

OPERATION
and
MAINTENANCE
MANUAL

MC-HD1

MILITARY PATTERN MOTORCYCLE

45 "V" ENGINE
MODEL WLC



Harley-Davidson Motor Co.
Milwaukee, Wisconsin, U. S. A.

FOREWORD

This manual is intended as both a guide and a reference book in the complete servicing of Harley-Davidson Military Pattern Motorcycles.

The book is divided into two major sections:

1. Operation, Inspection and Preventive Maintenance.
2. Workshop Procedure.

Section One covers correct maintenance of the vehicle to provide best operating efficiency. Section Two covers servicing methods which have been grouped according to major assemblies of the vehicles. Under each major unit the operations have been carefully outlined and numerous action illustrations with proper tools in use have been introduced to clarify the text.

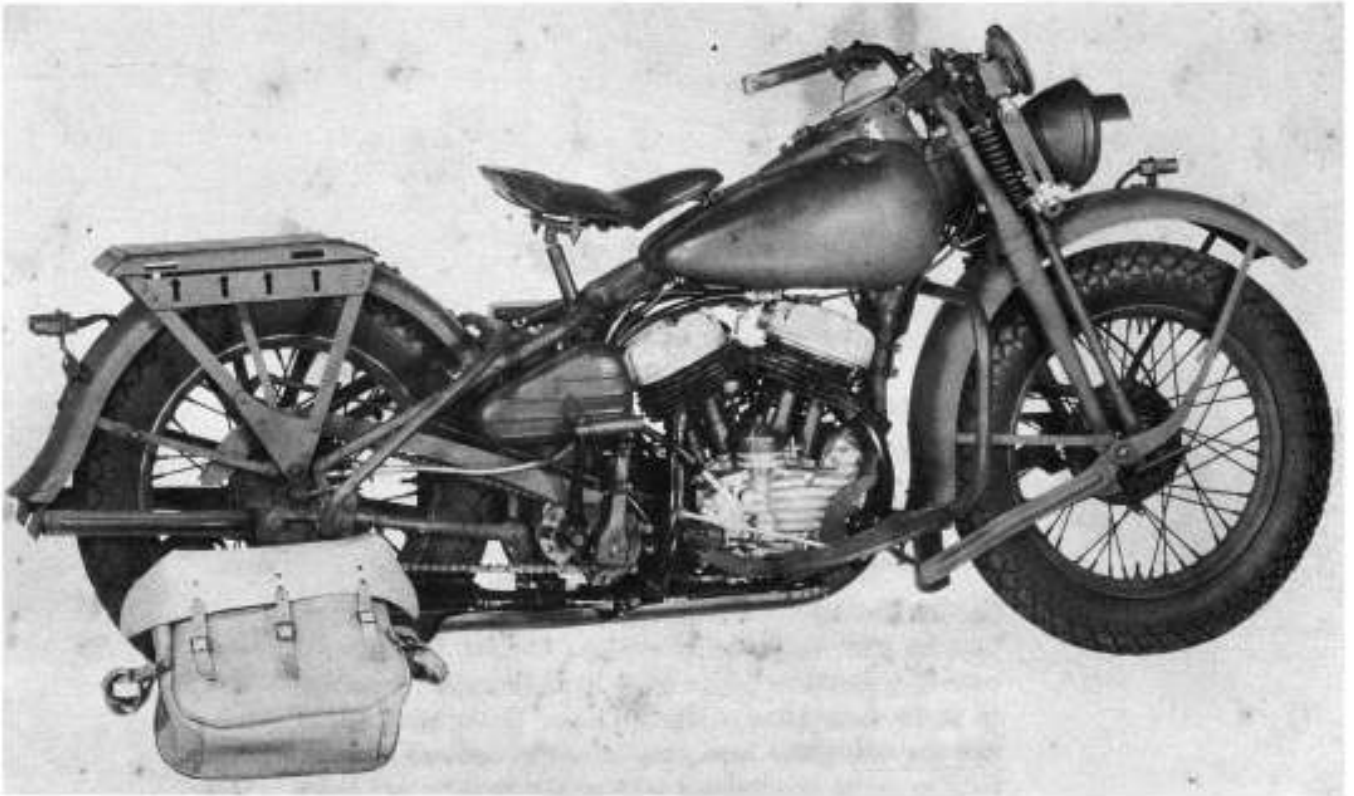
The more satisfactory and dependable performance of one motorcycle over another, when both are in the same type of service, is not generally due to any appreciable variation in original quality and construction. Experience has proven that it is usually the direct result of the operator's knowledge of correct operating and maintenance methods and his diligence in applying this knowledge.

1943 WLC ARMY MODEL

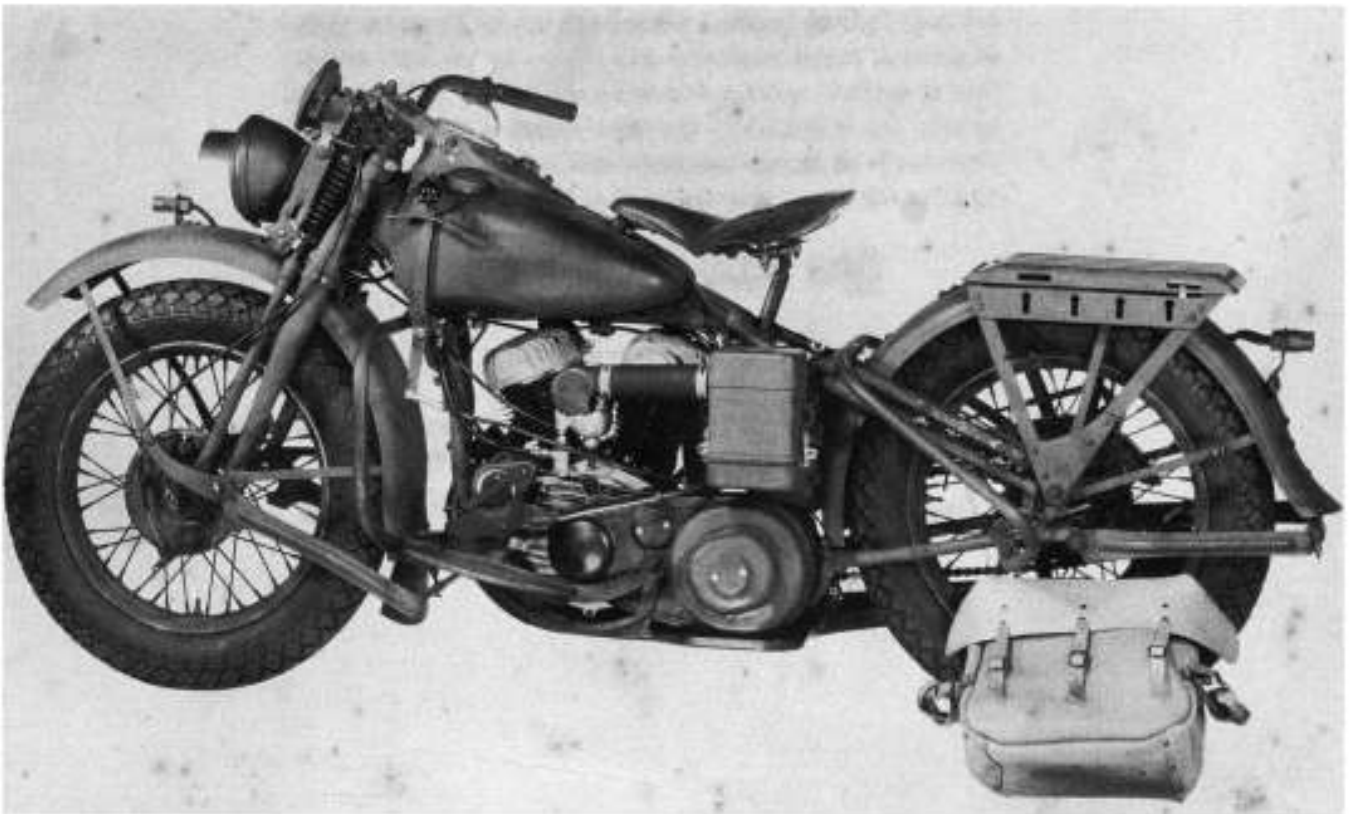
The nomenclature illustrations with detailed description in this manual are of the 1942 WLC Model. The 1943 WLC model differs only in its accessory equipment which may be observed in the first three illustrations.

The operation and maintenance information contained in this manual applies to both WLC Models.

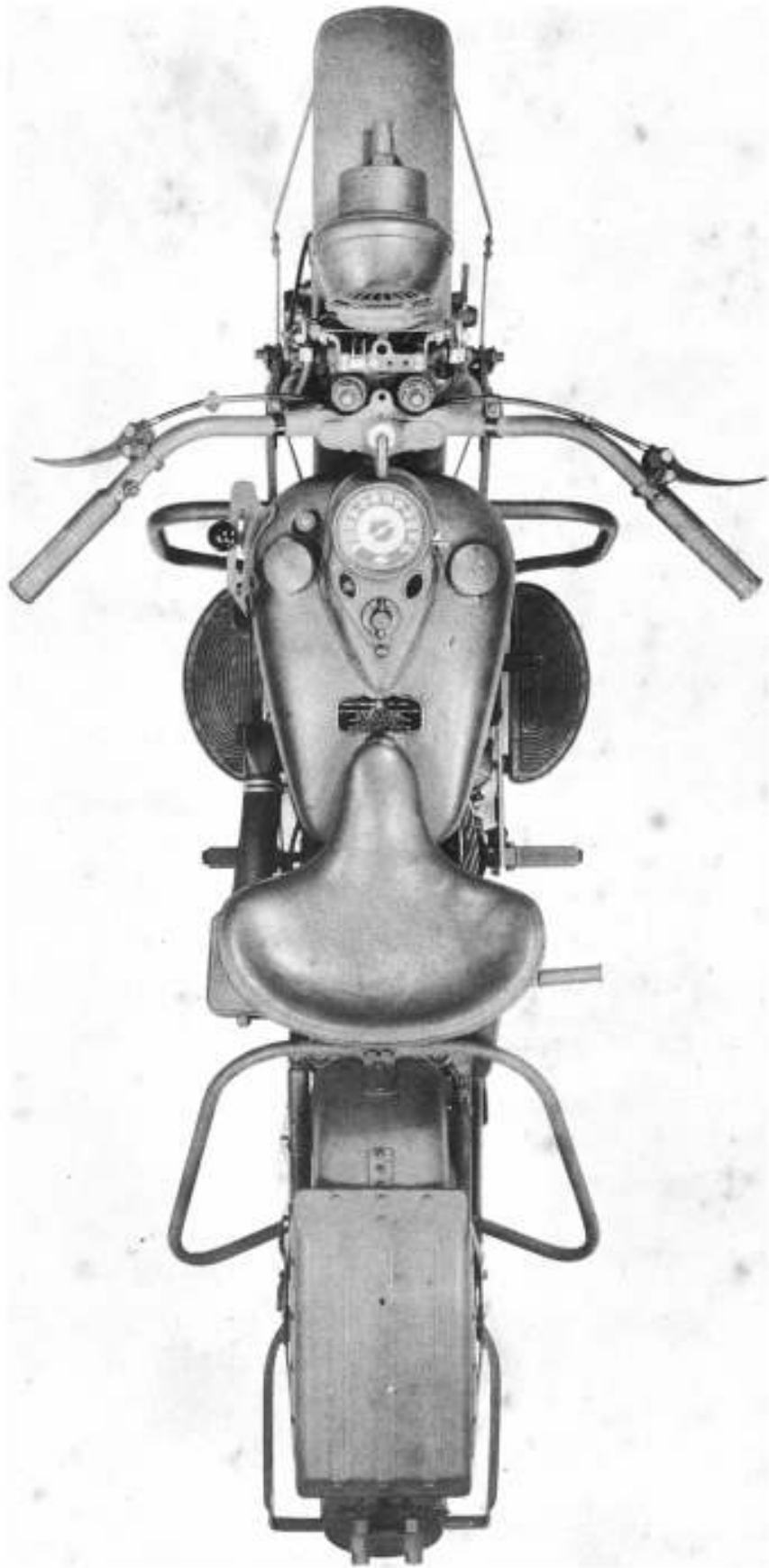
1943 WLC ARMY MODEL



RIGHT SIDE VIEW—COMPARTMENT IN RIGHT SADDLE BAG CONTAINS SPECIAL TOOLS AND ACCESSORIES FORMERLY CARRIED IN FRONT FENDER BOX.



LEFT SIDE VIEW — NOTE THE NEW TYPE, RECTANGULAR SHAPED OIL BATH AIR CLEANER.



TOP VIEW — 1943 WLC MODEL.

GENERAL SPECIFICATIONS

Model	WLC
Compression Ratio	5.0 to 1
Number of Cylinders	2
Cylinder Bore	69.85 mm. or 2¾ in.
Stroke	96.85 mm. or 3½ in.
Piston Displacement	739.46 c.c. or 45.12 cu. in.
Horsepower (N. A. C. C. Rating)	6.05
Horsepower (British Rating)	7.05
Wheel Base	57½ in.
Engine Sprocket (solo)	30 tooth
Engine Sprocket (sidecar)	27 tooth
Clutch Sprocket	59 tooth
Countershaft Sprocket	17 tooth
Rear Wheel Sprocket	41 tooth
High Gear Ratio (solo gearing)	4.74 to 1
High Gear Ratio (sidecar gearing)	5.27 to 1

ENGINE (SERIAL) NUMBER

In identifying a motorcycle as to its year and model, do not trust simply to knowledge of original differences in equipment and general appearance of one year's model as compared with another. Always identify by full *Engine (Serial) Number*.

Example:	Full Number	indicating	Year	Model	Serial No.
	42WLC2222		42	WLC	2222

The engine (serial) number is stamped on left side of engine base, just below front cylinder.

TIRE INFLATION PRESSURES

(4.00" x 18")

Front (solo)	16 pounds
Rear (solo)	18 pounds
Front (sidecar)	18 pounds
Rear (sidecar)	20 pounds

Note: Above tire inflation pressures are for average load and service. Increase pressure 2 to 4 pounds per tire for combined load of operator and equipment over 175 pounds, extra passenger or for maintained high speed riding.

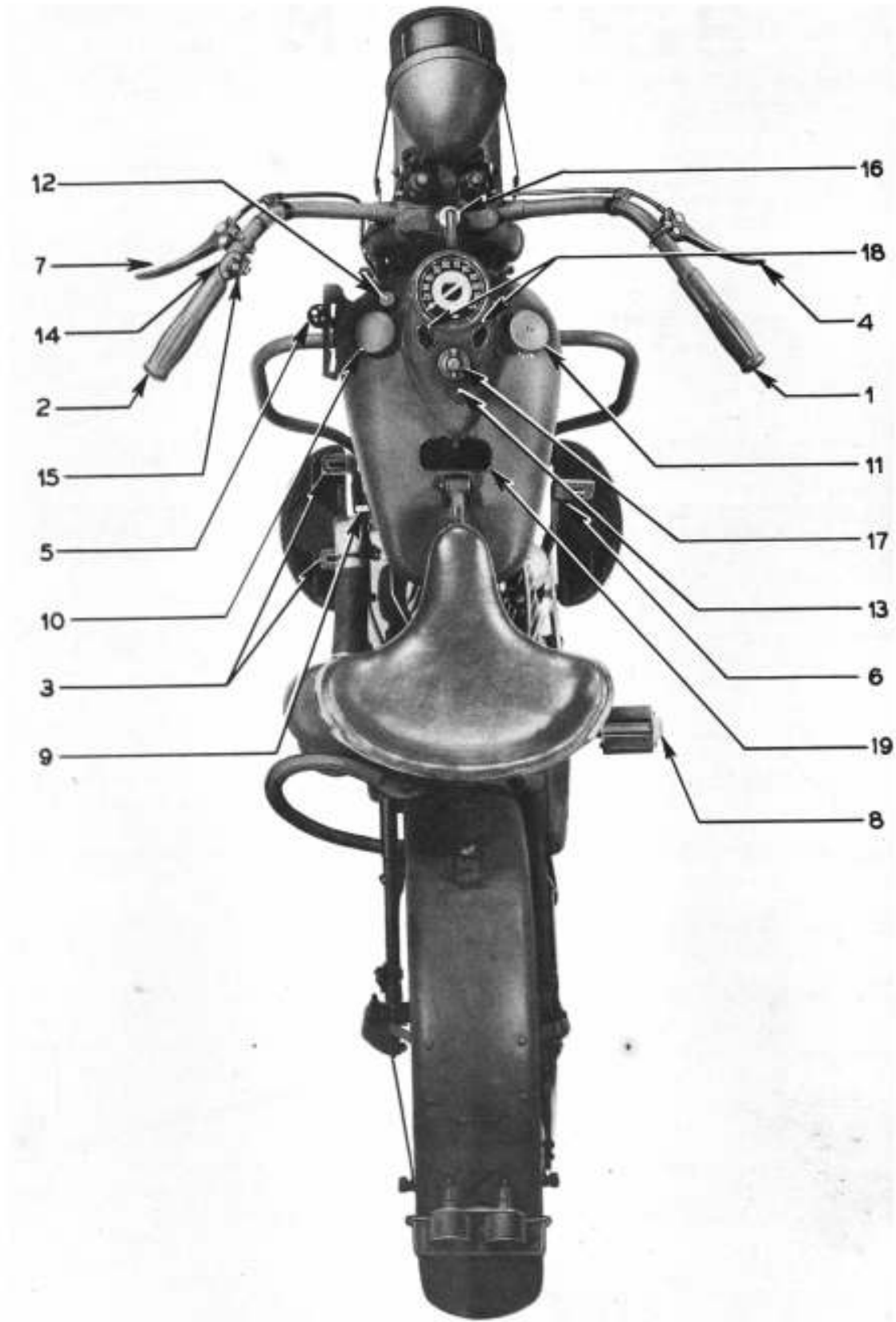
SECTION I

OPERATION, INSPECTION

and

PREVENTIVE MAINTENANCE

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ENGINE OPERATION	Page 9
INSPECTION AND PREVENTIVE MAINTENANCE	Page 11
LUBRICATION	Page 16



TOP VIEW — DETAILS 1 TO 19

ILLUS. 1

TOP VIEW — DETAILS 1 TO 19

(CONTROLS AND THEIR OPERATION)

1. **SPARK CONTROL GRIP** — Turn *inward* to advance; turn *outward* to retard. Under normal operation, carry a full spark advance. To avoid knocking and improve performance when engine is laboring under a hard pull, slightly retard spark. Some engines start better with spark slightly retarded.

2. **THROTTLE CONTROL GRIP** — Turn *inward* to open throttle; turn *outward* to close throttle. With all adjustments correct, the engine will continue to run at an idling speed when throttle is fully closed. Throttle adjustments should be made by the unit mechanic.

3. **CLUTCH FOOTPEDAL** — Clutch is engaged with *toe down*, *disengaged* with *heel down*. If the friction adjustment is correct, the clutch pedal will remain in any position within the range of its movement and yet may be rocked without undue effort on the part of the operator.

4. **CLUTCH HANDLEVER** — Clutch is *disengaged* when handlever is compressed, engaged when handlever is free.

NOTE (REGARDING DETAILS 3 AND 4) — Clutch must be engaged when starting engine (See Details 5 and 8). When starting motorcycle in motion, engage clutch with an easy movement; a quick engagement will "kill" the engine or spin the rear wheel. If either the clutch or its controls need adjustment, this attention should be given by the unit mechanic.

5. **SHIFTER LEVER** — Gear positions are marked on tank shifter guide. Lever must be in *neutral* and clutch engaged when starting engine. Release clutch fully when shifting.

6. **REAR BRAKE FOOTPEDAL** — Brake rod must be adjusted so brake doesn't take effect until footpedal is pushed downward about one inch. Brake should take full effect at least one inch before pedal bottoms. Wheel must spin freely when brake is released (See Detail 58).

7. **FRONT BRAKE HANDLEVER** — When properly adjusted, lever will move freely about one quarter of its full movement before brake begins to take effect. Always use rear brake in conjunction with front brake when bringing motorcycle to a stop. In using the front brake, especially under loose or slippery surface conditions, don't apply with a steady, hard pull; rather, employ a succession of brief applications. Don't use the front brake on sharp turns. Use front brake to hold motorcycle when starting on a grade, etc. (See Detail 29).

8. **KICK STARTER** — Kicks backward and downward. Gear releases at bottom of stroke. Shifter lever must be in *neutral* and clutch engaged when operating starter (See Details 3, 4 and 5). Always operate with a vigorous, full kick; a half-hearted, part-way kick will often result in the engine kicking back. (See "Starting Engine," Page 9.)

9. **CARBURETOR CHOKE LEVER** — When choke lever is in fully closed position, a large proportion of gasoline and little air are drawn into the cylinders. This position is for the purpose of *priming* only. Always have ignition switch "OFF" when turning engine over on "prime"; one or two kicks are usually sufficient. When starting engine after priming, open choke about one-quarter way in cold weather and one-half way in warm weather. Open choke fully when engine warms up. The choke lever is in full prime position when pulled up and in normal running position when down. (See "Starting Engine," Page 9.)

10. **GASOLINE TANK** — Tank capacity slightly over three U. S. gallons. Use fuel of high anti-knock rating — 74 octane or higher recommended. In order to prevent a vacuum lock of the gasoline flow, the gasoline tank cap is provided with a vent. For this reason it is important to avoid interchange of tank caps. The oil tank cap will fit the gasoline tank, but is not vented (See Detail 11).

11. **OIL TANK** — Oil level gauge rod located directly below tank cap. Tank completely empty holds one U. S. gallon; is considered full with oil level about one inch from top, as some air space is needed for expansion. When oil level is down to "Refill" mark on gauge rod, 2 U. S. quarts may be added. Oil tank cap is not vented; do not interchange with gasoline tank cap. See "Engine Lubrication," Page 17; read very carefully.

12. **GASOLINE SHUT-OFF VALVE AND RESERVE SUPPLY PLUNGER** — Gasoline is shut off when plunger is turned down, finger tight, against its seat; unscrew plunger from the threads (but do not lift) to use main supply; lift plunger to its limit to use reserve supply of approximately three U. S. quarts.

13. **SPEEDOMETER LAMP SWITCH** — Operated by turning knob to right or left.

14. **HORN BUTTON** — Operates by pressing.

15. **HEADLIGHT HANDLEBAR SWITCH** — After turning on service lamps with ignition-light switch (Detail 17), this handlebar switch provides individual control for headlamp. Headlamp is "OFF" with switch lever in center position. Headlamp beam is raised or lowered by flipping switch lever to one side or the other.

16. **STEERING DAMPER** — Applies light friction to the handlebar movement in order to stabilize steering at high speed and under rough going. It is properly adjusted when actuating lever can be moved approximately one-half inch from released position (left side) before damper takes effect. Fork must turn freely when lever is in released position.

17. **IGNITION-LIGHT SWITCH** — Switch is "OFF" in straight-ahead position. Turn *left* for parking lights only (tail lamp and front mudguard lamp). Turn to *first* right position for *ignition* only; *second* right position for ignition, headlamp, tail lamp and front mudguard lamp. Bear in mind that lighting

service lamps when engine is "dead" also turns ignition "ON." Switch is provided with lock and key to permit locking, if desired, when motorcycle is not in use. Switch can be locked only in "PARK" or "OFF" position. When switch is unlocked and motorcycle in use, key should be removed from lock.

18. INSTRUMENT PANEL SIGNAL LIGHTS — When ignition is turned "ON" preparatory to starting engine, both lights should go "ON." (Exception: Immediately after engine has been primed by cranking, red oil pressure signal may not light when ignition is turned "ON," but will light after a few seconds. This is due to oil pressure built up by cranking and is most likely to be noticed in cold weather.) With engine running, both lights should go "OFF."

19. CAUTION PLATE — Manufacturer's oil and spark plug recommendations.

LEFT SIDE VIEW — DETAILS 20 TO 42

(GENERAL DESCRIPTION — CARE REQUIRED)

20. FRONT MUDGUARD LAMP — Has single contact, 3 C.P. bulb, GE No. 63. Operated by ignition-light switch (Detail 17.)

21. AUXILIARY BOX.

22. RIDE CONTROL — Applies friction and snubs fork action to prevent front end bouncing on rough roads or at higher speeds. For normal service, adjust free; tighten (turn right) to desired friction when in rough going or when running at high speeds.

23. HORN — Operating button on handlebar (Detail 14). Tone adjusting screw in horn back.

24. HEADLAMP (WITH BLACKOUT SHIELD) — Has double filament, pre-focused bulb, GE No. 2320L. High beam 32 C.P.; low beam 21 C.P. (See Details 15 and 17).

25. GASOLINE TANK DRAIN PLUG.

26. OIL BATH AIR CLEANER — The oil bath air cleaner separates abrasive particles of dirt from the air drawn through the carburetor, thus preventing abrasive matter from being drawn into the engine and causing rapid wear of cylinder walls, rings, pistons and other moving parts. Giving air cleaner regular attention will assure normal life of internal engine parts.

With motorcycle in normal use on hard-surfaced roads, clean and refill air cleaner oil cup at least each time engine oil tank is drained and refilled. Service more frequently under dusty conditions; DAILY under extremely dusty conditions.

To service air cleaner, see instructions on Page 15.

27. TAIL LAMP (RIGHT SIDE) — Has single contact, 3 C.P. bulb, GE No. 63. Operated by ignition-light switch (Detail 17).

28. STOP LAMP (LEFT SIDE) — Has single-contact, 3 C.P. bulb, GE No. 63. Operated by stop lamp switch (Detail 52).

29. FRONT BRAKE CONTROL ADJUSTMENT — (See Detail 7).

30. FRONT AXLE NUT — (See Detail 32).

31. BRAKE SHACKLE BOLT.

32. FRONT WHEEL AND TIRE — Inflate front tire to 16 pounds. To remove front wheel: Raise front end of motorcycle by means of front stand. Take out axle and remove spacer from between hub and right side fork rocker. Wheel, with or without brake drum attached, is then free to come out.

If wheel is to be taken out merely for tire or wheel service and then reassembled in front, it is not necessary to detach brake drum. Detachment from brake drum is necessary only when wheel is to be replaced with another or interchanged with rear wheel.

33. FRONT STAND.

34. GEAR SHIFTER ROD — After each readjustment of front chain, or when any irregularity is noticed with shifting and positive engagement in different gear positions, check adjustment of this rod and readjust as necessary.

Adjustment should be made only by the unit mechanic, except in emergency. (See "Checking and Adjusting External Shifter Controls," Page 58.)

35. GASOLINE STRAINER — Remove lower end cap, remove screen, clean and flush at least twice a month, or oftener if need is indicated by irregular carburetion.

36. CARBURETOR — Remove bowl drain screw and flush at least twice a month, or oftener if need is indicated by irregular carburetion.

Don't make a practice of tampering with carburetor adjustment each time engine doesn't start or run right; first look for the cause elsewhere. Particularly, see that spark plugs are clean, properly adjusted and in good condition. Try new spark plugs. Check adjustment of valve tappets. Check compression on both cylinders. Check adjustment of spark and throttle controls.

Carburetor adjustments should be made only by the unit mechanic. (See "Adjusting Carburetor," Page 55.)

37. TIMING INSPECTION HOLE PLUG — Provides access to ignition timing mark on flywheel. Timing adjustments should be made only by a technically qualified mechanic. (See "Circuit Breaker and Ignition Timer," Page 35.)

38. ENGINE SERIAL NUMBER.

39. HAND CLUTCH CONTROL WIRE AND HOUSING (See Detail 4 and "Replacing Clutch Hand Control Wire," Page 59.)

40. FRONT CHAIN INSPECTION HOLE COVER — Operator should inspect adjustment of front chain every week and have it readjusted by the unit mechanic if needed. Chain should not be allowed to run loose enough to strike guard. Operation in such adjustment results in jerky low speed running and excessive wear of chain and sprockets. However,