Kawasaki

KLF 250
BAYOU 250
Workhorse 250



All Terrain Vehicle
Service Manual

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This quick reference guide will assist you in locating a desired topic or procedure.

- Bend the pages back to match the black tab of the desired chapter number with the black tab on the edge at each table of contents page.
- Refer to the sectional table of contents for the exact pages to locate the specific topic required.

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General Specifications

Item		KLF250-A1 ~ A3
Dimensions		
Overall Length		1 780 mm (70.08 in..)
Overall Width		1 120 mm (44.09 in.), (US) (CA) 1 020 mm (40.16 in.)
Overall Height		1 040 mm (40.94 in.)
Wheelbase		1 115 mm (43.90 in.)
Ground Clearance		155 mm (6.10 in.)
Seat Height		730 mm (28.74 in.)
Dry Mass		185 kg (408 lb), (US) 183 kg (404 lb), (CA) 183.5 kg (405 lb)
Curb Mass:	Front	89 kg (196 lb), (US) (CA) 88.5 (195 lb)
	Rear	106 kg (234 lb), (US) 104.5 kg (230 lb), (CA) 105 kg (232 lb)
Fuel Tank Capacity		10 L (2.6 US gal)
Performance		
Minimum Turning Radius		2.7 m (8.86 ft)
Engine		
Type		4-stroke, SOHC, 1-cylinder
Cooling System		Air-cooled
Bore and Stroke		69.0 × 61.0 mm (2.72 × 2.40 in.)
Displacement		228 mL (13.9 cu in.)
Compression Ratio		8.9
Maximum Horsepower		12.5 kW (17 PS) @7 000 r/min (rpm), (US) –
Maximum Torque		17.9 N·m (1.83 kgf·m, 13.24 ft·lb) @5 500 r/min (rpm)
Carburetion System		Carburetor, MIKUNI VM24SS
Starting System		Electric starter & Recoil starter
Ignition System		CDI
Timing Advance		Electronically advanced
Ignition Timing		From 10° BTDC @1 800 r/min (rpm) to 35° BTDC @4 600 r/min (rpm)
Spark Plug		NGK DR8ES
Valve Timing:		
Inlet:	Open	35° BTDC
	Close	57° ABDC
	Duration	272°
Exhaust:	Open	54° BBDC
	Close	26° ATDC
	Duration	260°
Lubrication System		Forced lubrication (wet sump)
Engine Oil:	Type	API SF or SG API SH or SJ with JASO MA
	Viscosity	SAE 10W-40
	Capacity	2.0 L (2.11 US qt)

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2-2 PERIODIC MAINTENANCE

Periodic Maintenance Chart

The scheduled maintenance must be done in accordance with this chart to keep the vehicle in good running condition. **The initial maintenance is vitally important and must not be neglected.**

FREQUENCY / OPERATION	First Service	Regular Service			
	After 10 hrs. or 100 km (60 mi) of use	Every 10 days or 200 km (120 mi) of use	Every 30 days or 600 km (360 mi) of use	Every 90 days or 1 700 km (1 100 mi) of use	Every year of use
ENGINE					
Air cleaner - service*	●	●			
Throttle lever play - inspect	●	●			
Valve clearance - inspect	●			●	
Fuel system cleanliness - inspect*	●			●	
Engine oil - change*	●			●	
Oil filter - replace*	●			●	
Clutch adjustment*	●	●			
Spark plug - clean and gap	●			●	
Spark arrester - clean					●
Fuel hoses and connections - inspect				●	
Fuel hose - replace	4 years				
CHASSIS					
Joint boots - inspect*	●	●			
Rear brake pedal and lever adjustment - inspect*	●	●			
Cables adjustment*	●	●			
Bolts and nuts - tighten	●	●			
Brake wear - inspect*	●	●			
Brake light switch - inspect*	●		●		
Battery - inspect	●		●		
Steering - inspect	●			●	
Tire wear - inspect*			●		
Final gear case oil - change	●				●
General lubrication*			●		

*: Service more frequently when operated in mud, dust, or other harsh riding conditions.

●: Clean, adjust, lubricate, torque, or replace parts as necessary.

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Torque and Locking Agent

The following tables list the tightening torque for the major fasteners, and the parts requiring use of a non-permanent locking agent or liquid gasket.

Letters used in the “Remarks” column mean:
L: Apply a non-permanent locking agent to the threads.
MO: Apply molybdenum disulfide oil solution (mixture of the engine oil and molybdenum disulfide grease in a weight ratio 10 : 1).
S: Tighten the fasteners following the specified sequence.
St: Stake the fasteners to prevent loosening.

The table below, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent-cleaned threads.

Basic Torque for General Fasteners

Threads dia. (mm)	Torque		
	N·m	kgf·m	ft·lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in·lb
8	14 ~19	1.4 ~1.9	10.0 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19.0 ~ 25
12	44 ~ 61	4.5 ~ 6.2	33 ~ 45
14	73 ~ 98	7.4 ~ 10.0	54 ~ 72
16	115 ~ 155	11.5 ~ 16.0	83 ~ 115
18	165 ~ 225	17.0 ~ 23.0	125 ~ 165
20	225 ~ 325	23 ~ 33	165 ~ 240

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Fuel Sytem				
Carburetor Holder Bolts	11	1.1	95 in·lb	L
Throttle Lever Bolt	5.9	0.6	52 in·lb	
Engine Top End				
Cylinder Head Bolts (M10), first torque	13	1.3	113 in·lb	L(1), MO, S
Cylinder Head Bolts (M10), final torque	34	3.5	25	S
Cylinder Head Bolts (M6), first torque	5.9	0.6	52 in·lb	MO, S
Cylinder Head Bolts (M6), final torque	9.8	1.0	87 in·lb	S
Valve Adjusting Cap Bolts	8.8	0.9	78 in·lb	
Retaining Bolt	4.4	0.45	39 in·lb	
Compression Releasing Lever Bolt	8.8	0.9	78 in·lb	
Camshaft Sprocket Bolt	34	3.5	25	MO
Rear Camshaft Chain Guide Bolt	9.8	1.0	87 in·lb	
Camshaft Chain Tensioner Mounting Bolts	8.8	0.9	78 in·lb	
Valve Adjusting Screw Locknuts	12	1.2	104 in·lb	
Rocker Shaft Retainer Screws	4.4	0.45	39 in·lb	
Camshaft Chain Guard Screws	4.4	0.45	39 in·lb	
Engine Right Side				
Right Engine Cover Bolts	8.8	0.9	78 in·lb	

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Periodic Maintenance Procedures

Fuel System

Throttle Lever Free Play Inspection



- Check that the throttle lever moves smoothly from full open to close, and the throttle closes quickly and completely in all steering positions by the return spring.

★If the throttle lever does not return properly, check the throttle cable routing, lever free play, and cable damage. Then lubricate the throttle cable.

- Run the engine at the idle speed, and turn the handlebar all the way to the right and left to ensure that the idle speed does not change.

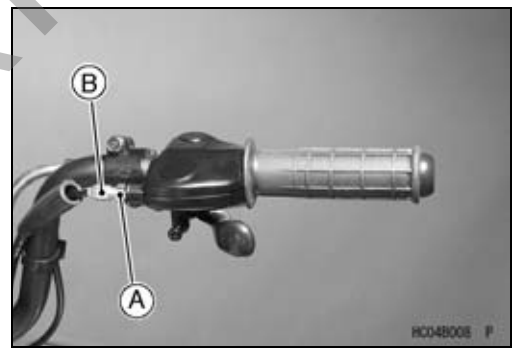
★If the idle speed increases, check the throttle lever free play and the cable routing.

- Stop the engine and check the throttle lever free play [A].

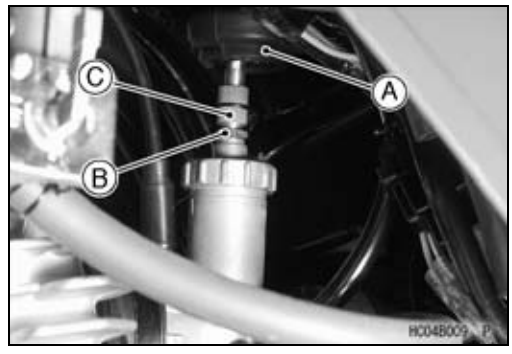
★If the free play is not within the specified range, adjust the cable.

Throttle Lever Free Play
Standard: 2 ~ 3 mm (0.08 ~ 0.12 in.)

Throttle Lever Free Play Adjustment



- Slide the rubber cover off the adjuster at the throttle case.
- Loosen the locknut [A] and turn the throttle cable upper adjuster [B] until the cable has proper amount of play.
- Tighten the locknut and reinstall the rubber cover.



★If the free play cannot be adjusted by using the upper cable adjuster, pull up the rubber cover [A] at the carburetor.

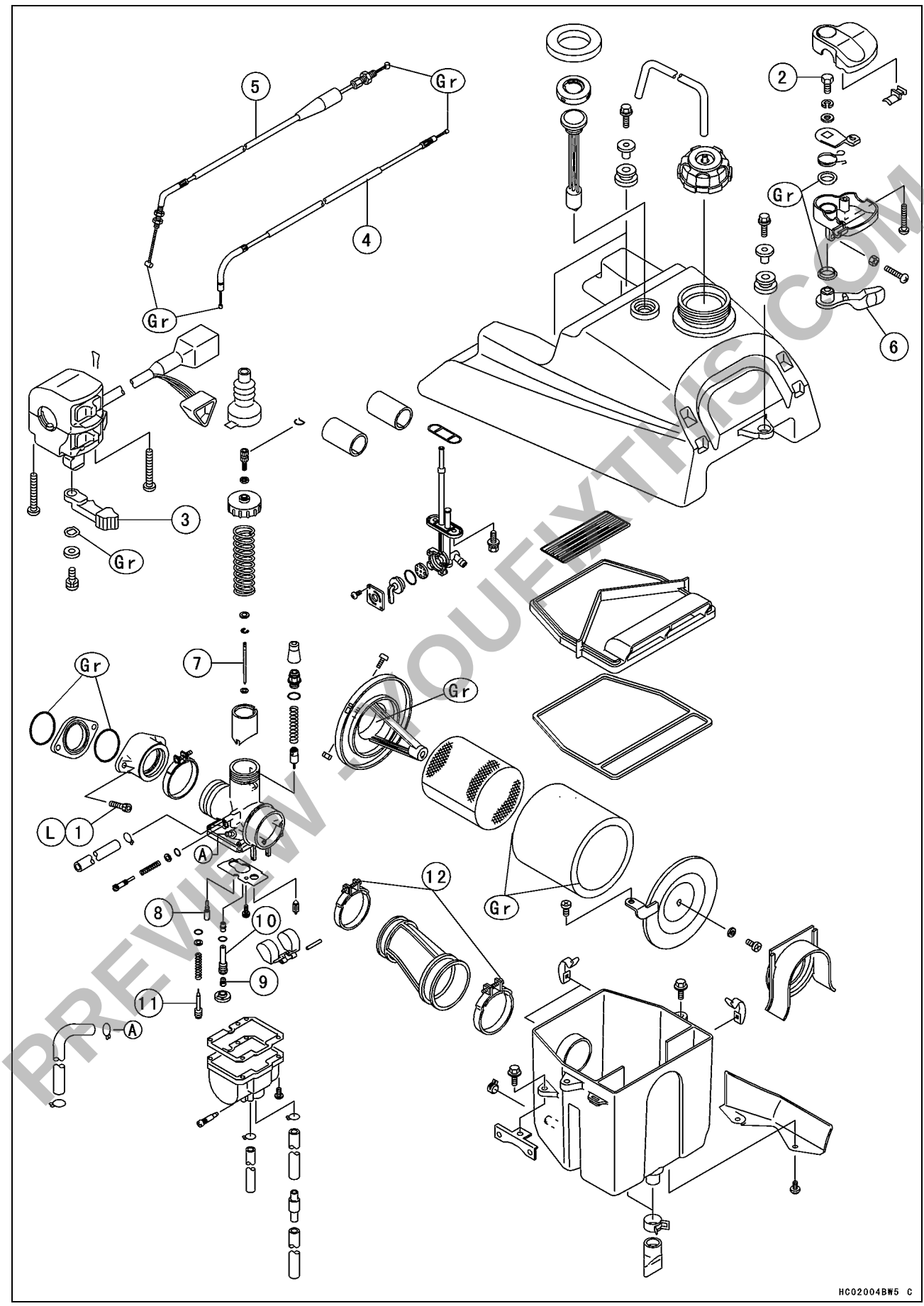
★Loosen the locknut [B] and turn the throttle cable lower adjuster [C] to obtain the specified free play.

★Tighten the locknut and reinstall the rubber cover.

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3-2 FUEL SYSTEM

Exploded View



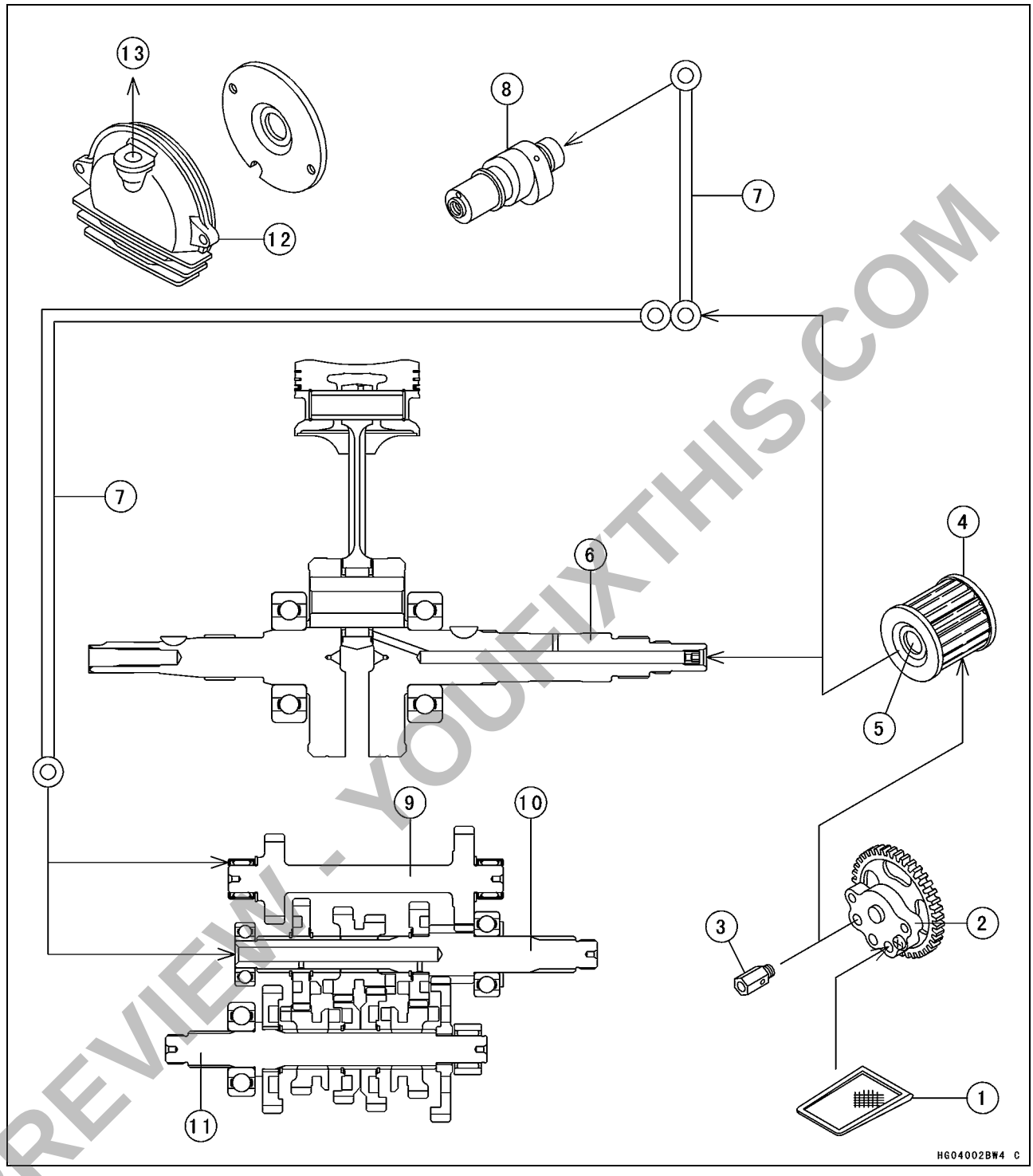
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Specifications

Item	Standard	Service Limit
Rocker Case		
Rocker Arm Inside Diameter	13.000 ~ 13.018 mm (0.5118 ~ 0.5125 in.)	13.05 mm (0.514 in.)
Rocker Shaft Diameter	12.976 ~ 12.994 mm (0.5109 ~ 0.5116 in.)	12.95 mm (0.510 in.)
Camshafts		
Cam Height:		
Exhaust	39.720 ~ 39.828 mm (1.5638 ~ 1.5680 in.)	39.62 mm (1.560 in.)
Inlet	40.395 ~ 40.503 mm (1.5904 ~ 1.5946 in.)	40.30 mm (1.587 in.)
Cylinder Head		
Cylinder Compression:	(usable range)	
with Recoil Starter (5 times)	750 ~ 1 180 kPa (7.7 ~ 12 kgf/cm², 110 ~ 171 psi) @450 r/min (rpm)	– – –
with Electric Starter	930 ~ 1 435 kPa (9.5 ~ 14.6 kgf/cm², 135 ~ 208 psi) @600 r/min (rpm)	– – –
Cylinder Head Warp	– – –	0.05 mm (0.002 in.)
Valve		
Valve Clearance:		
Exhaust	0.18 ~ 0.23 mm (0.0071 ~ 0.0091 in.)	– – –
Inlet	0.15 ~ 0.20 mm (0.0059 ~ 0.0079 in.)	– – –
Valve Head Thickness:		
Exhaust	1.0 mm (0.039 in.)	0.5 mm (0.020 in.)
Inlet	0.8 mm (0.031 in.)	0.4 mm (0.016 in.)
Valve Stem Bend	– – –	TIR 0.05 mm (0.002 in.)
Valve Stem Diameter:		
Exhaust	5.480 ~ 5.495 mm (0.2157 ~ 0.2163 in.)	5.47 mm (0.2154 in.)
Inlet	5.495 ~ 5.510 mm (0.2163 ~ 0.2169 in.)	5.48 mm (0.2157 in.)
Valve Guide Inside Diameter:		
Exhaust	5.520 ~ 5.532 mm (0.2173 ~ 0.2178 in.)	5.60 mm (0.220 in.)
Inlet	5.520 ~ 5.532 mm (0.2173 ~ 0.2178 in.)	5.60 mm (0.220 in.)

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Engine Oil Flow Chart



1. Oil Screen
2. Oil Pump
3. Relief Valve
4. Oil Filter
5. Crankshaft
6. Oil Pipe
7. Camshaft
8. Reverse Shaft
9. Input Shaft
10. Drive Shaft
11. Engine Breather
12. Blow-by Gas (to Air Cleaner)

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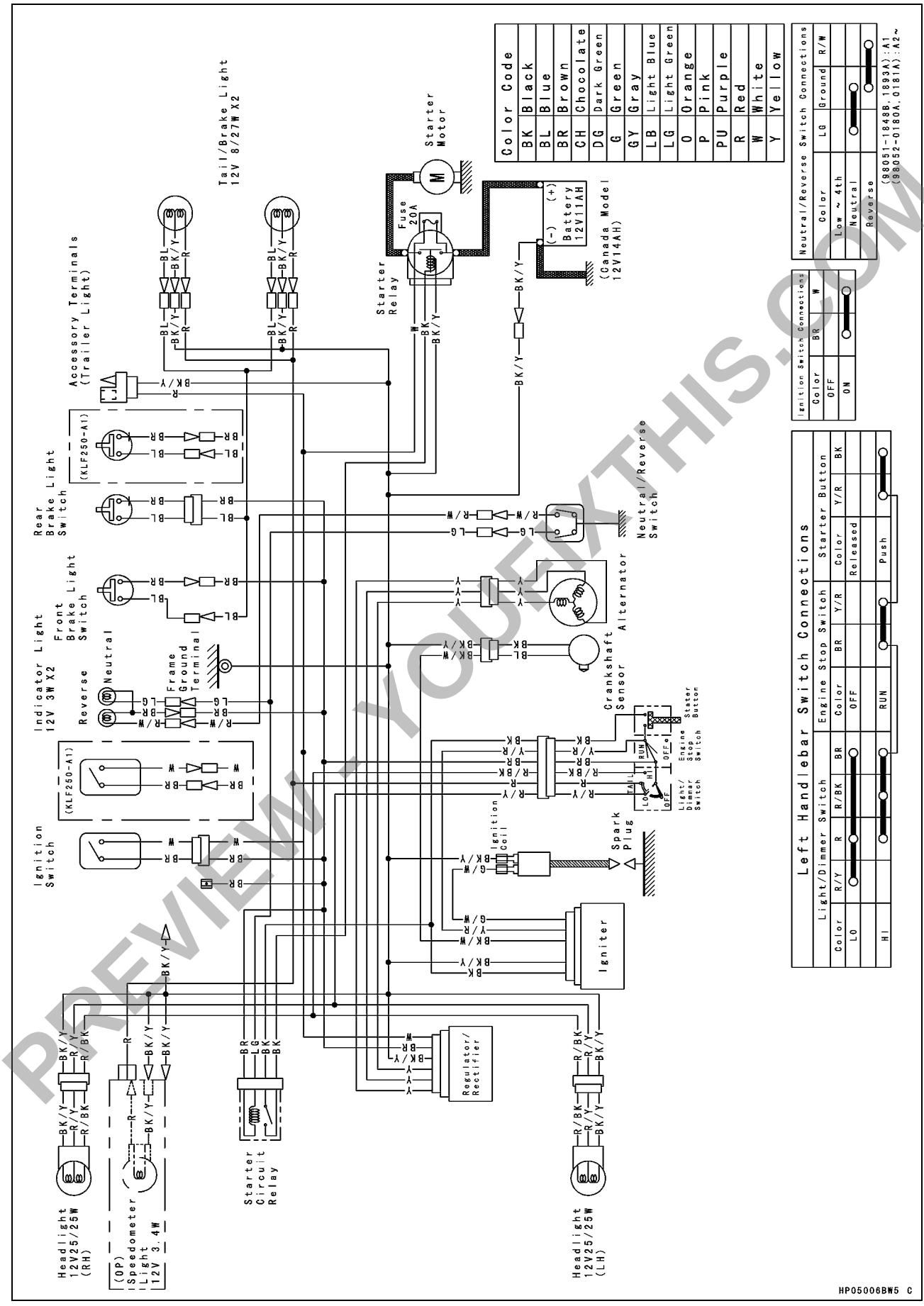
7-4 ENGINE LUBRICATION SYSTEM

Specifications

Item	Standard
Engine Oil	
Type	API SF or SG
	API SH or SJ with JASO MA
Viscosity	SAE 10W-40
Capacity	2.0 L (2.11 US qt) (when filter is not removed)
	2.1 L (2.22 US qt) (when filter is removed)
	2.75 L (2.91 US qt) (when engine is completely dry)

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Wiring Diagram (U.S.A. and Canada Models)



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Troubleshooting Guide

NOTE

○*This is not an exhaustive list, giving every possible cause for each problem listed. It is meant simply as a rough guide to assist the troubleshooting for some of the more common difficulties.*

Engine Doesn't Start, Starting Difficulty:

Starter motor not rotating:
- Neutral switch trouble
- Starter motor trouble
- Battery voltage low
- Relays not contacting or operating
- Starter button not contacting
- Wiring open or shorted
- Ignition switch trouble
- Engine stop switch trouble
- Fuse blown

Starter motor rotating but engine doesn't turn over:
- Starter motor clutch trouble

Recoil starter not operating
- Recoil starter spring broken
- Recoil starter pawl not engaging

Engine won't turn over:
- Valve seizure
- Rocker arm seizure
- Cylinder, piston seizure
- Crankshaft seizure
- Connecting rod small end seizure
- Connecting rod big end seizure
- Transmission gear or bearing seizure
- Camshaft seizure
- Balancer bearing seizure

No fuel flow:
- Fuel tank air vent obstructed
- Fuel tap clogged
- Fuel line clogged
- Float valve clogged

Engine flooded:
- Fuel level too high
- Float valve worn or stuck open
- Starting technique faulty
- (When flooded, crank the engine with the throttle
- fully opened to allow more air to reach the engine.)

Fuel/air mixture incorrect:
- Pilot screw and/or idle adjusting screw maladjusted
- Pilot jet, or air passage clogged
- Air cleaner clogged, poorly sealed, or missing
- Starter jet clogged

No spark; spark weak:
- Spark plug dirty, broken, or maladjusted
- Spark plug cap or spark plug lead trouble
- Spark plug cap not in good contact
- Spark plug incorrect
- Crankshaft Sensor trouble
- Igniter trouble
- Ignition coil trouble
- Battery voltage low
- Ignition or engine stop switch shorted
- Wiring shorted or open
- Fuse blown

Compression Low:
- Spark plug loose
- Cylinder head not sufficiently tightened down
- No valve clearance
- Cylinder, piston worn
- Piston ring bad (worn, weak, broken, or sticking)
- Piston ring/groove clearance excessive
- Cylinder head gasket damaged
- Cylinder head warped
- Valve spring broken or weak
- Valve not seating properly (valve bent, worn, or carbon accumulation on the seating surface)
- Compression release mechanism trouble

Poor Running at Low Speed:

Spark weak:
- Spark plug dirty, broken, or maladjusted
- Spark plug cap or spark plug lead trouble
- Spark plug cap shorted or not in good contact
- Spark plug incorrect
- Igniter trouble
- Crankshaft Sensor trouble
- Ignition coil trouble
- Battery voltage low

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LIST OF ABBREVIATIONS

A	ampere(s)	lb	pounds(s)
ABDC	after bottom dead center	m	meter(s)
AC	alternating current	min	minute(s)
ATDC	after top dead center	N	newton(s)
BBDC	before bottom dead center	Pa	pascal(s)
BDC	bottom dead center	PS	horsepower
BTDC	before top dead center	psi	pound(s) per square inch
°C	degree(s) Celcius	r	revolution
DC	direct current	rpm	revolution(s) per minute
F	farad(s)	TDC	top dead center
°F	degree(s) Fahrenheit	TIR	total indicator reading
ft	foot, feet	V	volt(s)
g	gram(s)	W	watt(s)
h	hour(s)	Ω	ohm(s)
L	liter(s)		

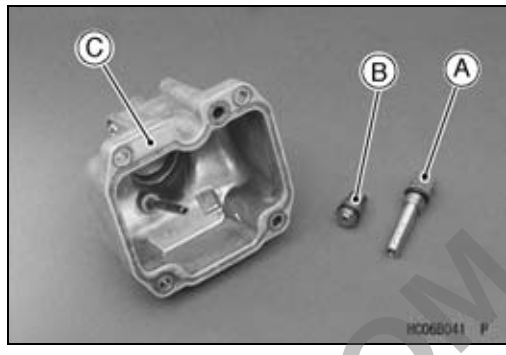
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Read OWNER'S MANUAL before operating.

Carburetor

- Disassemble the carburetor (see Carburetor Disassembly).
- Clean the carburetor (see Carburetor Cleaning).
- Check the carburetor holder, starter plunger, plunger cap, idle adjusting screw, pilot screw, needle jet holder [A], and float valve seat [B] and the gaskets on the carburetor cap and float bowl [C] are in good condition.

★If any of the O-rings or gaskets are not in good condition, replace them.

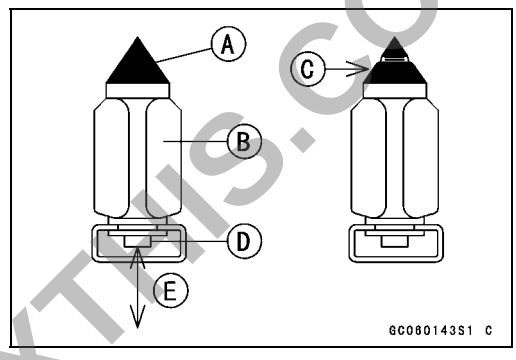


- Check the plastic tip [A] of the float valve needle [B]. It should be smooth, without any grooves, scratches, or tears.

★If the plastic tip is damaged [C], replace the needle.

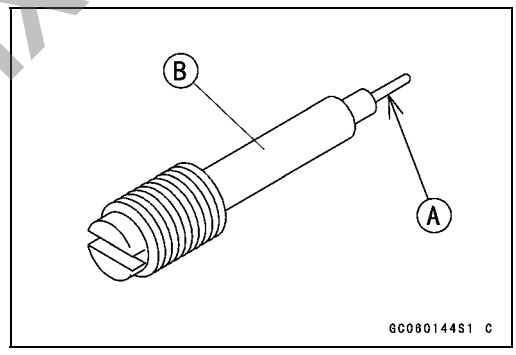
- Push the rod [D] in the other end of the float valve needle and then release it [E].

★If it does not spring out, replace the float valve needle.



- Check the tapered portion [A] of the pilot screw [B] for wear or damage.

★If the pilot screw is worn or damaged on the tapered portion, it will prevent the engine from idling smoothly. Replace it.



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Engine Right Side



- Apply molybdenum disulfide oil to the threads of the balancer gear nut and balancer drive gear nut.
- Align the punch marks [A] on the balancer drive gear and the balancer gear [B].
- Tighten:

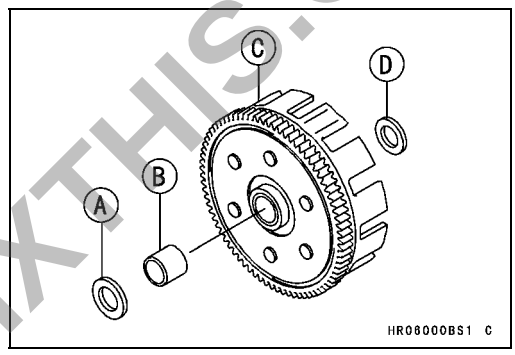
Torque - Balancer Gear Nut: 118 N·m (12 kgf·m, 87 ft·lb)

- Tighten:

Special Tool - Socket Wrench: 57001-1354

Torque - Balancer Drive Gear Nut: 83 N·m (8.5 kgf·m, 61 ft·lb)

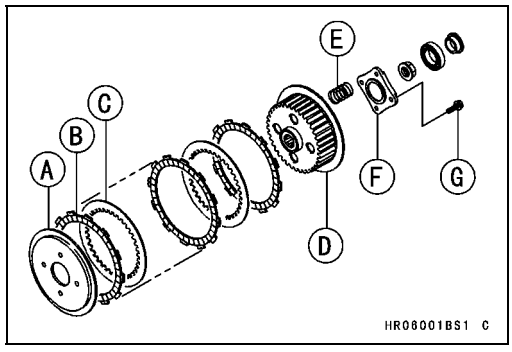
- Bend a tab [C] of the toothed washer into the slot in the nut.



- Apply molybdenum disulfide oil to the drive shaft and crankshaft.
- Install:
  Thinner Spacer [A] (20.2 x 36 x 2)
  Collar [B] and Clutch Housing [C]

○Apply engine oil to the outer surface of collar.

- Install:
  Thicker Spacer [D] (20.2 x 35 x 4)



- Install:
  Clutch Operating Plate [A]
  Friction Plate [B]
  Steel Plate [C]
  Clutch Hub [D]
  Spring [E]
  Spring Holder [F]
  Clutch Spring Bolts [G]
- Tighten:

Torque - Clutch Spring Bolts: 12 N·m (1.2 kgf·m, 104 in·lb)

CAUTION

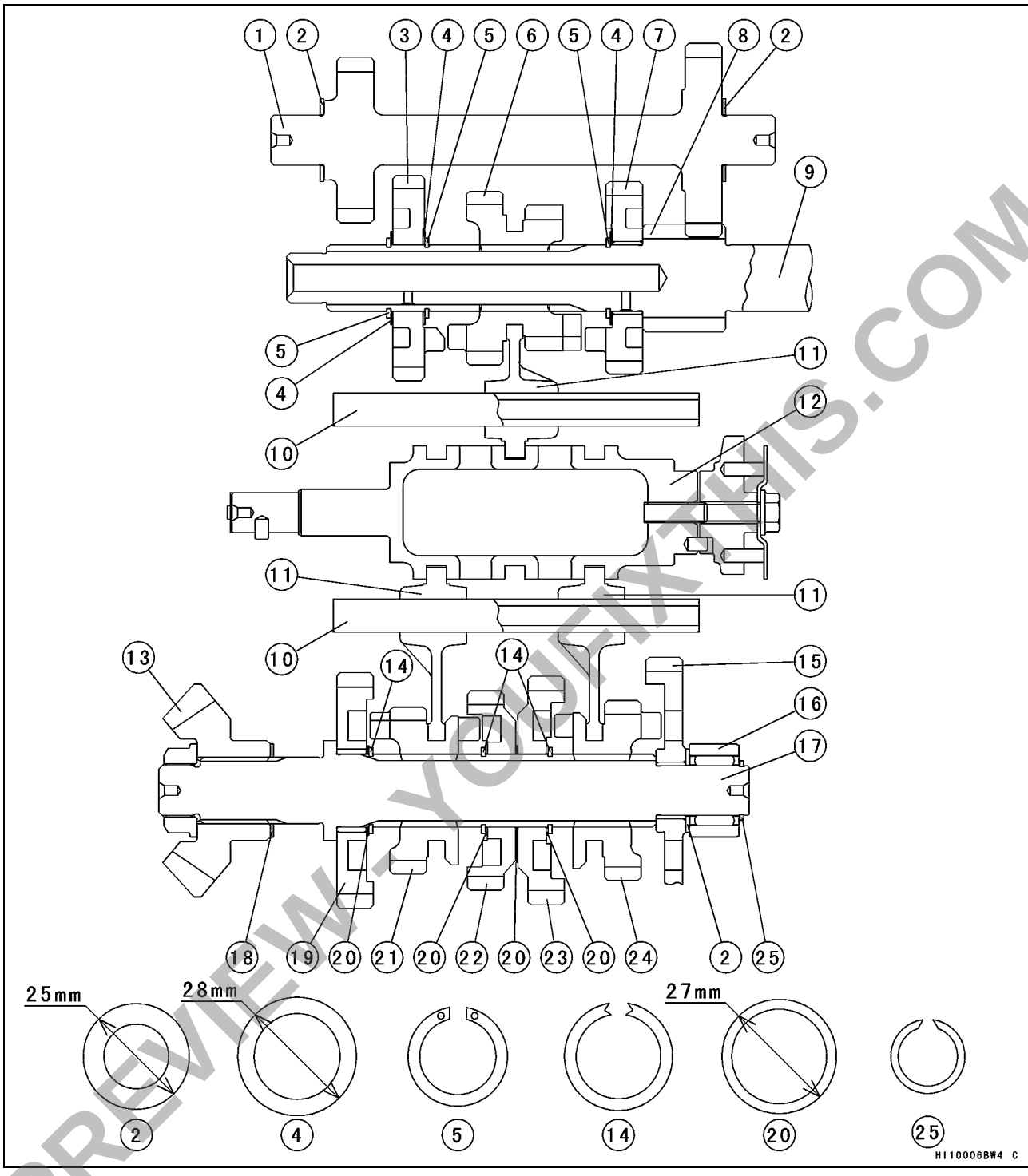
If new dry steel plates and friction plates are installed, apply engine oil to the surfaces of the each plate to avoid clutch plate seizure.



- There should be a gap [A] between the clutch wheel and housing.
- Apply molybdenum disulfide oil to the secondary clutch hub nut and tighten it lightly.

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Transmission



1. Reverse Shaft
2. Washer
3. Top Gear (28T)
4. Washer
5. Circlip
6. 3rd/2nd Gear (23T/19T)
7. 4th Gear (26T)
8. Low Gear (13T)
9. Input Shaft
10. Shift Rod
11. Shift Fork
12. Shift Drum
13. Bevel Gear
14. Circlip
15. Low Gear (38T)
16. Needle Bearing
17. Output Shaft
18. Shim
19. Reverse Gear (33T)
20. Washer
21. Top Gear (22T)
22. 3rd Gear (27T)
23. 2nd Gear (33T)
24. 4th Gear (24T)
25. Circlip

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Brake Adjustment

- Mount the cam lever at a new position so that the cam lever has the proper angle when the brake is fully applied.

Cam Lever Angle (front and rear)
Standard: 80 ~ 90°

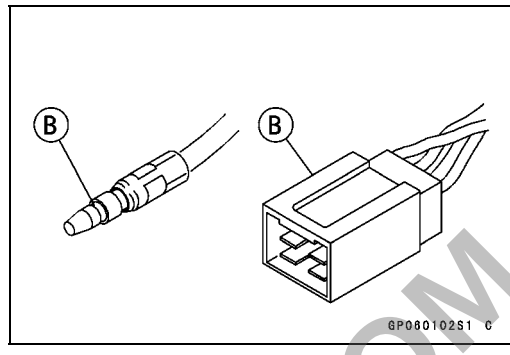
WARNING

When remounting the cam, be sure that the position of the indicator on the serrated shaft is not altered. A 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 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.

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Precautions

Male Connectors [B]



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