



**2013 Harley-Davidson Softail Models  
Service Manual**

**99482-13A**

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# MAINTENANCE

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# NOTES

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# FASTENER TORQUE VALUES

## FASTENER TORQUE VALUES IN THIS CHAPTER

The table below lists torque values for all fasteners presented in this chapter.

FASTENER	TORQUE VALUE		NOTES
Air cleaner bracket screws	40-60 <b>in-lbs</b>	4.5-6.8 Nm	1.5 MAINTENANCE SCHEDULE, General
Air cleaner bracket screws	40-60 <b>in-lbs</b>	4.5-6.8 Nm	1.7 AIR CLEANER AND EXHAUST SYSTEM, Installation
Air cleaner cover screw	36-60 <b>in-lbs</b>	4.1-6.8 Nm	1.5 MAINTENANCE SCHEDULE, General
Air cleaner cover screw	36-60 <b>in-lbs</b>	4.1-6.8 Nm	1.7 AIR CLEANER AND EXHAUST SYSTEM, Installation
Axle nut, rear	95-105 ft-lbs	128.8-142.4 Nm	1.12 DRIVE BELT AND SPROCKETS, Adjusting Belt Deflection
Battery terminal fastener	60-72 <b>in-lbs</b>	6.8-8.1 Nm	1.9 PRIMARY CHAINCASE LUBRICANT, Changing Primary Chaincase Lubricant
Battery terminal fasteners	60-72 <b>in-lbs</b>	6.8-8.1 Nm	1.5 MAINTENANCE SCHEDULE, General
Battery terminal fasteners	60-72 <b>in-lbs</b>	6.8-8.1 Nm	1.20 BATTERY MAINTENANCE, Installation and Connection
Battery terminal fasteners	60-72 <b>in-lbs</b>	6.8-8.1 Nm	1.20 BATTERY MAINTENANCE, Installation and Connection
Brake caliper, front, lower mounting bolt	28-38 ft-lbs	38.0-51.5 Nm	1.16 BRAKE PADS AND DISCS, Brake Pad Replacement
Brake caliper, front, pad pin	15-16 ft-lbs	20.4-21.7 Nm	1.16 BRAKE PADS AND DISCS, Brake Pad Replacement
Brake caliper, Front, Upper mounting bolt	28-38 ft-lbs	38.0-51.5 Nm	1.16 BRAKE PADS AND DISCS, Brake Pad Replacement
Brake caliper, rear, mounting fasteners	16-20 ft-lbs	21.7-27.1 Nm	1.16 BRAKE PADS AND DISCS, Brake Pad Replacement
Brake caliper, rear, pad pin	80-120 <b>in-lbs</b>	9.0-13.6 Nm	1.16 BRAKE PADS AND DISCS, Brake Pad Replacement
Brake master cylinder, front, reservoir cover screws	12-15 <b>in-lbs</b>	1.4-1.7 Nm	1.16 BRAKE PADS AND DISCS, Brake Pad Replacement
Brake master cylinder, front, reservoir cover screws	12-15 <b>in-lbs</b>	1.4-1.7 Nm	1.5 MAINTENANCE SCHEDULE, General
Brake master cylinder, rear, reservoir cover screws	6-8 <b>in-lbs</b>	0.7-0.9 Nm	1.5 MAINTENANCE SCHEDULE, General
Brake master cylinder, rear, reservoir cover screws	6-8 <b>in-lbs</b>	0.7-0.9 Nm	1.16 BRAKE PADS AND DISCS, Brake Pad Replacement
Brake pedal screw, rear	12-16 ft-lbs	16.3-21.7 Nm	1.15 BRAKES, Rear Brake Pedal
Clutch adjuster screw jamnut	72-120 <b>in-lbs</b>	8-13.6 Nm	1.5 MAINTENANCE SCHEDULE, General
Clutch adjuster screw jamnut	72-120 <b>in-lbs</b>	8.1-13.6 Nm	1.11 CLUTCH, Adjustment
Clutch cable adjuster jamnut	120 <b>in-lbs</b>	13.6 Nm	1.11 CLUTCH, Adjustment
Clutch inspection cover screw	84-108 <b>in-lbs</b>	9.5-12.2 Nm	1.9 PRIMARY CHAINCASE LUBRICANT, Changing Primary Chaincase Lubricant/Torque sequence
Clutch inspection cover screws	84-108 <b>in-lbs</b>	9.5-12.2 Nm	1.5 MAINTENANCE SCHEDULE, General
Clutch inspection cover screws	84-108 <b>in-lbs</b>	9.5-12.2 Nm	1.11 CLUTCH, Adjustment
Engine oil drain plug	14-21 ft-lbs	19.0-28.5 Nm	1.5 MAINTENANCE SCHEDULE, General

FASTENER	TORQUE VALUE		NOTES
Engine oil drain plug	14-21 ft-lbs	19.0-28.5 Nm	1.6 ENGINE OIL AND FILTER, Changing Oil and Filter
Fork bracket pinch bolt, lower	30-35 ft-lbs	40.7-47.5 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXSB
Fork bracket pinch bolt, lower	30-35 ft-lbs	40.7-47.5 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXSB
Fork bracket pinch bolt, lower, 1st torque, FXS	12-16 ft-lbs	16.3-21.7 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXST, FXS
Fork bracket pinch bolt, lower, 1st torque, FXS	12-16 ft-lbs	16.3-21.7 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXST, FXS
Fork bracket pinch bolt, lower, final torque, FXS	12-16 ft-lbs	16.3-21.7 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXST, FXS
Fork bracket pinch bolt, lower, final torque, FXS	12-16 ft-lbs	16.3-21.7 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXST, FXS
Fork bracket pinch bolt, lower, FXST	55-60 ft-lbs	74.6-81.4 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXST, FXS
Fork bracket pinch bolt, lower, FXST	55-60 ft-lbs	74.6-81.4 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXST, FXS
Fork bracket pinch bolt, upper, FLSTC, FLSTF/B, FLSTN, FLS	25-30 ft-lbs	33.9-40.7 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FLSTC, FLSTF/B, FLSTN, FLS
Fork bracket pinch bolt, upper, FLSTC, FLSTF/B, FLSTN, FLS	25-30 ft-lbs	33.9-40.7 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FLSTC, FLSTF/B, FLSTN, FLS
Fork bracket pinch bolts, lower, FLSTC, FLSTF/B, FLSTN, FLS	55-60 ft-lbs	74.6-81.4 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FLSTC, FLSTF/B, FLSTN, FLS
Fork bracket pinch bolts, lower, FLSTC, FLSTF/B, FLSTN, FLS	55-60 ft-lbs	74.6-81.4 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FLSTC, FLSTF/B, FLSTN, FLS
Fork stem nut	70-80 ft-lbs	94.9-108.4 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXST, FXS
Fork stem nut	70-80 ft-lbs	94.9-108.4 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXST, FXS
Fork stem nut	70-80 ft-lbs	94.9-108.4 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXST, FXS
Fork stem nut	70-80 ft-lbs	94.9-108.4 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXST, FXS
Fork stem nut	70-80 ft-lbs	94.9-108.4 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXSB
Fork stem nut	70-80 ft-lbs	94.9-108.4 Nm	1.18 STEERING HEAD BEARINGS, Adjustment: FXSB
Handlebar clamp screws	12-15 ft-lbs	16.3-20.3 Nm	1.5 MAINTENANCE SCHEDULE, General
Handlebar switch housing screws	35-45 <b>in-lbs</b>	4.0-5.1 Nm	1.5 MAINTENANCE SCHEDULE, General
Handlebar switch housing screws	35-45 <b>in-lbs</b>	4.0-5.1 Nm	1.13 THROTTLE CABLES, Cable Inspection, Lubrication and Adjustment
Headlamp horizontal adjustment fastener	30-35 ft-lbs	40.7-47.5 Nm	1.21 HEADLAMP ALIGNMENT, Headlamp Adjustment
Headlamp vertical adjusting bolt: Except FXS, FXSB	35-45 ft-lbs	47.5-61.0 Nm	1.21 HEADLAMP ALIGNMENT, Headlamp Adjustment
Headlamp vertical adjusting bolt: FXS, FXSB	30-35 ft-lbs	40.7-47.5 Nm	1.21 HEADLAMP ALIGNMENT, Headlamp Adjustment
Primary chaincase drain plug	14-21 ft-lbs	19.0-28.5 Nm	1.5 MAINTENANCE SCHEDULE, General
Primary chaincase drain plug	14-21 ft-lbs	19.0-28.5 Nm	1.9 PRIMARY CHAINCASE LUBRICANT, Changing Primary Chaincase Lubricant

<b>FASTENER</b>	<b>TORQUE VALUE</b>		<b>NOTES</b>
Spark plug	12-18 ft-lbs	16.3-24.4 Nm	1.5 MAINTENANCE SCHEDULE, General
Spark plug	12-18 ft-lbs	16.3-24.4 Nm	1.17 SPARK PLUGS, Installation
Spoke nipple	<b>55 in-lbs</b>	6.2 Nm	1.5 MAINTENANCE SCHEDULE, General
Spoke nipple	<b>55 in-lbs</b>	6.2 Nm	1.5 MAINTENANCE SCHEDULE, General
Spoke nipple	<b>55 in-lbs</b>	6.2 Nm	1.8 TIRES AND WHEELS, Wheel Spokes
Starter nut	<b>70-90 in-lbs</b>	7.9-10.2 Nm	1.20 BATTERY MAINTENANCE, Installation and Connection
Transmission dipstick	<b>25-75 in-lbs</b>	2.8-8.5 Nm	1.10 TRANSMISSION LUBRICANT, Transmission Lubricant
Transmission drain plug	14-21 ft-lbs	19.0-28.5 Nm	1.5 MAINTENANCE SCHEDULE, General
Transmission drain plug	14-21 ft-lbs	19.0-28.5 Nm	1.10 TRANSMISSION LUBRICANT, Changing Transmission Lubricant
Transmission filler plug	<b>25-75 in-lbs</b>	2.8-8.5 Nm	1.5 MAINTENANCE SCHEDULE, General
Transmission filler plug/dipstick	<b>25-75 in-lbs</b>	2.8-8.5 Nm	1.10 TRANSMISSION LUBRICANT, Changing Transmission Lubricant

## SERVICING A NEW MOTORCYCLE

### 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)

Perform necessary set-up tasks before customer delivery. See applicable model year predelivery and set-up instructions.

The performance of new motorcycle initial service is required to keep warranty in force and to verify proper emissions systems operation. See [1.5 MAINTENANCE SCHEDULE](#).

## SAFE OPERATING MAINTENANCE

### NOTES

- Do not attempt to tighten engine head bolts or engine damage may result.
- During the initial break-in period, use only GENUINE HARLEY-DAVIDSON H-D 360 MOTORCYCLE OIL 20W50. Failure to use the recommended oil will result in improper break-in of the engine cylinders and piston rings.

Inspect motorcycle on a regular basis for additional maintenance needs. Routinely check components between regular maintenance intervals. Always inspect motorcycle after periods of storage before riding.

Check:

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

## DISPOSAL AND RECYCLING

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

## SHOP PRACTICES

### Repair Notes

General maintenance practices are given in this section.

### NOTES

- Repair = Disassembly/Assembly.
- Replacement = Substitute a **new** part for existing component.

All special tools and torque values are noted at the point of use.

All required parts or materials can be found in the parts catalog.

### Safety

Safety is always the most important consideration when performing any job.

- Always have a complete understanding of the task.
- Use common sense.
- Use the proper tools.
- Protect yourself and bystanders with approved eye protection.

Don't just do the job, do the job safely.

### Removing Parts

Always consider the weight of a part when lifting. Use a hoist whenever necessary. Do not lift heavy parts by hand. If a hoist and adjustable lifting beam or sling are needed to remove some parts, verify that:

- The lengths of multiple chains or cables from the hoist to the part are equal and parallel.
- Slings, chains and cables are positioned directly over the center of the part.
- No obstructions will interfere with the lifting operation.
- Parts are not left suspended.

### WARNING

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

Always use blocking or proper stands to support the part that has been hoisted. If a part cannot be removed, verify that all bolts and attaching hardware have been removed. Verify that no parts are in the way of the part being removed.

When removing hoses, wiring or tubes, always tag each part to verify proper installation.

### Cleaning

Always clean around lines or covers before they are removed. Plug, tape or cap holes and openings to keep out dirt, dust and debris. Clean and inspect all parts as they are removed. Verify all holes and passages are clean and open. After cleaning, cover all parts with clean lint-free cloth, paper or other material. Verify the part is clean when installed.

Thoroughly clean all parts to be reused before assembly. Clean parts promote better component operation and longer life.

Seals, filters and covers used in this vehicle keep out extraneous dirt and dust. Keep these items in good condition to guarantee satisfactory operation.

When instructed to clean fastener threads or threaded holes, always:

- Clean all threadlocking material from fastener threads and threaded holes.
- Use a wire brush to clean fastener threads.
- Use a thread chaser or other suitable tool to clean threaded holes.
- Use PJ1 cleaner or equivalent to remove all traces of oil and contaminants from threads.
- Clear all threaded holes with low pressure compressed air.

Always verify cleanliness of blind holes before assembly. Tightening a screw with dirt, water or oil in the hole can cause castings to crack or break.

## Disassembly and Assembly

Always assemble or disassemble one part at a time. Do not work on two assemblies simultaneously. Make all necessary adjustments. Inspect your work when finished to verify that everything is done.

Operate the vehicle to perform any final check or adjustments. If all is correct, the vehicle is ready to go back to the customer.

## Checking Torques on Fasteners

Check torque using a torque wrench set to the minimum specification for that fastener. If the fastener does not rotate, the torque has been maintained. If the fastener rotates, remove it to determine if it has a threadlocking agent.

If it has a threadlocking agent, clean all material from the threaded hole. Replace the fastener with a **new** one or clean the original fastener threads and apply the appropriate threadlocking product. Install and tighten the fastener to specification.

If the fastener does not use a threadlocking agent, install and tighten it to specification.

## Magnetic Parts Trays

Magnetic parts trays are common in the service facility because they are convenient and can keep parts from becoming lost during a repair procedure. However, hardened steel parts can become magnetized when held in magnetic parts trays.

Metal fragments from normal wear are usually trapped in the oil filter or by the magnetic drain plug. Magnetized parts in the engine can retain these fragments, potentially causing accelerated engine wear and damage.

Never place parts that will be returned to service inside the vehicle's powertrain such as gears, thrust washers and especially bearings in magnetic parts trays.

## REPAIR AND REPLACEMENT PROCEDURES

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### Hardware and Threaded Parts

Install thread repair inserts when threaded holes in castings are stripped, damaged or not capable of withstanding specified torque.

Replace bolts, nuts, studs, washers, spacers and small common hardware if missing or damaged. Clean up or repair minor thread damage with a suitable tap or die.

Replace all damaged or missing lubrication fittings.

Use LOCTITE 565 THREAD SEALANT on pipe fitting threads.

### Threadlocking Agents

Always follow specific service manual procedures when working with fasteners containing preapplied threadlocking agents when fastener replacement is recommended. When re-using fasteners containing threadlocking agents, thoroughly clean all fasteners and threaded holes. Always use the recommended threadlocking agent for the specific procedure.

### Wiring, Hoses and Lines

Replace hoses, clamps, electrical wiring, electrical switches or fuel lines if they do not meet specifications.

### Instruments and Gauges

Replace damaged or defective instruments and gauges.

### Bearings

Always use the proper tools and fixtures when servicing bearings.

Anti-friction bearings must be handled in a special way. To keep out dirt and abrasives, cover the bearings as soon as they are removed from the package.

When bearings are installed against shoulders, always verify that the chamfered side of the bearing faces the shoulder. Lubricate bearings and all metal contact surfaces before pressing into place. Only apply pressure on the part of the bearing that makes direct contact with the mating part. Install bearings with numbered side facing out.

Only remove bearings if necessary. Removal usually damages bearings requiring replacement with **new** parts.

### Bushings

Do not remove a bushing unless damaged, excessively worn or loose in its bore. Press out bushings requiring replacement.

When pressing or driving bushings, always apply pressure in line with the bushing bore. Use a bearing/bushing driver or a bar with a smooth, flat end. Never use a hammer to drive bushings.

Verify that all oil holes are properly aligned during installation.

### Gaskets

Always discard gaskets after removal. Replace with **new** gaskets. Never use the same gasket twice. Verify that gasket holes match up with holes in the mating part. Be aware that sections of a gasket may be used to seal passages.

## Lip-Type Seals

Lip seals are used to seal oil or grease and are usually installed with the sealing lip facing the contained lubricant. Seal orientation, however, may vary under different applications.

Do not remove seals unless necessary. Only remove seals to gain access to other parts or if seal damage or wear dictates replacement.

Leaking oil or grease usually means that a seal is damaged. Replace leaking seals to prevent overheated bearings.

Always discard seals after removal. Do not use the same seal twice.

## O-Rings

Always discard O-rings after removal. Many O-rings are similar in size and appearance. Always use **new** O-rings keeping them packaged until use to avoid confusion. To prevent leaks, lubricate the O-rings before installation with the same type of lubricant as that being sealed. Be sure that all gasket, O-ring and seal mating surfaces are thoroughly clean before installation.

## Gears

Always check gears for damaged or worn teeth.

Remove burrs and rough spots with a honing stone or crocus cloth before installation.

Lubricate mating surfaces before pressing gears on shafts.

## Shafts

If a shaft does not come out easily, check that all nuts, bolts or retaining rings have been removed. Check to see if other parts are in the way before using force to remove.

Shafts fitted to tapered splines should be very tight. If shafts are not tight, disassemble and inspect tapered splines. Discard parts that are worn. Verify that tapered splines are clean, dry and free of burrs before putting them in place. Press mating parts together tightly.

Clean all rust from the machined surfaces of **new** parts.

## Part Replacement

### 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)**

Always install **new** genuine Harley-Davidson parts and accessories. This will provide best service life and maintain compliance with noise and emissions regulations.

Installing non-Harley-Davidson, off-road or competition parts can void warranty or result in an unsafe vehicle.

## CLEANING

### Part Protection

Before cleaning, protect rubber parts (such as hoses, boots and electrical insulation) from cleaning solutions. Use a grease-

proof barrier material. Remove the rubber part if it cannot be properly protected.

## Cleaning Process

Any cleaning method may be used as long as it does not result in parts damage. Thorough cleaning is necessary for proper parts inspection. Strip rusted paint areas to bare metal before priming and repainting.

## Rust or Corrosion Removal

Remove rust and corrosion with a wire brush, abrasive cloth, sand blasting, vapor blasting or rust remover. Use buffing crocus cloth on highly polished parts that are rusted.

## Bearings

Wash bearings in a non-flammable petroleum cleaning solution. Never use a solution that contains chlorine. Knock out packed lubricant by tapping the bearing against a wooden block. Wash bearings again.

### WARNING

**Using compressed air to "spin dry" bearings can cause bearing to fly apart, which could result in death or serious injury. (00505b)**

Cover bearings with a clean shop towel and allow to air dry. Do not spin bearings while they are drying. Never use compressed air to dry bearings.

When dry, coat bearings with clean oil. Wrap bearings in clean paper.

## TOOL SAFETY

### Air Tools

- Always use approved eye protection equipment when performing any task using air-operated tools.
- On all power tools, use only recommended accessories with proper capacity ratings.
- Do not exceed air pressure ratings of any power tools.
- Bits should be placed against work surface before air hammers are operated.
- Disconnect the air supply line to an air hammer before attaching a bit.
- Never point an air tool at yourself or another person.
- Protect bystanders with approved eye protection.

### Wrenches

- Never use an extension on a wrench handle.
- If possible, always pull on a wrench handle and adjust your stance to prevent a fall if something suddenly releases.
- Always keep the wrench squarely installed on the fastener.
- Never use a hammer on any wrench other than a STRIKING FACE wrench.
- Discard any wrench with damaged or battered points.
- Never use a pipe wrench to bend, raise or lift a pipe.



## Pliers/Cutters/Pry Bars

- Plastic- or vinyl-covered pliers handles are not intended to act as insulation. Do not use them on live electrical circuits.
- Do not use pliers or cutters for cutting hardened wire unless they were designed for that purpose.
- Always cut at right angles.
- Do not use any pry bar as a chisel, punch or hammer.

## Hammers

- Never strike a hammer against a hardened object, such as another hammer.
- Always grasp a hammer handle firmly, close to the end.
- Strike the object with the full face of the hammer.
- Never work with a hammer which has a loose head or cracked handle.
- Discard hammer if face is chipped or mushroomed.
- Wear approved eye protection when using striking tools.
- Protect bystanders with approved eye protection.

## Punches/Chisels

- Never use a punch or chisel with a chipped or mushroomed end. Dress mushroomed chisels and punches with a grinder.
- Hold a chisel or a punch with a tool holder if possible.
- When using a chisel on a small piece, clamp the piece firmly in a vise and chip toward the stationary jaw.
- Always wear approved eye protection when using these tools.
- Protect bystanders with approved eye protection.

## Screwdrivers

- Do not use a screwdriver for prying, punching, chiseling, scoring or scraping.
- Use the right type of screwdriver for the job. Match the tip of a screwdriver to the fastener.
- Do not interchange POZIDRIV, PHILLIPS or REED AND PRINCE screwdrivers.
- Screwdriver handles are not intended to act as insulation. Do not use them on live electrical circuits.
- Do not use a screwdriver with rounded edges because it will slip. Redress with a grinder.

## Ratchets and Handles

- Periodically clean and lubricate ratchet mechanisms with a light grade oil. Do not replace parts individually. Ratchets should be rebuilt with the entire contents of service kit.
- Never hammer on a ratchet or put a pipe extension on a ratchet handle for added leverage.
- Always support the ratchet head when using socket extensions, but do not put your hand on the head or you may interfere with the action of its reversing mechanism.
- When breaking a fastener loose, apply a small amount of pressure as a test to be sure the ratchet's gear wheel is engaged with the pawl.

## Sockets

- Never use hand sockets on power or impact wrenches. Select only impact sockets for use with air or electric impact wrenches.
- Select the right size socket for the job.
- Always keep the wrench or socket squarely on the fastener.
- Replace sockets showing cracks or wear.
- Keep sockets clean.
- Always use approved eye protection when using power or impact sockets.

## Storage Units

- Do not open more than one loaded drawer at a time. Close each drawer before opening another to prevent the cabinet from unexpectedly tipping over.
- Close lids and lock drawers and doors before moving storage units.
- Do not pull on a tool cabinet. Always push tool cabinets in front of you.
- Set the brakes on the locking casters after the cabinet has been rolled into position.



# FUEL AND OIL

# 1.3

## FUEL

Always use a good quality unleaded gasoline. Octane ratings are usually found on the pump. Refer to [Table 1-1](#).

### ⚠ WARNING

**Avoid spills. Slowly remove 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. (00028a)**

### ⚠ 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 1-1. Octane Ratings

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

## 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 percent 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 percent may be used in your motorcycle without affecting vehicle performance. U.S. EPA regulations currently indicate that fuels with 15 percent 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.

## 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 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. (00357c)**

### 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 1-2](#).

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 1-2](#) 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.

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