2008 Sportster Models Service Manual

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http://www.harley-davidson.com

ABOUT THIS MANUAL

GENERAL

This Service Manual has been prepared with two purposes in mind. First, it will acquaint the user with the construction of the Harley-Davidson product and assist in the performance of basic maintenance and repair. Secondly, it will introduce to the professional Harley-Davidson Technician the latest field-tested and factory-approved major repair methods. We sincerely believe that this Service Manual will make your association with Harley-Davidson products more pleasant and profitable.

HOW TO USE YOUR SERVICE MANUAL

Refer to the table below for the content layout of this manual.

NO.	CHAPTER
1	Maintenance
2	Chassis
3	Engine
4	Fuel System
5	Starter
6	Drive/Transmission
7	Electrical
A	Appendix A Connector Repair
B	Appendix B Wiring
C	Appendix C Conversions
D	Appendix D Compensating Sprocket
E	Appendix E Glossary

Use the TABLE OF CONTENTS (which follows this FOREWORD) and the INDEX (at the back of this manual) to quickly locate subjects. Sections and topics in this manual are sequentially numbered for easy navigation.

For example, a cross-reference shown as **2.1 SPECIFICATIONS** refers to chapter 2 CHASSIS, heading 2.1 SPECIFICATIONS.

For quick and easy reference, all pages contain a section number followed by a page number. For example, **page 3-5** refers to page 5 in section 3.

A number of acronyms and abbreviations are used in this document. See the E.1 GLOSSARY for a list of acronyms, abbreviations and definitions.

PREPARATION FOR SERVICE

⚠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)

Good preparation is very important for efficient service work. A clean work area at the start of each job will allow you to perform the repair as easily and quickly as possible, and will reduce the incidence of misplaced tools and parts. A motorcycle that is excessively dirty should be cleaned before work starts. Cleaning will occasionally uncover sources of trouble. Tools, instruments and any parts needed for the job should be gathered before work is started. Interrupting a job to locate tools or parts is a distraction and causes needless delay.

NOTES

- *To avoid unnecessary disassembly, carefully read all relative service information before repair work is started.*
- *In figure legends, the number which follows the name of a part indicates the quantity necessary for one complete assembly.*
- *When servicing a vehicle equipped with the Harley-Davidson Smart Security System (H-DSSS), you must first disarm the security system. Either keep the fob in close proximity to the vehicle, or use Digital Technician to disable the security system while the vehicle is being serviced and re-enable the system after service is completed.*

SERVICE BULLETINS

In addition to the information presented in this Service Manual, Harley-Davidson Motor Company will periodically issue Service Bulletins to Harley-Davidson dealers. Service Bulletins cover interim engineering changes and supplementary information. Consult the Service Bulletins to keep your product knowledge current and complete.

USE GENUINE REPLACEMENT PARTS

⚠WARNING

Do not use aftermarket parts and custom made front forks which can adversely affect performance and handling. Removing or altering factory installed parts can adversely affect performance and could result in death or serious injury. (00001a)

To ensure satisfactory and lasting repairs, carefully follow the Service Manual instructions and use only genuine Harley-Davidson replacement parts. Behind the emblem bearing the words GENUINE HARLEY-DAVIDSON stand more than 100 years of design, research, manufacturing, testing and inspecting experience. This is your assurance that the parts you are using will fit right, operate properly and last longer.

WARNINGS AND CAUTIONS

Statements in this service 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)

CAUTION

CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage. (00140a)

NOTE

Refers to important information, and is placed in italic type. It is recommended that you take special notice of these items.

Proper service and repair is important for the safe, reliable operation of all mechanical products. The service procedures recommended and described in this service manual are effective methods for performing service operations.

⚠WARNING

Always wear proper eye protection when using hammers, arbor or hydraulic presses, gear pullers, spring compressors, slide hammers and similar tools. Flying parts could result in death or serious injury. (00496b)

Some of these service operations require the use of tools specially designed for the purpose. These special tools should be used when and as recommended. It is important to note that some warnings against the use of specific service methods, which could damage the motorcycle or render it unsafe, are stated in this service manual. However, please remember that these warnings are not all-inclusive. Inadequate safety precautions could result in death or serious injury.

Since Harley-Davidson could not possibly know, evaluate or advise the service trade of all possible ways in which service might be performed, or of the possible hazardous consequences of each method, we have not undertaken any such broad evaluation. Accordingly, anyone who uses a service procedure or tool which is not recommended by Harley-Davidson must first thoroughly satisfy himself that neither his nor the operator's safety will be jeopardized as a result. Failure to do so could result in death or serious injury.

PRODUCT REFERENCES

⚠WARNING

Read and follow warnings and directions on all products. Failure to follow warnings and directions can result in death or serious injury. (00470b)

When reference is made in this manual to a specific brand name product, tool or instrument, an equivalent product, tool or instrument may be substituted.

Kent-Moore Products

All tools mentioned in this manual with an "HD", "J" or "B" preface must be ordered through SPX Kent-Moore. For ordering information or product returns, warranty or otherwise, visit www.spx.com.

Loctite Sealing and Threadlocking Products

Some procedures in this manual call for the use of Loctite products. If you have any questions regarding Loctite product usage or retailer/wholesaler locations, please contact Loctite Corp. at www.loctite.com.

PRODUCT REGISTERED MARKS

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

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All photographs, illustrations and procedures may not necessarily depict the most current model or component, but are based on the latest production information available at the time of publication.

Since product improvement is our continual goal, Harley-Davidson reserves the right to change specifications, equipment or designs at any time without notice and without incurring obligation.

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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)

Service operations to be performed before customer delivery are specified in the applicable model year PREDELIVERY AND SET-UP MANUAL.

The performance of new motorcycle initial service is required to keep warranty in force and to ensure proper emissions systems operation. See 1.3 MAINTENANCE SCHEDULE.

SAFE OPERATING MAINTENANCE

NOTES

- *Do not attempt to retighten engine head bolts. Retightening can cause engine damage.*
- *During the initial break-in period, use only Harley-Davidson 20W50 engine oil. Failure to use the recommended oil will result in improper break-in of the engine cylinders and piston rings.*

A careful check of certain equipment is necessary after periods of storage, and frequently between regular service intervals, to determine if additional maintenance is required.

Check:

1. Tires for abrasions, cuts and correct pressure.
2. Secondary drive belt for proper 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 rotors for wear.
5. Cables for fraying, crimping and free operation.
6. Engine oil and transmission fluid levels.
7. Headlamp, auxiliary lamp, tail lamp, brake lamp, horn and turn signal operation.

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 appropriate PARTS CATALOG.

Safety

Safety is always the most important consideration when performing any job. Be sure you have a complete understanding of the task to be performed. 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. A hoist and adjustable lifting beam or sling are needed to remove some parts. The lengths of chains or cables from the hoist to the part should be equal and parallel and should be positioned directly over the center of the part. Be sure that no obstructions will interfere with the lifting operation. Never leave a part suspended in mid-air.

⚠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. Check to see if any parts are in the way of the part being removed.

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

Cleaning

If you intend to reuse parts, follow good shop practice and thoroughly clean the parts before assembly. Keep all dirt out of parts; the unit will perform better and last longer. Seals, filters and covers are used in this vehicle to keep out environmental dirt and dust. These items must be kept in good condition to ensure satisfactory operation.

When you are instructed in a step to clean fastener threads or threaded holes, proceed as follows: Clean all LOCTITE 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 PJ-1 cleaner or equivalent to remove all traces of oil and contaminants from threads. Blow out all threaded holes with low pressure compressed air.

Clean and inspect all parts as they are removed. Be sure all holes and passages are clean and open. After cleaning, cover all parts with clean lint-free cloth, paper or other material. Be sure the part is clean when it is installed.

Always clean around lines or covers before they are removed. Plug, tape or cap holes and openings to keep out dirt, dust and debris.

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. Be sure to make all necessary adjustments. Recheck your work when finished. Be sure 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 with Lock Patches

To check the torque on a fastener that has a lock patch:

1. Set the torque wrench for the lowest setting in the specified torque range.
2. Attempt to tighten fastener to set torque. If fastener does not move and lowest setting is satisfied (torque wrench clicks), then the proper torque has been maintained.

Magnetic Parts Trays

Magnetic parts trays are becoming 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 that would ordinarily be washed away in the oil and trapped in the oil filter or magnetic drain plug during vehicle operation could be captured by magnetized parts in the engine, potentially causing accelerated engine wear and damage.

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

REPAIR AND REPLACEMENT PROCEDURES

Hardware and Threaded Parts

Install helical thread inserts when inside threads 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 in any way damaged. Clean up or repair minor thread damage with a suitable tap or die.

Replace all damaged or missing lubrication fittings.

Use Teflon pipe sealant or 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, be sure to completely remove all existing threadlocking agent from fastener threads with a wire brush or wire wheel. Also, be sure to remove residual threadlocking agent from fastener hole using an appropriate thread chasing device and compressed air when using new or existing fasteners. Always use the recommended threadlocking agent for your specific procedure.

Wiring, Hoses and Lines

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

Instruments and Gauges

Replace broken or defective instruments and gauges. Replace dials and glass that are so scratched or discolored that reading is difficult.

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.

Wash bearings in a non-flammable cleaning solution. Knock out packed lubricant inside by tapping the bearing against a wooden block. Wash bearings again. Cover bearings with clean material after setting them down to dry. Never use compressed air to dry bearings.

Coat bearings with clean oil. Wrap bearings in clean paper.

When bearings are installed against shoulders, be sure that the chamfered side of the bearing always 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.

Always use the proper tools and fixtures for removing and installing bearings.

Bearings do not usually need to be removed. Only remove bearings if necessary.

Bushings

Do not remove a bushing unless damaged, excessively worn or loose in its bore. Press out bushings that must be replaced.

When pressing or driving bushings, be sure to 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.

Inspect the bushing and the mated part for oil holes. Be sure all oil holes are properly aligned.

Gaskets

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

If a gasket must be made, be sure to cut holes that match up with the mating part. Serious damage can occur if any flange holes are blocked by the gasket. Use material that is the right type and thickness.

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.

Seals should not be removed unless necessary. Only remove seals if required 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 (Preformed Packings)

Always discard O-rings after removal. Replace with **new** O-rings. To prevent leaks, lubricate the O-rings before installation. Apply 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.

Shafts fitted to tapered splines should be very tight. If shafts are not tight, disassemble and inspect tapered splines. Discard parts that are worn. Be sure 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

Always replace worn or damaged parts with **new** parts.

Exhaust System Leakage

In the event of an exhaust system leak at a muffler or header pipe connection location, disassemble and clean all mating surfaces. Replace any damaged components. If leak still exists, disassemble and repair the leak by applying a bead of Harley-Davidson High-Performance Sealant (Part No. 99650-02) (or an equivalent 02 Sensor/Catalyst-safe alternative). Reassemble components, wipe off any excess sealant and allow adequate curing time following sealant product instructions before operating 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

Remove shields and seals from bearings before cleaning. Clean bearings with permanent shields and seals in solution.

⚠WARNING

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

Clean open bearings by soaking them in a petroleum cleaning solution. Never use a solution that contains chlorine.

Let bearings stand and dry. Do not dry with compressed air. Do not spin bearings while they are drying.

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 lets go.
- Never cock a wrench.
- Never use a hammer on any wrench other than a STRIKING FACE wrench.
- Discard any wrench with broken 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 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.
- 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 file.
- 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.
- 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 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 on live electrical circuits.
- Do not use a screwdriver with rounded edges because it will slip. Redress with a file.

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 or put a pipe extension on a ratchet or 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 loose a fastener, 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 the right size socket for the job.
- Never cock any wrench or socket.
- Select only impact sockets for use with air or electric impact wrenches.
- 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 up another.
- Close lids and lock drawers and doors before moving storage units.
- Do not pull on a tool cabinet; push it in front of you.
- Set the brakes on the locking casters after the cabinet has been rolled to your workspace.

FUEL

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

⚠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.

CAUTION

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

- Gasoline containing METHYL TERTIARY BUTYL ETHER (MTBE): Gasoline/MTBE blends are a mixture of gasoline and as much as 15% MTBE. Gasoline/MTBE blends can be used in your motorcycle.
- ETHANOL is a mixture of 10% ethanol (Grain alcohol) and 90% unleaded gasoline. Gasoline/ethanol blends can be used in your motorcycle if the ethanol content does **not** exceed 10%.
- REFORMULATED OR OXYGENATED GASOLINES (RFG): Reformulated gasoline is a term used to describe gasoline blends that are specifically designed to burn cleaner than other types of gasoline, leaving fewer tailpipe emissions. They are also formulated to evaporate less when you are filling your tank. Reformulated gasolines use additives to oxygenate the gas. Your motorcycle will run normally using this type of gas and Harley-Davidson recommends you use it when possible, as an aid to cleaner air in our environment.
- Do not use race gas or octane boosters. Use of these fuels will damage the fuel system.

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

ENGINE LUBRICATION

CAUTION

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

If it is necessary to add oil and Harley-Davidson oil is not available, use an oil certified for diesel engines. Acceptable diesel engine oil designations include: CF-4, CG-4, CH-4 and CI-4.

The preferred viscosities for the diesel engine oils in descending order are: 20W50, 15W40 and 10W40.

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

Table 1-2. Recommended Engine Oils

H-D TYPE	VISCOSITY	H-D RATING	LOWEST AMBIENT TEMPERATURE	COLD WEATHER STARTS BELOW 50° F (10° C)
H-D Multi-grade	SAE 10W40	HD 360	Below 40° F (4° C)	Excellent
H-D Multi-grade	SAE 20W50	HD 360	Above 40° F (4° C)	Good
H-D Regular Heavy	SAE 50	HD 360	Above 60° F (16° C)	Poor
H-D Extra Heavy	SAE 60	HD 360	Above 80° F (27° C)	Poor

WINTER LUBRICATION

In colder climates, the engine oil should be changed often. If motorcycle is used frequently for short trips, less than 15 miles (24 kilometers), in ambient temperatures below 60° F (16° C), oil change intervals should be reduced to 1500 miles (2400 kilometers). Motorcycles used only for short runs must have a thorough tank flush-out before **new** oil is put in. The tank flush-out should be performed by an authorized dealer or qualified technician.

NOTE

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

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

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

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

GENERAL

The table below lists the periodic maintenance requirements for Sportster model motorcycles. If you are familiar with the procedures, just refer to the table for the recommended service interval. If necessary, see the quick reference table (Table 1-4.) for the required specifications.

If more detailed information is needed, turn to the sections which follow for step-by-step instructions.

Also, throughout this manual, you will be instructed to use various lubricants, greases and sealants. Refer to Table 1-5. for the correct part numbers of these items.

Table 1-3. Regular Service Intervals: 2008 Sportster Models

ITEM SERVICED	PROCEDURE	1000 MI 1600 KM	5000 MI 8000 KM	10,000 MI 16,000 KM	15,000 MI 24,000 KM	20,000 MI 32,000 KM	25,000 MI 40,000 KM	NOTES
Engine oil and filter	Replace	X	X	X	X	X	X	
Oil lines and brake system	Inspect for leaks	X	X	X	X	X	X	1
Air cleaner	Inspect, service as required	X	X	X	X	X	X	
Tires	Check pressure, inspect tread	X	X	X	X	X	X	
Wheel spokes	Check tightness	X	X	X	X	X	X	1, 4
Transmission lubricant	Replace	X		X		X		
Clutch	Check adjustment	X	X	X	X	X	X	1
Primary chain	Check adjustment	X	X	X	X	X	X	
Rear belt and sprockets	Inspect, adjust belt	X	X	X	X	X	X	1
Throttle, brake and clutch controls	Check, adjust and lubricate	X	X	X	X	X	X	1
Jiffy stand	Inspect and lubricate	X		X		X		1
Fuel lines and fittings	Inspect for leaks	X	X	X	X	X	X	1
Fuel tank filter screen	Clean						X	1
Brake fluid	Check levels and condition	X	X	X	X	X	X	5
Brake pads and discs	Inspect for wear	X	X	X	X	X	X	
Front brake lever pin	Inspect		X	X	X	X		1, 2
	Lubricate						X	1, 2
Brake caliper pins	Inspect		X	X	X	X		1, 2
	Lubricate						X	1, 2
Brake caliper boots and bushings	Inspect		X	X	X	X		1, 2
	Replace						X	1, 2
Rear master cylinder outer boot	Inspect		X	X	X	X	X	1, 2
Brake components	Replace brake rubber components in master cylinders and calipers						X	1, 2
	Lubricate master cylinder pistons						X	1, 2
Spark plugs	Inspect	X	X		X		X	
	Replace					X		
Electrical equipment and switches	Check operation	X	X	X	X	X	X	
Engine idle speed	Check adjustment	X	X	X	X	X	X	1
Front fork oil	Replace							1, 6
Steering head bearings	Adjust	X				X		1
	Lubricate					X		1
Rear fork bearings		Replace every 30,000 MI (48,000 KM)						1
Shock absorbers	Inspect	X	X	X	X	X	X	1
Critical fasteners	Check tightness	X		X		X		1
Engine mounts and stabilizer links	Inspect			X		X		1
Battery	Check battery and clean connections							3
Exhaust system	Inspect for leaks, cracks, and loose or missing fasteners or heat shields	X	X	X	X	X	X	3

Table 1-3. Regular Service Intervals: 2008 Sportster Models

ITEM SERVICED	PROCEDURE	1000 MI 1600 KM	5000 MI 8000 KM	10,000 MI 16,000 KM	15,000 MI 24,000 KM	20,000 MI 32,000 KM	25,000 MI 40,000 KM	NOTES
Road test	Verify component and system functions	X	X	X	X	X	X	
NOTES:	1. Should be performed by an authorized Harley-Davidson dealer, unless you have the proper tools, service data and are mechanically qualified. 2. Replace every four (4) years. 3. Perform annually. 4. Not all vehicles are equipped with spoke wheels. Consult appropriate topic in service manual. 5. Replace every two (2) years. 6. Disassemble, lubricate and inspect every 50,000 miles (80,000 km).							

Table 1-4. Quick Reference Maintenance Chart

ITEM SERVICED	SPECIFICATION	DATA
Engine oil and filter	Oil capacity	2.8 qt (2.65 L)
	Filter	Hand tighten 1/2-3/4 turn after gasket contact
	Chrome filter (XL 1200C)	Part no. 63796-77A
	Black filter (all except XL 1200C)	Part no. 63805-80A
Primary chain tension	Deflection with hot engine	1/4-3/8 in. (6.3-9.5 mm)
	Deflection with cold engine	3/8-1/2 in. (9.5-12.7 mm)
	Chain tensioner nut torque	20-25 ft-lbs (27.1-33.9 Nm)
	Primary chain inspection cover screw torque	40-60 **in-lbs** (4.5-6.8 Nm)
Primary chain/transmission lubricant	Lubricant capacity	32 oz. (946 mL)
	Primary chaincase drain plug torque	14-30 ft-lbs (19.0-40.7 Nm)
	Lubricant	Genuine Harley-Davidson Formula+ Transmission and Primary Chaincase Lubricant
Clutch adjustment	Free play at adjuster screw	1/4 turn
	Free play at hand lever	1/16-1/8 in. (1.6-3.2 mm)
	Clutch inspection cover screw torque	84-108 **in-lbs** (9.5-12.2 Nm)
Tire condition and pressure	Pressure for solo rider	Front: 30 psi (207 kPa), Rear: 36 psi (248 kPa)
	Pressure for rider and passenger	Front: 30 psi (207 kPa), Rear: 40 psi (276 kPa)
	Wear	Replace tire if 1/32 in. (0.8 mm) or less of tread pattern remains
Wheel spokes	Spoke nipple torque	55 **in-lbs** (6.2 Nm)
Steering bead bearings	Lubricant for neck fitting	SPECIAL PURPOSE GREASE
Brake fluid reservoir level	Brake fluid type	D.O.T. 4 brake fluid
	Proper fluid level (front brake)	1/4 in. (6.35 mm) from the top of the reservoir
	Proper fluid level (rear brake)	Upper fluid level in reservoir
	Front master cylinder reservoir cover screw torque	9-17 **in-lbs** (1.0-2.0 Nm)
Brake pad linings and discs	Minimum brake pad thickness	0.04 in. (1.02 mm)
	Minimum brake disc thickness	See stamp on side of disc

Table 1-4. Quick Reference Maintenance Chart

ITEM SERVICED	SPECIFICATION	DATA
Drive belt	Upward measurement force applied at midpoint of bottom belt strand	10 lb. (4.5 kg)
	Belt deflection with motorcycle on jiffy stand, belt and sprockets at ambient temperature (cold engine), without rider or luggage	XL 883C/XL 883L/XL 1200C/XL 1200L/XL 1200N: 1/4-5/16 in. (6.35-7.94 mm)
		XL 883/XL 883R/XL 1200R: 9/16-5/8 in. (14.3-15.9 mm)
Air cleaner	Air filter element screw torque	40-60 **in-lbs** (4.5-6.8 Nm)
	Air cleaner cover screw torque	36-60 **in-lbs** (4.1-6.8 Nm)
Engine idle speed	Idle speed	950-1050 RPM
Fuel filter	Fuel pump module mounting screw torque	40-45 **in-lbs** (4.5-5.1 Nm)
Clutch and throttle cables	Lubricant	SUPER OIL
	Handlebar clamp screw torque	108-132 **in-lbs** (12.2-14.9 Nm)
	Handlebar switch housing screw torque	35-45 **in-lbs** (4.0-5.1 Nm)
Spark plugs	Type	6R12
	Gap	0.038-0.043 in. (0.96-1.09 mm)
	Torque	12-18 ft-lbs (16.3-24.4 Nm)
Front fork oil	Type	HYDRAULIC FORK OIL (TYPE E)
	Amount	See 1.20 FRONT FORK OIL
Battery	Lubricant	ELECTRICAL CONTACT LUBRICANT
	Negative terminal screw torque	60-70 **in-lbs** (6.8-7.9 Nm)
	Positive terminal screw torque	70-80 **in-lbs** (7.9-9.0 Nm)
Critical fasteners	See 1.29 CRITICAL FASTENERS	
Engine mounts/isolators and Stabilizers	See 2.23 FRONT ENGINE MOUNT/ISOLATOR, 2.24 REAR ENGINE MOUNT/ISOLATOR, 2.22 STABILIZER LINKS	

Table 1-5. Lubricants, Greases, Sealants

ITEM	PART NUMBER	PACKAGE
Anti-Seize Lubricant	98960-97	1 oz squeeze tube
CCI #20 Brake Grease	42830-05 (included in master cylinder rebuild kit)	squeeze packet
D.O.T. 4 Brake Fluid	99953-99A	12 oz. bottle
Electrical Contact Lubricant	99861-02	1 oz squeeze tube
Genuine Harley-Davidson Formula+ Transmission and Primary Chaincase Lubricant	99851-05	1 qt bottle
G40M Brake Grease	42820-04	squeeze packet
Gray High Performance Sealant	99650-02	1.9 oz squeeze tube
HYLOMAR Gasket and Thread Sealant	99653-85	3.5 oz tube
Loctite Pipe Sealant With Teflon 565	99818-97	6 ml squeeze tube
Loctite Prism Primer (770)		
Loctite Prism Superbonder (411)		
Loctite Superbonder 420 Adhesive		
Loctite Threadlocker 243 (blue)	99642-97	6 ml squeeze tube
Loctite Threadlocker 262 (red)	94759-99	6 ml squeeze tube
Loctite Threadlocker 272	98618-03	10 ml bottle
Special Purpose Grease	99857-97	14 oz. cartridge
Super Oil	94968-85TV	1/4 fl. oz
Type "E" Hydraulic Fork Oil	99884-80	16 oz bottle

BULB CHART

Table 1-6. Bulb Chart: 2008 Sportster Models

LAMP	DESCRIPTION (ALL LAMPS 12 VOLT)	BULBS REQUIRED	CURRENT DRAW (AMPERAGE)	HARLEY-DAVIDSON PART NUMBER
Headlamp	high beam/low beam	1	4.58/5.0	68329-03
	position lamp international	1	0.32	53438-92
Tail and stop lamps	tail lamp	1	0.59	68167-04
	stop lamp	1	2.10	68167-04
	tail lamp international	1	0.59	68167-04
	stop lamp international	1	2.10	68167-04
Turn signal lamp	front/running	2	2.25/0.59	68168-89A
	front international	2	1.75	68163-84
	rear	2	2.25	68572-64B*
	rear international	2	1.75	68163-84
Instrument panel	Illuminated with LEDs. Replace entire assembly upon failure.			
*Functions as turn signals, tail lamps and brake lamps on 1200N model.				

CHECKING AND ADDING OIL

Check engine oil level in oil tank and add oil if necessary. Oil tank capacity (wet) is 2.8 quarts (2.65 liters). Refer to Table 1-2 for recommended engine oil viscosity.

CAUTION

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

Removing and Replacing Oil Filler Cap

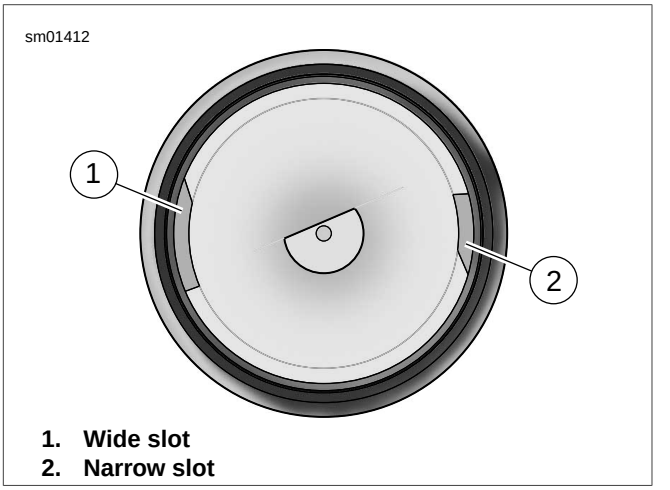
1. See Figure 1-1. Position motorcycle so that it is leaning on jiffy stand on level ground. Remove filler cap from oil tank on right side of vehicle.
   a. Press straight down on filler cap and release. Cap will pop up.
   b. Pull up on filler cap while turning counterclockwise one-quarter turn as if unscrewing filler cap.
2. Wipe attached dipstick clean.

NOTE

See Figure 1-2. Note that dipstick has a wide slot (1) and a narrow slot (2) and can only be inserted in oil tank one way.

3. Insert dipstick into tank. Turn filler cap clockwise one-quarter turn as if screwing filler cap into tank. When filler cap stops turning, it is fully seated. Press down on filler cap until it snaps in place, flush with top of oil tank cover.

Figure 1-1. Filler Cap/Dipstick Location



1. **Wide slot**
2. **Narrow slot**

Figure 1-2. Filler Cap/Dipstick

Checking Oil with Cold Engine

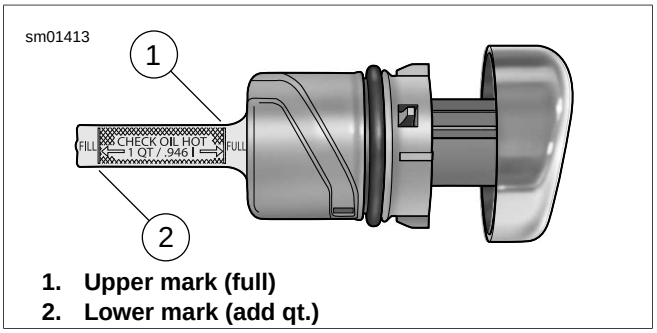
1. Position motorcycle so that it is leaning on jiffy stand on level ground.
2. Remove filler cap. See Removing and Replacing Oil Filler Cap above. Wipe attached dipstick clean. Reinstall oil filler cap in tank.
3. Remove oil filler cap again and check oil level on dipstick. See Figure 1-3. Dipstick has two marks. If oil level is at or below lower mark (2), add only enough oil to bring the level to a point between the two arrows on the dipstick. Replace filler cap.

Checking Oil with Warm Engine

1. Run engine until engine oil is at normal operating temperature. Turn engine off.
2. Position motorcycle so that it is leaning on jiffy stand on level ground.
3. Remove filler cap. See Removing and Replacing Oil Filler Cap above. Wipe attached dipstick clean. Reinstall oil filler cap in tank.
4. Remove filler cap again and check warm oil level on dipstick. See Figure 1-3. Dipstick has two marks. If oil level in tank is at or below lower mark, add 1.0 quart (0.946 liter) of Harley-Davidson oil to tank. Replace filler cap.
5. If you added oil in step 4, remove filler cap and verify correct engine oil level in oil tank. Do not fill oil tank to a level above upper mark on dipstick. Replace filler cap.

CAUTION

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



1. **Upper mark (full)**
2. **Lower mark (add qt.)**

Figure 1-3. Oil Level Marks on Dipstick

CHANGING OIL AND FILTER

PART NUMBER	TOOL NAME
HD-42311 OR HD-44067-A	HARLEY-DAVIDSON OIL FILTER WRENCH

General

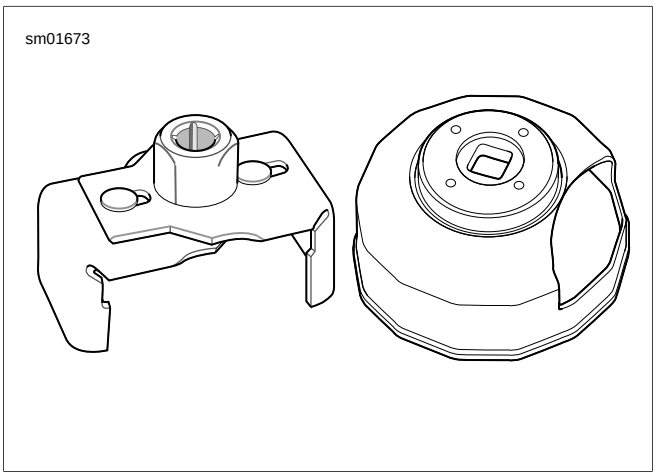


Figure 1-4. Oil Filter Wrenches

Completely drain oil tank of used oil at scheduled service intervals as specified in 1.3 MAINTENANCE SCHEDULE. Refer to Table 1-3. Refill with fresh oil.

NOTES

- *If vehicle is driven extremely hard, used in competition, or driven on dusty roads, change engine oil at shorter intervals.*
- *Always change oil filter when changing engine oil.*

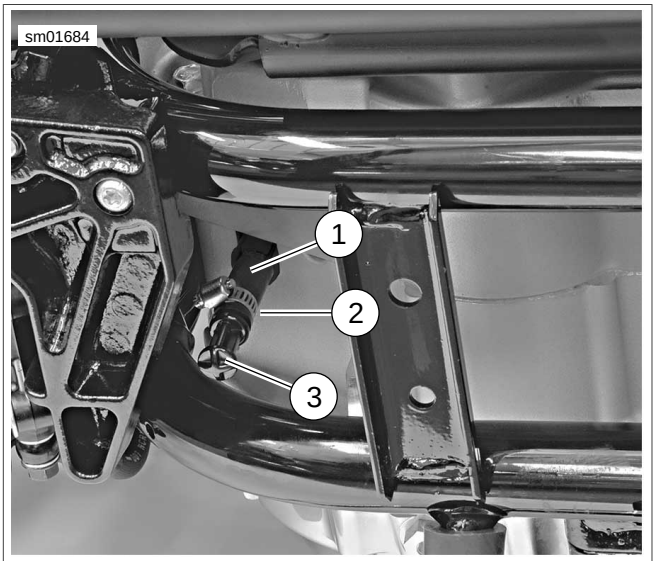
Draining Oil Tank

1. Run engine until engine oil has reached normal operating temperature.

NOTE

Oil will drain more quickly if filler cap/dipstick is removed from oil tank.

2. Remove oil filler cap/dipstick from oil tank.
3. See Figure 1-5. Place a suitable container directly under the drain hose (1) at the bottom rear of the engine crankcase. The container must be able to hold approximately 4.0 quarts (3.8 liters).
4. Loosen worm drive clamp (2) and pull drain plug (3) from end of drain hose. Completely drain engine oil from oil tank. It is not necessary to drain engine crankcase.
5. Replace drain plug into end of drain hose and tighten worm drive clamp securely.



1. **Oil tank drain hose**
2. **Worm drive clamp**
3. **Drain plug**

Figure 1-5. Oil Tank Drain Hose

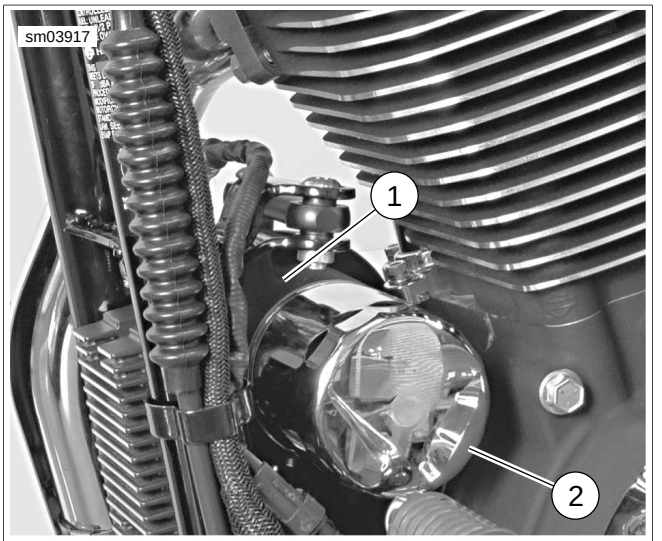
Removing Oil Filter

1. Place a drain pan beneath front of engine crankcase.

CAUTION

Use Harley-Davidson OIL FILTER WRENCH for filter removal. This tool can prevent damage to crankshaft position sensor and/or sensor cable. (00192a)

2. See Figure 1-4. See Figure 1-6. Remove oil filter using HARLEY-DAVIDSON OIL FILTER WRENCH (Part No. HD-42311 or HD-44067-A). Turn oil filter counterclockwise to remove from filter mount.
3. Drain oil filter into drain pan. Discard oil filter.
4. Clean any oil spills off crankcase and frame.



1. **Oil filter mount**
2. **Oil filter**

Figure 1-6. Oil Filter: All Models (XL 1200C Shown)

Installing New Oil Filter

NOTE

Partially fill oil filter before installation to minimize the time required for buildup of oil pressure when engine is first started.

1. Pour about 4 fluid ounces (120 ml) of fresh, clean engine oil into **new** oil filter. Allow time for oil to soak into filter element.
2. Wipe filter gasket contact surface of oil filter mount with a clean cloth.
3. See Figure 1-7. Coat oil filter gasket with clean Harley-Davidson 20W-50 engine oil.

NOTE

Do not use oil filter wrench to install new oil filter.

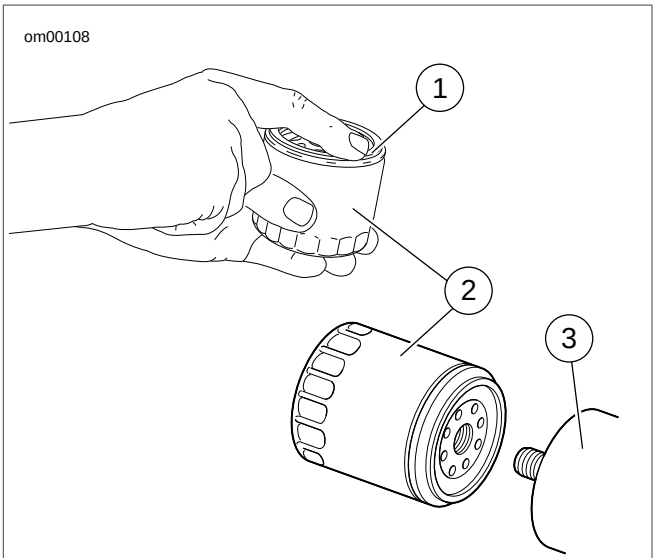
4. Install **new** oil filter. Turn filter clockwise to install. Hand tighten filter 1/2 to 3/4-turn after gasket contacts filter mount surface.

Refilling Oil Tank

CAUTION

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

1. Refer to Table 1-2. Always use the proper grade of oil for the lowest expected air temperature before the next regularly scheduled oil change. Pour 2.0 quarts (1.9 liters) of oil into engine oil tank.



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

Figure 1-7. Applying Thin Oil Film

CAUTION

Loosen clamp and pull plug from end of oil tank drain hose. Allow a small amount of oil to flow from hose before reinstalling drain plug. This removes air from the drain hose and reduces the possibility of oil pump cavitation. (00560b)

2. Install filler cap onto oil tank as described on previous page. Make sure cap is fully seated.
3. Start engine. See Figure 1-8. Verify that oil pressure signal lamp turns off when engine speed is 1000 RPM or above. Turn engine off.
4. Check for oil leaks at oil filter and oil tank drain hose. Check engine oil level. See 1.5 ENGINE OIL AND FILTER, Checking and Adding Oil earlier in this section.

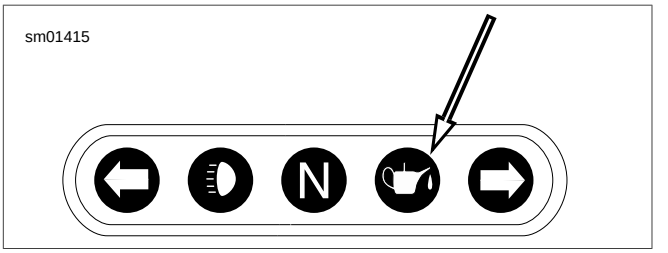


Figure 1-8. Oil Pressure Indicator Lamp

GENERAL

The front and rear brakes are fully hydraulic disc brake systems that require little maintenance. The front brake master cylinder is an integral part of the brake hand lever assembly on the right handlebar. The rear brake master cylinder is located at the rear of the motorcycle's frame, beneath the rear fork pivot point and is actuated by the rear brake pedal via mechanical linkage.

⚠WARNING

Use denatured alcohol to clean brake system components. Do not use mineral-based solvents (such as gasoline or paint thinner), which will deteriorate rubber parts even after assembly. Deterioration of these components can cause brake failure, which could result in death or serious injury. (00291a)

⚠CAUTION

Direct contact of D.O.T. 4 brake fluid with eyes can cause irritation. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 4 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. KEEP OUT OF REACH OF CHILDREN. (00240a)

CAUTION

D.O.T. 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. (00239b)

NOTES

- *If D.O.T. 4 brake fluid contacts painted surfaces, IMMEDIATELY flush area with clear water.*
- *Cover handlebar switches with a shop towel before adding brake fluid to front master cylinder reservoir. Spilling brake fluid on handlebar switches may render them inoperative.*

⚠WARNING

After repairing the brake system, test brakes at low speed. If brakes are not operating properly, testing at high speeds can cause loss of control, which could result in death or serious injury. (00289a)

INSPECTION

Check the master cylinder reservoirs for proper fluid levels. With the reservoir in a level position, add HARLEY-DAVIDSON D.O.T. 4 BRAKE FLUID from a sealed container until the fluid level is within approximately 1/4-inch (6.35 mm) below the top edge of the reservoir (front brake) or reaches the upper fluid level in the reservoir (rear brake).

Do not overfill the reservoir. See 1.7 BLEEDING HYDRAULIC BRAKE SYSTEM for procedures related to filling reservoirs.

Check brake pads and discs for wear. Replace brake pads if friction material is worn to 0.04 in. (1.02 mm) or less. Minimum brake disc thickness is stamped on side of disc. Replace any brake disc that is worn beyond this limit. Maximum brake rotor lateral runout and warpage is 0.008 in. (0.2 mm) when measured near the outside diameter.

- For disc replacement procedures, see 2.3 WHEELS.
- For brake master cylinder service, see 2.9 FRONT BRAKE MASTER CYLINDER or 2.11 REAR BRAKE MASTER CYLINDER.
- For brake caliper service, see 2.10 FRONT BRAKE CALIPER or 2.13 REAR BRAKE CALIPER.
- For brake line replacement procedures, see 2.14 BRAKE LINES.

TROUBLESHOOTING

Use the following troubleshooting guide to help in determining probable causes of poor brake operation.

Table 1-7. Troubleshooting Brakes

CONDITION	CHECK FOR	REMEDY
Excessive lever or pedal travel or spongy feel.	• Air in system. • Master cylinder reservoir low on fluid.	• Bleed brake system. • Fill master cylinder reservoir with approved brake fluid. Bleed brake system.
Chattering sound when brake is applied.	• Worn brake pads. • Loose mounting bolts. • Warped brake disc.	• Replace brake pads. • Tighten bolts. • Replace brake disc.
Ineffective brake - lever or pedal travels to limit.	• Low fluid level. • Piston cup not functioning.	• Fill master cylinder reservoir with approved brake fluid, and bleed brake system. • Rebuild master cylinder.
Ineffective brake - lever or pedal travel normal.	• Distorted or glazed brake disc. • Distorted, glazed or contaminated brake pads.	• Replace brake disc. • Replace brake pads.
Brake pads drag on disc - will not retract.	• Cup in master cylinder not uncovering relief port.	• Inspect master cylinder.

GENERAL

Bleed the hydraulic brake system any time a hydraulic brake line, brake master cylinder or brake caliper has been opened, or whenever brake lever/pedal operation feels "spongy." Bleeding evacuates air from the system leaving only incompressible hydraulic fluid.

⚠CAUTION

Direct contact of D.O.T. 4 brake fluid with eyes can cause irritation. Avoid eye contact. In case of eye contact flush with large amounts of water and get medical attention. Swallowing large amounts of D.O.T. 4 brake fluid can cause digestive discomfort. If swallowed, obtain medical attention. Use in well ventilated area. KEEP OUT OF REACH OF CHILDREN. (00240a)

NOTE

Hydraulic brake fluid bladder-type pressure equipment can be used to fill brake master cylinders through the bleeder valve. Remove master cylinder reservoir cover so that system cannot pressurize. Do not use pressure bleeding equipment when the hydraulic system is sealed with master cylinder reservoir cover and diaphragm in place.

BLEEDING FRONT BRAKE

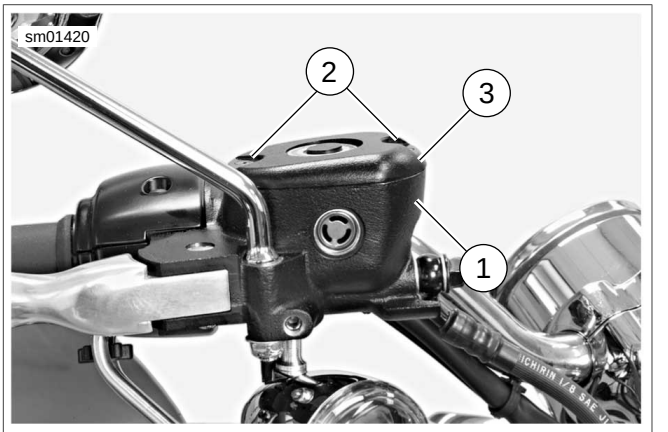
CAUTION

D.O.T. 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. (00239b)

NOTES

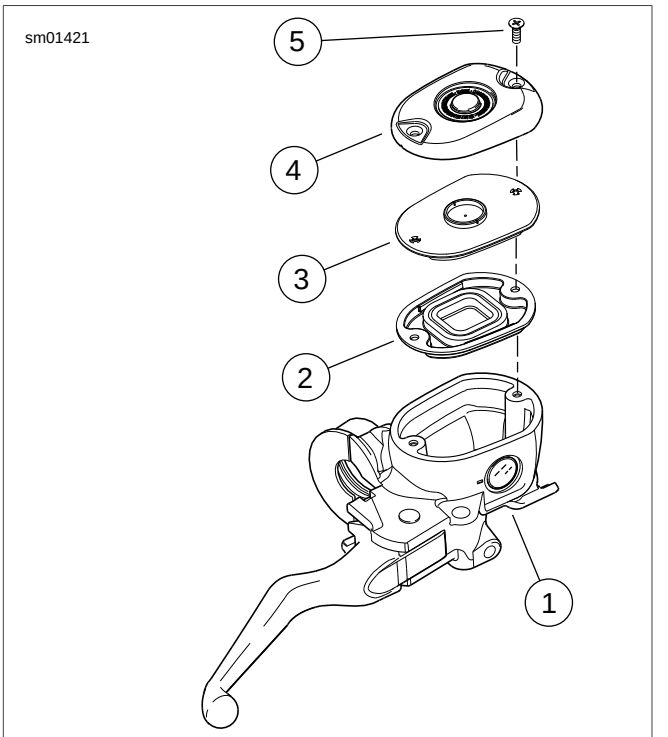
- *If D.O.T. 4 brake fluid contacts painted surfaces, IMMEDIATELY flush area with clear water.*
- *Cover handlebar switches with a shop towel before adding brake fluid to front master cylinder reservoir. Spilling brake fluid on handlebar switches may render them inoperative.*

1. See Figure 1-9. Position motorcycle so that top of front master cylinder reservoir (1) is level.
2. See Figure 1-10. Remove reservoir cover (4) with two captive screws (5), diaphragm plate (3) and diaphragm (2) from master cylinder reservoir (1).



1. **Front brake master cylinder and reservoir**
2. **Cover screw (2)**
3. **Top cover**

Figure 1-9. Front Brake Master Cylinder Reservoir



1. **Front brake master cylinder assembly**
2. **Diaphragm**
3. **Diaphragm plate**
4. **Reservoir cover**
5. **Captive screw (2)**

Figure 1-10. Front Brake Master Cylinder Cover Assembly

NOTES

- *See Figure 1-11. Do not use sight glass (2) to determine maximum fluid level. Sight glass should only be used as a visual indicator that fluid level is low and needs attention.*

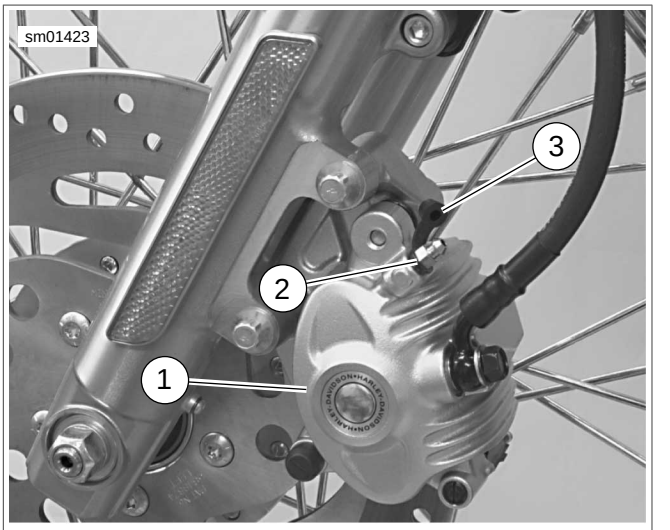
A ridge (1) is cast into the inside of the reservoir to assist you in determining the correct level.

- *Use only HARLEY-DAVIDSON D.O.T. 4 BRAKE FLUID from a sealed container.*
- *Do not overfill reservoir. Do not reuse old brake fluid.*

1. **Cast-in ridge**
2. **Sight glass**

Figure 1-11. Filling Front Master Cylinder Reservoir

3. See Figure 1-11. Add enough HARLEY-DAVIDSON D.O.T. 4 BRAKE FLUID to reservoir to bring fluid level even with ridge (1) cast into inside of reservoir, about 1/4-in. (6.35 mm) below top edge.
4. See Figure 1-12. Remove bleeder cap (3) from bleeder valve (2) on front caliper (1).
5. See Figure 1-13. Install end of a length of 5/16 in. (7.9 mm) I.D. clear plastic tubing over caliper bleeder valve. Place free end of tube in a clean container.
6. Squeeze and hold brake lever to build up hydraulic pressure. See Figure 1-12. Open bleeder valve (2) about 1/2-turn. Brake fluid will flow from bleeder valve through tubing. Observe fluid flowing through tubing. Check for air bubbles.
7. Close bleeder valve when brake lever has moved 1/2 to 3/4 of its full range of travel. Allow brake lever to return slowly to its released position.
8. Repeat two previous steps until all air bubbles are purged from system.
9. Final tighten bleeder valve to 35-61 **in-lbs** (4.0-6.9 Nm). Remove plastic tubing and install bleeder cap (3).
10. See Figure 1-11. Add enough HARLEY-DAVIDSON D.O.T. 4 BRAKE FLUID to reservoir to bring fluid level even with ridge cast into inside of reservoir, about 1/4-in. (6.35 mm) below top edge.



1. **Front brake caliper**
2. **Bleeder valve**
3. **Bleeder cap**

Figure 1-12. Front Brake Caliper

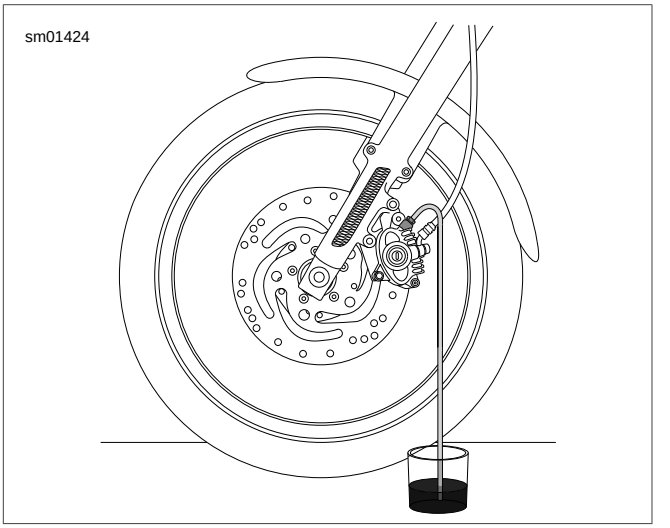


Figure 1-13. Bleeding Hydraulic System

11. If bleeding vehicle equipped with dual front disc brake system, repeat this procedure for other caliper.
12. See Figure 1-10. Replace diaphragm (2), diaphragm plate (3) and reservoir cover (4) with captive screws (5). Tighten to 9-17 **in-lbs** (1.0-2.0 Nm).

⚠WARNING

After repairing the brake system, test brakes at low speed. If brakes are not operating properly, testing at high speeds can cause loss of control, which could result in death or serious injury. (00289a)

13. Test ride motorcycle at low speed. Repeat the above bleeding procedure if front brake feels spongy.

BLEEDING REAR BRAKE

CAUTION

D.O.T. 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. (00239b)

NOTES

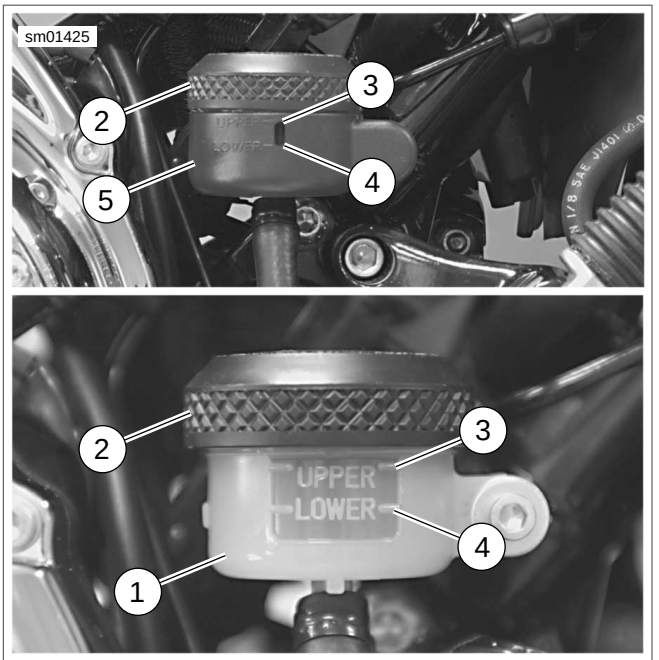
- *If D.O.T. 4 brake fluid contacts painted surfaces, IMMEDIATELY flush area with clear water.*
- *See Figure 1-14. Vehicle must be upright so that rear brake master cylinder reservoir (1) is in a level position when filling and checking fluid level.*
- *Reservoir cover (5) may be removed from rear brake master cylinder reservoir to more easily verify fluid level in reservoir.*
- *Use only HARLEY-DAVIDSON D.O.T. 4 BRAKE FLUID from a sealed container.*
- *Do not overfill reservoir. Do not reuse old brake fluid.*

1. Position motorcycle upright (not resting on jiffy stand). See Figure 1-14. Unscrew and remove reservoir cap (2).
2. If desired, remove reservoir cover (5) by grasping cover and gently pull straight out from reservoir (1).
3. Add HARLEY-DAVIDSON D.O.T. 4 BRAKE FLUID to master cylinder reservoir (1) until the fluid reaches the upper fluid level (3).
4. See Figure 1-15. Remove bleeder cap (3). Install end of a length of 5/16 in. (7.9 mm) I.D. clear plastic tubing over caliper bleeder valve (2). Place free end of tube in a clean container.
5. Depress and hold brake pedal to build up hydraulic pressure. Open bleeder valve about 1/2-turn. Brake fluid will flow from bleeder valve through tubing. Observe fluid flowing through tubing. Check for air bubbles.
6. Close bleeder valve when brake pedal has moved 1/2 to 3/4 of its full range of travel. Allow brake pedal to return slowly to its released position.
7. Repeat two previous steps until all air bubbles are purged.
8. Final tighten bleeder valve to 35-61 **in-lbs** (4.0-6.9 Nm). Remove plastic tubing and install bleeder cap.
9. See Figure 1-14. Add HARLEY-DAVIDSON D.O.T. 4 BRAKE FLUID to master cylinder reservoir (1) until the fluid reaches the upper fluid level (3).
10. Replace reservoir cap (2). Replace reservoir cover (5) if removed.

WARNING

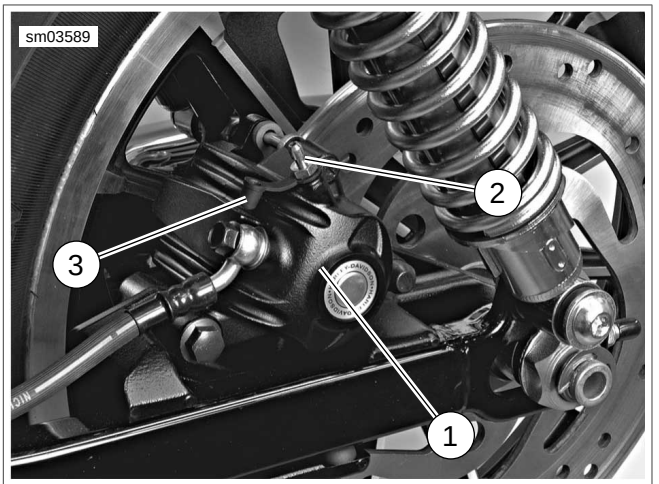
After repairing the brake system, test brakes at low speed. If brakes are not operating properly, testing at high speeds can cause loss of control, which could result in death or serious injury. (00289a)

11. Test ride motorcycle at low speed. Repeat the above bleeding procedure if rear brake feels spongy.



1. **Rear brake master cylinder reservoir**
2. **Reservoir cap**
3. **Upper fluid level**
4. **Lower fluid level**
5. **Reservoir cover**

Figure 1-14. Rear Brake Master Cylinder Reservoir



1. **Rear brake caliper**
2. **Bleeder valve**
3. **Bleeder cap**

Figure 1-15. Rear Brake Caliper

TIRES

WARNING

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

WARNING

Use only Harley-Davidson approved tires. See a Harley-Davidson dealer. Using non-approved tires can adversely affect stability, which could result in death or serious injury. (00024a)

WARNING

Use inner tubes on laced (wire spoked) wheels. Using tubeless tires on laced wheels can cause air leaks, which could result in death or serious injury. (00025a)

NOTES

- *Inner tubes must not be used in radial tires and radial tires must not be used on laced (wire spoked) wheels.*
- *Tubeless tires are used on all Harley-Davidson cast and disc wheels.*
- *Tire sizes are molded on the tire sidewall. See Table 1-8. Inner tube sizes are printed on the tube.*
- *New tires should be stored on a horizontal tire rack. Avoid stacking new tires in a vertical stack. The weight of the stack compresses the tires and closes down the beads.*

Check tire pressure and tread:

- As part of the pre-ride inspection.
- At every scheduled service interval.

1. Inspect each tire for punctures, cuts and breaks.
2. Inspect each tire for wear. Replace tires before they reach the tread wear indicator bars.

NOTE

Missing indicator wear bars represent less than 1/32 in. (0.8 mm) tread pattern depth remaining.

3. Check for proper front and rear tire pressures when tires are cold. Compare results against Table 1-9.

Table 1-8. Tire Sizes: 2008 Sportster Models

MODEL	MOUNT	SIZE	NUMBER
XL 883, XL 883R, XL 883L, XL 1200R, XL 1200L, XL 1200N	front	19 in.	D401F 100/90-19
XL 883C, XL 1200C	front	21 in.	D402F MH90-21
All	rear	16 in.	D401 150/80B16
2008 vehicles use Dunlop Harley-Davidson tires only.			

Table 1-9. Tire Pressures: 2008 Sportster Models

MODEL	LOAD	TIRE PRESSURE (COLD)			
		FRONT		REAR	
		PSI	kPa	PSI	kPa
All	solo rider	30	206	36	248
	rider and passenger	30	206	40	275