

KAWASAKI

KAWASAKI MOTORS CORPORATION, U.S.A.
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KLT110 AND KLF110

NOTE: Metric fasteners are used throughout vehicle.

CONDENSED SERVICE DATA

MODELS	KLT110-A1, A2, A3 KLF110-A1, B1
General	
Engine Make	Own
Engine Type	Air-Cooled Four-Stroke
Number of Cylinders	1
Bore	51 mm (2.0 in.)
Stroke	50.6 mm (1.99 in.)
Displacement	103 cc (6.3 cu. in.)
Compression Ratio	8.2:1
Engine Lubrication	Wet Sump; Oil Pump
Transmission Lubrication	Same as Engine
Engine/Transmission Oil	See Text
Forward Speeds	5
Reverse Speeds	None
Tire Size—Front:	
KLT Models	22x11-8
KLF Models	20x7-8
Tire Size—Rear:	
KLT Models	22x11-8
KLF Models	21x9-8
Tire Pressure (cold)—	
Front:	
KLT Models	14 kPa (2 psi)
KLF Models	21 kPa (3 psi)
Tire Pressure (cold)—	
Rear:	
KLT Models	14 kPa (2 psi)
KLF Models	15 kPa (2.2 psi)
Dry Weight:	
KLT Models	109 kg (240 lbs.)
KLF110-A1 Models	120 kg (264 lbs.)
KLF110-B1 Models	125 kg (275 lbs.)

Tune-Up

Engine Idle Speed	See Text
Spark Plug:	
KLT Models	NGK D7EA
KLF Models	NGK C6HA
Electrode Gap	0.6-0.7 mm (0.024-0.027 in.)
Ignition:	
Type	Capacitor Discharge
Point Gap	Pointless
Timing	10° BTDC @ Less Than 1500 rpm 35° BTDC @ Less Than 4000 rpm
Carburetor:	
Make	Keihin
Model	PC18
Float Height	18-22 mm (0.709-0.866 in.)
Main Jet:	
KLT Models	#102
KLF Models	#88
Pilot Jet	#35
Jet Needle:	
KLT Models	N17A
KLF Models	N17B
Clip Position:	
KLT Models	Fourth Groove From Top
KLF Models	Third Groove From Top
Throttle Valve Cutaway	3.0
Idle Mixture Setting:	
KLT Models	1 ³ / ₈ Turns
KLF Models	1-1 ¹ / ₂ Turns
Throttle Lever	
Free Play	2-3 mm (0.079-0.118 in.)

Sizes-Clearances

Valve Clearance (cold):	
Intake & Exhaust	0.12-0.17 mm (0.005-0.006 in.)
Valve Face & Seat Angle	45°
Valve Seat Width:	
Intake	0.80-1.15 mm (0.032-0.045 in.)
Exhaust	0.85-1.15 mm (0.034-0.045 in.)
Valve Stem Diameter:	
Intake	5.495-5.510 mm (0.2163-0.2169 in.)
Exhaust	5.480-5.495 mm (0.2157-0.2163 in.)
Valve Guide Bore Diameter:	
Intake & Exhaust	5.520-5.532 mm (0.2173-0.2178 in.)
Valve Stem-to-Guide	
Clearance:	
Intake	0.010-0.037 mm (0.0004-0.0015 in.)
Exhaust	0.025-0.037 mm (0.0010-0.0015 in.)

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Sizes-Clearances (Cont.)

Rocker Arm Bore Diameter:	
Intake & Exhaust	10.000-10.015 mm (0.3937-0.3943 in.)
Rocker Shaft Diameter:	
Intake & Exhaust	9.980-9.995 mm (0.3929-0.3935 in.)
Camshaft Lobe Height:	
Intake & Exhaust	28.750-28.858 mm (1.1319-1.1361 in.)
Wear Limit	28.65 mm (1.128 in.)
Cylinder Head Distortion (Max.)	0.05 mm (0.002 in.)
Cylinder Bore Diameter	51.000-51.012 mm (2.0079-2.0083 in.)
Wear Limit	51.10 mm (2.012 in.)
Piston-to-Cylinder Wall Clearance:	
KLT Models	0.020-0.047 mm (0.0008-0.0019 in.)
KLF Models	0.015-0.039 mm (0.0006-0.0015 in.)
Piston Diameter	
Measured 5 mm (0.2 in.) From Skirt Bottom and 90° to Pin Bore:	
KLT Models	50.965-50.980 mm (2.0065-2.0071 in.)
KLF Models	50.973-50.985 mm (2.0068-2.0073 in.)
Piston Ring End Gap in Standard Bore—	
Top Ring:	
KLT Models	0.10-0.30 mm (0.004-0.012 in.)
KLF Models	0.15-0.35 mm (0.006-0.014 in.)
Second Ring:	
KLT Models	0.15-0.30 mm (0.006-0.012 in.)
KLF Models	0.15-0.35 mm (0.006-0.014 in.)
Piston Ring Groove Width—	
Top & Second Ring:	
KLT Models	1.20-1.22 mm (0.047-0.048 in.)
KLF Models	1.00-1.02 mm (0.039-0.040 in.)
Oil Ring:	
KLT Models	2.50-2.52 mm (0.098-0.099 in.)
KLF Models	2.00-2.02 mm (0.078-0.079 in.)
Piston Ring Width—	
Top Ring:	
KLT Models	1.170-1.190 mm (0.0461-0.0469 in.)
KLF Models	0.97-0.99 mm (0.0382-0.0390 in.)

Sizes-Clearances (Cont.)

Second Ring:	
KLT Models	1.175-1.190 mm (0.0463-0.0469 in.)
KLF Models	0.97-0.99 mm (0.0382-0.0390 in.)
Piston Ring Side	
Clearance:	
Top Ring	0.01-0.05 mm (0.0004-0.0020 in.)
Max.	0.15 mm (0.006 in.)
Second Ring:	
KLT Models	0.010-0.045 mm (0.0004-0.0018 in.)
KLF Models	0.01-0.05 mm (0.0004-0.0020 in.)
Max.	0.15 mm (0.006 in.)
Connecting Rod Big End	
Side Clearance	0.3-0.5 mm (0.012-0.020 in.)
Maximum Allowable	0.7 mm (0.027 in.)
Connecting Rod Big End	
Radial Clearance:	
KLT Models	0.008-0.020 mm (0.0003-0.0008 in.)
KLF Models	0.007-0.022 mm (0.0003-0.0009 in.)
Maximum Allowable	0.7 mm (0.003 in.)
Crankshaft Runout (Max.)	0.1 mm (0.004 in.)

Capacities

Fuel Tank:	
KLT Models	9.5 L (2.5 gallons)
KLF Models	7.6 L (2.0 gallons)
Engine / Transmission	
Sump	1.1 L (1.16 qt.)

Tightening Torques

Front Axle Nut:	
KLT Models	73 N·m (54 ft.-lbs.)
KLF Models	34 N·m (25 ft.-lbs.)
Rear Axle Nut:	
KLT Models	88 N·m (65 ft.-lbs.)
KLF Models	145 N·m (110 ft.-lbs.)
Camshaft Sprocket	
Screws	12 N·m (104 in.-lbs.)
Clutch Nut	62 N·m (46 ft.-lbs.)
Cylinder Head Screws:	
6 mm	9.8 N·m (87 in.-lbs.)

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Tightening Torques (Cont.)

8 mm		
Initial	11 N·m (95 in.-lbs.)
Final	22 N·m (16 ft.-lbs.)
Flywheel Nut	42 N·m (31 ft.-lbs.)
Secondary Drive Gear	.....	72 N·m (53 ft.-lbs.)
Wheel Retaining Nut	.....	41 N·m (30 ft.-lbs.)

Standard Fasteners

5 mm	.....	3.4-4.9 N·m (30-43 in.-lbs.)
6 mm	.....	5.9-7.8 N·m (52-69 in.-lbs.)
8 mm	.....	14-19 N·m (10-13.5 ft.-lbs.)
10 mm	.....	25-39 N·m (19-25 ft.-lbs.)
12 mm	.....	44-61 N·m (33-45 ft.-lbs.)

Standard Fasteners (Cont.)

14 mm	.....	73-98 N·m (54-72 ft.-lbs.)
16 mm	.....	115-155 N·m (83-115 ft.-lbs.)
18 mm	.....	165-225 N·m (125-165 ft.-lbs.)
20 mm	.....	225-325 N·m (165-240 ft.-lbs.)

LUBRICATION

All Models

ENGINE AND TRANSMISSION. The engine is lubricated by pressurized oil from an oil pump attached to the right side of the crankcase. Oil is contained in a sump which is common to the engine and the transmission.

Recommended oil is API grade SE oil with an SAE viscosity rating of 10W-40, 10W-50, 20W-40 or 20W-50. Use an oil with a viscosity rating best suited for the ambient temperature.

An oil level window is located in the rear of the right side cover. The oil level should be between the two marks (M—Fig. K1-1) with the vehicle situated on a level surface. Add oil through the oil fill opening on top of the right side cover.

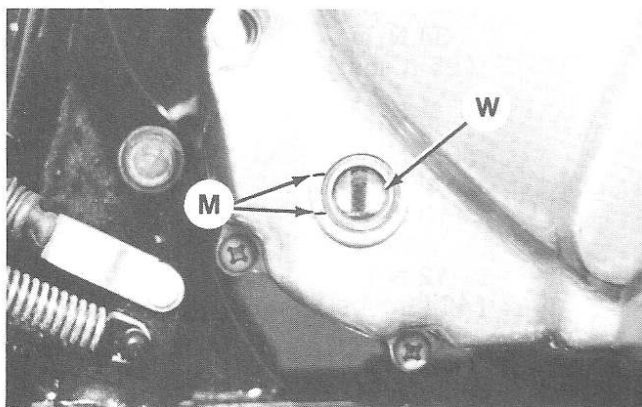


Fig. K1-1—Oil level should be between marks (M) of oil gage window (W).

The manufacturer recommends that the engine/transmission oil be changed after the first 10 hours of use and after every 30 days of use thereafter, or more frequently if usage is severe. The drain plug is located on the underside of the crankcase directly behind the front frame tube. Check the oil level at the oil level window as previously described.

A flat filter screen is located in a compartment in the bottom of the right crankcase half. The filter screen should be removed and cleaned after the first 10 hours of use and after every 90 days of use thereafter, or more frequently if usage is severe. To remove the filter screen, drain the engine oil and detach the oil line from the right side cover. Unscrew the right side cover screws and remove the right side cover shown in Fig. K1-2. Remove

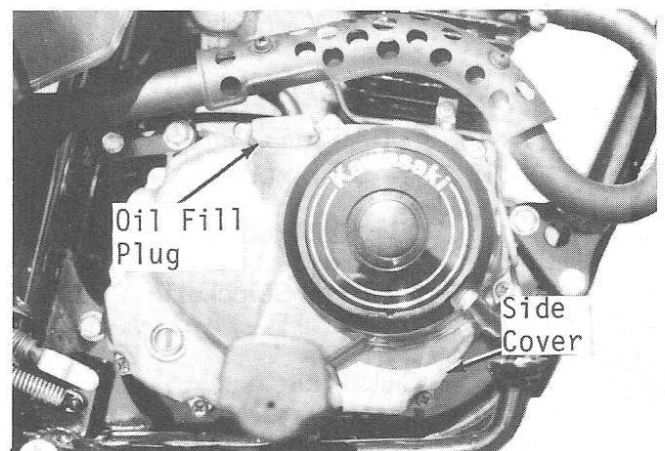


Fig. K1-2—View showing location of oil fill plug. The side cover must be removed for access to the filter screen.

the gasket if it remains on the engine. Pull out the filter screen and wash it in a suitable solvent. Insert the clean filter screen into the engine. Also remove the ball bearing in the clutch cover and clean the cavity behind the bearing. Reinstall the bearing so the open side is out (towards the side cover). Install a new gasket then reinstall the right side cover while being sure the pin on the clutch arm indexes in the notch of the clutch release mechanism.

DRIVE CHAIN. The drive chain should be lubricated with a suitable chain lubricant or SAE 90 gear oil prior to vehicle operation. The drive chain uses "O" rings as a part of the chain assembly to retain lubricant in the inner components. The chain lubricant must be designed for use on "O" ring type drive chains or the "O" rings may be damaged.

If the drive chain is dirty, wash the chain in diesel oil or kerosene. Do not use gasoline, cleaning solutions or solvents as the "O" rings may be damaged. Remove, install and adjust the chain as outlined in FINAL DRIVE CHAIN AND SPROCKET section.

CABLES, LEVERS AND SHAFTS. Depending on use and riding conditions, lubricate all cables with cable lubricant or light oil. Lubricate lever pivot pins and cable ends. Remove the brake pedal and apply grease to the shaft.

Remove the brake assembly and lubricate the brake cam with multipurpose grease.

AIR CLEANER ELEMENT

All Models

The Models KLT110 and KLF110 are equipped with a foam type air cleaner filter located underneath the seat. The air cleaner element should be removed and cleaned after the first 10 hours of use and after every 10 days of use thereafter, or more frequently if usage is severe.

To remove the air cleaner element, remove the seat, remove the air cleaner cover and lift out the element. Carefully remove the foam filter element from its support frame and clean the element in a suitable nonflammable solvent. Squeeze the element dry but to prevent tearing, do not wring or twist it. Inspect the element for tears or other damage which may prevent proper filtration. Saturate the foam with SAE 30 oil or a good quality air cleaner oil, then squeeze out all excess oil. Carefully squeeze out as much oil as possible as too much oil in the filter will affect the fuel:air ratio.

Apply grease to the foam gasket end of the element and install the filter element by reversing the removal procedure.

FUEL SYSTEM

All Models

CARBURETOR. The Keihin PC18 sliding valve type carburetor shown in Fig. K1-4 is used. Refer to CONDENSED SERVICE DATA for carburetor specifications.

Throttle lever free play should be 2-3 mm (0.079-0.118 in.) as measured at end of lever. To adjust lever free play, loosen locknut and rotate adjuster nut at throttle lever case or slide up the dust boot and turn adjusting nut (1—Fig. K1-3).

Initial setting of the idle mixture screw (12—Fig. K1-5) is 1½ turns out from a lightly seated position on KLT

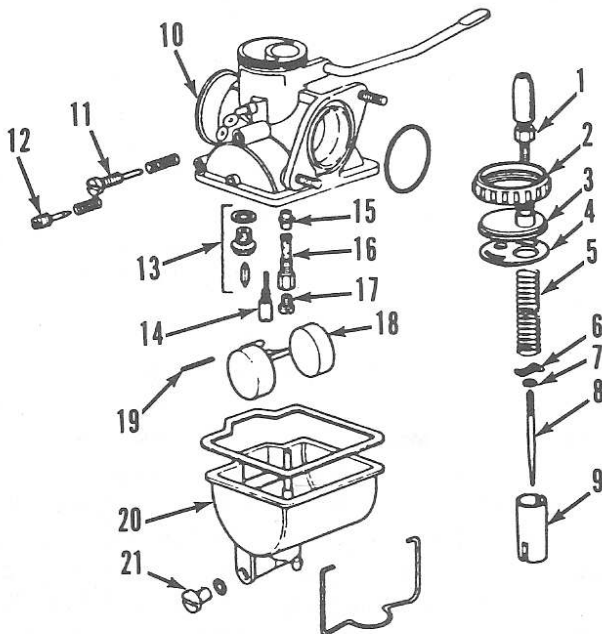


Fig. K1-4—Exploded view of carburetor typical of the type used on all models.

- | | |
|---------------------------|------------------------|
| 1. Cable adjuster | 12. Idle mixture screw |
| 2. Cap nut | 13. Fuel inlet valve |
| 3. Cap | 14. Slow jet |
| 4. Gasket | 15. Needle jet |
| 5. Throttle return spring | 16. Needle jet holder |
| 6. Retainer | 17. Main jet |
| 7. Jet needle clip | 18. Float |
| 8. Jet needle | 19. Float pin |
| 9. Throttle slide | 20. Fuel bowl |
| 10. Body | 21. Drain plug |
| 11. Idle speed screw | |

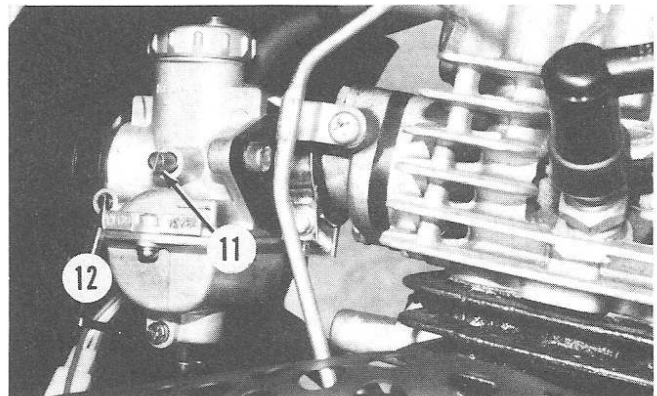


Fig. K1-5—View showing location of idle mixture screw (12) and idle speed screw (11).

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models and 1 to 1½ turns out on KLF models. Final adjustment should be performed with engine running at normal operating temperature. The idle mixture screw meters air and turning the screw counterclockwise will lean the idle mixture. Adjust the idle speed screw (11) to obtain the lowest smooth idle setting. After adjusting carburetor idle setting, check throttle lever free play as outlined in previous paragraph.

When servicing the carburetor, note the following: Jet needle clip (7—Fig. K1-4) should be located in fourth groove from top of jet needle (8) on KLT models and third groove from top on KLF models. Float height (A—Fig. K1-6) should be 18-22 mm (0.709-0.866 in.) as measured from gasket surface of carburetor body to lowest edge of float. Hold carburetor at an angle that will allow the float assembly to close the inlet valve but not compress the spring in the valve. Adjust the float level by bending tang (B) on float arm.

FUEL STRAINERS. Two fuel strainers are located on the pickup tubes of the fuel valve assembly mounted on the fuel tank. To inspect the strainers the fuel in the fuel tank must be drained. Disconnect the fuel hoses from the fuel valve. Unscrew the two screws securing the fuel valve to the fuel tank and carefully remove the fuel valve

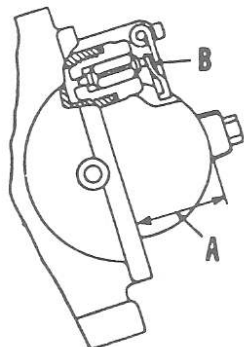


Fig. K1-6—Tilt carburetor when measuring float height (A) so spring in inlet valve is not compressed. Float height should be 18-22 mm (0.709-0.866 in.). Bend float tang (B) for adjustment.

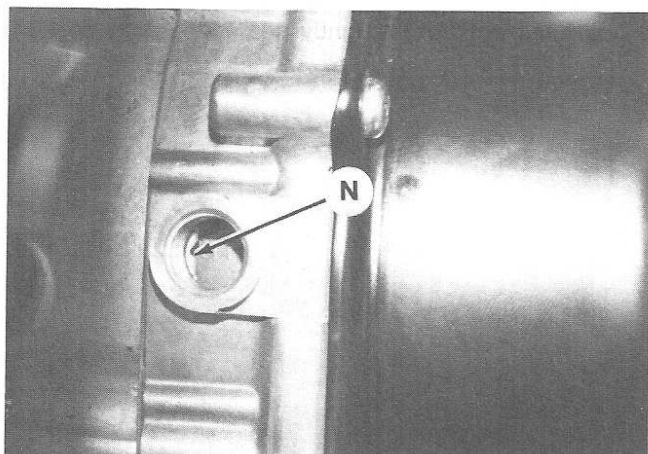


Fig. K1-7—Piston is at TDC (top dead center) when "T" mark on flywheel is aligned with timing notch (N). The second flywheel mark is the ignition timing mark.

from the tank. Clean and inspect the strainers. The strainers are not available separately, only as a part of the valve housing. Reinstall the valve assembly while noting that nylon washers are used on the two retaining screws to prevent fuel leakage.

IGNITION AND ELECTRICAL

All Models

IGNITION SYSTEM. The KLT110 and KLF110 models are equipped with a capacitor discharge, pointless ignition system. An exciter coil located behind the flywheel provides electrical power for the system. The pickup coil is located outside and just below the flywheel while the CDI unit and ignition coil are mounted underneath the fuel tank.

NOTE: Do not disconnect ignition system connectors while the engine is running as the CDI unit may be damaged.

Ignition timing can be checked after removing the inspection hole plug located adjacent to the starter. Using a suitable power timing light and tachometer check alignment of timing marks with engine running at various engine speeds. With engine running at idle or less than 1500 rpm, the second flywheel timing mark should align with the index notch (see Fig. K1-7; note that the first timing mark is marked "T" and indicates top dead center). As engine rpm is increased, ignition timing should advance. At approximately 4000 rpm the third timing mark should align with the index mark and ignition timing should advance no farther as engine speed increases. Ignition timing is not adjustable. If ignition timing is incorrect then the CDI unit is probably faulty.

Some components may be checked using an ohmmeter. Disconnect the connectors for the wires leading from the magneto.

Proceed as follows for KLT110 models. To check the exciter coil, connect one ohmmeter lead to the red lead from the magneto and ground the other ohmmeter lead. Exciter coil resistance should be 180-280 ohms. To check the pickup coil resistance, connect one ohmmeter lead to the brown lead from the magneto. Connect the other ohmmeter lead to the white lead from the magneto. Pickup coil resistance should be 90-140 ohms. Ignition coil primary winding resistance should be 0.34-0.52 ohm while secondary winding resistance should be 3200-4800 ohms.

Proceed as follows for KLF110 models. To check the exciter coil, connect one ohmmeter lead to the red lead from the magneto and ground the other ohmmeter lead. Exciter coil resistance should be 180-280 ohms. To check the pickup coil resistance, connect one ohmmeter lead to the black lead and the other ohmmeter lead to the black lead with yellow tracer from the magneto. Pickup coil resistance should be 80-150 ohms. Ignition coil pri-

primary winding resistance should be 0.14-0.22 ohm while secondary winding resistance should be 3300-4900 ohms.

If the ignition system does not operate properly after checking all components but the CDI unit, replace the CDI unit with a new or known to be good unit and recheck the system. Be sure all wiring and connectors are good.

ELECTRICAL SYSTEM. On nonelectric start models, a lighting coil is located behind the flywheel to provide power for the lights. The lighting coil should produce at least 10 volts AC with the engine running at 3000 rpm. Lighting coil resistance should be 0.56-0.84 ohm on KLT models and 0.9-1.6 ohms on KLF models.

On electric start models, maximum output of alternator is 7.5 amps, 14 volts. Charging coil resistance should be 0.1-0.8 ohm measured between the two yellow charging coil leads.

The headlight is a 12 V 35 W unit on KLT models and a 12 V 25 W unit on KLF models while the taillight is a 12 V 8 W unit on all models.

VALVE SYSTEM

All Models

The valves are actuated via rocker arms by a single overhead camshaft. The camshaft is driven by a roller chain which is connected to the left end of the crankshaft.

Valve clearance should be checked after the first 10 hours of use and then after every 90 days of use thereafter. Valve clearance must be checked with the engine cold. To check valve clearance, remove the seat and fuel tank. Remove valve covers for access to valve adjusting screws. Rotate the crankshaft so the piston is on its compression stroke then stop when the "T" mark on the

flywheel is aligned with the index mark viewed through the inspection hole (see Fig. K1-7). To ensure piston is on the compression stroke, watch the rocker arms as the flywheel "T" mark approaches the index mark. If either rocker arm is moving then the piston is not on the compression stroke.

Valve clearance is adjusted by loosening locknut (L—Fig. K1-8) then turning adjusting screw (S) so the proper clearance between the valve stem and adjusting screw is obtained. Valve clearance for both valves should be 0.12-0.17 mm (0.005-0.006 in.). Recheck valve clearance after tightening the locknut.

CLUTCH

All Models

Models KLT110 and KLF110 are equipped with a multiple-disc clutch that is actuated by the gear shift lever. As the gear shift lever is operated to change gears the clutch is disengaged through linkage connected to the shift shaft.

To adjust the clutch, remove the rubber cap in the right side cover. Loosen locknut (L—Fig. K1-9). Turn screw (S) clockwise until it is easy to turn, then turn the screw counterclockwise until resistance to turning is felt. Hold screw in position and tighten locknut (L). Check clutch adjustment by shifting gears with engine idling. Engine should not die when changing gears.

MANUAL STARTER

KLT Models

R&R AND OVERHAUL. Remove three screws and remove starter from left side cover. To disassemble start-

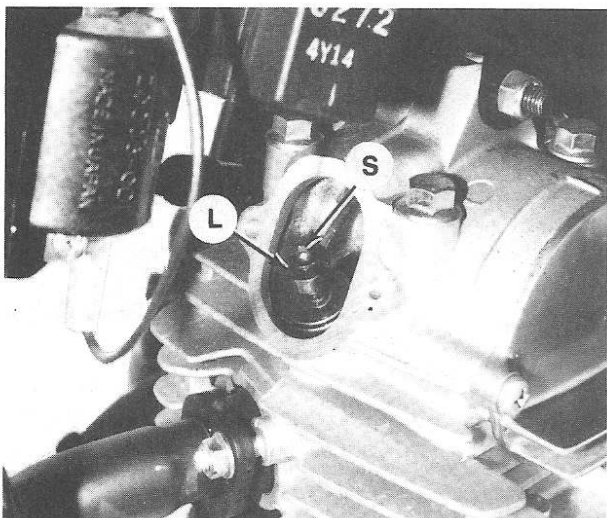


Fig. K1-8—Loosen locknut (L) and rotate adjusting screw (S) to adjust valve clearance. Valve clearance should be 0.12-0.17 mm (0.005-0.006 in.).

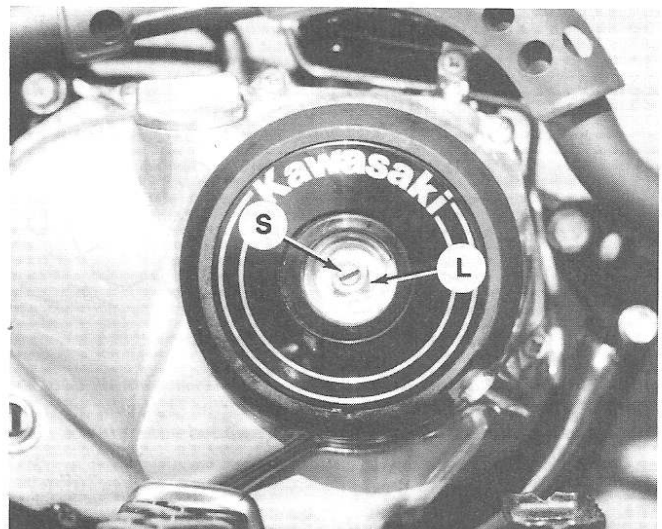


Fig. K1-9—View showing location of clutch adjusting screw (S). Refer to text for adjustment.

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er, detach "E" ring (11—Fig. K1-10) then remove components (5 through 10). Pull out rope and tie a knot to prevent rewinding. Remove rope handle (2). Hold ratchet retainer (9) using thumb pressure, untie rope knot, pull rope into notch of rope pulley (4) then release thumb pressure and allow rewind spring (3) to slowly unwind. Carefully disengage rope pulley from rewind spring and remove pulley. If necessary to remove rewind spring, tap starter housing against the floor with the open end down. Use care when working on or around a coiled rewind spring as uncontrolled uncoiling can cause injury.

To reassemble the starter, proceed as follows: Install the rewind spring (3) in the starter housing so the outer end engages the tab and the spring is wound in a clockwise direction from the outer end. Lightly grease the spring. If the spring is new carefully remove any bands or clips. Attach the rope to the rope pulley (4) then install the rope pulley while passing the rope end through the outlet of the starter housing. Be sure the pulley engages the inner spring end. Attach the rope handle. Position the rope in the notch of the rope pulley and turn the pulley two turns clockwise to preload the rewind spring. Install remainder of starter components. Note that ends of springs (8) are inserted in holes of pawls (7). Install starter and check operation.

KLF Models

R&R AND OVERHAUL. Refer to Fig. K1-11 for a partially disassembled view of manual starter assembly. Manual starter can be removed from the vehicle as a

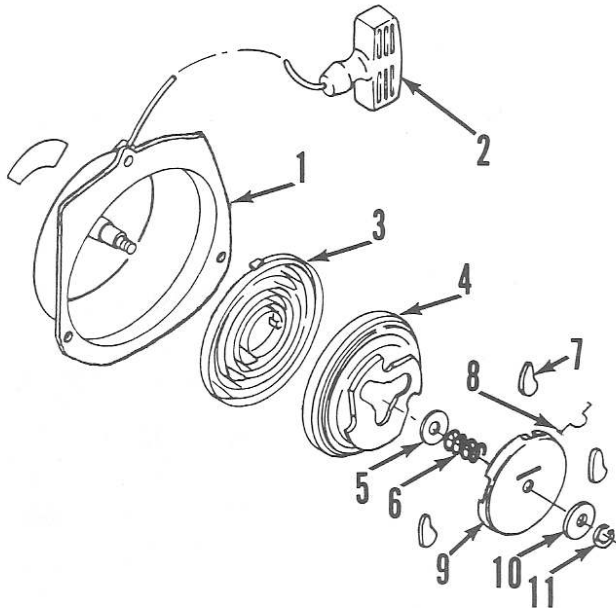


Fig. K1-10—Exploded view of manual starter assembly used on early KLT models. Later type manual starter is similar with the exception of using a single drive pawl assembly.

- | | |
|---------------------|--------------|
| 1. Starting housing | 7. Pawls |
| 2. Rope handle | 8. Spring |
| 3. Rewind spring | 9. Plate |
| 4. Pulley | 10. Washer |
| 5. Washer | 11. "E" ring |
| 6. Spring | |

complete unit after removing the three starter retaining screws. If starter rope remains under tension, pull starter rope and hold rope pulley (8—Fig. K1-11) with notch (N) in pulley adjacent to rope outlet. Pull a loop of rope back through outlet so rope engages notch in pulley and allow pulley (8) to slowly unwind.

Remove retaining nut (1) and disassemble unit. Be careful when removing rewind spring located behind pulley (8), a rapidly uncoiling starter spring can cause serious injury.

Rewind spring is wound into rope pulley (8) in a clockwise direction. Starter rope is wound on rope pulley (8) in a clockwise direction as viewed with rope pulley in starter housing. Reassemble starter by reversing disassembly procedure. Lightly grease pulley shaft and starter pawl.

To place tension on rewind spring after assembly, pass starter rope through rope outlet in starter housing and install rope handle. Pull a loop of rope back through outlet between notch (N) in pulley and housing. Rotate rope pulley (8) clockwise two or three complete revolutions, then release starter rope from pulley notch (N) and allow starter rope to wind onto pulley (8). Do not place any more tension on rewind spring than is necessary to draw starter rope handle up against housing.

ELECTRIC STARTER

KLF Models So Equipped

The starter assembly can be removed and disassembled to clean, inspect and lubricate individual parts. To remove electric starter, first disconnect battery. Disconnect wire at terminal on starter. Remove the three mounting screws and withdraw the starter motor. Note the location of all components during disassembly to aid in reassembly. The starter assembly should be renewed if starter brushes are worn to 3.5 mm (0.14 in.) or less.

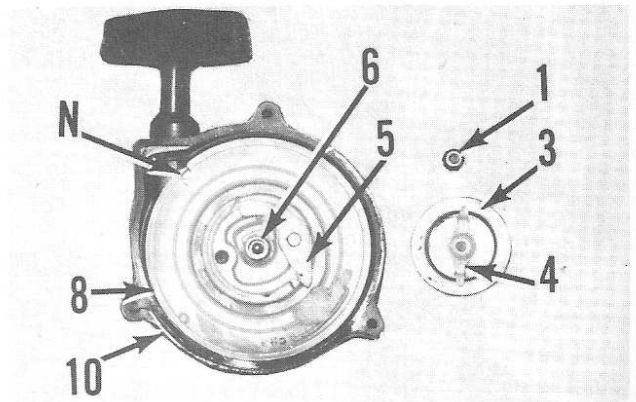


Fig. K1-11—Partially disassembled view of manual starter assembly typical of the type used on KLF models.

- | | |
|-------------------|---------------------|
| N. Notch | 5. Starter pawl |
| 1. Nut | 6. Friction spring |
| 3. Friction plate | 8. Rope pulley |
| 4. Pawl guide | 10. Starter housing |

During installation, make sure "O" ring is positioned around starter neck, then guide starter into position. Remainder of installation is the reverse of removal procedure.

FRONT AXLE

KLT Models

The front axle is supported by two sealed bearings. To remove the axle assembly, unscrew retaining nut and withdraw axle bolt. Separate the axle and wheel assembly from the front forks.

To remove bearings, remove the brake assembly and dust cap. Apply a small amount of heat to portion of axle housing which contacts the bearing to be removed (too much heat will distort brake drum). Drive against the opposite end of spacer to force out the bearing. Inspect "O" rings and renew if needed. When installing bearings note that snap ring end is outermost. Notch in brake plate must engage retaining flange on fork leg when installing axle assembly. Tighten axle nut to 73 N·m (54 ft.-lbs.).

KLF Models

The left and right front spindle assemblies pivot on the knuckle assembly at the end of each control arm. The control arms are bolted at the ends to the vehicle frame and a shock absorber is used to limit and cushion the up and down movement of the control arm. A grease fitting is located on the side of each knuckle and should be used to grease the knuckle components during each periodic maintenance check.

Remove the front wheel to service the knuckle assembly. Note that removing the brake components will allow greater access to knuckle components. If knuckle bushings are excessively worn or any other damage is noted, then control arm assembly must be renewed. Control arm mounting screws should be tightened to 88 N·m (65 ft.-lbs.). Shock absorber retaining nuts should be tightened to 34 N·m (25 ft.-lbs.). Spindle assembly to control arm knuckle retaining nut should be tightened to 34 N·m (25 ft.-lbs.).

FRONT BRAKE

KLT Models

BRAKE LEVER FREE PLAY. Brake lever free play is adjusted by turning adjuster nut at the bottom end of the brake cable. Brake lever free play measured at gap (A—Fig. K1-13) should be 4-5 mm (0.16-0.20 in.).

OVERHAUL. External determination of lining thickness is possible by actuating brake and noting position of

pointer attached to brake camshaft. There is sufficient brake lining if pointer falls in "USABLE RANGE" on brake backing plate.

The front brake assembly is accessible after removing the front axle. Renew the brake shoes if they are damaged or if the lining thickness is less than 1.5 mm (0.059 in.). Renew the brake drum assembly if the inside diameter is more than 110.75 mm (4.360 in.).

KLF Models

BRAKE LEVER FREE PLAY. Brake lever free play is adjusted by loosening brake cable locknut and rotating cable adjuster. Note that actuating lever at each front brake should have 3-4 mm (0.12-0.16 in.) free play. Rotate wing nut on cable end at each actuating lever until 3-4 mm (0.12-0.16 in.) free play is obtained. Then rotate brake cable adjuster until free play, measured at gap (A—Fig. K1-13), is 10-12 mm (0.39-0.47 in.) with front brake lever applied. Tighten brake cable locknut to retain adjustment.

OVERHAUL. External determination of lining thickness is possible by actuating brake and noting position of pointer attached to actuating lever at each front brake. There is sufficient brake lining if pointer falls in "USABLE RANGE" on brake backing plate.

Each front brake assembly is accessible after removing the respective brake drum. Renew the brake shoes if they are damaged or if the lining thickness is less than 1.6 mm (0.063 in.). Renew the brake drum assembly if the inside diameter is more than 110.70 mm (4.36 in.).

STEERING

KLT Models

ADJUSTMENT. Check the steering by supporting the vehicle so the front wheel is off the ground and the handlebars are free to turn. If pushed lightly the handlebars should continue to turn without binding. Check for roughness when turning which might indicate defective bear-

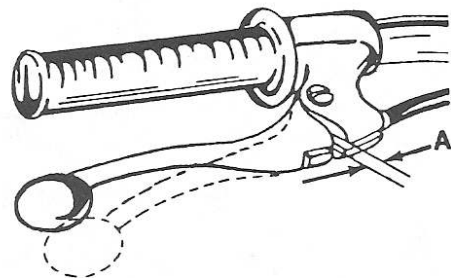


Fig. K1-13—Front brake lever free play (A) should be 4-5 mm (0.16-0.20 in.) on KLT models and 3-4 mm (0.12-0.16 in.) on KLF models. Gap, measured at (A), when brake lever is applied should be 10-12 mm (0.39-0.47 in.) on KLF models. Refer to text.

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ings. Push the fork legs fore and aft and check for play in the steering stem. If steering stem play is indicated, adjust steering as follows: Remove the fuel tank and steering head cover. Loosen the steering bracket screws (at top of each fork leg) and the steering stem retaining screw. Rotate the slotted steering stem nut to remove steering play (tighten nut) or remove binding (loosen nut). Do not loosen nut too far as bearing balls may fall out. Retighten steering stem retaining screw to 54 N·m (40 ft.-lbs.). Tighten steering stem bracket screws and reinstall cover.

OVERHAUL. To separate the steering stem and fork assembly from the frame's steering head, proceed as follows: Remove the front wheel and axle assembly, fuel tank, handlebars and headlight. Remove bracket screws (S—Fig. K1-14), steering stem screw and remove steering bracket (B). Unscrew slotted nut (N) then remove dust cover and bearing race from the steering stem. Note that the steering stem is now loose and the bearing balls may fall out. Lower the steering stem and fork assembly away from the steering head while being careful not to lose any loose bearing balls.

If suitable tools are available, the bearing races on the steering stem and in the steering head can be removed and installed. Be sure to reinstall any grease seals. Check the steering stem for straightness. Note that there are 23 bearing balls of 6 mm diameter located at the top of the steering stem and 19 bearing balls of 8 mm diameter used at the lower end of the steering stem. Use a good quality grease to lubricate the bearing balls and to hold them in place during installation. Reassemble components by reversing the removal procedure. Note that the stepped side of the slotted nut should be down against the dust cover. Tighten the slotted nut to 20 N·m (14.5 ft.-lbs.) or turn the nut 20 degrees past the point it becomes hard to turn.

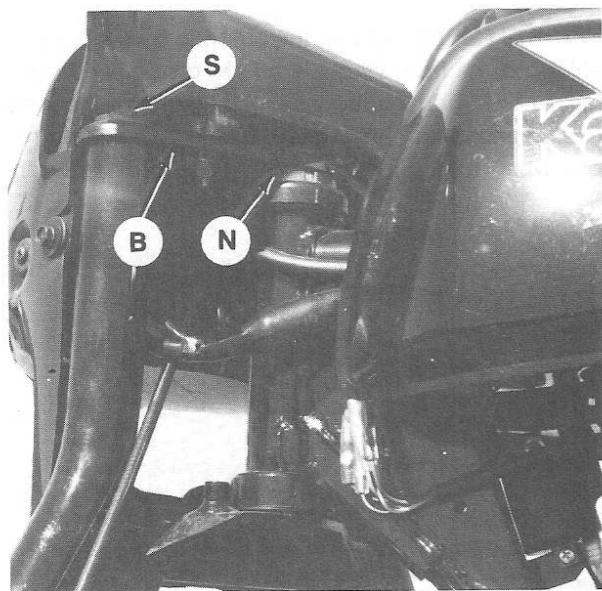


Fig. K1-14—View of steering head assembly. Rotate slotted nut (N) to adjust steering play.

KLF Models

TOE-IN SETTING. Raise the front wheels off the ground. Place the steering handlebars in a straight ahead position. Use a suitable measuring tool and measure distance (D—Fig. K1-16), at spindle height, between the center of the tires on the front and rear sides. The measured distance (D) on the front side should be 15 mm (0.59 in.) shorter than the measured distance on the rear side. If not, loosen the inside (I) and outside (O) locknuts on the left and right tie rod assemblies and rotate the tie rod sleeves equally until a difference of 15 mm (0.59 in.) is noted.

NOTE: The outside (O) locknuts are left-hand threaded.

After obtaining the correct setting, securely tighten the locknuts to retain tie rod settings.

INSPECTION. Rotate the steering handlebars from one extreme to the other and note if any binding or roughness is felt. Periodically inspect the steering components for looseness or any other damage. Renew any damaged component. Clean and grease components if binding or excessive effort is noted.

OVERHAUL. To expose the steering tube, the front fender assembly must be removed. Remove the Allen head bolts and nuts securing the upper tube clamp and withdraw the clamp halves. Clean the old grease from the steering tube and bearing portions of the clamp halves. Inspect the clamp halves and the upper and lower grease seals for damage. Renew components if needed. Position the grease seals so slits are aligned and facing towards front. Grease components and install clamp halves. Tighten the retaining clamp Allen head bolts and nuts to 25 N·m (18 ft.-lbs.).

The tie rod assemblies, front brake cables, upper tube clamp and handlebar assembly must be removed to withdraw the steering tube from the vehicle. Remove the lower bearing housing mounting screws to withdraw the steering tube. Inspect the lower bearing assembly and

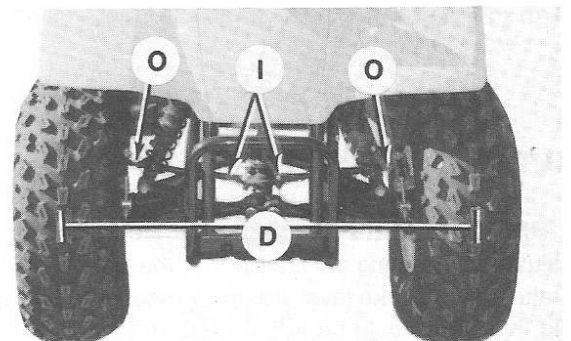


Fig. K1-16—Refer to text for toe-in setting procedures on KLF models. Inside (I) tie rod locknuts are right-hand threaded and outside (O) tie rod locknuts are left-hand threaded.

renew if needed. Install the lower bearing assembly with the brass side facing down. Tighten the lower bearing assembly retaining nut to 29 N·m (22 ft.-lbs.). Tighten the tie rod assembly mounting nuts to 41 N·m (30 ft.-lbs.). When installing the handlebar assembly to the steering tube, the handlebar should be positioned so the handlebar and steering tube set at the same angle. Tighten the rear handlebar mounting clamp screws first, then tighten the front screws. If properly tightened, there should be no gap at the rear of the clamp and an even gap at the front.

REAR BRAKE

All Models

ADJUSTMENT. The rear brake may be actuated either by a foot pedal or handlebar lever. Brake pedal free play should be 20-30 mm (0.787-1.181 in.) measured at the pedal pad. Adjust pedal free play by turning adjusting nut (P—Fig. K1-20). Brake lever free play measured at gap (G—Fig. K1-21) should be 4-5 mm (0.16-0.20 in.). Brake lever free play can be adjusted by rotating adjuster nut on brake cable at handlebar brake lever on KLF models or can be adjusted by turning adjusting nut (B—Fig. K1-20) on KLT models and KLF models if beyond handlebar brake lever adjustment.

OVERHAUL. On KLF models, external determination of lining thickness is possible by actuating brake and noting position of pointer attached to actuating lever. There is sufficient brake lining if pointer falls in "USABLE RANGE" on brake backing plate.

On all models, use the following procedure for access to the rear brake assembly. Remove the cotter pin and axle nut at the right end of the rear axle. Remove the right rear wheel and hub. If so equipped, remove the cover surrounding the brake drum. Prevent axle rotation by applying the rear brake, then unscrew the two nuts holding the brake drum in place. Slide the brake drum off the axle.

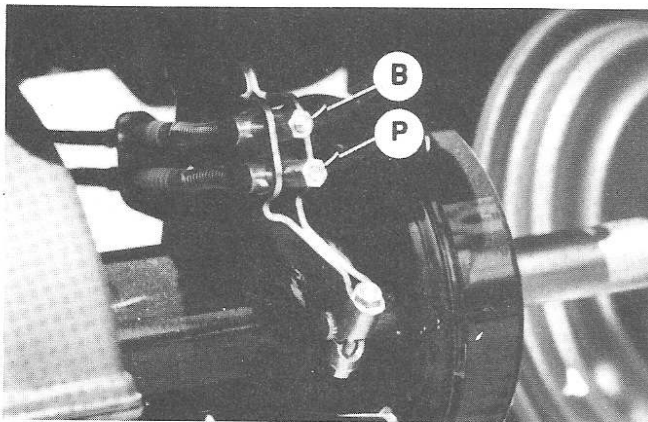


Fig. K1-20—View showing location of rear brake adjusters for brake pedal (P) and handlebar lever (B).

Inspect brake components. Inspect the splines on the axle and brake drum. Minimum brake shoe lining thickness is 2 mm (0.079 in.). Maximum allowable inside diameter for the brake drum is 130.75 mm (5.147 in.).

Reassemble brake and axle components by reversing removal procedure. Tighten the two nuts securing the brake drum to 78 N·m (58 ft.-lbs.) on KLT models and 145 N·m (110 ft.-lbs.) on KLF models. Apply grease to axle splines. Tighten axle nut to 88 N·m (65 ft.-lbs.) on KLT models and 145 N·m (110 ft.-lbs.) on KLF models.

DRIVE CHAIN AND SPROCKETS

All Models

CHAIN ADJUSTMENT. Remove the inspection plug in the left side of the chain case. Rotate the rear wheels manually until chain tension is greatest. Measure chain free play. Chain free play should be 10-25 mm (0.39-0.98 in.).

To adjust chain free play, loosen chain adjusting nut (N—Fig. K1-24). Loosen rear axle housing retaining screws (S). Tighten adjusting nut (N) to reduce chain free play or loosen nut to increase chain free play. Note that if chain is excessively worn, adjustment may not be possible. Retighten axle housing screws to 59 N·m (43 ft.-lbs.) on KLT models and 54 N·m (40 ft.-lbs.) on KLF models. Recheck chain free play after all fasteners are tightened.

R&R AND OVERHAUL. To remove the drive chain, proceed as follows: Remove the seat, rear fenders, air filter and air filter box. Remove the chain cover attached to the left side of the engine. Detach the axle dust cover from the chain case then remove the upper chain case half. Remove the protection plate from underneath the rear of the vehicle. Remove the lower chain case half. Remove the left rear wheel. Remove the snap ring retaining the engine sprocket then remove the sprocket. Remove the chain from the axle sprocket.

Inspect the drive chain and renew the chain if damaged or excessively worn. The distance between 21 chain pins should not exceed 260 mm (10.236 in.). The manufacturer recommends that only an endless type drive chain be used.

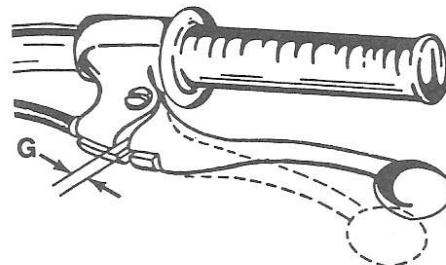


Fig. K1-21—Brake lever free play (G) should be 4-5 mm (0.16-0.20 in.).

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Install engine sprocket so side stamped with tooth number is out. If removed, install a new "O" ring on output shaft and install spacer with beveled end towards engine.

The axle sprocket may be removed after removing the wheel hub on the end of the axle. On KLT models, remove the four outer bolts for access to the sprocket dampers. Renew damaged dampers. New lockwashers should be used when assembling and installing sprocket. On KLT models, tighten sprocket retaining nuts to 29

N·m (22 ft.-lbs.) then bend tabs on lockplates against nuts. On KLF models, tighten sprocket retaining nuts to 34 N·m (25 ft.-lbs.). Apply grease to axle splines. Tighten axle nut to 88 N·m (65 ft.-lbs.) on KLT models and 145 N·m (110 ft.-lbs.) on KLF models.

Reverse removal procedure to install drive chain. Adjust chain free play as outlined in previous section.

REAR AXLE, BEARINGS AND HOUSING

All Models

R&R AND OVERHAUL. To remove the rear axle assembly, support the rear of the vehicle so both wheels are off the ground. Remove the drive chain and axle sprocket as previously outlined. Remove the rear brake assembly as previously outlined. Disconnect the rear brake cables from the actuating lever. Remove the four screws securing the axle housing to the frame and remove the axle housing assembly. Withdraw the axle from the housing. Remove the brake shoes if still attached to housing. Using a suitable tool, drive bearings and spacer out of housing.

Inspect components and renew any which are damaged or excessively worn. Reverse disassembly procedure to install components.

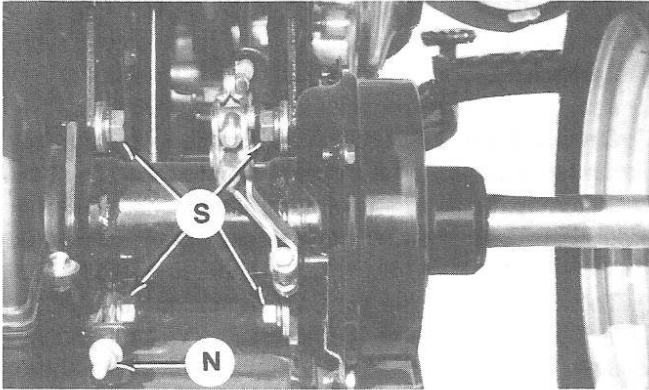


Fig. K1-24—Loosen rear housing retaining screws (S) and rotate adjusting nut (N) to adjust chain tension.