Kawasaki

KE125

Motorcycle Service Manual

Decimal Equivalents

INCH					MM INCH
1/64				.015625	
	1/32			.03125	1mm= .03937 inch
3/64				.046875	
		1/16		.0625	
5/64				.078125	2mm= .07874 inch
	3/32			.09375	
7/64				.109375	3mm= .11811 inch
			1/8	.125	
9/64				.140625	
	5/32			.15625	4mm= .15748 inch
11/64				.171875	
		3/16		.1875	5mm= .19685 inch
13/64				.203125	
	7/32			.21875	
15/64				.234375	6mm= .23622 inch
			1/4	.25	
17/64				.265625	7mm= .27559 inch
	9/32			.28125	
19/64				.296875	
		5/16		.3125	8mm= .31496 inch
21/64				.328125	
	11/32			.34375	9mm= .35433 inch
23/64				.359375	
			3/8	.375	
25/64				.390625	10mm= .39370 inch
	13/32			.40625	
27/64				.421875	11mm= .43307 inch
		7/16		.4375	
29/64				.453125	
	15/32			.46875	12mm= .47244 inch
31/64				.484375	
			1/2	.5	13mm= .51181 inch

INCH					MM INCH
33/64				.515625	
	17/32			.53125	
35/64				.546875	14mm= .55118 inch
		9/16		.5625	
37/64				.578125	15mm= .59055 inch
	19/32			.59375	
39/64				.609375	
			5/8	.625	16mm= .62992 inch
41/64				.640625	
	21/32			.65625	17mm= .66929 inch
43/64				.671875	
		11/16		.6875	
45/64				.703125	18mm= .70866 inch
	23/32			.71875	
47/64				.734375	19mm= .74803 inch
			3/4	.75	
49/64				.765625	
	25/32			.78125	20mm= .78740 inch
51/64				.796875	
		13/16		.8125	21mm= .82677 inch
53/64				.828125	
	27/32			.84375	
55/64				.859375	22mm= .86614 inch
			7/8	.875	
57/64				.890625	23mm= .90551 inch
	29/32			.90625	
59/64				.921875	
		15/16		.9375	24mm= .94488 inch
61/64				.953125	
	31/32			.96875	25mm= .98425 inch
63/64				.984375	
			1	1.	

Unit Conversion Table

cc	x	.0610	=	cu in
cc	x	.02816	=	oz (imp)
cc	x	.03381	=	oz (US)
cu in	x	16.39	=	cc
ft-lbs	x	12	=	in lbs
ft-lbs	x	.1383	=	kg-m
gal (imp)	x	4.546	=	litres
gal (imp)	x	1.201	=	gal (US)
gal (US)	x	3.7853	=	liters
gal (US)	x	.8326	=	gal (Imp)
grams	x	.03527	=	oz
in	x	25.40	=	mm
in lbs	x	.0833	=	ft-lbs
in lbs	x	.0115	=	kg-m
kg	x	2.2046	=	lbs
kg	x	35.274	=	oz
kg-m	x	7.233	=	ft-lbs
kg-m	x	86.796	=	in-lbs
kg/cm^2	x	14.22	=	lbs/in^2
km	x	.6214	=	mile
lb	x	.4536	=	kg
lb/in^2	x	.0703	=	kg/cm^2
litre	x	28.16	=	oz (imp)
litre	x	33.81	=	oz (US)
litre	x	.8799	=	qt (imp)
litre	x	1.0567	=	qt (US)
metre	x	3.281	=	ft
mile	x	1.6093	=	km
mm	x	.03937	=	in
oz (imp)	x	35.51	=	cc
oz (US)	x	29.57	=	cc
oz (weight)	x	28.35	=	grams
qt (imp)	x	1.1365	=	litre
qt (imp)	x	1.201	=	qt (US)
qt (US)	x	.9463	=	litre
qt (US)	x	.8326	=	qt (imp)
kg/cm^2	x	98.07	=	kPa
lbs/in^2	x	6.896	=	kPa
kPa	x	.1450	=	lbs/in^2

$°C \rightarrow °F: \frac{9\,(°C + 40)}{5} - 40 = °F$

$°F \rightarrow °C: \frac{5\,(°F + 40)}{9} - 40 = °C$

List of Abbreviations

ABDC	after bottom dead center
ATDC	after top dead center
BBDC	before bottom dead center
BDC	bottom dead center
BTDC	before top dead center
cc	cubic centimeters
cu in	cubic inches
ft	foot, feet
ft-lbs	foot-pounds
gal	gallon, gallons
hp	horsepower
in	inch, inches
in-lb	inch-pounds
kg	kilogram, kilograms
kg/cm^2	kilograms per square centimeter
kg-m	kilogram meters
km	kilometer
kph	kilometers per hour
lb, lbs	pound, pounds
lbs/in^2	pounds per square inch
ltr	liter, litre
m	meter, meters
mi	mile, miles
mm	milimeters
mph	miles per hour
oz	ounce, ounces
psi	pounds per square inch
qt	quart, quarts
rpm	revolutions per minute
sec	second, seconds
SS	standing start
TDC	top dead center
"	inch, inches
r/min	revolutions per minute
ℓ	liter, litre
kPa	kilo-Pascals

Kawasaki

KE125

Motorcycle Service Manual

Fourth Edition ① : Dec. 10, 1981 Ⓜ

EMISSION CONTROL INFORMATION

DESCRIPTION OF EMISSION CONTROL SYSTEM

To protect the environment in which we all live, Kawasaki has incorporated into your motorcycle an emission control system in compliance with the applicable regulations of the United States Environmental Protection Agency.

This system reduces the amount of pollutants discharged into the atmosphere by the exhaust of your motorcycle. The fuel system and cylinder of your motorcycle have been carefully designed and constructed to ensure an efficient engine with low exhaust pollutant levels.

The Clean Air Act, which is the Federal law covering motor vehicle pollution, contains what is commonly referred to as the Act's "tampering provisions".

"Sec. 203(a) The following acts and the causing thereof are prohibited...

(3)(A) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser, or for any manufacturer or dealer knowingly to remove or render inoperative any such device or element of design after such sale and delivery to the ultimate purchaser.

(3)(B) for any person engaged in the business of repairing, servicing, selling, leasing, or trading motor vehicles or motor vehicle engines, or who operates a fleet of motor vehicles knowingly to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title following its sale and delivery to the ultimate purchaser..."

Note: The phrase "remove or render inoperative any device or element of design" has been generally interpreted as follows:

1. Tampering does not include the temporary removal or rendering inoperative of devices or elements of design in order to perform maintenance.
2. Tampering could include:
   a. Maladjustment of vehicle components such that the emission standards are exceeded.

EMISSION CONTROL INFORMATION (CONT.)

b. Use of replacement parts or accessories which adversely affect the performance or durability of the motorcycle.
c. Addition of components or accessories that result in the vehicle exceeding the standards.
d. Permanently removing, disconnecting, or rendering inoperative any component or element of design of the emission control systems.

WE RECOMMEND THAT ALL DEALERS OBSERVE THESE PROVISIONS OF FEDERAL LAW, THE VIOLATION OF WHICH IS PUNISHABLE BY CIVIL PENALTIES NOT EXCEEDING $10,000 PER VIOLATION.

Foreword

This manual is designed primarily for use by motorcycle mechanics in a properly equipped shop although it contains enough detail and basic information to make it useful to the motorcycle user who desires to carry out his own basic maintenance and repair work. Since a certain basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily; the adjustments, maintenance, and repair should be carried out only by qualified mechanics whenever the owner has insufficient experience or has doubts as to his ability to do the work so that the motorcycle can be operated safely.

In order to perform the work efficiently and to avoid costly mistakes, the mechanics should read the text, thoroughly familiarizing himself with the procedures before starting work, and then do the work carefully in a clean area. Whenever special tools or equipment is specified, makeshift tools or equipment should not be used. Precision measurements can only be made if the proper instruments are used, and the use of substitute tools may adversely affect safe operation of the motorcycle.

This manual is divided into the following chapters:

(1) Adjustment

The adjustment chapter gives the procedure for all adjustments which may become necessary periodically and which do not involve major disassembly.

(2) Disassembly

This chapter shows the best method for the removal, disassembly, assembly, and installation which are necessary for maintenance and repair. Since assembly and installation are usually the reverse of disassembly and removal, assembly and installation are not explained in detail in some cases. Instead, assembly notes and installation notes are provided to explain special points.

(3) Maintenance and Theory of Operation

The procedures for inspection and repair are described in detail in this chapter. An explanation of the structure and functioning of each of the major parts and assemblies is given to enable the mechanic to understand better what he is doing.

(4) Appendix

The appendix in the back of this manual contains miscellaneous information, including a special tool list, a torque table, a table for periodic maintenance, and a troubleshooting guide.

(5) Supplement

The maintenance and repair procedures, that are unique to later year units since the first publication of the Service Manual, are explained in this chapter per one year unit.

Since this Service Manual is based on the first production units of the KE125, there may be minor discrepancies between some vehicles and the illustrations and text in this manual. Explanations on major changes and additions pertaining to later year units will be added the end of the supplement by a new edition, as required.

Table of Contents

Model Identification

KE125-A6 Left Side View

KE125-A6 Right Side View

Specifications

KE125-A6

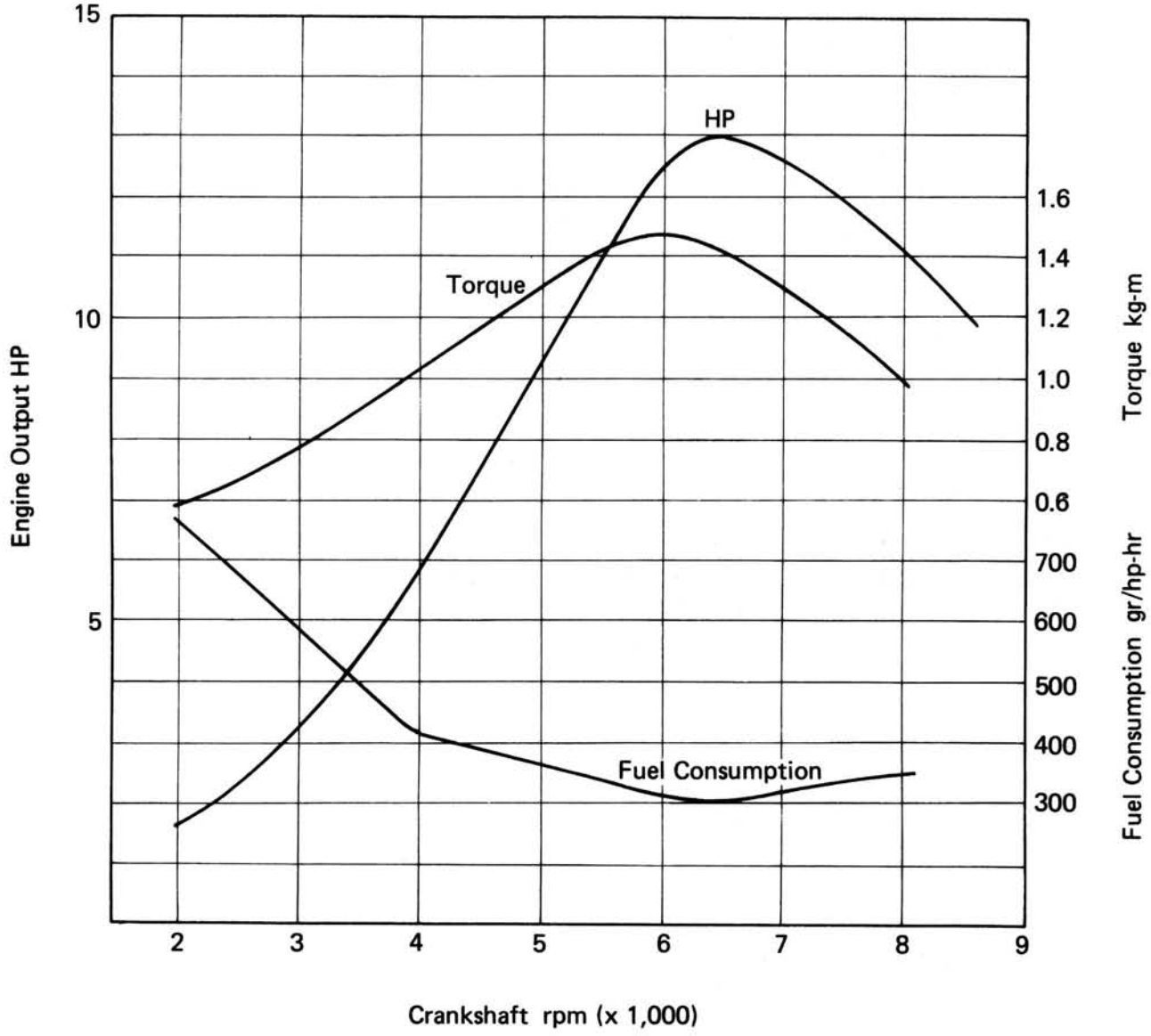
Dimensions		
Overall length		2,075 mm
Overall width		870 mm
Overall height		1,075 mm
Wheelbase		1,350 mm
Road clearance		250 mm
Dry weight		98 kg
Fuel tank capacity		6.7 ℓ
Oil tank capacity		1.3 ℓ
Performance		
Climbing ability		32°
Braking distance		12 m @50 kph
Minimum turning radius		2.0 m
Engine		
Type		2-stroke, single cylinder, rotary disc valve
Bore and stroke		56 x 50.6 mm
Displacement		124 cc
Compression ratio		7.0:1
Maximum horsepower		13 HP @6,500 rpm
Maximum torque		1.5 kg-m @6,000 rpm
Port timing		
Intake	Open	115° B.T.D.C.
	Close	55° A.T.D.C.
Scavenging	Open	56° B.B.D.C.
	Close	56° A.B.D.C.
Exhaust	Open	80° B.B.D.C.
	Close	80° A.B.D.C.
Carburetor type		Mikuni VM24SS
Lubrication system		Superlube (Oil injection)
Engine Oil		2 stroke oil for air-cooled engines
Starting system		Primary kick
Ignition system		Magneto
Ignition timing		23° B.T.D.C./252 mm B.T.D.C. @1,300 rpm
Spark Plug		NGK B8HS
Transmission		
Type		6-speed constant mesh, return shift
Clutch		Wet, multi disc
Gear ratios:		
1st		2.60 (26/10)
2nd		1.69 (22/13)
3rd		1.25 (20/16)
4th		1.05 (23/22)
5th		0.89 (17/19)
6th		0.80 (16/20)

Primary reduction ratio		3.14 (69/22)
Final reduction ratio		3.57 (50/14)
Overall drive ratio		8.40 (6th)
Transmission oil capacity		0.65 ℓ
Transmission oil		SE class SAE 10W30 or 10W40
Electrical equipment		
Flywheel magneto		Kokusan FP6137
Regulator/Rectifier		Kokusan RS2141
Ignition coil		Kokusan IG3122AC
Battery		Furukawa 6N6-1D-2 (6V 6AH)
Headlight type		Sealed beam
Headlight		6V30/30W
Tail/Brake light		6V5.3/25W
Speedometer light		6V1.5W
Tachometer light		6V1.5W
Neutral indicator light		6V3W
High beam indicator light		6V1.5W
Turn signal lights		6V17W x 4
Horn		6V1.8A
Frame		
Type		Tubular single cradle
Steering angle		50° to either side
Caster		31°
Trail		135 mm
Tire size	Front	2.75–21 4PR
	Rear	3.50–18 4PR
Suspension	Front	Telescopic fork
	Rear	Swing arm
Suspension stroke	Front	150 mm
	Rear	90 mm
Front fork oil capacity (per shock absorber)		145 ~ 155 cc
Front fork oil		SAE 5W20
Brake		
Type		Internal expansion, leading-trailing
Inside diameter	Front	120 x 28 mm
	Rear	130 x 28 mm

Specifications subject to change without notice.

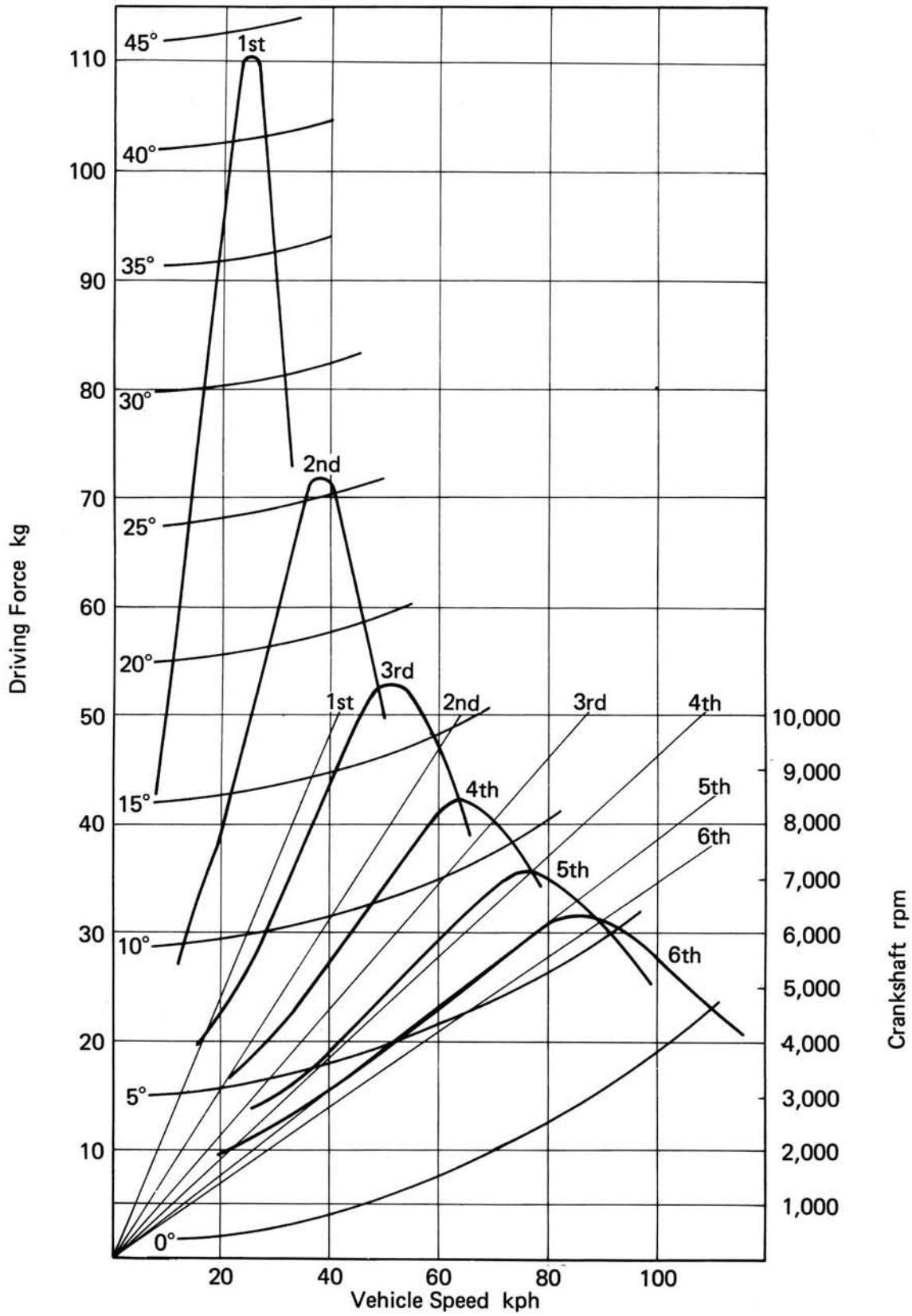
Engine Performance Curves

KE125-A6



Running Performance Curves

KE125-A6



Adjustment

THROTTLE CONTROL CABLE

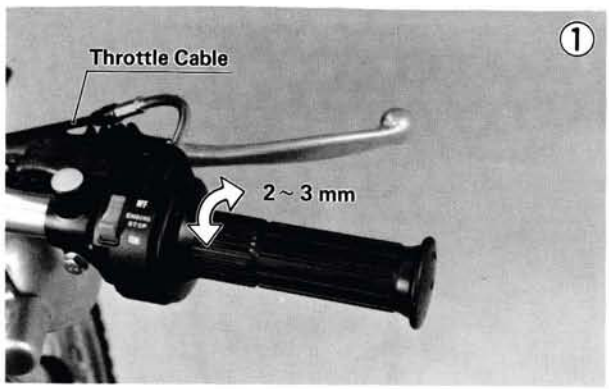
The throttle control cable is actually an assembly of three cables: the throttle cable, the carburetor cable, and the oil pump cable. The throttle cable runs from the throttle grip to the cable assembly junction where it connects to the carburetor cable, which leads to the carburetor, and the oil pump cable, which leads to the oil pump.

Since the throttle grip controls both the carburetor and the oil pump simultaneously, it is important that each cable be adjusted to its designated base position so that the quantity of oil and fuel/air mixture reaches the engine in the correct proportion at all throttle openings. Stretching of the cables creates excess play at the throttle grip and alters the base positions of the cables at the carburetor and the oil pump, necessitating periodic adjustment.

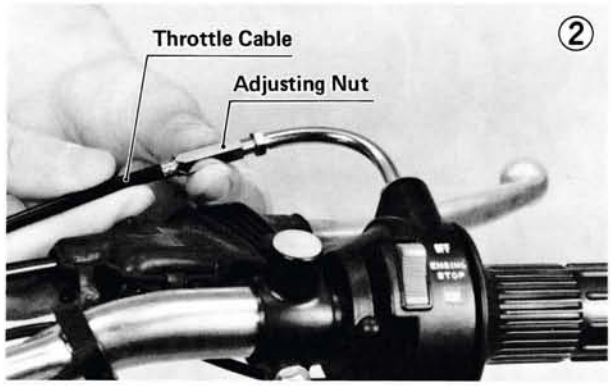
Throttle Cable

The throttle cable, connecting to both the carburetor cable and the oil pump cable, controls both the carburetor throttle valve and the oil pump lever. If there is too much play in the cable, neither the carburetor nor the oil pump will respond immediately when the grip is turned. Most of this excess play must be adjusted out. However, a small amount has to be left so that the steering movement will have no effect on the throttle valve or oil pump lever.

Check that the throttle grip has proper amount of play and turns smoothly. The proper amount of play is 2 ~ 3 mm. If there is too much or too little play, adjust the cable.



- Loosen the lock nut at the throttle grip end of the throttle cable.
- Turn the adjusting nut until the proper amount of throttle grip play is obtained.



- Tighten the lock nut.
- Check the oil pump cable and carburetor cable adjustments, and adjust them if necessary.

Carburetor Cable

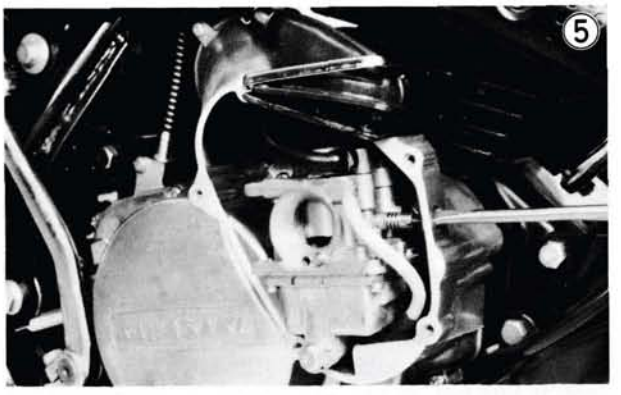
The carburetor cable forms one of the two lower branches of the throttle control cable assembly. It is adjusted so that, should the throttle valve be closed fully (not at idle but all the way down), all the play in the carburetor cable would be taken up.

The play that develops as the cable stretches will cause a delayed engine response, and should faulty adjustment cause the cable to pull the throttle valve out of its rest position, proper idling cannot be achieved. If the carburetor cable is out of adjustment, the oil and fuel/air mixture ratio will be incorrect, resulting in over or under-lubrication. Adjust the carburetor cable whenever the throttle does not respond properly to compensate for cable stretch.

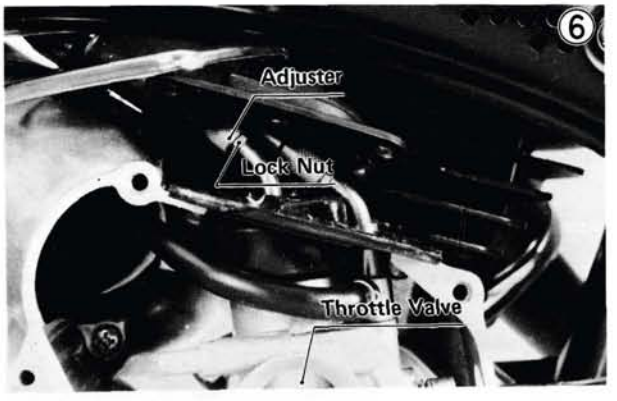
- Check to see that the throttle grip has the proper amount of play (Pg. 9).
- Remove the bolts (4) from the carburetor rim, and slide the rim and carburetor rubber cap up the cables.

- Remove the carburetor cover and gasket, and pull out the cap from the hole to the idle adjusting screw.

•Back out the idle adjusting screw 3 or 4 turns.



•Check that the carburetor cable has not any play when the throttle valve reaches at its lowest possible position.
•If the carburetor cable condition is not correct, adjust it according to the following procedure.
•Loosen the lock nut, and turn in the adjuster so that the throttle valve is at its lowest possible position.



•Being careful not to turn the adjuster so far that the throttle valve rises out of its lowest position, turn the adjuster back out to eliminate the play so that the slightest tug on the outer cable will affect the throttle valve.
•Tighten the lock nut.
•Check that the carburetor cable is seated properly in the cable adjuster.
•Install the carburetor cover and gasket, slide back the carburetor rubber cap and rim, and tighten the rim bolts.
•Check to see that the throttle grip has the proper amount of play (Pg. 9).
•Check the oil pump cable adjustment (Pg. 10).
•Warm the engine up for 5 minutes, and then adjust the idle speed with the idle adjusting screw to the lowest stable speed obtainable, which will normally be 1,200 ~ 1,400 rpm.
•Replace the cap on the idle adjusting screw hole.

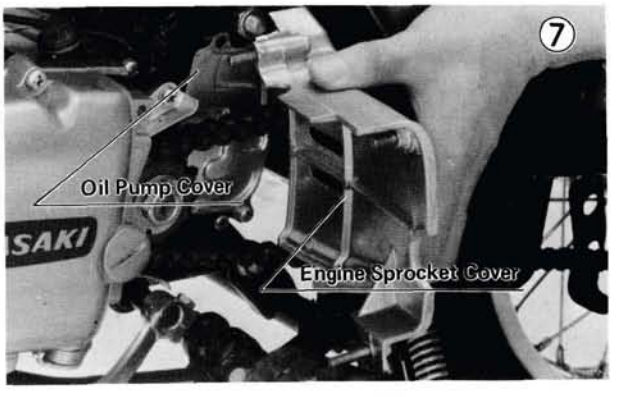
NOTE: After this adjustment has been completed, a certain amount of play will exist between the carburetor inner cable and the throttle valve, the extent of which may be detected by taking out the adjuster clip and pulling on the outer cable. This play, which is the proper amount for a correct oil and fuel/air mixture ratio, must not be altered. To ensure the proper ratio, the oil pump alignment marks should be checked after the carburetor cable adjustment.

Oil Pump Cable

The oil pump cable forms one of the two lower branches of the throttle control cable assembly and connects to the oil pump lever. The cable must be kept adjusted so that the oil pump output which is dependent on throttle movement is minimal at zero throttle and increases at a predetermined throttle opening. This adjustment is correct when the lower mark on the oil pump lever lines up with the mark on the oil pump lever stopper at zero throttle.

If adjustment is neglected or not carried out properly whenever necessary, the oil supply to the engine will become too low or too high, resulting in piston seizure from under-lubrication or poor performance and spark plug trouble from over-lubrication. The oil pump cable must be adjusted whenever the oil pump marks are found to be misaligned at zero throttle. Whenever white exhaust smoke is observed or an oil insufficiency is suspected, check the oil pump alignment marks and adjust the oil pump cable if necessary.

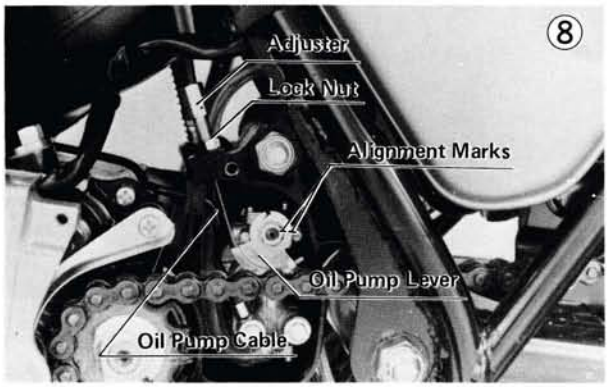
•Check that the throttle grip has the proper amount of play (Pg. 9).
•Remove the engine sprocket cover and oil pump cover.

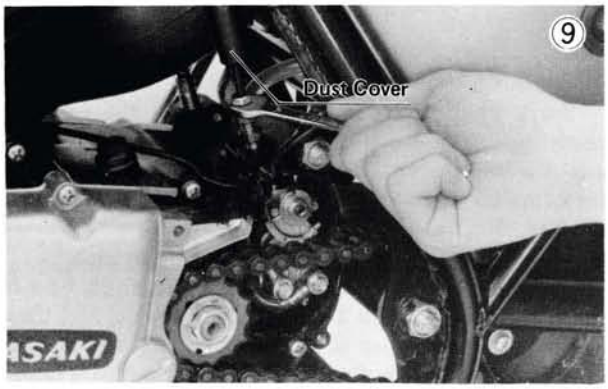


•Check that the lower mark on the oil pump lever aligns with the mark on the lever stop.
•If the marks are not properly aligned, slide up the adjuster dust cover, loosen the adjuster lock nut, and turn the adjuster so that with the throttle grip fully

closed the lower mark on the oil pump lever lines up with the mark on the lever stop.

NOTE: ○The upper mark on the oil pump lever is designed to line up with the mark on the lever stop when the throttle grip is fully open. It may be used to check whether or not the throttle grip is opening fully.
○Make sure the banjo bolts are tight but do not overtighten them. Any oil leakage should be corrected before riding.





- Check that the oil pump cable is seated properly in the cable adjuster.
- Tighten the lock nut, and slide back the adjuster cover.
- Install the oil pump cover and engine sprocket cover.
- Check that the throttle grip has the proper amount of play (Pg. 9).
- Check the carburetor cable adjustment (Pg. 9).

CARBURETOR

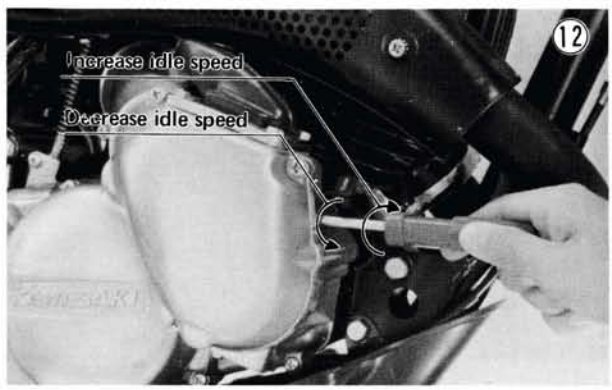
For internal carburetor maintenance and replacement of parts, see the maintenance section of this manual. The following procedure covers the idling adjustment, which is the adjustment should be inspected during periodic maintenance or whenever the idling setting has been disturbed.

When the idle speed is too low, the engine may stall, and when the idle speed is too high, the fuel consumption becomes excessive, and a resulting lack of engine brake may make the motorcycle difficult to control. For a proper fuel/air mixture at idle and low speed, it is important when adjusting the idle that the proper setting of the air screw is not neglected.

- Remove the carburetor rim bolts (2) which screw into the carburetor cover.

- Remove the carburetor cover.
- Turn in the air screw fully but not tightly, and then back it out 1¼ turns.

- Install the carburetor cover and tighten the rim bolts with 0.4~0.5 kg-m (35~43 in-lbs) of torque.
- Warm up the engine for about 5 minutes.
- Pull out the cap from the idle adjusting screw grommet.
- Adjust the idle speed with the idle adjusting screw to the lowest stable speed obtainable, which will normally be 1,200~1,400 rpm. Turning the idle adjusting screw clockwise raises engine speed, while turning it counterclockwise lowers it.



- Turn the throttle grip a few times to make sure that the idle speed is not changed after the grip is returned. Readjust if necessary.

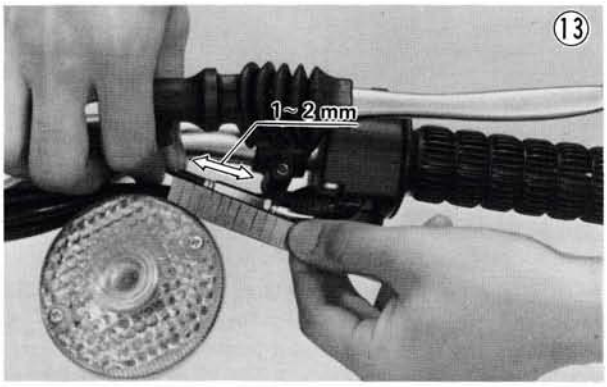
- Turn the handlebar from side to side while idling the engine. If idle speed varies, the throttle control cable assembly may be poorly routed or the throttle cable play insufficient.
- Replace the idle adjusting screw grommet cap.

NOTE: The ignition timing must be correct for proper carburetor adjustment.

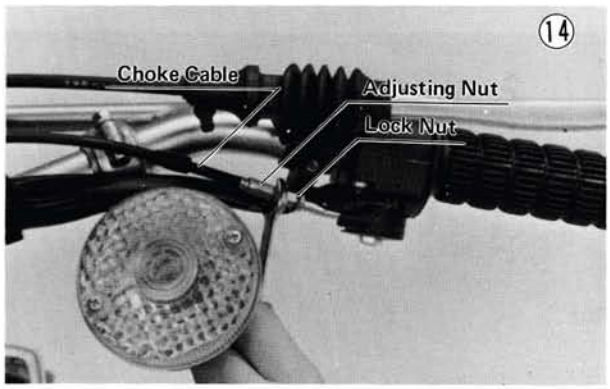
CHOKE CABLE

If the choke cable (more appropriately called a starter cable) is left too loose, the starter plunger may not open far enough when the choke lever is used. If the cable does not have enough play, the starter plunger may not fully close when the choke lever is returned, and the engine will always be running on too rich a mixture.

To determine the amount of cable play, first check to see that the choke lever is all the way returned to the left, and place a ruler alongside the upper end of the choke cable as shown in Fig. 13. Then pull out and push in the cable; the amount of cable travel is the amount of cable play. The proper amount of play is 1~2 mm. If the play is insufficient or excessive, adjust the choke cable.



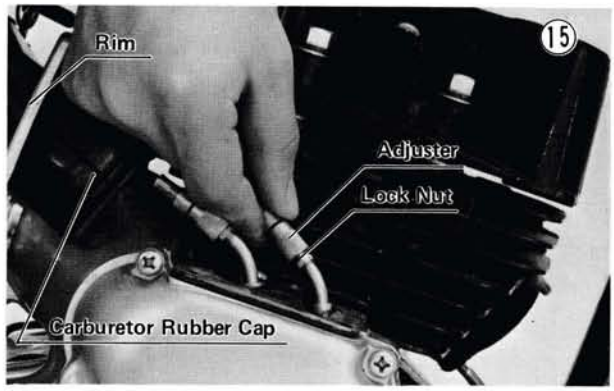
- Loosen the lock nut at the upper end of the choke cable, and turn the adjusting nut until the cable has the proper amount of play.



- Tighten the lock nut.

If the proper amount of play cannot be obtained with the adjusting nut at the upper end of the cable, carry out the following steps:

- Remove the bolts (4) from the carburetor rim, and slide the rim and carburetor rubber cap up the cable to gain access to the adjuster at the lower end of the choke cable.
- Loosen the lock nut, and turn the adjuster until the cable has the proper amount of play.

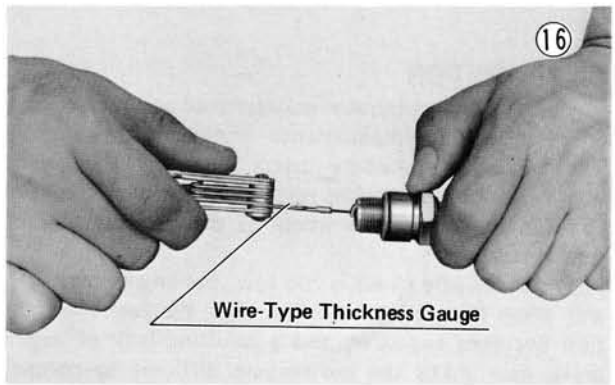


- Tighten the lock nut.
- Slide back the carburetor rubber cap and rim, and tighten the rim bolts.

SPARK PLUG

Spark plug electrode wear will widen the gap and cause missing and difficulty in starting. Too narrow a gap as a result of maladjustment will also result in poor performance since the small gap will produce only a weak spark.

- Remove the spark plug using a spark plug wrench.
- If the plug is oily or has carbon built up on it, have it cleaned, preferably in a sand-blasting device, and then clean off any abrasive particles. The plug may also be cleaned using a high flash-point solvent and wire brush or other suitable tool. If the spark plug electrodes are corroded or damaged, or if insulator is cracked, replace the plug. Use the standard spark plug or its equivalent.
- Measure the gap with a wire-type thickness gauge. The gap should be 0.6~0.7 mm; if it is not, bend the outer electrode with a suitable tool to obtain the correct gap.



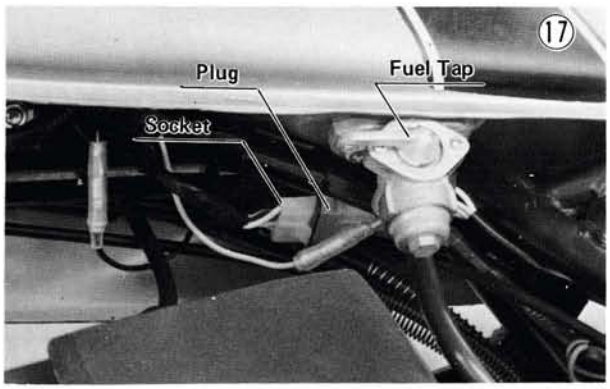
- Tighten the spark plug into the cylinder head with 2.5~3.0 kg-m (18~22 ft-lbs) of torque.

IGNITION TIMING

Incorrect ignition timing can cause poor performance, knocking, overheating, and serious engine damage. Periodic adjustment will be necessary to compensate for wear of parts, and the ignition timing must be checked whenever ignition related parts have been disassembled or replaced.

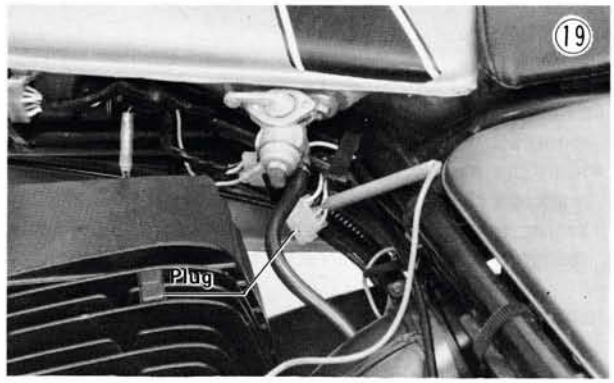
Correct ignition timing is achieved by adjusting through the inspection window of the magneto flywheel the position of the contact breaker base so that the points are just beginning to open when the timing mark on the outer circumference of the flywheel aligns with the timing projection on the crankcase, or when the piston is positioned 2.52 mm BTDC (beofre top dead center) by the use of a dial gauge. When the timing mark is aligned with the timing projection, the piston is positioned 2.52 ± 0.22 mm BTDC, by which the ignition can be set for good performance. However, superior performance is generally achieved by having ignition take place as close as possible to 2.52 mm BTDC. When precise ignition timing is desired, a dial gauge is used in place of the timing mark and projection to set the position of the piston. Once the timing has been adjusted, a strobe light may be used to check timing accuracy. There is no adjustment for maximum point gap.

- Remove the engine sprocket cover and left engine cover.
- Inspect the contact breaker points. If they are pitted or dirty, repair and clean them.
- Disconnect the white socket and plug from where they connect near the fuel tap.

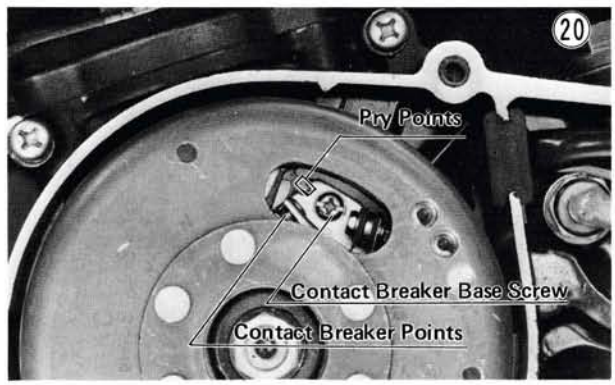


- Turn the magneto flywheel counterclockwise until the timing mark on the flywheel outer circumference aligns with the projection on the crankcase.

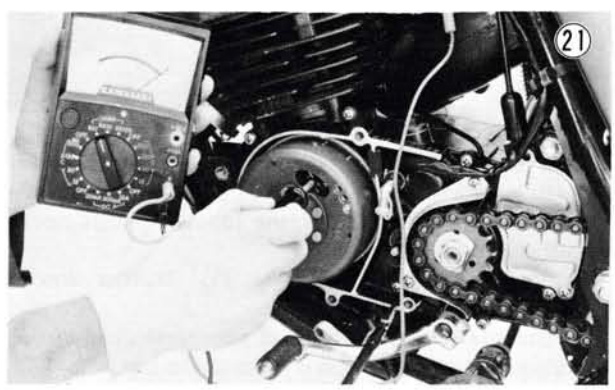
- Connect an ohmmeter set to the Rx1 range across the contact breaker points by securing one lead to chasis ground (such as the crankcase) and inserting the other lead into the hole where the black magneto output lead connects to the white plug. Be sure that the ohmmeter leads are connected with firm electrical contact.



- Loosen the contact breaker base screw just enough to allow the base to move.



- Use a screwdriver on the pry points to adjust the position of the contact breaker base until the contact breaker points are just at the point of opening. The ohmmeter needle starts to rise when the points just begin to open. Note that total needle travel as the points open is only about 3Ω.

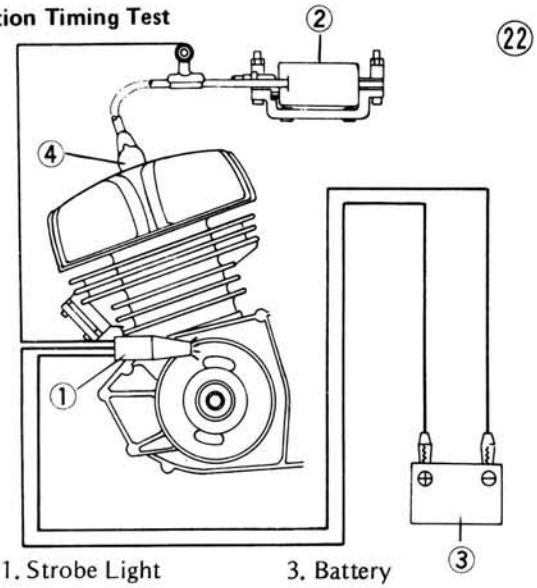


- Once the base seems properly positioned, tighten the base screw, rotate the flywheel a little clockwise, and then slowly rotate it counterclockwise. When the needle starts to rise, the timing mark and projection should be aligned. If they are not, readjust and recheck until the correct contact breaker base position is reached.
- Disconnect the ohmmeter, and reconnect the white plug and socket, being careful not to reverse the connection.

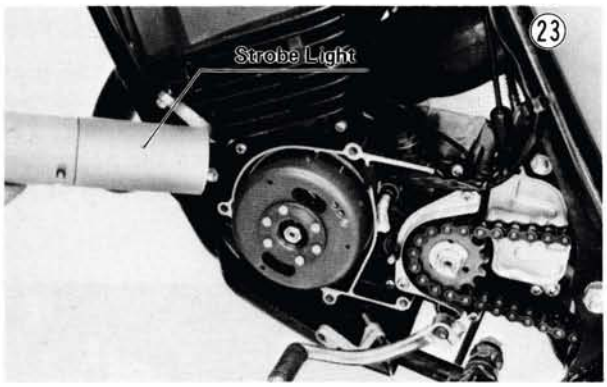
To check to see whether or not the ignition timing is correctly set, a strobe light may be used.

- Connect the light in the manner prescribed by the manufacturer. One example is shown in Fig. 22.
- With the engine idling, direct the light at the timing mark on the crankcase. If the timing mark and the timing projection are aligned when the light flashes, the ignition timing is correctly set.

Ignition Timing Test



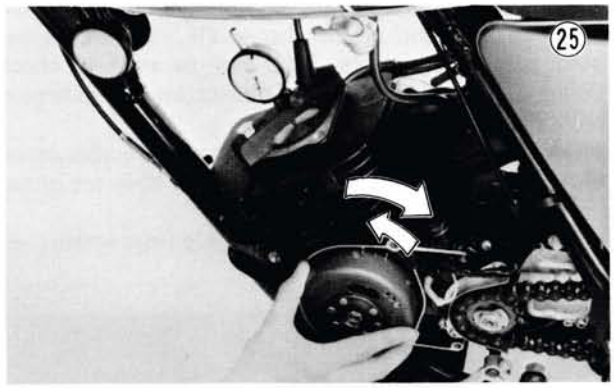
1. Strobe Light
2. Ignition Coil
3. Battery
4. Spark Plug Cap



For even better accuracy, a dial gauge can be used to set the position of the piston. Instead of aligning the timing mark and projection, the following steps can be substituted:

- Remove the cylinder head (Pg. 31). Muffler removal is not necessary.
- Rotate the magneto flywheel counterclockwise until the position of the piston is close to the top.
- Using TDC finder "B" (special tool), mount a dial gauge on the cylinder, rotate the flywheel to set the piston at exact TDC, and set the dial to zero.

- Rotate the flywheel clockwise until the dial gauge reads about 3.0 mm and then counterclockwise until the dial gauge reads 2.52 mm.



At this point the piston is properly positioned such that, while using an ohmmeter (or some other suitable device), the contact breaker base can be adjusted to set the timing. When replacing the cylinder head, be sure that the gasket is properly fitted and that the nuts are tightened in a cross pattern with 2.2 kg-m (16 ft-lbs) of torque (Pg. 157).

NOTE: When setting the ignition timing by the use of a dial gauge to determine piston position, the flywheel timing mark is not used to check the timing. The dial gauge reading is referred to throughout the entire adjustment instead of the timing mark and projection. Before checking with a strobe light, first make a new timing mark by marking the flywheel just under the projection once the piston has been set at 2.52 mm BTDC.

CLUTCH

Stretching of the clutch cable causes the clutch lever to develop excessive play. Too much play will prevent the lever from fully disengaging the clutch and will result in shifting difficulty and possible clutch or transmission damage. Most of the play must be adjusted out, but a small amount has to be left so that the clutch will engage fully without slipping.

Besides cable stretch, clutch plate wear also causes the clutch to go out of adjustment. Although the clutch lever is not pulled in, the push rod will begin to oppose clutch spring pressure as this wear progresses. For proper clutch adjustment, the clutch adjusting screw must be screwed out to eliminate the push rod opposition to spring pressure while the clutch is engaged.

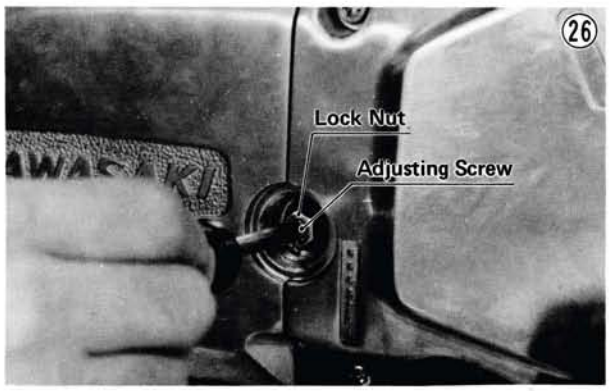
If satisfactory clutch operation is not achieved by clutch adjustment, inspect the clutch for wear and damage (Pg. 104).

The adjustment procedure which follows compensates for both cable stretch and plate wear.

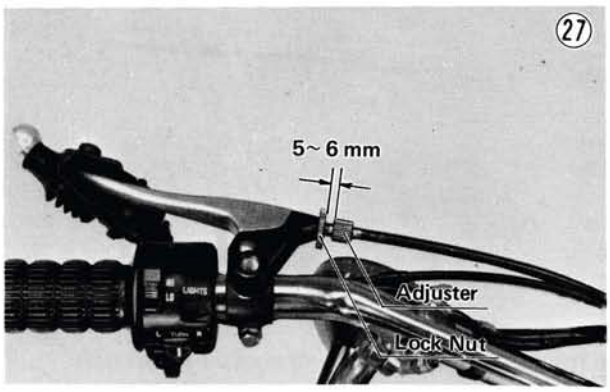
- Slide the clutch lever dust cover out of place.
- To determine whether or not the clutch requires adjustments, first check that the projection on the clutch release lever aligns with the projection on the left crankcase half.
- Next check that the clutch lever has 2~3 mm of play.

If any one of the above checks reveals improper adjustment, adjust the clutch as follows:

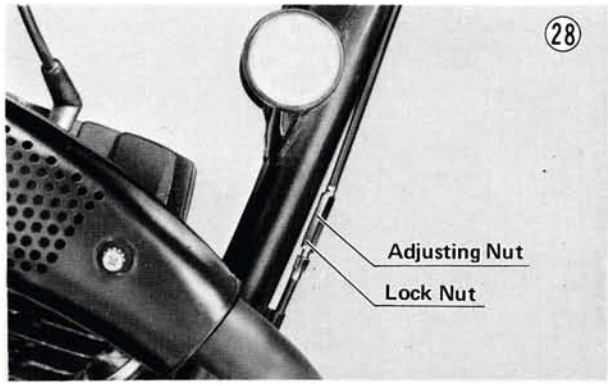
- Unscrew and remove the clutch adjusting hole cap and gasket.
- Loosen the lock nut. If the clutch adjusting screw does not turn loosely already, back it out until it does.



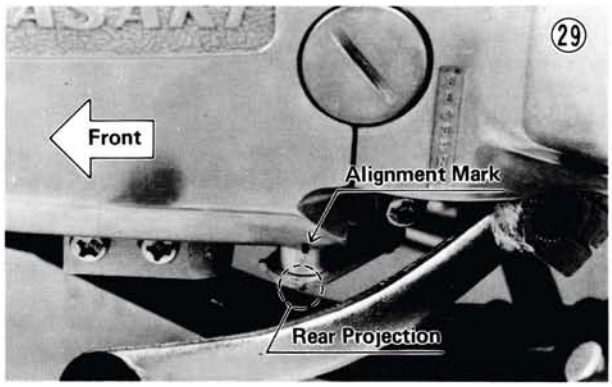
- Loosen the lock nut just enough so that the adjuster will turn freely, and then turn the adjuster to make a 5 ~ 6 mm gap between the adjuster and lock nut.



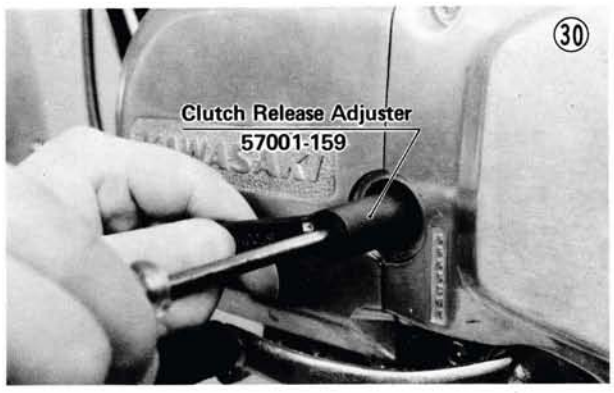
- Loosen the lock nut at the center of the clutch cable.



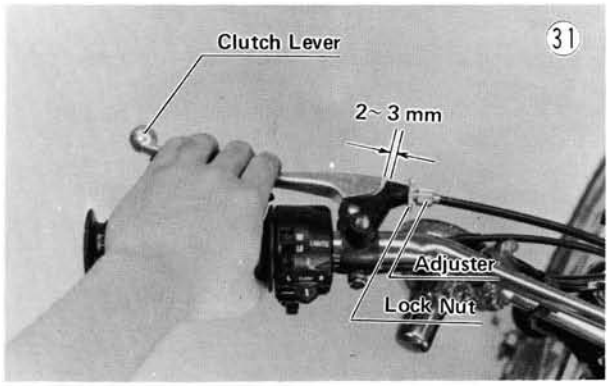
- Turn the adjusting nut at the center of the clutch cable so that the clutch release lever porjection aligns with the projection on the left crankcase half.



- Turn the clutch adjusting screw in until it seats lightly, and then tighten the lock nut.



●Turn the adjuster at the clutch lever so that the clutch lever will have 2~3 mm of play, and tighten the lock nut.



●Screw in the clutch adjusting hole cap together with its gasket.
●Slide back the clutch lever dust cover.

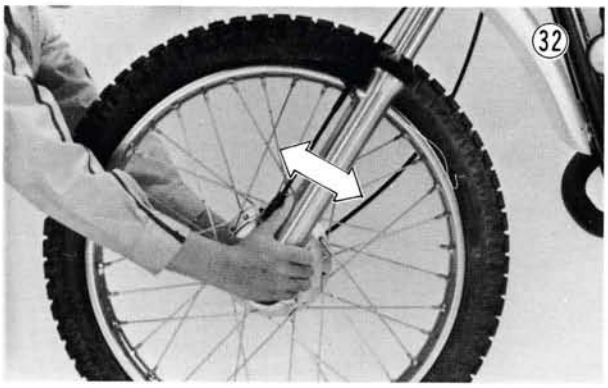
NOTE: ○After the adjusting is made, start the engine and check that the clutch has no slippage and releases properly.
○For mirror corrections while riding, use the adjuster at the clutch lever.

STEERING

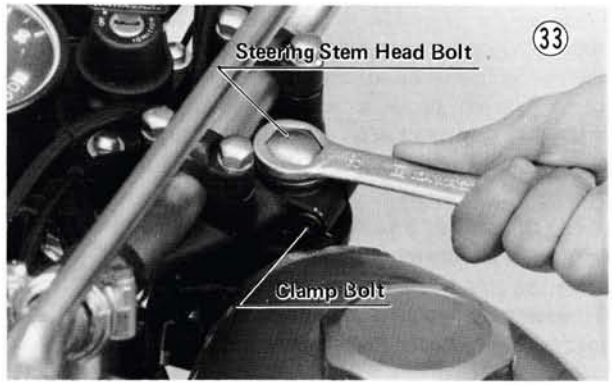
For safety, the steering should always be kept adjusted so that the handlebar will turn freely but not have excessive play.

If the steering is too tight, it will be difficult to turn the handlebar quickly, the motorcycle may pull to one side, and the steering stem bearings may become damaged. If the steering is too loose, the handlebar will vibrate, and the motorcycle will be unstable and difficult to steer in a straight line.

To check the steering adjustment, first place a stand or block under the engine so that the front wheel is raised off the ground. Push the handlebar lightly to either side; if it continues moving under its own momentum, the steering is not too tight. Squatting in front of the motorcycle, grasp the lower ends of the front fork at the axle, and push and pull the front end back and forth; if play is felt, the steering is too loose.



●Loosen the steering stem head bolt and the clamp bolt.



●Using the stem nut wrench, tighten the steering stem lock nut with 1.8~2.2 kg-m (13~16 ft-lbs) of torque.

●Tighten down the steering stem head bolt with 3.0 kg-m (22 ft-lbs) of torque.
●Tighten the clamp bolt with 1.6~2.2 kg-m (11.5~16 ft-lbs) of torque.
●Loosen the lower clamp bolts (4) on the left and right shock absorbers to let the tubes reseat themselves, and then retighten the bolts with 1.6~2.2 kg-m (11.5~16 ft-lbs) of torque.

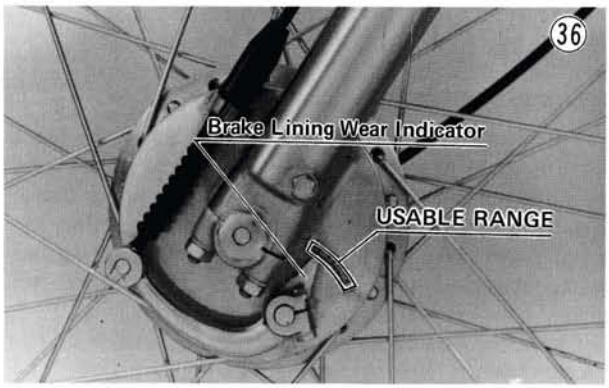
●Check the steering again, and readjust if necessary.

BRAKES

Brake lining wear, drum wear, and cable stretch cause the brakes to go out of adjustment, increasing lever and pedal play and decreasing braking effectiveness. Brake adjustment to compensate for this consists of correcting the cam lever angle and adjusting the front brake lever and rear brake pedal travel.

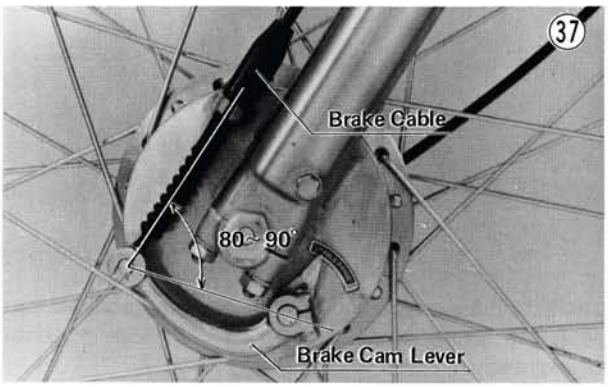
Once the brakes have been adjusted, spin or turn the wheels to check for drag. If any drag is heard or felt, disassemble the brake (Pgs. 65 and 68), and inspect for wear or damage (Pg. 123). Also, if the brake lever or pedal does not return to its rest position quickly upon release, inspect the brake for wear or damage.

On the outside of both the front and rear brake panels there is a brake lining wear indicator. Whenever the indicator has gone past USABLE RANGE, the brake shoes must be immediately replaced and the other brake parts examined. Adjustment alone cannot compensate for the wear of a brake worn.



Front and Rear Brake Cam Lever Angle

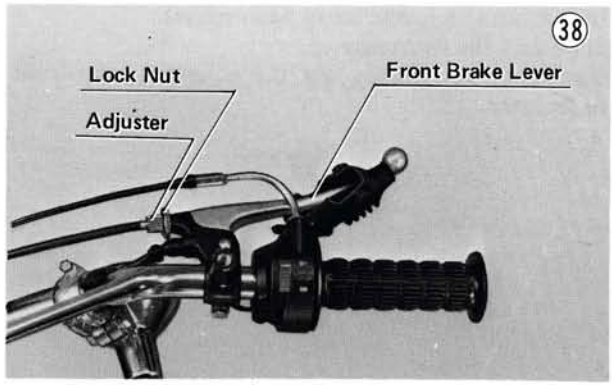
- When the brake is fully applied, the brake cam lever should come to an 80~90° angle with the threaded extension of the brake cable. If it does not, loosen the cable adjusting nut, remount the cam lever at a new position on the shaft for the proper angle, and then adjust cable play.



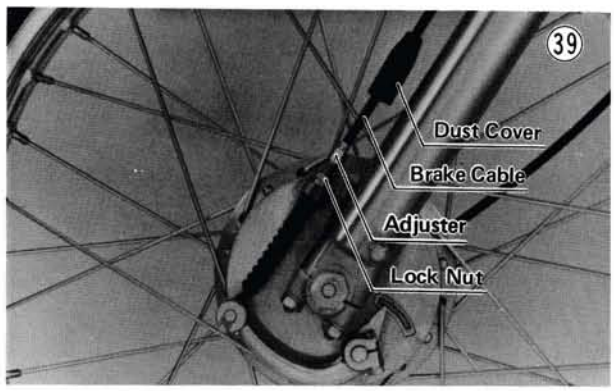
CAUTION: Since a cam lever angle greater than 90° reduces braking effectiveness, this adjustment should not be neglected. When remounting the cam, be sure that the position of the indicator on the serrated shaft is not altered. The change in cam lever angle is caused by wear of internal brake parts. Whenever the cam lever angle is adjusted, also check for drag and proper lever or pedal operation, taking particular note of the brake lining wear indicator position. In case of doubt as to braking effectiveness, disassemble and inspect all internal brake parts. Worn parts could cause the brake to lock or fail.

Front Brake Lever

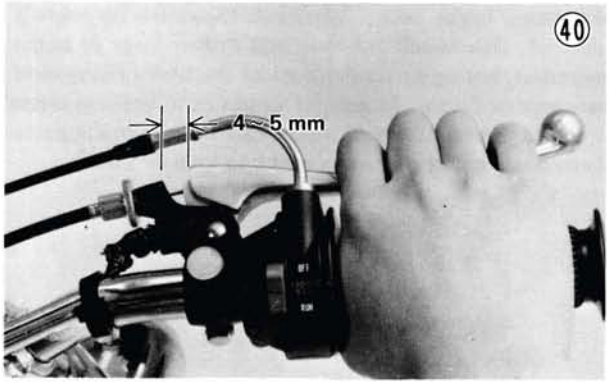
- Slide the front brake lever dust cover out of place.
- Loosen the lock nut at the front brake lever, screw the adjuster fully in, and tighten the lock nut.



- Slide up the dust cover, and loosen the lock nut at the lower end of the brake cable.



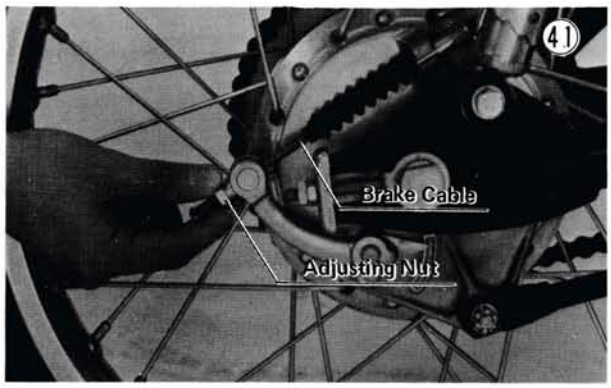
•Turn the adjuster on the lower end of the front brake cable so that the brake lever has 4 ~ 5 mm of play.

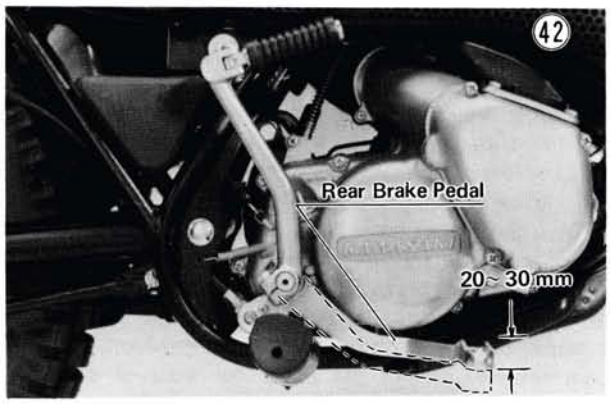


•If sufficient adjustment cannot be made with the adjuster, complete the adjustment with the adjuster at the brake lever, and then tighten all lock nuts.
•Check for brake drag.
•Operate the lever a few times to see that it returns to its rest position immediately upon release.
•Slide back the dust covers.
•For minor corrections, use the adjuster at the front brake lever.

Rear Brake Pedal

•Turn the adjusting nut on the end of the threaded extension of the rear brake cable so that the brake pedal has 20 ~ 30 mm of travel from the rest position to the fully applied position when the pedal is pushed down lightly by hand.





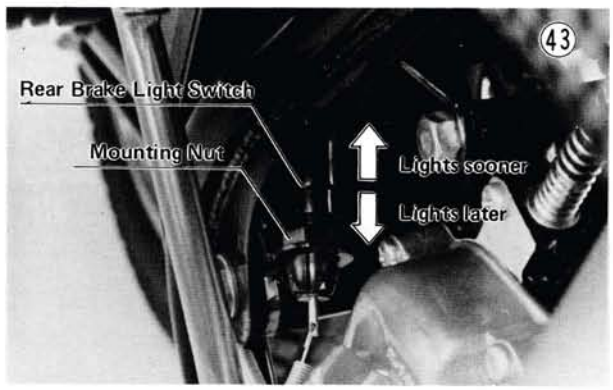
•Check for brake drag.
•Operate the pedal a few times to see that, it returns to its rest position immediately upon release.
•Check the rear brake light switch adjustment.

BRAKE LIGHT SWITCH

The front brake light switch, mounted on the front brake lever, is operated by simple electrical contact and should not need adjustment. However, the rear brake light switch, activated by a wire spring attached to the brake pedal, may require adjustment if the spring has gotten stretched or if the spring or brake pedal has gotten bent or warped.

Check the operation of the switch by turning on the ignition switch and depressing the brake pedal. The brake light should go on after 15 mm of pedal travel or shortly before the brake pedal reaches the fully applied position.

•Turn the switch adjusting nut up or down so that the brake light will go on after the correct amount of brake pedal travel. A higher switch position will make the light go on after less travel.



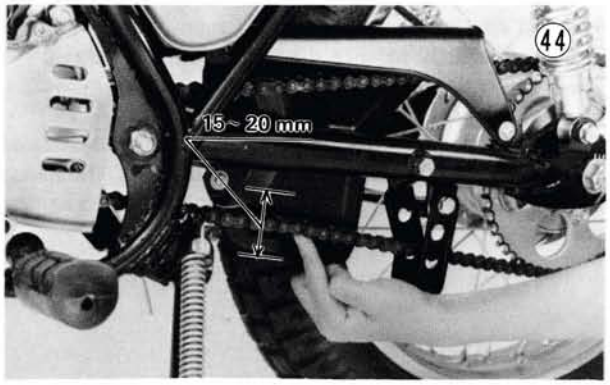
CAUTION: To avoid damaging the electrical connections inside the switch, be sure that the switch body does not turn during adjustment.

DRIVE CHAIN

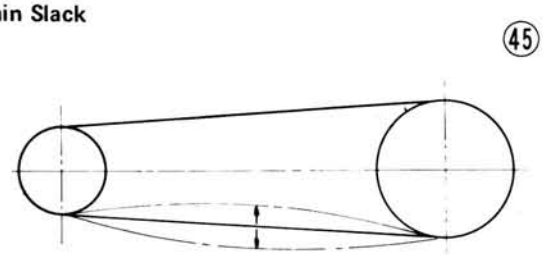
Chain and sprocket wear causes the chain to lengthen, which results in power loss, accelerated chain and sprocket wear, and increased noise. A lengthened chain which is not adjusted properly may possibly be thrown off the sprockets or break. A chain that has been adjusted too tight will wear excessively and possibly break.

First turn the rear wheel to find the part of the chain that is tightest, and make the adjustment using this part.

With the motorcycle on its side stand, the chain should have a maximum of about 15~20 mm of vertical movement at its greatest point. If there is less than 15 mm or more than 25 mm slack, adjust the chain.



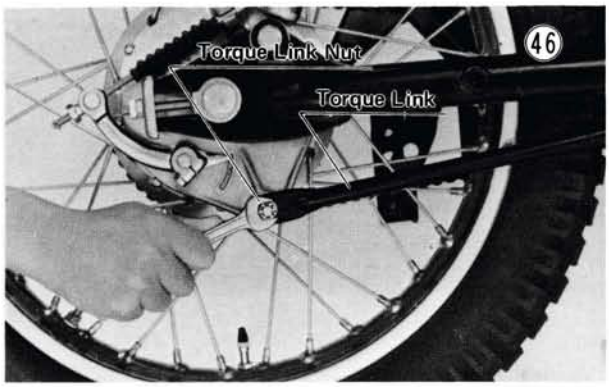
Chain Slack



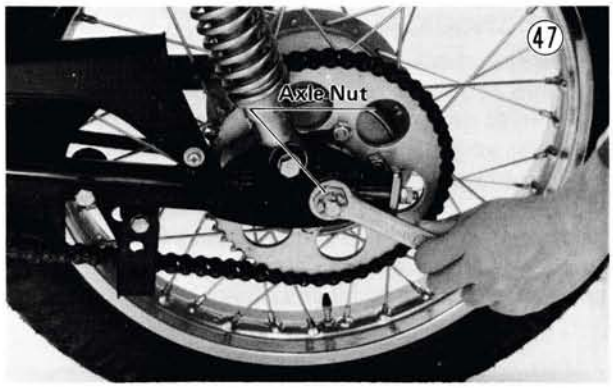
15~20 mm

CAUTION: A chain worn past the service limit (Pg. 125) should be replaced. Such wear cannot be adequately compensated by adjustment.

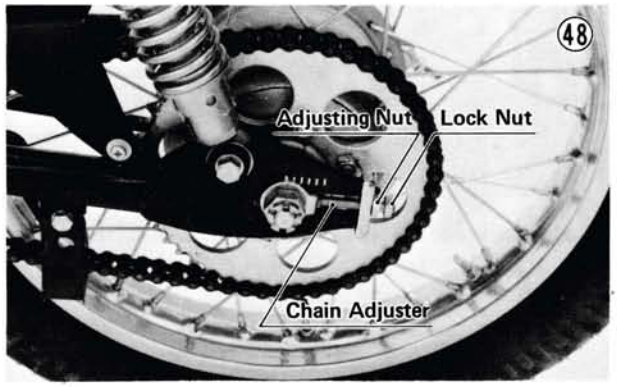
- Remove the cotter pin, and loosen the torque link rear nut.



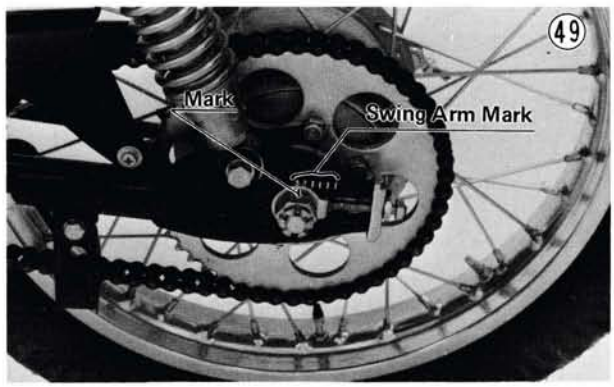
- Remove the cotter pin, and loosen the axle nut.



- Loosen the lock nut on both chain adjusters.



- If the chain is too tight, back out the adjusting nut on both chain adjusters, and then kick the wheel forward until the chain becomes overly loose.
- Turn in the right and left chain adjusters evenly until the chain has the correct amount of slack. To keep the chain and the wheel aligned, the mark on the left chain adjuster must come to the same swing arm mark that the right chain adjuster mark comes to.

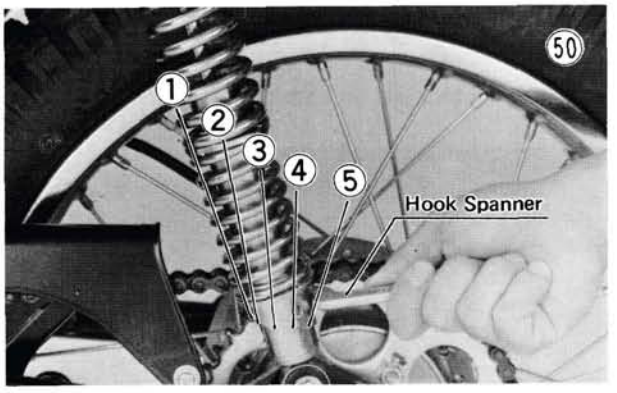


- Tighten both adjuster lock nuts, and then tighten the axle nut with 7 ~ 11 kg-m (51 ~ 80 ft-lbs) of torque.
- Rotate the wheel, measure the amount of slack, and readjust if necessary.
- Insert a new cotter pin through the axle nut and axle.
- Tighten the torque link rear nut with 1.8 ~ 2.4 kg-m (13 ~ 17.5 ft-lbs) of torque, and insert a new cotter pin.

REAR SHOCK ABSORBERS

The rear shock absorbers can be adjusted to one of 5 positions to suit riding conditions. They can be left soft for average riding but should be adjusted slightly harder for high speed riding or for riding on bad roads.

Adjustment is made by turning the adjusting sleeve with a hook spanner. The higher the adjusting sleeve is positioned, the harder the shock absorption. Be sure to turn both left and right shock absorbers to the same position in order to maintain stability.

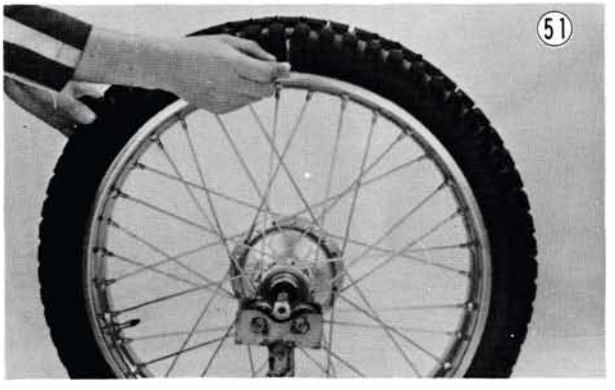


WHEEL BALANCE

To improve stability and decrease vibration at high speed, the front and rear wheels must be kept balanced.

Check and balance each wheel as follows:

- Remove the wheel (Pg. 64 or 67).
- Check that all the spokes are tightened evenly.
- Suspend the wheel so that it can be spun freely.



- Spin the wheel lightly several times, and see if it stops of its own accord in various positions, indicating that it is correctly balanced.
- If one part of the wheel always stops at the bottom, mark the side of the tire at the top, and attach a balance weight loosely to the spoke closest to the mark.

- Repeat the previous two steps as many times as necessary to correctly balance the wheel, and then clamp the weights on firmly using pliers.
- Remount the wheel onto the motorcycle.

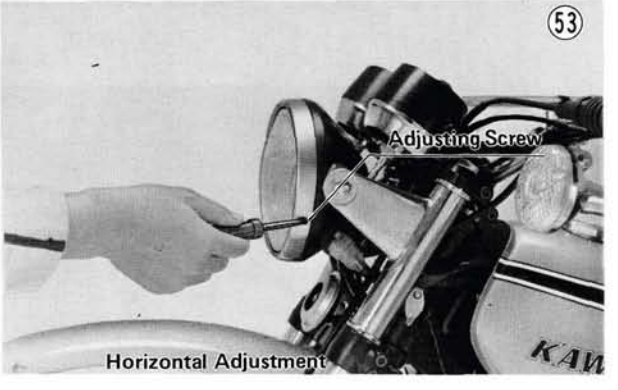
NOTE: Balance weights are available from Kawasaki Dealers in 10, 20, and 30 gram sizes. An imbalance of less than 10 grams will not usually affect running stability.

HEADLIGHT

The headlight beam is adjustable both horizontally and vertically. If not properly adjusted horizontally, the beam will point to one side rather than straight ahead. If adjusted too low vertically, neither low nor high beam will illuminate the road far enough ahead. If adjusted too high vertically, high beam will fail to illuminate the road close ahead, and low beam will blind oncoming drivers.

Horizontal Adjustment:

- Turn in or out the small screw on the headlight rim until the beam points straight ahead.



Vertical Adjustment:

- Loosen the headlight housing mounting bolts just enough so that the headlight can be moved.