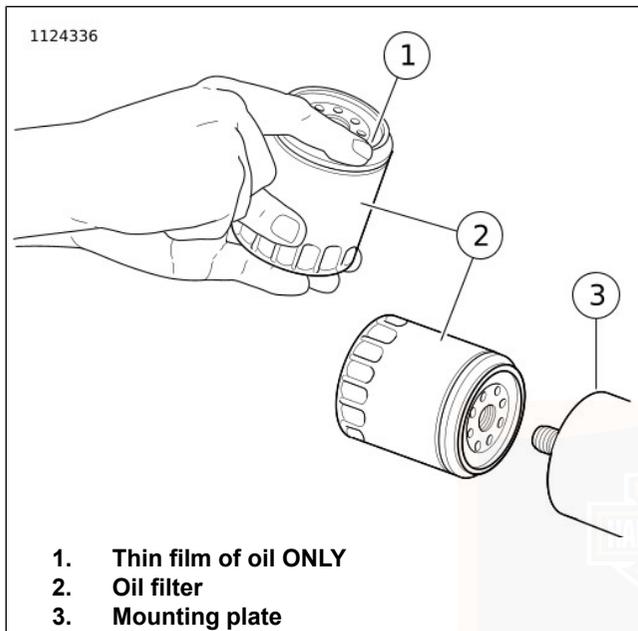


Figure 43. Applying Thin Oil Film

WINTER LUBRICATION

In colder climates, the engine oil should be changed often. 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 of the water vapor condenses to liquid form on the cool metal surfaces inside the engine. In freezing weather this water will become slush or ice and, if allowed to accumulate too long, may block the oil lines and cause damage to the engine.

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 allowed to thoroughly warm up, this water will accumulate, mix with the engine oil and form a sludge that is harmful to the engine.

OIL COOLER

Motorcycles with a Twin Cam 103 or larger engine are equipped with a factory installed oil cooler. Always keep the cooler clean and free from dirt and debris. This will help maintain maximum cooling efficiency.

TRANSMISSION LUBRICANT

Check the transmission lubricant level with engine turned off and motorcycle resting on jiffy stand on level surface.

NOTE

Allow vehicle to rest for a few moments before checking lubricant level. This will allow lubricant level to normalize.

1. See Figure 44. Remove transmission lubricant filler plug/dipstick. Wipe dipstick clean.
2. Insert dipstick into transmission with filler plug/dipstick resting on threads. Do not thread in.
3. See Figure 45. Remove filler plug/dipstick and check lubricant level on dipstick. If lubricant level is at or below the ADD mark on the dipstick, add only enough lubricant to bring level to between ADD mark and FULL mark on dipstick.
4. Install filler plug/dipstick. Tighten to 2.8–8.5 N·m (25–75 in-lbs).

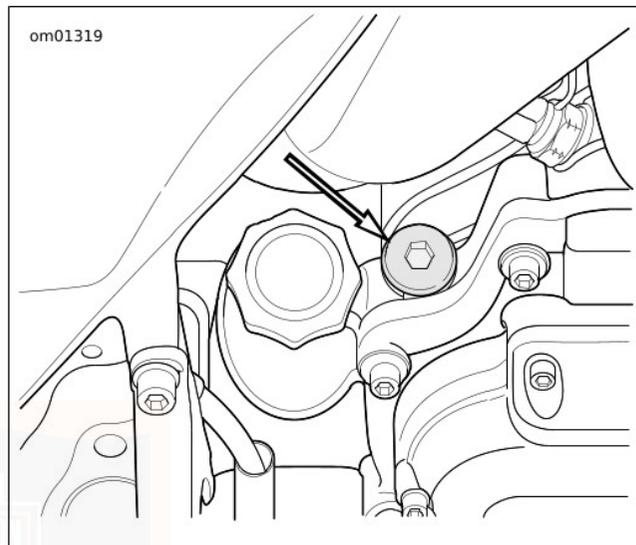
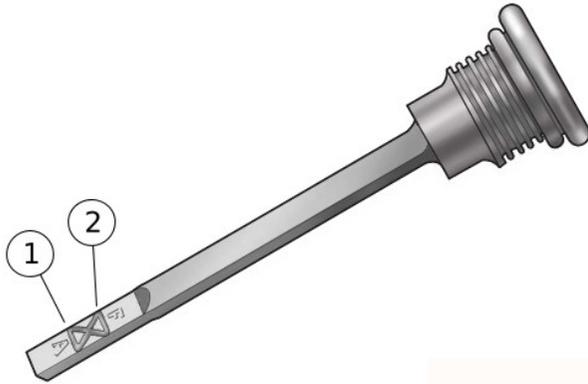


Figure 44. Transmission Filler Plug/Dipstick Location

AUTHORIZED
SERVICE

om01041



1. Add
2. Full

Figure 45. Transmission Filler Plug/Dipstick Lubricant Level

Table 29. Recommended Lubricant

MODEL	LUBRICANT	REFILL QTY. *
All CVO	SYN3 20W50 OIL or FORMULA+ TRANSMISSION AND PRIMARY CHAIN LUBRIC- ANT	0.83 L (28 fl oz)
* Approximate. Check and add as needed to bring level within specification.		

CHANGING TRANSMISSION LUBRICANT

1. See Figure 44. 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 46. Remove transmission drain plug and drain lubricant into a suitable container.

NOTE

Dispose of transmission lubricant in accordance with local regulations.

3. Inspect O-ring on drain plug for tears or damage. Replace as required. Wipe any foreign material from plug.

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. See MAINTENANCE AND LUBRICATION > TRANSMISSION LUBRICANT (Page 130). Check lubricant level and add lubricant to bring the level between the ADD and FULL marks.

7. Install filler plug/dipstick and tighten to 2.8–8.5 N·m (25–75 in-lbs).

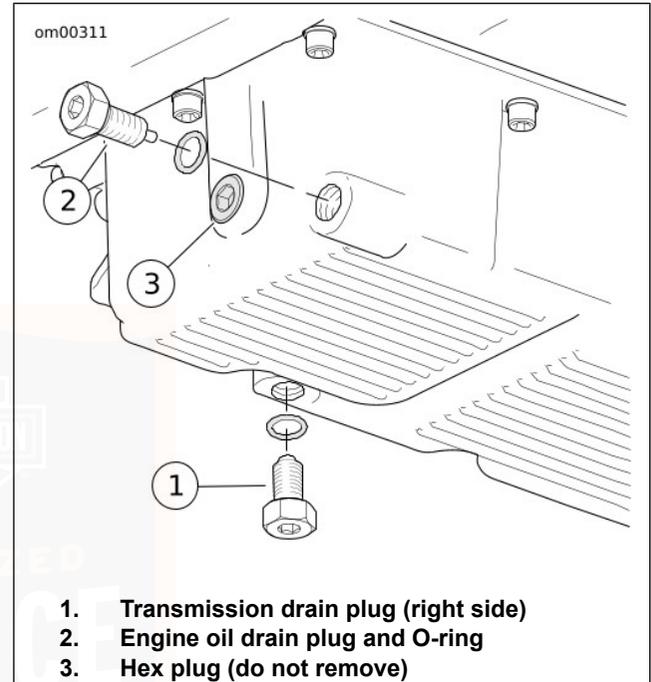


Figure 46. Oil Pan

PRIMARY CHAINCASE LUBRICATION: SYNTHETIC OIL

Lubrication is a major factor in the performance and service life of the clutch components. Use the appropriate Harley-Davidson chaincase lubricant for all operating temperatures.

Your motorcycle comes equipped with SCREAMIN' EAGLE SYN3 FULL SYNTHETIC MOTORCYCLE LUBRICANT 20W50. If SYN3 is not available and addition of lubricant to the primary chaincase is required, the first choice would be to add FORMULA+ TRANSMISSION AND PRIMARY CHAINCASE LUBRICANT. Although FORMULA+ TRANSMISSION AND PRIMARY CHAINCASE LUBRICANT is compatible with SYN3, we suggest the mixture of the fluids be changed as soon as possible.

NOTE

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

PRIMARY CHAINCASE LUBRICANT

General

NOTE

The chaincase lubricant level should be drained and refilled at specified intervals. Refer to Table 39.

134 Maintenance and Lubrication

Check Lubricant Level

1. Ride motorcycle until engine is warmed up to normal operating temperature.
2. Stand vehicle upright on a level surface, so that primary chaincase is level.
3. See Figure 47. Remove clutch inspection cover from primary chaincase cover.
4. Remove and discard seal ring from cover.
5. If the fluid level is visible through the clutch inspection cover opening, it is adequate. If necessary, add enough of the recommended GENUINE Harley-Davidson lubricant until it is visible along the bottom portion of the clutch assembly. Refer to Table 30.

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)

6. Refer to Changing Chaincase Lubricant to install seal ring and clutch inspection cover.

Table 30. Recommended Lubricant

MODEL	LUBRICANT
All CVO	Screamin' Eagle SYN3 Synthetic Motorcycle Lubricant

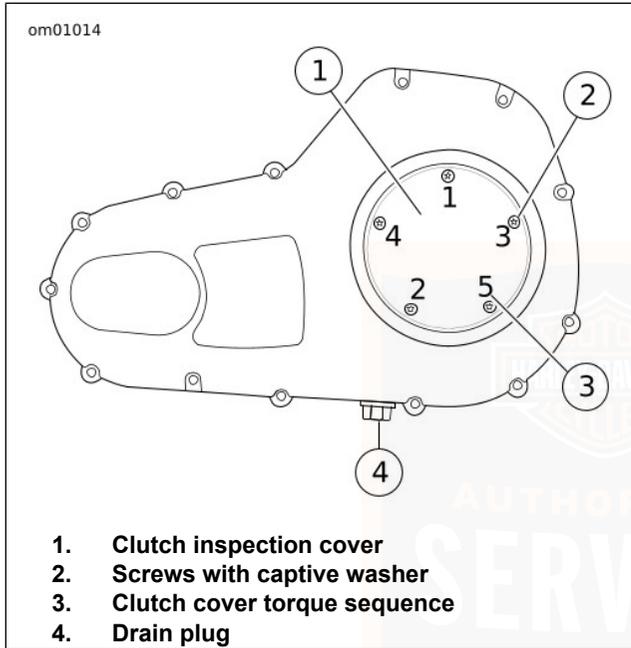


Figure 47. Primary Chaincase Cover

Changing Chaincase Lubricant

NOTICE

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

1. Ride motorcycle until engine is warmed to normal operating temperature.
2. See Figure 47. Remove clutch inspection cover from primary chaincase cover.
3. Remove drain plug and drain lubricant into suitable container.

NOTE

Dispose of chaincase lubricant in accordance with local regulations.

4. Clean drain plug magnet. If magnet has accumulated excessive debris, inspect the condition of chaincase components.
5. Inspect drain plug O-ring for cuts, tears or deterioration. Replace as necessary.

6. Install drain plug and tighten to 19–28.5 N·m (14–21 ft-lbs).
7. Pour 1.12 L (38 fl oz) of the recommended GENUINE Harley-Davidson lubricant through the clutch inspection cover opening. Refer to Table 30.

NOTE

Add 1.33 L (45 fl oz) only if the primary chaincase or primary chaincase cover has been removed.

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)

▲ 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)

8. Swab all lubricant from seal ring groove in clutch inspection cover and install **new** seal ring with nubs contacting ring groove walls.

9. See Figure 47. Install clutch inspection cover. Tighten screws in the sequence shown to 9.5–12.2 N·m (84–108 **in-lbs**).

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 deflection:

- At every scheduled service interval.
 - With transmission in neutral.
 - At loosest spot in belt.
 - With motorcycle at room temperature.
 - With motorcycle upright and rear wheel off the ground or on jiffy stand without rider or luggage.
1. Remove left side saddlebag.
 2. Slide O-ring on gauge toward 0 kg (0 lb) mark.
 3. See Figure 48. 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.

NOTE

Each graduation on the scale represents 3.2 mm (1/8 in) of belt deflection.

5. Measure deflection at several locations around the belt. Select the loosest measurement and compare with specifications in Table 31. Belt must be adjusted if not within specification.

Table 31. Belt Deflection

INCHES	MILLIMETERS
1/4-7/16	6.4-11.1

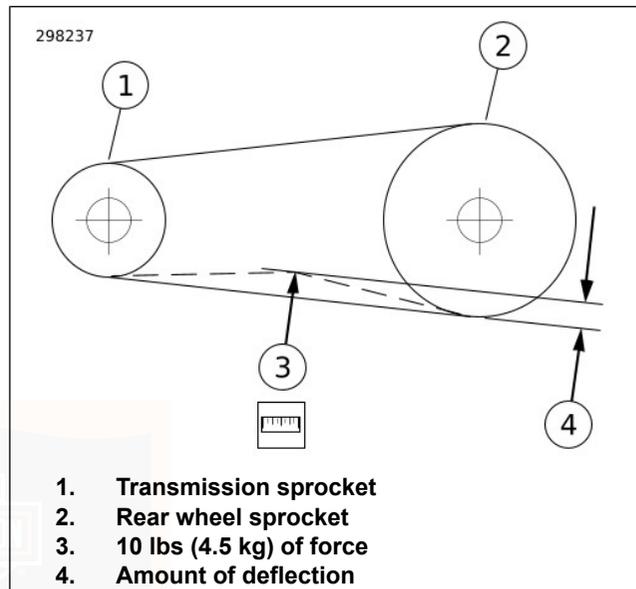


Figure 48. Checking Belt Deflection

CHASSIS LUBRICATION

Refer to Table 39 for all maintenance schedules.

1. Lubricate clutch control cable (if equipped) with HARLEY LUBE at proper intervals.

2. Lubricate front brake hand lever and clutch control hand lever with HARLEY LUBE only if necessary.
3. Pack the steering head bearings with SPECIAL PURPOSE GREASE at proper intervals.
4. Lubricate the jiffy stand mechanism with ANTI-SEIZE LUBRICANT at proper intervals.

NOTE

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

MISCELLANEOUS LUBRICATION

Hinges, Latches, Etc.

Lubricate the rub points of latches and hinges using HARLEY LUBE as required.

Lubricate the fingers on the saddlebag latches where they engage the hinge.

OIL APPLICATIONS

Refer to Table 39 for all control connections and parts. Vehicle should be oiled at regular intervals, particularly after washing motorcycle or driving in wet weather.

FRONT FORK OIL

Refer to Table 39. 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.

HYDRAULIC CLUTCH

The clutch is hydraulically actuated. Squeezing the left hand lever causes the clutch master cylinder to apply pressure to the clutch actuation cylinder mounted in the transmission right side cover. The actuation cylinder push rod extends and contacts the clutch release bearing to release the clutch.

Clutch fluid level should be checked periodically. Refer to Table 39 Service Intervals for the recommended frequency. Check the fluid level as follows:

1. Stand the motorcycle upright (not leaning on the jiffy stand) on a level surface, and turn handlebar so the top of the clutch master cylinder is level.

2. See Figure 49. View reservoir sight glass and verify fluid level is at or above the Min line. If fluid level is low, proceed to next step.

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)

3. Clean all dirt and debris from the clutch master cylinder cover. Remove the two clutch master cylinder cover screws and remove the cover.
4. Verify the fluid level in the clutch master cylinder reservoir is at the FILL LEVEL mark at the top of the ledge on the rear inside wall of the reservoir. If the fluid level is low, add DOT 4 BRAKE FLUID which is approved for clutch system use and available from a Harley-Davidson dealer.

NOTE

Do not overfill the clutch master cylinder reservoir. As the clutch friction discs wear, the piston in the clutch cylinder will force fluid back into the reservoir which could cause fluid overflow. If clutch fluid level is over full, the clutch can be damaged.

NOTICE

DOT 4 hydraulic brake fluid is used in the hydraulic clutch. Do not use other types of fluids as they are not compatible and could cause equipment damage. (00353b)

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)

▲ 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)

5. Inspect the clutch master cylinder cover gasket for rips, cuts, cracks, or other signs of damage. Replace the gasket if necessary. Carefully place the cover and cover gasket on the master cylinder reservoir and secure with the two cover screws. Tighten the screws to 0.9–1.1 N·m (8–10 in-lbs).

NOTE

If the fluid level in the clutch master cylinder reservoir is correct but the clutch does not operate properly, refer to the service manual or see a Harley-Davidson dealer for service.

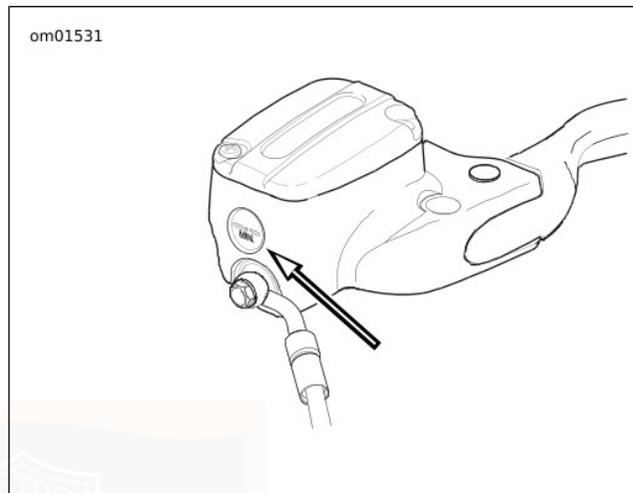


Figure 49. Clutch Reservoir Sight Glass

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 Table 39 Service Intervals.

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 shake indicating

excessive bearing looseness. Steering head bearings should be adjusted according to service manual procedure, if necessary.

BRAKES

Refer to Table 39. 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)

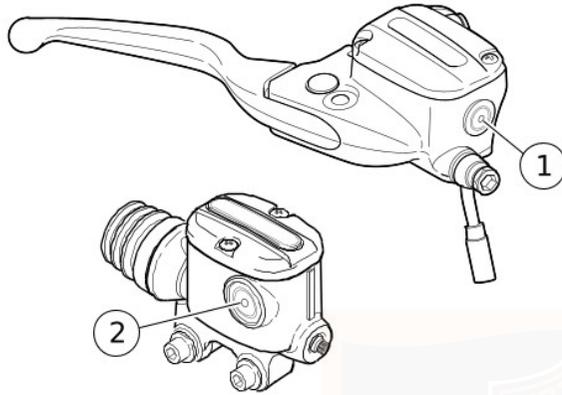
1. See Figure 50. Look through the sight glass on the front and rear brake fluid reservoirs to check for the presence of brake fluid. If necessary, turn the handlebars from side to side or gently shake the vehicle to agitate the fluid.

- 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.

307814



1. Sight glass, front master cylinder reservoir
2. Sight glass, rear master cylinder reservoir

Figure 50. 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 51. Check the rear brake disc as it spins. The disc should run true in the brake caliper.
2. Using a thin plastic ruler, measure the thickness of the brake pad friction material. For rear brakes, place the ruler against the brake disc through the space alongside the caliper.
3. Refer to Table 32. If the brake pad friction material is at the minimum thickness or less, replace the pads. Always replace brake pads in pairs. See a Harley-Davidson dealer.

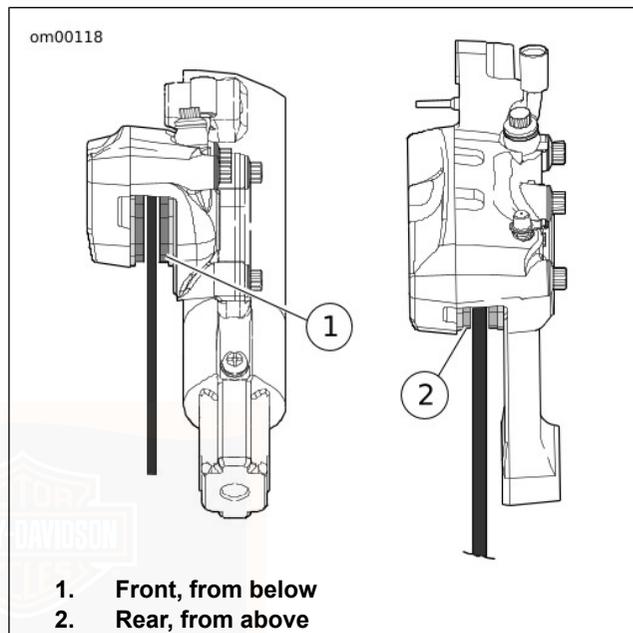


Figure 51. Brake Friction Material

Table 32. Minimum Brake Pad Friction Material Thickness

in	mm
0.016	0.4

TIRES

Refer to Table 14 Tire Specifications 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 14 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)

TIRE REPLACEMENT

Inspection

▲ WARNING

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

▲ WARNING

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.

Arrows on tire sidewalls pinpoint location of wear bar indicators.

Tread wear indicator bars will appear on tire tread surfaces when 0.8 mm (1/32 in) or less of tire tread remains. Always replace tires before the tread wear indicator bars appear.

When To Replace Tires

New tires are needed if any of the following conditions exist:

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. A bump, bulge or split in the tire.
4. Puncture, cut 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.

Refer to Table 14 for approved 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)

SHOCK ABSORBERS

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

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 39.

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 6.
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 FILTER ELEMENT

⚠ WARNING

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

NOTICE

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

NOTE

Refer to Table 39 Service Intervals. Remove air cleaner cover and inspect filter element at proper intervals. When operated under dusty conditions, inspect more often.

1. Remove fasteners (1) and air cleaner insert (2).
2. Remove fastener (3) and air cleaner cover (4).
3. Remove fasteners (5) and air filter element (6).

NOTE

- *Never strike filter element on a hard surface to dislodge dirt.*
 - *Fill the cleaning pan only about 9.5 mm (0.375 in) deep to prevent dirty cleaning solution from entering the inside of the element.*
4. Use a shallow pan with lukewarm water and a mild detergent to wash the paper/wire mesh filter element. Roll the element in the solution to soak the entire outer perimeter being careful not to let cleaning solution inside the element.
 5. Remove element and allow five minutes for solution to dissolve dirt.
 6. From the inside out, rinse the element.
 7. Shake off excess water and allow filter element to air dry. Do NOT use compressed air!
 8. Hold the filter element up to a strong light source. The element is sufficiently clean if light is uniformly visible through the media.
 9. Replace the filter element if damaged or if filter media cannot be adequately cleaned.

NOTE

Never apply oil to air filter element.

10. Apply a drop of LOCTITE 243 MEDIUM STRENGTH THREADLOCKER AND SEALANT (blue) to the threads of the filter element fasteners (5). Tighten screws to specification. Refer to Table 33.
11. Install air cleaner cover (4) and tighten fastener (3) to specification. Refer to Table 33.
12. Install insert (2) and tighten screw (1) to specification. Refer to Table 33.

NOTE

Water intrusion could occur in rainy conditions with an exposed filter element:

- *When parked resulting in internal engine damage.*
- *When running resulting in engine misfire.*

When not operating the motorcycle, cover the exposed air filter element with the provided rain sock to prevent the chance of water intrusion.

Table 33. Air Cleaner Fastener Torque

FASTENER	TORQUE
Air filter element	6.2–6.8 N·m (55–60 in-lbs)
Air cleaner cover	4–6.8 N·m (36–60 in-lbs)
Air cleaner insert	3.1–3.6 N·m (27–32 in-lbs)

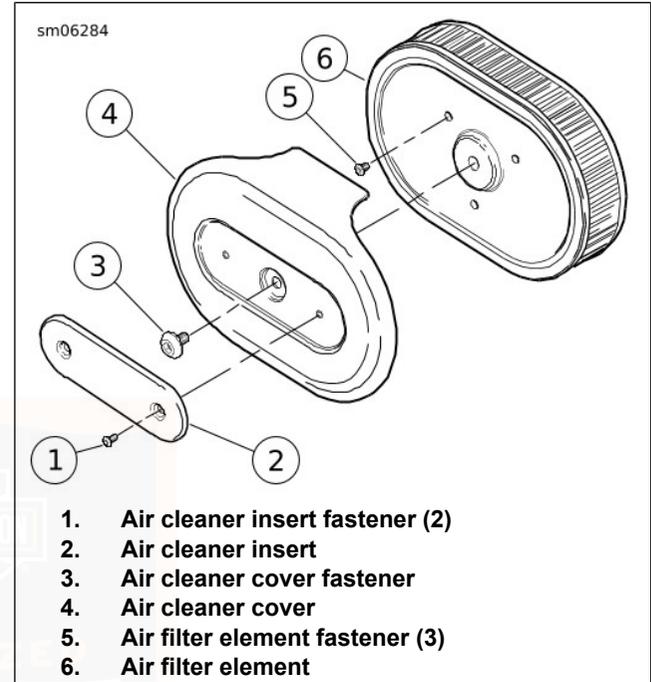


Figure 52. Air Cleaner Cover

HEADLAMP BULB REPLACEMENT

This headlamp assembly uses separate quartz halogen bulbs for the low beam and the high beam. Refer to Table 13 for part numbers.

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)

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)

⚠ WARNING

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

1. See Figure 53. Remove screw (1) and headlamp trim ring (2).
2. See Figure 54. Remove screws (1) and retaining ring (3).

3. Disconnect wire harness connectors from the bulbs.
4. Remove the bulb.
 - a. On Domestic and Canada models, turn bulb assembly 1/4 turn counterclockwise to remove from the reflector/lens.
 - b. See Figure 55. For all other models, remove the rubber boot from the back of the housing. Press down on the wireform loop (1) to release from the retainer (2). Swing wireform out of the way.
5. Install **new** bulb assembly.
 - a. On Domestic and Canada models, insert bulb into reflector/lens and rotate 1/4 turn clockwise.
 - b. For all other models, align the tab on the bulb with the notch in the headlamp housing. Rotate the wireform into place and latch under lip of the retainer. Install rubber boot at back of housing.
6. **HDI models:** Rotate position lamp bulb retainer 1/4 turn counterclockwise to remove. Replace bulb and install bulb retainer in lamp housing.
7. Connect the wiring harness connectors to the bulbs.
8. Hold headlamp assembly in place and install the retaining ring.
9. Install the headlamp trim ring and tighten the screw.

NOTE

Check headlamp alignment. See to **MAINTENANCE AND LUBRICATION > HEADLAMP ALIGNMENT (Page 152)**.

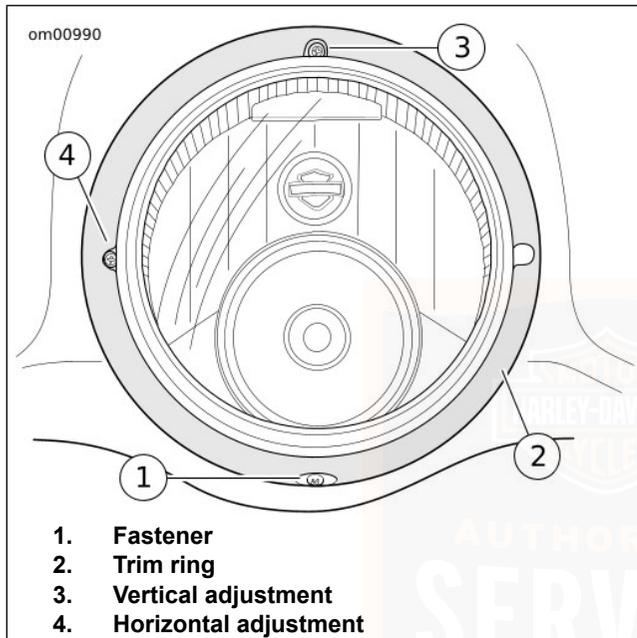


Figure 53. Headlamp Trim Ring

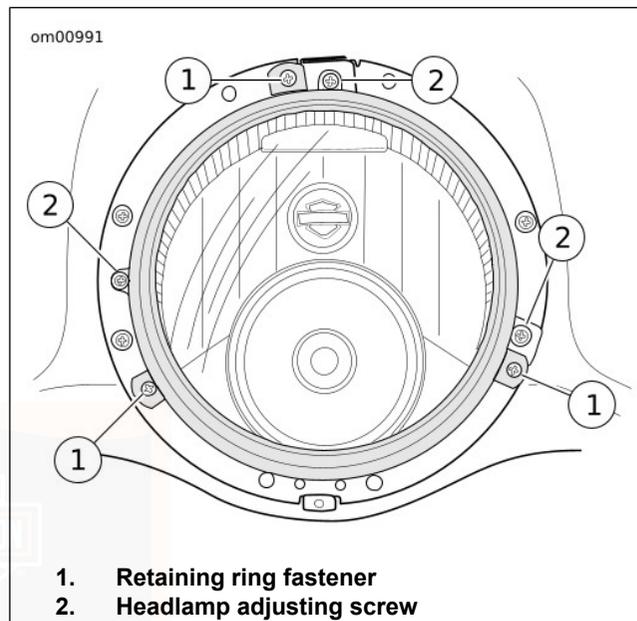
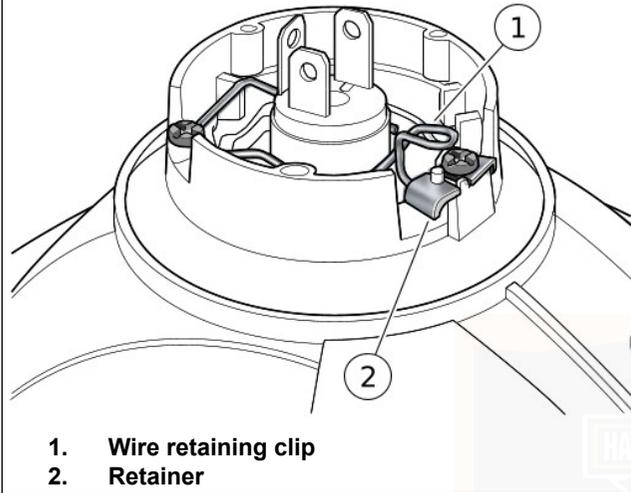


Figure 54. Headlamp Retaining Ring

sm05135



1. Wire retaining clip
2. Retainer

Figure 55. Wire Retaining Clip

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 the headlamps of motorcycles with multiple beam headlamps to converge into one pattern.

1. Verify that front and rear tire inflation pressures are correct and that suspension is adjusted to the weight of the principal rider. See OWNER MANUAL > SPECIFICATIONS (Page 23).
2. Fill fuel tank or add ballast to equal the weight of the fuel needed.

NOTE

See Figure 56. To aid in properly placing the motorcycle, a perpendicular line (1) can be drawn on the floor. For best results, choose an area with minimum light.

3. Draw a vertical line (2) on the wall.
4. Position motorcycle so that front axle is 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 principal rider sit on the motorcycle.

5. With the vehicle laden and upright, point the front wheel straight forward at wall and measure the distance (4) from the floor to the center of the HIGH BEAM bulb.
6. 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.
7. 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.

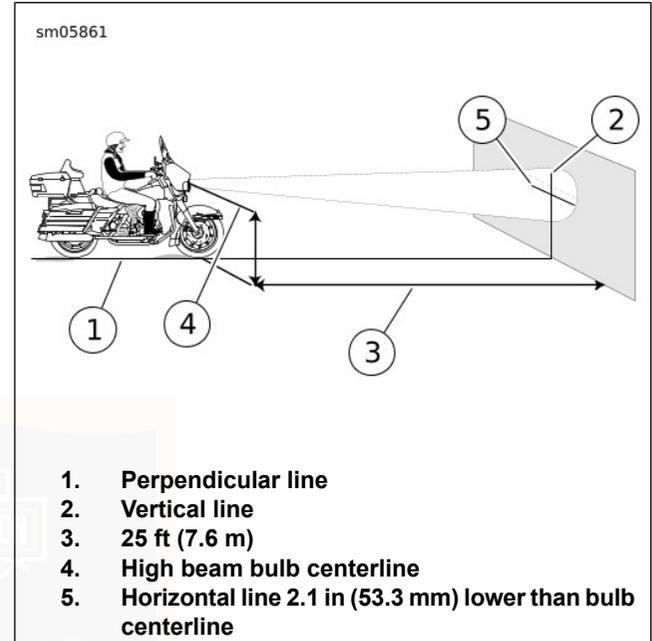


Figure 56. Check Headlamp Alignment

HEADLAMP ADJUSTMENT: SINGLE HEADLAMP MODELS

NOTE

Headlamp adjustment can be performed without removing the headlamp trim ring.

1. See Figure 57. Using adjuster slots in trim ring, insert Phillips screwdriver between headlamp trim ring and rubber gasket.
 - a. **Horizontal:** Turn the horizontal adjusting screw to adjust light beam left and right.
 - b. **Vertical:** Turn the vertical adjusting screw to adjust light beam up and down.
2. Adjust the light beam until it is centered as shown in Figure 56.

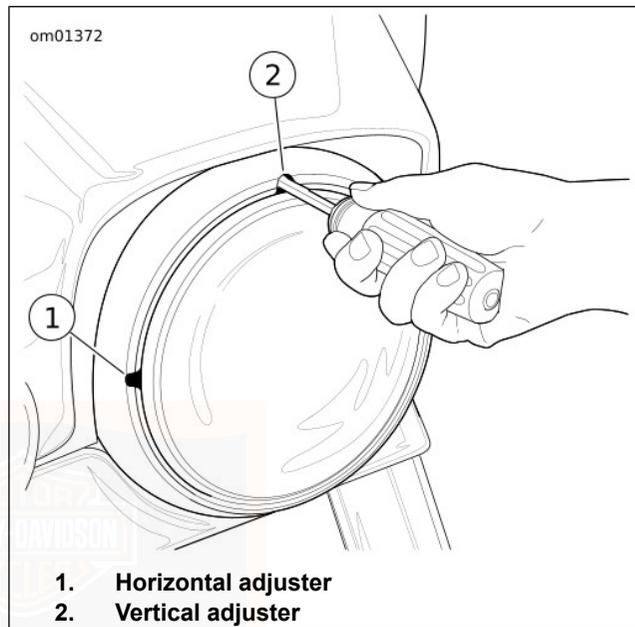


Figure 57. Headlamp Adjusters (typical)

TURN SIGNAL BULB REPLACEMENT: BULLET STYLE

1. See Figure 58. 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. Coat base of **new** bulb with ELECTRICAL CONTACT LUBRICANT.
5. Align pins on bulb with pin guides in bulb socket. Push **new** bulb in and turn clockwise to lock in place.
6. Snap lens cap back into the lamp holder. Rotate lens to position notch at bottom of lamp.

▲ 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. Turn ignition on and test for proper operation.

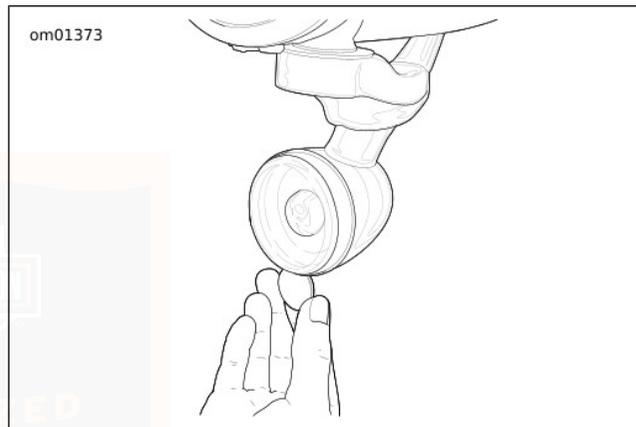


Figure 58. Lens Cap Notch

TAIL LAMPS/REAR TURN SIGNALS

The tail lamps/rear turn signals are LED assemblies with no replaceable bulbs. See service manual or Harley-Davidson dealer to replace entire assembly.

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)

A battery voltage LED in the instruments will light up when voltage is either too low or too high.

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: GENERAL

Type

Your motorcycle uses a permanently sealed, 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 34. 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

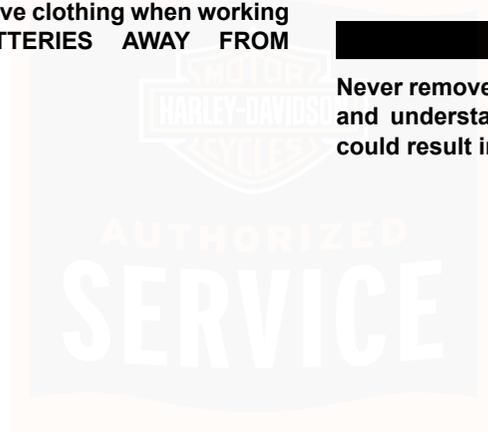
Explosive hydrogen gas, which escapes during charging, could cause death or serious injury. Charge battery in a well-ventilated area. Keep open flames, electrical sparks and smoking materials away from battery at all times. **KEEP BATTERIES AWAY FROM CHILDREN.** (00065a)

⚠ 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)



om00618



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><p>SHIELD EYES. EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY.</p></td><td><p>NO SPARKS FLAMES SMOKING</p></td><td><p>SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS.</p></td><td><p>FLUSH EYES IMMEDIATELY WITH WATER. GET MEDICAL HELP FAST.</p></td></tr></table> <p>KEEP OUT OF REACH OF CHILDREN. DO NOT OPEN BATTERY.</p>	 <p>SHIELD EYES. EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY.</p>	 <p>NO SPARKS FLAMES SMOKING</p>	 <p>SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS.</p>	 <p>FLUSH EYES IMMEDIATELY WITH WATER. GET MEDICAL HELP FAST.</p>
 <p>SHIELD EYES. EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY.</p>	 <p>NO SPARKS FLAMES SMOKING</p>	 <p>SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS.</p>	 <p>FLUSH EYES IMMEDIATELY WITH WATER. GET MEDICAL HELP FAST.</p>			

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 59. Battery Warning Label

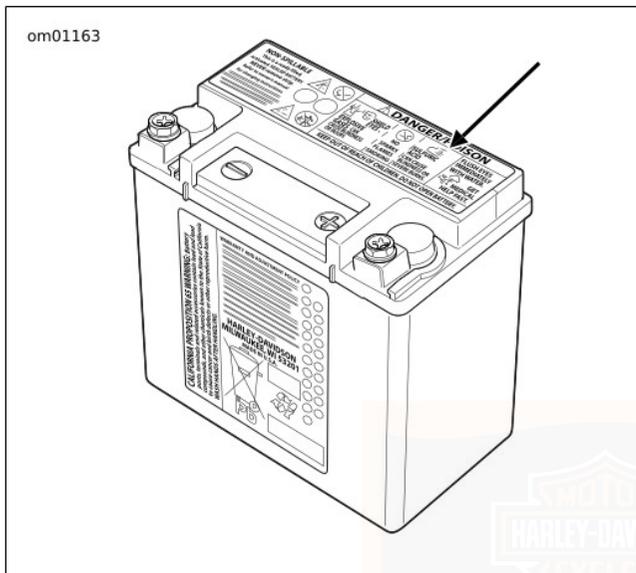


Figure 60. Battery Warning Label

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 12.6 V, charge the

battery and then re-check the voltage after the battery has set for one to two hours. Refer to Table 35.

Table 35. 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

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

- *The figures in Table 36 show typical charging times. Charge times may vary. When using automatic chargers, allow the charger to determine when charging is complete.*
- *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.*

⚠ 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.

Table 36. 28 Amp-Hour Battery Charging Rate/Times (Approximate)

READING (VOLTS)	PERCENT OF CHARGE	5 AMP CHARGER	2 AMP CHARGER	1.5 AMP CHARGER	0.75 AMP CHARGER
12.7	100	-	-	-	-
12.6	75	2 hours 24 minutes	4 hours 30 minutes	5 hours 42 minutes	10 hours 18 minutes
12.3	50	3 hours 48 minutes	8 hours	10 hours 18 minutes	19 hours 42 minutes
12.0	25	5 hours 12 minutes	11 hours 30 minutes	15 hours	29 hours
11.8	0	6 hours 36 minutes	15 hours	19 hours 42 minutes	38 hours 18 minutes

Storage

If the motorcycle will not be operated for several months, 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 battery 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 once per month if stored in the vehicle.
- Charge the battery every three months if stored out of the vehicle.

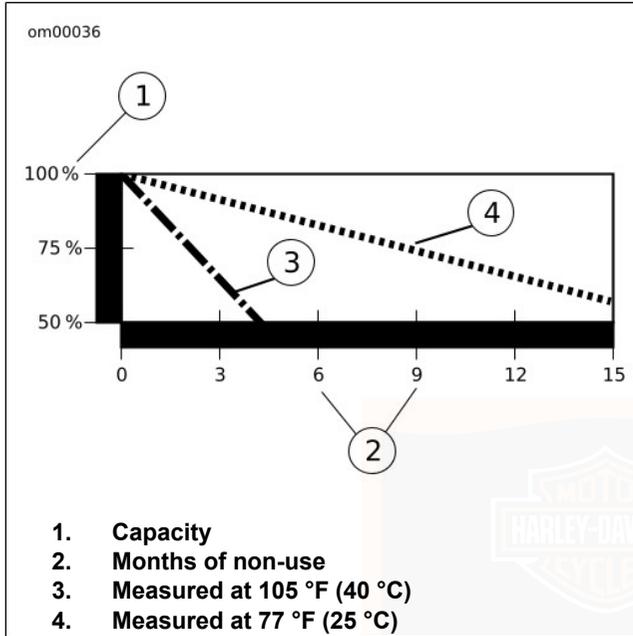


Figure 61. Effective Rate of Temperature on Battery Self-discharging Rate

BATTERY

Disconnection and Removal

1. Remove seat.
2. See Figure 62. If present, move purge solenoid (1) forward to release from top caddy. Release HFSM antenna (2) from top caddy and move out of the way.
3. Remove fasteners (4).
4. Cut cable ties (3) and move harnesses to allow more clearance for the top caddy.
5. See Figure 63. Release top caddy from front hold-down bracket and rotate top caddy (1) out of the way.
6. If equipped with security system siren, turn the ignition switch ON with the hands-free fob present to disarm the security system.

▲ 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)

7. Remove battery negative cable (black) from the battery negative (-) terminal.
8. Remove battery positive cable (red) from the battery positive (+) terminal.
9. Grasp lifting strap (2) and pull up to raise battery. When battery is extracted far enough to get a good grip, grasp battery and remove the rest of the way.

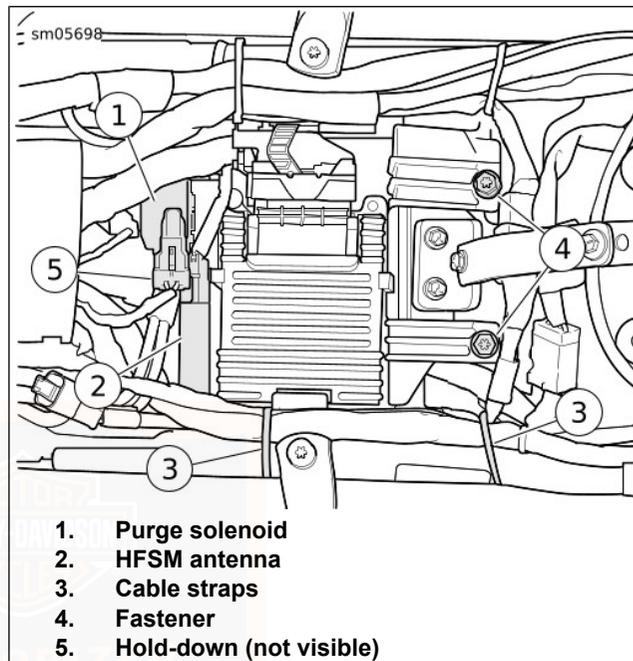


Figure 62. Top Caddy

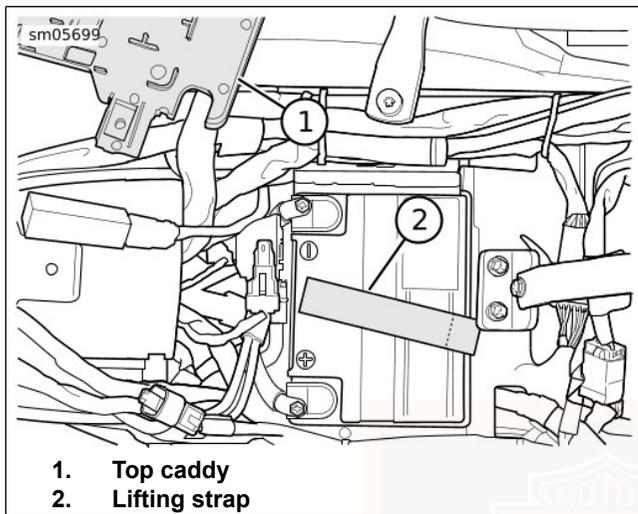


Figure 63. Move Top Caddy Aside

Installation and Connection

1. Run lifting strap rearward, first down the center of the battery tray, then up and across the frame crossmember.
2. Place the battery into the battery tray, terminal side forward.

NOTICE

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

⚠ WARNING

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

NOTICE

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)

3. Connect battery positive cable (red) to battery positive (+) terminal. Tighten bolt to 6.8–7.9 N·m (60–70 in-lbs).
4. Connect battery negative cable (black) to battery negative (-) terminal. Tighten bolt 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)

5. Apply a light coat of petroleum jelly or ELECTRICAL CONTACT LUBRICANT to both battery terminals.
6. See Figure 63. Fold lifting strap (2) forward over top of battery.
7. See Figure 62. Rotate top caddy into position above battery and engage latch on hold-down bracket.
8. If equipped, engage HFMS antenna (2) and purge solenoid (1) on top caddy. Verify all other connectors and harnesses are routed below the purge solenoid mounting tongue.
9. Fasten top caddy to frame crossmember. Tighten screws (4) to 8.1–10.9 N·m (72–96 **in-lbs**).
10. Secure harnesses to frame with cable ties (3).

⚠ 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)

11. Install seat.

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 64. 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.

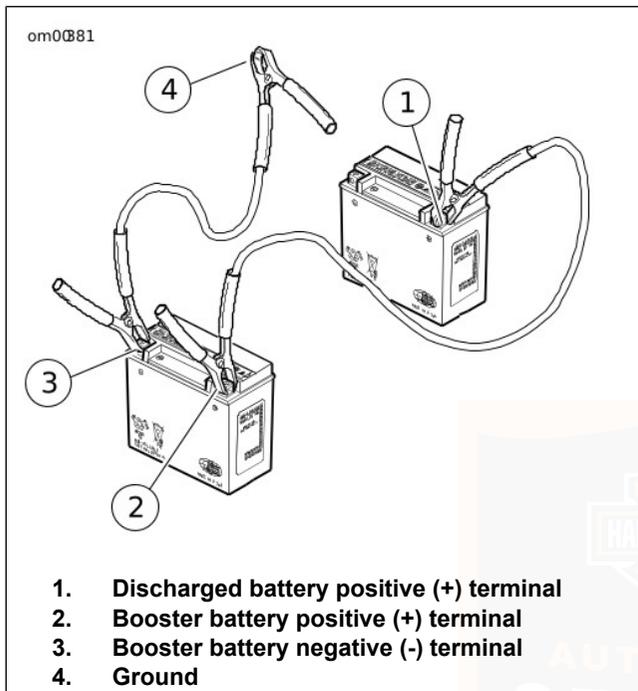


Figure 64. Jump Start Cable Connections

FUSES AND RELAYS

Main Fuse

See Figure 65. A 40 amp main fuse (2) is located near the fuse block. Removing the main fuse will disconnect power to all systems except the starter motor/solenoid.

If equipped with security system siren, turn the ignition switch ON with the hands-free fob present to disarm the security system before removing the main fuse.

System Fuses

NOTICE

Do not skip any steps for fuse replacement. Skipping fuse replacement steps can result in damage to the sound system and/or other motorcycle systems. (00223a)

See Figure 65. Fuses are located under left side cover.

If fuse replacement does not correct a problem, see a Harley-Davidson dealer for electrical diagnosis.

1. Place the ignition/headlamp key switch in the OFF position.

NOTE

Removal of side cover requires no tools. Pull side cover to remove. To install, align barbed studs on side cover with grommets in frame and push.

2. Remove left side cover.
3. Press latch on bottom of fuse block cover (1) and swing bottom of the cover out. Remove the cover.

NOTE

The fuse block cover has a fuse puller (3) attachment that may be used to remove fuses.

4. See Figure 66. Remove fuse and inspect the element.

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)

5. Replace the fuse if the element is burned or damaged.

NOTE

Use automotive-type fuses for replacements. Two spare fuses can be found in the fuse block.

6. Install the fuse block cover.
7. Install left side cover.

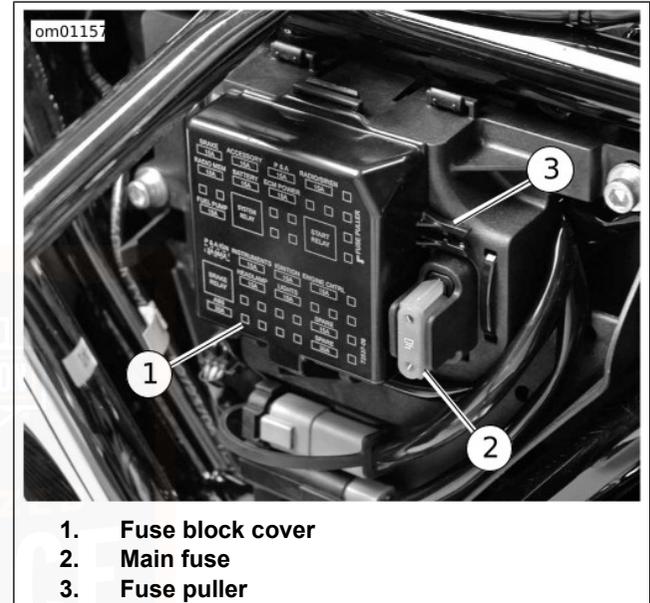
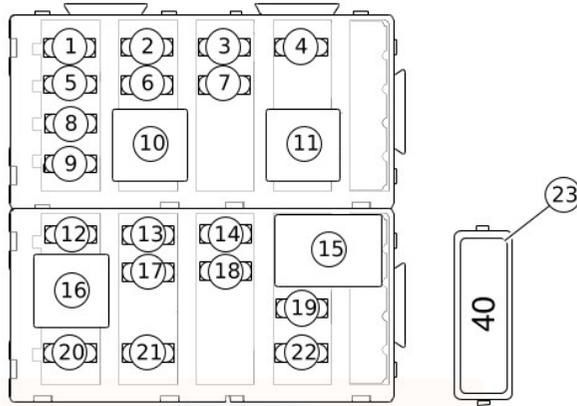


Figure 65. Fuse Block Area

om01155



- | | |
|----------------------------|----------------------------|
| 1. Brake (15 A) | 12. Instruments (15 A) |
| 2. Accessory (15 A) | 13. Ignition (15 A) |
| 3. P&A (15 A) | 14. Lighting relay |
| 4. Radio power (15 A) | 15. Brake relay |
| 5. Radio memory (15 A) | 16. Headlamp (15 A) |
| 6. Battery (15 A) | 17. Lights (15 A) |
| 7. ECM power (15 A) | 18. Spare (15 A) |
| 8. Fuel pump (15 A) | 19. ABS (30 A) |
| 9. System relay | 20. Audio amplifier (30 A) |
| 10. Start relay | 21. Spare (30 A) |
| 11. P&A ignition (2 A max) | 22. Main fuse (40 A) |

Figure 66. Fuses

SEAT AND PILLION

Pillion Removal

1. See Figure 68. Remove the thumbscrew and washer from top of rear fender.
2. Slide the pillion back from the seat mounting screws.
3. Tuck the seat strap under the flap at the rear of the rider seat.

NOTE

See Figure 68. A decorative fender plug is installed under the pillion. The plug may be removed and installed into the pillion retention nut on the rear fender when riding without the pillion.

Pillion Installation

1. Remove seat strap from under rider seat flap.
2. Slide the pillion under the seat strap and engage the pillion bracket with the seat mounting screws.
3. Tighten thumbscrew with washer to secure pillion to rear fender.

▲ 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)

4. Pull up on pillion to verify that it is properly secured.

Rider Seat Removal

1. See Figure 68. Remove the pillion.
2. Remove the two screws from the rear of the seat.
3. Lift rear of seat and pull rearward to remove seat.

Rider Seat Installation

1. Slide seat toward front of motorcycle to engage the tongue on the frame into the slot in the seat, while lowering the rear of the seat onto the seat mounting studs.
2. Install the seat strap on the seat mounting studs.
3. Install seat mounting screws. Tighten securely.
4. Install the pillion, if desired.

▲ 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)

5. Pull up on seat and pillion to verify that it is properly secured.

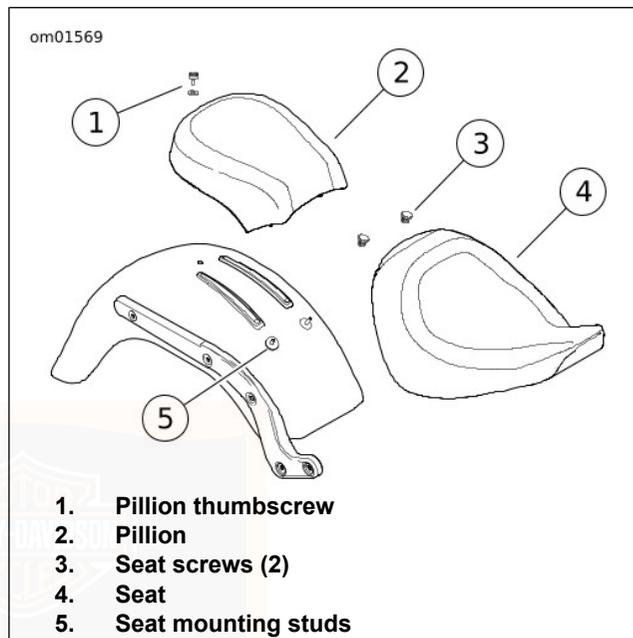


Figure 67. Seat and Pillion

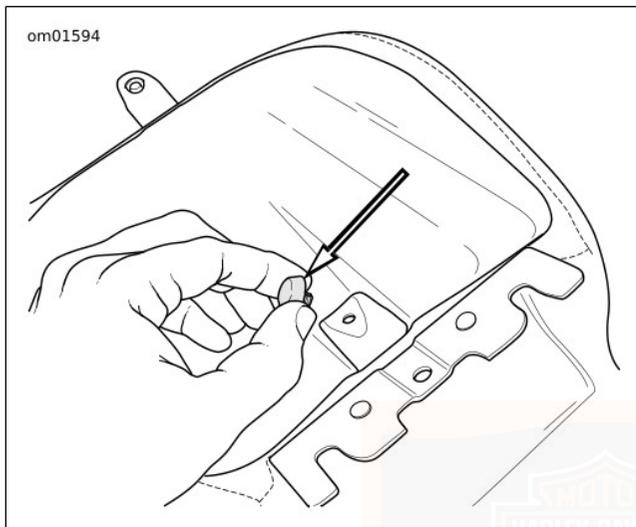


Figure 68. Rear Fender Plug (Under Pillion)

PASSENGER BACKREST

Removal

1. See Figure 69. Using your thumb, push in the spring loaded locking latch and pull the swivel latch rearward.
2. Lift the assembly off the motorcycle by lifting the backrest upward and toward the rear of the motorcycle.

Installation

1. See Figure 69. Slide the front of the backrest bracket into front docking point.
2. With the latch aligned to the rear docking point, push down on the rear of the backrest bracket and lock in place.
3. Verify that the passenger backrest is locked in place before riding the motorcycle.

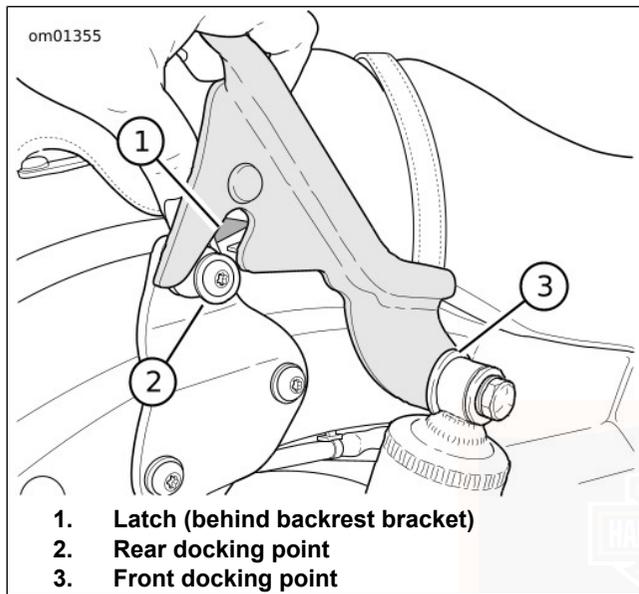


Figure 69. Passenger Backrest

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 14 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 179) section of this owner's manual prior to storage.
6. Prepare battery for winter storage. See MAINTENANCE AND LUBRICATION > BATTERY: GENERAL (Page 156).

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: GENERAL (Page 156).*

▲ 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: GENERAL (Page 156) 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 amount of oil in the oil tank.
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.

⚠ 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 14 for specified pressure.
8. Check overall tire condition. See MAINTENANCE AND LUBRICATION > TIRE REPLACEMENT (Page 146).
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.

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 37 and Table 38. 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 37. Recommended Cleaning and Care Products

PRODUCT	PART NUMBER	PURPOSE	FRAME	BODY PANELS	WHEELS	DENIM FINISH	OTHER
H-D Sunwash Concentrate	94659-98	Thorough washing of all surfaces with a wash mitt. Reduces hard water spots when washing a motorcycle in the sun.	Yes	Yes	Yes	Yes	
H-D Quick Wash Cleaner	93600011 (16 oz.) 93600012 (32 oz.)	A quick wash for a lightly soiled motorcycle. Cleans all surfaces, sheeting action prevents spots.	Yes	Yes	Yes	Yes	
H-D Bug Remover	94657-98	Removes bugs from metal, plastic or painted surfaces. Also available as individual wipes (97400-10).	Yes	Yes	Yes	Yes	
Harley Glaze Polish & Sealant	99701-84	Polishes windshields, painted surfaces and chrome.	Yes	Yes	As applicable	No	
Harley Gloss	94627-98	Produces high gloss with UV protection. Allows chrome to breathe, unlike wax. Good for windshields. Also available as individual wipes (97401-10).	Yes	Yes	Yes	No	
Harley Spray Cleaner and Polish	99817-99B	Aerosol quick cleaner and detailer. Reduces static attraction to dust. Works great for removing bugs.	Yes	Yes	Yes	No	

Table 37. Recommended Cleaning and Care Products

PRODUCT	PART NUMBER	PURPOSE	FRAME	BODY PANELS	WHEELS	DENIM FINISH	OTHER	
H-D Wheel and Tire Cleaner	94658-98	Cleans wheels, tires, whitewalls and black-coated exhaust pipes and mufflers. Do not use on frames or anodized parts.	No	No	Yes	No		
Harley Bright Chrome Cleaner	94683-99	Shines chrome-plated surfaces and cleans brushed aluminum or stainless steel surfaces.	As applicable					
Harley Bright Metal Polish	99725-89	Polishes non-clear coated polished aluminum or polished stainless steel surfaces.	As applicable					
H-D Swirl & Scratch Treatment	94655-98	Removes fine scratches and swirls.	Yes	Yes	No	No		
H-D Denim Paint Cleaner	94866-10	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 Wheel Protectant	99845-07	Corrosion control for bare aluminum surfaces. Also available as individual wipes (99846-10).	As applicable					
Windshield Water Repellent Treatment	99841-01	Allows water to bead and dissipate from the windshield.	No	No	No	No	Windshield	
Leather Dressing	98261-91V	Weatherproofs and preserves leather products.	No	No	No	No	Leather goods	

Table 37. Recommended Cleaning and Care Products

PRODUCT	PART NUMBER	PURPOSE	FRAME	BODY PANELS	WHEELS	DENIM FINISH	OTHER
Harley Rejuvenator for Black Leather	98839-09	Rejuvenates black leather products so they look brand new.	No	No	No	No	Black leather goods
H-D Engine Brightener	93600002	Rejuvenates wrinkle black engine finish.	No	No	No	No	Wrinkle black engines
H-D Exhaust Boot Mark Remover	93600001	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	
Harley Seat, Saddlebag and Trim Cleaner	93600010	Cleans and conditions vinyl, leather and plastic. Use on seats, saddlebags, inner fairings, and any other trim.	No	No	No	No	Seats, saddlebags and trim
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 38. 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.
Soft Drying Towel	94791-01	Extra-absorbent, non-streaking synthetic towel for drying. Dampen towel and wring out before using for greatest absorbency.
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.
S100 Detailing Swabs	99780-04	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

Refer to Table 37 and Table 38 for recommended cleaning and care products.

NOTE

- *During rinsing and washing, avoid direct spray on radio, 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 AND 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 H-D SUNWASH CLEANER CONCENTRATE, 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 H-D BUG REMOVER to remove any bugs.
5. Rinse from the bottom up, then rinse from the top down.

Drying the Motorcycle

1. Dry the surfaces of the motorcycle from the top down using a SOFT DRYING TOWEL or HOG BLASTER.
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 HARLEY GLAZE POLISH & 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 186) to prevent corrosion.

NOTE

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

Finishing Tires

Apply HARLEY BLACK to tires, following the instructions on the package.

LEATHER AND VINYL CARE

NOTE

- *Leather, vinyl and other synthetic 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). See your Harley-Davidson dealer.*

- *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.*

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.

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.
- Use HARLEY SEAT, SADDLEBAG AND TRIM CLEANER to clean leather, vinyl and other synthetic surfaces.

- Never try to dry leather quickly, using artificial means. Always let leather dry naturally, at room temperature. Always allow leather to dry completely before using.
1. Vacuum or blow dust off.
 2. Thoroughly clean leather with HARLEY SEAT, SADDLEBAG AND TRIM CLEANER, following directions on the bottle. Allow leather to dry.
 3. Once leather is dry, rejuvenate faded black leather surfaces with HARLEY REJUVENATOR FOR BLACK LEATHER.
 4. Treat with a good quality leather treatment, such as HARLEY-DAVIDSON LEATHER DRESSING.

WHEEL CARE

Your motorcycle has chrome plated wheels. Damage from harsh chemicals, acid based wheel cleaners, brake dust and lack of maintenance can occur. Regular washing and the use of a corrosion protectant will help to maintain their original appearance. Harley-Davidson WHEEL AND TIRE CLEANER (Part No. 94658-98) is recommended for cleaning wheels and tires. Then use HARLEY GLOSS (Part No. 94627-98) to protect the wheel surfaces.

NOTE

- *It is imperative that the wheels are cared for weekly to guard against pitting and corrosion.*

- *Corrosion of these components is not considered to be a defect in materials or workmanship.*

Harley-Davidson recommends the following products:

- WHEEL AND TIRE CLEANER (Part No. 94658-98): cleaner/degreaser for wheels, tires and engine.
- HARLEY GLOSS (Part No. 94627-98): all purpose surface protection the provides UV protection and a gloss finish.

See a Harley-Davidson dealer for cleaning, polishing and waxing products.

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 it may damage the finish.
- 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 37 for recommended cleaning products.

NOTE

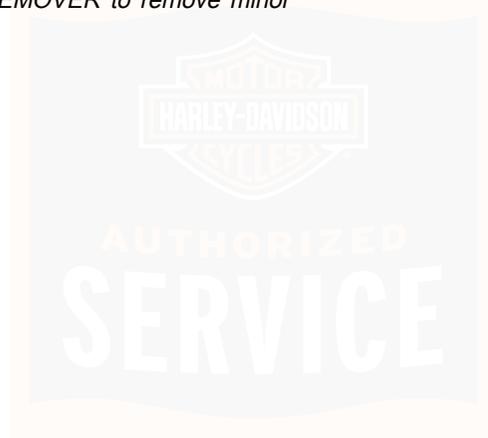
- Use *NOVUS 2 SCRATCH REMOVER* to remove minor scratches.

- *To treat the windshield with water repellent use WINDSHIELD WATER REPELLENT TREATMENT.*
- *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 run switch in OFF position.
2. Ignition switch not ON.
3. Discharged battery or loose or corroded connections (solenoid chatters).
4. Jiffy stand not in retracted position (required for international models only).
5. Blown fuse.

Engine Turns Over But Does Not Start

1. Fuel tank empty.
2. Discharged battery or loose or damaged battery terminal connections.
3. Fouled spark plugs.
4. Spark plug cable connections loose or in bad condition and shorting.
5. Loose or corroded wire or cable connection(s) at coil or battery.
6. Fuel pump inoperative. See dealer.

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. Water or dirt in fuel system.
7. Fuel pump inoperative. See dealer.
8. Check ACR operation. See dealer.

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. See dealer.
7. Water or dirt in fuel system, filter or carburetor.
8. Fuel vent system plugged. See dealer.
9. One or more injectors fouled. See dealer.

A Spark Plug Fouls Repeatedly

1. Incorrect spark plug.

Pre-ignition or Detonation (Knocks or Pings)

1. Incorrect fuel.
2. Incorrect spark plug for the 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. Engine to transmission mounting bolts loose. See dealer.
4. Cracked frame. See dealer.
5. Front chain or links tight as a result of insufficient lubrication or belt badly worn.
6. Wheels and/or tires damaged. 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. Worn friction discs. See dealer.
2. Insufficient clutch spring tension. See dealer.

Clutch Drags or Does Not Release

1. Primary chaincase overfilled.
2. Clutch discs warped. See dealer.

Clutch Chatters

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

BRAKES

ABS System Behavior

1. ABS lamp does not shut off above 5 km/h (3 mph). See dealer.
2. Other ABS symptoms. Refer to Table 18.

Brakes Do Not Hold Normally

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

NOTES



GENUINE MOTOR PARTS AND ACCESSORIES

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

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

Online Catalog

The full Genuine Motor Parts and Accessories catalog is available online in PDF format. The catalog includes hundreds of pages of Harley-Davidson accessories and maintenance products. 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 90 day

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

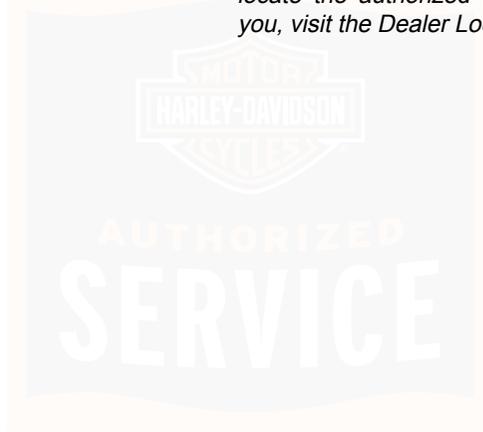
- Limited warranty for eligible *street legal* Genuine Harley-Davidson Motor Parts and Genuine Harley-Davidson Motor Accessories to run concurrent with the remainder of the motorcycle's 24-month manufacturer's warranty.
- Visit an authorized Harley-Davidson dealership within 60 days to qualify for Custom 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 may require all regular maintenance and service work to be done at an authorized Harley-Davidson dealer for your limited warranty to remain in effect. Check with your 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. 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: 2012 MODELS

All new 2012 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.

196 Warranties and Responsibilities

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 800-490-9635 (toll free), in any state except Alaska and Hawaii. 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 a 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.

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. 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



2012 HARLEY-DAVIDSON MOTORCYCLE LIMITED WARRANTY

24 Months/Unlimited Miles

Harley-Davidson warrants for any new 2012 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 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.

Harley-Davidson Motor Company, P.O. Box 653, Milwaukee, Wisconsin 53201, U.S.A.

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. 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.
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.



NOTES



2012 LIMITED RADIO WARRANTY

Harley-Davidson warrants that your Harley-Davidson radio will be free from factory defects in factory materials and workmanship, under normal use and service, for a period of twenty-four (24) months starting from the earlier of (a) the date of initial retail purchase of the motorcycle/sidecar on which the radio is installed, or (b) the third anniversary of the last day of the model year of the motorcycle/sidecar on which the radio is installed. Any unexpired portion of this limited warranty will be transferred to subsequent owners, upon the resale of the motorcycle/sidecar during the limited warranty period. If the motorcycle/sidecar was used as a demonstrator or company motorcycle, then the limited warranty period may have started and/or expired prior to the initial retail sale. See an authorized Harley-Davidson Dealer for details.

This limited warranty does not cover defects or damage due to abuse, misuse or improper installation, or any radio on a motorcycle/sidecar which has been registered with Harley-Davidson as a collector's vehicle. See an authorized Harley-Davidson dealer for details.

To obtain warranty service, return your motorcycle/sidecar with sound system intact, at your expense, within the limited warranty period to an authorized Harley-Davidson dealer. Authorized Harley-Davidson dealers should be able to provide warranty service during normal business hours and as soon

as possible, depending upon the service department's workload and the availability of necessary parts.

The remedy for breach of this warranty is expressly limited to the repair or replacement (**which may include a refurbished replacement radio**), without charge for parts and labor, of any part that proves to be defective, AND DOES NOT EXTEND TO LIABILITY FOR CONSEQUENTIAL DAMAGES, COSTS OR EXPENSES, INCLUDING LOSS OF TIME, INCONVENIENCE OR LOSS OF USE OF THE VEHICLE, RESULTING FROM ANY PART THAT PROVES TO BE DEFECTIVE.

THERE IS NO OTHER EXPRESS WARRANTY ON THE RADIO. ANY IMPLIED WARRANTY RELATING TO THIS RADIO, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, IS EXPRESSLY LIMITED TO THE DURATION OF THIS LIMITED WARRANTY.

TO THE FULLEST EXTENT ALLOWED BY LAW, HARLEY-DAVIDSON AND ITS AUTHORIZED DEALERS SHALL NOT BE LIABLE FOR LOSS OF TIME, INCONVENIENCE, LOSS OF MOTORCYCLE 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.

Other Rights

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

Harley-Davidson Motor Company, P.O. Box 653, Milwaukee, Wisconsin 53201, U.S.A.



REGULAR SERVICE INTERVALS

Refer to Table 39. 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 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 39.

NOTE

- *The use of parts and service procedures other than Harley-Davidson approved parts and service procedures may void the 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 39, 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 39. Regular Service Intervals: 2012 FLHXSE3

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, 6
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	6
Tires	Check pressure, inspect tread	X	X	X	X	X	X	X	X	X	X	X	3
Primary chaincase lubricant	Replace	X		X		X		X		X		X	6
Transmission lubricant	Replace	X				X				X			6
Clutch fluid	Check level and condition	X	X	X	X	X	X	X	X	X	X	X	4, 6
Drive belt and sprockets	Inspect, adjust belt	X	X	X	X	X	X	X	X	X	X	X	1
Compensator sprocket isolators		Inspect for wear at each rear tire change.											
Brake and clutch controls	Check 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	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 cartridge		Replace every 160,000 km (100000 mi).											
Brake fluid	Inspect sight glass	X	X	X	X	X	X	X	X	X	X	X	4

Table 39. Regular Service Intervals: 2012 FLHXSE3

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					7
Electrical equipment and switches	Check operation	X	X	X	X	X	X	X	X	X	X	X	
Front fork oil	Replace											X	1, 5
Steering head bearings	Lubricate	X		X		X		X		X			
Steering head bearings	Adjust						X					X	1, 2
Windshield bushings (if applicable)	Inspect			X		X		X		X		X	1
Fuel door, Tour-Pak, saddlebags (if equipped)	Lubricate hinges and latches	X	X	X	X	X	X	X	X	X	X	X	
Critical fasteners	Check tightness	X		X		X		X		X		X	1
Battery	Check battery and clean connections annually.												
Exhaust system	Inspect for leaks, cracks, and loose or missing fasteners or heat shields	X	X	X	X	X	X	X	X	X	X	X	3, 6



Table 39. Regular Service Intervals: 2012 FLHXSE3

ITEM SERVICED	PROCEDURE	1000 MI	5000 MI	10000	15000	20000	25000	30000	35000	40000	45000	50000	NOTES
		1600 KM	8000 KM	MI 16000 KM	MI 24000 KM	MI 32000 KM	MI 40000 KM	MI 48000 KM	MI 56000 KM	MI 64000 KM	MI 72000 KM	MI 80000 KM	
Road test	Verify component and system functions	X	X	X	X	X	X	X	X	X	X	X	
NOTES:	<ol style="list-style-type: none"> 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 80,000 km (50000 mi). 3. Perform annually or at specified intervals, whichever comes first. 4. Change D.O.T. 4 hydraulic brake/clutch fluid and flush system every two years. 5. Replace fork oil and inspect every 80,000 km (50000 mi). 6. Perform maintenance more frequently in severe riding conditions (such as extreme temperatures, dusty environments, mountainous or rough roads, long storage conditions, short runs and heavy stop/go traffic). 7. Perform every two years or at specified intervals, whichever comes first. 												

Table 40. 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)				
64,000 km (40000 mi)				

Table 40. Owner's Maintenance Records

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

SERVICE LITERATURE

Refer to Table 41. 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 41. Service Literature: 2012 FLHXSE3

DOCUMENT	LANGUAGE	PART NUMBER
Touring Models Service Manual	English	99483-12
	French	99483-12FR
	German	99483-12DE
	Spanish	99483-12ES
	Italian	99483-12IT
	Brazilian Portuguese	99483-12BR
	Simplified Chinese	99483-12ZH
FLHXSE3 Model Service Manual Supplement	English	99600-12
	French	99600-12FR
	German	99600-12DE
	Spanish	99600-12ES
	Italian	99600-12IT

Table 41. Service Literature: 2012 FLHXSE3

DOCUMENT	LANGUAGE	PART NUMBER
Touring Models Electrical Diagnostics Manual	English	99497-12
	French	99497-12FR
	German	99497-12DE
	Spanish	99497-12ES
	Italian	99497-12IT
	Brazilian Portuguese	99497-12BR
	Simplified Chinese	99497-12ZH
FLHXSE3 Model Parts Catalog	English	99433-12

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, Glaze, Gloss, H-D, H-Dnet.com, Harley, Harley-Davidson, HD, Heritage Softail, Low Rider, Night Rod, Nightster, Night Train, Profile, Revolution, Road Glide, Road King, Road Tech, Rocker, Screamin' Eagle, Softail, Sportster, Street Glide, Street Rod, Sun Ray, Sunwash, Super Glide, 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.

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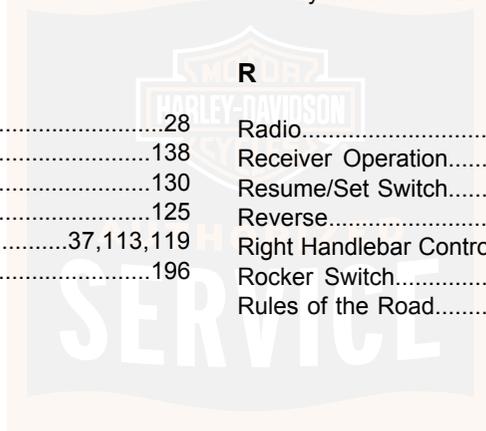
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