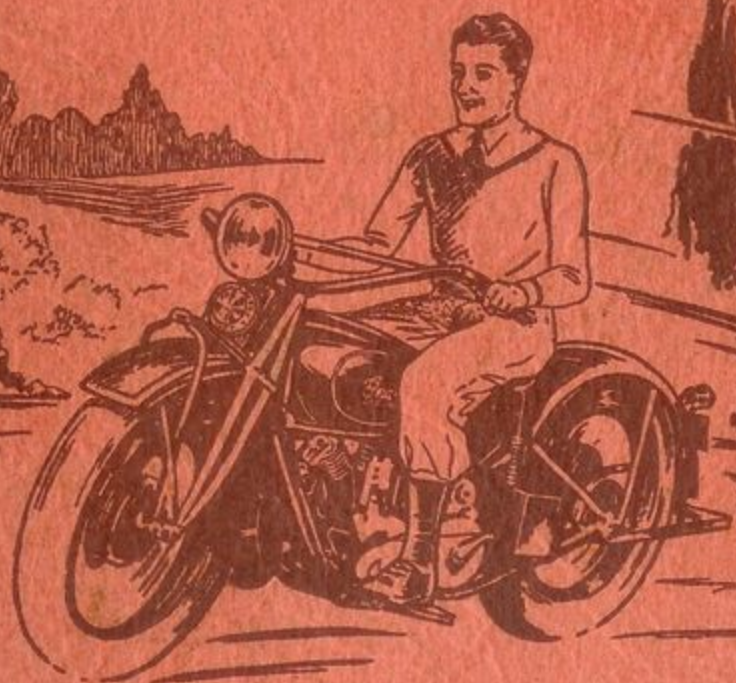


# *Indian* **RIDERS'** **INSTRUCTION** **BOOK**



**INDIAN MOTORCYCLE COMPANY**  
**SPRINGFIELD, MASS.**  
**Barnstormers Co. Nz**

# *Indian*

## Riders' Instruction Book



### *Covering:*

INDIAN Scout . . . .	Model 236
INDIAN 74 . . . .	Model 336
INDIAN 4 . . . .	Model 436
INDIAN Scout Pony .	Model 536
INDIAN Sport Scout .	Model 636

*Eleventh Revision*



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## *Motor Registration Data*

The following information is given to Indian owners to facilitate the filling-in of registration blank requirements. The motor number and serial number are different. The motor number is stamped on a boss on the left side of the crankcase under the front cylinder on twin cylinder models. On the **Indian 4**, the motor number is stamped on the transmission case near the shifter shaft lever. Serial numbers will be found on face of left rear fork end.

Model	No. of Cylinders	Bore	Stroke	Piston Displacement	Rated Horsepower
Indian Scout Pony	2	2½"	3 1/16"	30.07	5.0
Indian Sport Scout	2	2⅞"	3½"	45.44	6.61
Indian Scout 45	2	2⅞"	3½"	45.44	6.61
Indian 74	2	3¼"	4 7/16"	73.625	8.45
Indian 4	4	2¾"	3¼"	77.21	12.1

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## *A Word to the Indian Rider*

Use this Manual in keeping your INDIAN in tip top condition. It was written and printed just for you—as an INDIAN Rider. You will find an index in the last section, which tells you accurately just where to find any instructions contained in this booklet.

Extra care given to your motorcycle during its first 1000 miles will repay you in length and satisfaction of service.

Moving parts are closely fitted or adjusted at the factory and high speeds must be approached gradually to give these parts a chance to be properly “run in.” Refrain from sustained high speeds with a new machine and *never race your motor while the motorcycle is at rest.*

See page 33 for instructions on breaking in your new motor.

*Follow your motor lubrication and lubrication charts carefully.* Results obtained will repay you in improved performance and minimum repair costs.

Become well acquainted with your INDIAN dealer! While the care of an INDIAN Motorcycle is a comparatively simple matter, even to an inexperienced person, nevertheless there are certain adjustments and repairs which require the skilled mechanic.

For major repairs or adjustments, you should take your motorcycle to your INDIAN dealer, where it will receive the particular attention of factory trained mechanics, using genuine INDIAN service materials.

Paying a fair price for a few minutes' work to an experienced man is more satisfactory than putting in several hours of uncertainty yourself on the same task.

Yours for Service,

INDIAN MOTORCYCLE COMPANY

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## FILLING TANKS

**Models 236, 336, 636**—Remove filler caps from the front opening of the left tank and the rear opening of the right tank and fill to within one inch of the top with gasoline. Replace filler caps and turn until locked. Remove filler cap from front opening of the right tank and fill with Indian Oil to within 2" of the upper end of the return tube inside of the tank. (See lubrication of motor on page 8 for recommended grade). Replace filler cap and turn until locked. The oil tank on models 236, 336, 636 is vented from underneath. The oil filler cap has no vents. Be sure to put the correct cap on the oil tank. Capacity of tanks: gasoline 3.7 gallons; oil, 2½ quarts.

**Model 436**—Remove filler caps from both right and left tanks and fill to within one inch of the top with gasoline. Replace both filler caps and turn until locked. (There is no oil compartment in the 436 tank). Capacity of tank: 4.6 gallons gasoline.

**Model 536**—Remove filler caps from left tank and front opening of right tank and fill to within one inch of the top with gasoline. Replace both filler caps and screw down tight. Remove the rear filler cap from the right tank and fill with Indian Oil to within ½" of the upper end of the return tube inside of the tank. (See lubrication of motor on page 8 for recommended grade). Replace filler cap and screw down tight. Capacity of tanks: gasoline, 2⅝ gallons; oil, 2 quarts.

## MOTOR LUBRICATION

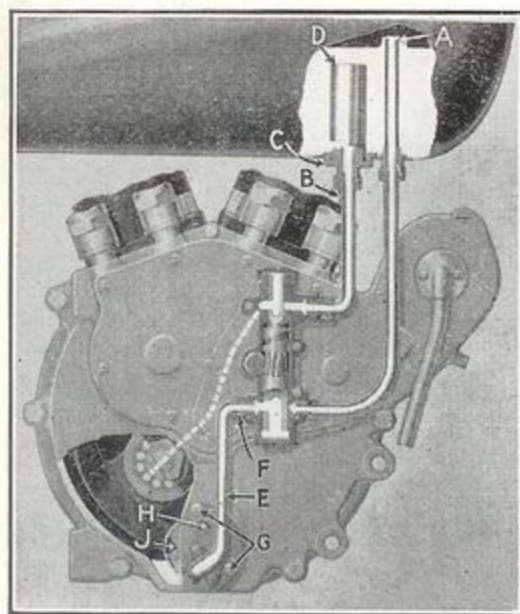


Figure 1

The lubricating system on models 236, 336, 536 and 636 is what is known as dry sump lubrication, which means that the oil is pumped from the tank to the motor in sufficient quantity to lubricate properly all parts of the motor at maximum speed, after which the surplus oil is returned to the tank by means of a return pump. Note Figure 1.

The lubricating system on Model 436 is a conventional pressure feed lubrication, which means that the oil is pumped from the crankcase sump to all parts of the motor, and then returned to the crankcase sump by gravity.

## MOTOR CRANKCASE AND TANK LEVEL

**Models 236, 336, 536 and 636**—For best results the tank oil level should be as specified under the

heading *Filling Tanks*. However, it is not absolutely necessary that this oil level be maintained, but can be allowed to drop to a point where it requires

one quart to bring it back to its proper level. In cases where the oil consumption is high due to fast driving, it is occasionally necessary to add fresh oil.

**Model 436**—The crankcase oil level should be up to the fourth or top notch on the gauge, and should never be allowed to drop below the second notch.

## OIL PUMP ADJUSTMENT

**Models 236, 336, 536 and 636**—The amount of oil being pumped into the motor is regulated by means of screw A (Fig. 2). When this screw is screwed in to its limit, the pump is completely shut off; and when it is screwed out five turns, the pump is wide open. The adjusting screw is set at 4 turns at the factory and should not be disturbed, as overloading the motor will only result in a waste of oil through the breather. In extreme hot weather, when the oil is thin, it might be advisable to cut the adjustment to a  $3\frac{1}{2}$  turn; and in extremely cold weather, when the oil is heavy, it might be advisable to increase the adjustment to  $4\frac{1}{2}$  turns. With the motor idling, note that the oil is returning to the tank through tube A (Fig. 1). The oil should not return to the tank in a steady stream, but should return intermittently with considerable air bubbles mixed with the oil.

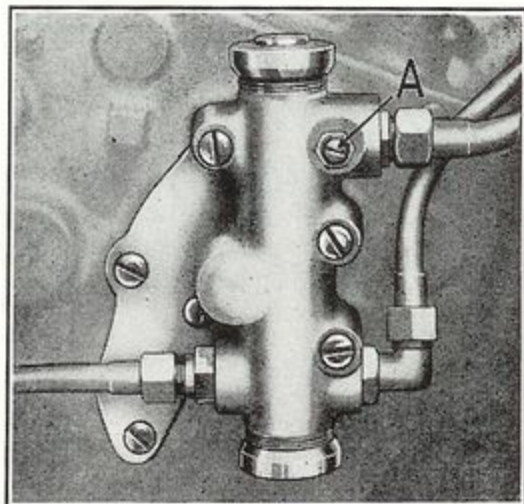


Figure 2

With the motor idling, note that the oil is returning to the tank through tube A (Fig. 1). The oil should not return to the tank in a steady stream, but should return intermittently with considerable air bubbles mixed with the oil.

**Model 436**—In warm weather, at very low speeds, the pressure registered on the gauge will be low, but when running from 35 to 50 miles per hour, the gauge should show a pressure of from 35 to 50 pounds. If, at any time, the oil gauge does not register, stop the engine immediately and ascertain the cause. First, inspect oil level gauge to make sure you have sufficient oil in base. Next inspect screen, and if clogged, clean with a brush. If no oil is circulating, serious damage will result.

When the motor leaves the factory, the oil pressure adjustment is correct for all ordinary demands of service. However, if it is desired to increase or decrease the pressure for any reason, note the following instructions:

1. Get motor thoroughly warmed up by running it several miles on the road.



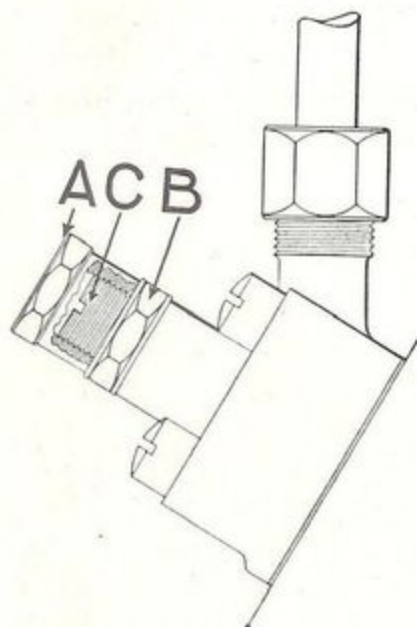


Figure 3

2. Remove cap nut A (Fig. 3), from oil pressure adjustment device (this will be found at base of feed line leading to oil pressure gauge on right side of crankcase).

3. Loosen lock nut B (Fig. 3) and turn screw C "in", or (clockwise) to increase pressure and "out", or anti-clockwise, to decrease pressure.

This screw should be turned only a trifle at a time, after which the oil pressure should be inspected on gauge. It should show a very slight pressure with motor thoroughly warmed up, and idling slowly. Also, when the oil pressure is correctly adjusted the gauge should register from 35 to 50 pounds pressure when the motorcycle is being driven on the road at speeds from 35 to 50 miles per hour.

## WARNING!

If oil pressure appears low, find the cause before setting up pressure adjustment, or over-oiling will result.

After the machine has been run many thousands of miles it is inevitable that a certain amount of wear will take place throughout the motor, including the bearings. Also, if the motor is at any time abused by being run with insufficient lubrication, wear in the bearings will result.

This wear is bound to allow the oil to be forced thru the bearings more easily, with the result that the pressure gauge will show a drop off in oil pressure. **Don't make the mistake of increasing the oil pressure by adjustment—until you know why the pressure is low.** An increase in pressure where the bearings are worn, will only mean more oil forced thru the bearings, with a resultant over-oiling. Needless to say an excess of oil will cause a multitude of petty troubles, including heavy carbon formation in cylinders.

## CHANGING TO FRESH OIL

**Models 236, 336, 536 and 636**—The old oil should be drained from both the tank and the crankcase every 500 to 2,000 miles—depending on the size of the motor and the conditions under which it is being driven. To change oil, proceed as follows:

Remove drain screw B (Fig. 4), and allow all the old oil to be drained off, after which replace the drain screw.

Remove the drain plug from bottom of oil tank and allow the oil to drain off, then replace the plug, screwing it in tight.

Refill the tank with fresh oil, as per instructions on page 4 under the heading "Filling Tanks".

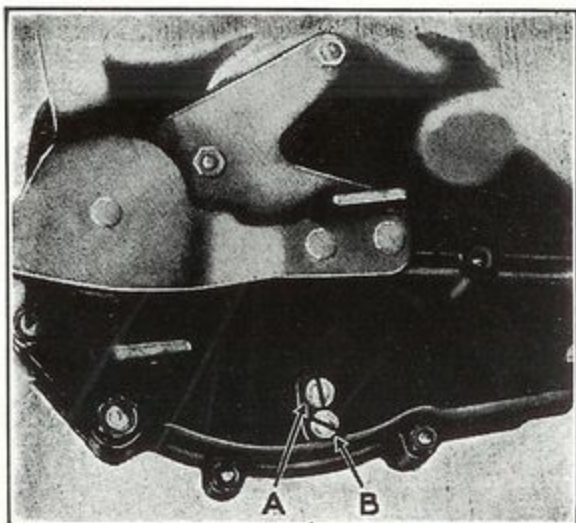


Figure 4

Oil level gauge.

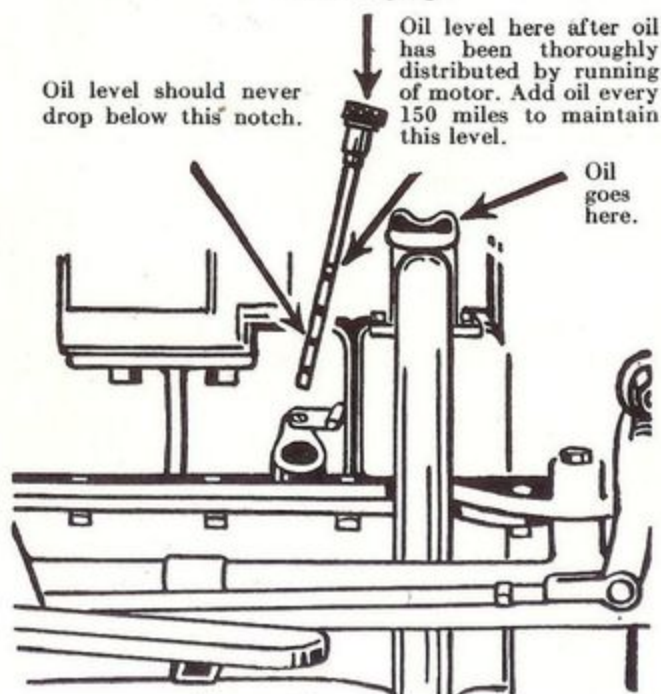


Figure 5

**Model 436**—Remove large drain plug from underneath the crankcase, also small plugs from underneath the flywheel housing and transmission case, allow all the oil to drain off, then replace all three drain plugs. Through filler cap (shown in Fig. 5) on left side of motor, pour enough oil into the crankcase to bring the level up to the *fourth* notch on the oil gauge. This will require about three quarts. It is necessary that the motor be run for a short time before the oil finds an equal level in the crankcase and flywheel housing.



## CLEANING THE OIL TANK AND CRANK CASE SCREEN

On dry sump models it will be necessary to occasionally flush the oil tank with clean gasoline and also to remove and clean the crank case screen J (Fig. 1, page 4). When reassembling make sure that there are no air leaks in tube E or lower housing and that the disc valve is clean and has a perfect seat.

**Model 436**—Remove the large drain plug from underneath the center of the crankcase and by means of a small brush and gasoline, clean the underside of the screen through the plug hole. Flush the crankcase and replace the drain plug. Refill crankcase with proper grade of Indian Oil as per instructions on page 7.

## RECOMMENDED GRADES OF INDIAN OIL

GRADE NAMES	S. A. E. VISCOSITY RATINGS
Indian Light Medium	S. A. E. No. 20W
Indian Heavy	S. A. E. No. 50
Medium Extra Heavy	S. A. E. No. 60

Model	For Operation Above Freezing	For Operation Below Freezing
236	Indian Heavy	Indian Light Medium
336	Indian Heavy	Indian Light Medium
436	Indian Heavy	Indian Light Medium
536	Indian Heavy	Indian Light Medium
636	Indian Heavy	Indian Light Medium

1. Above list applies to motors with either cast iron or aluminum alloy pistons and should be used in both motor and transmission.
2. For *extreme hot weather* conditions use the *next heavier* grade than specified for operation above freezing.
3. For *extreme cold weather* use the *next lighter* grade than specified for below freezing.
4. If the clutch is inclined to drag when the motor is cold, change to *next lighter* grade of oil in the transmission.

## LUBRICATION OF THE TRANSMISSION

The old oil in the transmission should occasionally be drained and replaced with fresh oil. The oil level should be checked every 500 miles. If low, fill with fresh oil.

**Models 236, 336, 636**—To change transmission oil, remove the drain plug

from the bottom of the transmission case and allow all the oil to drain off. Replace the plug. The transmission and primary drive are both lubricated by the same oil, the filler plug being located on top of the primary drive case. Remove this plug, also the oil level screw located just below the clutch operating arm on the face of the case. Pour enough Indian Oil in through the filler hole to bring the oil level to the lower edge of the level screw hole. Then replace both level screw and filler cap. If the clutch is inclined to drag when the motor is cold, change to a lighter grade of oil in the transmission.

**Model 436**—The transmission does not require separate oiling as the motor oil circulates through the transmission.

**Model 536**—Drain by removing the plug from the bottom of the transmission case the same as on Models 236 and 336 and refill through the filler hole located on the upper right side of the case. Pour enough oil (use the same grade of Indian Oil as you are using in your motor) into the case to bring the oil level up to the lower edge of the level screw hole located also on the right side of the case. Replace both oil level screw and filler cap.

## MANIPULATION OF CONTROLS

### THROTTLE AND SPARK CONTROLS

The spark advance and throttle are controlled by twisting grips. Turning the left grip inward (to the right) opens the throttle; turning it outward (to the left) closes the throttle. Turning the right grip inward (to the left) advances the spark; turning it outward (to the right) retards the spark. A simple rule to remember is: Turning both grips inward increases the speed and turning them outward decreases the speed.

### BRAKE CONTROLS

The front wheel brake is operated by applying pressure to the hand lever on the right handlebar. The brake releases when pressure ceases. The rear wheel brake is operated by a pedal on the right footboard. This brake holds only as long as the pedal is held down.

### CLUTCH CONTROL

**Models 236, 336, 536 and 636**—The clutch is controlled by a rocker pedal at the left footboard. Pressing down the toe or forward pad disengages the clutch. Pressing down the heel or rear pad engages the clutch.

**Model 436**—The clutch is operated by a spring pedal at the left footboard. When pressed down, the clutch is in the disengaged position. When released, the clutch is engaged. A double pedal is provided to hold the clutch in the disengaged position for use in traffic. By pressing down the inside pedal, the clutch is locked in the disengaged position, while a slight pressure on the outside pedal will release it.

### SHIFTING THE GEARS

**All Models**—The clutch must be disengaged before shifting gears. Neglect of this may cause breakage of some part of the driving mechanism or transmission. Disengagement must be complete in order to have a proper shift.



**Shifting Up**—Press firmly and quickly on the toe pedal to disengage the clutch. To shift to second (intermediate) gear, close the throttle and simultaneously disengage the clutch. Move the shift lever past the “neutral” point to the intermediate gear position and immediately engage the clutch by pressing down on the heel pedal. Open the throttle to speed up the machine. To shift to high gear, proceed as above, except that the gear shift lever is moved to the foremost position.

**Shifting Down**—The speed of the motorcycle must be reduced by partially closing the throttle before a shift is made. Disengage the clutch and shift quickly to the next lower gear when the clutch is immediately engaged again. Shifting to a lower gear should be done the instant the motor shows signs of laboring, as when ascending a steep hill, going through deep sand, etc.

If the speed of the motorcycle is not reduced when shifting to a lower gear, heavy strains are set up on the whole machine when the clutch is engaged.

After getting into high gear, regulate the speed of the motorcycle by the throttle. Always drive with the spark as far advanced as possible without causing the motor to knock. If knocking occurs, slightly retard the spark by turning the right grip outward, when the knocking will cease.

## SADDLE ADJUSTMENTS

**Models 236 and 336 with Spring Seat Post**—The spring seat post is adjustable for softer or stiffer spring action. To make the adjustment, first take off the nut at the bottom of the seat mast tube. This nut is directly in the center of the tube underneath the motorcycle, and holds the seat post in the seat mast tube. After nut is removed, disconnect the saddle from the seat post, and pull the seat post bodily up from the frame tube. Loosen the check nut on the bottom of the seat post, then you are ready to make the adjustment. For stiffer spring action, tighten the nut, or turn it to the right, which compresses the spring slightly on the seat post. To induce softer spring action, slack off on the nut, or turn to the left. A few turns of this nut at a time will be sufficient to produce a noticeable difference in the riding qualities of your spring seat post saddle. After the adjustment has been made, tighten the check nut and replace the seat post in the seat mast tube, but do not tighten the castle nut under the frame too tightly, as this might cause cramping. The cotter pin will prevent the nut from backing off.

Provisions are made for moving the saddle backward and forward by three holes being provided in the saddle bracket, and a long slot in the saddle front connection. To adjust, loosen the nuts, holding the nose of the saddle to the front connection, and remove the seat post and bracket bolt. Move the saddle to the desired position and replace the bolt, tightening all nuts.

When properly adjusted, the seat post link should be in a vertical position.

**Models 236 and 336 without Spring Seat Post**—(Fig. 6). The height of the saddle is adjusted by means of the hexagonal nuts “A” at the lower ends of the saddle spring truss. To lower the saddle turn the nuts “A” up on the spring truss; to raise, screw the nuts downwards. The easiest way to adjust saddle height is to remove the lower nuts and lift



truss from the springs. Then turn the upper nuts to the desired position on the truss. Next re-insert the truss ends thru the lower spring eyes, and lock the adjustment with the lower nuts.

To provide for forward or backward adjustment of the saddle there are three sets of holes on the rear bracket and a long slot in the saddle front connection. When changing the saddle position, loosen the nuts that hold the nose of the saddle to the front connection, move the saddle truss bolts "B" (Fig. 6) to the desired hole in the rear bracket. Move the nose of the saddle the same distance in the same direction and tighten all nuts and bolts. Also move rubber bumper.

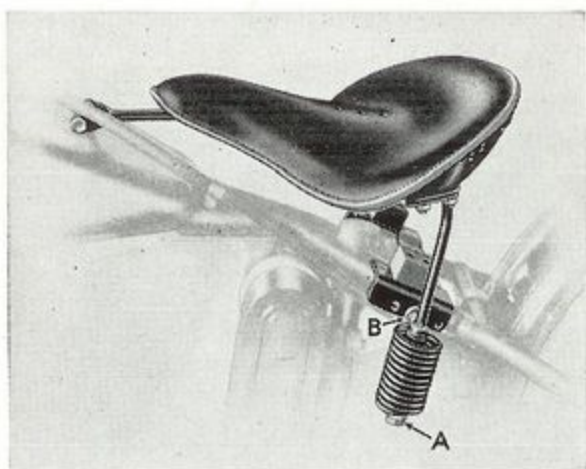


Figure 6

On compression type saddle spring on models 436 and 636 the height may be raised by putting rear bracket on top of frame tubes or sliding attachment along tube.

**Models 536 and 636**—To adjust the height of the saddle, follow the directions given in the first paragraph under the heading "Models 236 and 336 without Spring Seat Post." To produce a greater variation, the saddle bracket may be removed from the frame and turned upside down.

## ADJUSTMENT OF CONTROLS

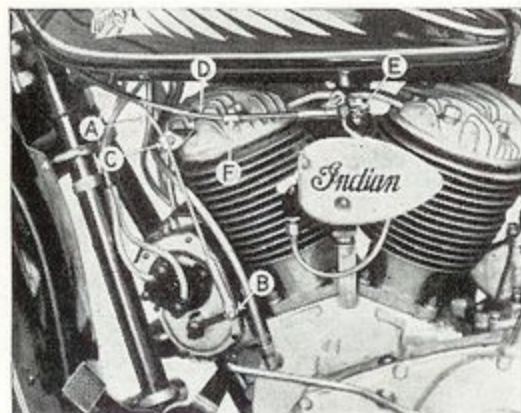


Figure 7

**Models 236, 336, 536 and 636**—**Throttle Control**—Pass the flexible casing for throttle control cable "D" (See Fig. 7), which comes from the left handlebar down by the left side of the frame head, through clip on lower front tank bolt also through clip "F" and attach clevis to carburetor throttle lever at "E". With the left grip turned out or to the left as far as it will go and the throttle lever in the closed position (to the rear) fasten casing by tightening screw on clip "F". Test by turning left grip in and out to be sure that full range of the throttle is obtained. If necessary, adjust by sliding cable casing "D" in clip "F".

**Spark Control (Magneto) Ignition**—Pass the flexible casing for spark control cable "A" (Fig. 7) which comes from right handlebar, to right of frame head, through clip on lower front tank bolt, across in back of the frame front drop tubes, through clip "C" and attach clevis to the magneto advance lever at "B". Then with the right grip turned in or to the left as far as it will go, push the magneto advance lever down as far as it will go and fasten cable casing by tightening screw on clip



"C". Test by turning right grip in and out to be sure that full range of the spark is obtained. If necessary, adjust by sliding cable casing in clip "C".

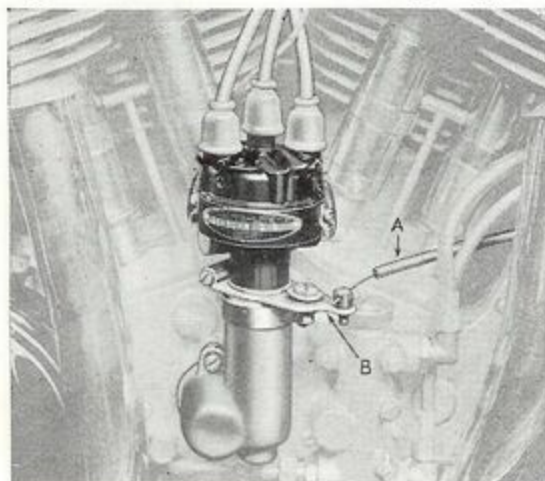


Figure 8

**Spark Control (Distributor Ignition)**—Pass the flexible casing for spark control "A" (Fig. 8) from the right handlebar to right of frame head and through clip on lower front tank bolt. Also pass casing through clip attached to clamp around ignition coil and attach control wire to advance arm at "B". **Note:** on Models 536-636, pass casing through clip on upper front of crankcase—right side. With the right grip turned in (toward the left) as far as it will go and the advance arm in the advanced position (nearest the motor), tighten casing clip at tank bolt and ignition coil. Test by turning right grip in and

out to be sure that full range of spark is obtained. The advance arm must travel the full length of the slot provided at the arm.

**Model 436—Throttle Control**—

Pass the flexible casing for throttle control from the left handlebar to the left of frame head and through clip on lower front tank bolt. Bring casing around ahead of front frame tubes and through clip on front of inlet manifold cover and attach wire clamp to throttle toggle lever. With the left grip turned "out" (to the left) as far as it will go and the carburetor throttle lever in the closed position (down), fasten the cable casing by tightening clip. Test by turning the left grip in and out to be sure that full range of the throttle is obtained. Adjust by sliding casing in clip.



Figure 9

**NOTE:** Later 1936 Model 436 machines have no toggle lever on the throttle control. In this case, pass control casing down behind ignition wire tube (Fig. 9) through double ended clip on, face of inlet manifold cover. Use the inside hole in the throttle lever. Control casing also passes through clip on upper front of exhaust manifold under exhaust manifold shield.

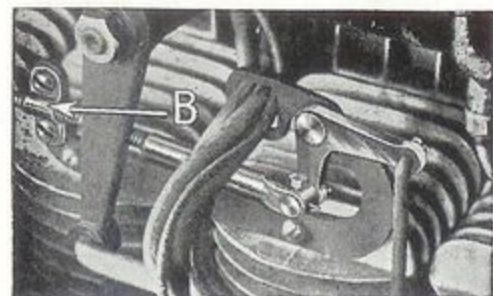


Figure 10

**Model 436—Spark Control (Magneto Ignition)**—Pass the flexible casing for spark control from the right handlebar, to right of frame head and through clip on lower front tank bolt. Pass under tank to left side of motor, along top of motor and attach clevis to bell crank, (Fig. 10). With the right grip turned "in" (to the left) as far as it will go, push the magneto advance lever up as far as it will go and fasten control casing by tightening clip "B" (Fig. 10). Test by

turning the right grip in and out to be sure that full range of the magneto lever is obtained. Adjust by sliding casing in clip "B" (Fig. 10).

**Model 436 Spark Control (Distributor Ignition)**—Pass the flexible casing for spark control from the right handlebar, to right of frame head and through clip on lower front tank bolt. Pass under tank to left side of motor, through clip on No. 2 cylinder and attach clevis to distributor advance arm. With the right grip turned "in" (to the left) as far as it will go and the distributor advance arm in the advanced position (to the rear), fasten the control casing by tightening clip on No. 2 cylinder. Test by turning right grip in and out to be sure that full range of spark is obtained. Adjust by sliding casing in cylinder clip.

## CLUTCH ADJUSTMENTS

**Models 236, 336, 636**—The clutch is operated by means of lever "A" (Fig. 11). Full engagement is obtained with lever as shown in upper part of Fig. 11 and full disengagement as shown in lower part. (If the clutch drags in severe cold weather, it is not due to improper clutch adjustment but to an oil with too heavy a body. Use the next lighter grade of Indian Oil in your transmission). Adjustment may be made by fully engaging the clutch, removing the nut that holds the lever from the end of the shaft, turning the shaft by means of screwdriver slot and *replacing the lever in the exact angular position as before removal*.

The hole in lever "A" is eight-sided and is so cut that by turning the lever over sixteen different positions can be obtained. When the clutch is properly adjusted, angle "B" in the upper illustration of (Fig. 11) should be exactly the same as angle "C" in the lower illustration. When the clutch is fully engaged with the lever in the rear position, the heel pedal of the rocker pedal should be within one quarter of an inch of the footboard. This can be adjusted by shortening or lengthening the clutch rod by means of the clevis on the threaded end.

The tension on the foot pedal can be adjusted by either loosening or taking up on the castle nut on the end of the shaft. Always replace the cotter pin.

**Model 436**—The clutch on the 436 operates automobile style. It can be locked in the disengaged position by pressing on the little pedal on the inside of the regular pedal. This lock can be released by pressing down on the outside pedal.

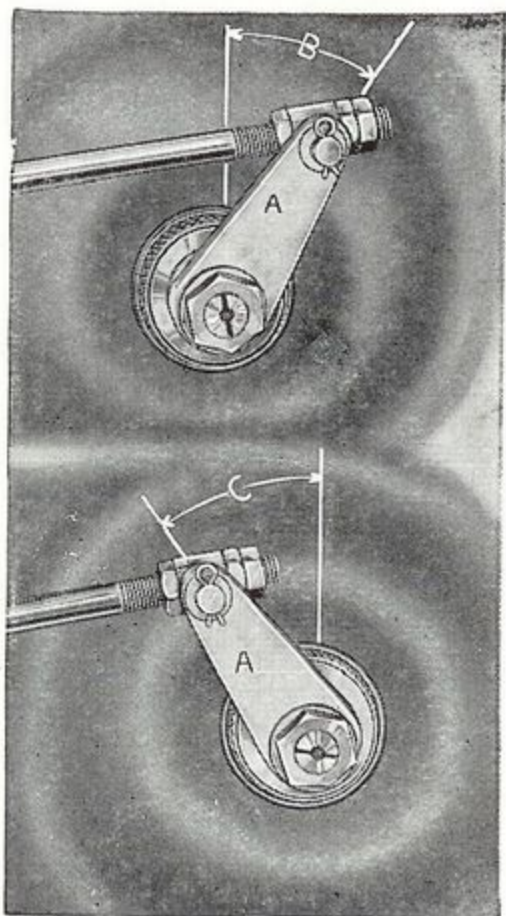


Figure 11



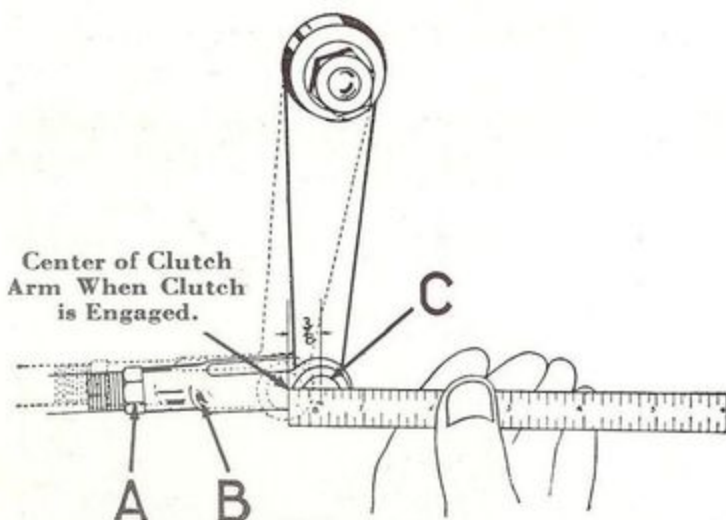


Figure 12

The clutch should require no adjustment except lengthening or shortening of the throwout rod. Adjustment can be checked by pressing down on the pedal until all the slack is taken up. The complete pressing down on the pedal from this position should move the end of the lever (Fig. 12),  $\frac{3}{8}$  of an inch.

**Model 536—Clutch Tension**—If the clutch slips, tighten as follows: Outside the foot starter

gear mounted against the chain guard on starter side of the machine is a heavy coil spring, held in place by a spring cap disc, or nut, with two holes in it. Insert a pin in each hole, place a wrench handle between them, and turn the cap disc to the right (clockwise) to tighten; move only in  $\frac{1}{2}$  turns, testing tension each time until enough is secured. Test for slippage on the road. Do not tighten more than enough to hold engine or it will place undue strain on clutch operating mechanism and give a harsh drive.

If the clutch spring should be taken off, on replacing, tighten several full turns before testing for slippage. Never allow a clutch to remain slipping when once noticed. Unless tightened at once, linings may be destroyed in a short time.

**Clutch Release Adjustment**—Clutch release or disengagement, is accomplished by pressing down the toe of the rocker pedal on the left footboard. On exhaust side of the machine, on the transmission is the clutch release lever "A" (Fig. 13). There should be a slight "back-lash" in the lever at this point before the clutch begins to engage. If this "back-lash" is too great, the clutch may drag when released, and gears may clash when shifted.

At lower end of lever "A" is a screw and nut. If the clutch does not fully disengage, loosen lock nut "B" and turn screw "C" (Fig. 13) to the right (clockwise)  $\frac{1}{4}$  turn at a time until the required "back-lash" is obtained; tighten the lock nut securely. When gears are engaged there should be no tendency for the machine to move forward on the road with clutch adjusted properly and held in the disengaged position.

When the hinged lever "A" has allowed the clutch to firmly engage, the heel pedal of the rocker pedal should be within one quarter of an inch of the footboard. Adjustment is made by means of two nuts at the threaded end of the operating rod.



Figure 13

## ADJUSTING THE FRONT WHEEL BRAKES

Front wheel brakes may be adjusted by changing the effective length of brake operating cable casing "A" (Fig. 14). Loosen lock nut "B" and turn nut "C" to the left. The hand lever should always have a freedom of  $\frac{1}{4}$ " before braking action begins. Further adjustments may be made by loosening nut "H" and pulling cable through the clevis.

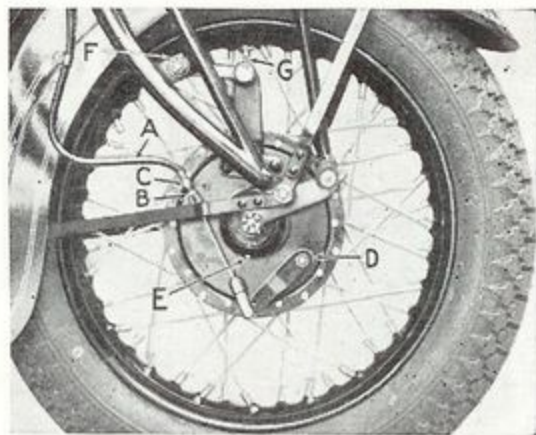


Figure 14

**IMPORTANT**—Every 200 miles, remove oil hole cover at "D" and add oil to brake lever shaft bearing. Oil brake arm bearing beneath spring washer occasionally. Keep drain hole "E" in the brake plate directly under the axle free and open. On Models 236, 336 and 436 it is very necessary to keep the front wheel brake arm bell crank bearings well lubricated. Grease points "F" and "G" every 200 miles.

## ADJUSTING THE REAR WHEEL BRAKES

Adjustments for the rear wheel brake may be made by shortening the brake rod (see Fig. 15). Remove clevis pin "A", loosen lock nut "B" and turn clevis "C" to the right. *Tighten all lock nuts after making brake adjustments.* Be sure to keep the rear wheel brake lever bearing well lubricated.

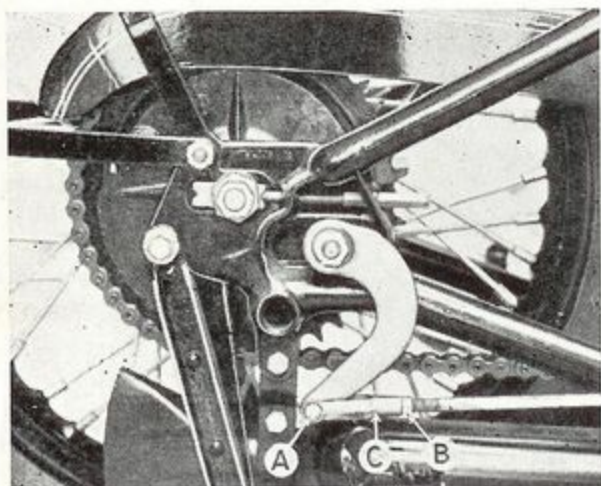


Figure 15

## REMOVING THE WHEELS

**Front Wheel**—Remove pin that holds the brake cable to the brake operating lever. Loosen lock nut on the brake adjusting screw and take out screw; slip cable through slot in adjusting screw lug and place brake cable assembly aside. Remove brake arm bell crank front bolt. Remove center axle nut and pull axle out. The entire wheel can now be removed. When reassembling, be sure that the brake plate anchor arm is in the correct position. Tighten all nuts, replace all cotter pins and adjust brake properly.



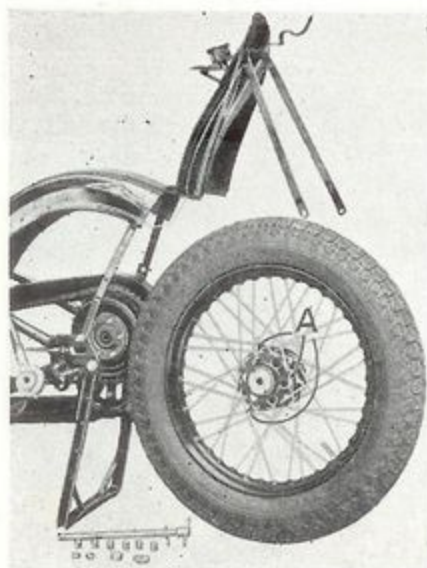


Figure 16

**Rear Wheel—Models 236, 336, 436—**  
(See Fig. 16). Remove the nuts that hold the outside mudguard braces to the frame stud and slip the outside braces off so that the rear portion of the mudguard may be hinged up. Then loosen the six nuts "A" of the rear hub until they are free of the studs. Take off the axle nut on the right side of the machine, pull out the axle on the left side and remove the spacer (or the speedometer gear if your machine is equipped with one) between the wheel and the left fork end. Pull the wheel to the left, away from the brake assembly and free from the machine. When assembling, be sure that all nuts are tightened.

**Rear Wheel Models 536 and 636—**  
Disconnect chain and remove from rear wheel sprocket. Take out clevis pin that holds the brake operating rod to the brake lever. Remove the bolt that holds the brake anchor arm to the lower frame tube. Now, loosen the right rear axle nut and remove the wheel from the right side of the machine. When assembling, be sure that all nuts are tightened and cotter pins replaced.

## ADJUSTMENT AND CARE OF WHEEL BEARINGS

**Front Wheel—**To adjust front wheel bearings loosen adjusting nut lock nut on left side of wheel. Straighten out the lock washer which has been bent over the adjusting nut and take up on the adjusting nut until wheel drags slightly. *Then back off until wheel is perfectly free to spin and has a slight amount of side shake. Never have the bearings too tight.*

To lock the adjusting nut bend the lock washer over one of the flats on the adjusting nut. Tighten the lock nut up against the lock washer.

Front wheel bearings should be partially packed with a good fiber wheel bearing grease twice a season. *Do not put too much in the front wheel hub.*

**Rear Wheel—**The bearings in the rear wheel are of a special design that automatically takes care of thrust and therefore will need no adjustment. The bearing on the left side of the machine should be greased every 500 miles while the right side bearing should be lightly packed with high temperature grease, such as Indian Wheel Bearing Grease, every 2500 miles. Care should be taken not to put too much grease in the right side wheel bearing. The plug for greasing this bearing may be located by removing the rear wheel. It is on the inside face of the brake drum next to the hub.

## CARE AND ADJUSTMENT OF THE CHAIN

Keep the chain at the proper tension at all times. This can be determined by lifting the bottom of the chain at its center. It should only lift about one inch if properly adjusted. A loose chain may jump the sprockets and damage

spokes and chain guard. Tight chains cause extra wear on the bearings and result in chain breakages.

Occasionally, disconnect and remove the chain. Clean it with kerosene thoroughly, then wipe it dry and dip in a mixture of light cylinder oil and graphite. After an hour in the mixture, hang the chain up to dry. When all dripping ceases, wipe off excess mixture and oil and put the chain on its sprockets. Be sure that the clip of the detachable link snaps into proper position. The split, or open end of this spring clip should be pointing in the opposite direction to chain-travel.

## TO ADJUST REAR CHAIN

**Models 236, 336 and 436**—Loosen the center axle nut on the right hand side of the machine also the nut that holds the brake and sprocket assembly to the rear fork end. Tighten the adjusting screw in each fork end an equal amount until the chain has the proper tension. Revolve the wheel and note that the chain runs true on its sprockets and that there is no tight spot. The wheel should run squarely in the frame. Tighten both center and hollow axle nuts securely. Screw adjusting screws down tight against the fish-tail washers after the axle is tight in order to prevent them from backing out. In taking up the chain, it will be necessary to lengthen the brake rod to make up for the change in the wheel location.

For adjusting the rear chain, the directions given under Models 236, 336 and 436 may be followed with the exception of the brake and hub anchorage. On the 536 and 636, the brake arm stud nut must be loosened to allow the wheel to be moved backward.

## TO ADJUST FRONT CHAIN

**Models 236, 336 and 636**

Excessive slack in the primary drive chain is taken up by means of a shoe under the chain, which can be raised or lowered by means of a screw and lock nut on the under side of the primary drive case, however, *do not run the chain tight*. Remove the plug from the inspection hole located on the upper face of the cover and insert a small rod or tool under the chain, testing it for slack. A proper adjustment is when the chain can be moved freely up and down a distance equal to the diameter of the inspection hole or approximately  $\frac{3}{4}$ ".

**Model 536** — When the front chain is properly adjusted, you should be able to lift the bottom of the chain about  $\frac{1}{2}$ " at its center. If it is too loose, take it up by loosening the two nuts that hold the transmission case to the frame and sliding the case backward. Tighten the nuts and test the chain for tension. Whenever the front chain is adjusted, the rear chain should be checked for tension and adjusted if necessary. The foot clutch rod should be adjusted when front chain tension is changed.

## ADJUSTING STEERING HEAD BEARING

**Models 236, 336 and 436**—To check the adjustment of the steering head bearing, jack up the front end of the motorcycle so that the front wheel is clear,



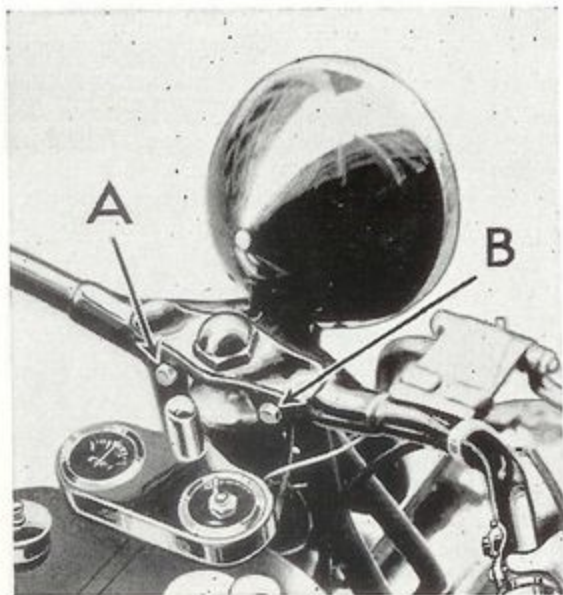


Figure 17

tightened to hold the handlebars firmly against the fork sides.

**Models 536 and 636**—To check the adjustment of the steering head bearing, jack up the front end of the motorcycle so that the front wheel is clear, loosen the steering damper (by turning the wheel "A" (Fig. 18) to the left until it turns freely) and try turning the handlebars to the right and left. There should be a slight drag if the bearing is properly adjusted. If there is no drag or too much drag, remove the handlebars, flatten out the portion of the adjusting cone lock nut and loosen the lock nut. Loosen the nut "B" (see Fig. 18) which holds the spring top anchorage to the fork stem. If there is too much drag, turn the adjusting cone "C" to the left and if there is not sufficient drag turn it to the right. Put on the lock nut washer and the lock nut. Tighten the lock nut and fasten it in place by turning up the lock washer against one of the flat sides of the nut. Tighten nut "B" and replace handlebars.

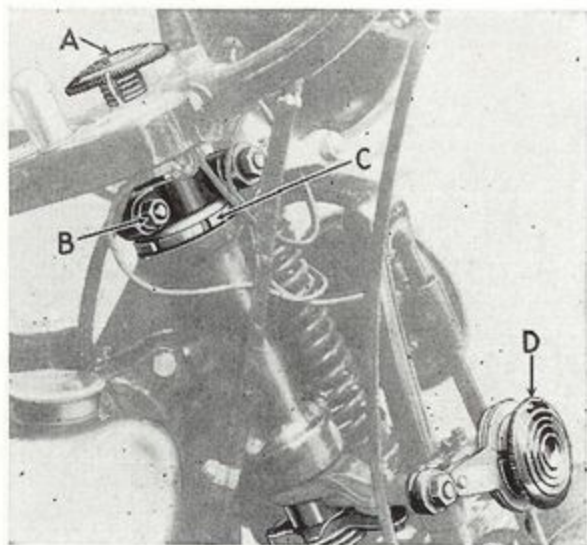


Figure 18

then try turning the handlebars to right or left. There should be a very slight drag if the bearing is properly adjusted. If there is no drag, or too much drag, loosen the two bolts "A" and "B", take off the handlebars, remove the flat washer which is bent over the edge of the adjusting cone, then adjust the steering head bearing just enough so that there is a slight drag. It will be necessary before replacing the large flat washer to flatten the bent portion and then bend it down over the adjusting cone in proper position. When the adjustment is satisfactory, the handlebars should be put in place, and large hexagonal nut on the top tightened down securely. Then the two bolts "A" and "B" (Fig. 17) may be

## CARE AND ADJUSTMENT OF THE SPRING FORK

**Models 236, 336 and 436**—The springs in the spring fork are packed with grease when assembled to ensure smooth and noiseless action and to prevent rusting. Squeaking of the springs indicates that the lubricant needs renewing. To grease the springs, jack up the frame with a box to take the weight off the front wheel and pry the leaves apart with a sharp screwdriver. Insert grease between the leaves with a thin knife. This should not be necessary oftener than twice a season.

Lubricate bell cranks and spring pin at frequent intervals.

The front springs are adjustable to the weight of the rider. When the motorcycle leaves the factory, the springs are set for medium weight. If the rider is a heavyweight, loosen up the nuts of the four spring bolts and move the springs rear-ward. If the rider is a lightweight, the springs should be moved forward to permit softer spring action.

**Models 536 and 636**—The steering damper works entirely through friction discs tightened or loosened by the hand wheel at the top of the fork stem (see Fig. 18). It is in no way to be confused with the adjustment of the steering head bearing. If the front end shakes or wobbles at high speed on the road turn the wheel "A" to the right to increase the friction. If it is difficult to turn the handlebars from side to side, turn the wheel "A" to the left, decreasing the amount of friction. For stiffer action of the spring fork turn the ride control wheels "D" to the right. For softer action, turn them to the left. When adjusting the ride control be sure to turn the right and left hand wheels an equal amount.

## STARTING THE MOTOR

1. Open valve in gasoline line, set gear shift lever in "Neutral" position and see that the clutch is fully engaged.
2. Be sure that the ignition switch is OFF.
3. Prime the motor by turning the motor over twice with the kick starter as follows:
  - (a) 1st kick should be with throttle open wide and the carburetor choke lever in upper position.
  - (b) 2nd kick should be with closed throttle and with choke lever in one notch lower or second position.
4. Now turn on the ignition switch and with the spark advance lever in slightly retarded position and the throttle lever slightly open, start the motor with a vigorous stroke of the starter.
5. As soon as the motor starts, open the throttle just far enough to keep it running while warming up, or until ready to set the machine in motion. Shortly after starting, move the choke lever to third or next to the open position. After running  $\frac{1}{4}$  to 1 mile (depending on the weather) move choke lever to "Open" position (all the way down).



Starting a hot motor does not always require the use of the choke lever on the carburetor.

Racing a motor on the stand is the worst abuse that can be inflicted on it and should never be permitted at any time.

## ADJUSTING THE CARBURETOR

Model 236, 336, 536, 636 Schebler De Luxe

If the carburetor has not previously been adjusted to the motor or if for any reason it is badly out of adjustment, proceed as follows:

Turn both needle valves to the right (clockwise) until they seat (care being taken not to use force which might result in injuring the seat). Turn high speed needle No. 4 (Fig. 19) to the left (counter-clockwise) two full turns and the low speed needle No. 3 in the same direction three full turns.

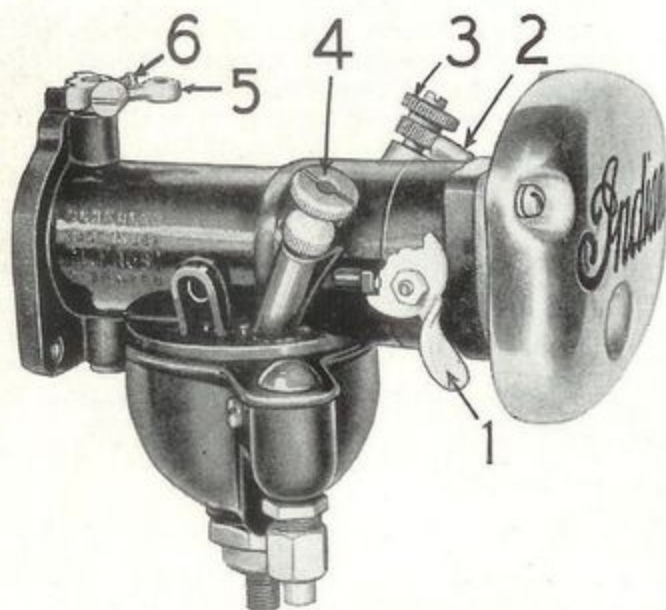


Figure 19

Start the motor as per instructions on page 19 and allow it to run until warm. Then with the spark retarded halfway and the choke lever open, adjust needle valve No. 3 until the motor fires evenly. (Turning the needle valve to the right (clockwise) gives a leaner mixture and turning it to the left (counter-clockwise) gives a richer mixture).

When a proper idling mixture is obtained the speed of the motor should be regulated by means of adjusting screw No. 5 and locked by screw No. 6.

To get the proper high speed adjustment, have the spark retarded half-way and open the throttle for a fraction of a second. If the motor backfires through the carburetor, it indicates that the mixture is too lean and the needle valve No. 4 should be turned to the left (counter-clockwise) about  $\frac{1}{2}$  turn. If the motor chokes when the throttle is opened, it indicates that the mixture is too rich and needle valve No. 4 should be turned to the right (clockwise) about  $\frac{1}{2}$  turn. Repeat this operation until a satisfactory mixture has been obtained.

Although the high and low needle valves operate independently, they nevertheless influence each other to a certain extent and it is therefore nec-

essary that the entire carburetor adjustment instructions given above be repeated several times before a satisfactory adjustment is obtained.

It should be borne in mind that the carburetor will perform with a rich mixture but this is wasteful. On the other hand, a lean mixture will result in the motor's overheating, knocking and lack of power.

All the passages on the 1936 carburetors may be cleaned by removing passage plugs.

If unable to adjust carburetor satisfactorily, clean out all passages.

## ADJUSTING THE CARBURETOR

**Model 436**—Before starting to make the carburetor adjustment, have the motor-cycle standing as straight as possible, instead of leaning on the "Jiffy" stand.

### AIR SCREW ADJUSTMENT

The first thing to learn and always remember is that the air screw "A" (Fig. 20) adjustment is not merely an idle adjustment, but it controls the mixture ratio throughout the entire engine range and not just at idle. Therefore, al-

ways consider it as an adjustment made at idle instead of an "idle adjustment". With this always in mind you can readily appreciate why an adjustment too rich or too lean at idle will affect the operation throughout the entire engine range.

It will usually be found that the air screw adjustment is close to correct when the top of the air screw is flush with the end of the ratchet spring clip bearing against it.

From this setting turn the air screw "A" (Fig. 20) in a few notches until the engine "rolls" from richness, then turn the air screw out (counter clockwise) until the engine falters from leanness. At a point approximately midway between these positions will be the proper setting. Be sure the engine is not idled at too slow a speed.

**Caution:** Never change this air screw adjustment to overcome any faulty operation except at idle. Due to the fact that present day engines are designed to operate on a "wet" mixture, there is always present a "wall film" on the inside of the intake manifold, at the lower speeds. Therefore, it is

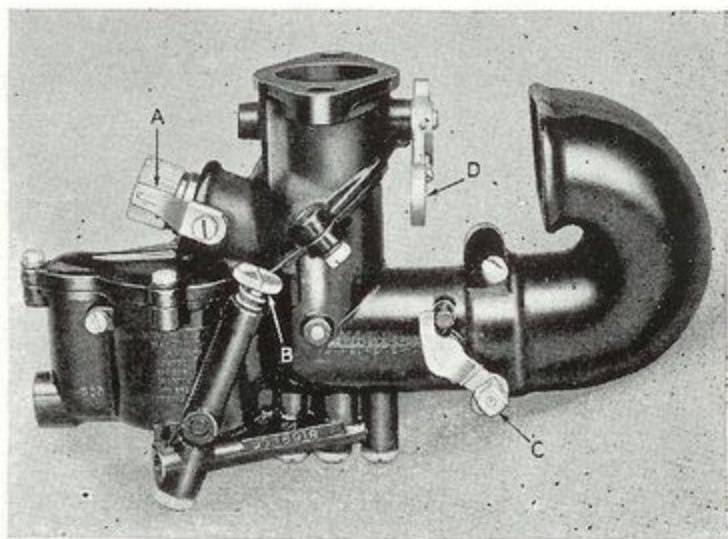


Figure 20



absolutely necessary in making the adjustment, that it be done very slowly to allow this "wall film" to change with relation to the change made at the carburetor. It takes a few seconds for this change to take place before the "true mixture" from the carburetor is in evidence. If this adjustment is made, too rapidly you will find that it will be too rich or too lean, and you will form the opinion that there is no good running point between these two extremes. Also remember that the slower that an engine is idled the richer the mixture must be made. Therefore, do not try to idle the engine too slowly or the carburetor will be adjusted out of "balance" throughout the operating range.

The gasoline for idle is supplied from the low speed jet, which is calibrated to correct size, and must not be changed to a different size, except where the motorcycles are operated permanently at altitudes above 3,000 feet, for which special calibrations are furnished.

## RANGE ADJUSTMENT

### (Intermediate and High Speed)

The intermediate and high speed gasoline is supplied from an intermediate jet and a high speed jet of proper sizes for this engine, in connection with which there is an adjustable flow needle "B" (Fig. 20), used to compensate for atmospheric, gasoline and engine conditions.

The adjustable flow needle should be set at one and one-half to two turns from the seat when starting to make the adjustment. Be sure the choker valve "C" (Fig. 20) in the air intake operates to **full open**. It must be in the full open position when making the adjustment.

The flow needle adjustment should be made with the engine running at almost half throttle. Turn the needle down (clockwise) until the engine begins to falter from leanness, then turn the needle up (counter clockwise) until it is firing strong on all cylinders. After this peak in engine speed is obtained it will be noted that the needle can be turned out considerably farther. But this should **not** be done, because no better performance will be obtained and gasoline consumption will be greater.

After making this adjustment on several engines you will be able to get the "feel" of this action and have no difficulty making a fine carburetor adjustment.

**Always make carburetor adjustments slowly.**

## TO TIGHTEN GENERATOR BELT

If the generator belt becomes loose so that the generator pulley does not turn when the motor is running, loosen the two bolts that hold the generator to the generator bracket, move the generator away from the driving pulley until the belt will not slip over the pulleys when tried by hand, and tighten the bracket bolts.

## CARE OF BATTERY

Keep the battery properly filled with distilled water and the terminals coated with vaseline to prevent corrosion. The battery hold-down strap wing nut should be tightened with the fingers only—never use a wrench or pliers to tighten.

Make a habit of taking your machine frequently to a good battery service station for inspection.

If for any reason the battery is removed from the machine or disconnected during the time that the machine is in operation, precaution should be taken to prevent possible injury to the generator. Remove the generator belt.

The battery supplied with Indian Motorcycles is shipped bone dry, although it is in a charged condition. To make it ready for use, it is necessary to fill it with the proper electrolyte solution. Under the strap of the battery bracket on each new motorcycle, there is a red tag describing in full just how to prepare the battery for use. It is important that these instructions be followed to the last letter before attempting to start the machine with the battery connected.

## ADJUSTING THE VALVE TAPPETS

**Models 236, 336, 536 and 636**—The proper running of motor depends in a large measure upon the good condition of the valves. All valves have adjustable tappets to compensate for wear. The intake valves are those nearest the carburetor in each cylinder, while the exhaust valves are those farthest away from the carburetor.

It is important to have the clearance or distance between the tappet and the end of the valve stem correct, if the motor is to run quietly and keep its power and speed. The proper clearance for the intake valve is three thousandths of an inch. The proper clearance for the exhaust valve is six-thousandths of an inch. If motor is intended to be run at high speed the clearance should be .005 on inlet tappets and .008 on exhaust tappets.

**THE MOTOR MUST BE COLD FOR ALL TAPPET ADJUSTMENTS.**

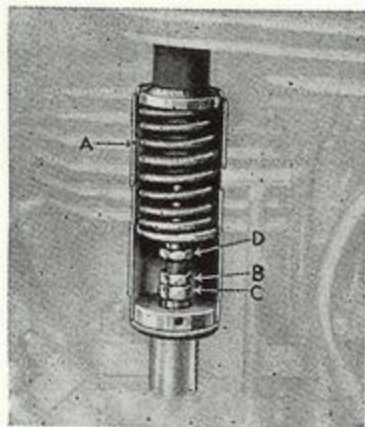


Figure 21

**Adjusting Tappet Clearance**—After removing dust covers "A" loosen lock nut "B" with special wrench in tool kit. Hold nut "D" with wrench and turn "C" to right or left until proper clearance is obtained.

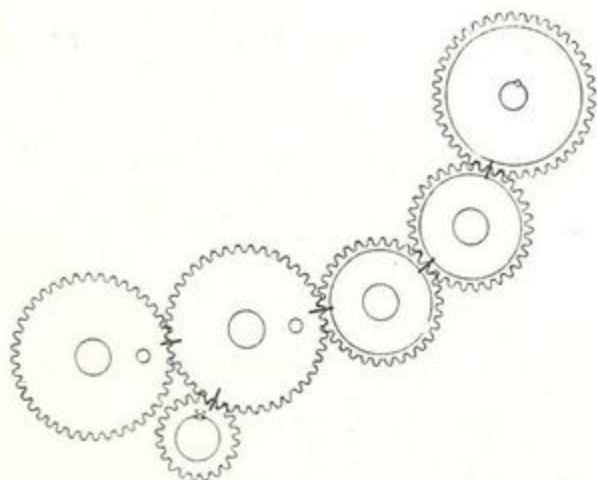
**Model 436**—The exhaust valves are operated by rocker arms on top of motor. To adjust exhaust tappets turn motor over slowly until exhaust valve for No. 1 cylinder is fully opened, then adjust No. 4. Turn until No. 4 is open and adjust No. 1. Turn until No. 3 is open and adjust No. 2. Turn until No. 2 is open and adjust No. 3. Measure exhaust clearance between end of rocker arm and valve stem.

Follow the same procedure for inlet tappet adjustments. All adjustments must be made with motor cold. Set exhaust tappets .002". Set inlet tappets .004".



## TIMING VALVES AND IGNITION

**Models 236, 336, 536 and 636**—If timing gears have been removed for any reason, replace according to marks. (See Fig. 21). To check timing by piston travel, tappet clearance should be .015. Reset before running motor according to instructions on this page.



**Figure 22**

- Model 236:** INLET opens  $.061$  ( $3/64$ ) before top center.  
 INLET closes  $.656$  ( $21/32$ ) after lower center.  
 EXHAUST opens  $.500$  ( $1/2$ ) before lower center.  
 EXHAUST closes  $.109$  ( $7/64$ ) after top center.
- Model 336:** INLET opens  $.010$  ( $1/64$ ) before top center.  
 INLET closes  $.741$  ( $47/64$ ) after lower center.  
 EXHAUST opens  $.75$  ( $3/4$ ) before lower center.  
 EXHAUST closes  $.010$  ( $1/64$ ) after top center.
- Model 536:** INLET opens  $.028$  ( $1/32$ ) before top center.  
 INLET closes  $.450$  ( $29/64$ ) after lower center.  
 EXHAUST opens  $.450$  ( $29/64$ ) before lower center.  
 EXHAUST closes  $.028$  ( $1/32$ ) after top center.
- Model 636:** INLET opens  $.046$  ( $3/64$ ) before top center.  
 INLET closes  $.656$  ( $21/32$ ) after lower center.  
 EXHAUST opens  $.500$  ( $1/2$ ) before lower center.  
 EXHAUST closes  $.109$  ( $7/64$ ) after top center.

## IGNITION TIMING

**Models 236, 336, 536, 636 (Distributor or Magneto Ignition)**—Ignition timing should be set so that the breaker points open when the rear cylinder piston is coming up on the compression stroke and the piston is at a certain distance before top dead center. These distances are as follows:

<b>Model 236, 636</b>	( $\frac{3}{8}$ " )
<b>Model 336</b>	( $\frac{1}{2}$ " )
<b>Model 536</b>	( $\frac{7}{16}$ " )

Be sure breaker point gap is adjusted to .020" on distributor models and .015" on magneto models. All ignition timing must be done with either distributor advance arm or magneto advance arm in the **advanced position**. The advance arm on the distributor is advanced when arm is pushed in toward the motor, and on magneto models when the magneto advance arm is pushed down as far as it will go.

If the timing or cam gears have been removed, replace according to marks on gears (Fig. 22).

If the distributor unit has been removed from its drive housing (Distributor Ignition Models), proceed as follows. Rotate motor until rear piston is in proper position for advance firing. Have distributor advance arm set in advanced position. Rotate distributor shaft until points are ready to break on large end of distributor cam (the large end of the cam is opposite the nose of the rotor on the end of the cam shaft). With the condenser toward the motor, insert the distributor into the drive housing. The angle cut drive gears will rotate the distributor when the gears mesh. It may be necessary to remove and change position one tooth to get the correct position. Tighten clamping band around distributor drive housing. Final adjustment may be made by loosening the advance arm clamping screw and rotating distributor body until points just open when engine is set for timing as noted Recheck.

If the magneto has been removed, proceed as follows: Set timing and cam gears as shown (Fig. 22), rotate motor to firing position in rear cylinder. Set magneto distributor points just breaking for rear cylinder. At this point the drilling of the magneto shaft for the magneto gear pin will be found to match the hole in the drive gear. Replace pin and recheck.

On Model 636 motors with Magneto Ignition, the same procedure should be followed, being sure to attach the primary chain when the motor and magneto drive gears are in the proper position.

**Model 436 (Distributor Ignition)**—Ignition timing should be set so that the breaker points open when the No. 1 cylinder piston is coming up on the compression stroke and the crankshaft or piston is at top dead center. Be sure breaker point gap is adjusted to .020. The advance arm "D" (Fig. 23) of the distributor must be set in the full retarded position (to the rear) when timing the motor. Top dead center may be determined by inserting a stiff wire or rod through spark plug hole of No. 1 cylinder. No. 1 cylinder refers to the front cylinder. Read 1, 2, 3, 4, front to rear. If the timing gears have been removed, replace according to the marks on the gears.



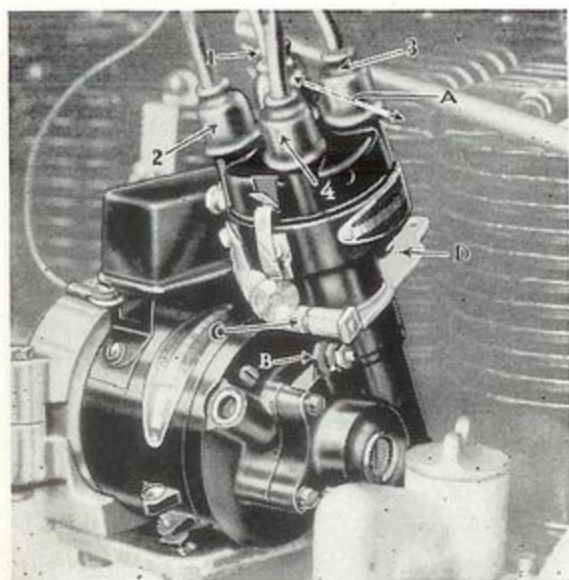


Figure 23

If the generator distributor unit has been removed, replace as shown in (Fig. 23), connect hose coupling, rotate motor to firing position (full retard No. 1 cylinder). Loosen clamping screw "B" and lift distributor away from generator. Rotate distributor cam shaft until points are just ready to break when the rotor on top of cam shaft is pointing to No. 1 cylinder segment in distributor cap. With advance arm "D" in retarded position, replace distributor unit and tighten clamping screw "B". Final adjustment is made by loosening clamping screw "C" and rotating distributor body until points are just breaking for No. 1 cylinder.

**Model 436 (Magneto Ignition)**—Ignition timing on magneto Model 436 motors should be set so that the breaker points in the magneto distributor open when the No. 1 cylinder piston is coming up on the compression stroke and the crankshaft or piston is at top dead center. Be sure breaker point gap is adjusted to .015". The advance arm must be set in full retard position (down) when timing the motor. Top dead center may be determined by inserting a stiff wire or rod through the spark plug hole of No. 1 cylinder. No. 1 cylinder refers to the front cylinder. Read 1, 2, 3, 4 front to rear).

If the timing gears have been removed, replace according to marks on gears.

If magneto has been removed, check timing gears and rotate motor to firing position (retarded) on No. 1 cylinder. Turn distributor shaft of magneto unit rotor on end of shaft pointing to No. 1 cylinder segment in distributor cap (upper right) attach magneto and coupling. Recheck.

**Connecting the Ignition Wires**—The firing order of the cylinders is 1, 3, 4, 2. On battery ignition models, follow the figures given on the distributor cap in (Fig. 23); that is, the wire leading from No. 1 segment on the cap should go to the spark plug on No. 1 cylinder, the wire leading from No. 3 segment on the cap should go to No. 3 cylinder, etc.

#### MODEL 436 TIMING VALVES

Valve timing is governed by the marks on timing gears. Be sure gears are placed according to marks.

### ELECTRICAL SYSTEM

The electrical system will require little attention except the proper lubrication of the running units. Keep the wiring harness connections tight.

The Indian ammeter serves as an indicator of what is going on in the entire electric system.

The zero of the ammeter scale is at the center; all marks to the right indicate that the battery is charging. All marks to the left of the center indicate discharge.

When the motor is stopped and lights not being used, the pointer should be at zero on the scale. When the motor is running and the lights are off, the

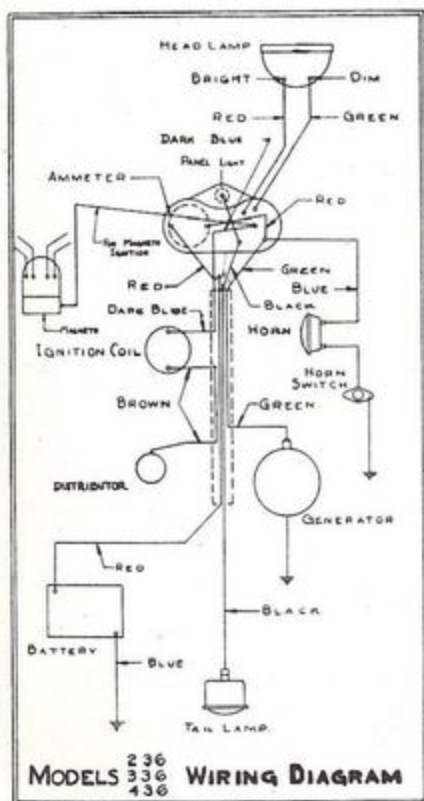


Figure 24

Wiring Diagram  
Models 235, 335 and 435

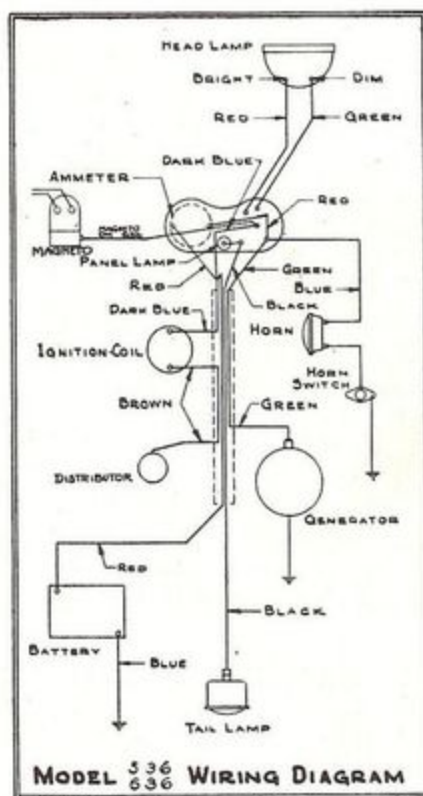


Figure 25

Wiring Diagram  
Models 535 and 635

pointer will indicate the amount of current sent into the battery. Normally this will be between five and eight amperes, according to the speed of the motor and the condition of the storage battery.

**As Trouble Detector**—With motor stopped and lights off, if the pointer shows a discharge, there is a short circuit in the system. Hunt for it. With motor running, if the ammeter pointer jumps quickly or moves continually from side to side, there is a loose connection. If it moves to the discharge (left) side, the trouble is between the battery and lamps or horn.



If there is an open circuit between battery and generator (very rare), the ammeter will indicate normal discharge for the lamps which are lighted whether the motor is running or not. Trace the broken wire and repair immediately, **to avoid generator being injured**. If cut out points are fused together, ammeter will show a heavy discharge. If there is a short circuit between ammeter and lamps or horn, the ammeter will show excessive discharge when the lamps are on. With motor stopped and lamps switched on, if the pointer shows zero and the lamps do not burn, there is a break between battery and lamps.

A break or open circuit between the main wire and any lamp will be indicated by that lamp not burning, and the ammeter will indicate the discharge for the remaining lamps only.

If when the motor is running and no lights on, the ammeter pointer stays at zero, the driving belt may be found to be loose or broken.

## CONNECTING AND ADJUSTING HEAD LAMP

The head lamp adjustment is on the ball and socket principle. The head lamp should be pointed in the desired direction and tightened securely in place by means of the nut at the lower rear of the lamp. To connect wires, pass the cables leading from the head lamp through the rubber grommet in the handlebar bracket, and from there the cable should pass on the **left side of the frame head** between the frame head and instrument panel, where it is attached to the switch. Black and red cables should be fastened to the post marked **HI** and the black cable to the post marked **LO**.

To connect horn, pass the horn switch cable between the truss and fork side tubes, then attach to the post on the horn.

## CARE AND ADJUSTMENT OF MAGNETO

Add a few drops of light oil every 1,000 miles to both ends of the magneto in oilers provided.

Keep the contact points cleaned with a special file or No. 00 sandpaper and adjusted to .020 inch gap when open.

For timing the magneto see your dealer, service station, or consult magneto instruction booklet provided.

**Keep the magneto high tension cables to the spark plugs clean.**

## CARE AND ADJUSTMENT OF DISTRIBUTOR

Distributor breaker points should be examined occasionally to be sure that they are clean and in proper adjustment. If they are dirty or pitted, dress them with a special breaker point file. Adjust to .020" gap when open.

The distributor cap should be kept clean and free of grease or dust. All wires should be clean and properly seated in cap sockets. Add a little light oil occasionally to lubricator on distributor body.

## CARE OF SPARK PLUGS

Spark plugs should be kept clean and the points free from blisters. The correct spark gap is from .022" to .025".

## CARE AND ADJUSTMENT OF GENERATOR

Add four or five drops of a good light machine oil every 400 miles to oilers on both ends of the generator.

For generator output adjustment fitted to your riding needs consult your dealer or service station. Never set the charging rate too high, thus preventing the injurious overcharging of the battery.

The generator is of the third brush type. To increase the output, move the third or adjustable brush in the direction of the rotation of the armature. To decrease the output, move the third brush in the opposite direction from the rotation of the armature.

## MODEL 636 GENERATOR CHAIN ADJUSTMENT

Loosen the bolt at the top of the generator where the generator bracket attaches to the frame. Loosen the two nuts on the bracket lower clamping and adjusting screw. Slide the generator forward until the chain is at proper tension. Tighten the upper bolt and turn the lower screw to hold the generator in this position. Tighten the two lower nuts after adjustment is made in order to securely clamp the generator in its bracket.

The generator chain, when properly adjusted, should have approximately  $\frac{1}{2}$ " of up and down travel. Adjustment should be made with the chain guard cover removed. The generator chain should be lubricated frequently.

## GEAR RATIOS

The gearing furnished is intended for average service and all machines shipped from the factory are equipped with this sprocket equipment. It is a common fallacy to suppose that high gear ratios are productive of maximum speed. This is true only up to a certain point. Too high a gear will reduce rather than increase the speed of the machine and will also cause the motor to labor and overheat. Comparatively low gear is always more economical and efficient.

Model	Purpose	Teeth	High	Second	Low
236	Solo	20-43	4.66-1	6.54-1	11.50-1
	Side Car	17-43	5.48-1	7.70-1	13.53-1
336	Solo	23-43	4.05-1	5.69-1	10.00-1
	Side Car	20-43	4.65-1	6.54-1	11.50-1
436	Solo	18-43	3.93-1	6.04-1	10.37-1
	Side Car	15-43	4.72-1	7.24-1	12.41-1
536	Solo	18-39	5.46-1	8.03-1	14.45-1
636	Solo	18-40	4.82-1	6.77-1	11.89-1

The figures under "ratios" give the number of revolutions made by the motor for one by the rear wheel.

For better city performance, gear ratios may be changed by decreasing the number of teeth on the countershaft sprocket by one tooth.



## FOUR SPEED TRANSMISSION GEAR RATIOS

Countershaft Sprocket	Low	Second	Third	Fourth
16 teeth	14.48	11.56	7.36	5.84
17 "	13.62	10.87	6.92	5.49
18 "	12.87	10.28	6.54	5.19
19 "	12.15	9.70	6.17	4.90
20 "	11.58	9.25	5.88	4.67
21 "	11.04	8.81	5.61	4.45
22 "	10.49	8.38	5.33	4.23
23 "	10.07	8.04	5.12	4.06
24 "	9.62	7.68	4.89	3.88
25 "	9.25	7.39	4.70	3.73

## TROUBLE SAVING TIPS

Don't race the motor on the stand. This abuse has ruined more motors than thousands of miles of road use.

Don't use inferior oils; use the oil recommended. It keeps the motor in good shape.

Don't neglect to oil all parts needed.

Don't use counterfeit Indian parts. They are cheap material, wear out quickly and void the guarantee. Genuine Indian parts are better and cheaper in the long run. They are obtainable from authorized Indian dealers only.

Don't fail to keep tires properly inflated at all times.

Don't spin the rear wheel when starting. Let the clutch in easily. Each time the wheel spins, rubber is torn from the tire, making it easier to puncture and reducing its mileage.

Don't open and close the throttle suddenly. It injures the motor and creates ill-feeling against motorcyclists.

Try all nuts and bolts at least once a week. Any loose parts will be detected by regular inspection of this kind and will prevent trouble on the road.

## SOURCES OF MOTOR TROUBLE AND REMEDIES

### 1—Motor Will Not Start

- Gasoline supply exhausted, carburetor pipe shut off or clogged by dirt or water.
- Cylinder flooded by too much priming; pump out excess gas by kicking motor over just a few times with the throttle closed.
- Mixture too lean. Adjust by directions on pages 20 and 21.
- Oil congealed in motor; kick motor over a number of times before trying to start.

- (e) Clutch slips, so that starter fails to turn motor fast enough. Tighten clutch.
- (f) Distributor—Magneto points dirty, pitted, worn out, or set too closely or too far apart.
- (g) Compression very weak.

## 2—Motor Stops Continually After Starting

- (a) Gasoline pipe clogged; motor will start on kicking but gets no more fuel. Disconnect pipe and clean.

## 3—Motor Stopped Suddenly

- (a) Gasoline tank empty, filler cap air vent plugged or gasoline pipe or carburetor clogged by dirt or water.
- (b) Loose, broken or fouled spark plug or its cable unfastened.
- (c) Oil supply in tank or engine exhausted; do not run until motor turns freely again; as severe damage to cylinder, piston or bearings will result; refill with oil and turn motor over slowly till chance of injury is removed. Get your dealer to investigate and advise you.

## 4—Motor Knocks

- (a) You are opening throttle too fast, or failing to retard the spark, when accelerating or in extremely hard pulling. Open throttle more slowly.
- (b) Improper gas mixture, usually too lean. See correct adjustments on pages 20 and 21. The correct mixture is a little hard to get; be patient and thorough; the result will greatly increase the motor's power and flexibility, and enable to pull hard hills without knocking, etc.
- (c) Heavy carbon deposits; shows up on quick acceleration and when pulling hard hills; shows only when motor is hot.
- (d) Overheated motor, due to low oil supply, or oil of poor quality. Sometimes due to running too fast in second or low gear.
- (e) Distributor—Magneto points set too far apart, making too early breaking of contact.

## 5—Motor Shows Lack of Power

- (a) Overheated, due to heavy carbon deposit and other reasons mentioned in paragraph under "Overheating."
- (b) Faulty carburetor adjustment, usually too lean.
- (c) Spark lever does not advance fully.
- (d) Poor compression.
- (e) Sump valve not working properly; clean screen and valve disc.

## 6—Motor Overheats

- (a) Using poor grade of oil.
- (b) Not using enough oil.
- (c) Sump valve not working properly; clean screen and valve disc.



- (d) Excessive carbon deposit.
- (e) Weak valve springs; replace them.
- (f) Running with retarded spark.
- (g) Poorly adjusted carburetor.
- (h) Slipping clutch or dragging brake.
- (i) Running motor too fast in second or low gears.
- (j) Poor compression.

### 7—Motor Misfires

- (a) Poor carburetor adjustment; usually too rich.
- (b) Magneto or Distributor faulty.
- (c) Exhaust valve not seating properly; set too close.
- (d) Spark plug points set wrong or in need of cleaning.
- (e) Weak or broken valve springs; replace them.
- (f) Sticking valve stems; usually exhaust, from poor oil, pour kerosene down valve stem till free.

### 8—Motor Hard to Start

- (a) Too much or too heavy oil in motor.
- (b) Too much choking; clear motor of its excess gas.
- (c) Weak kicking of the starter; give a sharp, powerful kick; it often takes a few days' practice to acquire the knack of this.
- (d) Poor carburetor adjustment; usually too lean.
- (e) Spark plug points dirty or too far apart. (See Care of Spark Plugs on page 29).
- (f) Distributor—Magneto points pitted, dirty, or too far apart, or too close.

### 9—Motor Races When Idle

- (a) Throttle does not close.
- (b) Throttle cable not properly adjusted, or dry and needs oil poured down inside of cable casing.
- (c) Worn throttle stem; have your dealer replace it.

### SPECIAL ATTENTION MUST BE GIVEN TO THE FOLLOWING:

1. Break the motor in PROPERLY.
2. Shift gears CORRECTLY at all times.
3. Use the CORRECT SPARK PLUGS.
4. Watch your tappet adjustment.
5. Use the correct fuel. And above all, use THE RIGHT OIL.

## HOW TO BREAK IN A MOTOR PROPERLY

By far the most important of all is the breaking in of the motor. Many owners of motorcycles have often wondered, after running their machines not more than 20 or 25 miles an hour for 500 or 1,000 miles, why they should not then be able to ride the machine wide open. The reason that this cannot be done is that these lower speeds do not subject the various parts to the rapid and maximum expansion caused by the heat of wide open throttle.

For the first 100 miles avoid all steep hills and run at speeds of 20 to 35 miles per hour, but do not exceed a speed of 40 miles an hour in spurts or when passing another vehicle.

During the next 400 miles it will be all right to ride at 35 to 40 miles per hour. However, do not ride over 50 miles an hour during this period and then **only for a short distance.**

At the end of 500 miles, take the machine to your dealer's and have a thorough inspection. Be sure to give special attention to the tightening of the cylinder and manifold nuts, as well as proper adjustment of tappets and drive chain. See your instruction book.

By this time it should be safe to begin subjecting the motor to full throttle. In other words, after having done exactly as outlined above for 500 miles, it is about time to begin **breaking the motor in for speed.**

After first, when riding at 35 miles per hour, open the throttle wide and allow the machine to reach the speed of 55 miles per hour—**then close the throttle quickly and permit the machine to slow down to 35 miles per hour.** Do this several times, but make sure that the motor has had time to cool by slow running between spurts. The speed can now be increased five miles per hour for every 100 miles of riding until maximum speed has been reached. For example, at 600 miles, allow the machine to reach 60 miles an hour before closing the throttle. At 700, close the throttle at 65. Be sure at all times to shut off immediately when the various speeds have been reached while breaking in the machine. Further, the machine must accelerate quickly and if not, stiffness is indicated and more limbering is necessary.

Thruout the entire breaking in period, just remember that good judgment must be used. If at any time there are signs of stiffness or laboring, the machine should be stopped at once and allowed to cool. Particular care must be taken to shut off immediately when reaching top speed and even after 1,000 miles, the machine should not be run at full speed for more than one-half mile.

The above instructions for breaking in are for solo machines. If sidecar is used, subtract 10 miles an hour in all your breaking-in operations.

After 5,000 miles, carbon should be removed and valves ground. Also, again give the machine a thorough inspection. At this time the machine should be in a condition to run as hard as one wishes on the road provided INDIAN oil is in the crankcase. Do not race motor when cold. Allow temperature to rise slowly and be sure oil and engine are thoroughly heated before attempting fast riding.



## Supplement

COVERING 1928-'29-'30-'31-'32 and '33 MODELS

**NOTE:** This supplement is in no way intended to be complete. It is included to provide information of major importance to owners of models previous to 1934. If any point upon which you are vitally interested is not covered sufficiently in this supplement, your local Indian Dealer will be glad to supply you with the information or write direct to the Indian Motorcycle Company at Springfield, Mass.

### PRIMING OIL PUMPS

If the oil tank has been allowed to run completely dry or if the oil line from the tank to the pump has been removed for any reason, the oil pump will draw air instead of oil and form an air-lock. It is *essential* that this condition be relieved before running the motor. Refill the oil tank with the proper grade of Indian Oil. Remove the priming screw located directly beneath the oil tube connection on the mechanical oil pump and allow the air in the tube to pass out through the priming screw hole. Be sure that any oil which comes out is free from air bubbles before replacing the screw.

### MECHANICAL OIL PUMP ADJUSTMENTS

**Models 1931-1932**—The operation of the throttle controlled mechanical oil pump is automatic. Increased quantities of oil are delivered to the motor with throttle openings.

If necessary at any time to alter the amount of oil pumped at *idling speeds*, loosen lock nut "B" (Fig. 26) and turn screw "A" to the right (*in*) to increase the supply and to the left (*out*) to decrease the supply.

To alter the amount of oil pumped at wide open throttle; loosen lock nut "D" and turn screw "C" to the left (*out*) to increase the supply and to the right (*in*) to decrease the supply. Lever "E" should always be against screw "C" or stop "F" at wide open throttle.

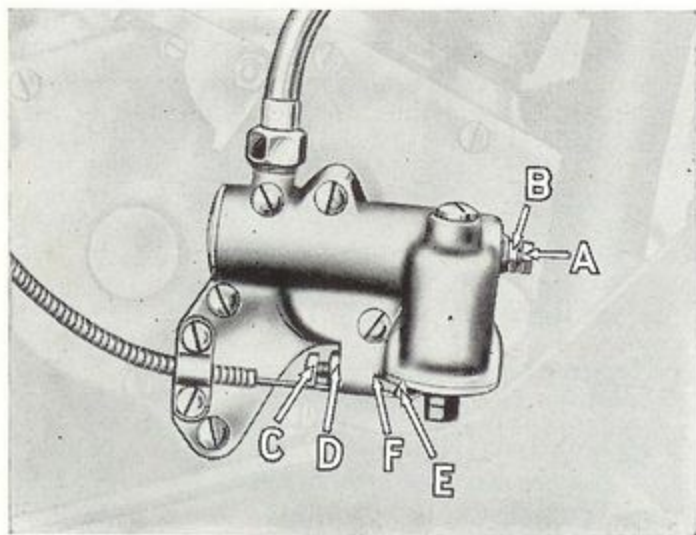


Figure 26

**Important:** In case the mechanical oiler or the oil tube is removed for any reason follow directions on "Priming Oil Pump" before running the motor.

**Note:** The mechanical oil pump is designed to give proper lubrication to the motor under average conditions and reasonable speeds. At sustained high speeds or during long, hard pulls, the motor should be fed an additional quantity of oil by use of the hand pump on the top of the right tank.

## ADJUSTMENT OF MECHANICAL OILER

(1928, 1929, and 1930 Models)

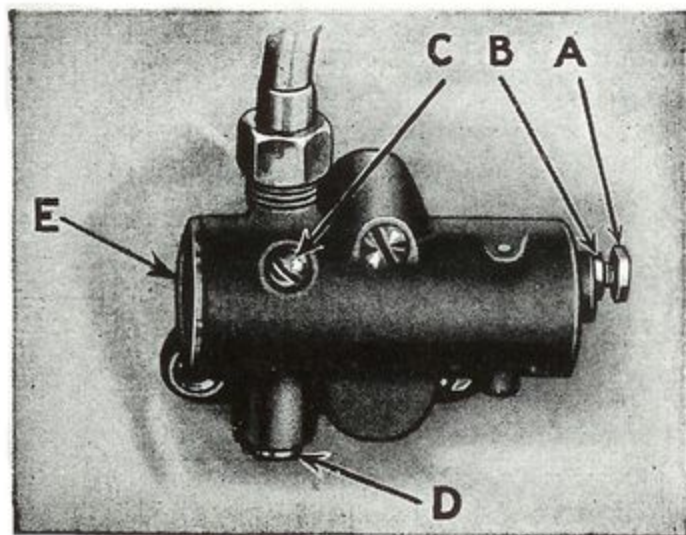


Figure 27

If for any good reason it is necessary to alter the adjustment of the oil flow, loosen lock nut "B", (Fig. 27), and turn screw "A" to the right (IN) to decrease the oil supply, and to the left (OUT) to increase the oil supply. Turn this screw only one-half a turn at a time. After any adjustments, be sure and tighten the lock nut "B". When the screw "A" is all the way in against "B" the oiler will not pump.

## ADJUSTMENT OF MECHANICAL OILER

Previous to 1928 Models

If nature of the country where the motorcycle is operating makes it desirable to alter the oil adjustment, proceed as follows: (See Fig. 28). Remove caps 1 and 2, loosen but do not remove screw 3 and turn screw 4, which is under cap 2, to the right to increase oil supply or to the left to decrease supply. Screw 4 should be turned not more than half a turn at a time. Tighten screw 3 and replace caps 1 and 2. If adjustment is still incorrect repeat after machine has been ridden and oil level tested.

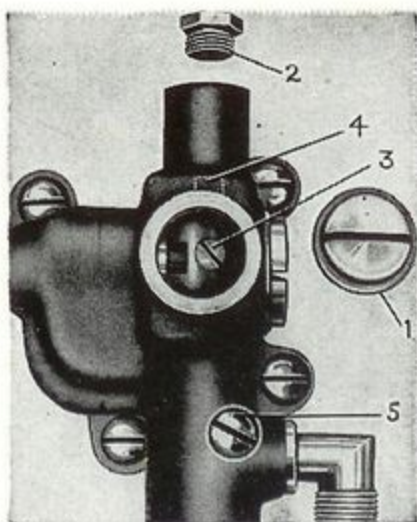


Figure 28



## ADJUSTMENT OF CONTROLS

**Models 45 and 74—1931 and 1932**—Pass the flexible casing for spark control cable "A" (see Fig. 29) which comes from the right handlebar, to left of frame head and attach clevis to the magneto advance lever "D". Then with the right grip turned in or to the left as far as it will go, push the magneto or circuit breaker advance lever down as far as it will go and fasten cable casing to bracket "C" by tightening clip "B". Test by turning the right grip in and out to be sure that full range of the spark lever is obtained. If necessary, adjust by sliding cable casing in clip "B".

Next, pass the flexible casing for throttle and mechanical oiler control cable which comes from the left handlebar down by the left side of the frame head and attach cable to cable block "G". With the left grip turned out to the left as far as it will go and the throttle lever on the carburetor in closed position (to the rear), fasten casing to bracket "C" by tightening clip "F".

Pass the flexible casing for mechanical oil pump in rear of the rear cylinder and fasten to bracket "C" by tightening clip "J" so that the end of the casing is flush with the front end of clip "J". With the left grip turned out to the left as far as it will go and with the mechanical oil pump lever "E" (Fig. 26) in open position so that it rests against stop screw "C" (Fig. 26) fasten the oiler cable to block "G" (Fig. 29). Test by turning the left grip in and out to be sure that full range of both the throttle and mechanical oiler levers is obtained simultaneously. Adjustments are made by sliding cable casings in clips "F" and "J" and also by sliding throttle rod in swivel block at "K" (Fig. 29).

When correctly assembled and adjusted, the spark control cable will cross from the right handlebar to the left side of the steering head, while the throttle cable stays on the left side. These cables should be adjusted so that the handlebars can swing freely from side to side without damaging the casings or stretching them.

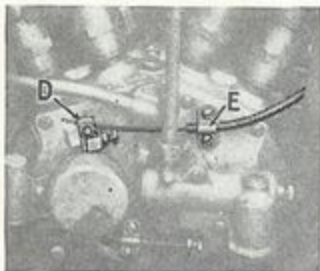


Figure 30

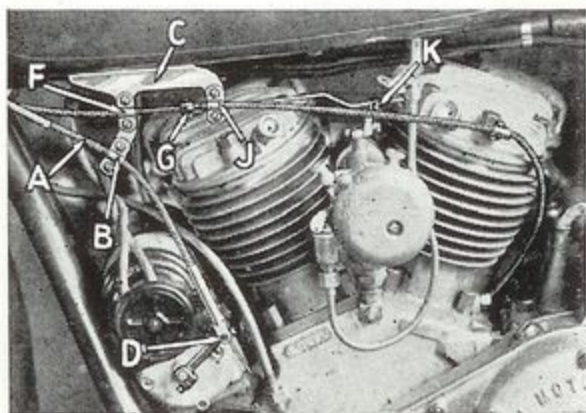


Figure 29

**Model 503**—Pass the flexible casing for throttle control, which comes from the left handlebar, down the left side of the frame head and attach cable to cable block. With the left grip turned out (to the left) as far as it will go and the carburetor throttle lever in the closed position (back as far as it will go) fasten the cable casing to the bracket by tightening the front clip. Test by turning the left grip in and out to see that full range of the throttle is obtained.

Pass the flexible casing for spark control, which comes from the right handlebar, down the right

side of the frame head and attach cable to circuit breaker arm at "D" (Fig. 30). With the right grip turned in (to the left) as far as it will go and the circuit breaker arm in the advanced position, resting against the rear stop, fasten the cable casing to the cam case by tightening clip "E" (Fig. 30). Test by turning the right grip in and out to be sure that full range of the spark is obtained.

Directions for synchronizing the action of the carburetor throttle and the mechanical oil pump control lever are identical with those given in the third paragraph under 45 and 74 Models.

## ADJUSTING EXTERNAL BRAKES

The first adjustment consists of shortening the brake rod. (See Fig. 31). To shorten the brake rod, remove the dowel pin at "H", loosen the lock nut "K", and after dropping the rod away from the brake lever, the rod may be

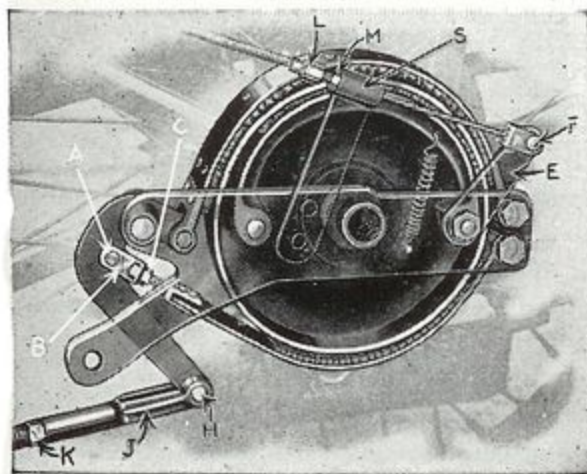


Figure 31

### Chief and Scout Brake

loosen the lock nut "C". Then back this nut off a few turns and after lowering the flat clevis and lower band away from the brake lever and drum (into an accessible position), turn this clevis "B" to the right a turn or two to shorten the brake band. **DO NOT TAKE UP MORE THAN A TURN AT A TIME HERE.** Replace the clevis, tighten the lock nut "C" and put the dowel pin "A" back in place. Now inspect the bands to see that they both draw down snugly on the brake drum when the brake pedal is depressed.

A very fine brake adjustment may be obtained by adjusting this lower band to exactly the correct length, which will insure that the *upper band sets down* on to the drum a *trifle before the lower band* grips the drum. This is very important, and it will pay the rider to give this adjustment some attention. **DO NOT NEGLECT TO REPLACE ALL COTTER PINS AND TIGHTEN ALL LOCK NUTS AFTER ADJUSTING BRAKE.**



## ADJUSTING OF TIMKEN WHEEL BEARINGS

In adjusting the Timken Wheel bearings as supplied on Indian models, caution should be taken to keep them free. The easiest way to obtain the proper adjustment is to loosen the adjusting nut lock nut, remove the locking washer and tighten the adjusting nut until the wheel has a slight drag when turned. Then back off on the adjusting nut until the wheel runs freely but has a small amount of side-shake. Reassemble the locking washer, binding one of the sides on a flat on the adjusting nut and assemble the lock nut. Under no condition should Timken roller bearings be run with a tight adjustment. These wheel bearings should be packed with Indian Wheel Bearing Grease at least once in every six months if the motorcycle has had average use.

## TILLOTSON MS TYPE CARBURETORS

### STARTING INSTRUCTIONS FOR CARBURETOR NOT PREVIOUSLY ADJUSTED

(See Fig. 32). Turn both idle "B" and high speed "A" adjustment screws clockwise, or into their seats (do not force against seat). Open high speed adjustment from two to two and one-half turns counter clockwise, or out. Open low speed adjustment from one-half to one full turn counter clockwise, or out. Adjust throttle stop screw "D" (located on the throttle lever) to cause a slight opening of the throttle. After making throttle adjustments be sure to tighten set screw "E". Open throttle, approximately one-fourth of its travel, close choke "F" fully, and turn motor two or three revolutions to prime. Next, move choke to "warm up" position and crank, starting motor. When motor is thoroughly warm, move choke to running position, and make final adjustments as follows:

### FACTS TO REMEMBER

In starting a cold engine, advance spark fully. Choke in the usual manner. In starting a warm engine—KEEP THROTTLE CLOSED AND RETARD SPARK FULLY. CHOKING IS UNNECESSARY.

### THE BY-PASS OR LOW SPEED ADJUSTMENT

The low speed jet is regulated as follows: Turning to the right (clockwise) or in, increases the suction imposed in the By-Pass Tube, at the same time reducing the amount of air bled around the needle control. Thus the mixture is richened. Turning to the left, (counter-clockwise) or out, decreases the suction in the tube by bleeding more air around the needle control. In this manner the mixture is thinned.

## THE MAIN OR HIGH SPEED ADJUSTMENT

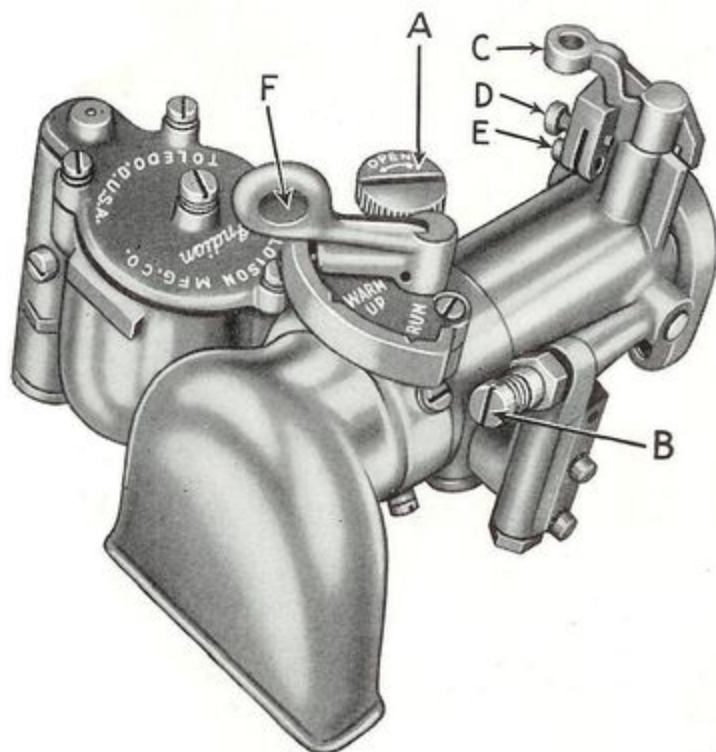


Figure 32

By turning to the right (clockwise) or in, the flow of gasoline is restricted and the high speed mixture thinned. By turning to the left (counterclockwise) or out, the fuel restriction is opened and the mixture is richened. *Note that the low speed and the high speed adjustments operate exactly opposite in thinning and richening mixtures.*

*That is, where the low speed turns to the right to richen, the high speed is thinned in so doing.*

The low speed adjustment will be found approximately correct when the knurled screw stands from one-half to one full turn off in its seat. The high speed adjustment will be found from one and one-half to two full turns off seat when correctly adjusted.

## FUEL LEVEL

It is important that the fuel stand at the proper level within the float bowl. This level is recommended as being fifteen-sixteenths inches when measured from the top edge of bowl to fuel level. The float cover must, of course, be removed when making this check.

## CARE OF THE CARBURETOR

The Tillotson carburetor when once adjusted will continue to function accurately unless interrupted by dirt or water, in which case the carburetor must be cleaned.

The nozzles should never be cleaned by using a wire or small drill—always use compressed air or gasoline.



## MOTOR REGISTRATION DATA from 1926 to DATE

Model Name	Motor Model Letters	Number of Cylinders	Bore	Stroke	Piston Displacement	Rated Horsepower
Prince	AL-BL and CL	1	2¾	3 <sup>37</sup> / <sub>64</sub>	21.25	3.02
Pony	EOC-ECC ECD-ECE-ECF	2	2½	3 <sup>1</sup> / <sub>16</sub>	30.07	5.0
37" Scout	AG-BG CG-DG and EG	2	2¾	3 <sup>1</sup> / <sub>16</sub>	36.38	6.05
45" Scout, Motoplane and Sport Scout	BGP-CGP DGP-EGP BOC-BCC-FCC BCD-FCD-BCE FCE-BCF-FCF	2	2 <sup>7</sup> / <sub>8</sub>	3½	45.44	6.61
61" Chief	AZ-BZ and CZ	2	3 <sup>1</sup> / <sub>8</sub>	3 <sup>31</sup> / <sub>32</sub>	60.88	7.81
74" Chief	AH-BH-CH-EH COC-CCC-CCD CCE-CCF	2	3¼	4 <sup>7</sup> / <sub>16</sub>	73.62	8.45
Indian 4	VF-CA-DA-EA DOC-DCC-DCD DCE-DCF	4	2¾	3¼	77.21	12.1

Yearly Models Prior to 1925 was Indicated by a Letter in Middle of the Motor Number (Example 50R001)

1909—A	1915—G	1921—S
1910—B	1916—H	1922—T
1911—C	1917—J	1923—V
1912—D	1918—K	1924—X
1913—E	1919—M	1925—Y
1914—F	1920—R	

# Motor and Serial Numbers of the Various Seasonal Models from 1928 to Date

	21 Cu. In. Prince	37 Cu. In. Scout	45 Cu. In. Scout	61 Cu. In. Chief	74 Cu. In. Chief	78 Cu. In. Four	30.50 Cu. In. Pony	45 Cu. In. Motoplane & Sport Scout
1928	CL101-up	CG101-up also DG101 to DG2637	CGP101-up also DGP101 to DGP4317	CZ101-up	CH101 to CH2224	CA101-up also DA101-DA700		
1929		DG2638-up	DGP4318-up		CH2225-up	DA701-up also EA101-EA775		
1930		EG101 to EG924	EGP101 to EGP3080		EHI101 to EHI535	EA776 to EA1509		
1931 Motor No.		EG925-up	EGP3081-up		EHI536-up	EA1510-up		
1931 Serial No.		S1344-up	G4050		H1410-up	A982-up		
1932 Motor No.			BOC101-up		COC101-up	DOC101-up	EOC101-up	
1932 Serial No.			203101-up		303-101-up	403-101-up	503-101-up	
1933 Motor No.			BCC101-up		CCC101-up	DCC101-up	ECC101-up	FCC101-up
1933 Serial No.			233-101-up		333-101-up	433-101-up	533-101-up	633-101-up
1934 Motor No.			BCD101-up		CCD101-up	DCD101-up	ECD101-up	FCD101-up
1934 Serial No.			234-101-up		334-101-up	434-101-up	534-101-up	634-101-up
1935 Motor No.			BCE101-up		CCE101-up	DCE101-up	ECE101-up	FCE101-up
1935 Serial No.			235-101-up		335-101-up	435-101-up	535-101-up	635-101-up
1936 Motor No.			BCF101-up		CCF101-up	DCF101-up	ECF101-up	FCF101-up
1936 Serial No.			236-101-up		336-101-up	436-101-up	536-101-up	636-101-up



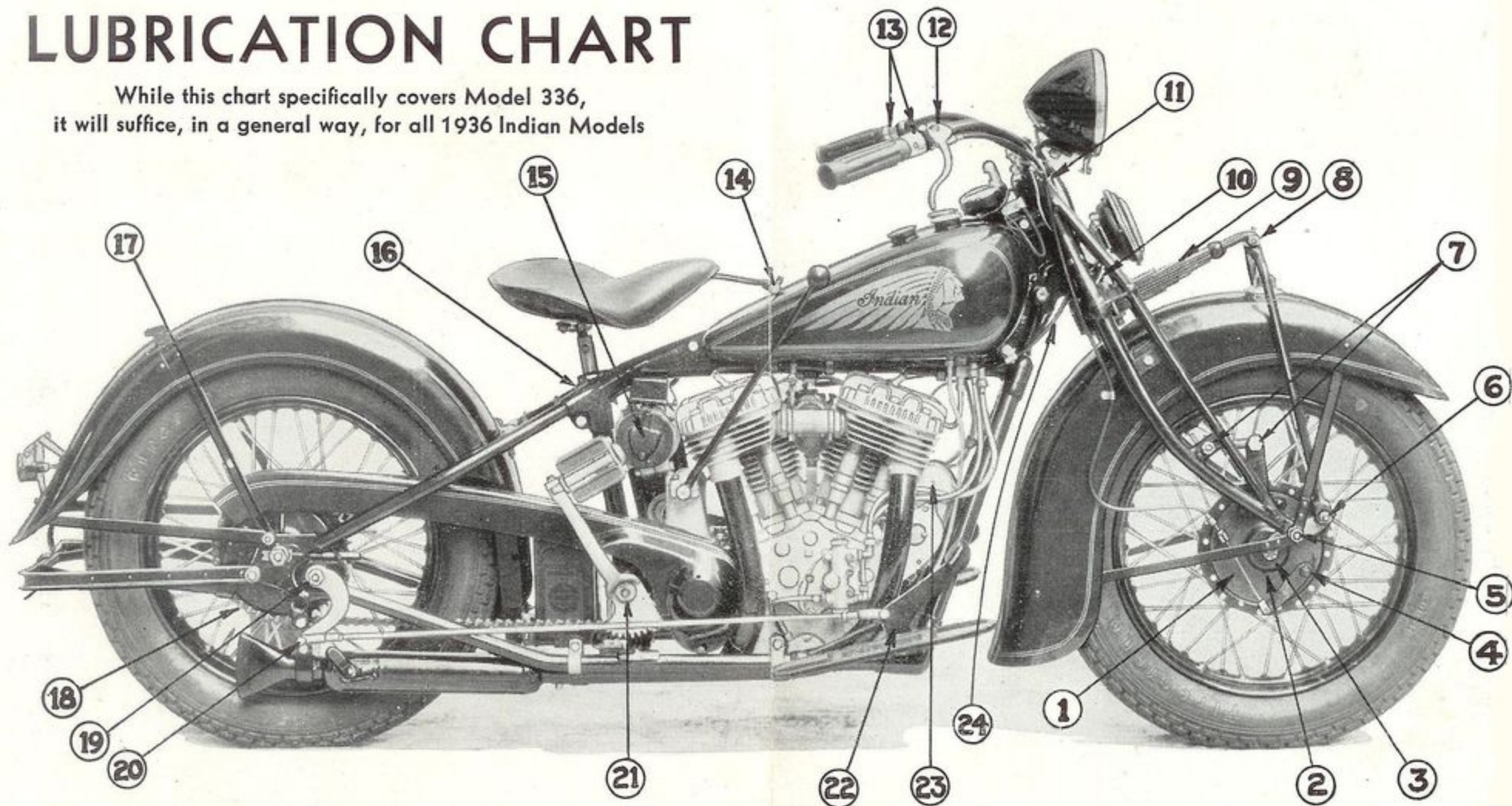
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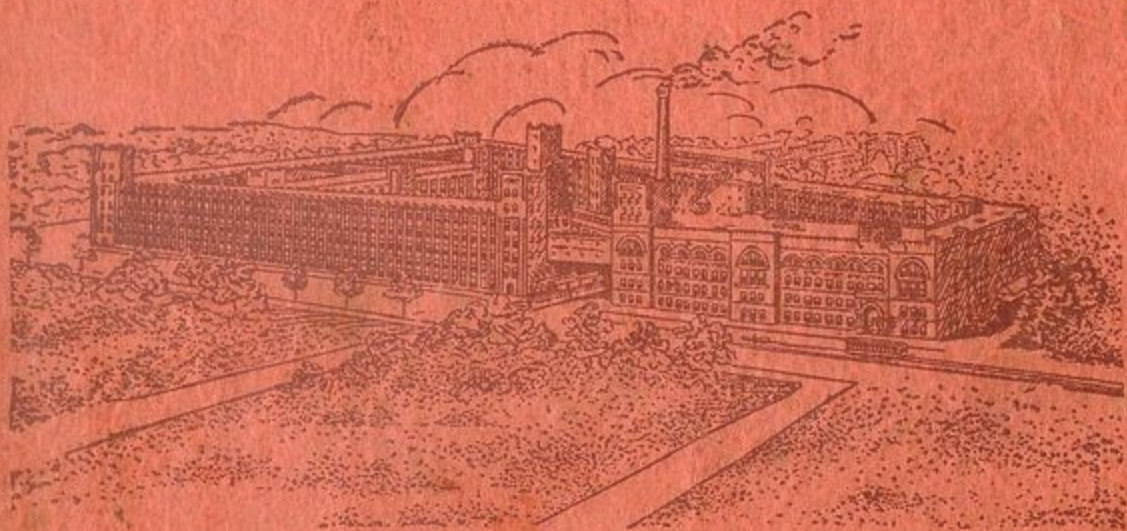
# LUBRICATION CHART

While this chart specifically covers Model 336,  
it will suffice, in a general way, for all 1936 Indian Models



1. **Front Hub**—Grease every 1000 miles.
2. **Important**—Keep drain hole clear to allow escape for excess lubricant in hub.
3. **Friction Washer**—Keep free with a few drops of oil every 200 miles.
4. **Brake Cam Bearing**—Few drops of oil every 200 miles.
5. **Bell Crank Bearings**—Grease every 200 miles.
6. **Bell Crank End Pins**—Grease every 200 miles.
7. **Brake Anchor Link Bearings**—Grease every 200 miles.
8. **Spring End Bearing**—Grease every 200 miles.
9. **Spring**—Grease leaves when they squeak—see Care of Spring Fork.
10. **Lower Head Bearings**—Grease every 500 miles.
11. **Upper Head Bearings**—Disassemble and pack with grease every season.
12. **Hand Brake Lever and Cable**—Oil hand brake lever pivot every 500 miles.
13. **Grips**—Unscrew protector sleeve and inject a few drops of oil monthly.
14. **Saddle Front Connection Bearing**—Grease every 200 miles.
15. **Generator**—Few drops of light oil in oiler at each end of generator every 400 miles—see Care of Generator.
16. **Seat Post**—Grease every 200 miles.
17. **Rear Hub**—Pack with grease twice each season—see Care of Wheel Bearings.
18. **Chain**—See Care and Adjustment of Chain.
19. **Brake Cam Bearing**—Grease every 500 miles.
20. **Brake and Clutch Rod Clevis**—(Clutch rod on left side)—Few drops of oil on front and rear clevis pins every 200 miles.
21. **Kick Starter Segment Bearing**—Grease every 500 miles.
22. **Brake and Clutch Pedal**—(Clutch pedal on left side)—Grease every 500 miles.
23. **Magneto**—See Care of Magneto.
24. **Controls**—Few drops of oil inside upper end of covering once a week.





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U. S. A.