TRIKE MODELS

2013 HARLEY-DAVIDSON® INTERNATIONAL OWNER'S MANUAL

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MOTOR
HARLEY-DAVIDSON
CYCLES
AUTHORIZED
SERVICE

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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

Three-wheeled motorcycles are different from two-wheeled motorcycles and 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.**

(00587e)

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

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

- Review the TRIKE PRODUCT ORIENTATION VIDEO in your Owner's Kit to understand the operation and characteristics of your three-wheeled motorcycle.
- Know and respect the rules of the road. See SAFETY FIRST > RULES OF THE ROAD (Page 11). 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 brakes, 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)

- A new motorcycle must be operated according to the special break-in procedure. See OPERATION > BREAK-IN RIDING RULES (Page 118).
- 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, advanced and 3-wheel basic 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.
- Steering and handling characteristics for a three wheeled motorcycle are different than a two wheeled motorcycle. Approach corners and sharp turns using the appropriate speed and steering technique to handle the turn and prevent rollover.
- Pay strict attention to road surfaces and wind conditions and keep both hands on the handlebar grips at all times when riding the motorcycle. The 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.
- The rear of the vehicle is wider than a typical motorcycle. Check for proper clearance when maneuvering, cornering, parking and operating the vehicle in reverse.
- 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 Tour-Pak or trunk.

NOTE

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

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

⚠ WARNING

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

- Wear an approved helmet, clothing, and foot gear suited for motorcycle riding. Bright or light colors are best for greater visibility in traffic, especially at night. Avoid loose, flowing garments and scarves.
- When carrying passengers, it is your responsibility to instruct them on proper riding procedures. (In the United States, 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 ignition key from switch.
- Safe motorcycle operation requires alert mental judgment combined with a defensive driving attitude. Do not allow fatigue, alcohol or drugs to endanger your safety or that of others.
- Vehicles equipped with a sound system should have the volume adjusted to a non-distracting level before operating vehicle.
- Maintain your motorcycle in proper operating condition in accordance with Table 38. Proper care and maintenance, including tire pressure, condition and tread depth plus proper adjustment to steering head bearings are particularly important to the stability and safe operation of the motorcycle.

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

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

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

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

- GVWR is the sum of the weight of the motorcycle, accessories, and the maximum weight of the rider, passenger and cargo that can be safely carried.
- 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 steering head.
- Refer to Table 11.

⚠ 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

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.

⚠ 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)

RULES OF THE ROAD

- Always sound your horn, actuate your turn signals, and exercise caution when passing other vehicles going in the same direction. Never try to pass another vehicle going in the same direction at street intersections, on curves, or when going up or down a hill.
- At street intersections give the right-of-way. Do not presume you have the right-of-way, as the other driver may not know it is your turn.
- Always signal when preparing to stop, turn or pass.
- All traffic signs, including those used for the control of traffic at intersections, should be obeyed promptly. SLOW DOWN signs near schools and CAUTION signs at railroad crossings should always be observed and your actions governed accordingly.
- When intending to turn, signal at least 30.5 m (100 ft) before reaching the turning point. If turning across an intersection, move over to the centerline of the street (unless local rules require otherwise). Slow down when entering the intersection and turn carefully.
- Never anticipate a traffic light. When a change is indicated from GO to STOP (or STOP to GO) in the traffic control systems at intersections, slow down and wait for the light to change. Never run through a yellow or red traffic light.

- While turning either right or left, watch for pedestrians, animals, as well as vehicles.
- Do not leave the curb or parking area without signaling. Be sure your way is clear to enter moving traffic. A moving line of traffic always has the right-of-way.
- Be sure your license plate is installed in the position specified by law and is clearly visible at all times. Keep the plate clean.
- Ride at a safe speed that is consistent with the type of highway you are on. Pay strict attention to whether the road is dry, oily, icy or wet.
- Watch for debris such as leaves or loose gravel.
- Weather and traffic conditions on the highway dictate adjusting your speed and driving habits accordingly.

ACCESSORIES AND CARGO

Harley-Davidson Motor Company cannot test and make specific recommendations concerning every accessory or combination of accessories sold. Therefore, the rider must be responsible for safe operation of the motorcycle when installing accessories or carrying additional weight.

⚠ WARNING

See ACCESSORIES AND CARGO section within the SAFETY FIRST section in your owner's manual. Improper cargo loading or accessory installation can cause component failure and adversely affect stability, handling and performance, which could result in death or serious injury. (00021c)

⚠ WARNING

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

- GVWR is the sum of the weight of the motorcycle, accessories, and the maximum weight of the rider, passenger and cargo that can be safely carried.
- GAWR is the maximum amount of weight that can be safely carried on each axle.
- The GVWR and GAWR are shown on the information label which is located on the frame down tube.
- Refer to Table 11.

⚠ 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. The 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.
- 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 Tour-Pak or trunk.
- 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.

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

⚠ WARNING

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

NOISE CONTROL SYSTEM

Tampering

Owners are warned that removal or replacement of any noise control system component may be prohibited by law. This prohibition applies prior to vehicle sale or delivery to the ultimate purchaser. Use of a vehicle on which noise control system components have been removed or rendered inoperative may also be prohibited by law.

LABELS

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

NOTE

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

Table 3. Labels

ITEM	PART NO.	DESCRIPTION	LOCATION	TEXT
1	83881-09A	General warnings	Top of air cleaner cover	WARNING: Three wheeled motorcycles are different from two wheeled motorcycles and other vehicles. They operate, steer, handle and brake differently. Unskilled or improper use could result in loss of control, death or serious injury. • Take a rider training course. • Read Owner's Manual before riding, adding accessories or servicing. • Wear a helmet, eye protection and protective clothing. • Never tow a trailer. For a manual, find nearest dealer at 1-800-443-2153 or www.harley-davidson.com
2	15368-01A	Battery warning	Under seat, behind fuel tank on main harness trough	WARNING: A connected battery can cause a spark or motorcycle startup while servicing. Death or serious injury could occur. • Disconnect negative cable before servicing. • Keep cable away from terminal while servicing.
3	14148-86	Engine guard label	On front of engine guard below center mount	This guard may provide limited leg and cosmetic vehicle protection under unique circumstances (fall over while stopped, very low speed slide). It is not made nor intended to provide protection from bodily injury in a collision with another vehicle or any other object.

Table 3. Labels

ITEM	PART NO.	DESCRIPTION	LOCATION	TEXT
4	83446-09	Trunk load limits	Inside trunk door	WARNING: Too much weight in Trunk can cause loss of control. Death or serious injury could occur. • Do not put more than 50 pounds in Trunk. • See Accessories and Cargo section of Owner's Manual for more information.
5	90821-74C	Tour-Pak load limits	Inside Tour-Pak lid	WARNING: Too much weight in Tour-Pak® can cause loss of control. Death or serious injury could occur. • Do not put more than 25 pounds (11.3 kg) in Tour-Pak® on 2008 and earlier motorcycles. • Do not put more than 30 pounds (13.6 kg) in Tour-Pak® on 2009 and later motorcycles. • See Accessories and Cargo section of Owner's Manual for more information.
6	83563-10	Tire label	Under right side cover	TIRE AND LOADING INFORMATION SEATING CAPACITY, TOTAL 2, FRONT 1, REAR 1 The combined weight of occupants and cargo should never exceed weight specifications. See OWNER MANUAL > SPECIFICATIONS (Page 23) for tire data and maximum weight allowed.

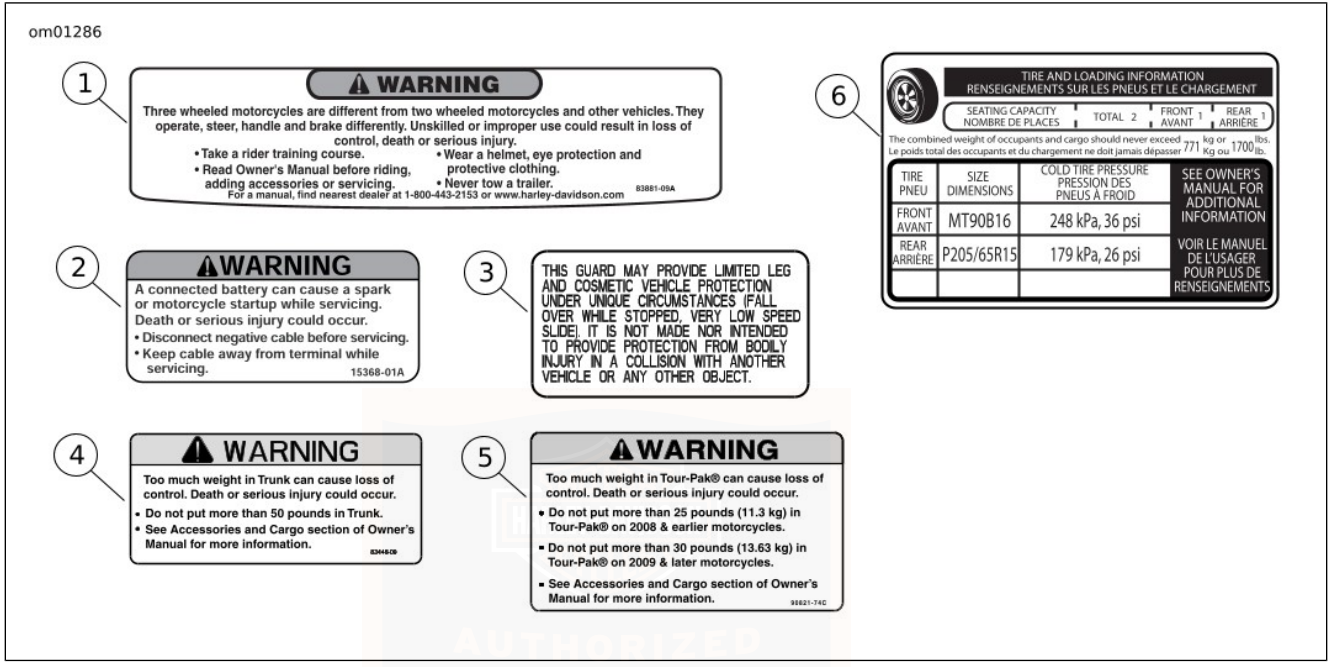


Figure 1. Labels

NOTES

VEHICLE IDENTIFICATION NUMBER (VIN)

General

See Figure 3. 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 4.

Location

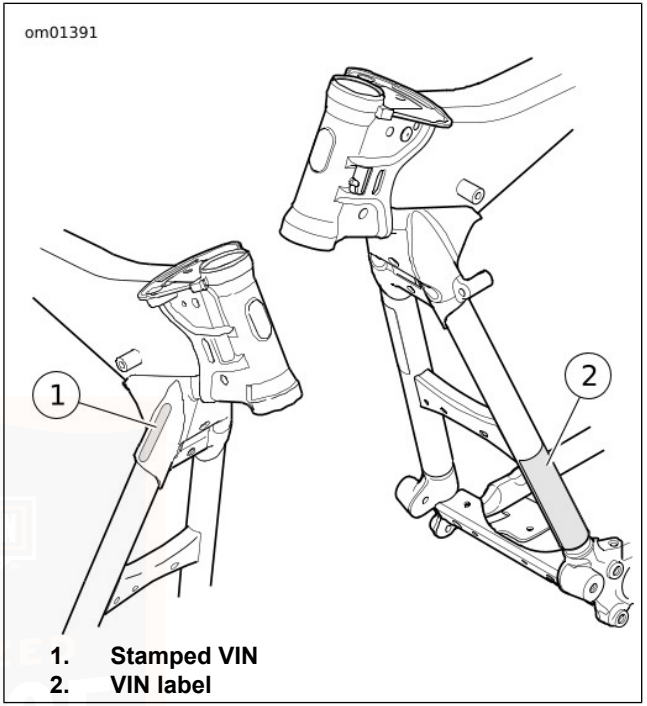
See Figure 2. The full 17-digit VIN (1) is stamped on the right side of the frame near the steering head. In some destinations, a printed VIN label (2) is also attached to the front downtube.

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.



1. Stamped VIN
2. VIN label

Figure 2. VIN Locations

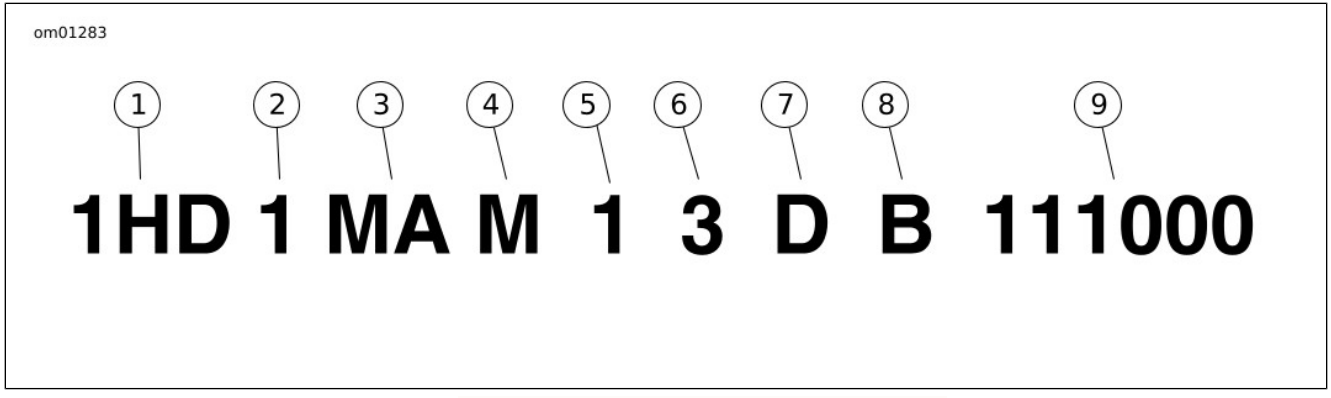


Figure 3. Typical Harley-Davidson VIN: 2013 Trike Models

Table 4. Harley-Davidson VIN Breakdown: 2013 Trike 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
2	Motorcycle type	1=Heavyweight motorcycle (901 cm^3 or larger)
3	Model	MA=FLHTCUTG Tri Glide™ Ultra Classic® MA=FLHTCUTG ANV Tri Glide™ Ultra Classic® 110th Anniversary Edition
4	Engine type	M=Twin Cam 103™, 1690 cm^3 air-cooled, fuel-injected

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

POSITION	DESCRIPTION	POSSIBLE VALUES	
5	Calibration/configuration, introduction	**Normal Introduction** 1=Domestic (DOM) 3=California (CAL) A=Canada (CAN)	**Mid-year or Special Introduction** 2, 4=Domestic (DOM) 5, 6=California (CAL) B=Canada (CAN)
6	VIN check digit	Can be 0-9 or X	
7	Model year	D=2013	
8	Assembly plant	B=York, PA U.S.A.	
9	Sequential number	Varies	

MODELS AND FEATURES

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

ANNIVERSARY MODELS

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

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

NOTES

SPECIFICATIONS

Table 5. Engine: Twin Cam 103

ITEM	SPECIFICATION	
Number of cylinders	2	
Type	4-cycle, 45 degree V-Type, air-cooled	
Compression ratio	9.6:1	
Bore	3.875 in	98.42 mm
Stroke	4.38 in	111.3 mm
Displacement	103.0 in^3	1690 cm^3
Lubrication system	Pressurized, dry sump with oil cooler	

Table 6. Electrical

COMPONENT	SPECIFICATION	
Ignition timing	Not adjustable	
Battery	12 volt, 28 amp-hr, 405 CCA sealed and maintenance free	
Charging system	Three-phase, 50-amp system (585W @ 13V, 2000 rpm, 650W max power @ 13V)	
Spark plug type	HD-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	30
	Rear wheel	70

Table 9. Overall Drive Ratios

GEAR	RATIO
1st Gear	10.537
2nd Gear	7.303
3rd Gear	5.425
4th Gear	4.393

Table 9. Overall Drive Ratios

GEAR	RATIO
5th Gear	3.742
6th Gear	3.157

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*	1191	540.2
Maximum added weight allowed**	509	230.9
GVWR	1700	771.1
GAWR front	500	226.8

Table 11. Weights

ITEM	LB	KG
GAWR rear	1200	544.3
* The total weight of the motorcycle as delivered with all oil/fluids and approximately 90% of fuel. ** The sum total weight of the rider, passenger, cargo, riding gear and any accessories cannot exceed this weight.		

Table 12. Dimensions

ITEM	IN	MM
Length	105.8	2687
Overall Width	54.7	1389
Overall Height	59.3	1506
Wheelbase	66.6	1692
Ground clearance	4.7	119
Saddle height*	27.1	688
*With 81.7 kg (180 lb) rider on seat.		

Table 13. Bulb Chart

LAMP (ALL LAMPS 12 VOLT)		BULBS REQUIRED	CURRENT DRAW AMPERAGE	HARLEY-DAVIDSON PART NUMBER
Headlamp		1	4.58/5.0	68329-03
Tail/stop/rear turn signal lamp		2	0.59/2.10	68167-04
Front turn signal lamp		2	0.59/2.25	69331-02
Tour-Pak tail/stop lamps		2	0.59/2.10	68168-89A
Fender tip lamps		1	0.30	68193-95
Auxiliary lamps		2	2.1	68453-05
Instrument panel lamps*	High beam indicator	Instrument panel is illuminated with LEDs. Replace entire assembly upon failure.		
	Oil pressure indicator			
	Neutral indicator			
	Turn signal indicator			
License plate lamp		2	0.35	52441-95
Reverse enable lamp*		Illuminated with an LED. Replace entire assembly upon failure.		
Tour-Pak side lamps*		Illuminated with an LED. Replace entire assembly upon failure.		

Table 13. Bulb Chart

LAMP (ALL LAMPS 12 VOLT)		BULBS REQUIRED	CURRENT DRAW AMPERAGE	HARLEY-DAVIDSON PART NUMBER
Gauge lamps	Speedometer	N/A	N/A	N/A
	Tachometer	N/A	N/A	N/A
	Voltmeter	1	0.24	67445-00
	Oil pressure indicator	1	0.24	67445-00
	Air temperature gauge	1	0.24	67445-00
	Fuel gauge	1	0.24	67445-00
Items with *	Illuminated with LEDs. Replace entire assembly upon failure.			

Table 14. Specified Tires

MOUNT	SIZE	SPECIFIED TIRE	PRESSURE (COLD)	
			PSI	kPa
Front	16 in.	Dunlop D402F MT90B16 72H	36	248
Rear	15 in.	Dunlop P205/65 R15 92T	26	179

TIRE DATA

⚠ WARNING

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

⚠ WARNING

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

Refer to Table 14 for specified tires and recommended pressures.

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

Tire sizes are molded on the tire sidewall.

⚠ 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 the GAWR specified in Table 11. Under inflated, over inflated, or over loaded tires can fail.

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.

⚠ WARNING

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

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

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

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

GASOLINE BLENDS

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

NOTICE

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

- Gasoline/METHYL TERTIARY BUTYL ETHER (MTBE) blends are a mixture of gasoline and as much as 15% MTBE. Gasoline/MTBE blends use in your motorcycle is approved.
- ETHANOL fuel is a mixture of ethanol (grain alcohol) and unleaded gasoline and can have an impact on fuel mileage. Fuels with an ethanol content of up to 10% may be used in your motorcycle without affecting vehicle performance. U.S. EPA regulations currently indicate that fuels with 15% ethanol (E15) are restricted from use in motorcycles at the time of this publication. Some motorcycles are calibrated to operate with higher ethanol concentrations to meet the fuel standards in certain countries.
- REFORMULATED OR OXYGENATED GASOLINES (RFG) describes gasoline blends that are specifically designed to burn cleaner than other types of gasoline. This results in fewer tailpipe emissions. They are also formulated to evaporate less when filling the tank. Reformulated gasolines use additives to oxygenate the gas. Your motorcycle will run normally using this type of fuel. Harley-Davidson recommends using it whenever possible as an aid to cleaner air in our environment.
- Do not use racing fuel or fuel containing methanol. Use of these fuels will damage the fuel system.
- The only octane booster Harley-Davidson recommends is SCREAMIN' EAGLE SUPER OCTANE BOOST (available only in the U.S.). This is the only octane booster that has been extensively tested and approved for use with Harley-Davidson engines and components.

Some gasoline blends might adversely affect starting, driveability or fuel efficiency. If any of these problems are experienced, try a different brand of gasoline or gasoline with a higher octane blend.

FUEL

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

⚠ 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 YOUR OWNER'S MANUAL section. Be sure to record all your key numbers in the space provided at the front of this book.

See Figure 4. The ignition switch controls electrical functions 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)

NOTICE

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

NOTICE

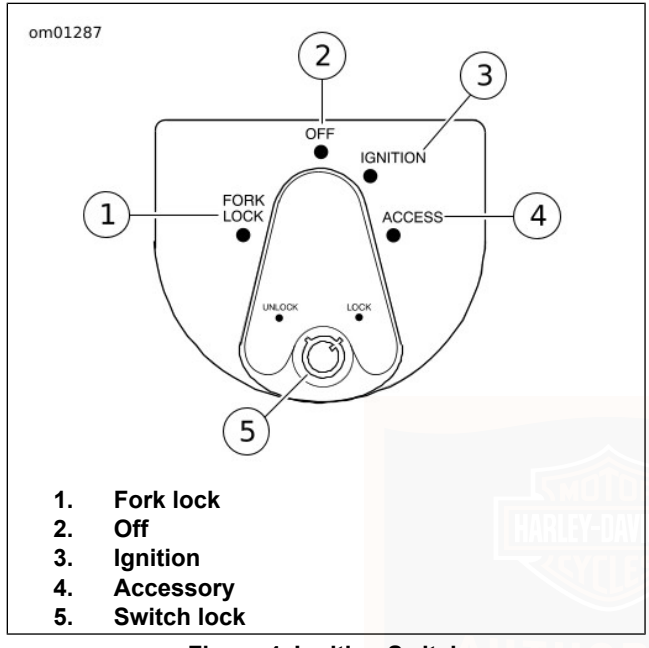
Do not lubricate barrel locks with petroleum based lubricants or graphite. Inoperative locks may result. (00152a)

NOTE

- *Harley-Davidson recommends removing key from ignition/fork lock before operating motorcycle. If you do not remove key, it can fall out during operation.*
- *ACCESS/ACCESSORY - 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.*

Table 16. Ignition Switch 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 four positions. To prevent loss while riding, remove the key.
Switch	FORK LOCK	Locks fork in left position to discourage unauthorized use of vehicle when parked. See CONTROLS AND INDICATORS > FORK LOCK (Page 33) for operation.
	OFF	When switch is in 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, the instrument lamps and accessories will operate but the engine can not be started. Brake lamp and horn can be activated. In ACCESS, the switch can be locked.



1. **Fork lock**
2. **Off**
3. **Ignition**
4. **Accessory**
5. **Switch lock**

Figure 4. Ignition Switch

FORK LOCK

NOTICE

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

⚠ WARNING

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

See Figure 4. Using the fork lock immediately after parking your motorcycle can discourage unauthorized use or theft when parking your motorcycle. The fork lock is integrated into the ignition switch.

NOTE

Do not force the switch into the locked position or switch damage can occur.

1. Turn fork to full left position.
2. See Figure 4. Turn switch knob to FORK LOCK and push knob down.
3. Insert key and turn key to LOCK position. Remove key.

4. To unlock fork, insert key and turn to UNLOCK position. Remove key and rotate switch knob out from the FORK LOCK position.

HAND CONTROLS

NOTICE

Control wiring is routed inside handlebar and may be pinched or cut if controls are rotated too far. Electrical damage to control wiring can result. See Service Manual Supplement or see a Harley-Davidson dealer. (00363a)

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

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

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 8. 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 (5) operates the right front and right rear flashing lamps.

NOTE

Front turn signal lamps also function as running lamps.

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 RUN position to start or operate the engine.*
- *The engine off/run switch should be used to shut the engine off.*

1. To shut the engine off, push the top of the off/run switch to the ignition OFF position.
2. See Figure 4. Turn the ignition key to the OFF position to turn the ignition power completely OFF.

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 120) for detailed operation procedures.

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

Front Brake Lever

See Figure 5. The front brake lever (8) applies mechanical pressure to the front brake master cylinder and the master cylinder applies hydraulic pressure to the front brake calipers.

Audio/CB Control Switches

See Figure 5. The audio control switches (10) set up and operate functions within the Advanced Audio System and CB (if equipped).

See ADVANCED AUDIO SYSTEM > ADVANCED AUDIO SYSTEM (Page 67) for detailed operation.

Cruise Control Resume/Set Switch

See Figure 5. If equipped with cruise control, the cruise control resume/set switch (11) automatically maintains the speed of the motorcycle.

See CONTROLS AND INDICATORS > GEAR SHIFT LEVER (Page 50) for detailed operation.

Reverse Control Switches

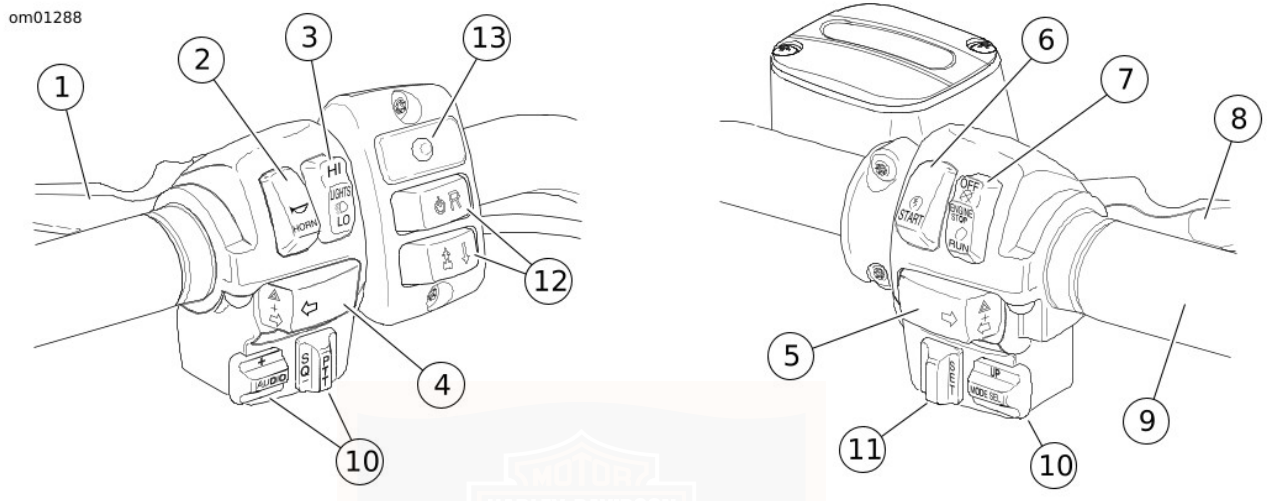
See Figure 5. The reverse control switches (12) operate the electric reverse motor. The reverse enable indicator (13) is lit when reverse operation is enabled.

See CONTROLS AND INDICATORS > REVERSE OPERATION (Page 65) for detailed operation.

Throttle Control Grip

The throttle control grip is located on the right handlebar control and is operated with the right hand.

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



1. Clutch hand lever
2. Horn switch
3. Headlamp dimmer switch
4. Left turn signal switch
5. Right turn signal switch
6. Electric starter switch
7. Engine off/run switch
8. Front brake lever
9. Throttle control grip
10. Audio/CB control switches
11. Cruise control resume/set switch
12. Reverse control switches
13. Reverse enable indicator

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 check engine 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

Operating

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

NOTE

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

Automatic Canceling

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

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

Manual Canceling

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

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

HAZARD WARNING FOUR-WAY FLASHER

If the motorcycle must be parked alongside a roadway, the hazard warning four-way flashers can be turned on with the security system armed. This allows a stranded motorcycle to be secured with the four-way flashers operating until help is found.

Activate

1. Turn the ignition switch to IGNITION with security system disarmed (fob present, if equipped).
2. Press the left and right turn signal switches at the same time.
3. Turn the ignition switch OFF and lock the switch. The four-way flashers will operate for two hours. The security system (if equipped) will automatically arm.

Deactivate

1. Have the fob present to disarm the security system (if equipped).
2. Unlock the ignition switch and turn the switch to IGNITION.
3. Press the left and right turn signal switches at the same time.

INSTRUMENTS

Speedometer

⚠ WARNING

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

See Figure 7. The speedometer registers miles per hour (U.S. models) or kilometers per hour (international models) of forward speed. The speedometer has a single display for the following selectable functions:

- Odometer
- Trip odometers A and B
- Fuel range function

1. See Figure 7. Pressing the function switch with the ignition switch in any position will activate the odometer reading. Mileage may be checked without unlocking ignition switch. Press and release function switch once to view odometer.
2. To check mileage on trip odometers, the ignition switch must be in the ACC or IGNITION position. Press and release the function switch until the desired trip odometer reading is displayed. An A or B in the upper left of the display window identifies trip odometers.
3. To reset or zero trip odometers, have desired (A or B) odometer in display window. Press function switch and hold switch for 2-3 seconds. The trip odometer will be reset to zero.
4. Repeat the previous step if you wish to zero both trip odometers.

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).

Tip Indicator Lamp

⚠ WARNING

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

Should motorcycle be tipped over, the word "tip" will appear in the odometer window. Engine will not start until reset. To reset, cycle ignition switch ON-OFF-ON.

Fuel Gauge

The fuel gauge indicates the approximate amount of fuel in the fuel tank(s) and is located to left of the speedometer or on the left front panel of the fairing.

Oil Pressure Gauge

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 5 psi (34 kN/m2) at idle speed to 30-38 PSI (207-262 kN/m2) at 2000 RPM when engine is at normal operating temperature of 230° F (110° C).

Voltmeter

The voltmeter indicates electrical system voltage and is found on the front panel of the fairing. With the engine running above 1500 RPM, the voltmeter should register 13-14.5 volts with battery at full charge.

Air Temperature Gauge

The air temperature gauge indicates the ambient air temperature in degrees Fahrenheit. This gauge is found on the front panel of the fairing.

Fuel Range Function

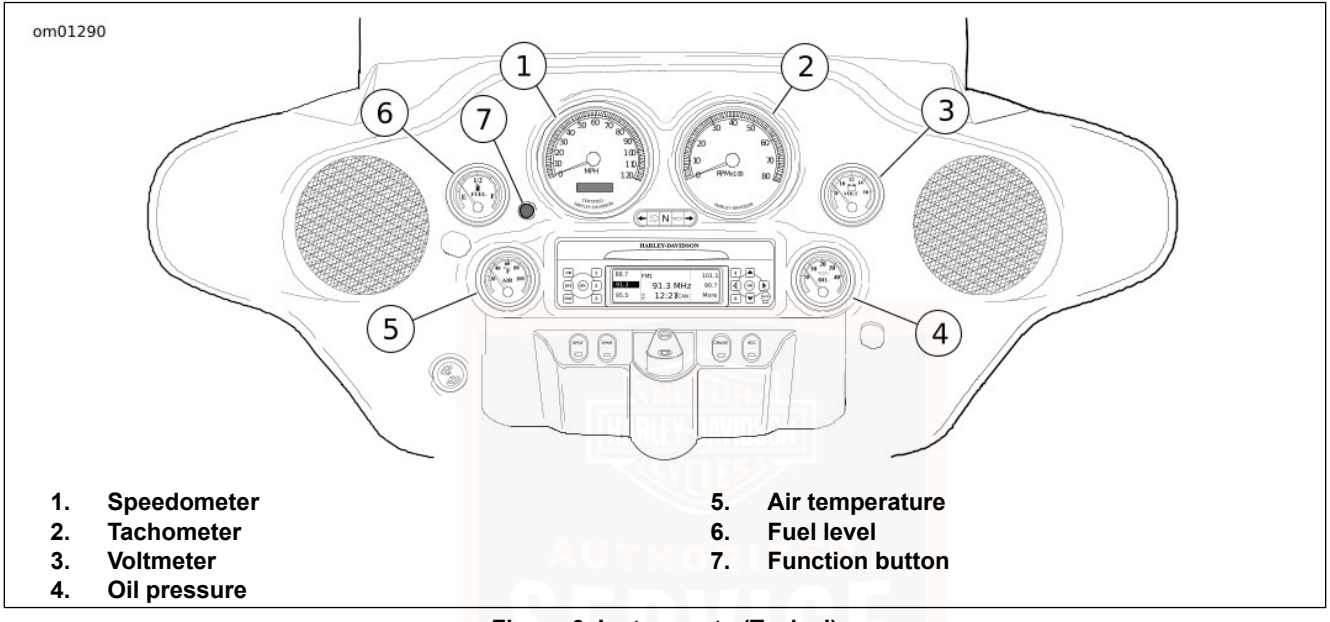
The fuel range function shows the approximate mileage available with the amount of fuel left in the fuel tank.

1. With the ignition switch in the ACC or IGNITION position, press function switch until fuel range function is displayed, as indicated by the letter 'r' in the left side of the odometer display. The calculated remaining distance (miles or kilometers) to empty is displayed, based on the amount of fuel in tank. Range can be accessed at any time using the function switch.
2. When the low fuel warning lamp illuminates, the range feature will automatically be displayed in the odometer unless this automatic pop-up feature is disabled by a press and hold of the function switch while in range display mode. Automatic range pop-up feature will show that it is disabled by blinking twice. Likewise, automatic range popup can be reactivated by a press and hold of the function switch. Range will blink once when the automatic pop-up feature is re-enabled.

NOTE

- *When the low fuel warning lamp turns on, there is approximately 3.79 L (1.00 USgal) of fuel remaining in the tank. Refuel as soon as possible.*
- *The range display is only updated when the vehicle is moving.*

3. After the range calculation reaches 16 km (10 mi) remaining, the range display will display "r Lo" to indicate that the vehicle will shortly run out of fuel.
4. Resetting the low fuel warning lamp and range requires an ignition switch cycle change.



1. **Speedometer**
2. **Tachometer**
3. **Voltmeter**
4. **Oil pressure**
5. **Air temperature**
6. **Fuel level**
7. **Function button**

Figure 6. Instruments (Typical)

INSTRUMENT LAMPS

Check Engine Lamp

See Figure 7. The check engine lamp is located near the lower left side of the speedometer face. Its purpose is to indicate whether or not 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 check engine lamp comes on at any other time, see a Harley-Davidson dealer.

Low Fuel Lamp

See Figure 7. The low fuel lamp is located in the speedometer face, lower center by check engine lamp. The low fuel lamp indicates low fuel level in the tank. The low fuel lamp illuminates to indicate that you have approximately 3.8 L (1.0 USgal)of gasoline left in the tank.

If the low fuel lamp remains lit after adding fuel or filling the fuel tank, see your Harley-Davidson dealer.

Battery Discharge Lamp

See Figure 7. The red battery charging lamp indicates either overcharging or undercharging of the battery. Refer to MAINTENANCE AND LUBRICATION > BATTERY (Page 166).

Cruise Control Lamps

Cruise control equipped models feature two additional indicator lamps.

- See Figure 7. A green or orange lamp on the tachometer or speedometer face indicates the cruise control is SET (green) or NOT SET (orange).
- See Figure 9. An orange lamp on the cruise control switch which indicates the cruise control is ON or OFF.

Sixth Gear Lamp

See Figure 7. The sixth gear lamp on the speedometer face indicates when the transmission is in sixth gear.

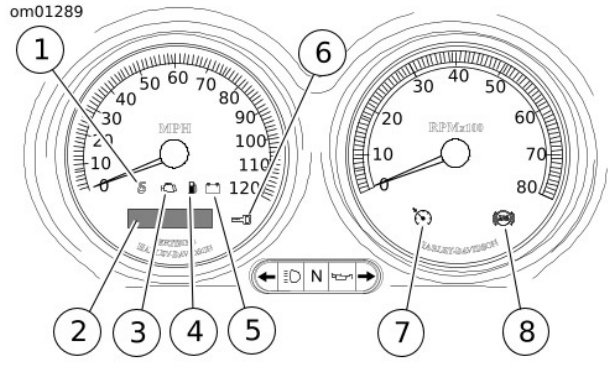
Security System Lamp

See Figure 7. The red security system lamp on the speedometer face indicates when the security system is armed. Refer to HANDS-FREE SECURITY MODULE > HARLEY-DAVIDSON SMART SECURITY SYSTEM (Page 103).

If the security system lamp remains lit after the security system is disarmed, see your Harley-Davidson dealer.

Reverse Enable Lamp

The reverse enable lamp is located with the reverse controls on the left handlebar. This yellow lamp is lit when reverse operation is enabled. See CONTROLS AND INDICATORS > REVERSE OPERATION (Page 65).



1. **Sixth gear lamp**
2. **Odometer/trip odometer**
3. **Check engine lamp**
4. **Low fuel warning lamp**
5. **Battery discharge lamp**
6. **Security system lamp**
7. **Cruise lamp**
8. **ABS lamp (not used)**

Figure 7. Indicator Lamps

INDICATOR LAMPS

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

Turn Indicator Lamps

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

Headlamp High Beam Indicator Lamp

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

Neutral Indicator Lamp

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

Oil Pressure Indicator Lamp

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

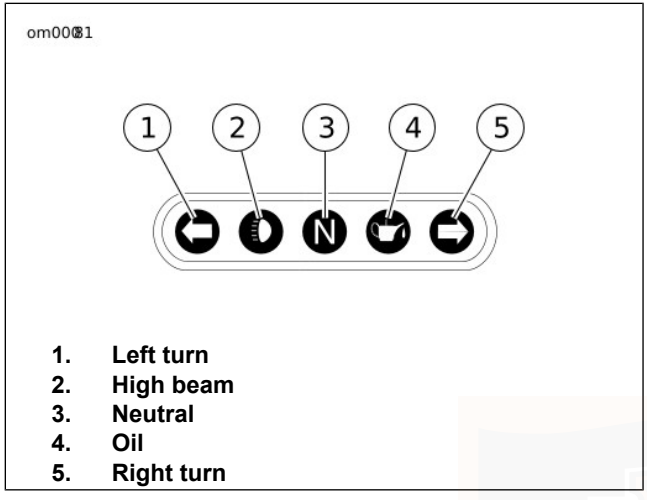
The lamp is lit when the ignition is turned on prior to starting engine. With engine running, lamp should be off when engine speed is above idle.

Circumstances that could cause the oil indicator lamp to illuminate:

- Low oil level. Stop engine immediately. Add oil.
- Diluted oil. Change oil as soon as possible.
- Incorrect oil for the operating temperature. Change oil as soon as possible.
- See OWNER MANUAL > TROUBLESHOOTING (Page 199) for further information.

NOTICE

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



1. **Left turn**
2. **High beam**
3. **Neutral**
4. **Oil**
5. **Right turn**

Figure 8. Indicator Lamps (Typical)

CRUISE CONTROL

Operating Controls

The cruise control system provides automatic vehicle speed control.

⚠ WARNING

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

See Figure 9. A fairing cap cruise control switch located to the right of the ignition switch turns the cruise control system ON and OFF. An orange lamp on the cruise control switch indicates the cruise control is ON.

NOTE

The cruise control icon on the speedometer or tachometer will turn orange to indicate the cruise control is ON. If the orange icon does NOT come on, the system is NOT ON. If you cannot SET cruise speed, see your dealer.

See Figure 10. RESUME/SET switch is located in the right handlebar control group.

The RESUME/SET switch controls several system functions, including set, resume, accelerate and decelerate.

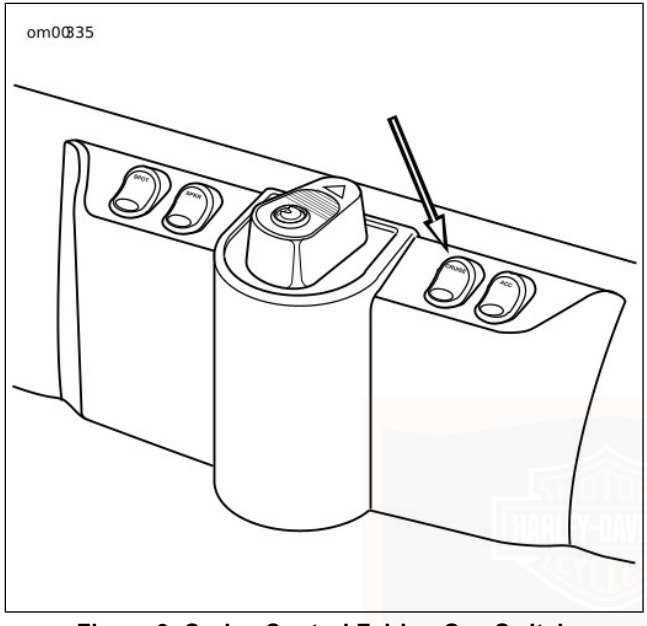


Figure 9. Cruise Control Fairing Cap Switch

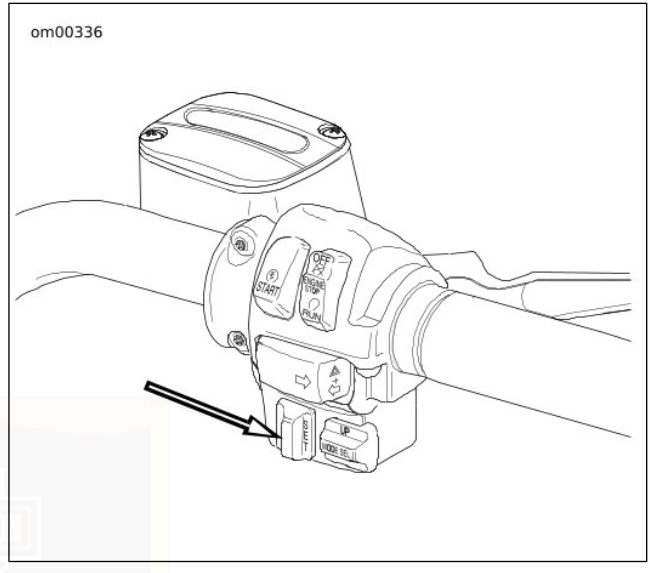


Figure 10. RESUME/SET Switch

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 overrides 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.*
- *The system also 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 disengage 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.*

Non-specified tires or gearing may affect cruise control operation.

1. See Figure 9. Push the CRUISE control ON/OFF switch to activate cruise control. The orange icon on the cruise gauge face will light when activated. See Figure 7.
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 disengage cruise control.

When the cruise is disengaged, the cruise icon on the face of the gauge is 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 in desired direction.

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 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.

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. The transmission is a six speed sequential gear box.

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.*

First gear is the last gear position that can be found by pushing the gear shift lever full stroke downward.

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

To shift from first gear to neutral, lift the gear shift lever one-half 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 123) for more information.

HEEL-TOE FOOT SHIFTER

See Figure 11. 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.

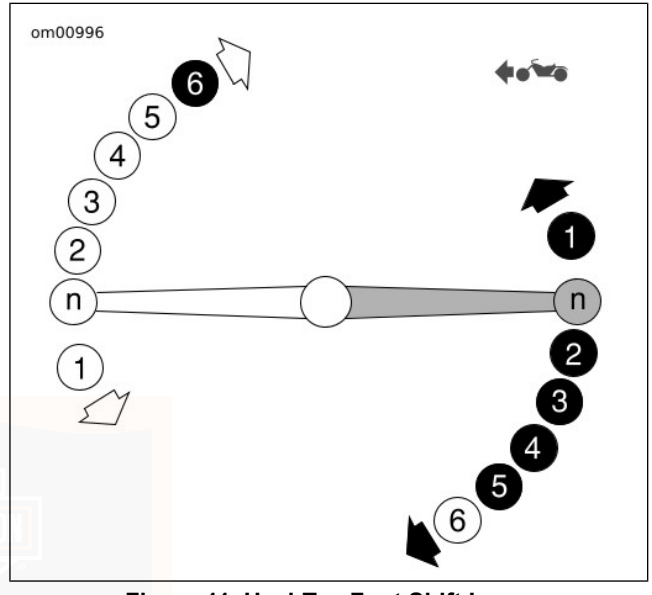


Figure 11. Heel-Toe Foot Shift Lever

BRAKE SYSTEM

⚠ WARNING

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

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)

Brakes should be applied uniformly and evenly to prevent wheels from locking up. A balance between rear and front braking is generally best.

PARKING BRAKE

The parking brake lever is located on the right side of vehicle. The lever mechanically engages brakes for both rear wheels to prevent the vehicle from rolling when parked.

Do not use parking brake when the vehicle is in motion. It is not an emergency brake. Always disengage parking brake before riding.

NOTE

As brake pads wear, the parking brake lever may have to be adjusted to provide sufficient lever effort and fully engage rear brakes. See MAINTENANCE AND LUBRICATION > PARKING BRAKE (Page 148) for inspection and adjustment.

Engaging Parking Brake

1. Bring the vehicle to a complete stop using service brakes.
2. Shift to first gear and shut off engine.
3. Apply front brake with left hand and cover rear brake with right foot.
4. See Figure 12. Raise right side passenger floor board and push parking brake lever to the forward position (2) with right hand.

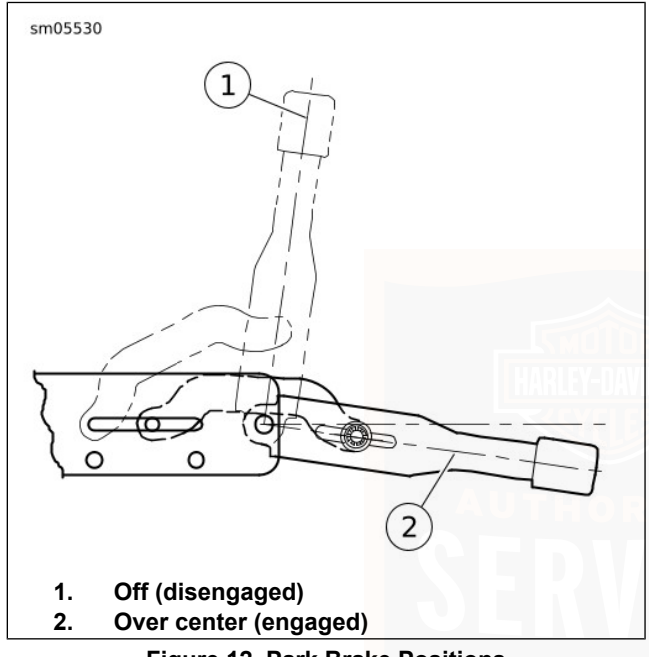
NOTE

The rear brake pedal will increase pressure as the parking brake engages. This is normal operation. Do not resist rear brake pedal motion when engaging the parking brake.

Disengaging Parking Brake

1. Apply front brake with left hand and cover rear brake with right foot.

2. See Figure 12. With right hand, pull parking brake lever to the upright position (1). The rear brake pedal will decrease pressure as the parking brake disengages.
3. Start motorcycle and operate normally.



1. Off (disengaged)
2. Over center (engaged)

Figure 12. Park Brake Positions

REAR VIEW MIRRORS

⚠ WARNING

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

Your vehicle is equipped with two convex rear view mirrors.

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

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

NOTE

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

FUEL FILLER CAP

Gasoline is extremely flammable and highly explosive. Inadequate safety precautions could result in death or serious

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

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)

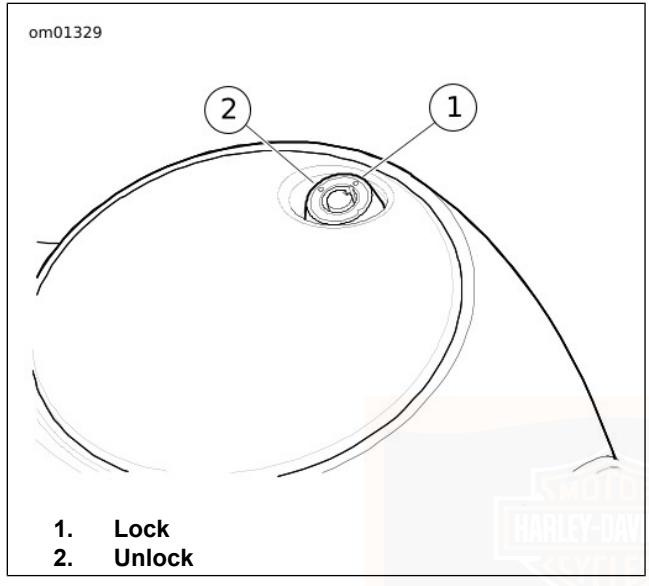
⚠ WARNING

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)

See Figure 13. The fuel filler cap is located beneath a door on the fuel tank. Insert key into fuel door lock and turn counterclockwise to open. Unscrew fuel filler cap.

Fill fuel tank slowly to prevent fuel spillage. Do not fill above the bottom of the filler neck insert. Leave enough air space to allow for fuel expansion. Expansion can cause an overfilled tank to overflow fuel through the filler cap vent onto surrounding areas.

After refueling, be sure filler cap is securely tightened. Tighten fuel filler cap clockwise until it clicks. Close fuel door and turn key clockwise to lock fuel door.



1. **Lock**
2. **Unlock**

Figure 13. Fuel Door

REAR AIR SUSPENSION

Refer to Table 17. The vehicle features air-adjustable rear suspension. Air pressure in the rear shocks may be adjusted to suit load requirements, riding style and personal comfort.

1. Remove the right side cover.
2. See Figure 14. Remove the cap from the air valve located behind the shock absorber.

NOTE

- *Always add 21–35 kPa (3–5 psi) to the existing pressure before releasing air from the system to prevent oil from exiting the air valve. NEVER exceed 345 kPa (50 psi).*
- *Do not exceed maximum GVWR or GAWR.*

3. Attach AIR SUSPENSION PUMP AND GAUGE (PART NUMBER: HD-34633) to the air valve. Fill or release air from the shock absorber to the pressure specified for your load.

NOTE

The specified pressures are recommended starting points. Adjust pressure to suit load conditions, riding style and comfort desired. Less pressure does not necessarily result in a softer ride. Using pressures outside the recommended loading range will result in a reduction of available suspension travel and reduced rider comfort.

4. Install cap on air valve.
5. Install right side cover.

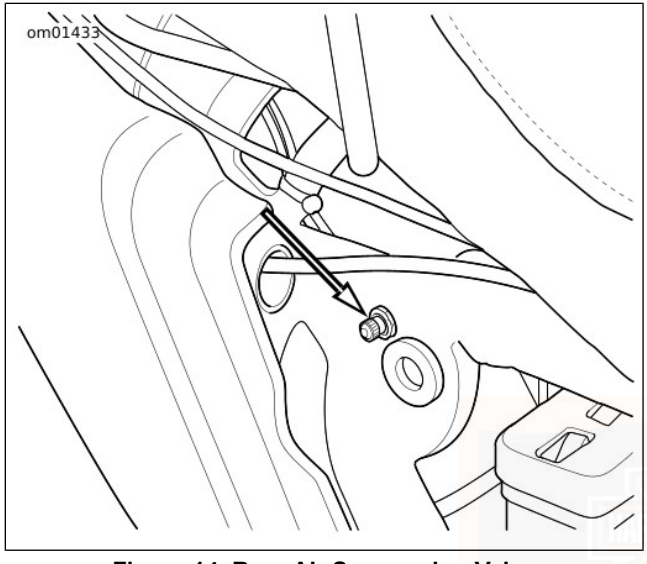


Figure 14. Rear Air Suspension Valve

Table 17. Rear Suspension Recommended Air Pressure

SHOCK LOAD	TOTAL WEIGHT	PRESSURE	
		PSI	kPa
Solo rider	up to 68 kg (150 lb)	5-10	34-69
	68–91 kg (150–200 lb)	10-20	69-138
	91–113 kg (200–250 lb)	20-30	138-206
	136–136 kg (250–300 lb)	30-40	206-276
	136 kg (300 lb) to maximum added weight allowed*	40-50	276-345
Solo rider with capacity luggage of 36 kg (80 lb)	up to 68 kg (150 lb)	25-30	172-206
	68–91 kg (150–200 lb)	30-40	206-276
	91–113 kg (200–250 lb)	40-50	276-345
	113 kg (250 lb) to maximum added weight allowed*	50	345
Rider plus passenger	Any weight up to maximum added weight allowed*	50	345
Maximum loaded vehicle	Maximum added weight allowed*	50	345
Do **not** exceed 345 kPa (50 psi) rear shock pressure. *Refer to Table 11 for maximum added weight allowed on the motorcycle.			

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.

TOUR-PAK

Operation

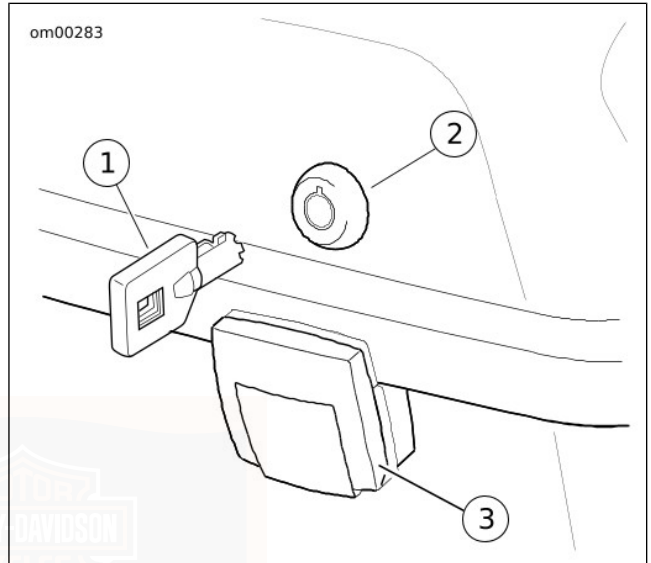
See Figure 15. Some models are equipped with a lockable Tour-Pak. To open, unlock the Tour-Pak lock with the ignition key and open the draw catches.

Removal/Installation

⚠ 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)

The Tour-Pak can be installed in the forward or rearward position. See the service manual or a Harley-Davidson dealer for Tour-Pak removal/relocation.



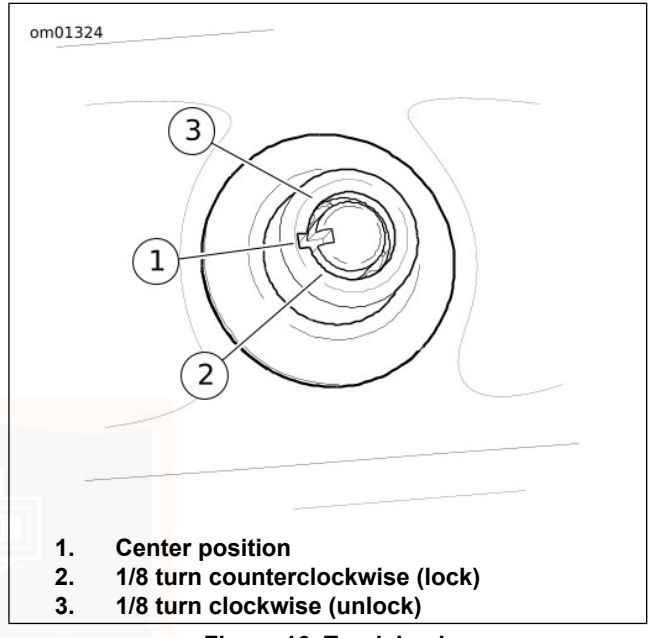
1. **Key**
2. **Lock**
3. **Draw catch**

Figure 15. Tour-Pak Lock and Draw Catch

TRUNK

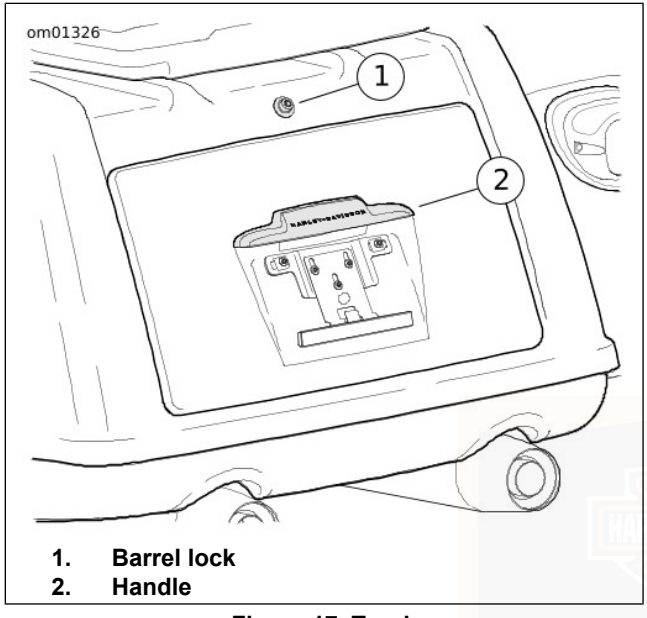
The vehicle has a lockable trunk. When loading the trunk, distribute weight evenly and do not exceed the maximum load of 22 kg (50 lb). Contents in trunk may shift while riding.

1. See Figure 16. To unlock trunk, insert key into barrel lock and turn one-eighth turn clockwise. Return key to center position and remove.
2. See Figure 17. Push in the barrel lock to unlatch door. Pull handle to open trunk door.
3. Firmly close the trunk door to engage latch. Pull handle to make sure trunk door is secure.
4. To lock trunk, insert key into barrel lock and turn one-eighth turn counterclockwise. Return key to center position and remove. Push on barrel lock to make sure trunk is locked.



1. **Center position**
2. **1/8 turn counterclockwise (lock)**
3. **1/8 turn clockwise (unlock)**

Figure 16. Trunk Lock



1. **Barrel lock**
2. **Handle**

Figure 17. Trunk

ADJUSTABLE AIR DEFLECTORS

See Figure 18. Some models are equipped with adjustable air deflectors located along the left and right bottom edge of the fairing. These deflectors can be rotated to direct airflow for rider and passenger comfort.

To adjust, grasp the outer edge of the deflector and pivot to the desired position.

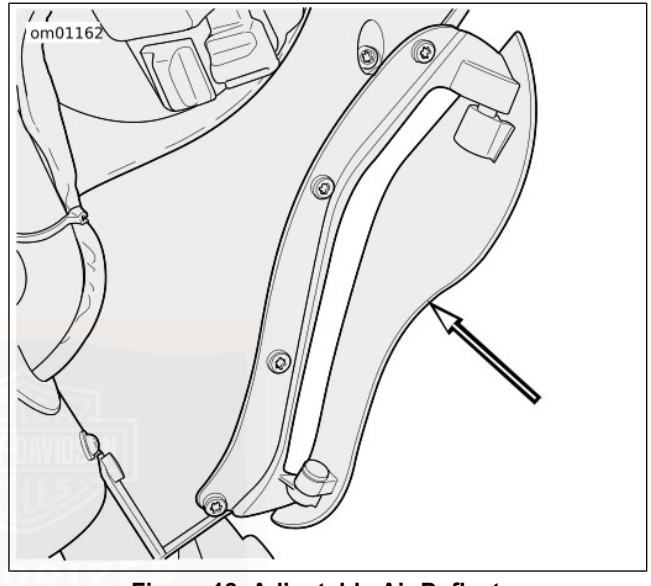


Figure 18. Adjustable Air Deflector

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 19. 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.

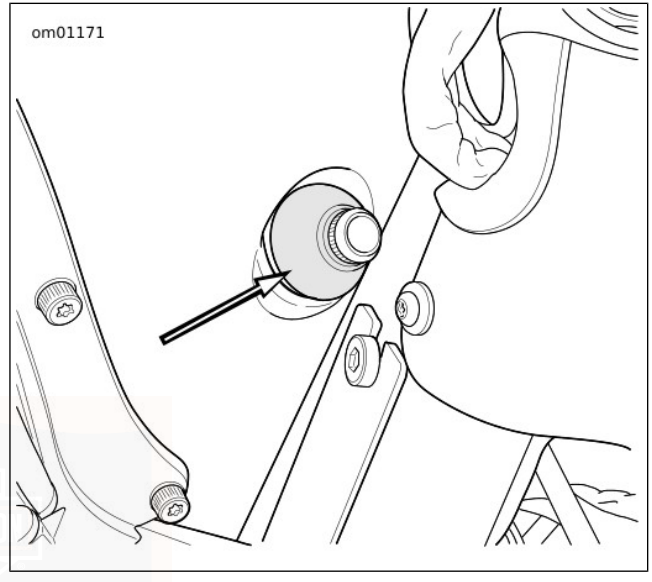


Figure 19. Cigarette Lighter

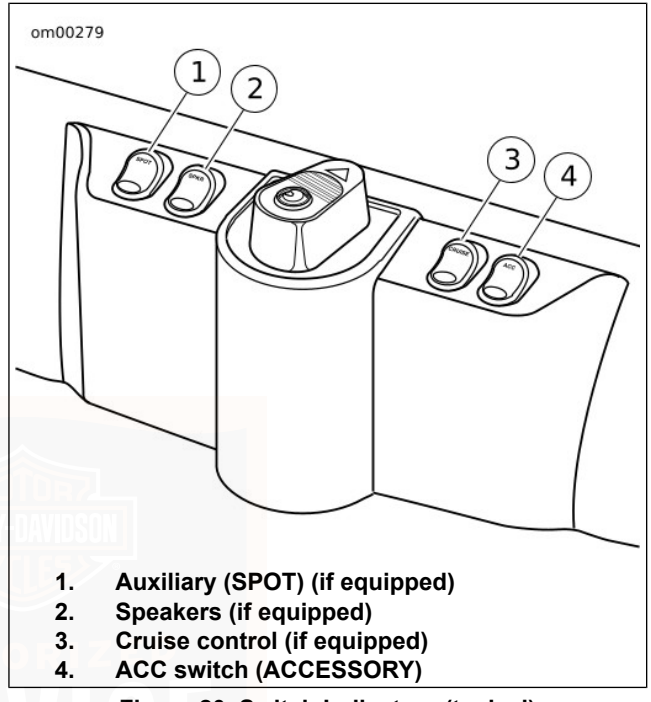
ACCESSORY SWITCH

See Figure 20. An accessory switch (4) is located on the right side of the fairing.

See Figure 21. There is an accessory connector located in front of the battery that can be activated with the ACC switch. See a Harley-Davidson dealer for possible uses.

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)



1. **Auxiliary (SPOT) (if equipped)**
2. **Speakers (if equipped)**
3. **Cruise control (if equipped)**
4. **ACC switch (ACCESSORY)**

Figure 20. Switch Indicators (typical)

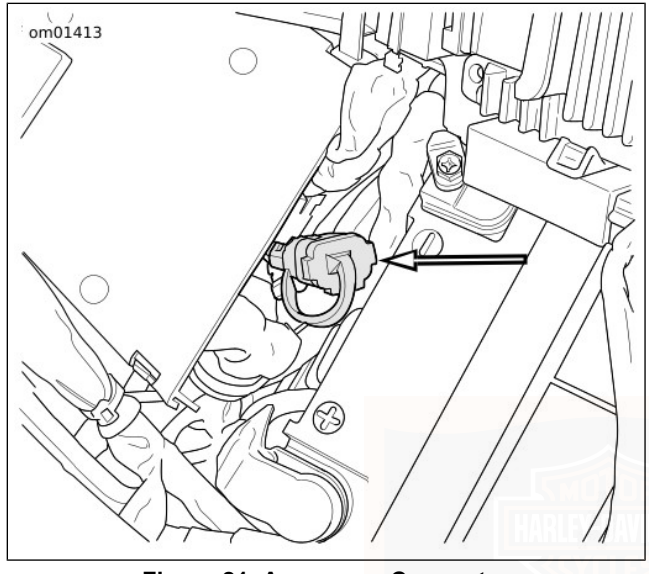


Figure 21. Accessory Connector

AUXILIARY/FOG LAMPS

See Figure 20. On models equipped with auxiliary/fog lamps, use the auxiliary/fog lamp switch to turn on the auxiliary/fog lamps as needed. The auxiliary/fog lamp switch (SPOT) is on the left side of the ignition switch on the fairing cap.

When the high beam headlamp is turned on, the auxiliary/fog lamps automatically turn off.

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 22. 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.

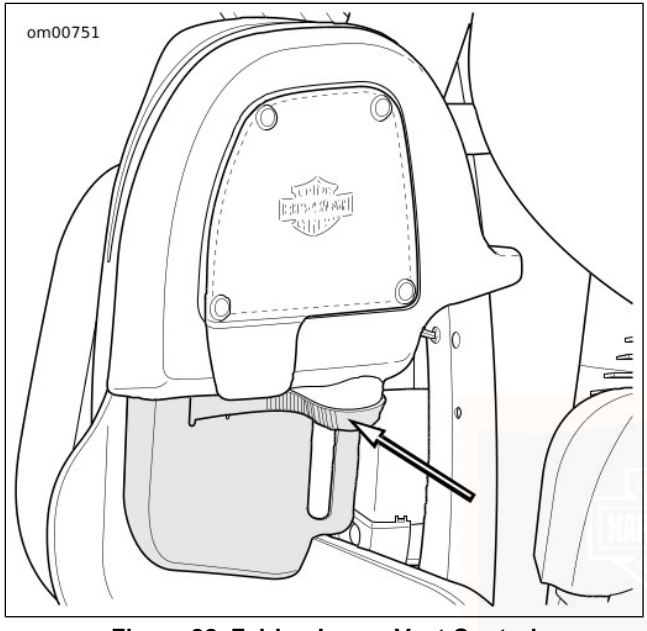


Figure 22. Fairing Lower Vent Control

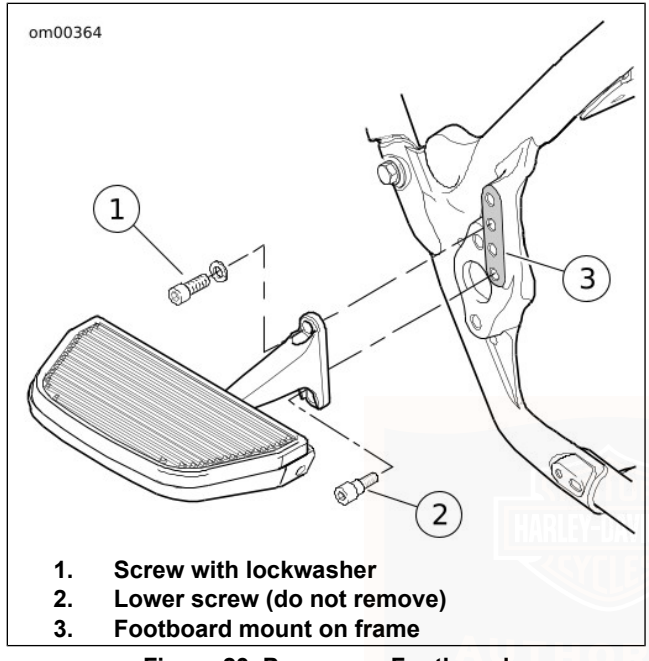
PASSENGER FOOTBOARDS

Passenger footboards can be adjusted to one of three positions. Remove plastic plugs from holes in the footrest mount in the frame as necessary.

1. See Figure 23. Remove socket screw with lockwasher from top of footboard bracket. Do not remove lower screw.

2. Slide bracket to the desired position.

3. Install socket screw with lockwasher. Apply a drop of Loctite Threadlocker 243 (blue) to the threads. Tighten socket screw to 49–56 N·m (36–42 ft-lbs).



1. **Screw with lockwasher**
2. **Lower screw (do not remove)**
3. **Footboard mount on frame**

Figure 23. Passenger Footboard

REVERSE OPERATION

The vehicle is equipped with an electric reverse motor. The reverse motor uses battery power to move the vehicle in reverse with the engine running and the transmission in neutral.

The reverse motor is designed for light load, short duration use. Steep inclines, long distance travel in reverse or attempted operation with the brakes or parking brake applied or while the vehicle is against resistance (such as a curb) will drain the battery and may cause the reverse circuit breaker to trip.

Light application of the brakes during reverse, backing into something then trying to pull away, or backing up a steep incline and then allowing the vehicle to coast the other direction may cause the reverse drive to not disengage. If this occurs, a loud whine will be heard when pulling forward and considerable drag will be felt as if the parking brake is applied. In the event this happens, stop immediately and rock the vehicle slightly to disengage the drive. If the reverse drive remains engaged and the vehicle is driven in a forward direction, reverse motor damage may occur.

NOTE

Always come to a complete stop before placing the vehicle in forward gear or enabling the reverse motor.

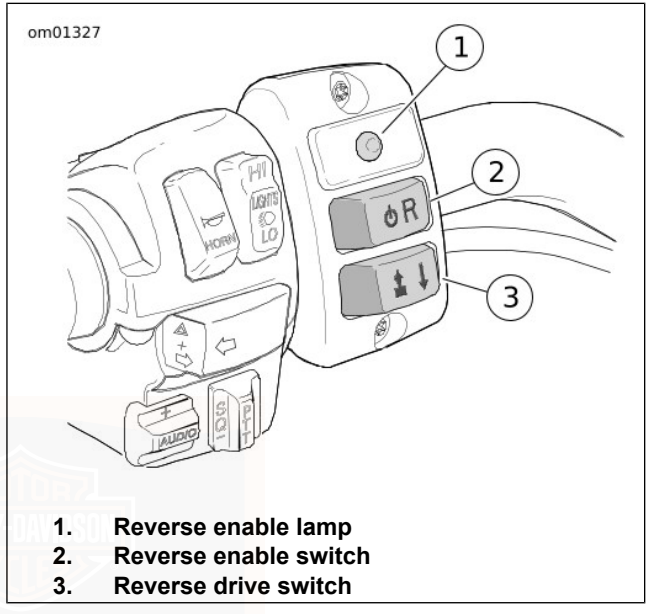
1. Bring the vehicle to a complete stop using front and/or rear brake. If parked, check that the parking brake is disengaged.

2. See Figure 24. With the vehicle started and in neutral, press the reverse enable switch (2) in the left hand control group. The yellow reverse enable lamp (1) will light.
3. Press and hold the reverse drive switch (3) to operate the electric reverse motor.

NOTE

- *The reverse vehicle speed is affected by the incline of the surface. On a level surface the maximum reverse speed is approximately 2-3 mph (3-5 km/h). Do not exceed 2-3 mph (3-5 km/h) and be prepared to slow or stop the vehicle while in reverse.*
- *The rear of the vehicle is wider than a typical motorcycle. Check for proper clearance when maneuvering.*
- *If the reverse motor does not operate, see MAINTENANCE AND LUBRICATION > REVERSE MOTOR CIRCUIT BREAKER (Page 180) to reset the circuit breaker.*

4. Release the reverse drive switch and brake as necessary to stop the vehicle.
5. Shift into a forward gear and ride normally or turn ignition to OFF and engage the parking brake.



1. Reverse enable lamp
2. Reverse enable switch
3. Reverse drive switch

Figure 24. Reverse Controls (FLHTCUTG shown)

ADVANCED AUDIO SYSTEM

The Advanced Audio System by Harman/Kardon® is based on an electronic unit mounted inside the front fairing of selected Harley-Davidson Touring models.

The Advanced Audio System 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. The Advanced Audio receiver also supports additional passenger speakers, a rider/passenger intercom and a 40 channel Citizen Band (CB) radio transceiver.

⚠ 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 18. Advanced Audio System Modules

MODULE	FLHTCUTG	
AM/FM Stereo Receiver	X	
CD/MP3 Player	X	
CB Radio	X	
Weather Band	X	
Weather Band Alert	X	
Intercom	X	
Passenger Controls	X	
X = Standard equipment - = Not equipped		

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 25. With the ignition switch in IGNITION or ACCESS, press the **ON** button (10).
2. **Adjust Volume:** See Figure 26. 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 25. 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.

Intercom - If Equipped

NOTE

Some local governments prohibit or restrict the use of headset (helmet-mounted) speakers. Check with local authorities and obey all applicable laws and regulations.

1. Plug headsets into front (Figure 31) and rear (Figure 33) headset jacks.
2. **Transmitting:** Press and hold either the rider PTT switch (Figure 26) or passenger PTT switch (Figure 33) to transmit. To end transmission, release **PTT** switch.

Citizen Band (CB) Radio - If Equipped

1. See Figure 25. Turn radio receiver ON and push the **COM** button (1). Push soft key **1** (9) to turn the CB ON/OFF.
2. **Select a Channel:** Push and release the MODE SEL switch on the right hand grip to select a CB channel.
3. **Transmitting:** Press and hold either the rider PTT switch (Figure 26) or passenger PTT switch (Figure 33) to transmit. To end transmission, release **PTT** switch.

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 compatability.
- 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 25. 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

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

COM is the Citizen Band (CB) setup button. See ADVANCED AUDIO SYSTEM > CB OPERATION (Page 94). Press the **COM** pushbutton to display the CB Setup menu.

INT

INT is the intercom setup button. See ADVANCED AUDIO SYSTEM > INTERCOM OPERATION (Page 91). Press the **INT** pushbutton to display the Intercom Setup menu.

NOTE

With the headsets/microphones plugged into the rider and/or passenger intercom sockets, the intercom is voice activated (VOX).

NAV

Active only with the Advanced Audio System accessory, **NAV** is the GPS positioning and turn-to-turn navigation setup button. Press the **NAV** pushbutton to display the navigational menu.

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.

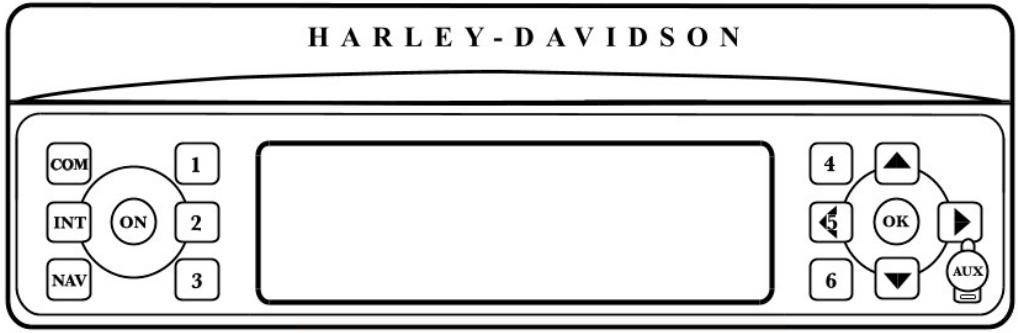
Use a 1/8 in. (3.5 millimeter) male to male extension cord to plug the line out or headset out from the auxiliary device into the **AUX** port. AUX appears in the LCD as a mode selectable with the **MODE SEL** switch.

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.*

om00505



1. Communications (CB) setup (if equipped)
2. CD cover
3. EJECT (under cover)
4. OK (Confirm)
5. Auxiliary connector cover
6. Left (5), Up, Right, Down Arrow Keys
7. Soft keys (4, 5/Left Arrow, 6)
8. Liquid crystal display (LCD)
9. Soft keys (1, 2, 3)
10. ON key
11. GPS navigation module (if equipped)
12. Intercom setup (if equipped)

Figure 25. Advanced Audio System Front Panel

LEFT HANDLEBAR CONTROLS

See Figure 26. Easy to operate while riding, audio controls are mounted on the left hand switch housing on the left handgrip. The left hand audio controls are a **+/AUDIO/-** and a **PTT +/SQ/-** switch.

+/AUDIO/- Switch

AUDIO: See Figure 26. 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 Fade, 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, Fade, 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.

See C in Figure 34. Fade adjusts the balance between rider and passenger speakers. Pressing **AUDIO** upward (**+**) moves the balance to the front speakers while pressing **AUDIO** downward (**-**) moves the balance to the rear speakers. Equal volume in front and rear speakers is indicated by one horizontal single line in the center position.

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

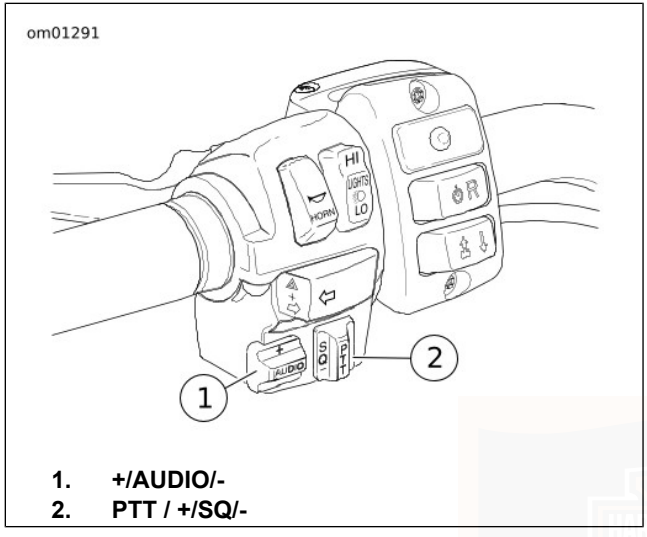
The AVC (Automatic Volume Control) function sets the volume level to compensate for the ambient noise associated with motorcycle speed.

PTT and +/SQ/- Switch

See Figure 26. Push-To-Talk (**PTT**) and the squelch control switch (**+/SQ/-**) is located on the left handlebar switch assembly.

PTT: With the power ON and the LCD indicating CB is active, press and hold the **PTT** switch to transmit over the channel displayed. Release **PTT** to end transmission.

+/SQ/-: Lower the threshold to allow reception of CB signals by pressing the **+/SQ/-** switch toward the rear (**-**) or raise the threshold by pressing the **+/SQ/-** switch toward the front (**+**).



1. **+/AUDIO/-**
2. **PTT / +/SQ/-**

Figure 26. Left Handlebar Audio Controls

RIGHT HANDLEBAR CONTROLS

See Figure 27. 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 CB mode: **UP/DN** changes the CB channel.

In the Intercom mode: **UP/DN** changes the voice activated microphone (VOX) sensitivity.

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

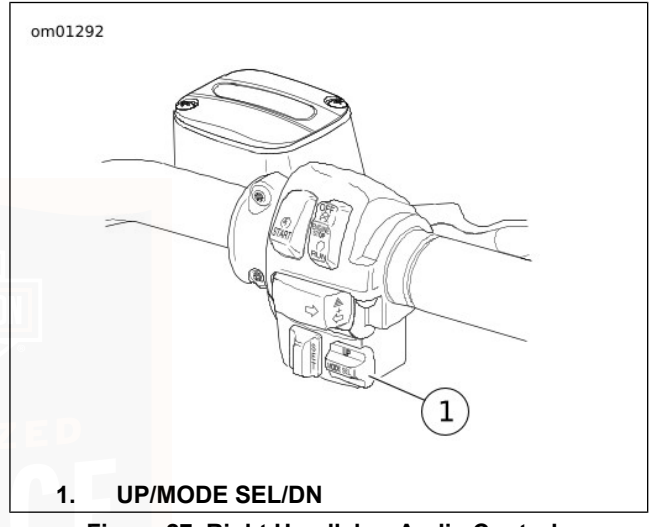
For a detailed description of the various modes, see ADVANCED AUDIO SYSTEM > RECEIVER OPERATION (Page 76).

Table 19. 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

NOTE

The intercom and CB can be activated at the same time with the receiver modes. The intercom and CB signals are passed to the audio circuits only if the signal strength exceeds the threshold established by CB squelch or VOX microphone sensitivity levels. Depending on the position of the speaker control switch in the fairing switch cap, the receiver function, the CB, and the VOX microphone can be heard in the headsets simultaneously. See ADVANCED AUDIO SYSTEM > INTERCOM OPERATION (Page 91) and ADVANCED AUDIO SYSTEM > CB OPERATION (Page 94).



1. UP/MODE SEL/DN

Figure 27. Right Handlebar Audio Controls

RECEIVER OPERATION

See Figure 25 for an illustration of the stereo receiver front panel.

Set Time-of-Day

Set the time-of-day with the ignition 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 28. 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.

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 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 switch is turned to **IGNITION**.

Select a Frequency Band

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 28. The LCD highlights the selected band.

NOTE

*Refer to Table 19. 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 28. 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 28. 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 28. 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.

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 28. 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 28. 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 28. AM can store 6 preset frequencies.

*See E and F in Figure 28. 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 28. 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 28. 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 28. 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 28. 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 28. 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 28. 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 28. 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.

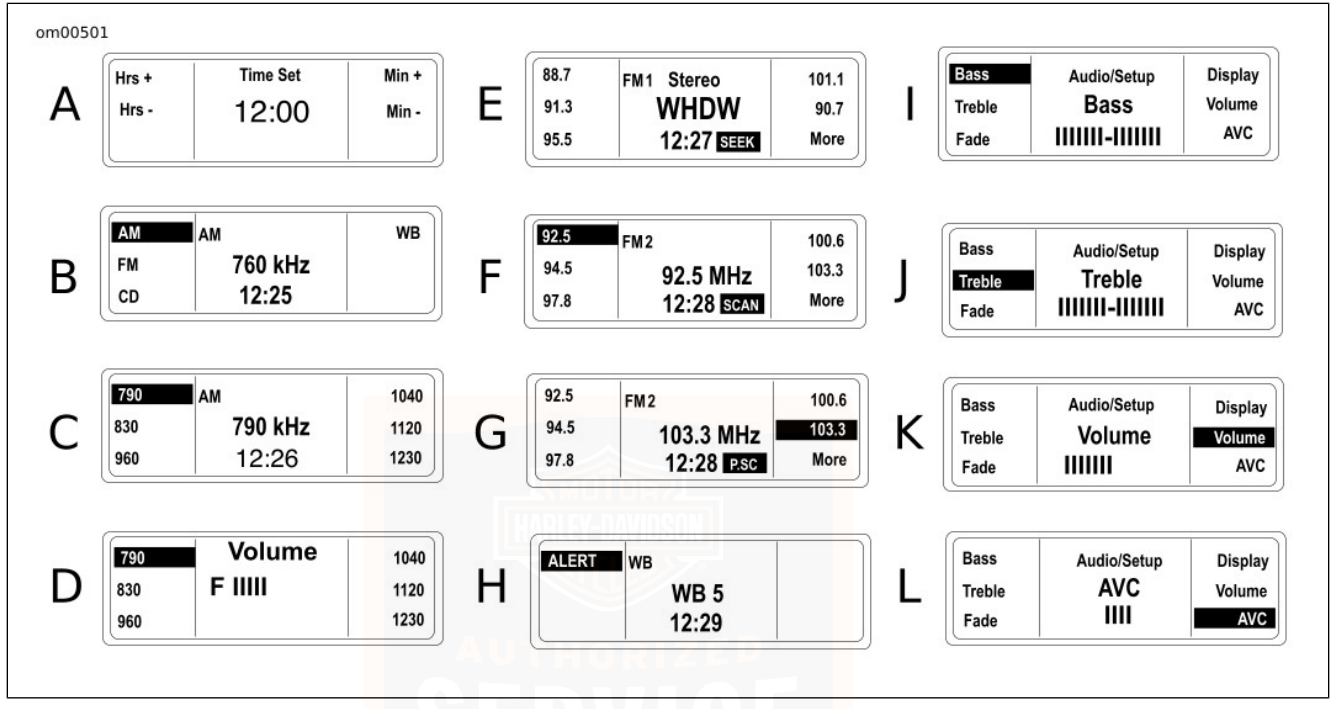


Figure 28. LCD Display Examples

Adjusting Display Contrast

See Figure 29. 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.

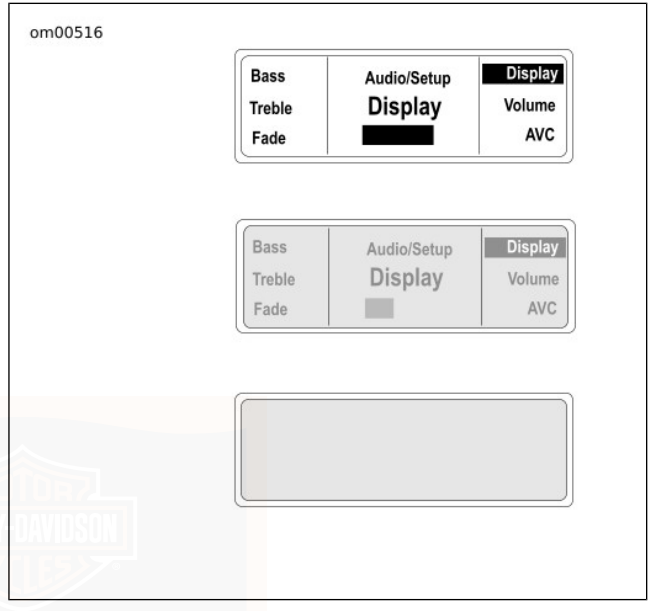


Figure 29. Character Display Illumination

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 30. 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 30. 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 86).

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 30. 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 30. 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.

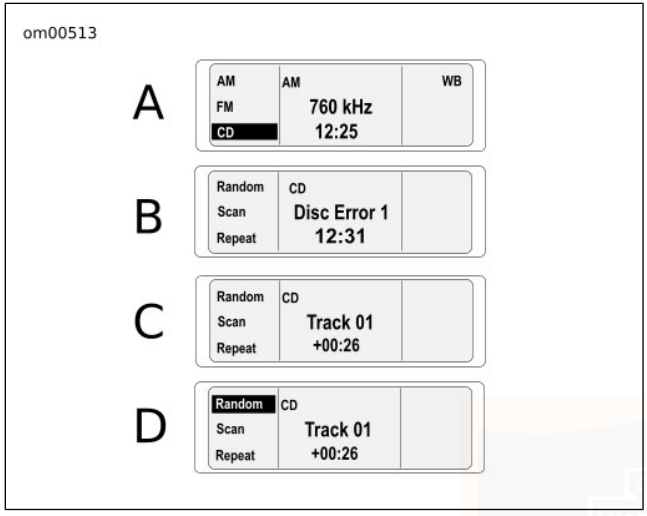


Figure 30. CD/MP3 Display Examples

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.*

INTERCOM AND CITIZEN BAND

The Advanced Audio System includes a digitally tuned 40 channel Citizen Band (CB) transceiver, a rider/passenger intercom.

Features include:

- Rider headset connector on fuel tank console
- Passenger headset connector on backrest
- Handlebar mounted rider push to talk (**PTT/+/SQ/-**) switch (CB and Intercom)
- Fairing-mounted speaker switch
- Rear-mounted passenger **UP/MODE SEL/DN** and **PTT/+/VOL/-** switches (CB and Intercom)

- Digitally adjustable rear headset speaker volume
- Passenger receiver band switching and frequency tuning
- Passenger CD/MP3 player control
- Rider hand-held microphone compatibility for areas that prohibit headset (helmet-mounted) speakers

HEADSETS AND SOCKETS

NOTE

Some local governments prohibit or restrict the use of headset (helmet-mounted) speakers. Check with local authorities and obey all applicable laws and regulations.

A Harley-Davidson dealer can help you select the correct genuine Harley-Davidson headsets and microphones for your year and model Harley-Davidson. Harley-Davidson stereo helmet headsets with 7-pin DIN jacks fit the rider and the passenger intercom sockets. Other headset microphones will not work.

Open the socket cap and with the ridge on the headset jack facing upward and insert the jack into either the front or rear headset socket.

NOTE

For areas that do not permit headset speakers, a special hand-held microphone can be used to transmit over the CB. This microphone is also available through a Harley-Davidson dealer.

NOTICE

Do not pull on the cord to remove the headset from the socket. Pull on the headset jack to disconnect the headset from the socket. (00174a)

The spring-loaded hinge keeps the headset socket cap closed while riding. It protects against dirt and water when the headset or hand-held microphone is not in use. Before washing the motorcycle, verify that **BOTH** rider and passenger socket caps are closed.

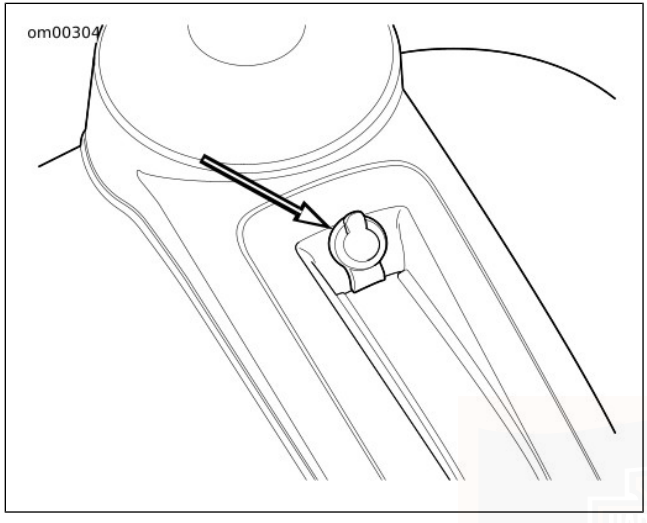


Figure 31. Front Headset Socket Cap

VOX MICROPHONES

The Harley-Davidson intercom uses a voice-activated (VOX) microphone for hands-free intercom operation. The headset microphone minimizes the transmission of hand-held microphone generated noise.

The intercom is activated when a voice or sound exceeds a preset audio level, the voice is said to "break VOX". The voice or sound is transmitted to the headsets.

NOTE

*Pressing and holding the **PTT** switch will also open the microphone.*

Once VOX is broken, a conversation can proceed uninterrupted. After the absence of sound or voice, there is a delay of approximately 2 seconds before the microphone is deactivated. This delay in deactivation allows for pauses in conversation.

Because loud exhausts, passing trucks, car horns or other background sounds may unintentionally activate the intercom, the sound level necessary to break VOX is adjustable. See ADVANCED AUDIO SYSTEM > INTERCOM OPERATION (Page 91).

SPEAKER CONTROLS

SPKR Switch

A three position speaker (SPKR) switch is located on the inner fairing cap. See Figure 32.

Off/Forward: In the forward position, the speakers are off. Audio (radio, CD/MP3, AUX and CB) is played in the headsets only. During simultaneous CB reception, the other audio source is muted and only the CB is heard in the headsets.

Center: In the center position, the radio, CD/MP3 player or AUX is played over the speakers while the CB is played only in the headsets.

On/Rearward: In the rearward position, the speakers are on. With the SPKR indicator lit, the radio, the CD/MP3 player, or any AUX device and the CB are played through both the rider and passenger speakers. When a CB signal is received, other audio sources mute and the CB is played over the speakers. Refer to Table 21.

NOTE

The intercom is only heard in the headsets, regardless of the SPKR switch position.

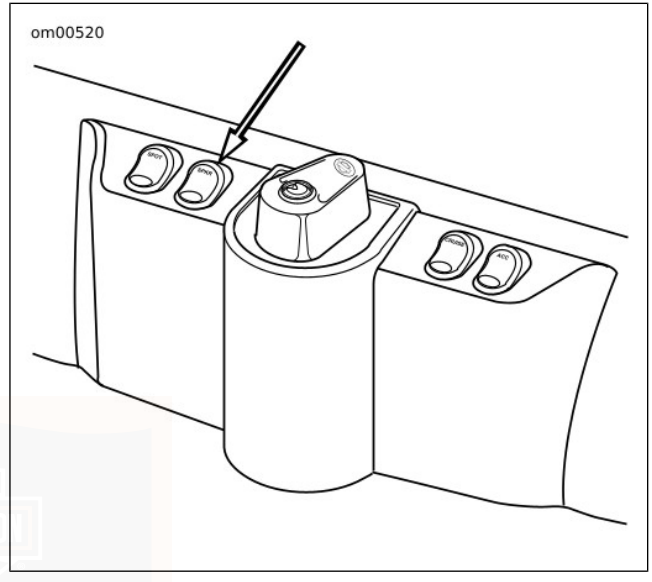


Figure 32. SPKR (speaker) Switch

Rider to Passenger Speaker Balance

The receiver FADER control balances the front rider and rear passenger speakers.

FADER: With the fairing speaker switch in either the SPKR or center position, press the **AUDIO** switch to cycle through Bass to Treble to Fade in the LCD or with the motorcycle

stationary, press the left hand **AUDIO** switch once to enter the Bass display and select Fade with the **MODE SEL** switch or with the soft key.

The LCD displays the word Fader and a row of outlined rectangles. The smaller center rectangle indicates equal balance between front and rear speakers. A single solid rectangle moves left or right of the center dash as the balance of volume is switched from the passenger speakers (to the left) to the rider speakers (to the right). See C in Figure 34.

- Press the AUDIO switch up (+) to raise the volume from the rider speakers while lowering the volume from the passenger speakers.
- Press the AUDIO switch down (-) to raise the volume from the passenger speakers while lowering the volume from the rider speakers.

PASSENGER CONTROLS

UP/MODE SEL/DN Switch

See Figure 33. The passenger **MODE SEL** switch on the left side of the speaker box gives the passenger control of radio band selection, tuning, CD/MP3 operation and all functions of the hand grip mounted **MODE SEL** switch.

NOTE

For information on routing audio signals to the passenger speakers and headsets, refer to Table 21.

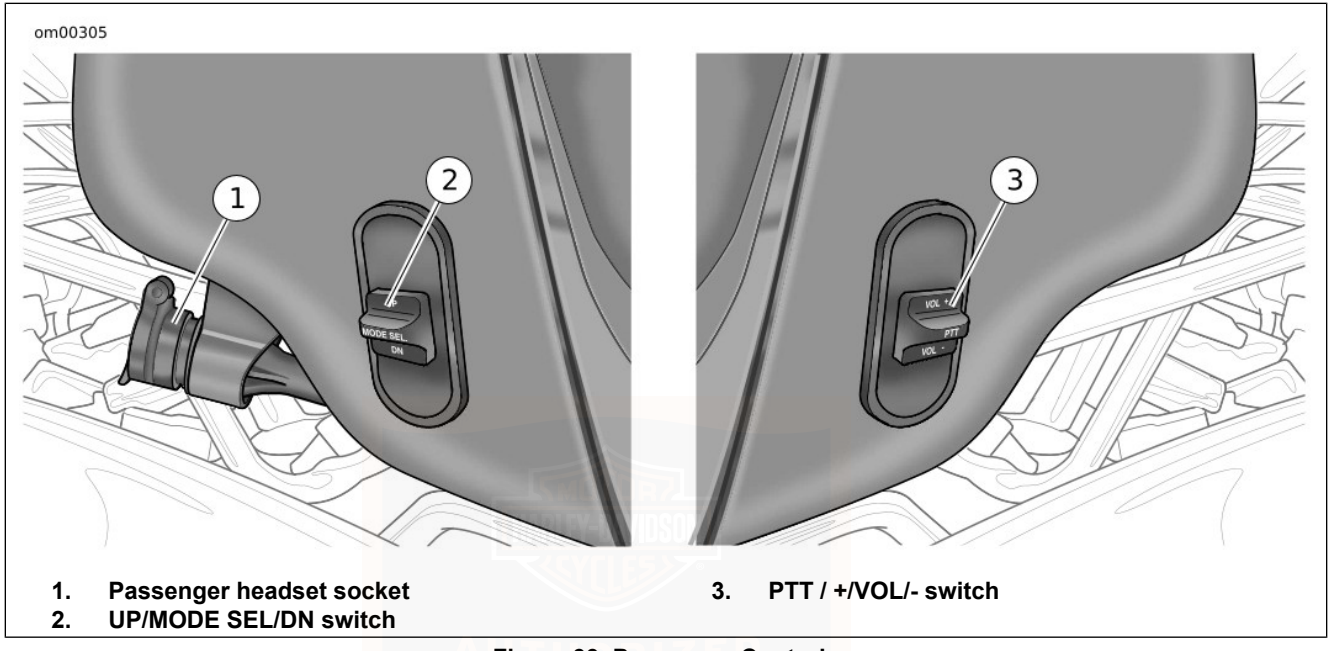
PTT and +/VOL/- Switch

See Figure 33. The **PTT/+/VOL/-** switch on the right side of speaker box allows the passenger to talk over the intercom or transmit over the CB as well as to raise or lower the rear headset volume.

See E in Figure 34. When the rear headset volume is adjusted, a F (front) and R (rear) bar graph appear in the LCD display.

NOTE

- *The passenger VOL switch affects only the passenger headset. The handlebar mounted **AUDIO** switch is the master volume control, and used in conjunction with the FADER, affects both the rider and passenger speaker volume.*
- *With stereo receiver tuning, radio band selection, CD/MP3 track selection or other functions, simultaneous use of front and rear **MODE SEL** switches may cause operation to be suspended until either rider or passenger controls are released.*



1. **Passenger headset socket**
2. **UP/MODE SEL/DN switch**
3. **PTT / +/VOL/- switch**

Figure 33. Passenger Controls

INTERCOM OPERATION

Operation

To speak over the intercom, press and hold either rider or passenger **PTT** switch to enable the microphones. Both microphones are active while one or both **PTT** switches are pressed.

NOTE

Always verify that the CB is off so that private intercom conversations will not be transmitted.

Activating the Intercom and the VOX Microphones

Press and hold the **INT** button on the front panel, to open the Intercom Setup display.

See D in Figure 34. To activate the intercom (INT) and the VOX microphones, press soft key **1** to turn the intercom ON.

The intercom will activate in Intercom Setup with VOX sensitivity and headset volume level settings from the previous use. VOX sensitivity and headset volume are adjusted in Int Setup only.

To exit Int Setup, press and release the **MODE SEL** switch or the **INT** button.

To make adjustments to VOX sensitivity after exiting Intercom Setup, re-enter Intercom Setup by pressing **INT**.

NOTE

For privacy, the intercom can only be heard through the headsets.

To turn OFF the intercom and the VOX microphones, press the **INT** button to open the Intercom Setup display and press the On/Off soft key (**1**).

Adjusting VOX Sensitivity

VOX sensitivity should be adjusted so that the microphones break VOX at a normal voice level.

Enter Intercom Setup by pressing the **INT** button. Press the ON or **1** soft key to turn the intercom on.

See G in Figure 34. Press the **MODE SEL** switch **UP** or **DN** or press the **4** or **5** soft key to initiate the VOX display. The LCD displays VOX sensitivity as a bar graph with a smaller bar to indicate the center of the 14 bars. A higher number of bars indicates greater sensitivity while a lower number means less sensitivity.

Continue to use **MODE SEL** on the right hand grip to adjust the sensitivity level. Press **MODE SEL UP** to make the microphone more sensitive. Press the **MODE SEL DN** to reduce sensitivity. To exit Setup, press and release the **MODE SEL** switch.

NOTE

- *The receiver retains the sensitivity level from the previous setup. However, if power is removed from the receiver, VOX sensitivity defaults to mid level.*

- *VOX sensitivity may have to be adjusted if either microphone is unintentionally activated because the microphone misinterprets radio, road or background sound as conversation.*

When VOX is set to its maximum, the microphone is always open. The VOX display will read Open.

When VOX is set to lowest value, the microphone is closed and the VOX display reads Closed.

Adjusting Rider Headset Volume

The rider intercom volume is only adjustable in Intercom Setup.

See E in Figure 34. Enter Intercom Setup, speak into microphone and adjust the intercom volume with the AUDIO switch on the left hand grip. Press **AUDIO +** to raise the volume and **AUDIO -** to lower the volume. The LCD displays a dashed line that changes length with the level.

See F in Figure 34. When the headset volume has been adjusted to the bottom of its range, Mute will appear in the volume display.

To exit Intercom Setup, press and release 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)

Adjusting Passenger Headset Volume

The passenger intercom volume is only adjustable in Intercom Setup.

Enter Intercom Setup. Speak into the microphone and adjust the intercom volume with the **AUDIO** switch on the right speaker box on the passenger's backrest. Press **AUDIO +** to raise the volume and **-** to lower the volume. The LCD displays a bar graph that changes length with the level.

See F in Figure 34. When the headset volume has been adjusted to the bottom of its range, Mute will appear in the volume display.

To exit Intercom Setup, press and release the **MODE SEL** switch or press the INT pushbutton.

CB OPERATION

Activating the CB

See H and I in Figure 34. To activate the Citizen Band transceiver, press and release the **COM** pushbutton on the front panel. Press soft key **1** to turn the CB ON/OFF. The CB will activate in CB Setup with squelch threshold and channel settings from the previous use. CB channels are selected in CB Setup.

To exit CB Setup but leave the receiver with the CB active, press and release the **MODE SEL** switch or the **COM** pushbutton.

To turn off the CB, press the **COM** button to enter CB Setup. Press soft key **1** to turn the CB ON and Off.

NOTICE

There are no adjustments internal to the CB transceiver chassis that can be performed without risking non-compliance with Federal Communications Commission (FCC) rules. Refer to the original equipment manufacturer for any service required during the warranty period. For transmitter service after the warranty period, refer to a certified repair service. Any frequency determining components, such as crystals, or power determining semi-conductors, etc., should only be replaced with the original component manufacturer's part or equivalent. Substitutes can result in violation of FCC rules. (00175a)

Entering CB Setup

See J in Figure 34. With the CB on, press **COM** to enter CB Setup. The LCD displays CB SETUP in the upper half and the CB channel appears in the lower half.

To exit CB Setup, press and release the **MODE SEL** switch.

After exiting CB Setup with the CB still active, re-enter CB Setup by pressing and releasing the **COM** soft key.

Selecting a Channel

In CB Setup, use the **MODE SEL** switch to select a CB channel. Press and release **MODE SEL UP** or **DN** to switch channels one at a time.

Soft keys 4, 5 and 6 can be used to preset CB channels.

If the **MODE SEL** switch is held up or down, tuning continuously wraps around the ends of the channels.

See K in Figure 34. When squelch is interrupted, the CB in the display inverts. If the squelch is not interrupted and the another source is playing, CB is displayed.

⚠ WARNING

Set CB channel, squelch threshold and volume before riding to minimize adjustments on the road. Distractions can lead to loss of control, resulting in death or serious injury. (00089a)

Preset Channels

See J in Figure 34. Up to 3 CB channels can be preset. Press and hold a soft key (4, 5, 6) to preset a CB channel.

Once set, press the preset soft key to switch to the preset channel when the CB display is active.

Adjusting Squelch

See K in Figure 34. The CB signal is passed to the speakers or headsets only if signal strength exceeds the threshold set with the squelch control switch (**PTT/+/SQ/-**). When CB signals exceed the threshold, they are said to "break squelch." Refer to Table 20.

- To lower the threshold to process the weakest CB signals, press **SQ -** or rearward.
- To raise the threshold to process stronger signals, press **SQ +** or forward.

In the LCD, a dashed line changes length with the setting.

Table 20. Squelch Control Switch

SQ (-) REARWARD	SQ (+) FORWARD
More signals	Fewer signals
More noise	Less noise
More static	Less static
Unwanted signals	Better sound quality

Transmitting

To transmit, press and hold the **PTT** switch. Transmission is over the CB channel displayed in the LCD. To end transmission, release **PTT**.

Adjusting Volume

Refer to Table 21. See L in Figure 34. To adjust volume of the CB in the speakers or headset, Press **AUDIO +** to raise the volume or **AUDIO -** to lower the volume. CB volume is adjustable when squelch is interrupted or when the display is in CB Setup.

A dashed line that changes length with the volume setting is displayed.

NOTICE

Operating the CB radio without an antenna or with a broken antenna cable can result in damage to the transmitter circuitry. (00176a)

CB Range

Maximum transmission range can only be expected under stable weather conditions in flat, open country.

Weather: In times of atmospheric disturbances, such as rain, snow, or even sunspots, the CB's range can be reduced.

Terrain: Buildings, hills, valleys or any elevated objects or depressions that either block or create a longer path between transmitter and receiver will reduce or disrupt communications.

Obstructions: Transmissions may be cut off under a viaduct or inside a tunnel or parking garage.

NOTE

The CB transmitter is the most powerful allowed under Federal law, but since there is no large steel area to create a ground plane, it may not transmit as strongly as when mounted in a car or truck.

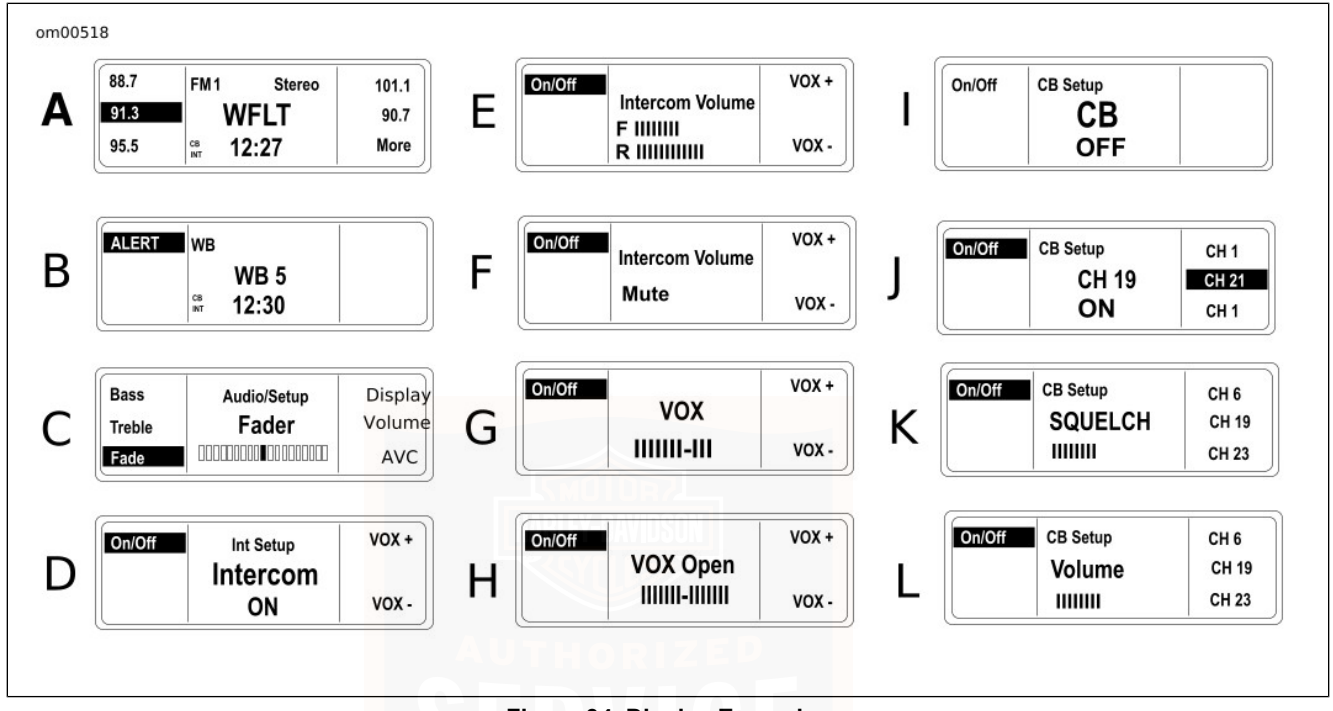


Figure 34. Display Examples

AUDIO ROUTING AND MIXING

General

Refer to Table 21. Whether audio is routed to the headsets, speakers or both depends on the **SPKR** control switch and the **INT** and **CB** buttons on the receiver.

A single audio source routed to headset or speaker can be controlled with the riders **AUDIO** switch or the passenger **VOL** switch.

NOTE

*The passenger volume control switch affects only the passenger headset. The handlebar mounted **AUDIO** switch is the master volume control, and used in conjunction with the fader, affects both the rider and passenger speaker volume.*

Table 21. Audio Routing and Mixing Combinations

AUDIO ROUTING COMBINATIONS			VOLUME CONTROL
SPEAKER CONTROL SWITCH	**AUDIO SOURCE(S)**	**AUDIO OUT**	**AUDIO ± OR VOL ±**
Off or Forward (Headsets)	Music*	Headsets	Music*
	CB	Headsets	CB (During reception or SETUP)
	Intercom	Headsets	Intercom (Only in SETUP)
	Intercom and music*	Both in the headsets	Music
	CB and music*	CB in the headsets (Music is muted during CB reception)	CB (During reception or SETUP)
	Intercom and CB	Both in the headsets (Music is muted during CB reception)	CB (During reception or Setup)

Table 21. Audio Routing and Mixing Combinations

AUDIO ROUTING COMBINATIONS			VOLUME CONTROL
SPEAKER CONTROL SWITCH	**AUDIO SOURCE(S)**	**AUDIO OUT**	**AUDIO ± OR VOL ±**
Center (Speakers and headsets)	Music*	Speakers	Music*
	CB	Headsets	CB (During reception or SETUP)
	Intercom	Headsets	Intercom (Only in SETUP)
	Intercom and music*	Intercom in the headsets Music* in the speakers	Music*
	CB and music*	CB in the headsets Music* in the speakers Music is muted during CB reception	CB
	Intercom and CB	Both in the headsets (Music is MUTED during CB reception)	CB*
On or rearward (Speakers)	Music*	Speakers	Music*
	CB	Speakers	CB (During reception or SETUP)
	Intercom	Headsets	Intercom (Only in SETUP)
	Intercom and music*	Intercom in the headsets. Music in the speakers.	Music
	CB and music*	CB in the speakers (When squelch is broken)	CB
	Intercom and CB	Intercom in the headsets (CB in the speakers MUTED during CB reception)	CB
* Music = Radio, CD player or auxiliary (AUX) audio source.			

TROUBLESHOOTING: AUDIO

Audio Troubleshooting

Refer to Table 22. Use the following table to identify rider or passenger control settings that prevent intended operation.

NOTE

See the electrical diagnostic manual for all system diagnosis and electrical troubleshooting information.

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

If it is necessary to replace the radio fuses, follow the fuse replacement procedures in this manual or see your Harley-Davidson dealer for service.

See Figure 74. Radio fuses are located in the fuse block under the left side cover.

- A 15 amp radio power fuse allows power to the radio through activation of an internal relay.
- A 15 amp radio memory fuse provides direct and continuous power to the radio memory and time-of-day clock, and when the internal relay is activated, feeds the main circuits of the radio as well.

Remove the radio fuses and inspect the element. Replace the fuse if the element is burned or separated.

NOTE

See Figure 74. A spare 15 amp fuse is installed in the fuse block.

Table 22. Operational Troubleshooting: Advanced Audio System

THIS	CAN PREVENT THIS
Squelch broken	Fairing music
	Headset music
	Passenger speaker music
Squelch unbroken	CB audio
CB off or low volume	CB audio
Front or rear PTT on	Fairing music
	Headset music
	Passenger speaker music
	CB audio
Handlebar volume low	Fairing music
	Headset music
	Passenger speaker music
Passenger headset volume low	Passenger headset music and CB audio
Fairing SPKR back to speaker	Headset music and headset CB audio
Fairing SPKR forward to headset	Fairing music and CB audio
INT off	Voice communications (Unless PTT is pressed)

NOTES

HARLEY-DAVIDSON SMART SECURITY SYSTEM

Components

The Harley-Davidson Smart Security System (H-DSSS) consists of a Hands-Free Security Module (HFSM) 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 or ACC 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 ACC.

NOTE

- *If disconnecting power from the motorcycle battery, see HANDS-FREE SECURITY MODULE > DISCONNECTING POWER (Page 114) to prevent the optional security system siren from sounding.*
- *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 expressively 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 35. 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 HANDS-FREE SECURITY MODULE > FOB BATTERY (Page 113).*
- *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 HANDS-FREE SECURITY MODULE > ARMING AND DISARMING (Page 108) and HANDS-FREE SECURITY MODULE > TROUBLESHOOTING (Page 114).*
- *The PIN can easily be changed by the rider at any time. Refer to HANDS-FREE SECURITY MODULE > PERSONAL IDENTIFICATION NUMBER (PIN) (Page 105).*

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.

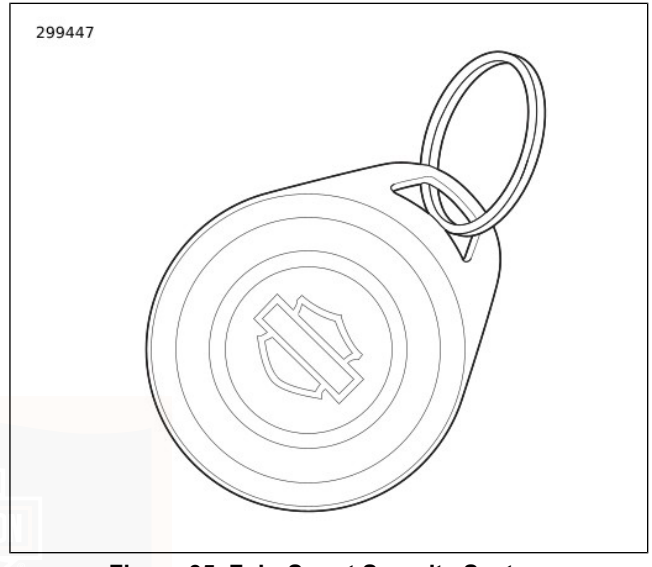


Figure 35. Fob: Smart Security System

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

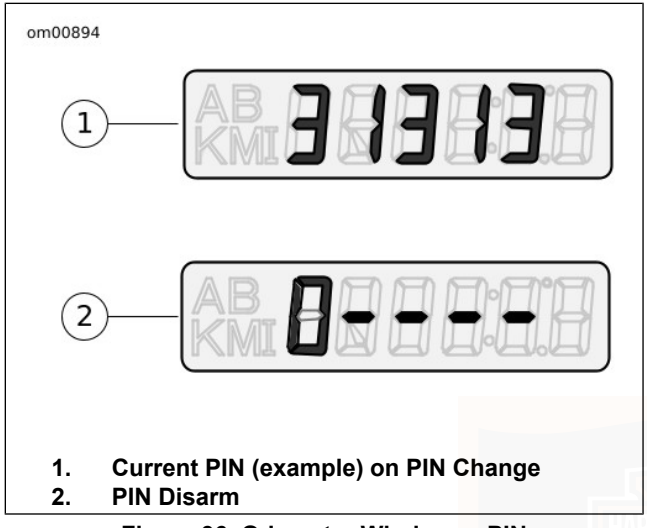
To maintain security, the rider can change the PIN at any time. Refer to Table 23.

Table 23. Changing the PIN

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
1	Select a 5-digit (1 thru 9) PIN and record on the wallet card from Owner's Manual.		
2	With an assigned fob present, turn the ignition switch **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 36.
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.	

Table 23. Changing the PIN

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
9	Enter third digit (c) of new PIN by pressing **left** turn signal switch **c** times.		
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 switch to **OFF**.	The odometer will return to mileage.	Turning the ignition switch to **OFF** stores the new PIN in the module.



1. **Current PIN (example) on PIN Change**
2. **PIN Disarm**

Figure 36. Odometer Windows - PIN

SECURITY STATUS INDICATOR

See Figure 7. 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 the module needs servicing.

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

International Models: *The HFSM must be in the Chirp Mode for the siren to chirp on arming or on disarming. See HANDS-FREE SECURITY MODULE > SIREN CHIRP MODE (CONFIRMATION) (Page 111).*

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 or turning the ignition key to IGNITION will cause the module to 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 or straddle seat. During a PIN disarm, if the Smart Security System detects motorcycle motion the system will activate the alarm.

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.*

Table 24. 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 switch to **IGNITION**.		

Table 24. Entering a PIN to Disarm Harley-Davidson Smart Security System

STEP NO.	ACTION	WAIT FOR CONFIRMATION	NOTES
3	Quickly (within 2 seconds of turning ignition switch) 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 36. 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.
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.

ALARM (IF EQUIPPED)

Warnings

Once armed, if the motorcycle is moved 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 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 183).

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

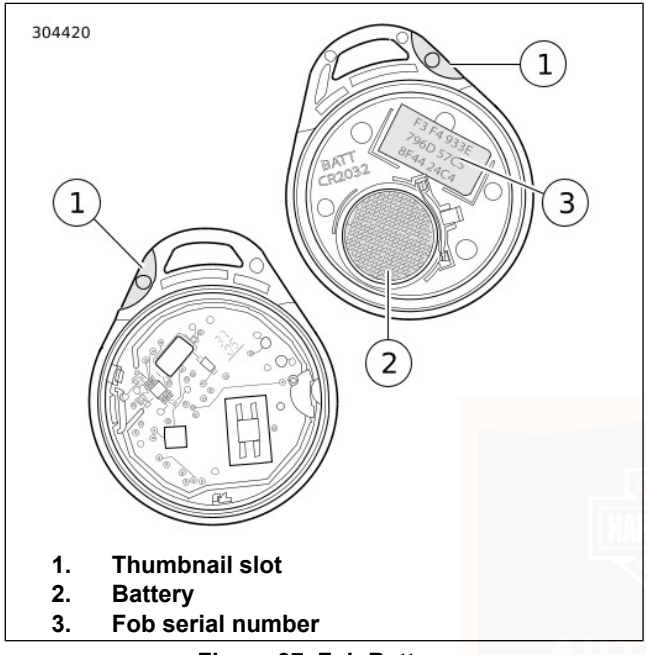
Replace the fob battery every year.

1. See Figure 37. 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.



1. **Thumbnail slot**
2. **Battery**
3. **Fob serial number**

Figure 37. 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 HANDS-FREE SECURITY MODULE > FOB BATTERY (Page 113).
3. **A damaged fob:** Use the PIN to disarm the motorcycle. Replacement fobs are available for purchase from a Harley-Davidson dealer.

Siren

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

NOTES

OPERATING RECOMMENDATIONS

⚠ WARNING

Three-wheeled motorcycles are different from two-wheeled motorcycles and 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.**

(00587e)

- 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)

- 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

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

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 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 oil level. Add oil if necessary.
4. Check controls to make sure they operate properly. Operate the front and rear brakes, parking brake, 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. Check secondary 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

1. Turn ignition switch to IGNITION position. Do not roll the throttle.

⚠ WARNING

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

2. Shift transmission to neutral.

3. See Figure 38. 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 operating for approximately 2 seconds as it fills the fuel lines with gasoline.

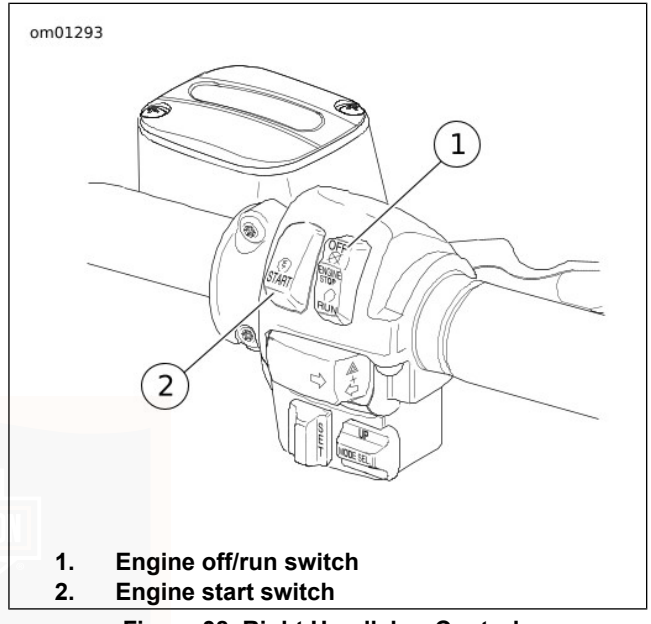
4. Squeeze the clutch lever in against the handgrip.

5. Press the starter button to start the motorcycle.

6. Release the parking brake before riding the motorcycle. See CONTROLS AND INDICATORS > PARKING BRAKE (Page 52).

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.



1. Engine off/run switch
2. Engine start switch

Figure 38. 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 5 in the VIN Breakdown Table 4 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 7. 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.

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

NOTE

Release parking brake before riding motorcycle. See CONTROLS AND INDICATORS > PARKING BRAKE (Page 52).

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

Upshift (Acceleration)

See Figure 39. Engage the next higher gear when the motorcycle reaches the shifting speed. Refer to Table 25.

Table 25. Upshift (Acceleration) Gear Speeds: Six Speed

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

1. Close the throttle.
2. Disengage the clutch (pull the clutch lever in).
3. Lift the gear shift lever up to the end of its travel and release.
4. Ease out the clutch lever and gradually open the throttle.
5. Repeat the previous steps to engage remaining gears.

NOTE

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

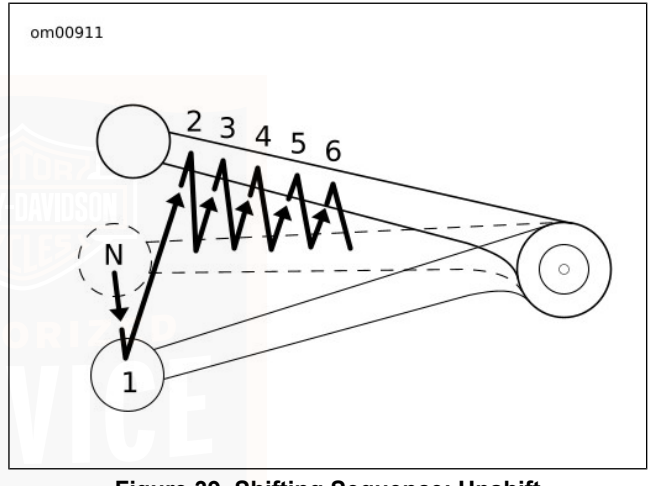


Figure 39. Shifting Sequence: Upshift

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 40. When engine speed decreases, as when climbing a hill or slowing for a turn, shift to the next lower gear. Refer to Table 26.

Table 26. 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.

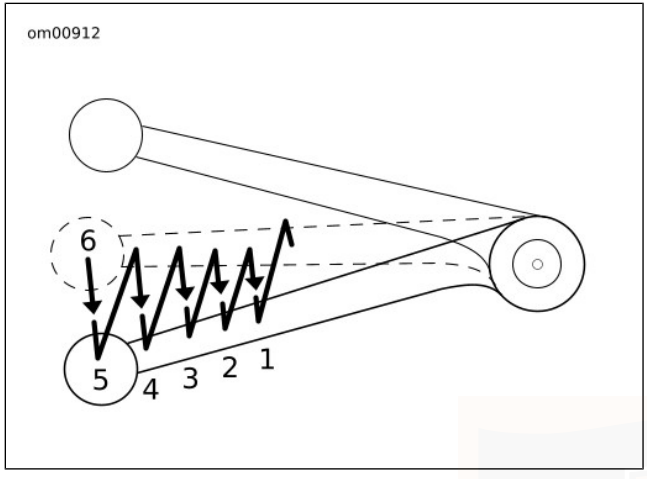


Figure 40. Shifting Sequence: Downshift

STOPPING THE ENGINE

1. Stop the engine by turning OFF the engine stop switch on right handlebar.
2. Turn OFF the ignition switch. If the engine should be stalled or stopped in any way, turn off the ignition switch at once to prevent battery discharge.
3. Shift the transmission into gear and engage the parking brake.

SAFE OPERATING MAINTENANCE

⚠ WARNING

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

⚠ WARNING

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

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

Check the following items:

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

BREAK-IN MAINTENANCE

NOTE

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

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

ENGINE LUBRICATION

⚠ CAUTION

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

⚠ CAUTION

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

NOTICE

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

Engine oil is a major factor in the performance and service life of the engine. Always use the proper grade of oil for the lowest temperature expected before the next scheduled oil change. Refer to Table 27.

This motorcycle was originally equipped with GENUINE HARLEY-DAVIDSON H-D 360 MOTORCYCLE OIL 20W50. H-D 360 is the preferred oil under normal operating conditions. If operation under extreme cold or heat are expected, refer to Table 27 for alternative choices.

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

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

Table 27. Recommended Engine Oils

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

Table 27. Recommended Engine Oils

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

CHECKING OIL LEVEL

⚠ CAUTION

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

NOTICE

Oil level cannot be accurately measured on a cold engine. For pre-ride inspection, with motorcycle 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. (00589b)

NOTE

See Figure 42. When checking oil level, use the gauge marked FULL HOT VEHICLE UPRIGHT.

Oil Level Cold Check

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

1. For pre-ride inspection, park vehicle on level ground.
2. See Figure 41. Remove filler plug/dipstick and wipe off the dipstick. Insert the dipstick and tighten into the fill spout.

NOTE

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

3. Remove the dipstick. Using the gauge marked FULL HOT VEHICLE UPRIGHT on the dipstick, verify the oil level. 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. For cold level check, do not exceed the midpoint (2) when filling with oil.

Oil Level Hot Check

NOTE

- *The engine will require a longer warm up period in colder weather.*
- *Perform engine oil level hot check only when engine is at normal operating temperature.*

1. Ride motorcycle until engine is at normal operating temperature.
2. Park vehicle on level ground. Allow engine to idle for 1-2 minutes. Turn engine off.
3. Remove filler plug/dipstick and wipe off the dipstick. Insert the dipstick and tighten into the fill spout.
4. See Figure 42. Remove the dipstick. Using the gauge marked FULL HOT VEHICLE UPRIGHT on the dipstick, verify the oil level. 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 27. Use only recommended oil specified in MAINTENANCE AND LUBRICATION > ENGINE LUBRICATION (Page 128).

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

NOTICE

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

NOTICE

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

- Check engine oil level at each complete fuel refill.

- Refer to Table 38. Oil should be changed at specified 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 134).

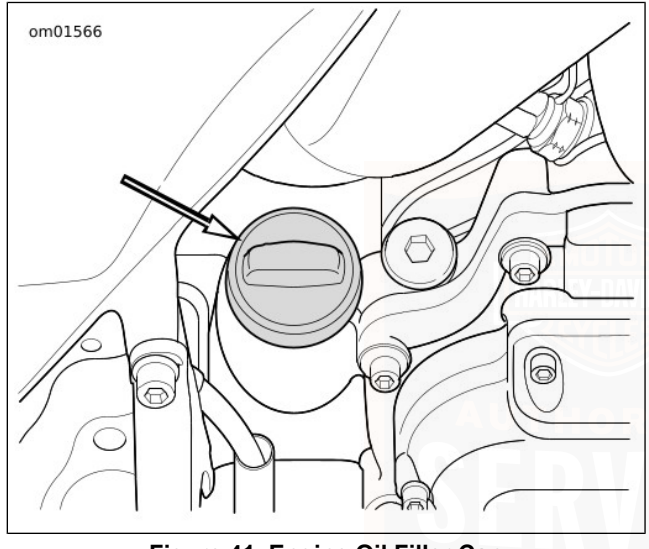
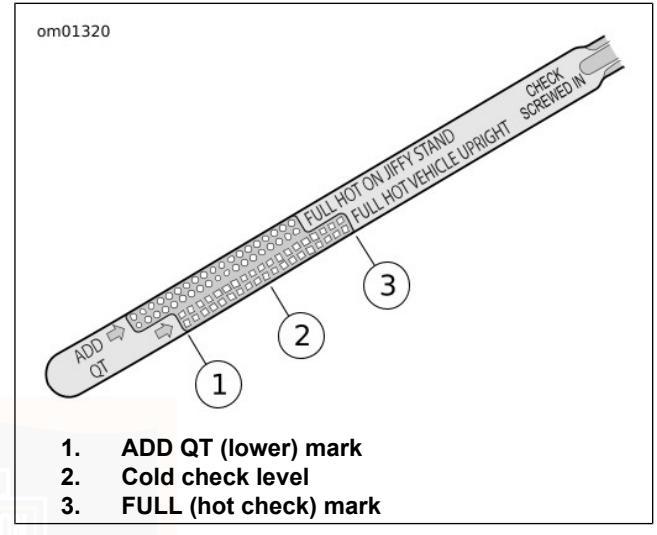


Figure 41. Engine Oil Filler Cap



1. **ADD QT (lower) mark**
2. **Cold check level**
3. **FULL (hot check) mark**

Figure 42. Engine Oil Dipstick

CHANGING OIL AND OIL FILTER

Refer to Table 38. 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 134).

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 43. 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.
7. See Figure 44. 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 27 for recommended oil.

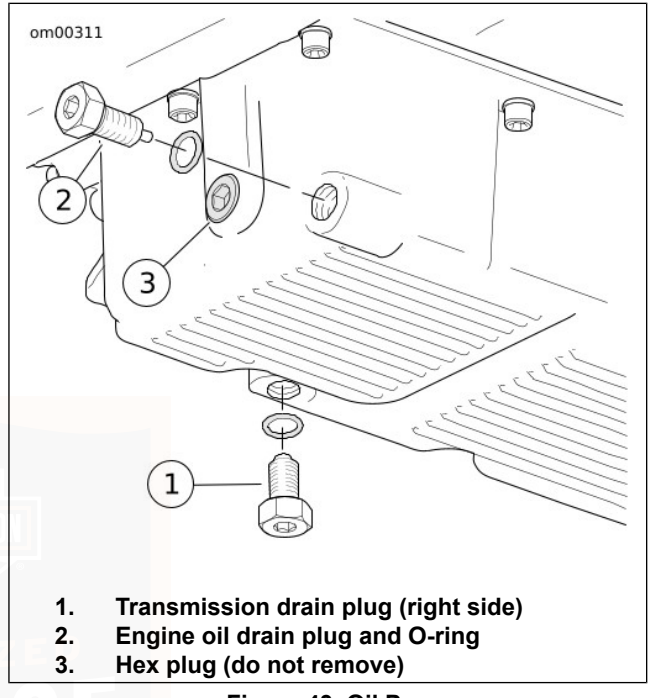
9. Initially add 2.8 L (3.0 qt) of engine oil.

10. Verify proper oil level. See MAINTENANCE AND LUBRICATION > CHECKING OIL LEVEL (Page 129).

    a. Check engine oil level using **COLD CHECK** procedure.

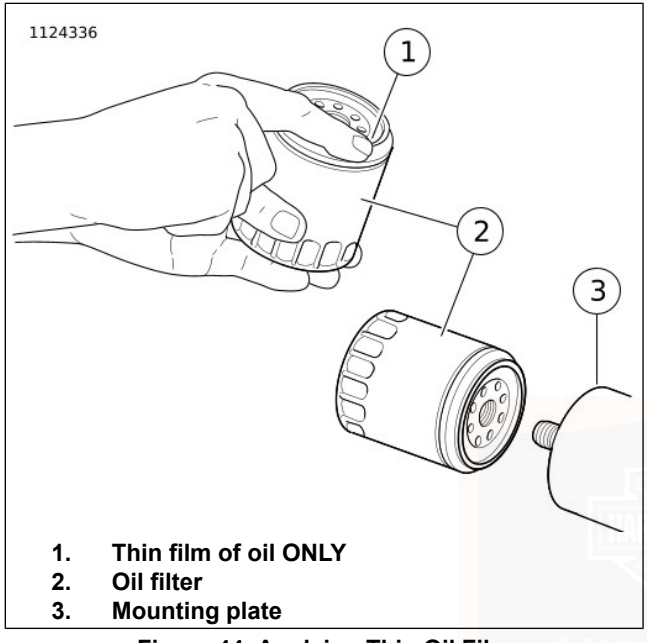
    b. Start engine and carefully check for oil leaks around drain plug and oil filter.

    c. Check engine oil level using **HOT CHECK** procedure.



1. Transmission drain plug (right side)
2. Engine oil drain plug and O-ring
3. Hex plug (do not remove)

Figure 43. Oil Pan



1. **Thin film of oil ONLY**
2. **Oil filter**
3. **Mounting plate**

Figure 44. Applying Thin Oil Film

WINTER LUBRICATION

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

NOTE

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

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

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

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

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.

CHECKING TRANSMISSION LUBRICANT LEVEL

Check the transmission lubricant level with engine turned off and motorcycle 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 45. Remove transmission lubricant dipstick. Wipe dipstick clean.

2. Thread dipstick into transmission finger tight.

3. See Figure 46. Remove 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 dipstick. Tighten to 2.8–8.5 N·m (25–75 **in-lbs**).

Table 28. Recommended Lubricant

LUBRICANT	REFILL QUANTITY *
FORMULA+ TRANSMISSION AND PRIMARY CHAIN LUBRICANT or SCREAMIN' EAGLE SYN3 FULL SYNTHETIC MOTORCYCLE LUBRICANT 20W50	0.83 L (28 fl oz)
*Approximate. Check and add as needed to bring level within specification.	

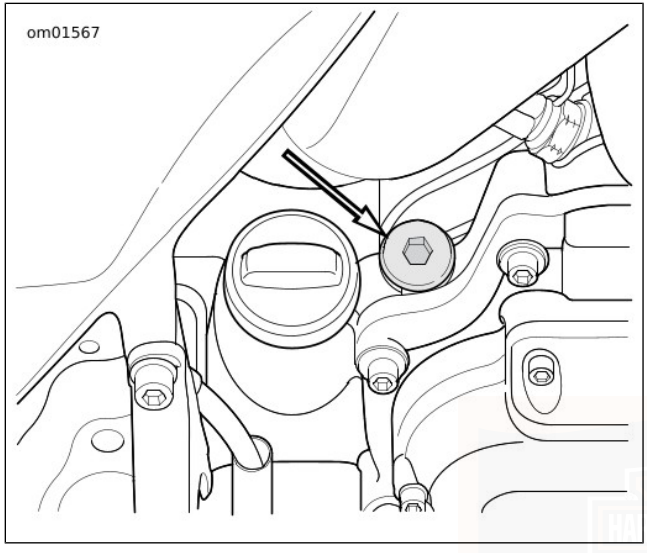
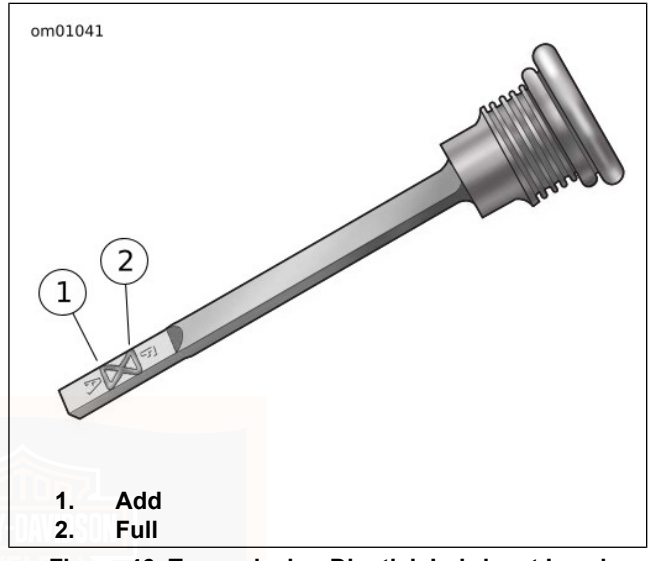


Figure 45. Transmission Dipstick Location



1. Add
2. Full

Figure 46. Transmission Dipstick Lubricant Level

CHANGING TRANSMISSION LUBRICANT

1. See Figure 45. 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 47. Remove transmission drain plug. Drain lubricant into a suitable container.

3. Clean and inspect drain plug and O-ring.

NOTICE

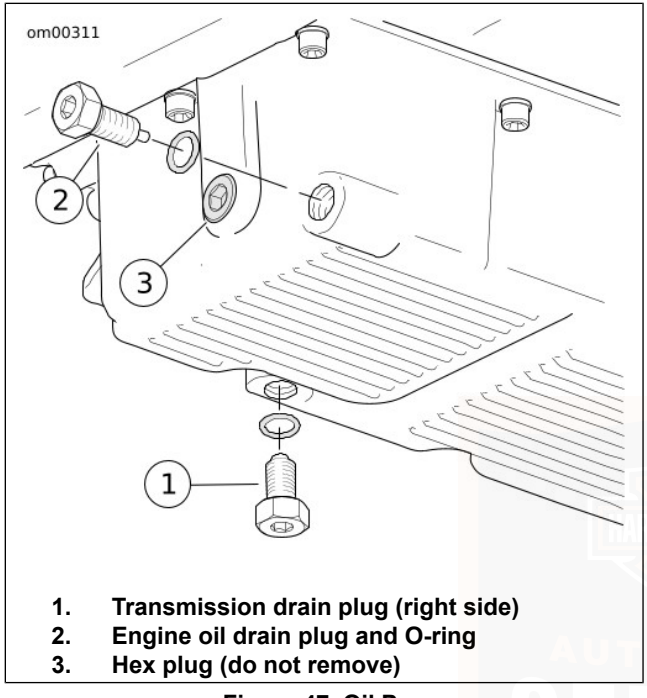
Do not over-tighten filler or drain plug. Doing so could result in a lubricant leak. (00200b)

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

5. Fill the transmission with 0.83 L (28 fl oz) of recommended Harley-Davidson lubricant. Refer to Table 28.

6. Check lubricant level and add enough lubricant to bring the level between the A(dd) and F(ull) marks. See MAINTENANCE AND LUBRICATION > CHECKING TRANSMISSION LUBRICANT LEVEL (Page 135).

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



1. **Transmission drain plug (right side)**
2. **Engine oil drain plug and O-ring**
3. **Hex plug (do not remove)**

Figure 47. Oil Pan

PRIMARY CHAINCASE LUBRICANT

General

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

Check Lubricant Level

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

2. Park vehicle on a level surface, so that primary chaincase is level.

⚠ WARNING

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

3. Disconnect negative battery cable. See MAINTENANCE AND LUBRICATION > BATTERY ACCESS (Page 172).

4. See Figure 48. Remove five screws to free clutch inspection cover from primary chaincase cover.

5. Remove seal ring from clutch inspection cover and discard.

6. 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 29.

7. Refer to CHANGING CHAINCASE LUBRICANT to install seal ring and clutch inspection cover.

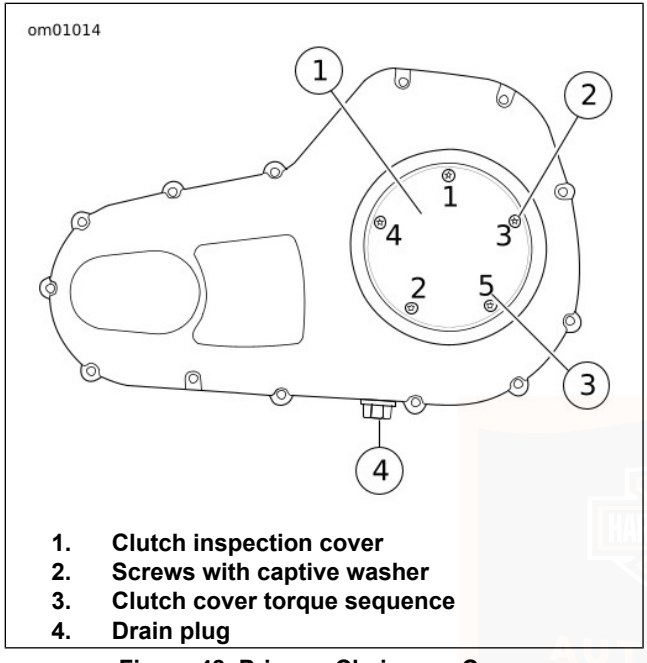
NOTICE

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

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

Table 29. Recommended Primary Chaincase Lubricant

LUBRICANT	REFILL QUANTITY
FORMULA+ TRANSMISSION AND PRIMARY CHAIN LUBRICANT or SCREAMIN' EAGLE SYN3 FULL SYNTHETIC MOTORCYCLE LUBRICANT 20W50	1.12 L (38 fl oz) (wet) 1.33 L (45 fl oz) (dry)



1. **Clutch inspection cover**
2. **Screws with captive washer**
3. **Clutch cover torque sequence**
4. **Drain plug**

Figure 48. 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 up to normal operating temperature.

⚠ WARNING

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

2. Disconnect negative battery cable. See MAINTENANCE AND LUBRICATION > BATTERY ACCESS (Page 172).
3. Remove five screws to free clutch inspection cover from primary chaincase cover.
4. Remove drain plug at bottom of primary chaincase. Drain lubricant into suitable container.

NOTE

Dispose of chaincase lubricant in accordance with local regulations.

5. Clean drain plug magnet. If plug has accumulated a lot of debris, inspect the condition of chaincase components.

6. Inspect drain plug O-ring for cuts, tears or signs of deterioration. Replace as necessary.

7. Install drain plug into primary chaincase and tighten to 19–28.5 N·m (14–21 ft-lbs).

8. Pour 1.12 L (38 fl oz) of the recommended GENUINE Harley-Davidson lubricant through the clutch inspection cover opening. Refer to Table 29.

NOTE

Only add 45 fl. oz. (1331 ml) after service that involves removal of the primary chaincase or primary chaincase cover.

NOTICE

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

⚠ 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)

9. Swab all lubricant from seal ring groove in clutch inspection cover. Install **new** seal ring in groove with nubs contacting ring groove walls.

10. See Figure 48. Install clutch inspection cover to primary chaincase cover. Tighten screws in the sequence shown to 9.5–12.2 N·m (84–108 **in-lbs**).

11. Connect battery negative cable. Tighten to 6.8–7.9 N·m (60–70 **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 belt deflection:

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

⚠ WARNING

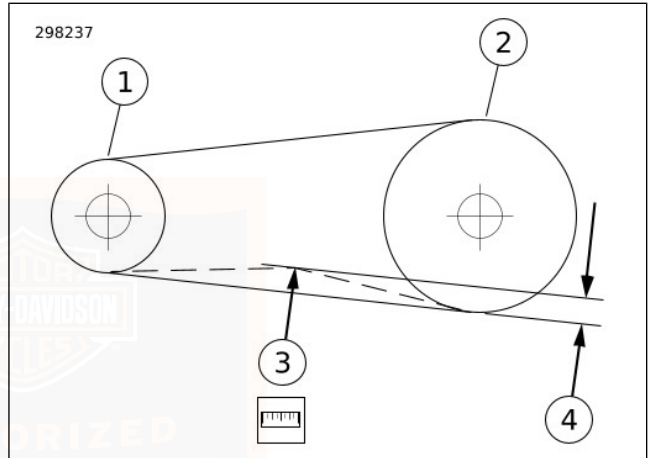
To prevent accidental vehicle start-up, which could cause death or serious injury, disconnect negative (-) battery cable before proceeding. (00048a)

1. Disconnect battery negative cable. See MAINTENANCE AND LUBRICATION > BATTERY ACCESS (Page 172).
2. Slide O-ring on gauge toward 0 lbs (0 kg) mark.
3. See Figure 49. Fit cradle against bottom of belt midway between transmission sprocket and rear sprocket.
4. Push upward on knob until O-ring slides to the 4.5 kg (10 lb) mark on the tool and compare belt deflection to scale on debris deflector.
5. Rotate rear wheels and measure deflection at several locations around the belt. Select the loosest measurement and compare with specifications in Table 30. Belt must be adjusted if not within specification.

Table 30. Belt Deflection

MODELS	INCHES	MILLIMETERS
All models	3/8-7/16	9.5-11.1

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



1. **Transmission sprocket**
2. **Rear wheel sprocket**
3. **10 lbs (4.5 kg) of force**
4. **Amount of deflection**

Figure 49. Checking Belt Deflection

CHASSIS LUBRICATION

Refer to Table 38 for all maintenance schedules.

1. Lubricate clutch control cable 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.

NOTE

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

OIL APPLICATIONS

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

FRONT FORK OIL

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

FUEL FILTER

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

CLUTCH

NOTICE

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

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

HYDRAULIC LIFTERS

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

When starting an engine which has been turned off even for a few minutes, the valve mechanism may be slightly noisy until the hydraulic units completely refill with oil. If at any time the valve mechanism becomes abnormally noisy, other than

for a short period immediately after engine is started, it is an indication that one or more of the hydraulic units may not be functioning properly.

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

If engine oil is at the proper level, the lifters may not be functioning properly because of dirt in the oil supply passages leading to the lifter units. See a Harley-Davidson dealer for service.

STEERING DAMPER

Refer to Table 38. Inspect the hydraulic steering damper for leaks at specified intervals. Elevate the front wheel slightly and turn handlebars through their full range of steering travel several times to check for smooth damper action. Check all damper mounting fasteners for tightness.

The steering damper must be replaced or rebuilt at specified intervals. If steering damper leaks or is damaged, see a Harley-Davidson dealer.

MISCELLANEOUS LUBRICATION

Hinges, Latches, Etc.

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

STEERING HEAD BEARINGS

⚠ WARNING

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

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

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

BRAKES

Refer to Table 38. Inspect brake fluid level and check brake pads and discs/rotors 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)

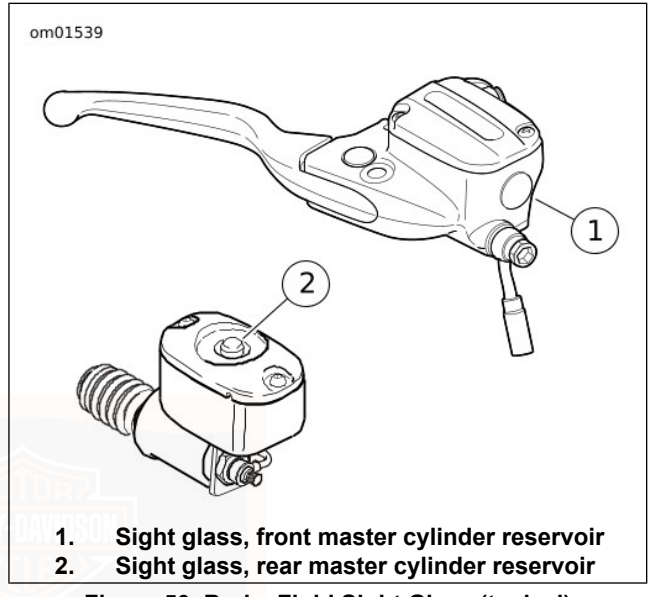
1. See Figure 50. Look through the sight glass on the front and rear brake fluid reservoirs to check for the presence of brake fluid. If necessary, turn the handlebars from side to side or gently shake the vehicle to agitate the fluid.

- 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 HYDRAULIC 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.



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

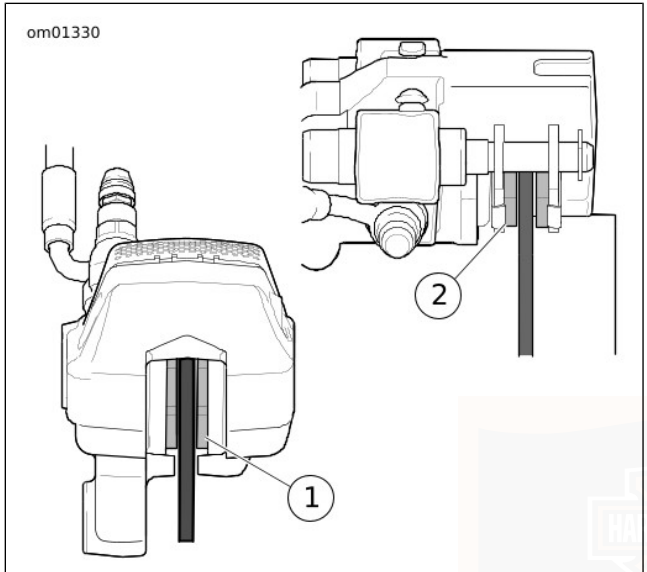
Perform routine scheduled brake maintenance. Lack of maintenance at recommended intervals can adversely affect brake performance, which could result in death or serious injury. (00055a)

⚠ 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 brake disc or rotor as it spins. The disc/rotor should run true in the brake caliper.
2. Refer to Table 31. Measure the thickness of the brake pad friction material. 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.



1. **Front brake**
2. **Rear brake**

Figure 51. Brake Friction Material

Table 31. Minimum Brake Pad Friction Material Thickness

BRAKE	in	mm
Front	0.016	0.4
Rear	0.050	1.27

PARKING BRAKE

As brake pads begin to wear in, the parking brake lever effort will lessen and the grip of the parking brakes on rear rotors will decrease. Inspect and adjust the parking brake on the following occasions.

- At regular intervals. Refer to Table 38.
- Periodically after extensive rear brake usage.
- After replacement of rear brake pads or other rear brake service.

NOTE

The following inspection and adjustment procedures may be used to adjust the parking brake between service intervals. For regular service intervals, see a Harley-Davidson dealer or service manual for complete maintenance instructions.

Inspection

1. Park vehicle (with normal load) on a steep incline. Turn ignition switch to OFF and shift transmission into first gear.
2. Apply front brake with left hand and cover rear brake pedal with right foot.

3. Push parking brake lever to the forward position with right hand. If parking brake lever is difficult to engage, see ADJUSTMENT to decrease lever effort.
4. With parking brake engaged, release the front brake and gradually pull in the clutch lever.
5. See Figure 52. The rear brakes should hold securely and the vehicle should remain still. Check position of the parking brake lever (should be in over center position). See ADJUSTMENT to adjust parking brake as necessary.

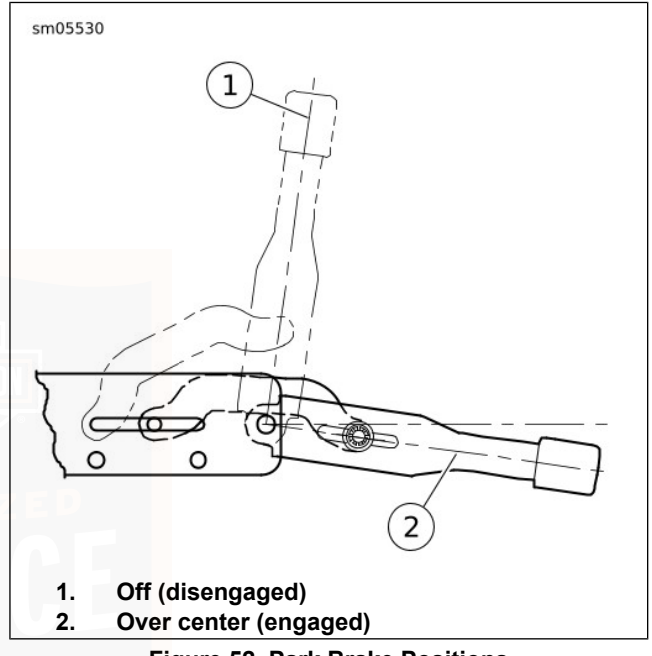
Adjustment

1. See Figure 52. With vehicle on level ground, move parking brake lever to OFF position.

NOTE

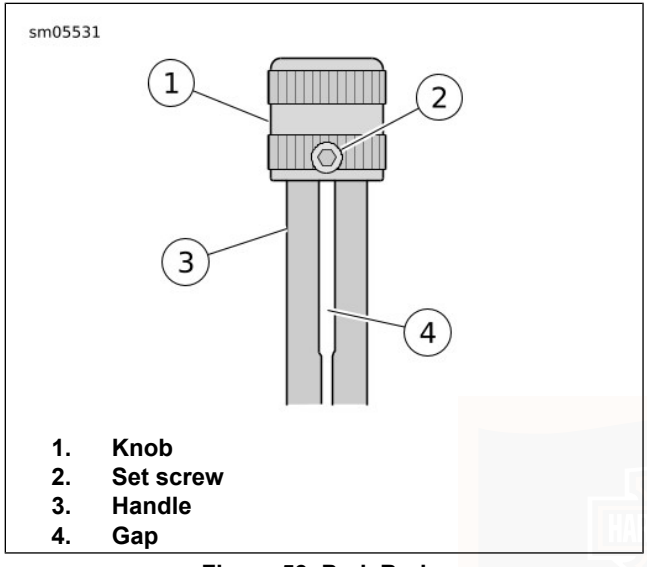
Park brake has two positions, off (disengaged) and over center (engaged), approximately 90° apart.

2. See Figure 53. Loosen set screw with hex wrench (provided in tool kit) and turn knob several revolutions in the appropriate direction.
   a. Turn clockwise to increase brake grip/lever effort.
   b. Turn counterclockwise to decrease brake grip/lever effort.
3. Rotate knob until set screw is aligned with gap at front or rear of handle. Tighten set screw.
4. See INSPECTION to check performance of the adjusted parking brake.



1. Off (disengaged)
2. Over center (engaged)

Figure 52. Park Brake Positions



1. **Knob**
2. **Set screw**
3. **Handle**
4. **Gap**

Figure 53. Park Brake

JACKING POINTS

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)

NOTE

- *Never use differential housing as lifting point.*
- *Set the park brake and block the wheels as necessary to prevent the vehicle from rolling.*
- *Lift against the forgings where the down tubes and lower frame tubes join.*

Because the balance point is toward the rear of the motorcycle, special consideration must be made when lifting with a jack for service.

See Figure 54. When lifting the front to remove the front tire or check steering head bearings, etc., engage the parking brake. Place the jack under the forward portion of the frame, approximately centered under the crankshaft, and be sure it contacts the frame tube forgings on both sides.

See Figure 55. When lifting the rear of the motorcycle, secure the front tire in a wheel vise and secure front end to the motorcycle lift using straps. Place the jack under the rear portion of the frame, approximately centered under the clutch cover, and be sure it contacts the frame tube forgings on both sides.

Alternatively, each rear wheel can be raised by placing a jack under the left or right side of the axle.

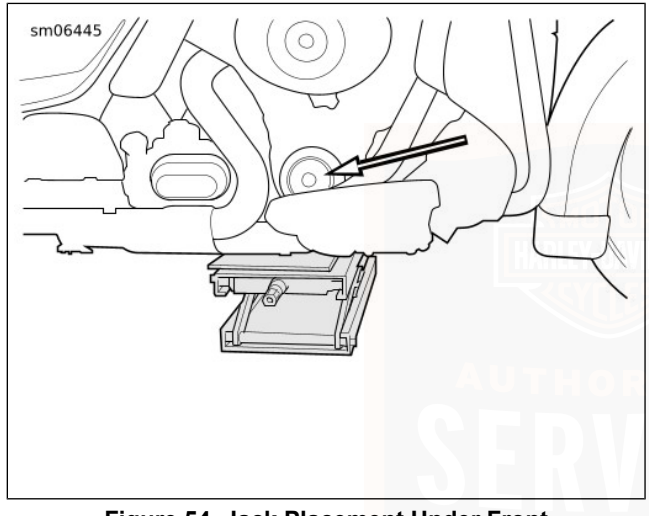


Figure 54. Jack Placement Under Front

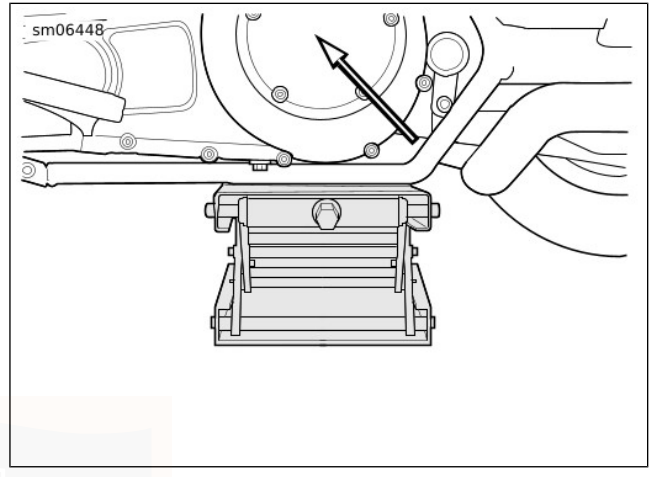


Figure 55. Jack Placement Under Rear

TIRES

Refer to Table 14 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

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

⚠ WARNING

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

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

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

See Figure 56 and Figure 58. Arrows on tire sidewalls pinpoint location of wear bar indicators.

See Figure 57 and Figure 59. Always replace tires before the tread wear indicator bars become visible on the tread surfaces.

When To Replace Tires

⚠ WARNING

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

New tires are needed if any of the following conditions exist (refer to Table 14 for the specified replacement tires):

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

4. Punctures, cuts, or other damage to the tire that cannot be repaired.

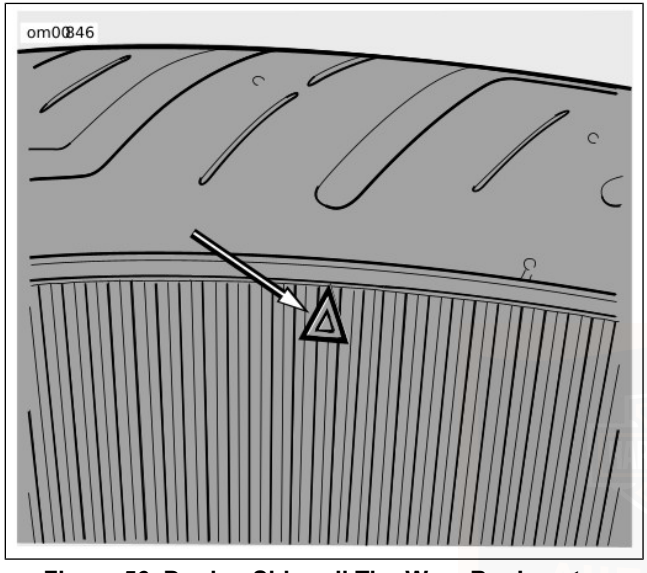


Figure 56. Dunlop Sidewall Tire Wear Bar Locator

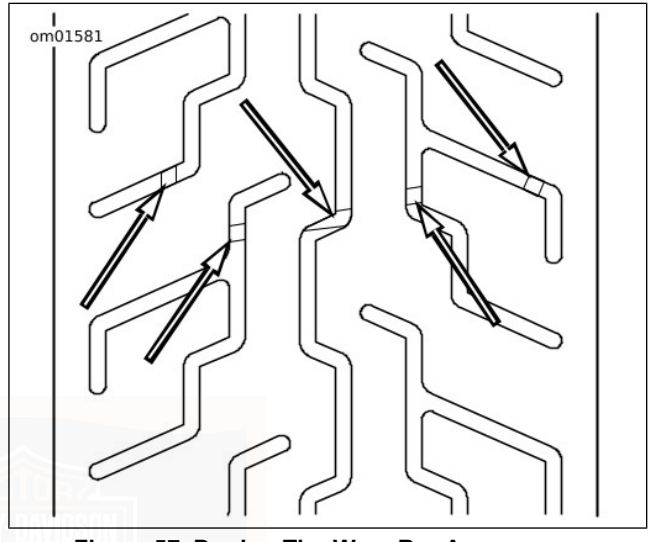


Figure 57. Dunlop Tire Wear Bar Appearance

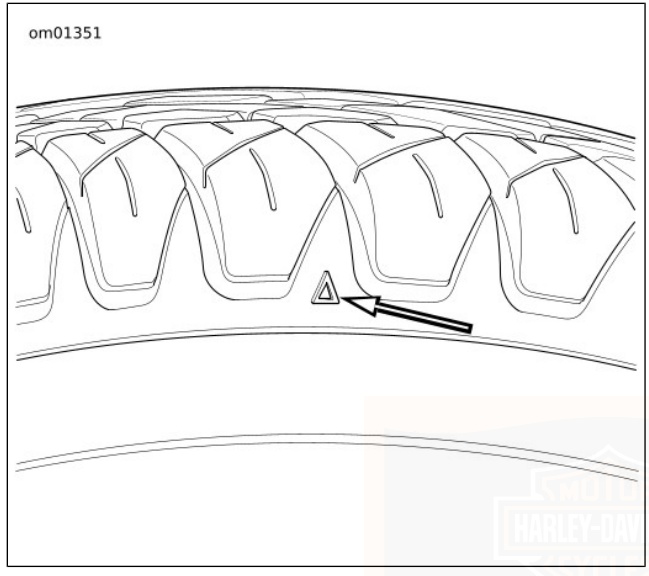


Figure 58. Rear Tire Tread Wear Bar Indicator

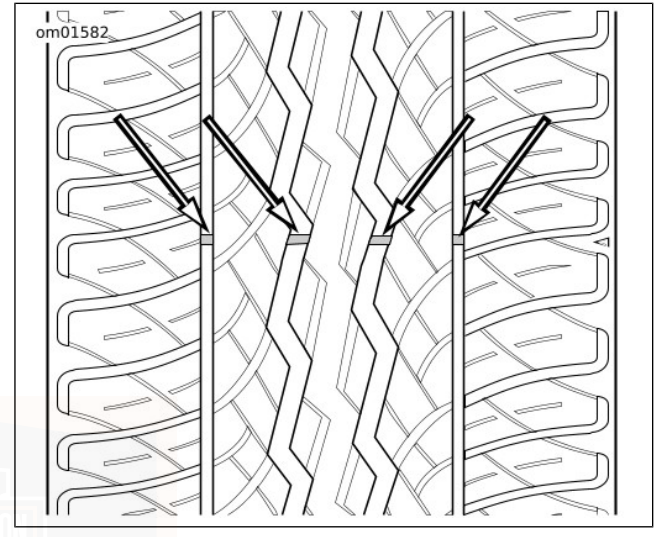


Figure 59. Dunlop Rear Tire Wear Bar Appearance

VEHICLE ALIGNMENT

Refer to Table 38. Vehicle alignment should be checked at regular intervals. This includes whenever the rear drive belt is adjusted. The stabilizer link and engine mounts should be checked for wear according to Service Manual procedures at proper intervals.

Vehicle alignment is important. Vehicle stability is adversely affected if wheels are out of alignment. Inspect both front to

rear alignment and lateral (side to side) alignment. Major alignment of the front and rear wheels are partially controlled by one stabilizer link at the top of the engine and alignment of the rear axle. See a Harley-Davidson dealer for this service.

⚠ WARNING

Only a Harley-Davidson dealer should perform vehicle alignment. Improper alignment can adversely affect stability and handling, which could result in death or serious injury. (00060a)

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 38.

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

NOTE

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

4. Always tighten to the proper torque. Spark plugs must be tightened to the torque specified for proper heat transfer. Refer to Table 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 CLEANER

⚠ WARNING

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

⚠ WARNING

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

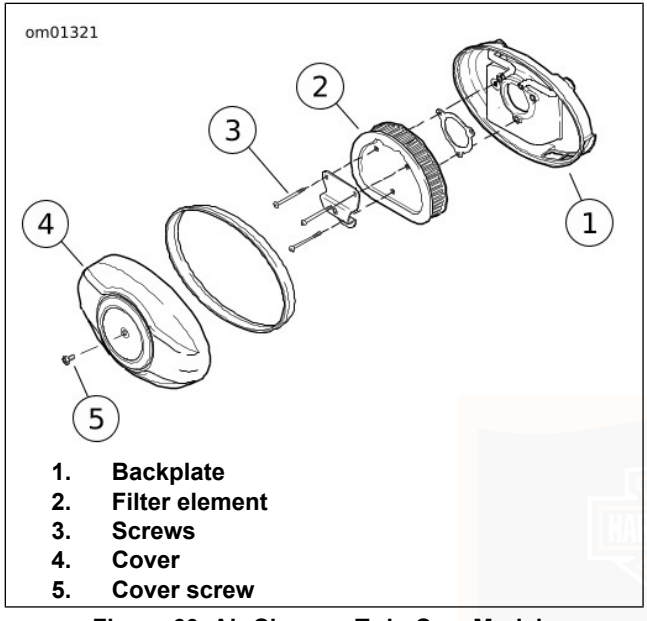
NOTICE

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

1. Refer to Table 38. Remove air cleaner cover and inspect filter element at proper intervals. When operated under dusty conditions, inspect more often.
2. Wash the paper/wire mesh filter element in lukewarm water with a mild detergent. Do not strike filter element on a hard surface to dislodge dirt.
3. Allow filter element to either air dry or blow it dry, from the inside, with low pressure air. Do NOT use air cleaner filter oil on the Harley-Davidson paper/wire mesh air filter element.
4. Hold the filter element up to a strong light source. The element is sufficiently clean if light is uniformly visible through the media.
5. Replace the filter element if damaged or if filter media cannot be adequately cleaned.
6. Install baseplate gasket, air filter element and bracket if removed. Tighten bracket screws. Refer to Table 32.
7. Install air cleaner cover. Apply a drop of LOCTITE THREADLOCKER 243 (blue) to the threads of the cover screw and tighten. Refer to Table 32.

Table 32. Air Cleaner Fastener Torque

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



1. **Backplate**
2. **Filter element**
3. **Screws**
4. **Cover**
5. **Cover screw**

Figure 60. Air Cleaner: Twin Cam Models

HEADLAMP

Removal

1. Remove screw at bottom of headlamp door (chrome ring). Remove headlamp door.
2. See Figure 61. Remove screws securing headlamp assembly.
3. Remove headlamp connector from headlamp bulb.

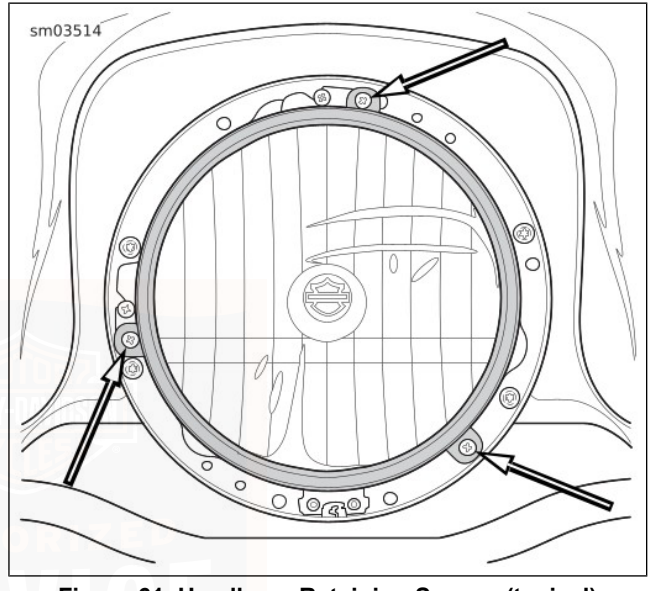


Figure 61. Headlamp Retaining Screws (typical)

Bulb Replacement

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)

NOTE

The headlamp uses a replaceable quartz halogen bulb which is very delicate and must be handled with care.

1. Remove headlamp assembly.
2. Remove rubber boot at back of housing.
3. See Figure 62. Release wire retaining clip (1) from retainer (2). Swing wire retaining clip out of the way.

NOTE

It may be necessary to loosen retainer screw 1/2-1 turn to release wire retaining clip.

⚠ WARNING

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

4. Remove and discard bulb.

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)

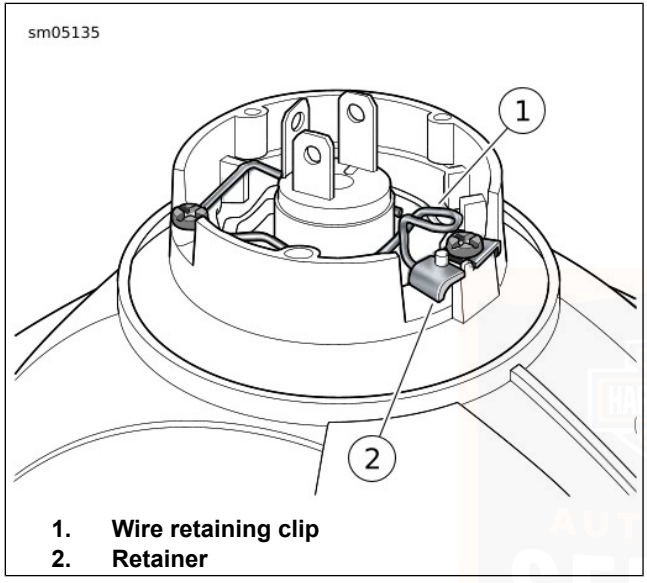
5. Install **new** bulb. Align the tab on the bulb with the notch in the headlamp housing.
6. See Figure 62. Rotate wire retaining clip (1) into place and latch under lip of retainer (2).

NOTE

If retainer screw was loosened to release wire retaining clip, hold retainer in place and tighten screw until snug. Verify that reflector cone is still centered under decorative logo. If it is not, loosen retainer screw and repeat step until the proper results are achieved.

7. Install rubber boot at back of housing.

8. Install headlamp assembly.



1. **Wire retaining clip**
2. **Retainer**

Figure 62. Wire Retaining Clip

Installation

1. Install headlamp connector on headlamp bulb.

2. Install headlamp assembly and tighten screws to 1–2 N·m (9–18 **in-lbs**).

3. Fit the headlamp door spring into slot at top of headlamp housing and secure the headlamp door (chrome ring) with screw. Tighten to 1–2 N·m (9–18 **in-lbs**).

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. Check the tire pressure.
2. Adjust the rear shocks for the rider and intended load.
3. Fill fuel tank or add an equal amount of ballast.

NOTE

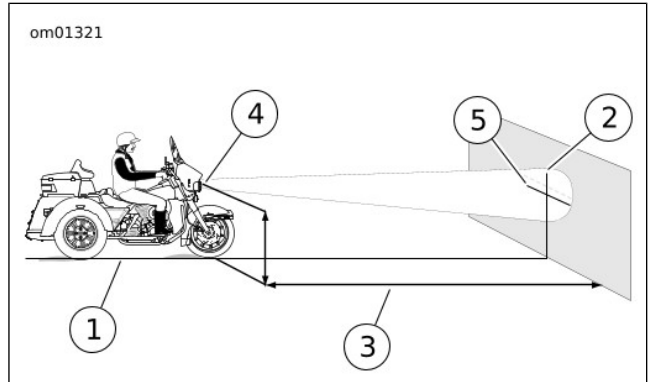
Choose a wall in minimum light.

4. See Figure 63. Park the motorcycle in a line (1) perpendicular to the wall.
5. Position motorcycle so that front axle is 7.6 m (25 ft) from wall.
6. Draw a vertical line (2) on the wall.
7. With the motorcycle loaded, point the front wheel straight forward at wall. Measure the distance (4) from the floor to the center of the high beam bulb.
8. Draw a horizontal line (5) through the vertical line on the wall. Place line 53.3 mm (2.1 in) lower than the measured bulb centerline.

NOTE

The headlamp is aligned when the light beam hot spot is centered over the intersection of the lines.

9. Verify headlamp alignment. Adjust as necessary.



1. **Perpendicular line**
2. **Vertical line**
3. **25 ft (7.6 m)**
4. **High beam bulb centerline**
5. **Horizontal line 2.1 in (53.3 mm) lower than bulb centerline**

Figure 63. Headlamp Alignment

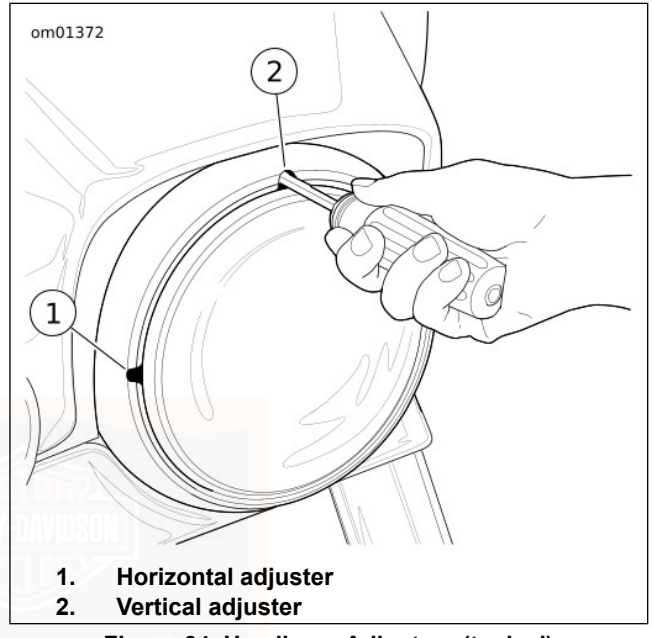
HEADLAMP ADJUSTMENT

NOTE

Do not remove trim ring for headlamp adjustment.

1. See Figure 64. Insert Phillips screwdriver between headlamp housing and rubber gasket.

2. Adjust beam.
   a. Turn the vertical adjusting screw (2) to adjust headlamp vertically.
   b. Turn the horizontal adjusting screw (1) to adjust headlamp horizontally.



1. Horizontal adjuster
2. Vertical adjuster

Figure 64. Headlamp Adjusters (typical)

AUXILIARY/FOG LAMPS

For models equipped with auxiliary/fog lamps, see a Harley-Davidson dealer or service manual for bulb replacement or alignment.

TURN SIGNAL BULB REPLACEMENT: BULLET STYLE

1. See Figure 65. Insert a coin or the blade of a small screwdriver into the notch at the bottom of the lens cap. Carefully twist until the lens cap pops out of the lamp housing.

2. Push bulb in and rotate counterclockwise. Pull bulb from socket.

3. Inspect condition of electrical contacts in socket. If necessary, clean with a small wire brush and electrical contact cleaner.

4. Apply ELECTRICAL CONTACT LUBRICANT to contacts in socket and at bottom of **new** bulb.

5. Align pins on **new** bulb with pin guides in bulb socket. Push bulb in and turn clockwise to lock in place.

6. Snap lens cap onto the lamp housing with notch at bottom.

⚠ WARNING

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

7. Test lamp operation.

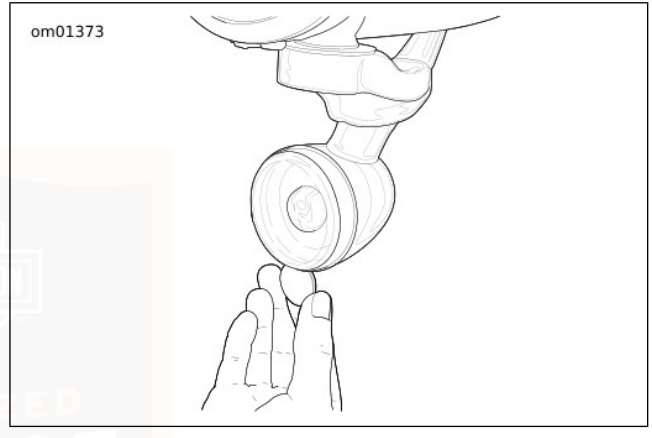


Figure 65. Lens Cap Notch

TAIL LAMP BULB REPLACEMENT

Removal

1. Remove two screws to release tail lamp assembly from chrome base.
2. See Figure 66. Disconnect tail lamp connector (3).
3. Rotate bulb socket (4) 1/4 turn counterclockwise and remove from tail lamp assembly. Pull bulb from socket.

Installation

1. Coat base of **new** bulb with ELECTRICAL CONTACT LUBRICANT. Install **new** bulb in socket.
2. Insert socket (4) into tail lamp assembly and rotate 1/4 turn clockwise.
3. See Figure 66. Connect tail lamp connector (3).
4. Place tail lamp into position against chrome base.

NOTE

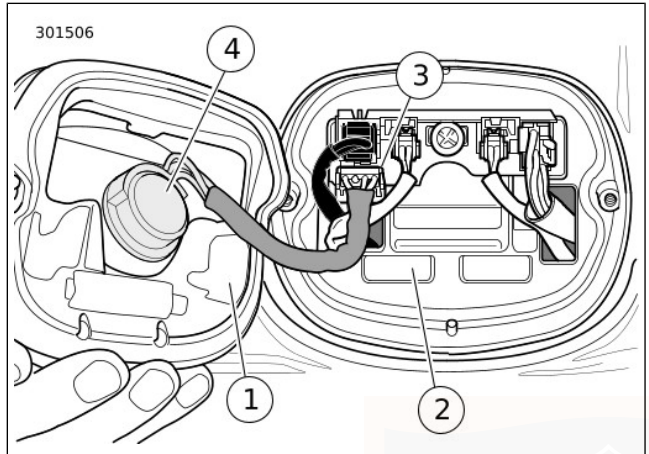
Over-tightening screws can crack the lens.

5. Install two screws. Tighten to 2.3–2.7 N·m (20–24 **in-lbs**).

⚠ WARNING

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

6. Test tail lamp operation.



1. Lens
2. Base
3. 4-pin multilock connector
4. Bulb socket

Figure 66. Tail Lamp 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

Type

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

Table 33. Antidotes for Battery Acid

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

⚠ WARNING

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

⚠ WARNING

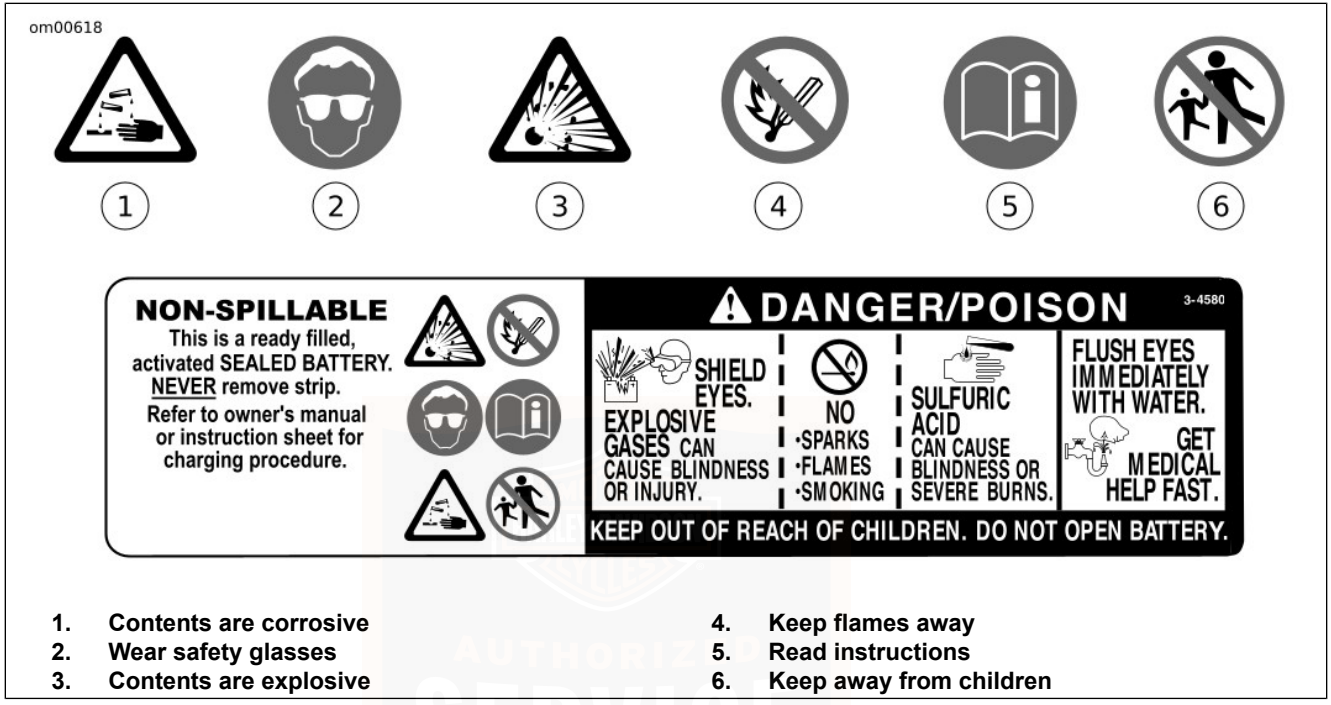
Explosive hydrogen gas, which escapes during charging, could cause death or serious injury. Charge battery in a well-ventilated area. Keep open flames, electrical sparks and smoking materials away from battery at all times. KEEP BATTERIES AWAY FROM CHILDREN. (00065a)

⚠ WARNING

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

⚠ WARNING

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



1. **Contents are corrosive**
2. **Wear safety glasses**
3. **Contents are explosive**
4. **Keep flames away**
5. **Read instructions**
6. **Keep away from children**

Figure 67. Battery Warning Label

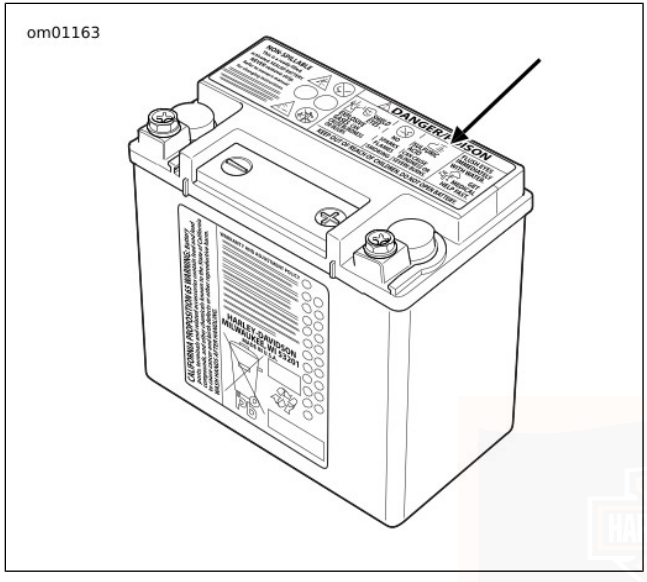


Figure 68. Battery Warning Label

Voltmeter Test

The voltmeter test provides a general indicator of battery condition. Check the voltage of the battery to verify that it is in a 100 percent fully-charged condition. If the open circuit (disconnected) voltage reading is below 12.7 V, charge the battery and then re-check the voltage after the battery has set for one to two hours. Refer to Table 34.

Table 34. Voltmeter Test

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

Cleaning and Inspection

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

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

6. Inspect the battery case for cracks or leaks.

Charging

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

Charge the battery if any of the following conditions exist:

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

⚠ WARNING

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

⚠ WARNING

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

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

2. Place the battery on a level surface.

NOTE

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

⚠ WARNING

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

⚠ WARNING

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

⚠ WARNING

Disconnect negative (-) battery cable first. If positive (+) cable should contact ground with negative (-) cable connected, the resulting sparks can cause a battery explosion, which could result in death or serious injury. (00049a)

NOTICE

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

3. Connect the red battery charger lead to positive (+) terminal of the battery.
4. Connect the black battery charger lead to negative (-) terminal of the battery.

NOTE

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

5. Step away from the battery and turn on the charger.

⚠ WARNING

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

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

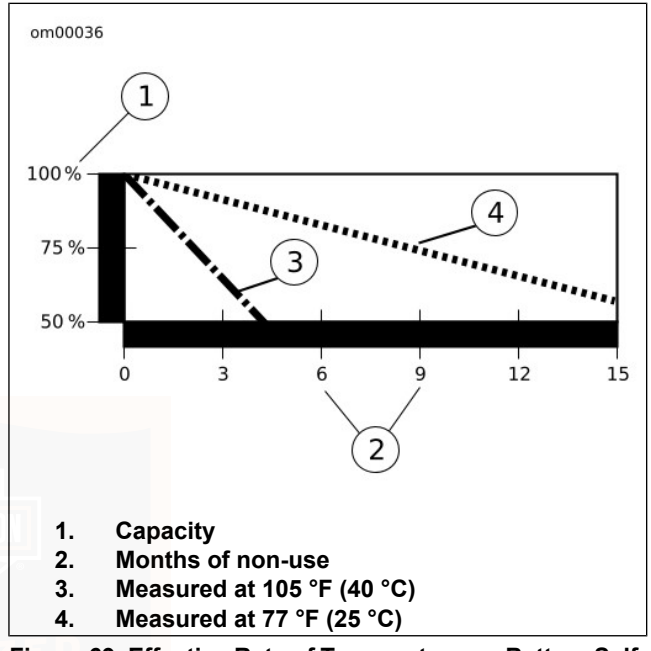
Storage

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

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

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

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



1. **Capacity**
2. **Months of non-use**
3. **Measured at 105 °F (40 °C)**
4. **Measured at 77 °F (25 °C)**

Figure 69. Effective Rate of Temperature on Battery Self-discharging Rate

BATTERY ACCESS

NOTE

The top caddy has an opening in the front right corner allowing access to the negative battery terminal.

Disconnection and Removal

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

2. Remove seat.

3. See Figure 70. Remove two screws from rear of top caddy.

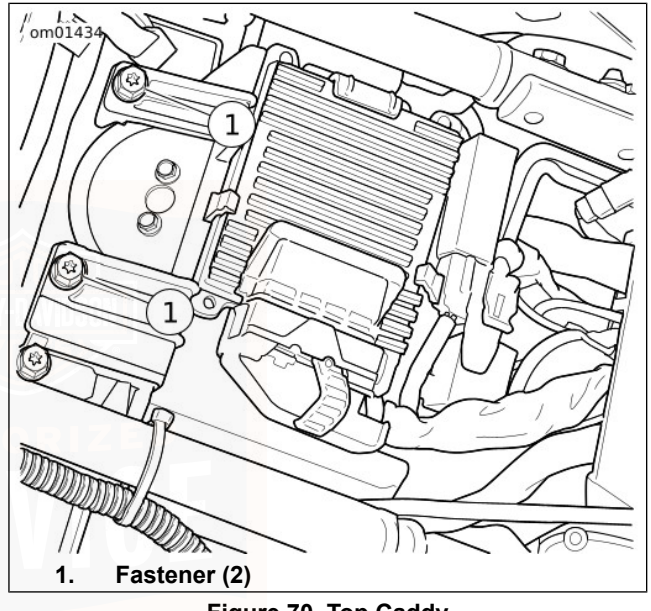
4. Release top caddy from the front hold-down bracket. Move caddy and connectors aside.

⚠ 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)

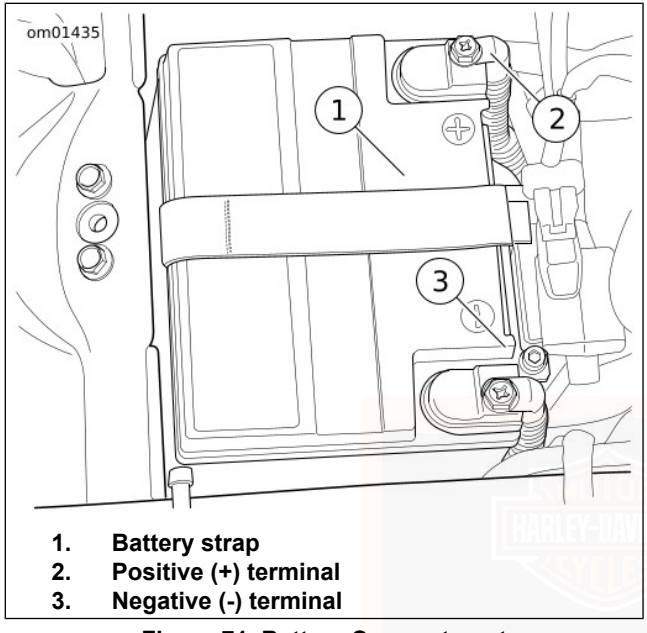
5. See Figure 71. Disconnect the battery cables, negative cable first.

6. Grasp lifting strap 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..



1. Fastener (2)

Figure 70. Top Caddy



1. **Battery strap**
2. **Positive (+) terminal**
3. **Negative (-) terminal**

Figure 71. Battery Compartment

Installation and Connection

NOTICE

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

⚠ WARNING

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

NOTE

Make sure strap is inside compartment under battery. The strap handle should remain outside the compartment.

1. See Figure 71. Place the fully charged battery into the compartment with terminals toward the front of the vehicle. Lay battery strap over top of battery.

⚠ WARNING

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

NOTICE

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)

2. Turn the ignition switch to the OFF position.

3. Connect battery cables, positive cable first. Tighten 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)

4. Apply a light coat of petroleum jelly or ELECTRICAL CONTACT LUBRICANT to both battery terminals.

5. See Figure 70. Rotate top caddy into position above battery and engage front of caddy to the front clip.

6. Align rear of top caddy with mounting holes. Install two screws in top caddy. Tighten to 8.1–10.9 N·m (72–96 **in-lbs**).

⚠ WARNING

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

7. Install seat.

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 72. 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

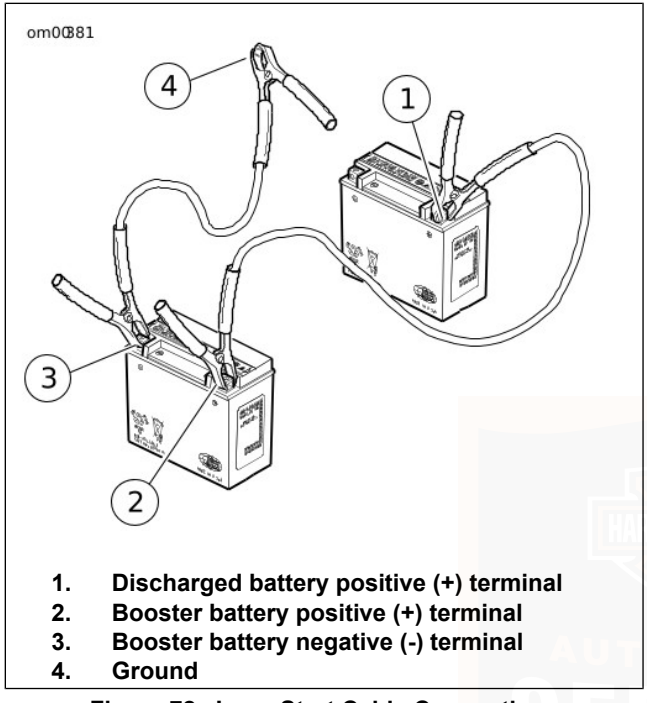
Do not connect negative (-) cable to or near the discharged battery negative (-) terminal. Doing so could cause a spark and explosion, which could result in death or serious injury. (00073a)

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.



1. **Discharged battery positive (+) terminal**
2. **Booster battery positive (+) terminal**
3. **Booster battery negative (-) terminal**
4. **Ground**

Figure 72. Jump Start Cable Connections

FUSES AND RELAYS

Main Fuse

See Figure 73. 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 73. 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 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.*
- *The fuse block cover label for fuse 4, Radio/siren power refers to the emergency siren installed on police models.*

4. See Figure 74. 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)

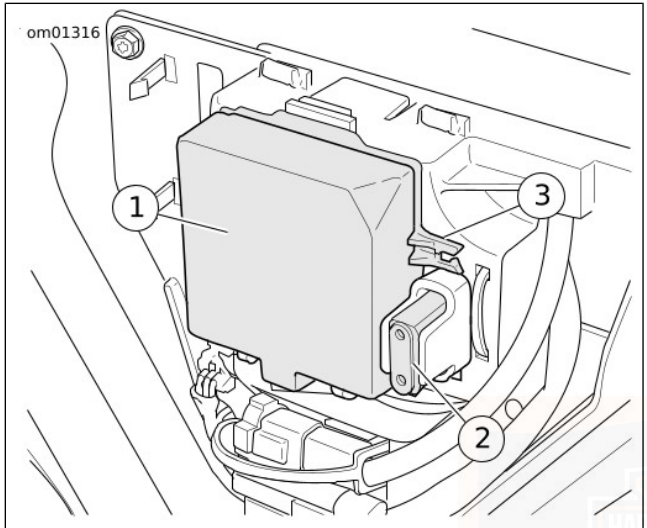
5. Replace the fuse if the element is burned or damaged.

NOTE

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

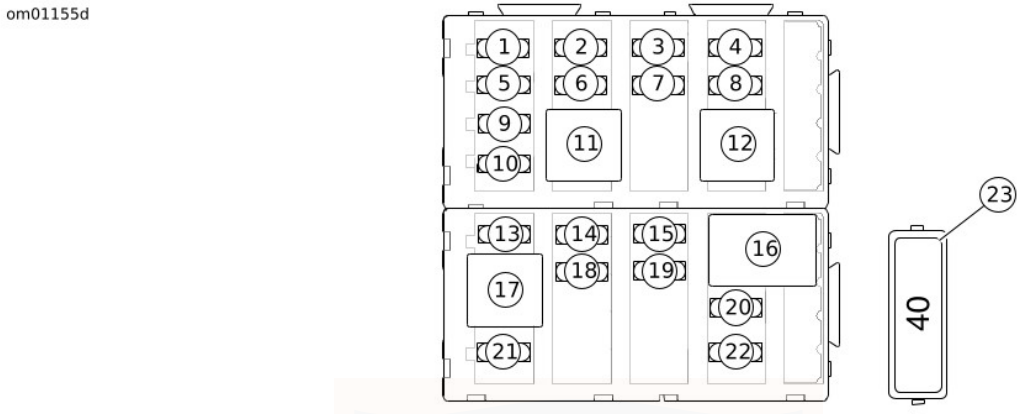
6. Install the fuse block cover.

7. Install left side cover.



1. **Fuse block cover**
2. **Main fuse**
3. **Fuse puller**

Figure 73. Fuse Block



1. **Brake (15 amp)**
2. **Accessory (15 amp)**
3. **P&A (15 amp)**
4. **Radio power/siren (15 amp)**
5. **Radio memory (15 amp)**
6. **Battery (15 amp)**
7. **ECM power (15 amp)**
8. **Power outlet (if equipped) (15 amp)**
9. **Not used**
10. **Fuel pump (15 amp)**
11. **System relay**
12. **Start relay**
13. **P&A ignition (2 amp max)**
14. **Instruments (15 amp)**
15. **Ignition (15 amp)**
16. **Lighting relay**
17. **Brake relay**
18. **Headlamp (15 amp)**
19. **Lights (15 amp)**
20. **Spare (15 amp)**
21. **ABS (not used)**
22. **Not used**
23. **Main fuse (40 amp)**

Figure 74. Fuses

REVERSE MOTOR CIRCUIT BREAKER

The reverse motor circuit is equipped with a circuit breaker to prevent current overload conditions to the motor and power cabling. The power circuit for the reverse control module is also protected by the accessory fuse in the fuse block.

Perform reverse operation as explained in CONTROLS AND INDICATORS > REVERSE OPERATION (Page 65). If reverse motor will not run or cuts off during operation, turn off the engine and check the condition of the circuit breaker and accessory fuse.

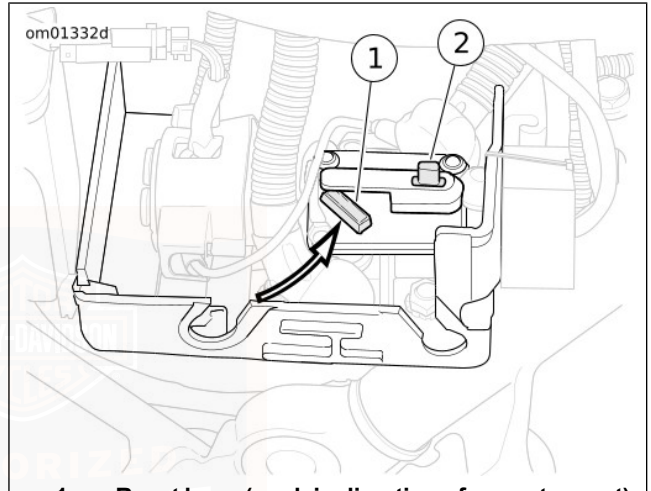
See Figure 75. The circuit breaker is located in the electrical caddy. This manually resettable circuit breaker has a red trip pushbutton (2) and a reset switch (1). To manually trip the circuit breaker, push down on the trip pushbutton (which causes the reset switch to extend out).

If the reset switch is extended as shown, the reverse circuit is open/tripped. Push the reset switch into the center of the circuit breaker body until an audible click is heard to reset.

If the circuit breaker repeatedly opens under non-strenuous loading conditions, or if the reverse motor will not operate after resetting circuit breaker and checking fuses, see a Harley-Davidson dealer.

NOTE

- *The reverse enable lamp in the hand control housing will illuminate even if the circuit breaker is tripped/open.*
- *It is a normal function that the pinion on the reverse motor will engage the ring gear when the circuit breaker is tripped.*



1. Reset lever (push in direction of arrow to reset)
2. Manual trip pushbutton

Figure 75. Reverse Motor Circuit Breaker

SEAT

Removal

1. See CONTROLS AND INDICATORS > TOUR-PAK (Page 58). Open Tour-Pak to move passenger seat backrest out of the way.
2. Remove screw securing rear of seat.
3. To protect Tour-Pak finish, cover rear seat mounting bracket with palm of hand.
4. See Figure 76. While pushing seat forward, raise rear of seat until bracket clears top of Tour-Pak. Push seat rearward slightly to free seat from frame.

Installation

1. See Figure 77. Place seat on frame backbone.
2. To protect finish of Tour-Pak, cover rear seat mounting bracket with palm of hand.
3. While raising rear of seat approximately 76.2 mm (3.0 in), use other hand to firmly push front of seat downward and forward until tongue engages slot in seat.
4. Push seat rearward until rear fender seat retention nut is centered in hole of mounting bracket.
5. Install seat mounting fastener. Tighten to 5.4–8.1 N·m (48–72 **in-lbs**).

⚠ WARNING

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

6. Pull up on seat to verify that it is properly secured, front and rear.

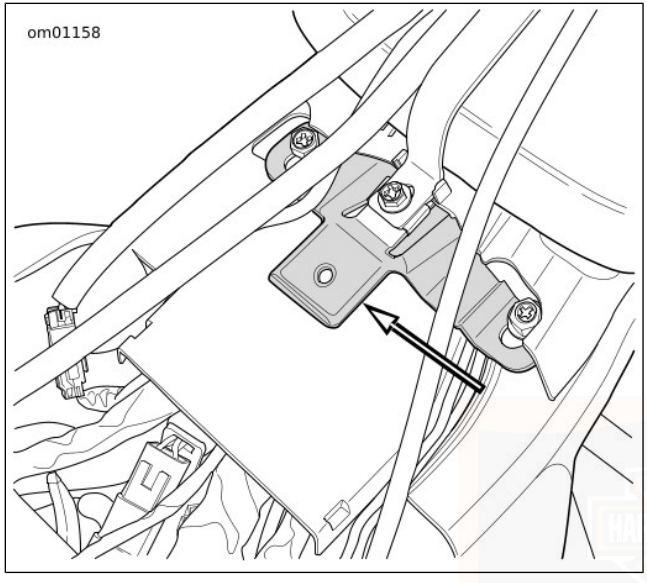


Figure 76. Seat Tongue

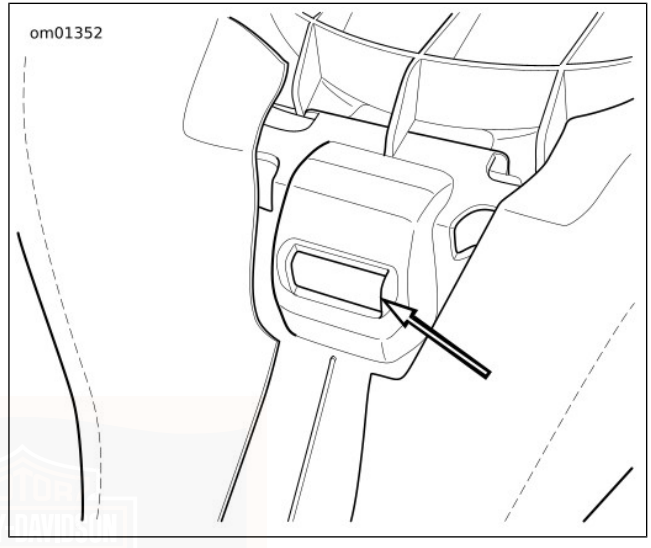


Figure 77. Seat Slot

REAR AXLE TIE DOWN LOOPS

The rear axle has steel loops on the bottom (left and right sides) which may be used to tie down the rear end of the vehicle when transporting on a trailer.

RADIO/CB ANTENNA

The antenna mast is threaded on a mount at the rear of the motorcycle. Unscrew the antennas if they must be removed. When installing, hand-tighten only.

Antennas for the radio and CB are different. For vehicles with a CB, always install the CB antenna (marked with the letters "CB" at the base of the mast) on the right side of the motorcycle. Installing the incorrect antenna for the radio or CB will result in degraded reception.

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 187) section of this owner's manual prior to storage.

6. Prepare battery for winter storage. See MAINTENANCE AND LUBRICATION > BATTERY ACCESS (Page 172).

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 ACCESS (Page 172).*

⚠ 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 ACCESS (Page 172) for proper battery care. Charge and install the battery.

2. Start the engine and run until it reaches normal operating temperature. Turn off engine.

3. Check engine oil level.

4. Check the transmission lubricant level.

5. Check controls to be sure they are operating properly. Operate the front and rear brakes, throttle, clutch and shifter.

6. Check steering for smoothness by turning the handlebars through the full operating range.

⚠ 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 153).

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)

MOTOR
HARLEY-DAVIDSON
CYCLES
AUTHORIZED
SERVICE

CLEANING AND GENERAL CARE

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

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

NOTE

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

⚠ WARNING

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

⚠ WARNING

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

NOTICE

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

NOTICE

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

Table 35. Recommended Cleaning and Care Products

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

Table 35. Recommended Cleaning and Care Products

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

Table 35. Recommended Cleaning and Care Products

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

Table 35. Recommended Cleaning and Care Products

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

Table 36. Recommended Surface Care Products

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

Table 36. Recommended Surface Care Products

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

TRUNK

Before washing the motorcycle, make sure the trunk door is securely closed with the latch engaged.

Water can leak into the trunk if door latch is not engaged or if water is directed at the lock or seal area for an extended time.

WASHING THE MOTORCYCLE

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

NOTE

During rinsing and washing, avoid direct spray on radio, speakers, saddlebags, trunk or Tour-Pak sealing areas (if equipped). Avoid spraying water under leather saddlebag covers (if equipped).

Preparation

1. Allow motorcycle to cool before rinsing or washing. Spraying water on hot surfaces can leave water spots and mineral deposits.
2. Rinse the motorcycle from the bottom up.

3. To loosen dried bugs or hardened dirt, allow surfaces to soak under a damp towel.

Cleaning the Wheels and Tires

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

Washing the Motorcycle

NOTE

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

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

Drying the Motorcycle

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

Polishing and Sealing

NOTE

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

1. Apply GLAZE POLY SEALANT with a SOFTCLOTH or MICROFIBER DETAILING CLOTH, following the instructions on the package.
2. Buff with a SOFTCLOTH.
3. Polish and seal the wheels as described in CARE AND CLEANING > WHEEL CARE (Page 195) to prevent corrosion.

NOTE

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

Finishing Tires

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

DENIM FINISH CARE

Some motorcycles have a Denim (flat or matte) finish. The Denim finish has qualities which differ from high gloss finishes on all other Harley-Davidson motorcycles. Like denim fabric, Denim paint will burnish or mar with age and use, thus adding character and personality to the finish of the motorcycle. Refer to Table 35 for recommended products.

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

How to Clean

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

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

LEATHER AND VINYL CARE

NOTICE

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

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

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

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

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

NOTE

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

WHEEL CARE

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

NOTE

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

Keep wheels clean from harsh chemicals, acid based wheel cleaners, salt, and accumulated brake dust. After washing wheels with WHEEL & TIRE CLEANER, use the polish and sealing products in Table 37 according to the type of wheels on your motorcycle.

Table 37. Wheel Polish and Sealing Products

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

WINDSHIELD CARE

NOTICE

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

NOTICE

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

- Powdered, abrasive or alkaline cleanser will damage the windscreen/windshield. Ammonia-based window cleaners cause permanent yellow effects to windshields.
- Do not use gas station windshield cleaner as 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 35 for recommended cleaning products.

NOTE

- *Use NOVUS 2 SCRATCH REMOVER to remove minor scratches.*
- *To treat the windshield with water repellent use WINDSHIELD WATER REPELLENT.*
- *Covering the windshield with a clean, wet cloth for approximately 15-20 minutes before washing will make dried bug removal easier.*

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

NOTE

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

NOTES

TROUBLESHOOTING: GENERAL

⚠ WARNING

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

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

ENGINE

Starter Does Not Operate or Does Not Turn Engine Over

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

Engine Turns Over but Does Not Start

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

Starts Hard

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

7. Fuel pump inoperative.

Starts but Runs Irregularly or Misses

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

A Spark Plug Fouls Repeatedly

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

Pre-ignition or Detonation (Knocks or Pings)

1. Incorrect fuel.
2. Incorrect spark plug for 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. Damaged 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.
7. Vehicle not properly aligned. See dealer.
8. Steering head damper worn or damaged. See dealer.
9. Panhard rod fasteners loose. See dealer.

Engine Oil Not Circulating (Oil Pressure Lamp Lit)

1. Insufficient or diluted oil supply.
2. Oil feed clogged with ice and sludge in freezing weather.

3. Grounded oil signal switch wire or faulty signal switch. See dealer.
4. Damaged or improperly installed check valve. See dealer.
5. Oil pump problem. See dealer.

ELECTRICAL SYSTEM

Alternator Does Not Charge

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

Alternator Charge Rate is Below Normal

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

TRANSMISSION

Transmission Shifts Hard

1. Bent shifter rod. See dealer.

Transmission Jumps Out of Gear

1. Worn shifter dogs in transmission. See dealer.

Clutch Slips

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

Clutch Drags or Does Not Release

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

Clutch Chatters

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

BRAKES

Brakes Do Not Hold Normally

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

Parking Brake Does Not Hold Normally

1. Rear brake pads slightly worn in. Adjust parking brake.
2. Rear brake pads badly worn. See dealer.

REVERSE MOTOR

Reverse Motor Does Not Operate/Cannot Enable

1. Vehicle not started or vehicle not in neutral.
2. Reverse motor circuit breaker open/tripped.
3. Open accessory fuse.

GENUINE MOTOR PARTS AND ACCESSORIES

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

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

Online Catalog

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

Shop For Your Bike

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

Customizer

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

Fit Shop

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

Custom Seats

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

CUSTOM COVERAGE

Add Accessories To Your New Ride

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

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

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

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

NOTE

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

WARRANTY AND MAINTENANCE

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

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

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

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

These records should be transferred to each subsequent owner.

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

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

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

KEEPING IT ALL HARLEY-DAVIDSON

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

your Harley-Davidson motorcycle and its limited warranty intact.

NOTE

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

NOTICE

It is possible to overload the vehicle's charging system by adding too many electrical accessories. If the combined electrical accessories operating at any one time consume more electrical current than the vehicle's charging system can produce, the electrical consumption can discharge the battery and cause damage to the vehicle's electrical system. (00211d)

CALIFORNIA AND SELECT INTERNATIONAL MARKETS EVAPORATIVE EMISSION CONTROLS: 2013 MODELS

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

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

WARRANTY/SERVICE INFORMATION

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

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

REQUIRED DOCUMENTATION FOR IMPORTED MOTORCYCLES

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

OWNER CONTACT INFORMATION

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

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

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

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

QUESTIONS AND CONCERNS

If you have questions or concerns regarding the performance of your motorcycle or the application of the limited warranty described here, or are not satisfied with the service you are receiving from an authorized Harley-Davidson dealership, do the following:

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

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

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

NOTES

2013 HARLEY-DAVIDSON MOTORCYCLE LIMITED WARRANTY

24 Months/Unlimited Miles

Harley-Davidson warrants for any new 2013 Harley-Davidson motorcycle/sidecar that an authorized Harley-Davidson dealer will repair or replace without charge any parts found under normal use to be defective in factory materials or workmanship. Such repair or replacement of parts will be Harley-Davidson's sole obligation and your sole remedy under this limited warranty.

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

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

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

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

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

The following terms and conditions apply to this limited warranty:

Duration

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

Owner's Obligations

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

Exclusions

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

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

Other Limitations

This warranty does not cover:

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

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

Important: Read Carefully

1. Authorized Harley-Davidson dealers are independently owned and operated and may sell non-Harley-Davidson products. Because of this, HARLEY-DAVIDSON IS NOT RESPONSIBLE FOR THE SAFETY, QUALITY, OR SUITABILITY OF ANY NON-HARLEY-DAVIDSON PART, ACCESSORY OR DESIGN MODIFICATION INCLUDING, BUT NOT LIMITED TO, LABOR WHICH MAY BE SOLD AND/OR INSTALLED BY AUTHORIZED HARLEY-DAVIDSON DEALERS.
2. This limited warranty is a contract between you and Harley-Davidson. It is separate and apart from any warranty you may receive or purchase from an authorized Harley-Davidson dealer. An authorized Harley-Davidson dealer is not authorized to alter, modify, or in any way change the terms and conditions of this limited warranty.
3. Any warranty work or parts replacement authorized by Harley-Davidson will not preclude Harley-Davidson from later relying on any exclusion where applicable.

4. Harley-Davidson and its dealers reserve the right to modify or service motorcycles designed and manufactured by Harley-Davidson at any time without incurring any additional obligation to make the same alteration or change to a motorcycle previously built and sold. Harley-Davidson reserves the right to provide post-warranty repairs, conduct repair campaigns, offer good-will or customer satisfaction repairs or extend the warranty coverage for certain motorcycles at its sole discretion. Said repairs or extensions of warranty coverage in no way obligates Harley-Davidson to provide similar accommodations to other owners of similar motorcycles. Sometimes Harley-Davidson may offer a special adjustment program to pay all or part of the cost of certain repairs beyond the terms of your limited warranty. Check with your dealer to learn whether such programs are available to you. Your state may prohibit these types of offers, in which case, they may not be available to you.
5. The fact that a part is labeled or branded Harley-Davidson does not necessarily make it appropriate or warranted for the make and model of your motorcycle. The use of parts not designed and tested for your motorcycle may have negative consequences on the performance of your motorcycle and may create conditions not covered by the limited factory warranty.

2013 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.

REGULAR SERVICE INTERVALS

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

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

NOTE

- *The use of parts and service procedures other than Harley-Davidson approved parts and service procedures may void the limited warranty. Any alterations to the emission system components, such as the intake and exhaust system, may be in violation of motor vehicle laws.*
- *Some countries, such as Brazil, may require all regular maintenance to be performed by an authorized Harley-Davidson dealer for your limited warranty to remain in effect. Check with your authorized Harley-Davidson dealer.*
- *Some countries, such as Brazil, may require additional annual (or semi-annual) regular maintenance steps to be performed to keep your limited warranty in effect and/or comply with vehicle regulations. Check with your authorized Harley-Davidson dealer and check the motorcycle regulations in your country for local requirements.*
- *After completing the final service interval in Table 38, repeat the service schedule starting at the 8,000 km (5000 mi) interval.*

⚠ WARNING

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

⚠ WARNING

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

Table 38. Regular Service Intervals: 2013 Trike Models

ITEM SERVICED	PROCEDURE	1000 MI 1600 KM	5000 MI 8000 KM	10000 MI 16000 KM	15000 MI 24000 KM	20000 MI 32000 KM	25000 MI 40000 KM	30000 MI 48000 KM	35000 MI 56000 KM	40000 MI 64000 KM	45000 MI 72000 KM	50000 MI 80000 KM	NOTES
Engine oil and filter	Replace	X	X	X	X	X	X	X	X	X	X	X	3, 8
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	8
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	8
Transmission lubricant	Replace	X				X				X			8
Clutch	Check adjustment	X	X	X	X	X	X	X	X	X	X	X	1, 8
Drive belt and sprocket(s)	Inspect, adjust belt	X	X	X	X	X	X	X	X	X	X	X	1
Rear sprocket isolators	Inspect for wear					X				X			1
Brake and clutch controls	Check and lubricate	X	X	X	X	X	X	X	X	X	X	X	1
Park brake	Inspect, adjust	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 element		Replace every 160,000 km (100000 mi).											1
Brake fluid	Inspect sight glass	X	X	X	X	X	X	X	X	X	X	X	4
Brake pads and discs	Inspect for wear	X	X	X	X	X	X	X	X	X	X	X	
Spark plugs	Replace							X					9

Table 38. Regular Service Intervals: 2013 Trike Models

ITEM SERVICED	PROCEDURE	1000 MI 1600 KM	5000 MI 8000 KM	10000 MI 16000 KM	15000 MI 24000 KM	20000 MI 32000 KM	25000 MI 40000 KM	30000 MI 48000 KM	35000 MI 56000 KM	40000 MI 64000 KM	45000 MI 72000 KM	50000 MI 80000 KM	NOTES
Electrical equipment and switches	Check operation	X	X	X	X	X	X	X	X	X	X	X	
Front forks	Rebuild											X	1, 6
Steering head bearings	Lubricate	X		X		X		X		X			
Steering head bearings	Adjust						X					X	1, 2
Hydraulic steering damper	Check for leaks, smooth damper action, mounting fastener torque	X	X	X	X	X	X	X	X	X	X	X	5
Air suspension	Check pressure, operation and leakage	X	X	X	X	X	X	X	X	X	X	X	1, 8
Fuel door, trunk, Tour-Pak (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, 8

Table 38. Regular Service Intervals: 2013 Trike Models

ITEM SERVICED	PROCEDURE	1000 MI 1600 KM	5000 MI 8000 KM	10000 MI 16000 KM	15000 MI 24000 KM	20000 MI 32000 KM	25000 MI 40000 KM	30000 MI 48000 KM	35000 MI 56000 KM	40000 MI 64000 KM	45000 MI 72000 KM	50000 MI 80000 KM	NOTES
Road test	Verify component and system functions	X	X	X	X	X	X	X	X	X	X	X	7
NOTES:	1. Should be performed by an authorized Harley-Davidson dealer, unless you have the proper tools, service data and are mechanically qualified. 2. Disassemble, lubricate and inspect every 80,000 km (50000 mi). 3. Perform annually or at specified intervals, whichever comes first. 4. Change DOT 4 hydraulic brake fluid and flush system every two years. 5. Replace or have rebuilt at 80,000 km (50000 mi). 6. Disassemble, inspect, rebuild forks and replace fork oil every 80,000 km (50000 mi). 7. Check reverse operation at each service interval. 8. Perform maintenance more frequently in severe riding conditions (such as extreme temperatures, dusty environments, mountainous or rough roads, long storage conditions, short runs, heavy stop/go traffic or poor fuel quality). 9. Perform every two years or at specified intervals, whichever comes first.												

Table 39. Owner's Maintenance Records

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

Table 39. Owner's Maintenance Records

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

SERVICE LITERATURE

Refer to Table 40. Visit any Harley-Davidson dealer or go to www.harley-davidson.com to purchase a service or parts manual for your motorcycle. Factory authorized manuals are the most complete and detailed source of information outside of your Harley-Davidson dealer.

Table 40. Service Literature: 2013 Trike Models

DOCUMENT	LANGUAGE	PART NUMBER
Touring Models Service Manual	English	99483-13
	French	99483-13FR
	German	99483-13DE
	Spanish	99483-13ES
	Italian	99483-13IT
	Simplified Chinese	99483-13ZH
	Japanese	99483-13JA
Touring Models Electrical Diagnostics Manual	English	99497-13
	French	99497-13FR
	German	99497-13DE
	Spanish	99497-13ES
	Italian	99497-13IT
	Simplified Chinese	99497-13ZH
	Japanese	99497-13JA

Table 40. Service Literature: 2013 Trike Models

DOCUMENT	LANGUAGE	PART NUMBER
Trike Service Manual Supplement	English	99601-13
	Spanish	99601-13ES
Trike Parts Catalog	English	99602-13

H-D MICHIGAN, INC. TRADEMARK INFORMATION

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