



AMF

# Harley-Davidson

**1979 Owner's Manual  
XLH/XLCH/XLS-1000**



### **IMPORTANT NOTICE**

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.

To protect your warranty and to retain the safety, dependability and emission control performance originally built into your Harley-Davidson, the operating procedures, specifications and service instructions in this manual must be followed.

Any substitution, alteration or adjustment of emission system components outside of factory specifications may be prohibited by law.

It is recommended that any emission system maintenance be performed by an authorized Harley-Davidson Dealer using genuine Harley-Davidson replacement parts.

THE MAINTENANCE, REPLACEMENT OR REPAIR OF THE EMISSION CONTROL SYSTEM MAY BE PERFORMED BY ANY OTHER QUALIFIED SERVICE OUTLET OR INDIVIDUAL. NON-GENUINE PARTS MAY BE USED PROVIDING SUCH PARTS ARE CERTIFIED TO COMPLY WITH U.S. ENVIRONMENTAL PROTECTION AGENCY STANDARDS.

**AMF Harley-Davidson Motor Co., Inc.**



## YOUR OWNER'S MANUAL

Welcome to the Harley-Davidson Motorcycling Family! Your new Harley-Davidson Motorcycle is designed and manufactured to be the finest in its field. 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 pleasure.

Your Owner's Manual contains instructions for owner care, maintenance and repairs. Information covering major repairs is provided in the Harley-Davidson Service Manual. Such major repairs require the attention of a skilled mechanic 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.

*Harley-Davidson Motor Co., Inc.*

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## SAFE OPERATING RULES

Before operating your new motorcycle it is your responsibility to read and follow operating and maintenance instructions in this manual, and follow these basic rules:

- Know and respect the Rules of the Road (see "RULES OF THE ROAD"). Also read and observe the "MOTORCYCLE SAFETY" booklet that comes with this Owner's Manual.
- Use only Harley-Davidson approved parts and accessories.
- Gasoline is extremely flammable and is explosive under certain conditions. Refuel in a well ventilated area with the engine stopped. Do not smoke or allow open flames or sparks when refueling or servicing the fuel system. Always close the fuel supply valve when the engine is not running to prevent flooding of the carburetor. Do not overfill fuel tank. Leave at least one inch air space to allow for fuel expansion.
- Motorcycle exhaust contains poisonous carbon monoxide gas. Do not inhale exhaust gases and never run the engine in a closed garage or confined area.
- Before starting engine, check for proper operation of brake, clutch, shifting, throttle controls, correct fuel and oil supply. (See "CONTROLS" and "RIDING.")

- A new motorcycle must be operated according to special break-in procedure. (See "The First 500 Miles" in "RIDING" section.)
- 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. If you are an inexperienced rider we recommend that you see your Harley-Davidson dealer for information and training in correct motorcycle riding technique.
- 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 the possibility of loss of control.
- Pay strict attention to road surfaces and wind conditions. Any two wheeled vehicle may be subject to upsetting forces. Wind blasts from passing trucks, holes in the pavement, rough road surfaces, rider control error, etc., may influence the handling characteristics of your motorcycle. Should this happen, reduce speed and guide the motorcycle with a relaxed grip to a straight-away position. Do not brake abruptly or force the handlebars as this may aggravate an unstable condition. New riders should gain experience under various conditions while driving at moderate speeds.



- Wear an approved helmet, clothing and footgear suited to motorcycle riding. Bright or light colors are best for greater visibility in traffic especially at night. Avoid loose flowing garments and scarves.
- The exhaust pipes and mufflers get very hot when the engine is running and remain too hot to touch for some time after the engine is shut off. Wear clothing that will completely cover the legs when riding and avoid contact with the unshielded portion of the exhaust system.
- Do not allow others under any circumstances to operate your motorcycle unless you are certain that they are experienced, licensed riders and are familiar with the operation of your particular motorcycle.
- When leaving motorcycle unattended, lock steering head, remove ignition key from switch. Protect your motorcycle against theft.
- Safe motorcycle operation requires mental awareness and good judgment combined with a defensive driving attitude. Don't allow fatigue, alcohol or drugs to endanger your safety or the safety of others.
- Maintain your motorcycle in proper operating condition in accordance with this "Owner's Manual" and the Service Schedule specified in the "Owner's Warranty and Maintenance" booklet. Particularly important to motorcycle stability is the tire inflation pressure, tread condition, and proper adjustment of wheel bearings and steering head bearings. Do not operate motorcycle with a loose, worn or damaged steering system or front or rear suspension system as handling will be adversely affected. Contact your dealer for repair of steering or suspension system wear or damage.
- Be sure all equipment required by federal, state, and local law is installed and in good operating condition.
- Maintain proper tire pressure and wheel and tire balance. Improper tire and wheel balance and abnormal tread wear can cause poor handling. Inspect your tires periodically. Look for excessive flat or pointed tread cross section. Replace only with approved tires. (See "Tires" in "SERVICE AND MAINTENANCE" section.)
- Do not exceed the Gross Vehicle Weight Rating of your motorcycle. Maximum allowable vehicle weights with rider and passenger are specified on the Identification Label affixed to your vehicle. Overloading, particularly at the rear of a motorcycle, can cause instability.
- Do not tow a trailer.
- Regularly inspect shock absorbers and front forks. Worn parts can affect stability. If you have questions as to how these should function, see your Harley-Davidson dealer.



Keep hazardous substances such as brake and battery fluids and cleaning compounds away from eyes and skin and out of mouth.

Consult your dealer regarding any questions you may have about your motorcycle. Should any abnormality whatever occur in the operation of your motorcycle, immediately contact your Harley-Davidson dealer for correction of the problem. Continued operation of a misperforming motorcycle most likely will aggravate an initial problem, cause repairs to be more costly, and perhaps affect your personal safety.

#### **IMPORTANT NOTICE!**

Statements in this manual preceded by the following words are of special significance:

**WARNING** — means there is the possibility of personal injury to yourself or others.

**CAUTION** — means there is the possibility of damage to the vehicle.

*Other information of particular importance has been placed in italic type.*

We recommend you take special notice of these items.

## **HARLEY-DAVIDSON OWNER'S IDENTIFICATION CARD**

A permanent Owner's Identification Card is issued to each Harley-Davidson new motorcycle owner when we receive the completed warranty registration form.

The Owner's Identification card is a permanent record showing proof of your ownership and gives all of the information necessary for you and your dealer to simplify and expedite service and obtain parts and accessories.

Keep this card in your possession, since it is required by your Harley-Davidson dealer for any warranty service performed on your motorcycle.

If you have any questions regarding service or warranty, we recommend that you contact your Harley-Davidson dealer for assistance.



## HARLEY-DAVIDSON OWNER'S "WARRANTY AND MAINTENANCE"

In addition to this Owner's Manual, a Warranty and Maintenance booklet is provided each new Harley-Davidson owner. The booklet contains your new motorcycle Warranty, and a number of tear-out service coupons.

The approved service and maintenance procedures on each coupon and the mileage intervals cover items which are the owner's responsibility to have taken care of. Starting with the 500 and 1250 mile maintenance intervals, all of the specified maintenance services must be performed to keep your warranty in force.

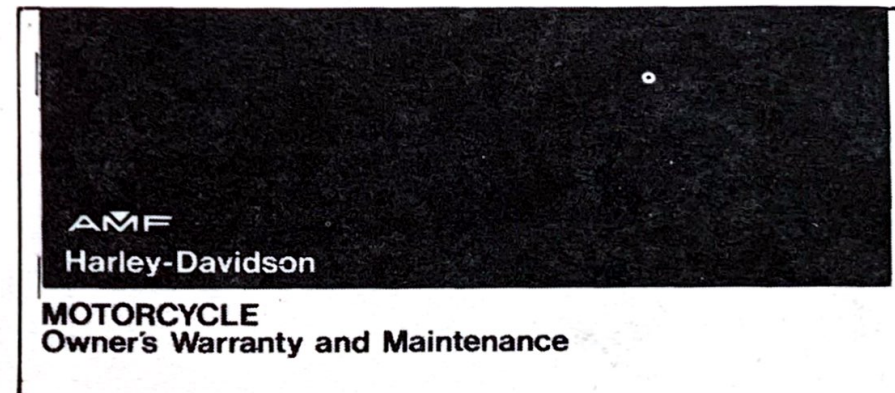
Bring the coupon booklet along when you visit your dealer at the specified mileages to have your motorcycle inspected and serviced. Have the service coupon stubs signed for required proof of service during the warranty period. The service coupons should be retained by the dealer or owner as a record of proper maintenance, also keep other receipts covering any service or maintenance performed. These records should be transferred to each subsequent owner.

Dealer charges for the recommended service procedures are nominal — you will be repaid with long, trouble-free service and will protect your investment in a quality Harley-Davidson product.

Tools for owner use, as recommended in this manual for service and minor repairs, are supplied in a tool kit which can be purchased from your Harley-Davidson dealer.

**WARNING — We caution you against the use of certain non-standard parts which may adversely affect performance and handling, and could cause an accident with possible injury to yourself or others. Also, the use of any non-standard parts including muffler may void your warranty according to terms of the warranty.**

*Harley-Davidson Dealers are independently owned and operated and may sell parts and accessories other than Harley-Davidson. Therefore, you should understand that we are 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 our dealers.*





# SPECIFICATIONS

## DIMENSIONS (Inches)

	XLH/XLCH	XLS
Wheel Base. . . . .	58.5	59.6
Overall Length . . . . .	88	89.6
Overall Width . . . . .	33.75	29.2
Road Clearance. . . . .	6.9	6.8
Overall Height. . . . .	46.5	42.5
Saddle Height. . . . .	29.25	30.0

## WEIGHT (Pounds)

DRY WEIGHTS (as shipped from the factory)	XLH	XLCH	XLS
	522	513	527
GVWR	960	960	960
GAWR — Front	340	340	340
GAWR — Rear	620	620	620

NOTE: Gross Vehicle Weight Rating (GVWR) (maximum allowable loaded vehicle weight) and corresponding Gross Axle Weight Ratings (GAWR) are given on a label located on the frame steering head.

## CAPACITIES

Fuel Tank — Total. . . . .	2.25 U.S. Gallons (approx.)
Reserve . . . . .	0.25 U.S. Gallons (approx.)
Oil Tank . . . . .	3 Quarts
Transmission . . . . .	1-1/2 Pints

## ENGINE

Model Designation Letters. . . . .	XLH, XLCH
Number of Cylinders . . . . .	2
Type. . . . .	4-Cycle, 45 Degree V-Type
Horsepower . . . . .	61 HP @ 6200 RPM
Bore . . . . .	3.188 in. (81 mm)
Stroke. . . . .	3.8125 in. (96.8 mm)
Piston Displacement. . . . .	60.9 cu. in. (997.5 cc)
Torque . . . . .	52 lb-ft @ 3800 RPM
Compression Ratio . . . . .	9.0 to 1



## SERIAL NUMBERS

The serial (V.I.N.) numbers of your Harley-Davidson are stamped on the right side of the engine crankcase, the right side of frame steering head and on a label located on the frame steering head. It consists of a model code, a serial number, a manufacturer's number and model year as shown in the table.

Model Model	First Two Digits (Model)	Next Five Digits (Sequential Number)	Second Last Digit (Manufacturer)	Last Digit (Model Season)
XLH XLCH XLS	3A 4A 4E	10,000 and up	H Harley-Davidson	9 1979

1979 XLH – 3A 13214 H9

Always give these numbers when ordering parts or making any inquiry about your motorcycle.

## IGNITION SYSTEM

Ignition Timer — Air Gap . . . . .	0.004 to 0.006 in.
Spark Plugs . . . . .	Harley-Davidson No. 4 (Standard) Harley-Davidson No. 4R (Resistor type)
Size . . . . .	14 mm
Gap . . . . .	0.038 to 0.043 in.
Spark Timing . . . . .	Retard $10^{\circ}$ (1/32 in.) B.T.C. Advance $40^{\circ}$ (17/32 in.) B.T.C.

## TRANSMISSION

Type. . . . . Constant Mesh, Foot Shift  
Speeds. . . . . 4 Forward

## NUMBER OF SPROCKET TEETH

Engine. . . . .	34	Transmission . . . . .	21
Clutch. . . . .	59	Rear Wheel. . . . .	51

## GEAR RATIOS

First (Low) Gear . . . .	10.63	Third Gear . . . . .	5.82
Second Gear . . . . .	7.70	Fourth (High) Gear .	4.22



## TIRE DATA

		Front MJ90-19	Rear MN90-18	Rear MT9-16T
Tire Pressure (PSI) (Cold)	Up to 300 lb. load including rider with passenger and cargo	24	30	26
	Up to gross GVWR* maximum load	26	32	28

\*Gross Vehicle Weight Rating (GVWR) is given on a label located on the frame steering head.

**WARNING** — Maximum pressure of these tires is 32 lbs.

## TIRE SIZES

**WARNING** — For your own personal safety, tires and tubes must be correctly matched to wheel rims. Tires and tubes listed below must be used exclusively for replacement. Mismatching tires, tubes and rims may result in damage to the tire bead during mounting or may allow the

tire to slip on the rim, damaging the tube, causing rapid tire deflation. In addition, using tires and tubes other than those specified may adversely affect motorcycle stability. Use only tube type tires on all Harley-Davidson cast and laced (wire spoke) wheels. Protective rubber rim strips must be used on laced wheels. Tire sizes are molded on the tire sidewall. Tube sizes are printed on the tube.

Front Wheel — 19 Inch, XLH/XLCH/XLS

Tire . . . . . Goodyear Eagle A/T MJ90-19  
Tube . . . . . Goodyear V18/19

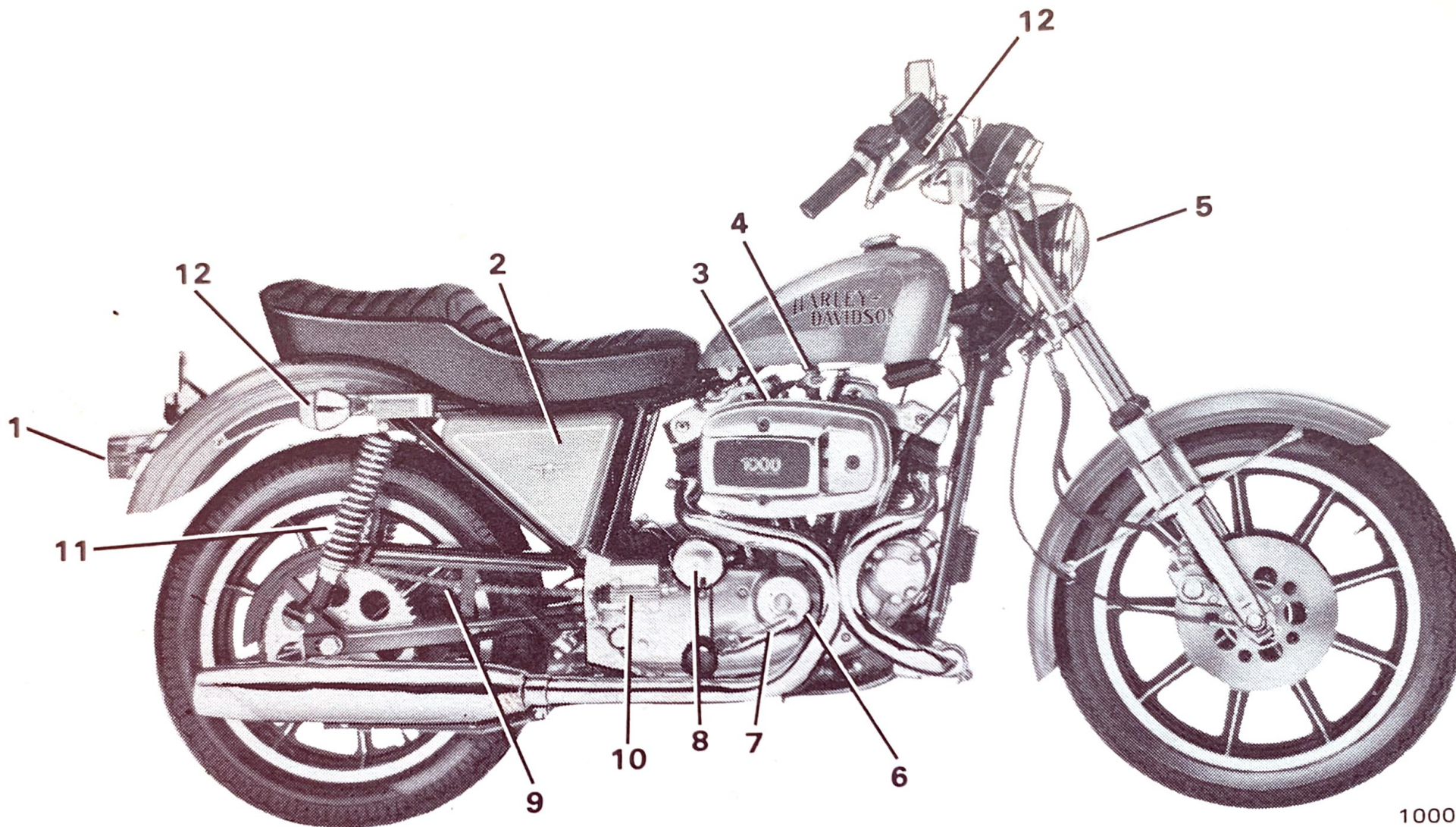
Rear Wheel — 18 Inch, XLH/XLCH

Tire . . . . . Goodyear Eagle A/T MN90-18  
Tube . . . . . Goodyear V18/19

Rear Wheel — 16 Inch, XLS

Tire . . . . . Goodyear Eagle A/T MT90-16T  
Tube . . . . . Goodyear G5.10-16





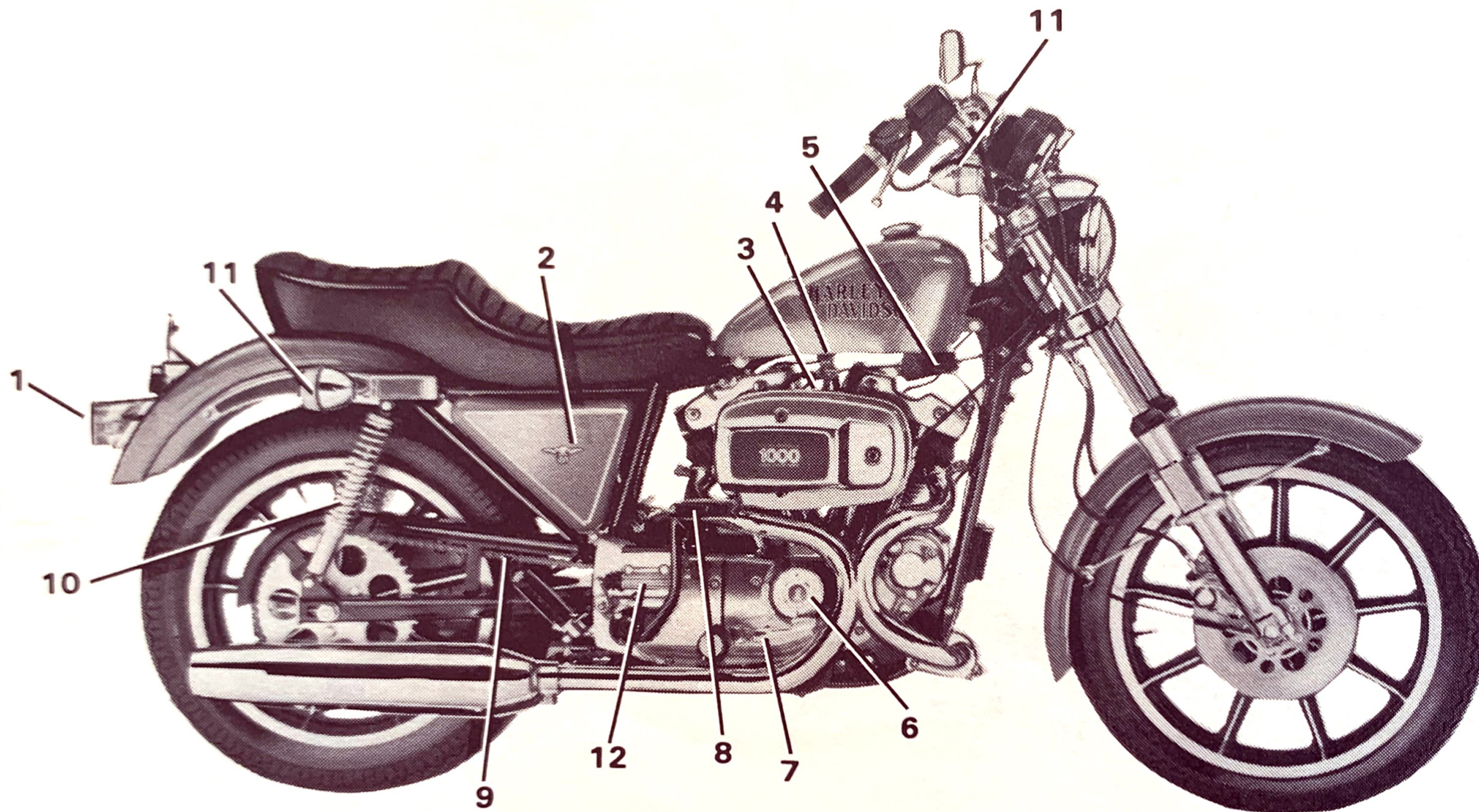
- 1. Tail/Stop Lamp
- 2. Battery and Oil Tank Cover
- 3. Carburetor Air Cleaner
- 4. Gasoline Supply Valve

- 5. Headlamp
- 6. Ignition Timer Cover
- 7. Rear Brake Pedal
- 8. Electric Starter

- 9. Drive Chain
- 10. Rear Brake Master Cylinder
- 11. Rear Shock Absorber
- 12. Turn Signal

FIGURE 1. RIGHT SIDE VIEW, MODEL XLH-1000





1001

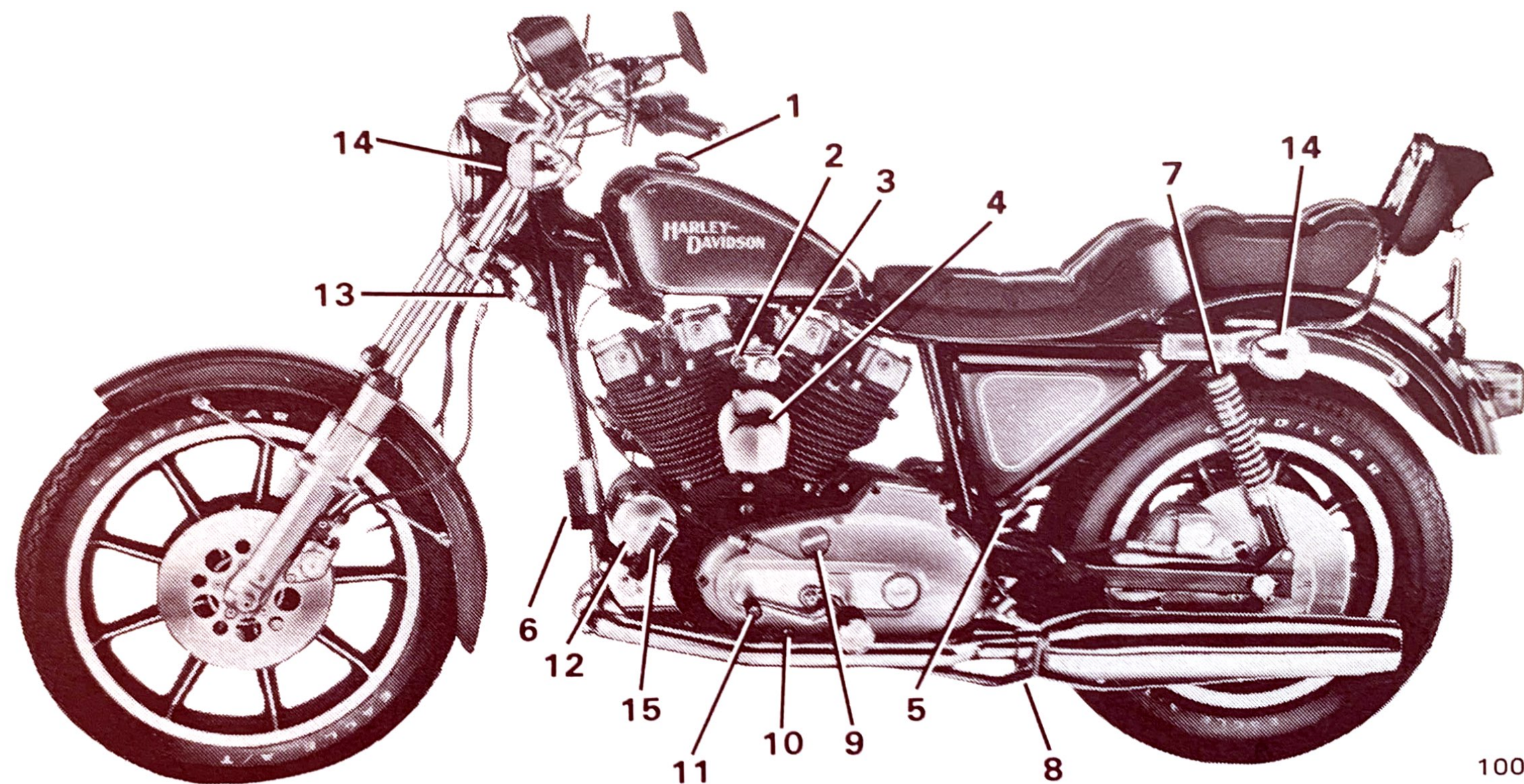
1. Tail/Stop Lamp
2. Battery and Oil Tank Cover
3. Carburetor Air Cleaner
4. Gasoline Supply Valve

5. Ignition Coil
6. Ignition Timer Cover
7. Rear Brake Pedal

8. Starter Crank Pedal
9. Drive Chain
10. Rear Shock Absorber
11. Turn Signal
12. Rear Brake Master Cylinder

FIGURE 2. RIGHT SIDE VIEW, MODEL XLCH-1000





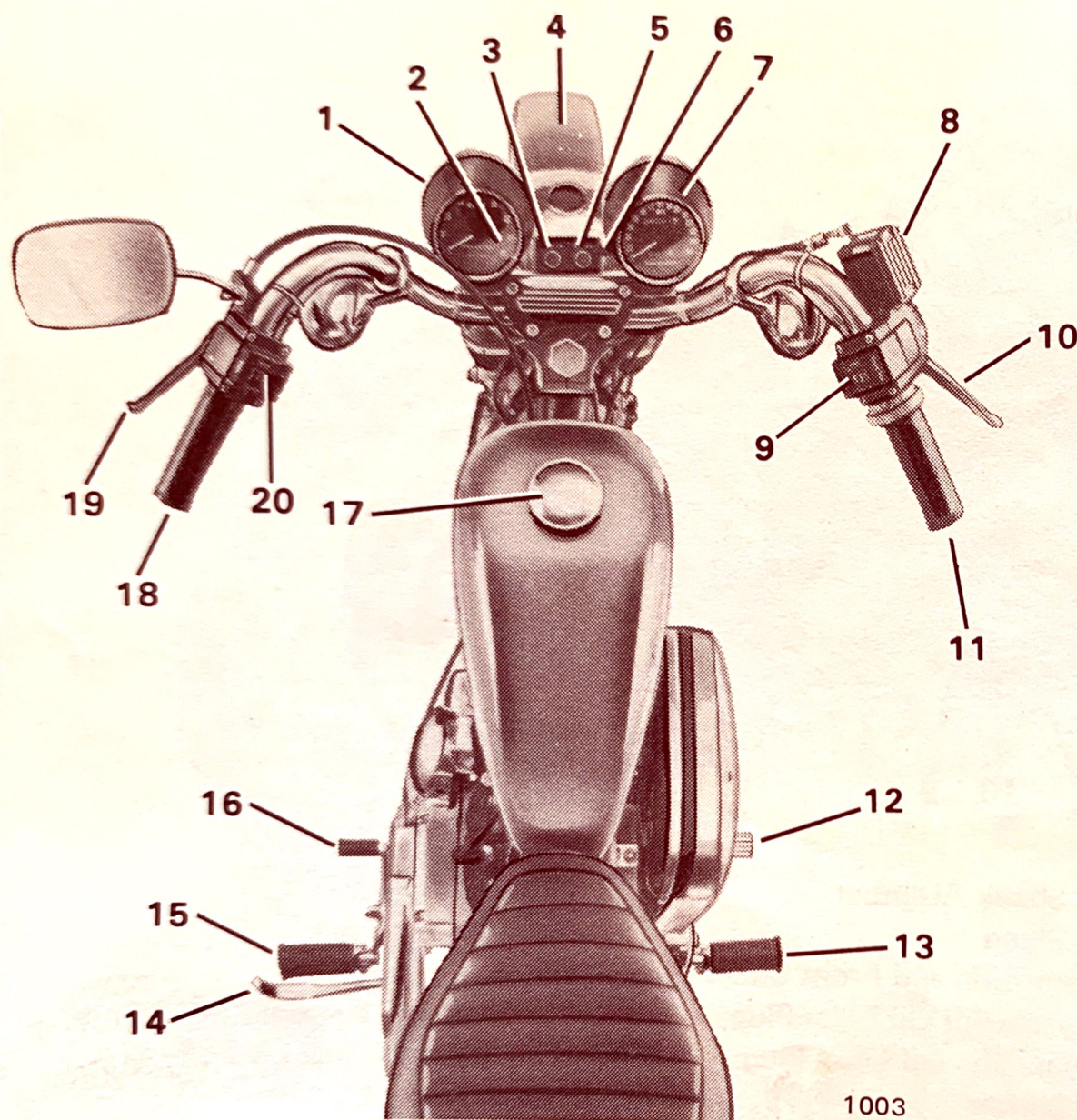
- 1. Gas Cap
- 2. Carburetor Choke Knob
- 3. Ignition-Light Switch
- 4. Horn
- 5. Oil Tank Drain Plug
- 6. Regulator

- 7. Rear Shock Absorber
- 8. Jiffy Stand
- 9. Transmission and Front Chain  
Compartment Oil Filler Plug
- 10. Transmission Oil Level Plug
- 11. Gear Shifter

- 12. Generator
- 13. Steering Lock
- 14. Turn Signal
- 15. Highway Footrest (XLS only)

FIGURE 3. LEFT SIDE VIEW, MODEL XLS-1000





1. Tachometer
2. High Beam Indicator Light
3. Generator Signal Light
4. Headlamp
5. Oil Pressure Light
6. Trip Odometer Reset Knob
7. Speedometer
8. Front Brake Master Cylinder
9. Right Handlebar Switch
10. Front Brake Hand Lever
11. Throttle Control Grip
12. Rear Brake Pedal
13. Right Side Foot Rest
14. Jiffy Stand
15. Left Side Footrest
16. Gear Shifter
17. Gas Tank Cap
18. Left Handlebar Grip
19. Clutch Hand Lever
20. Left Handlebar Switch

1003

FIGURE 4. TOP VIEW, MODEL XLH-1000



# CONTROLS

## Gasoline Supply Valve

The gasoline supply valve is located under the gas tank. Gasoline to carburetor is shut off when handle is in horizontal position. Turning the handle down to vertical position turns on main gasoline supply; turning handle up to vertical position turns on reserve supply.

**WARNING** — Valve should always be closed when engine is not running to ensure against accidentally flooding engine or surroundings with gasoline.

Use a good quality "Premium" grade leaded gasoline. If "Premium" grade is not available, "Regular" grade may be used temporarily.

**CAUTION** — Do not use unleaded gasoline grades such as "No-Lead."

*Do not operate the motorcycle with the valve in the "Reserve" position after refueling to always maintain reserve supply.*

**WARNING** — Do not overfill. Leave at least one inch air space to allow for fuel expansion. After refueling, make sure filler cap is securely tightened.

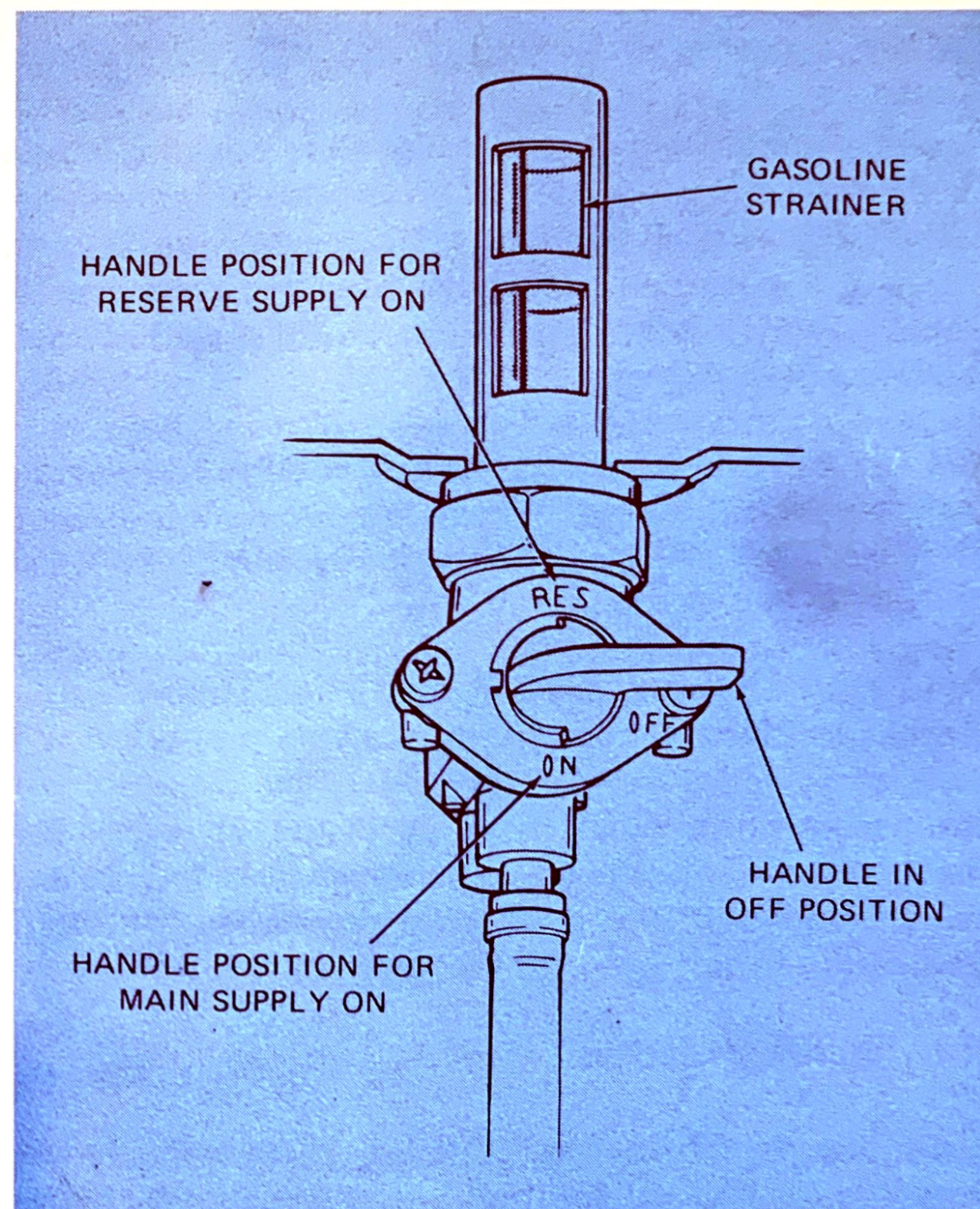


FIGURE 5. GASOLINE SUPPLY VALVE



## Ignition-Light Key Switch

Electrical circuits are controlled by a key operated switch (3, figure 3) located below seat on left side of motorcycle. From OFF vertical position, there are two positions to the right for ignition and lights. Both positions operate ignition and lights as required by law in some localities. See figure 6.

Key can be removed to lock switch in OFF position. To protect yourself, always remove key when motorcycle is left unattended. Make a record of key number so it can be replaced in case of loss.

## Headlamp Dimmer Switch and High Beam Indicator Light

The headlamp dimmer switch (1, figure 7) on the left handlebar controls the headlamp high and low beams. Indicator light (2, figure 4) remains lit when high beam is on.

## Turn Signal Switches

Right turn switch button (6, figure 7) on right handlebar operates the right front and right rear flashing lamps. Left turn switch button (2, figure 7) on left handlebar operates the left front and left rear flashing lamps.

## Horn

The horn (4, figure 3) is operated by the horn button (3, figure 7) on the left handlebar.

## Electric Starter — XLH/XLS

The starter button (4, figure 7) is located on the right handlebar. With ignition on, engine stop switch (5, figure 7) in run position and transmission in neutral, push button to operate starting motor.

## Kick Starter — Model XLCH

The starter crank pedal (8, figure 2) is located on the right side and has a spring return. When starting the

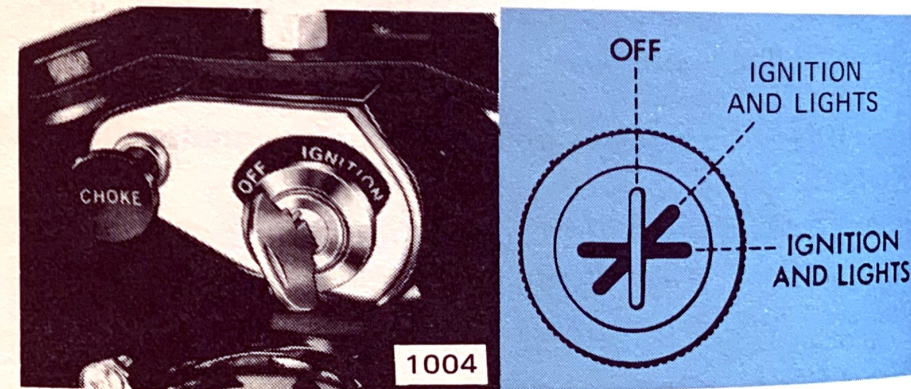


FIGURE 6. IGNITION-LIGHT SWITCH AND CHOKE



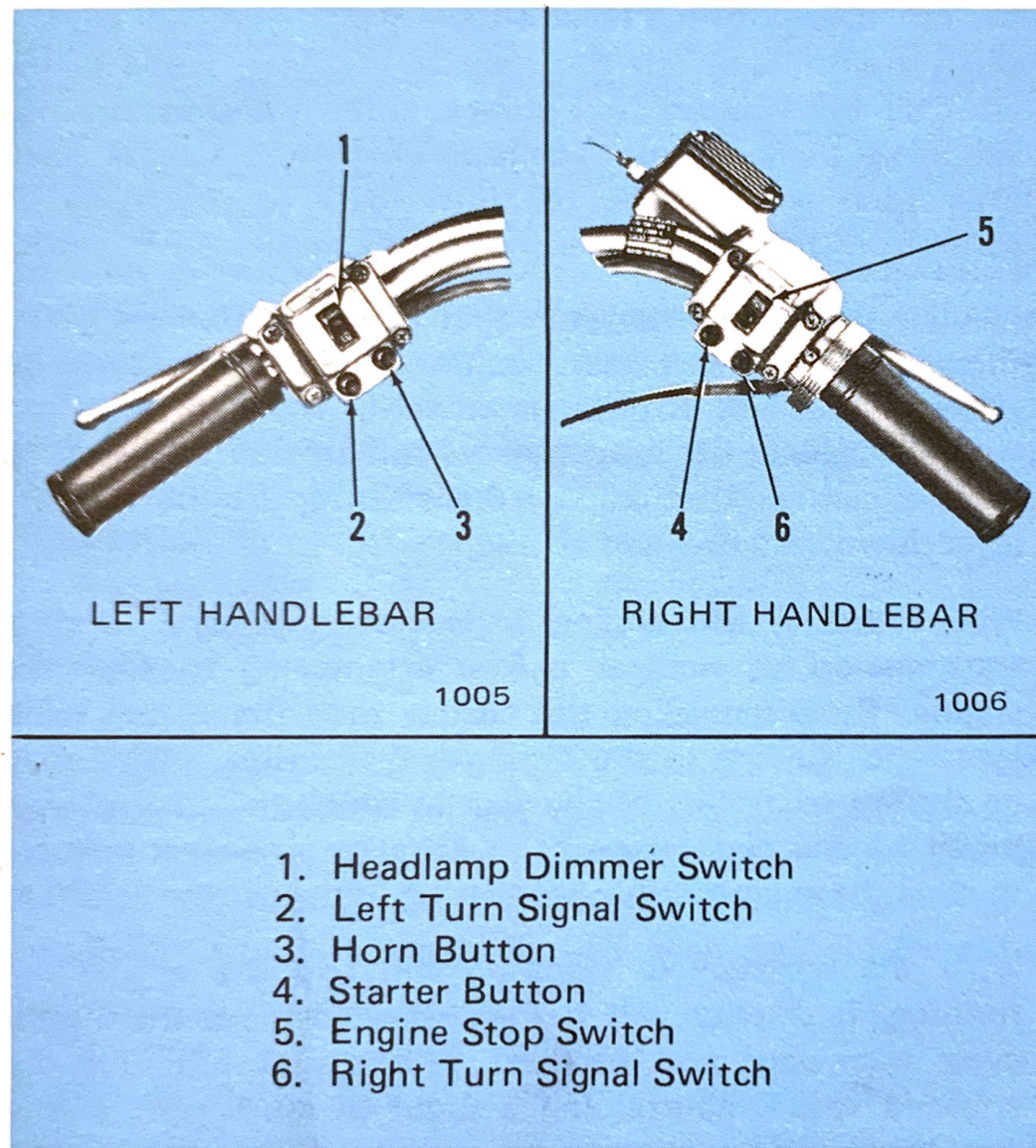


FIGURE 7. HANDLEBAR SWITCHES

engine, push the pedal down with full, vigorous strokes to turn the engine over. Also see "Kick Starter" in "RID-ING" section.

### Engine Stop Switch

Rocker switch (5, figure 7) on right handlebar turns ignition on or off and should be used to stop the engine in an emergency. To stop engine, push switch to position marked "OFF."

Be sure switch is in "RUN" position to operate engine.

### Choke

The carburetor choke control knob (2, figure 3) is located just under the gas tank on the left side of the motorcycle. Pull knob out to close choke; push knob in to open choke. The choke knob has four positions. As knob is pulled out to each position, the high idle cam progressively increases engine idle speed for proper engine operation.

### Throttle Control Grip

The throttle control grip (11, figure 4) is located on the right handlebar. Turn control grip outward (clockwise) to close throttle; turn control grip inward (counterclockwise) to open throttle.



A spring loaded friction adjusting screw is located at the bottom of the throttle grip clamp. Turn this knurled screw outward to provide a self-closing throttle, which should return to idle position when hand is removed from throttle grip. Turn the screw inward to increase friction on grip as desired to provide a damping effect on throttle motion and smoother speed change.

**WARNING** — The self-closing throttle feature can be eliminated by over-tightening the friction screw. Throttle must not be operated with friction screw over-tightened because of the possible hazard involved when the engine will not return to idle automatically in an emergency.

### Clutch Hand Lever

The clutch hand lever (19, figure 4) is located on the left handlebar where it may be operated easily with the fingers of the left hand. Pull lever in against handlebar grip to disengage clutch; release the lever slowly to its outward position to engage clutch.

**WARNING** — Before starting engine, always shift transmission to neutral or fully disengage clutch to prevent accidental start-up which could cause possible damage to motorcycle and personal injury.

### Gear Shifter

The gear shifter (16, figure 4) is located on left side, where it may be operated conveniently with the toe of

the left foot. Pushing lever all the way down (full stroke) shifts transmission to the next lower gear, while lifting lever all the way up (full stroke) shifts transmission into the next higher gear. The operator must release lever after each gear change to allow lever to return to its central position before another gear change can be made.

Neutral position is between first (low) and second gears. First gear is the last gear position that can be found by pushing lever full strokes downward. To shift from first gear to neutral, lift lever half its full stroke. The shift to neutral can also be made from second gear by pushing lever downward one-half stroke.

When starting the engine it is not necessary to shift transmission to neutral before attempting to start the engine. By disengaging the clutch with the clutch hand lever and holding in the disengaged position, engine may be started regardless of the gear in which the transmission might be engaged. However, it is better whenever possible to start the engine with transmission in the neutral position.

With the motorcycle standing still and the engine not running, it usually will be necessary to move the motorcycle backward and forward with the clutch fully disengaged while maintaining a slight pressure on the foot shift lever before a shift from one gear to another can be made. Even with the engine running and the motorcycle standing still, difficulty may be experienced in shifting



gears. This difficulty arises when transmission gears are not turning and shifting parts are not lined up to permit engagement. When this difficulty is experienced, do not under any circumstances, attempt to force the shift by "roughing" the shifter lever; the results of such abuse will be a damaged or broken shifter mechanism. Either roll the motorcycle as indicated above, or if the engine is running, engage the clutch very slightly at the same time applying light pressure to the shifter lever to make the shift. Both of these procedures set transmission gears in motion and then the shift can be made easily. See also "Operation," page 21.

## Brakes

The brake pedal (12, figure 4) controls the rear wheel brake and is located on the right side where it is operated by the right foot. The brake hand lever (10, figure 4) controls the front wheel brake and is located on the right handlebar, where it is operated by the fingers of the right hand.

Brakes should be applied uniformly and gradually to prevent wheels from locking. A balance between rear and front braking is generally best. Begin braking with the rear brake and then apply the front brake slightly later as more braking force is needed.

**WARNING — Do not apply either brake strongly enough to lock the wheel because this may cause the wheel to skid with possible loss of control of the motorcycle.**

## Jiffy Stand

The jiffy stand (8, figure 3 or 14, figure 4) is located on the left side of the motorcycle and swings outward to support the motorcycle for parking.

**WARNING — Be sure stand is fully retracted before riding motorcycle or the stand could contact the road causing loss of control of the motorcycle. Park on a level, hard surface so that motorcycle will not tip over.**

## Steering Lock

The steering lock (13, figure 3) is located on the left side of the lower front fork bracket. Turning fork to the left aligns hole in bracket with hole in steering head. A high strength padlock is available from your dealer, under part No. 45737-72, to lock the fork in this position to discourage unauthorized use or theft.

## Oil and Generator Signal Lights

Two signal lights (3 and 5, figure 4) are located on top of the headlamp cover. The left "generator" signal light, when on, indicates that the generator is not charging. The right "oil press" signal light, when on, indicates that oil is not circulating through the engine. Proper operation is indicated when both lights are off.



Both signal lights will light when the ignition is turned on prior to starting engine. With engine running, both lights should be off when engine speed is approximately 1200 rpm.

The generator light will normally flash on and off at slow idle because generator output does not meet the load requirements at these speeds.

If the generator signal light fails to go off at engine speeds above 1200 rpm, the generator is either not charging or its output is below normal and it should be checked at once.

If the oil pressure signal light fails to go off at speeds above idling, it is usually due to an empty oil tank or to diluted oil. In freezing weather the oil feed pipe may clog with ice and sludge, thus preventing circulation of the oil. A grounded oil signal switch wire, faulty signal switch, or trouble with the oil pump will also cause the light to stay on. If the oil circulation signal fails to go off, always check the oil supply first. Then, if oil supply is normal and the light still does not operate normally, look inside the oil tank and see if oil is circulating when the engine is running. If it is returning to the tank there is some circulation, and you may drive slowly to the nearest Harley-Davidson dealer to have the oiling system checked

and serviced. If no oil returns to the tank, stop the engine at once and do not drive further until the trouble is located and the necessary repairs are made.

## Rear Shock Absorber Spring Adjustment

The rear shock absorber springs can be adjusted to five positions for the weight the motorcycle is to carry. The average weight solo rider would use the extended spring position (off cam or first cam step). A heavy solo rider might require the position with springs slightly compressed (second cam step); buddy seat riders require the fully compressed spring position (third or fourth cam step).

To adjust the rear shock absorber springs, turn cushion spring adjusting cam (figure 8) to desired position with spanner wrench. Both cushion spring adjusting cams must be adjusted to the same position. When returning to off-cam position, cams should be backed off in opposite direction. A spanner wrench for this purpose is available from your Harley-Davidson dealer.

## Accessories and Cargo

### — WARNING —

The addition of accessories and additional weight to this motorcycle can affect the motorcycle's stability, handling characteristics, and safe operating speed.



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

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

1. The Gross Vehicle Weight Rating (GVWR) is shown on the information plate located on the frame steering head. GVWR is the sum of the weight of the motorcycle and accessories and the maximum weight of rider, passenger and cargo that may be safely carried.

Do not tow a trailer with this motorcycle. Do not exceed the Gross Vehicle Weight Rating as indicated on the frame label.

Overloading the motorcycle or towing a trailer will result in unstable handling and reduced braking efficiency which could cause an accident with personal injury.

2. 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 15 pounds maximum load in each saddlebag.

3. Luggage racks are designed for lightweight items — do not overload racks.
4. Be sure cargo is secure and will not shift while riding. Recheck load periodically.
5. Accessories that change the operator's riding position may increase reaction time and affect handling.
6. Additional electrical equipment may overload the motorcycle's electrical system and cause an unsafe operating condition.
7. Large surfaces such as fairings, windshields, backrests, and luggage racks can adversely affect handling. These items should be designed and approved by Harley-Davidson specifically for the motorcycle model and be properly installed.

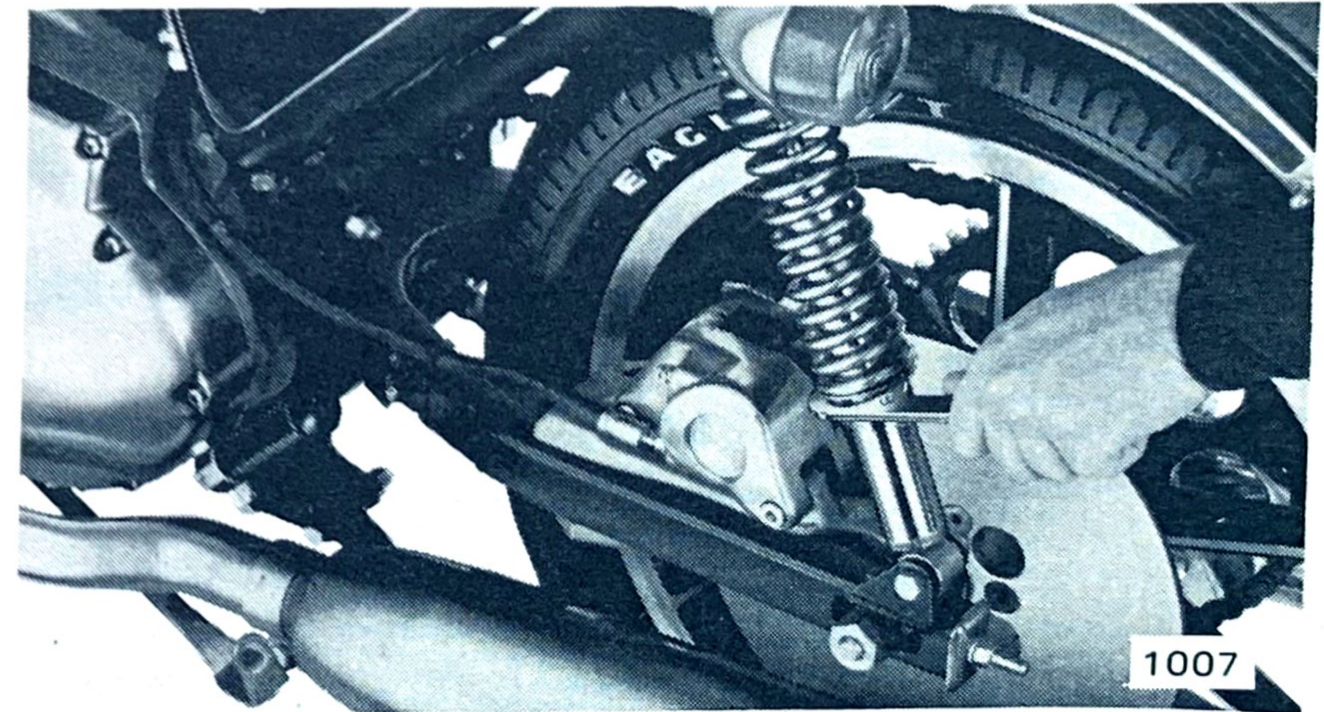


FIGURE 8. SHOCK ABSORBER SPRING ADJUSTMENT



# RIDING

*Read paragraphs on "SAFETY" (page 2) and "CONTROLS" (page 13) before riding this motorcycle.*

## Pre-Riding Check List

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

1. Check amount of fuel in tank and add gasoline if required. See "Gasoline Supply Valve", page 13.

**WARNING — Do not overfill. Leave at least one inch air space to allow for fuel expansion.**

2. Check oil tank oil level. See "Engine Lubrication", page 34.
3. Check controls to make sure they are operating properly; operate the front and rear brakes, throttle, clutch and shifter.
4. Check steering for smoothness by turning the handlebars through the full operating range.
5. Check tire pressure. Incorrect pressure will result in poor riding characteristics and can affect handling and stability. See "Tire Data," page 8, for correct inflation pressures to use.

6. Check all electrical equipment and switches including the stoplamp, turn signals and horn for proper operation.

7. Check for any fuel, oil or hydraulic fluid leaks.

## The First 500 Miles

The sound design, quality materials, and workmanship that is built into your new Harley-Davidson will give you high performance right from the start. However, for the first 500 miles, to wear-in critical parts, observe the few simple driving rules below. This will guarantee future performance and durability.

1. During the first 50 miles, keep the speed below 45 miles per hour.
2. Up to 500 miles, vary the speed, avoiding any steady speed for long distances. Any speed up to the maximum legal limit or 60 miles per hour is permissible for short distances.
3. Avoid fast starts at wide open throttle and overspeeding engine in lower gears. Drive slowly until engine warms up.



## Starting and Stopping Instructions

*Use recommended oil in relation to expected temperatures. See engine lubrication chart, page 34.*

**WARNING** — When starting the engine, shift the transmission to neutral or fully disengage clutch to prevent accidental start-up which could cause possible damage to motorcycle and personal injury.

### Electric Starter

The carburetor choke control knob (2, figure 3) is located just under the gas tank on the left side of the motorcycle.

To start a cool engine at temperatures above 50°F., open throttle twice, then fully release. Pull choke knob to first detent (fast idle) position (above 65°F., fast idle may not be required). Turn the ignition switch on and press starter button to operate the electric starter.

To start a cold engine at temperatures below 50°F., open throttle twice, then fully release. Pull the choke knob outward to the fully closed (choke) position; turn the ignition switch on and press starter button to operate the electric starter.

*Engine Stop Switch on right handlebar must be in "RUN" (ignition on) position.*

As soon as engine starts, open choke and throttle just far enough to keep it running while warming up or until ready to set motorcycle in motion. As engine warms up and misfires because of the over-rich mixture, gradually open choke by moving choke knob inward. After engine has thoroughly warmed up, choke knob should be all the way in.

To start a warm or hot engine, set throttle 1/4 open, turn on ignition switch and operate the electric starter. (DO NOT CHOKE.)

*When the engine does not start after a few turns or if one cylinder fires weakly but engine does not start, it is usually because of an over-rich (flooded) condition. This is especially true of a hot engine. If the engine is flooded, open choke all the way, turn ignition on and operate starter with choke and throttle wide open.*

### Kick Starter

Move the choke control knob outward to the fully closed (choke) position, fully open throttle, and with ignition switch off, kick starter pedal down once or twice to prime the cylinders. Open throttle twice, then fully close throttle.

To start a cool engine at air temperature above 50°F., place choke knob in first detent (fast idle) position. (For



air temperatures above 65°F., fast idle may not be required.) Turn ignition switch on and start engine with vigorous strokes of the starter pedal.

To start a cold engine at air temperatures below 50°F., pull choke knob outward to fully closed choke position. Turn ignition switch on and start engine with vigorous strokes of the starter pedal.

**WARNING** — Be sure kick starter engages fully and that there is pressure on the starter pedal before pushing pedal on downward stroke. Keep foot on pedal and hold down at bottom of stroke until engine starts, or stops turning over. Release pedal slowly — do not allow pedal to snap back against upper stop.

*Engine Stop Switch on right handlebar must be in "RUN" (ignition on) position.*

As soon as engine starts, open choke and throttle just far enough to keep it running while warming up or until ready to put motorcycle in motion. As engine warms up and misfires because of the over-rich mixture, gradually open choke by moving choke knob inward. After engine has thoroughly warmed up, choke knob should be all the way in.

To start a warm or hot engine, set the throttle 1/4 open (DO NOT CHOKe), turn on the ignition switch and start engine with a vigorous stroke of the starter pedal.

*When the engine does not start within 2 or 3 starting kicks, or if one cylinder fires weakly but engine does not start, it is usually because of an over-rich (flooded) condition. This is especially true of a hot engine. If the engine is flooded, turn off the ignition and crank the engine over 3 or 4 times with choke and throttle wide open. This will clear the engine. Then follow correct starting procedure as previously described for cold, warm or hot engine.*

*Flooding can be caused by opening and closing the throttle too much, because throttle is interconnected to the accelerating pump which injects extra gas into the engine each time throttle is opened.*

## Operation

**CAUTION** — Never accelerate the engine to high RPM after a cold start. The engine should be allowed to run slowly for a few minutes during warm weather and for a longer time in cold weather. This will allow the engine to warm up and let oil reach all surfaces needing lubrication.

To start moving with motorcycle upright and engine idling, pull the clutch lever (located on left handlebar) to



fully disengage clutch. Then push shifter lever down firmly but gently to end of its travel to engage first gear (see figure 9). Then release the clutch lever slowly to engage the clutch and at the same time, open throttle gradually.

Engage second gear after the motorcycle has run a few yards as follows: close the throttle, disengage the clutch and lift the gear shifter pedal up to the end of its travel. Then engage the clutch and operate the throttle gradually. Repeat the same operation to engage third and fourth gears.

For correct operation of your motorcycle under average conditions, the following shifting points are recommended:

Gear Change	Speed
Acceleration (Upshift)	
First to Second	15 mph (25 kph)
Second to Third	25 mph (40 kph)
Third to Fourth	40 mph (65 kph)
Deceleration (Downshift)	
Fourth to Third	30 mph (50 kph) or less
Third to Second	20 mph (30 kph) or less
Second to First	10 mph (15 kph) or less

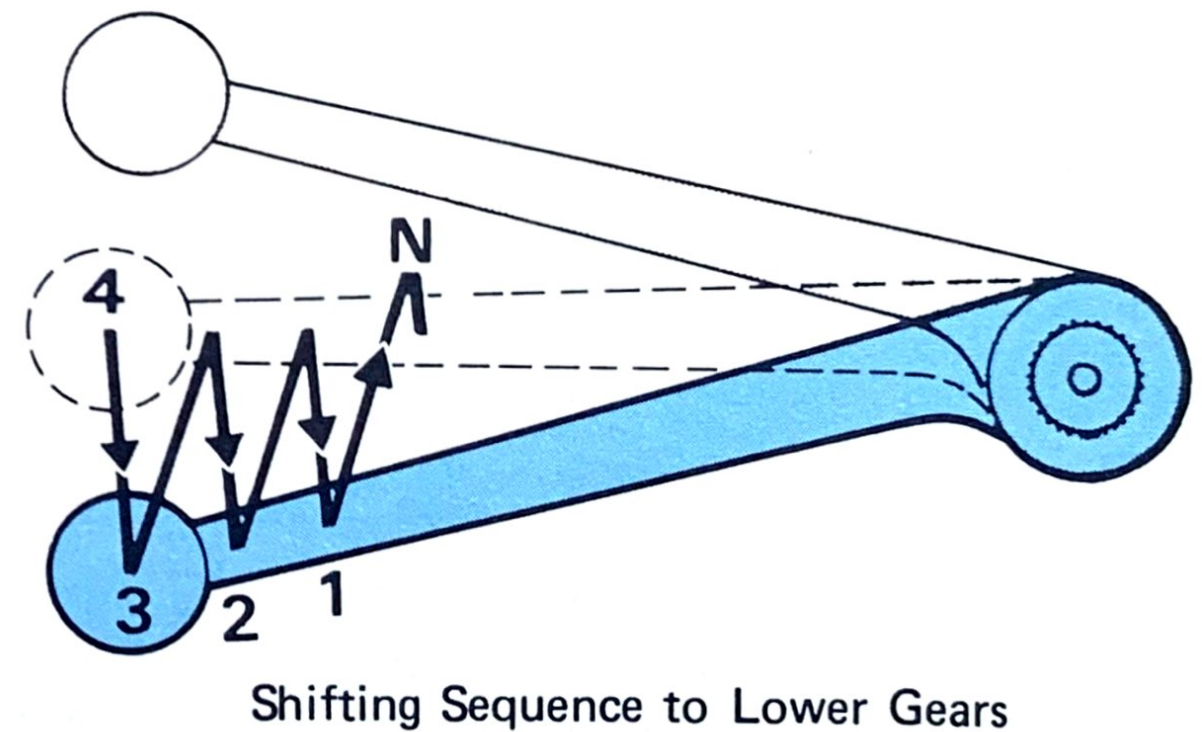
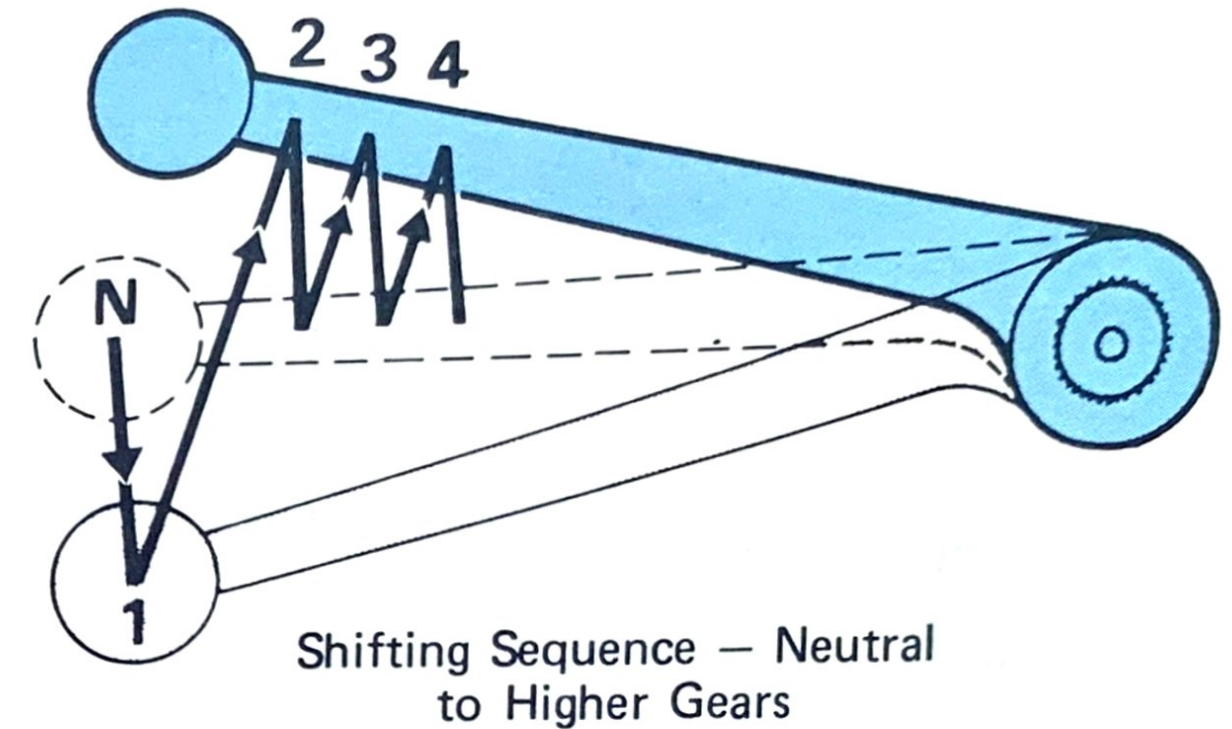


FIGURE 9. SHIFTING



To shift to lower gears, reverse the shifting of the gear shifter pedal, disengaging the clutch completely before each gear change and only partially closing the throttle so that the engine will not drag when clutch is again engaged. Keep in mind that by lifting the gear shifter lever up, a high gear is engaged; by pushing down the gear shifter lever, a lower gear is engaged. When stopping, operate gear shift until neutral is reached. Note that neutral is 1/2 stroke up from first gear.

**CAUTION** — Do not shift gears without fully disengaging the clutch.

**WARNING** — When shifting to lower gears with the motorcycle in motion, do not downshift at speeds higher than those listed in the table. Shifting to lower gears when speed is too high may severely damage the transmission or cause the rear wheel to lose traction.

Shift to neutral before stopping engine. Shifting mechanism can be damaged by shifting gears while engine is stopped.

*Always start motorcycle in motion in first gear.*

When engine speed decreases, as in climbing a hill or running at a reduced speed, change from a higher gear to the next lower gear by partially closing the throttle so that the engine accelerates as soon as the clutch lever is pulled.

## Stopping the Engine

Stop the engine by turning off the ignition key switch or emergency stop switch on right handlebar. If the engine should be stalled or stopped in any other way than with the switch, turn off the switch at once to prevent battery discharge.

## Operating Recommendations

**CAUTION** — Do not run the engine at extremely high RPM with clutch disengaged or transmission in neutral. Do not exceed 6200 maximum RPM under any conditions!

Don't idle the engine unnecessarily for long periods with motorcycle standing still.

An engine run long distances at high speed must be given closer than ordinary attention to avoid overheating and possible consequent damage. Have the engine checked regularly and keep it well tuned up. Valve seating and good compression is particularly important. Use correct heat range spark plugs to suit type of service. This applies particularly to a motorcycle equipped with windshield and splash shields or lap apron.



**WARNING** — When riding on wet roads or under rainy conditions, braking efficiency is greatly reduced and caution should be used when applying the brakes, accelerating, and turning. This is especially true immediately after the rain begins and the oil from the road surface combines with the water.

When descending a long, steep grade, downshift and use engine compression together with intermittent application of both brakes to slow the motorcycle. Avoid continuous use of brakes which may cause overheating of the brakes and reduced efficiency.

Do not coast for a long distance with the engine off because the transmission is properly lubricated only when the engine is running. Also to prevent transmission damage, do not tow the motorcycle for long distances without removing the drive chain.

### Locating Operating Troubles

The following check list of possible operating troubles and their probable causes will be helpful in keeping your motorcycle in good operating condition.

## ENGINE

Cranking Motor Does Not Operate or Does Not Turn Engine Over

1. Engine run switch in "OFF" position.
2. Ignition switch not on.
3. Discharged battery or loose or corroded connections (solenoid chatters).
4. Starter control circuit, relay or solenoid defective.
5. Electric starter shaft pinion gear not engaging or over-running clutch slipping.

Engine Turns Over But Does Not Start

1. Gasoline tank empty.
2. Gasoline valve turned off.
3. Gasoline valve or filter clogged.
4. Discharged battery or loose or broken battery terminal connections.
5. Fouled spark plugs.
6. Spark plug cables in bad condition and leaking or cable connections loose.
7. Ignition timing badly out of adjustment.
8. Loose wire connection at coil or battery connection.
9. Defective ignition coil.



10. Defective ignition module.
11. Sticking or damaged valve or tappets too tight.
12. Engine flooded with gasoline as a result of overchoking.
13. Engine and transmission oil too heavy (winter operation).

### Starts Hard

1. Spark plugs in bad condition or have improper gap or are partially fouled.
2. Spark plug cables in bad condition and leaking.
3. Battery nearly discharged.
4. Loose wire connection at one of the battery terminals or at coil.
5. Carburetor controls not adjusted correctly.
6. Defective ignition coil.
7. Engine and transmission oil too heavy (winter operation).
8. Timing advance weights sticking in advanced position.
9. Ignition not timed properly.
10. Gasoline tank cap bent or plugged, or carburetor fuel line closed off restricting fuel flow.
11. Water or dirt in fuel system and carburetor.
12. Choke disc stuck in open position.
13. Air leak at intake manifold.
14. Valves sticking.

### 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. Defective ignition coil.
5. Defective ignition module.
6. Battery nearly discharged.
7. Damaged wire or loose connection at battery terminals or coil.
8. Intermittent short circuit due to damaged wire insulation.
9. Water or dirt in fuel system, carburetor or filter.
10. Gasoline tank cap vent plugged or carburetor vent line closed off.
11. Carburetor controls misadjusted.
12. Weak or broken valve springs.
13. Air leak at intake manifold or air cleaner.
14. Damaged inlet or exhaust valve.
15. Incorrect valve timing.

### A Spark Plug Fouls Repeatedly

1. Incorrect spark plug for the kind of service.
2. Piston rings badly worn or broken.
3. Fuel mixture too rich (see carburetor trouble chart).
4. Valve guides badly worn.



### Pre-Ignition or Detonation (Knocks or Pings)

1. Excessive carbon deposit on piston head or in combustion chamber.
2. Incorrect spark plug for the kind of service.
3. Defective spark plugs.
4. Ignition timing advanced.
5. Fuel octane rating too low.

### Overheating

1. Insufficient oil supply or oil not circulating.
2. Leaking valve.
3. Heavy carbon deposit.
4. Ignition timing retarded.
5. Low power — timing advance weights sticking in retarded position.

### Valve Train Noise

1. Too much tappet clearance.
2. Bent push rod.
3. Cam, cam gears or cam gear bushings worn.
4. Rocker arm binding on shaft.
5. Valve sticking in guide.

### Excessive Vibration

1. Upper mounting bracket loose or broken.
2. Lower mounting bolts loose.
3. Broken frame.
4. Front chain badly worn or links tight as a result of insufficient lubrication.
5. Wheels and/or tires defective.
6. Internal engine problem.

## LUBRICATION SYSTEM

1. Oil tank empty.
2. Scavenger pump gear key sheared.
3. Oil feed pump not functioning.
4. Restricted oil lines or fittings.

### Engine Uses Too Much Oil

1. Piston rings badly worn or broken.
2. Valve guides worn.



### Engine Leaks Oil From Cases, Push Rods, Hoses, Etc

1. Loose parts.
2. Imperfect seal at gaskets, push rod cover, washers, etc.
3. Restricted oil return line to tank.
4. Restricted breather hose to air cleaner.

### ELECTRICAL SYSTEM

#### Generator Does Not Charge

1. Brushes badly worn.
2. Brushes sticking in holders.
3. Voltage regulator not grounded.
4. Defective voltage regulator.
5. Commutator dirty or oily.
6. Positive brush holder grounded.
7. Generator "A" terminal grounded.
8. Loose or broken wire in generator-battery circuit.
9. Broken field coil wire or loose terminal (both sides).
10. Commutator shorted.
11. Defective armature.

#### Charging Rate is Below Normal

1. Broken field coil wire or loose terminal (one coil).
2. Commutator worn or not turning true with shaft — throws brushes at high speed.

3. Commutator dirty or oily.
4. Brushes gummy and sluggish in holders.
5. Defective armature.

### CARBURETOR

#### Carburetor Floods

1. Inlet valve sticking.
2. Inlet valve and/or valve seat worn or damaged.
3. Dirt or other foreign matter between valve and its seat.
4. Excessive "pumping" of hand throttle grip.
5. Leaky or defective float.
6. Float misadjusted.

### TRANSMISSION

#### Transmission Shifts Hard

1. Clutch dragging slightly.
2. Transmission oil too heavy (winter operation).
3. Shifter forks (inside transmission) sprung.



## Transmission Jumps Out Of Gear

1. Shifter forks (inside transmission) improperly adjusted.
2. Shifter engaging parts (inside transmission) badly worn and rounded.

## Clutch Slips

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

## Clutch Drags or Does Not Release

1. Clutch controls improperly adjusted.
2. Clutch spring tension incorrect.
3. Friction discs gummy.
4. Clutch shell keys or hub studs badly worn.
5. Clutch discs warped.
6. Transmission oil too heavy for air temperature.

## Clutch Chatters

1. Clutch spring disc too flat.
2. Friction discs or steel discs worn or warped.

## BRAKES

### Brake Does Not Hold Normally

1. Master cylinder low on fluid.
2. Brake line contains air bubbles.
3. Master or wheel cylinder piston worn or parts defective.
4. Brake pads contaminated with grease or oil.
5. Brake pads badly worn (1/16 inch minimum lining thickness).
6. Brake disc badly worn or warped.
7. Brake fades due to heat build up — brake pads dragging or excessive braking.
8. Brake drags — insufficient brake pedal or hand lever free play.



## RULES OF THE ROAD

1. Keep on the right side of the road centerline when meeting other vehicles coming in the opposite direction. Ride to left of center of your lane to avoid possible oily pavement.
2. Always sound your horn, actuate your turn signals and pass on the left side 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.
3. At street intersections give the right-of-way to the vehicle on your right. Do not presume too much when you have the right-of-way; the other driver may not know you have it.
4. Always signal when preparing to stop, start, or turn.
5. All traffic signs, including those used for the control of traffic at intersections, should be obeyed promptly and to the letter. "Slow Down" signs near schools and caution signs at railroad crossings should always be observed and your actions governed accordingly.
6. Never "crash" a light. When a change is indicated from "Go" to "Stop" (or vice versa) in the traffic control systems at intersections, await the change.
7. When intending to turn to the left, give signal at least 100 feet before reaching the turning point. Move over to the center line of the street (unless local rules require otherwise), slow down passing the intersection of the street and then turn carefully to the left.
8. In turning either right or left, watch for pedestrians as well as vehicles.
9. Do not leave the curb or parking area without signaling and seeing that your way is clear to drive into moving traffic. A moving line of traffic has the right-of-way.
10. See that your license tags are installed in the position specified by law and that they are clearly visible under all conditions. Keep them clean.
11. Ride at a safe speed — a speed consistent with the type of highway you are on, and always note whether the road is dry, oily, icy or wet. Each varying condition on the highway means adjusting your speed accordingly.



# SERVICING

## New Motorcycle Initial Service

**WARNING** — For your personal welfare, all the listed service and maintenance recommendations should be followed, because they may affect the safe operation of your motorcycle.

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

After a new motorcycle has been driven its first 500 miles and again at approximately 1250 miles, the motorcycle should be taken to the dealer from whom it was purchased for initial service operations with which the dealer is familiar. If it is impossible to take the motorcycle to a dealer at the mileage intervals mentioned, the owner should at least give the following outlined attention, or arrange to have it given, and take the motorcycle to the dealer for more complete servicing when convenient to do so.

**WARNING** — Stop the engine and support the motorcycle securely before performing all service procedures. Service should be performed in an adequately lighted and ventilated work area using proper tools.

## Check at First 500 Miles

1. Drain oil tank through drain plug, flush with kerosene and refill with fresh oil.
2. Replace oil filter, if applicable.
3. Drain transmission through magnetic drain plug and clean plug.
4. Check and adjust chains.
5. Check battery electrolyte level and add distilled water if necessary.
6. Check rear brake pedal adjustment.
7. Inspect brake fluid level and condition. Check hydraulic brake lines and fittings for leaks.
8. Check brake pad linings and discs for wear.
9. Check clutch adjustment.
10. Clean fuel tank valve screen.
11. Check fuel valve, lines and fittings for leaks.
12. Check oil lines for leaks.
13. Change front fork oil.
14. Lubricate rear chain if necessary.
15. Grease or oil all points indicated for 2500 miles attention in the SERVICE AND MAINTENANCE CHART.
16. Check front and rear fork bearing adjustment.
17. Check tightness of all fasteners.
18. Check wheel spoke tightness if applicable.
19. Check tire pressure and inspect tread.
20. Inspect and service air cleaner.
21. Check engine low and high idle speed adjustment.
22. Check throttle and choke control adjustment.



23. Check operation of all electrical equipment and switches.
24. Check and adjust tappet clearance.
25. Road test.

### Check at First 1250 Miles

1. Check engine oil level.
2. Check transmission oil level.
3. Check and adjust chains.
4. Check battery electrolyte level and fill with distilled water if necessary. Make sure battery connections are clean and tight.
5. Check rear brake pedal adjustment.
6. Inspect brake fluid level and condition. Check hydraulic brake lines and fittings for leaks.
7. Check brake pad linings and discs for wear.
8. Check clutch adjustment.
9. Check fuel valve, lines and fittings for leaks.
10. Check oil lines for leaks.
11. Lubricate rear chain if necessary.
12. Check tightness of all fasteners.
13. Check wheel spoke tightness where applicable.
14. Inspect air cleaner and service.
15. Check tire pressure and inspect tread.
16. Check engine low and high idle speed adjustment.
17. Check throttle and choke control adjustment.
18. Check operation of all electrical equipment and switches.

19. Check and adjust tappet clearance.
20. Road test.

### Regular Service Intervals

Regular lubrication and maintenance will help you keep your new Harley-Davidson operating at peak performance, and will give you lower operating costs, longer motorcycle life, and greater riding pleasure. Your Harley-Davidson dealer knows best how to service your motorcycle with factory approved methods and equipment assuring you of thorough and competent workmanship for every job.

*The performance of regular service interval operations is required to keep your new motorcycle warranty in force. The use of other than Harley-Davidson approved parts and service procedures may void the warranty. Also, any alterations to the emission system components, such as carburetor and exhaust system, may be in violation of federal and state law.*

The chart on the next page shows regular intervals at which specified service operations should be performed. For more detailed description of the service and maintenance procedures specified, refer to information following after chart.



# REGULAR MAINTENANCE INTERVAL

Regular Service Interval	Engine Oil	Transmission Oil	Grease	Oil	Service
Every 500 miles	Check				
Every 1250 miles	Check	Check		Rear chain	Service air cleaner as required Check and adjust chains Check battery electrolyte level/check and clean connections Check rear brake pedal adjustment Check brake pad linings and discs for wear Check fuel valve, lines and fittings for leaks Inspect oil lines and brake system for leaks Check tightness of all fasteners Check tire pressure and inspect tread Check wheel spoke tightness Check all electrical equipment and switches
Every 2500 miles	Change		Speedometer drive	Front brake handle Throttle control cable Choke control cable Clutch control cable and handle	Check and regap or replace spark plugs Inspect brake fluid level and condition Check clutch adjustment Clean tank fuel valve screen Check engine low and high idle speeds Check throttle and choke control adjustment Check low speed mixture setting Replace oil filter* Check and adjust tappet clearance
Every 5000 miles		Change	Throttle control grip sleeve Speedometer cable		Replace spark plugs Change front fork oil Check rear shock rubber bushings Check front and rear fork bearing adjustment Generator Lubricate ignition advance Clean transmission magnetic drain plug
Every 10,000 miles			Wheel bearings Repack rear fork bearings		
Weekly					Check tires and battery
Spring and Fall	Change	Change			

\*If applicable to equipment



## Storage

If your motorcycle will not be operated for several months, such as during the winter season, there are several things which should be done to protect parts against corrosion and preserve the battery.

1. Run engine until it reaches operating temperature.
2. Remove fuel supply hose at tank and drain gas tank, including reserve supply — replace hose.
3. Mix about 4 ounces of 2-cycle oil in one quart of gasoline and put in gas tank.
4. Run engine with gas-oil mix for several minutes until exhaust smokes.
5. Drain remaining fuel mixture from tank per item 2.

**WARNING — Fuel mixture is flammable. Do not store motorcycle having fuel in tank within the home or garage.**

6. Remove spark plugs, inject a few squirts of 2-cycle oil into each cylinder and crank engine 5 or 6 revolutions. Clean and replace plugs.
7. Drain oil tank.
8. See that rear chain is clean and well lubricated.
9. Wax chrome plated surfaces and apply some oil to exposed unpainted surfaces.
10. Store battery above freezing temperature, trickle charge at least once a month, and keep water level above plates. If battery is removed from motorcycle it must not be placed directly on ground or concrete.

## ENGINE

### Engine Lubrication

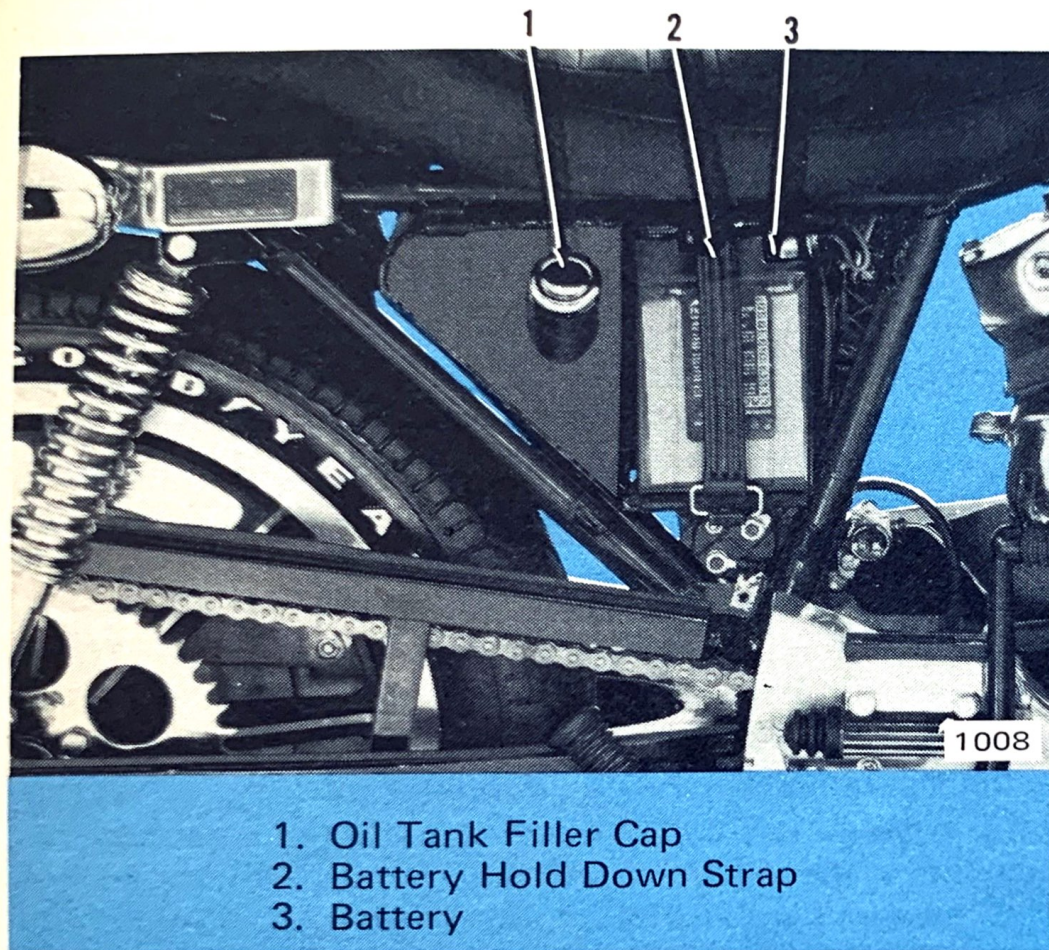
Engine oil is a major factor in the performance and service life of the engine. Use the proper grade of oil for the lowest temperature expected before the next oil change as shown below. Your Harley-Davidson dealer has the proper grade oil to suit your requirements.

Use Harley-Davidson Oil	Use Grade	Air Temperature (Cold Engine Starting Conditions)
Medium Heavy	75	Above 40°F.
Special Light	58	Below 40°F.
Regular Heavy	105	Severe operating conditions at air temperatures above 90°F.

**CAUTION — Do not switch brands indiscriminately because some oils interact chemically when mixed. Use of inferior oils or non-detergent oils can damage the engine.**

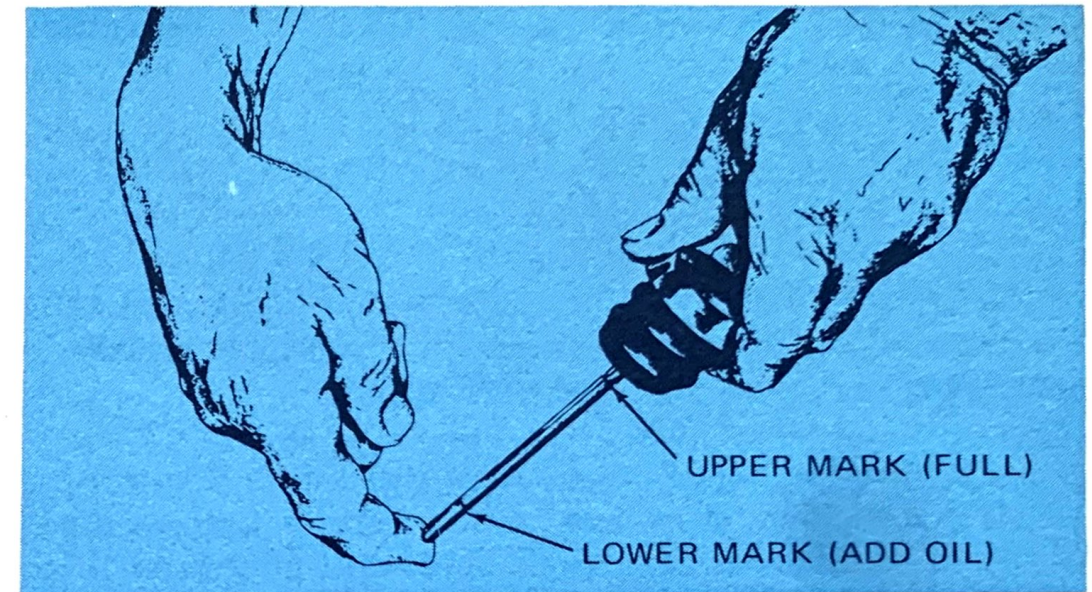
The oil tank filler cap (1, figure 10) is located behind the cover on the right side of the motorcycle. The cap has a





**FIGURE 10. OIL TANK AND BATTERY**

dipstick attached to indicate oil level in the tank. If oil level is down to the lower mark on the dipstick (figure 11), one quart can be added. Do not fill above upper mark on dipstick. Never allow oil to go below lower mark on dipstick. Oil level should be measured with motorcycle on jiffy stand.



**FIGURE 11. OIL LEVEL DIPSTICK**

Oil mileage normally varies from 500 to 1000 miles per quart, depending on nature of service, fast or moderate driving, and how well engine is kept tuned. A new engine will use more oil until the piston rings are fully seated. If mileage is not within this range, see your dealer about it.

Remove oil tank cap and CHECK OIL SUPPLY AT LEAST EVERY 500 MILES AFTER EACH COMPLETE REFILL. FOR A NEW ENGINE, CHECK THE OIL SUPPLY EVERY 250 MILES DURING THE BREAK-IN PERIOD.



Keep the oil level well up in tank. Oil runs cooler and oil mileage is somewhat higher with oil level well up in the tank. Furthermore, unless oil tank is kept well filled, frequent checking of oil level will be necessary to avoid any chance of running dry. Oil should be changed after the first 500 miles for a new engine, and thereafter at about 2500 mile intervals in normal service at warm or moderate temperatures. Oil change intervals should be shorter in cold weather — see "Winter Lubrication."

Completely drain oil tank of used oil and refill with fresh oil. If the engine is driven extremely hard, or used on dusty roads or in competition, drain and refill at shorter intervals. Draining should be done while oil is hot. It is not necessary to drain the crankcase as it does not accumulate used oil. At the time of the first 500 mile oil change, and at least at every second oil change thereafter, thoroughly flush and clean out tank with kerosene to remove any sediment and sludge that may have accumulated. Your Harley-Davidson dealer has facilities for quick flushing and cleaning of oil tank.

*If the oil lines are removed for any reason, oil pump (16, figures 12 and 17) must be primed. Loosen oil pressure switch (15) at front of oil pump enough to allow about 1 ounce of oil to blow from threaded connection while*

*engine is running. Retighten switch and add engine oil at tank to correct level.*

## Winter Lubrication

Combustion in any engine produces water vapor. When starting and warming up in cold weather, much of the vapor condenses to water on the relatively cool metal surfaces. If engine is driven enough to get the crankcase thoroughly warmed up frequently, most of this water is again vaporized and blown out through the breather. However, a moderately driven engine, making only short runs now and then and seldom getting thoroughly warmed up, is likely to accumulate an increasing amount of water in the oil tank. This water will, in freezing weather, become slush or ice, and if allowed to accumulate too long, may block the oil lines and cause damage to the engine. Also, water mixed with oil for some time forms sludge that is harmful to the engine and causes undue wear of various working parts. Therefore, in winter the oil change interval should be shorter than normal for all engines, and any engine used only for short runs must have oil drained frequently along with a thorough tank flush-out before new oil is put in tank. The farther below freezing the temperature drops, the shorter the oil change interval should be.



## Air Cleaner

Carburetor air cleaner is equipped with a plastic foam air filter element which is oil saturated.

Remove air cleaner cover and inspect filter element at least every 1250 miles, or oftener under dusty service conditions. The need for servicing is indicated by the appearance of the outside surface of the filter. Filter should be cleaned and re-oiled if a film of dirt has built up covering the surface pores, or if light spots show on the surface which means that dust is drying out the oil. A dirty, dark appearance is normal, as long as pores in the filter remain open and covered with an oil film.

To clean filter, remove it from screen and wash it in a non-flammable petroleum solvent or detergent and water. Allow to dry thoroughly and saturate with same weight oil as recommended for engine crankcase. Apply oil to element liberally working in with hands and fingers until element is uniform in color indicating uniform saturation. After excess oil has drained off, replace element on screen so that three grooves are toward screen, and re-install in engine.

## Gasoline Strainer

A screen type gasoline strainer is located on top of the gasoline supply valve inside the gasoline tank (see figure 5). Check the fuel valve, lines and fittings for leakage at least every 1250 miles. Screen should be cleaned at 2500 mile intervals.

To clean the screen proceed as follows; Disconnect fuel line at the carburetor. Remove the tank from the motorcycle and drain it. Remove the fuel valve from the tank and thoroughly clean the strainer in a non-flammable solvent.

Reassemble fuel valve and strainer to tank and mount tank on motorcycle. Connect fuel line to carburetor using a new hose clamp. Fill fuel tank and check for leaks.

**WARNING — Make sure motorcycle engine is cool before disconnecting fuel line. Perform work in a well ventilated area away from sparks or flame.**

## TRANSMISSION

### Transmission and Front Chain (See figure 12)

Use grade 75 above 40°F. and grade 58W below 40°F.



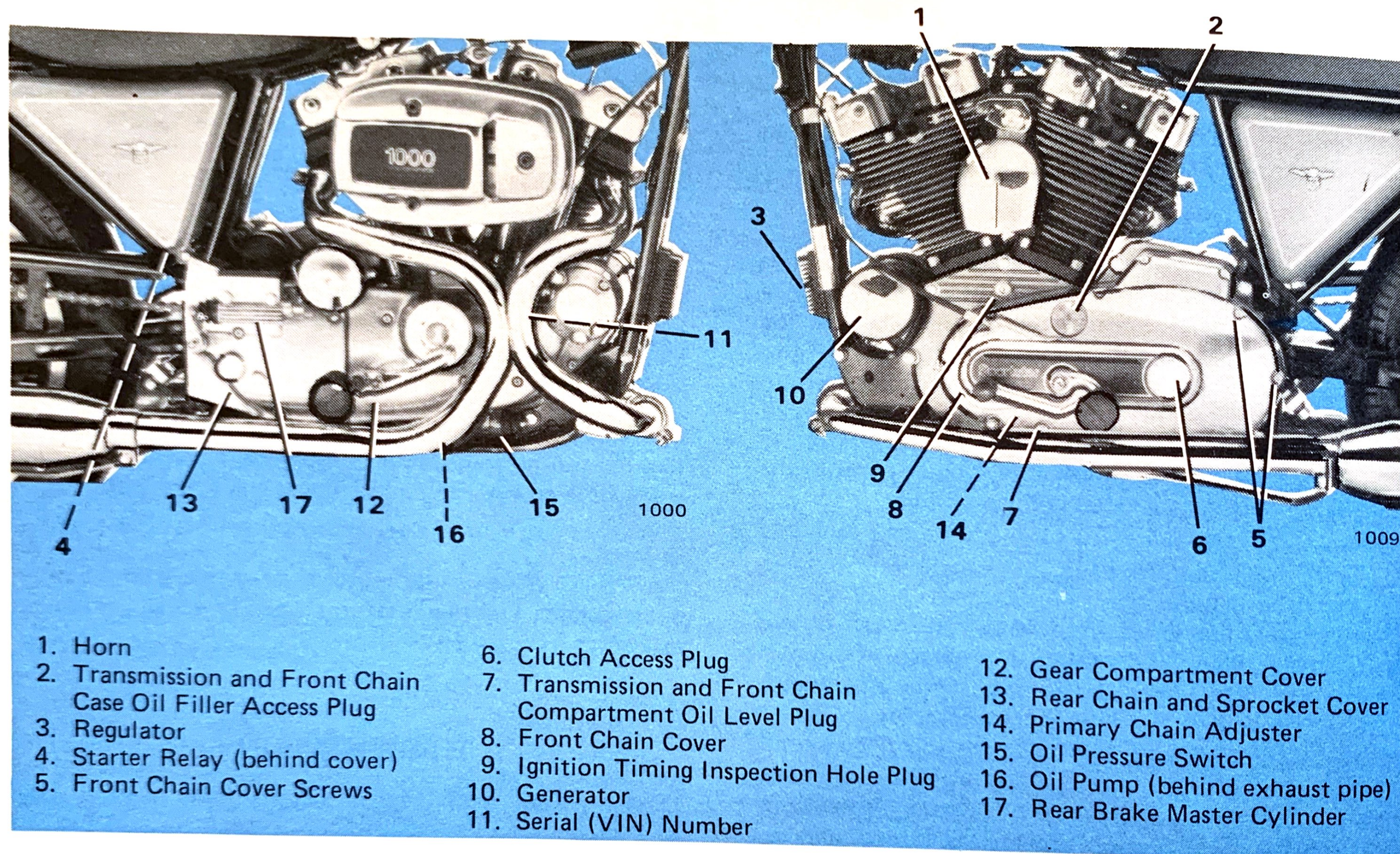


FIGURE 12. MODEL XLH/XLS ENGINE



There is an opening between the transmission and the front chain compartments, and the same oil supply lubricates the parts in both compartments.

The oil drain plug is located underneath case directly below the transmission (see italicized paragraph below). The oil filler access (2) is located near the top of the chain case cover. The oil level plug (7) is located near the bottom of the chain case cover. To determine correct oil level in the transmission and chain case compartments, proceed as follows:

1. Stand motorcycle straight up. Motorcycle must remain in this position during entire procedure.
2. Remove transmission oil filler plug (2) and oil level plug (7).

*If the oil is to be changed, remove oil drain plug and allow oil to drain. Remove foreign material from magnet on end of plug. Reinstall drain plug with plastic washer and tighten to 10 ft.-lbs. torque before proceeding with next step.*

**CAUTION — Do not over-tighten drain plug.**

3. Add oil until it begins to overflow through oil level hole. Leave excess oil flow from oil level hole until it ceases to run. This is correct oil level.
4. Reinsert and tighten oil level plug and oil filler plug.

Drain transmission and refill to correct level with fresh, clean oil after the first 500 miles and thereafter seasonally or every 5000 miles, whichever comes first. Check transmission oil level every 1250 miles. If transmission should become submerged in water, drain it immediately and refill with clean oil to the correct level.

**CAUTION — When draining and refilling the oil tank or transmission, be careful that dirt and debris does not get into case or oil tank. Do not allow draining oil to get on rear wheel or tire.**

## Rear Chain

This motorcycle is not equipped with a rear chain oiler. Therefore, the rear chain should be checked and lubricated at regular intervals.

Under normal operating conditions, brush off the dirt and lubricate chain at least every 300 miles. Use Harley-Davidson grade 75 or 105 (SAE 40 or 60) or "Chain Spray," "Chain Saver," or "Chain Grease." Apply at room temperature to both chain side plates and rollers. Apply with a brush or squirt can to thoroughly cover chain. Wipe off surplus lubricant.

If motorcycle is operated under extremely dirty, wet, or high speed conditions, extra cleaning and lubrication of the rear chain may be advisable from time to time. Under these conditions proceed as follows. Remove chain from



motorcycle. Soak and wash thoroughly in a pan of solvent such as kerosene. After removing chain from kerosene, allow kerosene to drain off or blow off with air hose. After chain is completely dry, apply Harley-Davidson grade 75 or 105 (SAE 40 or 60) oil or "Chain Spray," "Chain Saver," or "Chain Grease." Apply at room temperature to both chain side plates and rollers. Wipe all surplus lubricant from surface of chain. Install chain on motorcycle. Inspect connecting link and spring clip closely for bad condition. Replace if at all questionable. Be sure spring clip is correctly and securely locked on pin ends. Closed end of spring clip should face direction of chain travel.

## CHASSIS

### Greasing

Use wheel bearing grease for steering head bearings and wheel bearings. Use a multi-purpose chassis grease for other applications.

All chassis bearings requiring frequent applications of grease are provided with grease gun fittings. Locations and recommended greasing intervals are listed in the SERVICE AND MAINTENANCE CHART on page 33.

Use a hand grease gun to avoid over-greasing. Excess grease can damage oil seals and produces a messy condition.

Repack front and rear wheel bearings every 10,000 miles, or yearly if operated under winter conditions.

Remove and grease handlebar throttle control grip sleeve with fresh grease every 5000 miles, once each year, or when operation indicates lubrication is necessary.

Remove and grease speedometer drive cable every 5000 miles.

Grease the foot shift lever bearing and the rear brake pedal bearing every 2500 miles.

Pack the two rear fork pivot bearings with fresh grease at 10,000 mile intervals.

Pack the steering head bearings with fresh grease at 50,000 mile intervals.

### Oil Applications

All control connections and parts as indicated in the SERVICE AND MAINTENANCE CHART (Page 33) should be oiled regularly, particularly after washing motorcycle or driving in wet weather.



## Generator Bearings

Generator commutator end bearing is grease-packed and sealed, and normally does not require additional lubrication.

Generator drive end bearing requires no attention as it is lubricated by the oil that circulates through the engine.

## Hydraulic Fork

The hydraulic fork requires little maintenance or attention. Refill after the first 500 miles and at 5000 mile intervals thereafter. If fork does not appear to be working properly or an appreciable amount of oil leakage should develop, attention should be given by a Harley-Davidson dealer. Incorrect recoil action will result if there is insufficient oil in either side of fork. If fork should at any time become submerged in water, drain and refill immediately.

When forks are disassembled for repairs and reassembled (DRY), each fork side requires 6 ounces of Harley-Davidson Type B Fork Oil. When oil is drained for refill, each fork side should have 5 ounces of oil added. To drain and refill fork, first remove the hex head cap screw at the top of each fork side. Remove the drain plug at the lower end of each slider tube (just above axle) and drain the oil. Replace lower drain plugs and fill with Harley-Davidson Type B Fork Oil. Tighten upper hex head cap screws securely.

The oil specified for your motorcycle is available at your Harley-Davidson dealer.

Filling the fork using only a funnel is a rather slow job because of the small filler openings and because the filler channel tends to become air locked. It is recommended that you see your Harley-Davidson dealer when this service is required for he has the recommended fork oil and necessary equipment to do this job cleanly and quickly.

Check front and rear fork for proper bearing adjustment at 500 miles and every 5000 miles thereafter. With front end of motorcycle raised off the floor, make sure front fork turns freely without any binding or interference and that there is no appreciable front to rear fork shake indicating excessive bearing looseness. Steering head bearings should be adjusted if necessary according to Service Manual procedure.

With rear end of motorcycle raised off the floor, check rear fork for side to side play. If there is appreciable rear fork shake indicating excessive looseness, the bearing adjustment should be checked according to the Service Manual procedure.

**WARNING — Adjustment of front and rear fork bearings is critical. Improperly adjusted bearings will adversely affect motorcycle handling and stability. It is recommended that fork bearing adjustments be performed by your Harley-Davidson dealer.**



## Hydraulic Front Brake

Every 2500 miles, check the fluid level in the master cylinder reservoir and check brake pad lining and brake discs for wear every 1250 miles. Use only D.O.T. 5 HYDRAULIC BRAKE FLUID that is approved for brake system use which is available from your Harley-Davidson dealer.

Check all hydraulic lines, connections and calipers for leaks.

The front brake master cylinder (8, figure 4) is located on right handlebar. The rear brake master cylinder (10, figure 1) is located near the rear brake foot pedal on right side of the motorcycle. *Clean around reservoir cover to prevent dirt from entering reservoir.* To check fluid level, remove cover screws, cover, and sealing gasket. Fluid level should be up to gasket surface *with reservoir in level position*. Reinstall cover and tighten screws to 14 in.-lbs. torque.

**WARNING — Brake fluid can cause irritation of eyes and skin and may be harmful if swallowed. If fluid is swallowed, induce vomiting by administering two tablespoons of salt in a glass of warm water. Call a doctor. In case of contact with skin of eyes, flush with plenty of water. Get medical attention for eyes. KEEP BRAKE FLUID OUT OF THE REACH OF CHILDREN!**

## Battery

The battery (figure 10) is located underneath the cover on the right side of the motorcycle.

It is the care given a battery, rather than time and miles of service, which is most important in determining its life.

### Solution

Inspect the level of the battery solution at least once a week during motorcycle operation, adding pure distilled water as often as necessary to keep the solution above the plates. If the motorcycle is not used for an extended period of time, check solution level before placing in service.

Remove battery and take out filler plugs. With a hydrometer or syringe, add water to each cell to raise level of solution between upper and lower level limits shown on battery.

Clean connections and check tightness every 1250 miles.



**WARNING** — Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing.

**ANTIDOTE** — External — Flush with water.

Internal — Drink large quantities of milk or water followed by milk of magnesia, vegetable oil, or beaten eggs. Call doctor immediately.

Eyes — Flush with water and get immediate medical attention.

Batteries produce explosive hydrogen gas at all times — especially when being charged. Keep cigarettes, open flame, and sparks away from the battery at all times. Ventilate area when charging battery. Always protect hands and protect eyes with shield or goggles when working near a battery or acid. **KEEP BATTERIES AND ACID OUT OF THE REACH OF CHILDREN!**

**CAUTION** — If battery is filled to a higher level, some of the solution will be forced out through the vent tube when battery is charging. This will not only weaken the solution, but also may damage parts near the battery. Keep battery clean and lightly coat terminals with petroleum jelly to prevent corrosion. Do not overtighten terminal connections. To prevent battery case damage caused by pressure built-up, be sure vent tube is properly routed and not kinked or obstructed.

## Charging

Check solution in each cell with a battery hydrometer. If hydrometer reading is below 1.200, remove battery and charge it from an outside source. The charging current should be 12 volt direct current and charging rate should not be allowed to go over 2.0 amperes. A higher battery charge rate may heat and damage the battery. For this reason, do not allow the motorcycle battery to be charged in the same line with auto batteries. Hydrometer reading of fully charged battery in good condition will be from 1.265 to 1.300. Allowing battery to remain in a discharged condition for any length of time shortens its life.

It is especially important that the battery be kept well charged in below freezing weather. A low or discharged battery is very likely to be frozen and ruined.

**WARNING** — Battery should be charged in a well ventilated area with the filler caps removed. Be sure charger is properly connected and adjusted observing positive (+) and negative (-) polarity to battery.

## Keep the Motorcycle Clean

Keeping the motorcycle clean on the outside as well as on the inside is good maintenance procedure. To aid you in keeping your motorcycle clean see your Harley-Davidson dealer for the following:



## Hydraulic Front Brake

Every 2500 miles, check the fluid level in the master cylinder reservoir and check brake pad lining and brake discs for wear every 1250 miles. Use only D.O.T. 5 HYDRAULIC BRAKE FLUID that is approved for brake system use which is available from your Harley-Davidson dealer.

Check all hydraulic lines, connections and calipers for leaks.

The front brake master cylinder (8, figure 4) is located on right handlebar. The rear brake master cylinder (10, figure 1) is located near the rear brake foot pedal on right side of the motorcycle. *Clean around reservoir cover to prevent dirt from entering reservoir.* To check fluid level, remove cover screws, cover, and sealing gasket. Fluid level should be up to gasket surface *with reservoir in level position*. Reinstall cover and tighten screws to 14 in.-lbs. torque.

**WARNING — Brake fluid can cause irritation of eyes and skin and may be harmful if swallowed. If fluid is swallowed, induce vomiting by administering two tablespoons of salt in a glass of warm water. Call a doctor. In case of contact with skin of eyes, flush with plenty of water. Get medical attention for eyes. KEEP BRAKE FLUID OUT OF THE REACH OF CHILDREN!**

## Battery

The battery (figure 10) is located underneath the cover on the right side of the motorcycle.

It is the care given a battery, rather than time and miles of service, which is most important in determining its life.

### Solution

Inspect the level of the battery solution at least once a week during motorcycle operation, adding pure distilled water as often as necessary to keep the solution above the plates. If the motorcycle is not used for an extended period of time, check solution level before placing in service.

Remove battery and take out filler plugs. With a hydrometer or syringe, add water to each cell to raise level of solution between upper and lower level limits shown on battery.

Clean connections and check tightness every 1250 miles.



**WARNING** — Batteries contain sulfuric acid. Avoid contact with skin, eyes or clothing.

**ANTIDOTE** — External — Flush with water.

Internal — Drink large quantities of milk or water followed by milk of magnesia, vegetable oil, or beaten eggs. Call doctor immediately.

Eyes — Flush with water and get immediate medical attention.

Batteries produce explosive hydrogen gas at all times — especially when being charged. Keep cigarettes, open flame, and sparks away from the battery at all times. Ventilate area when charging battery. Always protect hands and protect eyes with shield or goggles when working near a battery or acid. **KEEP BATTERIES AND ACID OUT OF THE REACH OF CHILDREN!**

**CAUTION** — If battery is filled to a higher level, some of the solution will be forced out through the vent tube when battery is charging. This will not only weaken the solution, but also may damage parts near the battery. Keep battery clean and lightly coat terminals with petroleum jelly to prevent corrosion. Do not overtighten terminal connections. To prevent battery case damage caused by pressure built-up, be sure vent tube is properly routed and not kinked or obstructed.

## Charging

Check solution in each cell with a battery hydrometer. If hydrometer reading is below 1.200, remove battery and charge it from an outside source. The charging current should be 12 volt direct current and charging rate should not be allowed to go over 2.0 amperes. A higher battery charge rate may heat and damage the battery. For this reason, do not allow the motorcycle battery to be charged in the same line with auto batteries. Hydrometer reading of fully charged battery in good condition will be from 1.265 to 1.300. Allowing battery to remain in a discharged condition for any length of time shortens its life.

It is especially important that the battery be kept well charged in below freezing weather. A low or discharged battery is very likely to be frozen and ruined.

**WARNING** — Battery should be charged in a well ventilated area with the filler caps removed. Be sure charger is properly connected and adjusted observing positive (+) and negative (-) polarity to battery.

## Keep the Motorcycle Clean

Keeping the motorcycle clean on the outside as well as on the inside is good maintenance procedure. To aid you in keeping your motorcycle clean see your Harley-Davidson dealer for the following:



**WARNING** — Observe warning cautions given on labels of cleaning compounds to prevent personal injury or damage to your motorcycle.

#### Harley-Davidson "Gunk" Cleaner

Harley-Davidson "Gunk" will quickly and efficiently remove grease and oil from the metal parts of your motorcycle leaving a clean, bright finish. For unpainted metal surfaces, use full strength. For enameled surfaces, dilute according to instructions on can.

*Do not allow "Gunk" cleaner to come in contact with any plastic parts such as windshield, trim strips, seat or saddlebags, since it will discolor the surface or cause deterioration. Use Harley-Davidson "Plastic Cleaner," "Vinyl Dressing" or mild soap and water to clean these materials.*

**CAUTION** — When washing your motorcycle, be careful not to get the brakes, engine or mufflers too wet. Wet brake pads or a wet disc may affect braking, and a wet engine could start and run poorly until it dries. Start engine immediately after washing and be sure brakes and engine are operating properly before riding in traffic. Be especially careful not to allow water to enter the brake master cylinder through the vent hole in the filler plug.

#### Harley-Davidson "Chrome Cleaner"

Use Harley-Davidson "Chrome Cleaner" to make the chrome parts of your motorcycle glitter and sparkle.

#### Harley-Davidson "Cycle Polish"

Harley-Davidson "Cycle Polish" is made to clean and polish the enamel parts to maintain or restore these parts as close as possible to their original luster.

#### Harley-Davidson "Vinyl Dressing"

Harley-Davidson "Vinyl Dressing" is specially formulated for seats, pegs, grips, tires and all other vinyl, rubber, leather and plastic surfaces. Retards fading, cracking and aging. Restores full rich color leaving a soft natural appearance. Full instructions appear on the container.

#### Harley Davidson "Plastic Cleaner"

Use Harley-Davidson "Plastic Cleaner" to clean and remove fine scratches from most flexible or rigid plastic surfaces. Flush with water first to soften and remove excessive dirt. Follow instructions on the container.



# MAINTENANCE

To obtain the longest possible life and the best possible performance from your motorcycle it is necessary to keep it not only adequately serviced, but also correctly adjusted to the tolerances to which it was manufactured. The following are the adjustments and general maintenance facts pertaining to your motorcycle.

**WARNING** — Stop the engine and support the motorcycle securely before performing all maintenance procedures.

## ENGINE

### Spark Plugs

Inspect spark plugs for condition and electrode gap every 2500 miles.

The spark plug may be replaced or cleaned at the 2500 mile inspection depending upon the condition of the porcelain and electrodes, however, a new plug will provide best performance.

The plugs should be replaced with new ones at least every 5000 miles.

At the time of spark plug service, the gap should be checked and adjusted if necessary to 0.038 to 0.043 in.

Be sure that your motorcycle has the correct spark plug, which is the Harley-Davidson No. 4 (standard) or 4R (resistor type for radio noise suppression).

Spark plugs must be tightened to 25 ft.-lbs. torque in the cylinder heads for proper heat transfer. If a torque wrench is not available, tighten plugs finger tight and tighten an additional one quarter turn with a spark plug wrench.

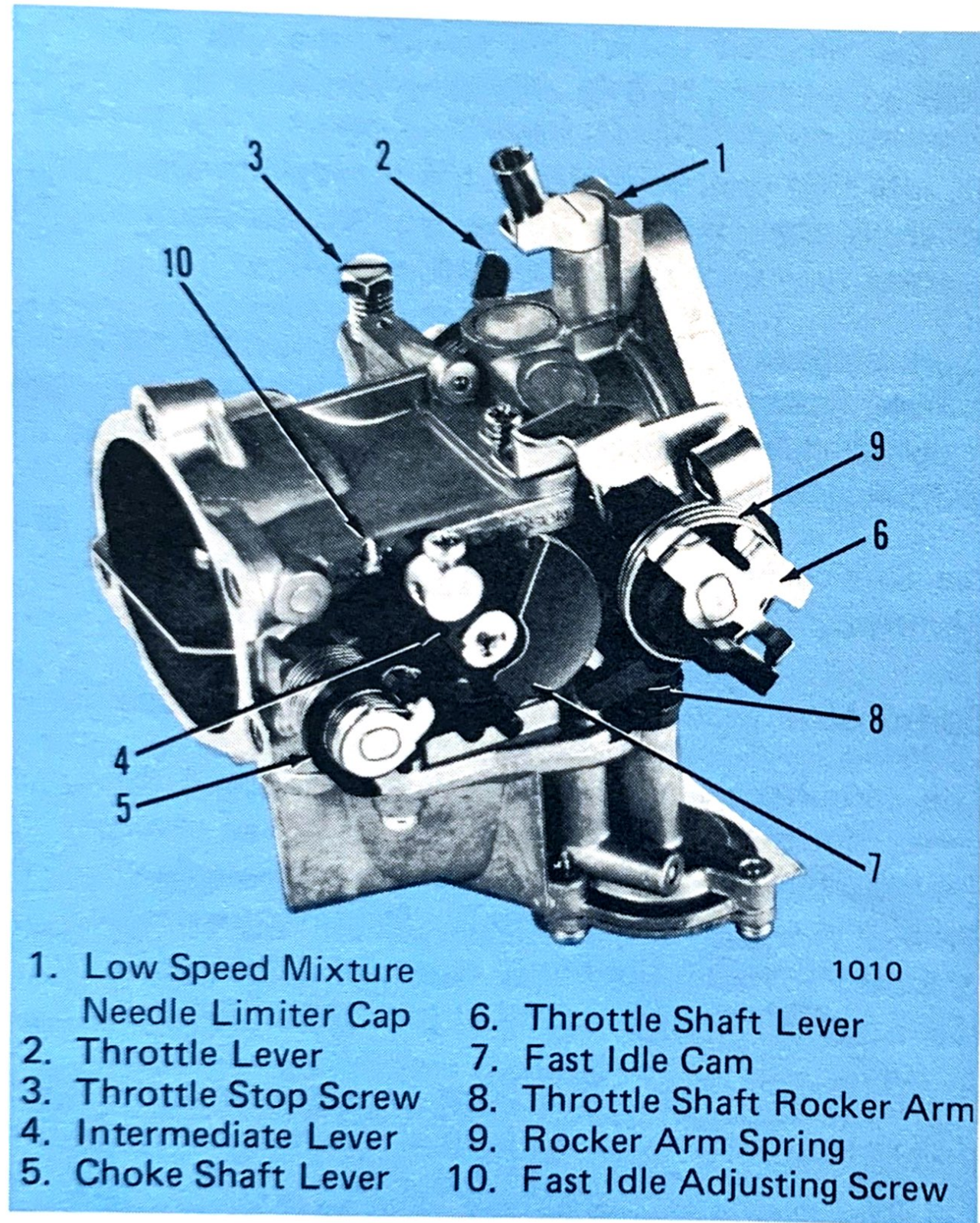
See Service Manual for complete spark plug service instructions.

### Carburetor (See figure 13)

The carburetor has been specifically designed for emissions control operation. All jets are fixed except for limited adjusting of the low speed mixture needle which is preset and capped at the factory. The mixture needle may be adjusted within the limits of limiter cap (1). The limiter cap should not be removed during normal tune-up.

The carburetor has a fuel bowl having a float operated inlet valve, an accelerating pump, a throttle stop screw for low idle speed adjustment, and choke system having a high idle speed cam with a screw for high idle speed adjustment.





**FIGURE 13. CARBURETOR**

The high idle speed cam operates in conjunction with the choke to raise the idle speed progressively as the choke disc closes for proper engine operation.

**CAUTION** — Adjusting the carburetor controls by procedures other than those specified in this section may violate Federal or State laws.

Carburetor controls include throttle, choke and low/high idle speed adjusting screws. Operation should be checked and adjusted after the first 500 miles and every 1250 miles thereafter. Check the idle mixture adjustment every 2500 miles.

**IMPORTANT** — Operation at higher altitudes (approximately 4000 ft. elevation) may require carburetor modifications for best engine performance. A high altitude carburetor kit, which provides leaner fuel/air mixtures, is available from your Harley-Davidson dealer.

Before attempting to correct faulty engine performance by servicing carburetor, check over "Locating Operating Troubles." In addition, be sure air cleaner element is clean and check carburetor, air cleaner, backplate gasket and manifold connections to be sure they are tight and not leaking air.

We recommend that any carburetor service be performed by your Harley-Davidson dealer.



### Carburetor Adjustment:

Remove air cleaner and backplate.

**WARNING — Do not operate engine without air cleaner attached, except when required for carburetor adjustment. Stay clear of carburetor intake when starting or running engine with air cleaner off. A possibility of fire exists due to engine back-fire with air cleaner removed.**

Make sure throttle control is adjusted so that throttle lever (2) fully opens and closes the throttle disc with handlebar grip movement. Make sure that choke control wire is adjusted to open and close choke fully. With engine warmed up to operating temperature and choke fully opened, adjust throttle lever stop screw (3) to make engine idle at 900 RPM with throttle closed. Turning screw clockwise opens throttle disc for faster idle. Never set idle to lowest possible speed. An extremely slow idle causes bearing wear, oil consumption and slow speed accelerating difficulties. The low speed mixture setting may be adjusted within the range of the adjusting needle limiter cap. Turn the limiter cap clockwise for a leaner mixture, counterclockwise for a richer mixture. The mixture should be adjusted to the leanest setting that results in a smooth idle.

*Do not remove low speed mixture limiter cap. If the limiter cap has been removed and the factory idle mixture altered, the idle mixture must be reset according to Service Manual procedure.*

After low idle speed (900 RPM) setting has been obtained, pull choke knob out moving choke shaft lever (5) to first detent position (choke plate remaining fully opened), with fast idle cam (7) on intermediate lever (4) contacting throttle shaft rocker arm (6). Turn screw (10) in or out, as required to set engine fast idle at 1500 RPM. With choke knob all the way in, recheck slow idle speed.

The accelerating pump is preset at the factory and should not be altered.

Install backplate and air cleaner. Make sure carburetor seats tightly on backplate gasket. Air cleaner and backplate must be tight to prevent any air leakage.

### Ignition Timer Air Gap (See figure 14)

Ignition timer sensor air gap should be checked every 2500 miles. Remove spark plugs to permit engine to turn easily and rotate flywheels so that the wide lobe on the trigger rotor (1) is centered in the sensor (2). Check the gap between the rotor and the sensor using a narrow 0.005 in. feeler gauge. If gap is not correct, loosen screws (3) and move sensor as required.



Repeat for narrow lobe gap setting so that gap for both lobes is between 0.004 and 0.006 in. When gap is correct, tighten screws to 5 to 7 in.-lbs. torque.

**CAUTION** — When reinstalling timer cover, be careful not to pinch any wires. Route wires as shown in Figure 15.

### Ignition Timing (See figure 14)

Ignition timing should be checked every 2500 miles. Correct ignition timing and correct timer sensor air gap setting is absolutely necessary for proper engine operation and performance.

Spark timing cam is advanced automatically as engine speed increases through action of the flyweights in the ignition timer base. This insures correct spark timing to suit starting, low speed and high speed requirements.

To check or reset ignition timing, proceed as follows:

Remove ignition timer cover and set timer sensor air gap as outlined under Ignition Timer Air Gap.

Use a strobe flash timing light (timing gun) to view front cylinder advanced timing mark (7) on flywheel through accessory plastic view plug screwed into timing inspection hole (8) while engine is running at 2000 RPM. Timing light leads should be connected to front spark plug,

ground and positive red wire to battery terminal. Light will flash each time spark occurs. Loosen timer plate screws (5) just enough so plate (4) can be shifted using a screwdriver in notch (6) as light aimed into inspection hole (8) stops timing mark (7) in center of hole. Timing will retard 30° automatically when engine is stopped.

*The small dot which appears on or near the front cylinder advanced timing mark indicates rear cylinder advanced timing.*

### Setting Timing With a Circuit Tester (figure 14)

If a strobe timing light is not available, approximate timing can be obtained in an emergency by using the following procedure:

**CAUTION** — This procedure will result in approximate timing and engine can be operated in an emergency for a short period until advanced position timing can be obtained with a strobe light.

Remove screw plug from timing inspection hole (8) in left side of crankcase. Then remove front push rod cover so that opening and closing of front intake valve can be observed.

Turn engine in direction in which it runs until front piston is on compression stroke (just after front intake valve



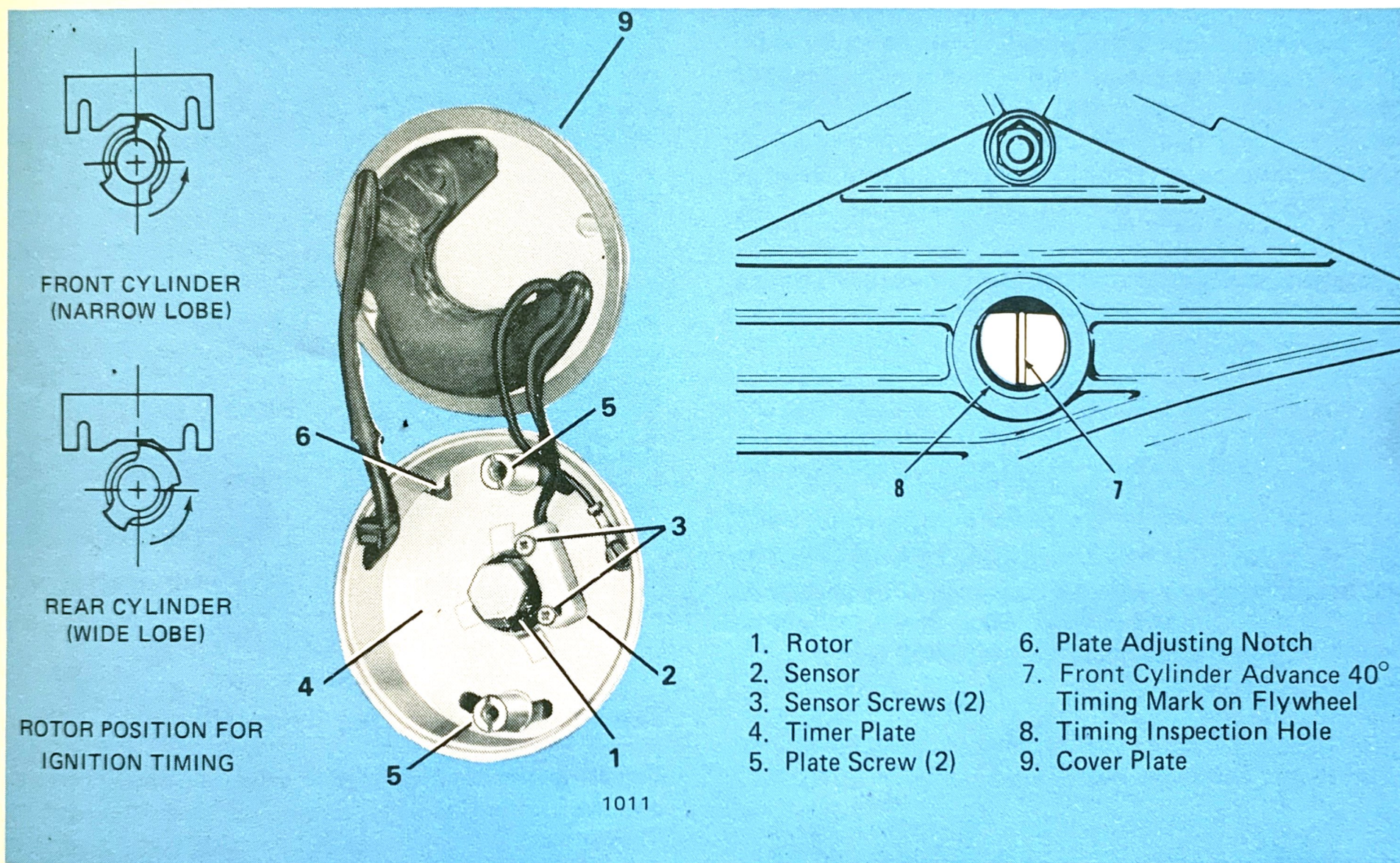


FIGURE 14. CIRCUIT BREAKER AND TIMING MARKS



closes), and continue turning engine very slowly (less than 1/2 revolution) until front piston advanced timing mark (7) on flywheel is aligned in the inspection hole (8) as shown.

A circuit tester, such as a 12 volt light bulb (No. 57), can be used to determine the exact point of ignition firing as follows:

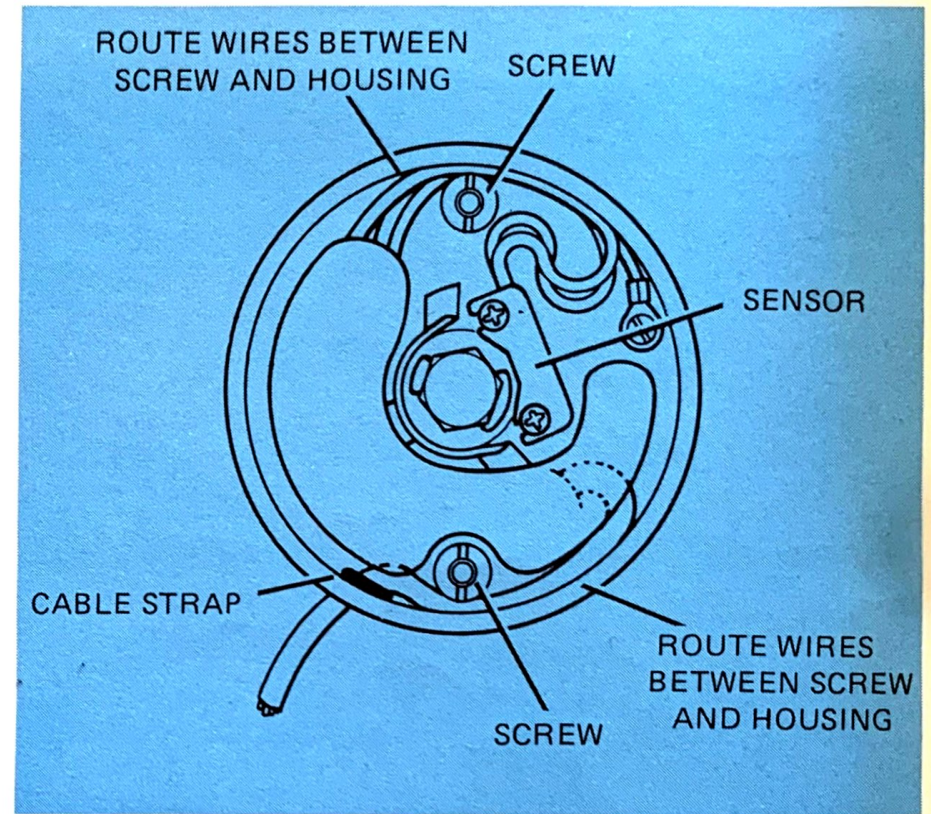
Disconnect the blue wire from the ignition coil primary terminal and connect test light to this terminal and to end of removed blue wire.

Loosen timer plate screws (5) so they are just snug and shift timer plate (4) so that centerline of the sensor body is aligned with the leading edge of the narrow lobe on the timer rotor as shown in figure 14.

Turn timer rotor (1) counterclockwise as far as it will go and hold in the fully advanced position. Shift timer plate (4) using a screwdriver in notch (6) so that light goes on or off. Tighten timer plate screws to 12 to 16 in.-lbs. torque.

**CAUTION** — When reinstalling timer cover, be careful not to pinch any wires. See Figure 15.

At intervals of 2500 miles, or at least once a year, have your dealer check the sensor air gap and ignition timing.

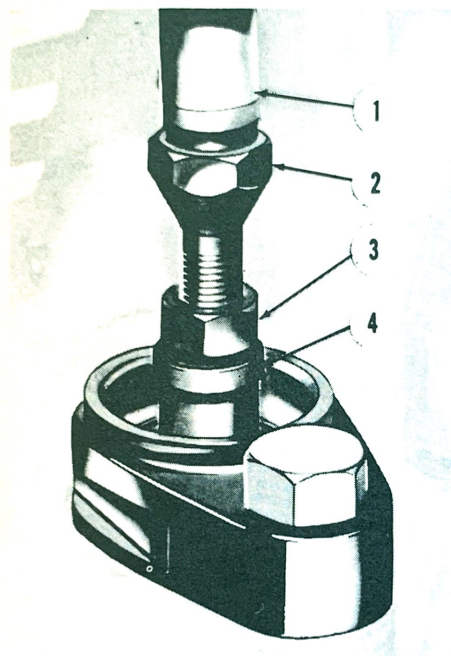


**FIGURE 15. IGNITION TIMER WIRE ROUTING**

### **Tappet Adjustment (See figure 16)**

To get the maximum power and best all around performance from an engine, keep valve tappets properly adjusted. They should be inspected and, if necessary, readjusted initially at 500 and 1250 miles, and every 2500 miles thereafter.





1. Push Rod
2. Tappet Adjusting Screw
3. Tappet Adjusting Screw Locknut
4. Tappet Body

FIGURE 16. TAPPETS

Engine must be cold during tappet adjustment. As each tappet is readjusted, make sure it is at its lowest position, by turning engine ahead until the like tappet in the other cylinder is at its highest position (valve fully opened). The inlet valves are those nearest the carburetor.

To uncover tappets, press down on push rod cover expander sleeve, and remove keeper at upper end. Cover then telescopes.

Loosen tappet adjusting screw locknut (3, figure 16) and turn adjusting screw (2) downward (into tappet body) until push rod is just free and has noticeable shake. When checking for push rod shake, grasp push rod with fingertips just below cylinder head, and shake toward front and rear of engine.

Slowly turn adjusting screw upward (toward push rod) until almost all play is removed. At this point lock tappet screw locknut against tappet body (4) (8 to 10 ft.-lbs. torque) and recheck for correct tappet adjustment.

A tappet is correctly readjusted when push rod has just noticeable play or shake, can be turned freely with fingertips, completely around, without any trace of bind.



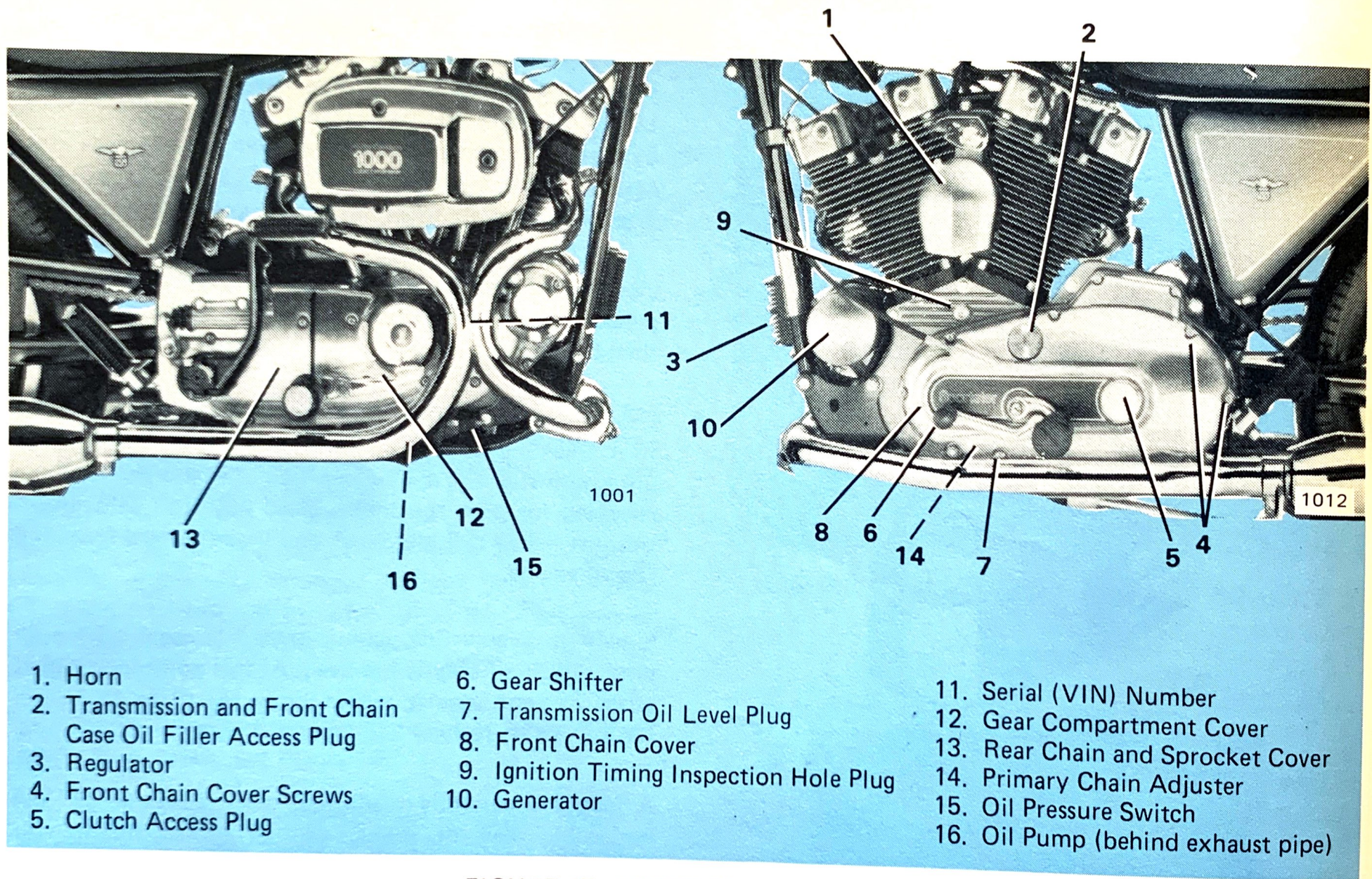


FIGURE 17. MODEL XLCH ENGINE



Each push rod cover is sealed with three rubber O-rings, one at each end and one below expander sleeve and spring. Re-place these O-rings if they show even slight damage or when more than very slight oil leakage develops around them.

When reassembling push rod covers, make sure that both ends of covers are properly seated against O-rings.

## TRANSMISSION

### Clutch (See figure 18)

Periodic adjustment of the clutch and oiling of the clutch control cable is required every 2500 miles to compensate for lining wear. The need for attention to clutch and controls will also be indicated by the clutch slipping under load, or dragging in released position. In any case, the first thing to be checked is the adjustment of control. It is not necessary to remove chain cover for simple adjustment. See steps 1 through 5.

1. Remove access plug (5, figure 17) from the left side chain compartment cover.

2. Loosen the locknut (1) and turn the screw (2) inward until it starts to release the clutch (screw turns harder). Then turn the screw two turns farther in, and lock locknut (1).
3. Loosen locknut (4) on adjuster (3) and turn the adjuster inward until slack can be felt in the cable (some play at hand lever). From that point, turn the adjuster back out to a position where all slack in the cable is just eliminated (no play at hand lever) and tighten the locknut. This is the correct cable adjustment.
4. The clutch release adjustment should then be made with screw (2) as follows: Loosen locknut (1) and back off the screw until the clutch is engaged (screw turns easier), then turn screw inward until the point where free play has just been eliminated. From this point, turn screw outward 1/2 turn to establish correct free play, hold screw in this position and tighten locknut.
5. If the above procedure fails to produce correct clutch adjustment, remove left side gear compartment cover and check clutch operating lever to see that three balls on operating cam return to low position in cam when lever is released. Loosen locknut (4) and adjuster (3) inward until there is 1/8 free hand lever movement



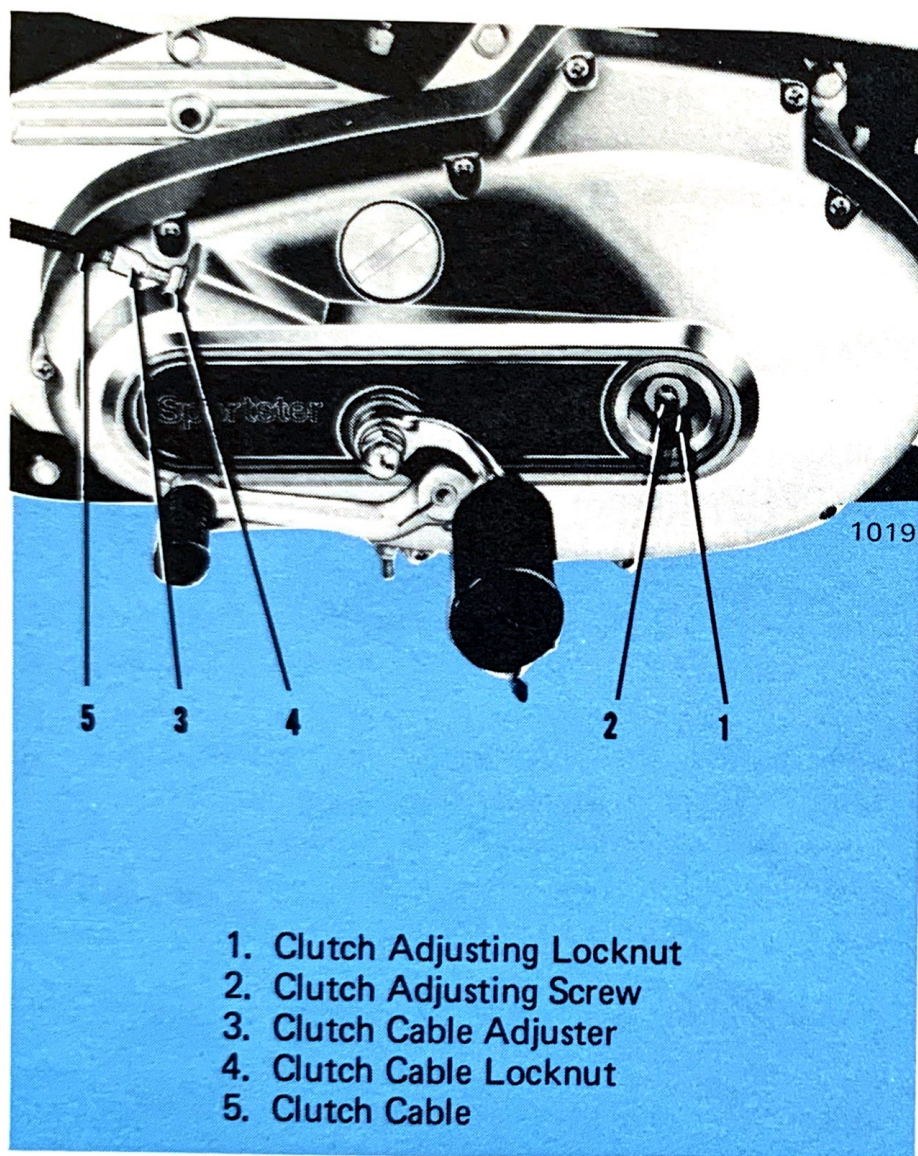


FIGURE 18. CLUTCH ADJUSTMENT

when balls are seated in low position in cam. Reinstall cover on crankcase and then adjust clutch adjusting screw as described previously.

If the clutch continues to slip under load or drag in released position, the clutch friction plates may be worn and require replacement.

When the clutch must be adjusted or taken apart, it is advisable to have it serviced by a Harley-Davidson dealer where any needed new parts are at hand.

## CHASSIS

### Chains

Inspect the adjustment of the front chain at 1250 mile intervals and the rear chain at 300 mile intervals. Readjust them if necessary. If chains are allowed to run too loose they will cause the motorcycle to jerk when running at low speed, and both the chains and sprockets will wear excessively.

Adjust both front and rear chains so they have the correct amount of free movement up and down, midway between sprockets. Do not adjust tighter, because running chains too tight is even more harmful than running them too loose. As chains stretch and wear in service, they will run tighter at one point on the sprockets than at another; always check adjustment at the tightest point.



Inspect chains occasionally for links in bad condition. If any are found, replacement of entire chain is recommended. The rear chain can be taken apart and removed after locating and taking out the spring-locked connecting link. See "Chain Repair." The front chain is not provided with such a connecting link. Therefore, it is necessary to remove the engine sprocket and clutch before the chain can be taken off for replacement.

#### Front (Primary) Chain Adjustment (See figure 19)

The adjustment of front chain (1) can be checked through hole in left side cover (2). The chain is adjusted correctly when the upper strand has the following up and down free play:

5/8 to 7/8 inch with a cold engine, or,  
3/8 to 5/8 inch with a hot engine.

Adjustments can be made without removing cover (2). To adjust, loosen locknut (3) and turn screw (4) either IN to reduce free play or OUT to increase free play.

After adjusting, retighten locknut (3) and replace cap in hole in cover (2).

If screw (4) is screwed in all the way and chain (1) is still too loose, either slider (5) in shoe assembly (6) or chain is probably worn out and should be replaced. Take your motorcycle to the nearest Harley-Davidson dealer for service.

#### Rear Chain Adjustment (See figure 20)

A correctly adjusted rear chain should have 1/2 inch free up and down movement half way between transmission sprocket and rear wheel sprocket with weight of motorcycle and rider on wheels. To adjust chain, loosen axle nut (7) on left side of motorcycle; loosen locknuts (4) on rear wheel adjusting studs (3). The adjusting studs extend through and out the rear ends of frame fittings on either side. Turning nuts clockwise moves the wheel back to tighten chain; turning nuts counterclockwise and tapping each end of the axle to move wheel forward will loosen chain. Turn nut (4) on either side exactly the same number of turns to maintain alignment of wheel. The distance from locknut to outer end of adjusting stud (3) should be the same on both sides. Check correct alignment of wheel by observing that tire runs about midway between rear frame tubes and also that rear wheel sprocket runs centrally in the chain. When readjustment is completed be sure to securely retighten rear axle nut (7) to 50 ft.-lbs. torque. Retighten rear wheel adjusting locknuts (4), also.

Rear chain adjustment should be checked every 300 to 1250 miles depending on service conditions.



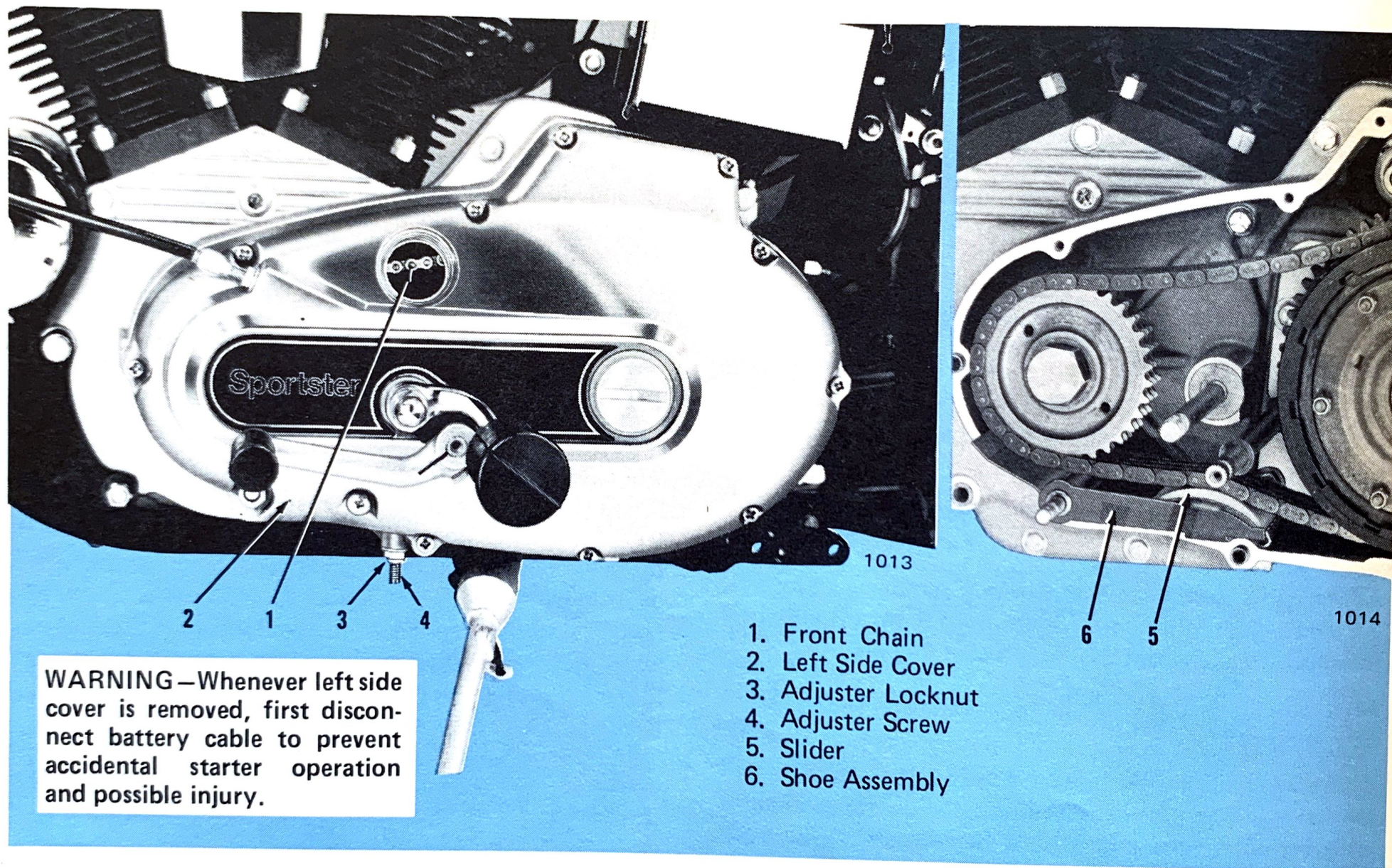
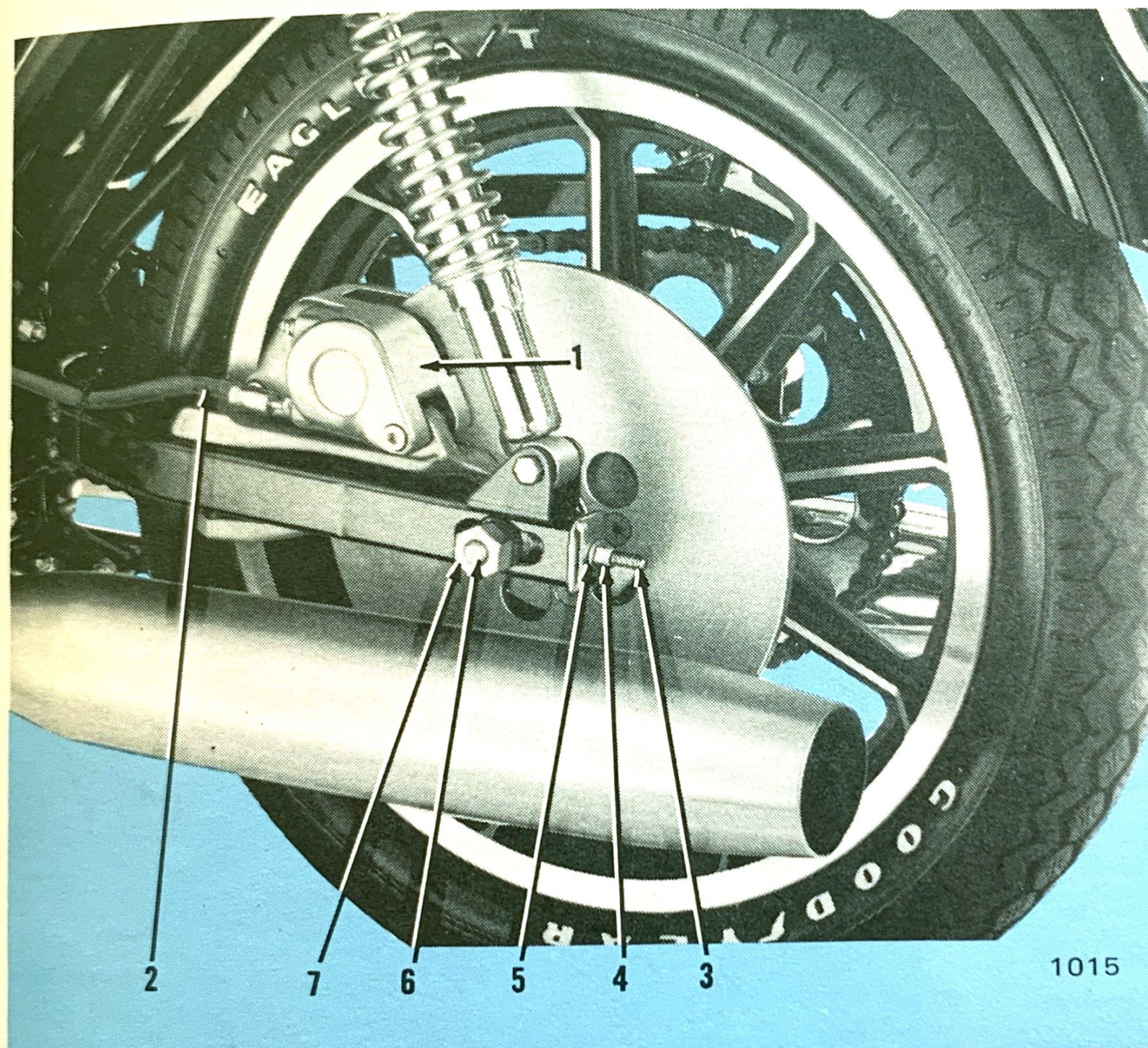


FIGURE 19. FRONT CHAIN ADJUSTMENT





1. Brake Caliper
2. Brake Hydraulic Line
3. Rear Wheel Left Side Adjusting Stud
4. Rear Wheel Left Side Adjusting Stud Locknut
5. Rear Wheel Left Side Adjusting Stud Washer
6. Rear Axle
7. Rear Axle Nut

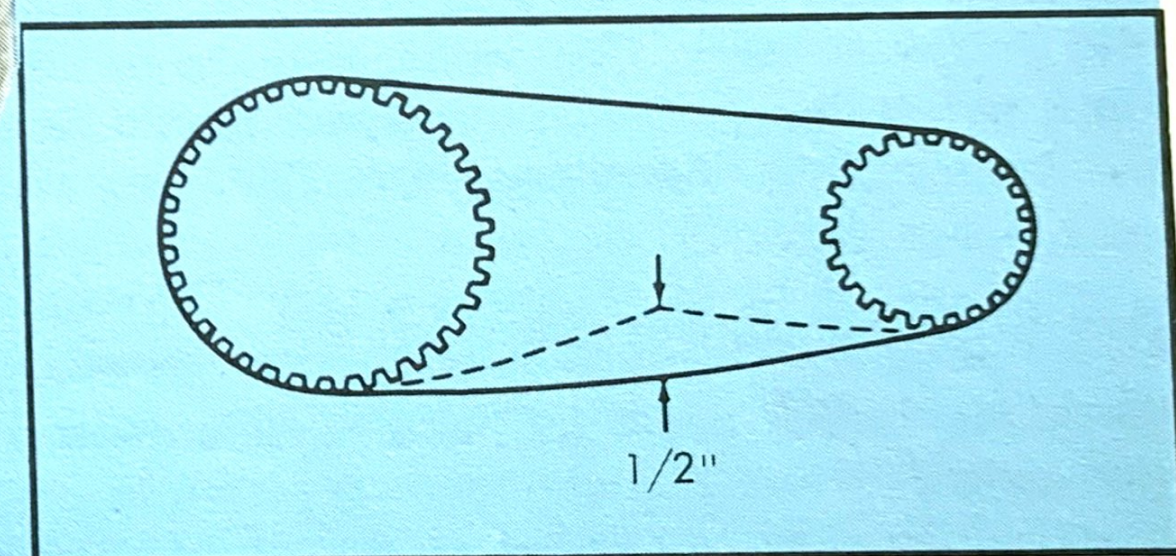


FIGURE 20. REAR CHAIN ADJUSTMENT



## Rear Chain Repair

To repair rear chain in an emergency, remove the damaged links by pushing out the riveted link pins with a chain repair tool (obtained from dealer). Then install the necessary repair links. This tool is also used to remove press fit connecting link side plate when replacing entire rear chain.

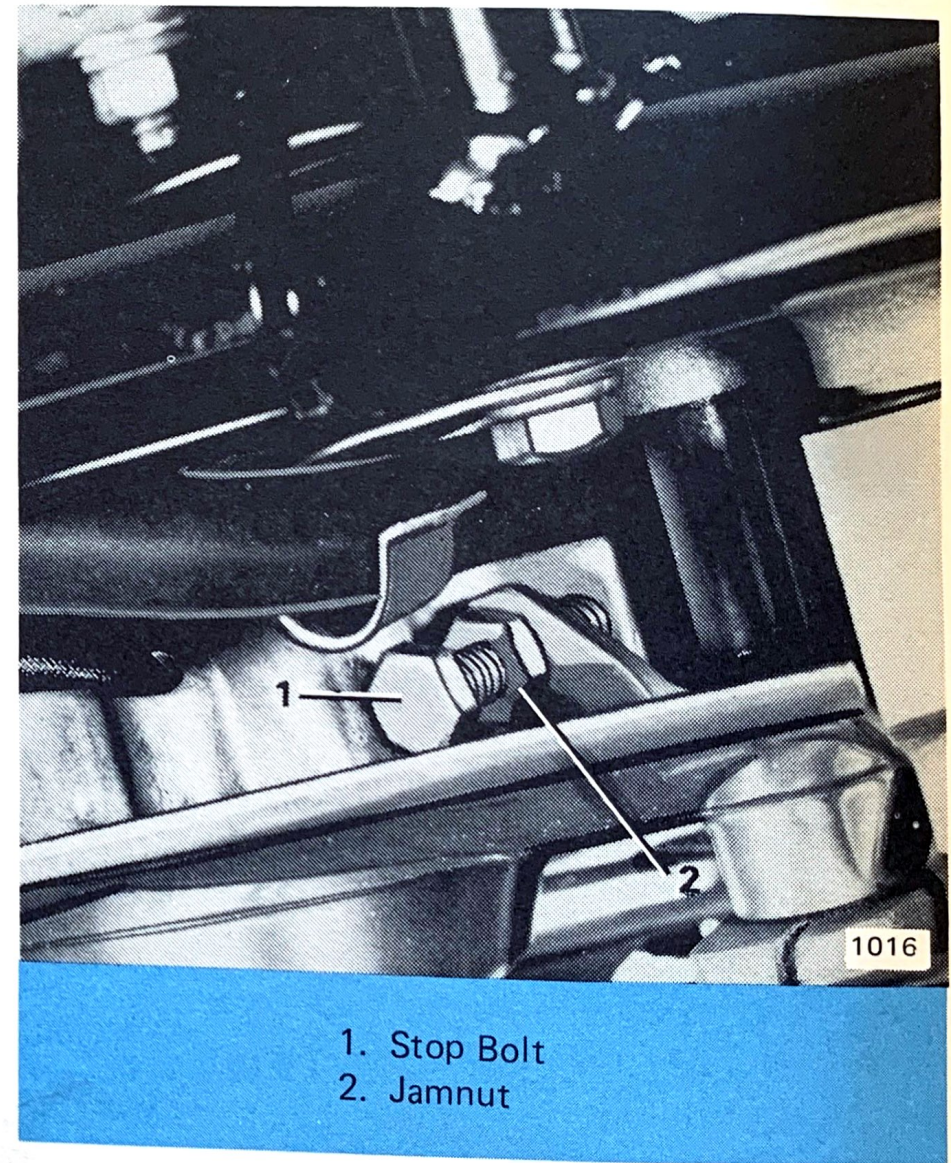
## Brakes

### Front Wheel Brake

The front wheel hydraulic brake mechanism is self adjusting and does not require periodic service except for checking master cylinder fluid level and brake pad lining and disc wear every 1250 miles. If brake pad linings are worn to less than 1/16 inch thick, pads should be replaced. Oil the front brake hand lever every 2500 miles.

### Rear Brake Adjustment (See figure 21)

Work rear brake pedal by hand to determine free play (movement before plunger contacts piston in master cylinder). Free play, measured at the plunger, of plunger should be approximately 1/16 inch to be sure rear brake cylinder hydraulic pressure is relieved when brake pedal is released.



**FIGURE 21. REAR BRAKE ADJUSTMENT**  
(Behind sprocket cover below engine)



Adjustment is made by means of a stop bolt (1) which is located underneath the right side of the engine just below the rear brake pedal. Loosen jamnut (2) and turn adjusting screw in (clockwise) to decrease free play, or out (counterclockwise) to increase free play. When approximately 1/16 inch free play is obtained, tighten jamnut (2) while holding stop bolt (1) in position. Recheck free play.

## Wheels

Removal of front or rear wheel is necessary for repair or replacement of tires.

### Removal of Rear Wheel (See figure 22)

Support motorcycle underneath frame with rear wheel raised. Locate and remove chain connecting link (1) and disengage chain from rear sprocket. Remove axle nut (5), lock washer (4) and flat washer (3). With a soft hammer tap end of axle (2) to loosen it and start it out. Pull the axle the rest of the way out and remove wheel assembly.

**CAUTION** — Do not operate rear brake pedal when rear wheel is removed because the brake caliper piston may be forced out of the bore, requiring disassembly of the brake system to get it properly reseated.

To reinstall wheel, reverse the above procedure. Adjust rear chain as described previously under "Rear Chain Adjustment". Tighten axle nut to 50 ft-lbs torque.

### Removal of Front Wheel (See figure 23)

Support motorcycle underneath frame with front wheel raised. Detach both the right and left caliper assemblies from the fork sliders by removing mounting hardware (3). Let caliper assemblies hang down loose out of the way as shown in figure. Remove axle nut (6), lockwasher (7) and washer (8). Loosen slider cap hardware (4). With a soft hammer tap left end of axle (5) to loosen it and start it out. Pull axle (5) out of fork assembly. Remove front wheel assembly and speedometer drive (9).

**CAUTION** — Do not operate front brake lever when the front wheel is removed because the brake caliper piston may be forced out of the bore, requiring disassembly of the brake system to get it properly reseated.

To reinstall wheel, reverse above procedure. Be sure speedometer drive (9) ear engages hole in wheel hub when installed. Securely tighten axle nut (6) to 50 ft.-lbs. and then tighten slider cap hardware (4) to 11 ft.-lbs. torque. This will insure correct alignment of the fork sides. Tighten caliper mounting bolts (3) to 11 ft.-lbs. torque.

## Wheel Hubs

Bearings should be repacked at 10,000 mile intervals, or yearly if operated in winter weather. Use wheel bearing



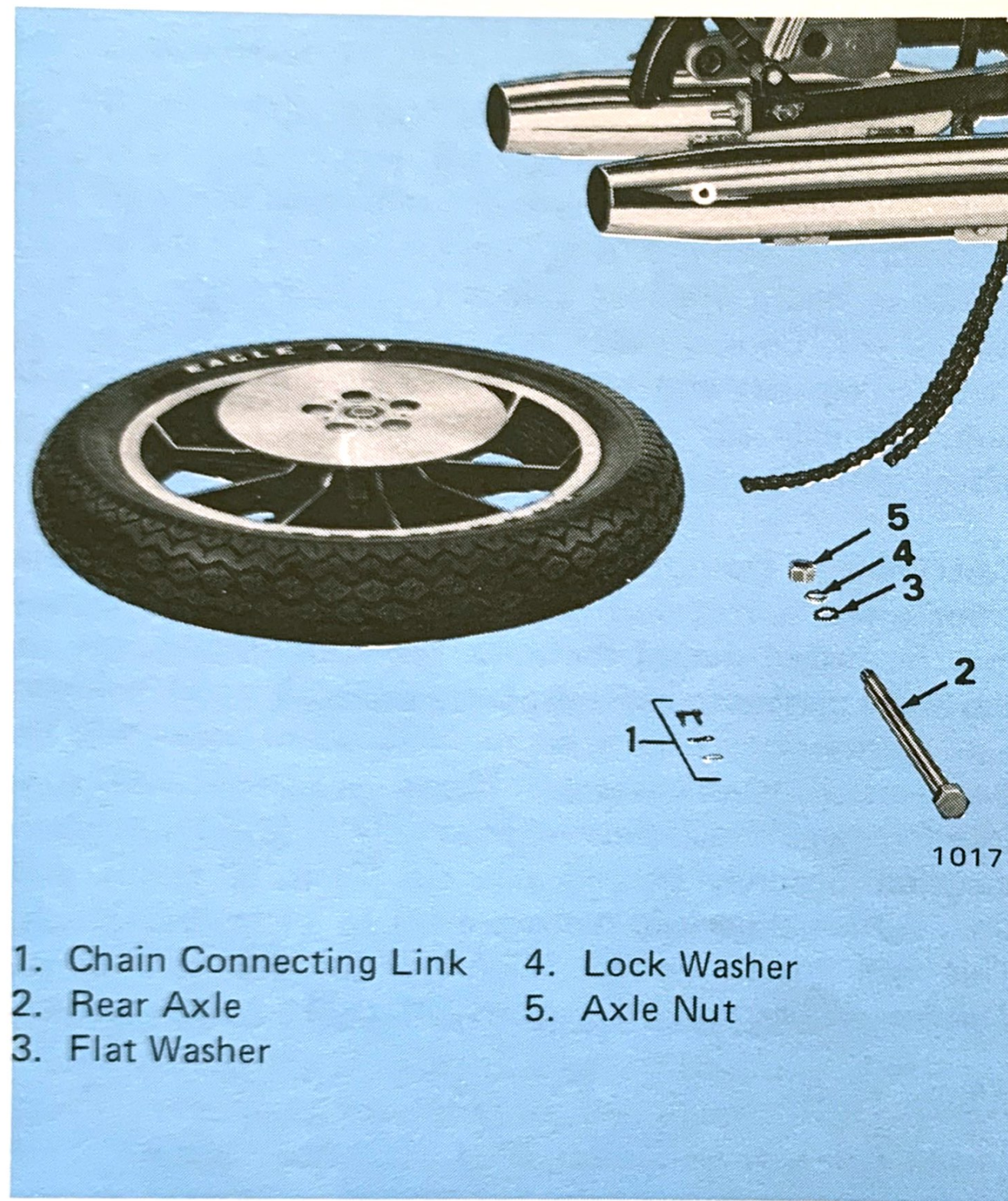


FIGURE 22. REAR WHEEL REMOVAL



FIGURE 23. FRONT WHEEL REMOVAL



grease and new seals. Excessive play or roughness indicates worn bearings and they will require replacement.

## Shocks

Shocks and rubber bushings should be inspected every 5000 miles.

## Tires

Care should be taken to keep tires properly inflated. See TIRE DATA, page 8, for correct cold tire inflation pressures. Check before riding when tires are cold. Do not over-inflate tires.

**WARNING** — Improper tire inflation will cause abnormal tread wear and could result in unstable handling. Under-inflation could result in the tire slipping on the rim.

Check inflation pressure and inspect tread for punctures, cuts, breaks, etc., at least weekly if in daily use; or before trips, if used occasionally.

Tires should be replaced when the tread depth at the center of the tread is less than the following limits:

Front — 1/16 inch (1.5 mm)

Rear — 3/32 inch (2.0 mm)

**WARNING** — Riding with excessively worn, unbalanced or improperly inflated tires is hazardous and will adversely affect traction, steering and handling.

**Same as original equipment tires must be used. Other tires will not fit correctly and may be hazardous to use.**

Tires should be mounted on rim with arrow on sidewall pointing in direction of forward wheel rotation. Balance mark on tire sidewall should be located at the inner tube valve stem.

**WARNING** — When repairing a flat tire or installing a new tire, these procedures should be followed.

1. Always locate and eliminate the cause of the original tire failure.
2. Do not patch or vulcanize a tire casing because this weakens the casing and may cause a blowout.
3. An inner tube should be patched only as an emergency measure. Replace the damaged tube as soon as possible.
4. Be sure the inner tube is the correct size for the tire casing to prevent stretching or wrinkling of the tube which will weaken it.
5. The use of tires other than those specified as acceptable replacements may adversely affect handling.
6. Proper wheel balance is necessary for safe, stable handling of the motorcycle. Do not remove or change any wheel balance weights. Wheel balancing is required after tire repair or replacement (dynamic balancing is preferred).



7. Because tires, tubes and wheels are critical safety items, and servicing of these items requires special tools and skills, we recommend you see your dealer for these services.

## ELECTRICAL

### Headlamp

The headlamp is of the sealed-beam type. It was specially designed and is specially made for the Harley-Davidson motorcycle. When replacement is required, use only the prescribed sealed unit.

#### Replacing Headlamp Sealed-Beam Unit

If either filament burns out, or the lens breaks, the entire sealed-beam unit must be discarded and a new unit installed.

Remove outer molding clamp screw and molding to remove sealed-beam unit from rubber mounting ring. Pull connector block from sealed-beam unit prongs.

Install new sealed-beam unit by reversing above operations. Make sure connector block contacts are clean to insure good electrical contact. After final assembly re-adjust headlamp as described in following paragraph.

### Headlamp Adjustment

The headlamp beam must be adjusted for height and direction. To get the greatest efficiency from the headlamp and to meet the requirements of the law, make the following adjustment in a darkened room or at night.

1. With the tires correctly inflated stand the motorcycle on a level surface about 25 feet away from, and headed toward a wall or screen upon which a horizontal line has been drawn at exactly the same height as the headlamp center. The motorcycle must be resting on both wheels, and the front wheel must be in straight ahead alignment. Furthermore, to correctly adjust the headlamp on the motorcycle, it will be necessary to have someone of about the same weight as the rider seated on the motorcycle because the weight of the rider will compress the fork slightly.
2. Turn on light switch, set handle bar switch to the HI BEAM position, and check light beam for height and direction. The top of the main beam of light should register on the wall or screen even with, but no higher than, the horizontal line mentioned above.
3. Remove snap plug on top of headlamp housing and loosen the clamp nut behind the lamp bracket. Tilt the lamp up or down to properly aim it in relation



to the horizontal line and at the same time turn it right or left to direct the beam of light straight ahead. Tighten the clamp nut after the lamp is properly positioned.

## **Generator Charging Rate and Regulator**

The generator itself has no adjustment for control of output. This is controlled by the regulator. The regulator functions to increase power output when battery is low or lamps are lighted, and to decrease charging rate when no lamps are lighted or when battery is up. The regulator requires no regular interval attention.

Should any electrical system trouble be experienced that might be traceable to the voltage regulator, motorcycle should be taken to your Harley-Davidson dealer who has the necessary electrical testing equipment to give required attention.

## **Inspecting or Replacing Generator Brushes**

Inspect generator every 5000 miles and service if necessary.

To inspect generator commutator and brushes, remove the inspection cover band. Commutator should appear smooth and clean. Replace brushes when longest side of brush measures 1/2 in. or less. Excessive brush wear will

be indicated if brush lead wire enters brush holder slot close to commutator.

Generator should be removed from engine and disassembled to replace brushes or recondition commutator. When re-installing inspection cover band, position connection ears at bottom of generator.

## **Circuit Breakers**

To protect the motorcycle wiring, there are four circuit breakers: main, lighting, accessory, and ignition.

Each of these breakers is self-resetting and automatically returns steady power to the circuit when an electrical fault that causes it to trip is found and corrected. If the electrical fault is not found and corrected, the breaker cycles on and off causing the motorcycle to operate erratically and eventually the battery will lose its charge.

For electrical problems, it is best to see your Harley-Davidson dealer who has necessary parts and equipment to perform electrical service.



## Bulb Chart

The chart below gives the light bulb locations and requirements.

Lamp Description (All Lamps 12V.)	Number of Bulbs Required	Candle Power or Wattage	Harley- Davidson Part Number
Headlamp High Beam Low Beam	1	50 watts 40 watts	67717-65
Tail and Stop Lamp Tail Lamp Stop Lamp	1	3 C.P. 32 C.P.	68165-64
High Beam Indicator Light	1	2 C.P.	71090-64
Generator Signal Light	1	4 C.P.	68536-75
Oil Pressure Signal Light	1	4 C.P.	68536-75
Speedometer, Tachometer Lights	1	2 C.P.	71090-64
Turn Signal Lamps	4	32 C.P.	68572-64A



## KEY FOR WIRING DIAGRAMS

- |                                    |   |
|------------------------------------|---|
| 1. Headlamp housing                | 26. Tachometer light                        |
| 2. Socket-plug combination         | 27. Front stoplight switch                  |
| 3. Socket-plug combination         | 28. Crankcase bolt (under battery)          |
| 4. Socket-plug combination         | 29. Starter relay                           |
| 5. Wiring harness                  | 30. Engine stop switch                      |
| 6. Headlamp dimmer switch          | 31. Tail lamp harness connector             |
| 7. Horn switch                     | 32. Lighting circuit breaker                |
| 8. Generator "F" and "A" terminals | 33. Accessory circuit breaker               |
| 9. Regulator                       | 34. Ignition circuit breaker                |
| 10. Tail lamp                      | 35. Connector                               |
| 11. Starter motor                  | 36. Right turn signal switch                |
| 12. Starter solenoid               | 37. Left turn signal switch                 |
| 13. Battery                        | 38. Turn signal flasher                     |
| 14. Rear stoplight switch          | 39. Left front turn signal lamp             |
| 15. Ignition coil                  | 40. Right front turn signal lamp            |
| 16. Ignition timer                 | 41. Left rear turn signal lamp              |
| 17. Ignition — light switch        | 42. Right rear turn signal lamp             |
| 18. Oil signal light switch        | 43. Tag, brown (R)                          |
| 19. Starter button                 | 44. Tag, violet (L)                         |
| 20. Horn                           | 45. Bolt to frame                           |
| 21. Speedometer light              | 46. Main circuit breaker                    |
| 22. Oil signal light               | 47. Handlebar bolt                          |
| 23. High beam indicator light      | 48. Diode                                   |
| 24. Generator indicator light      | 49. Rear turn signal lamp harness connector |
| 25. Headlamp socket                | 50. Regulator connector                     |

KEY TO COLOR CODE	
(BK)	BLACK
(W)	WHITE
(O)	ORANGE
(R)	RED
(GN)	GREEN
(Y)	YELLOW
(V)	VIOLET
(BE)	BLUE
(BN)	BROWN
(GY)	GRAY
(TN)	TAN



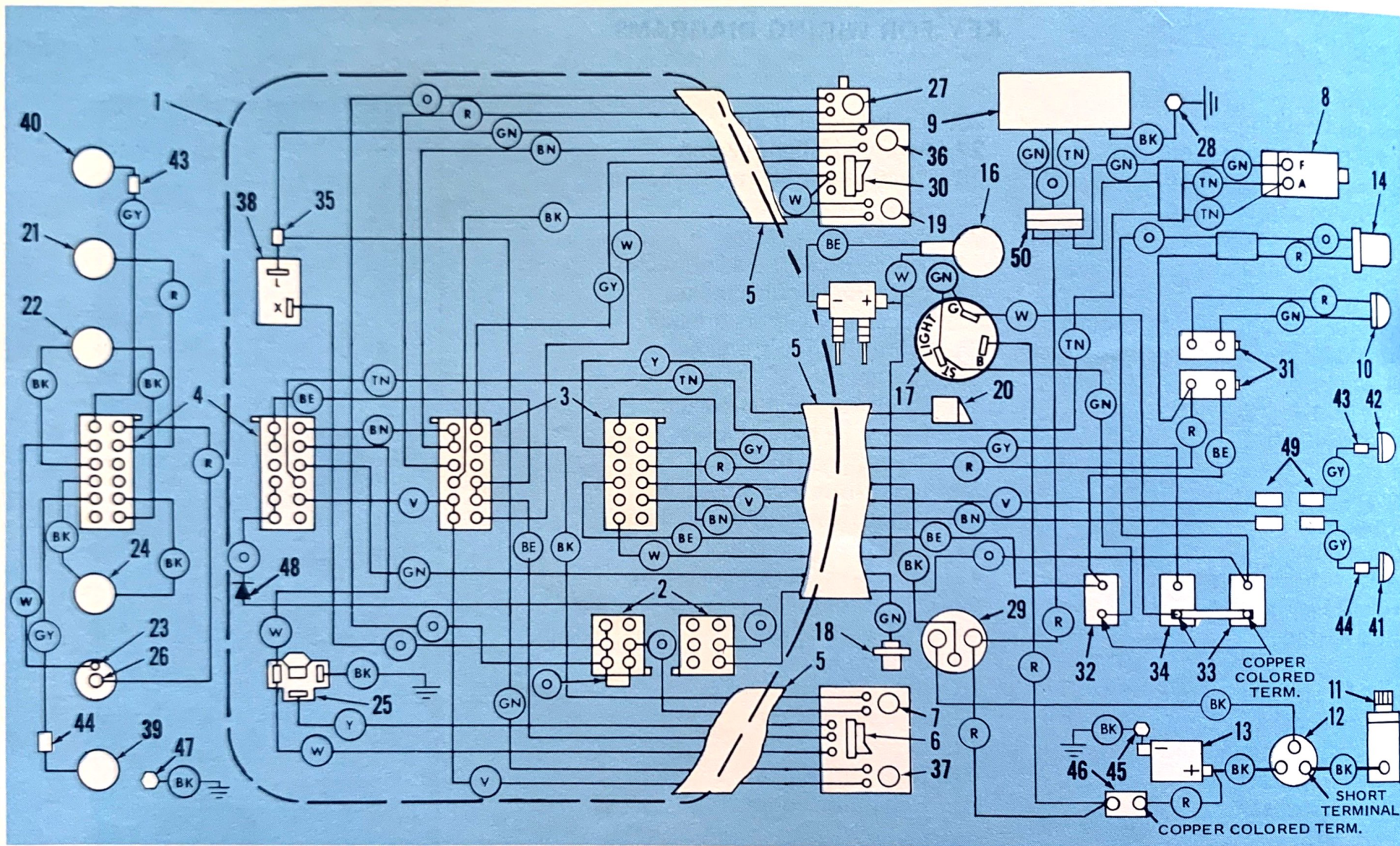
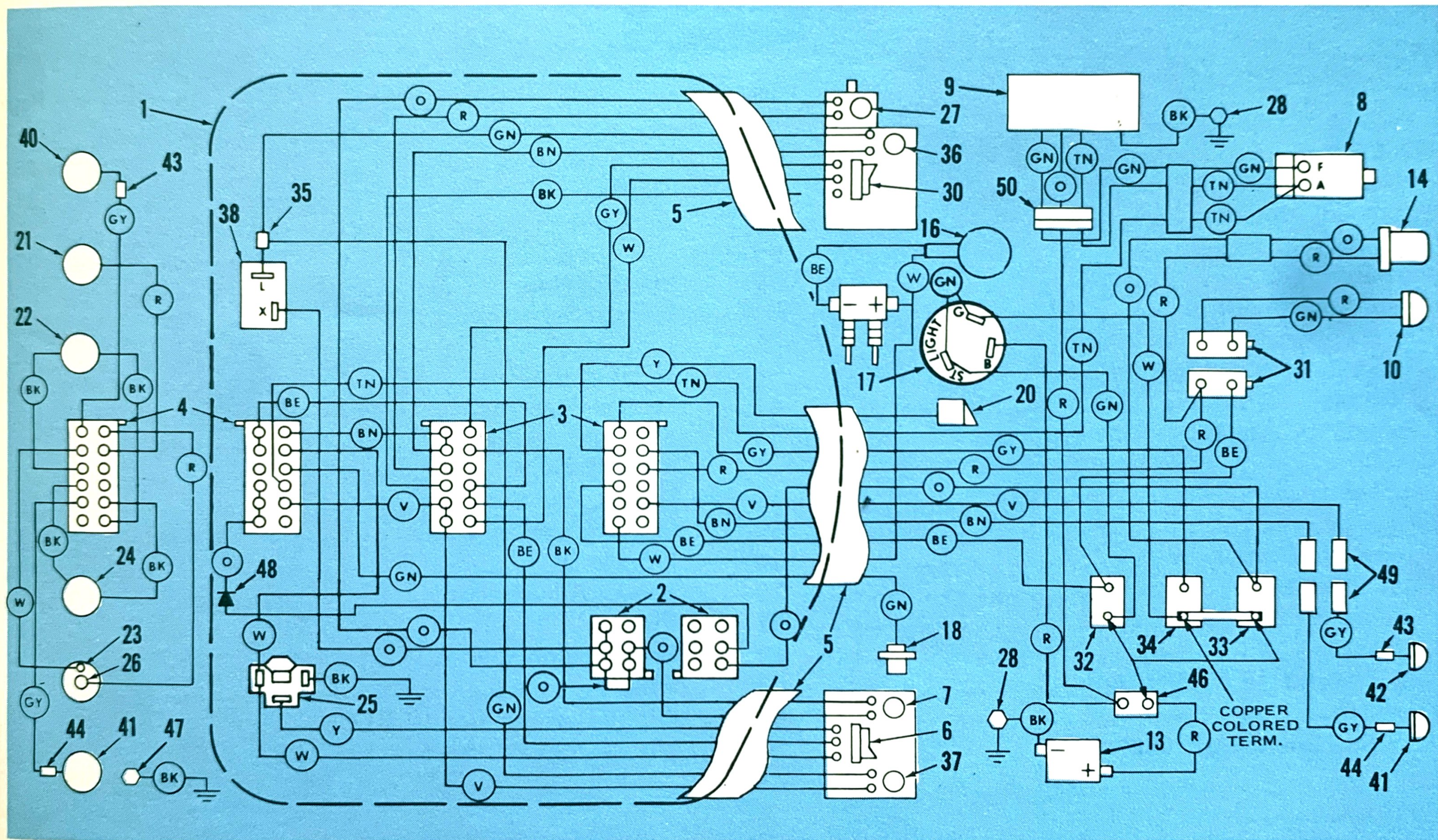


FIGURE 24. WIRING DIAGRAM, MODEL XLH/XLS







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#### **PATENT NOTICE**

Harley-Davidson products are manufactured under one or more of the following patents: U.S. Patents — 2986162, 2987934, 2998809, 3116089, 3144631, 3144860, 3226994, 3229792, 3434887, 3559773, 3673359, 3709317. Des. 225, 626.

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