

Fuel System

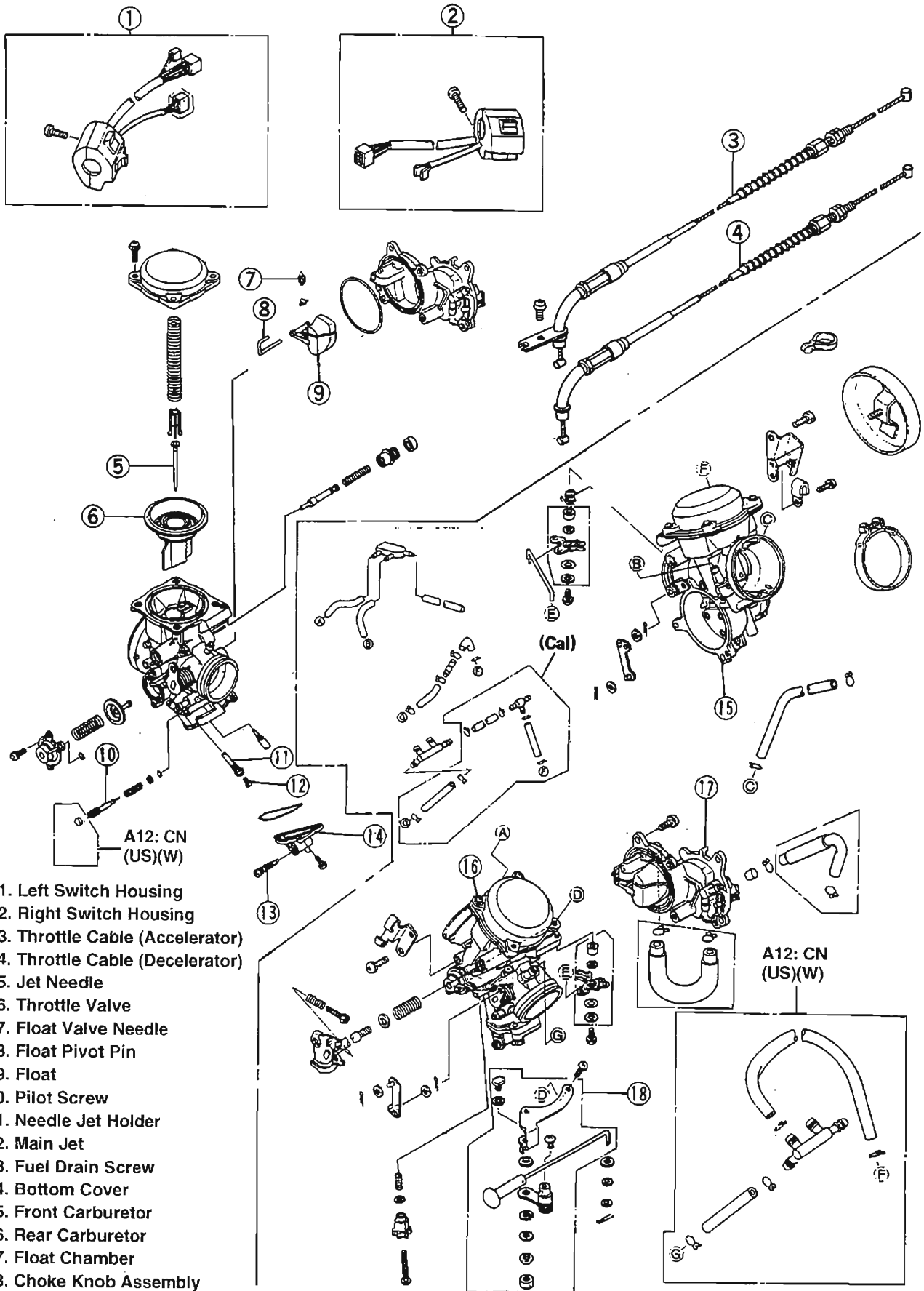
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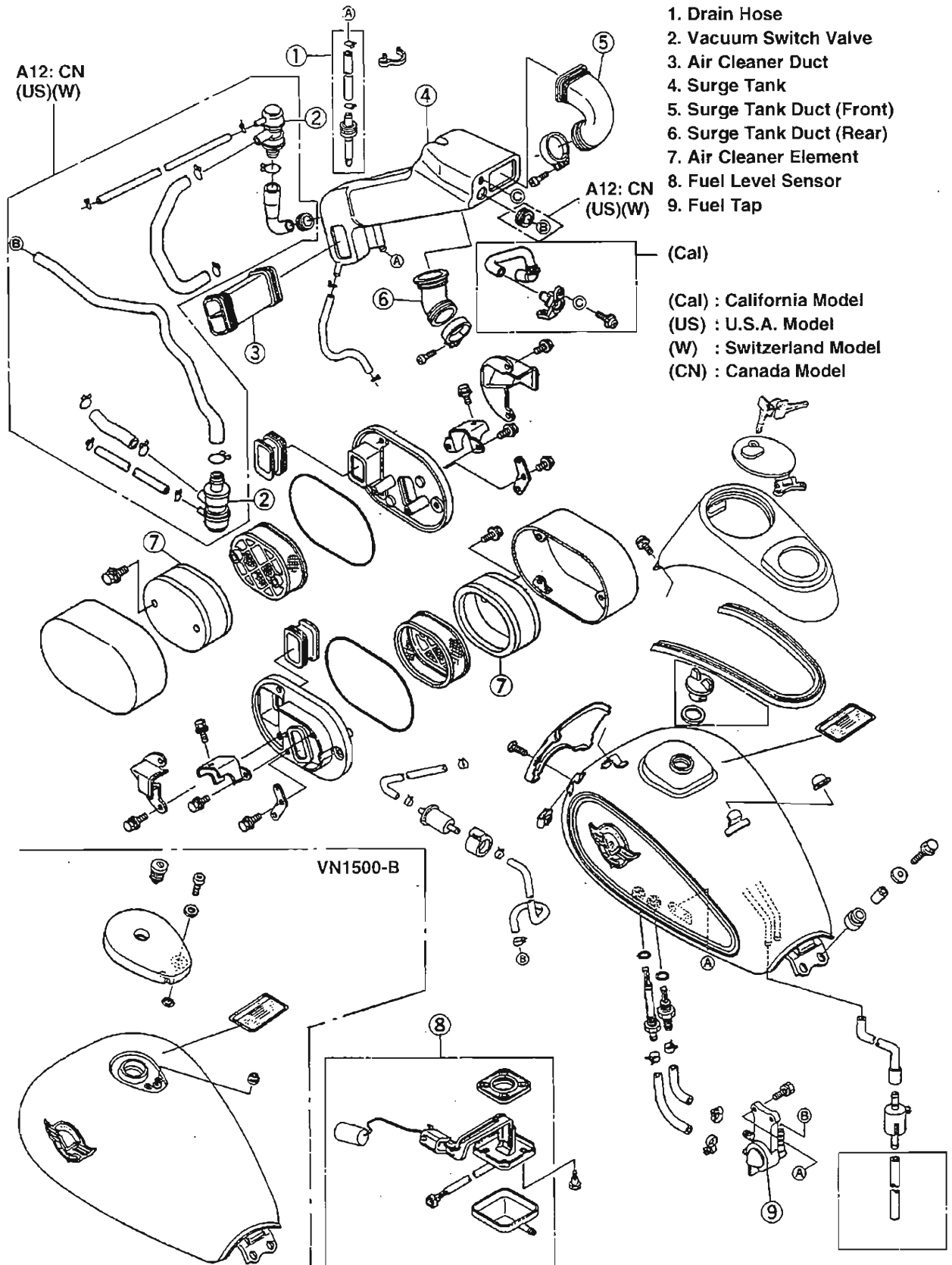
2-2 FUEL SYSTEM

Exploded View

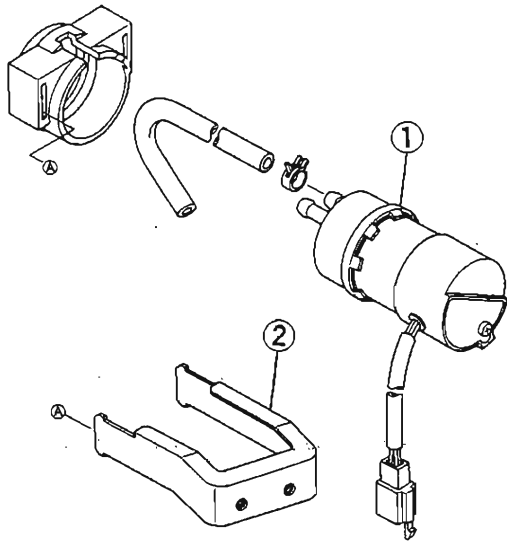


1. Left Switch Housing
2. Right Switch Housing
3. Throttle Cable (Accelerator)
4. Throttle Cable (Decelerator)
5. Jet Needle
6. Throttle Valve
7. Float Valve Needle
8. Float Pivot Pin
9. Float
10. Pilot Screw
11. Needle Jet Holder
12. Main Jet
13. Fuel Drain Screw
14. Bottom Cover
15. Front Carburetor
16. Rear Carburetor
17. Float Chamber
18. Choke Knob Assembly

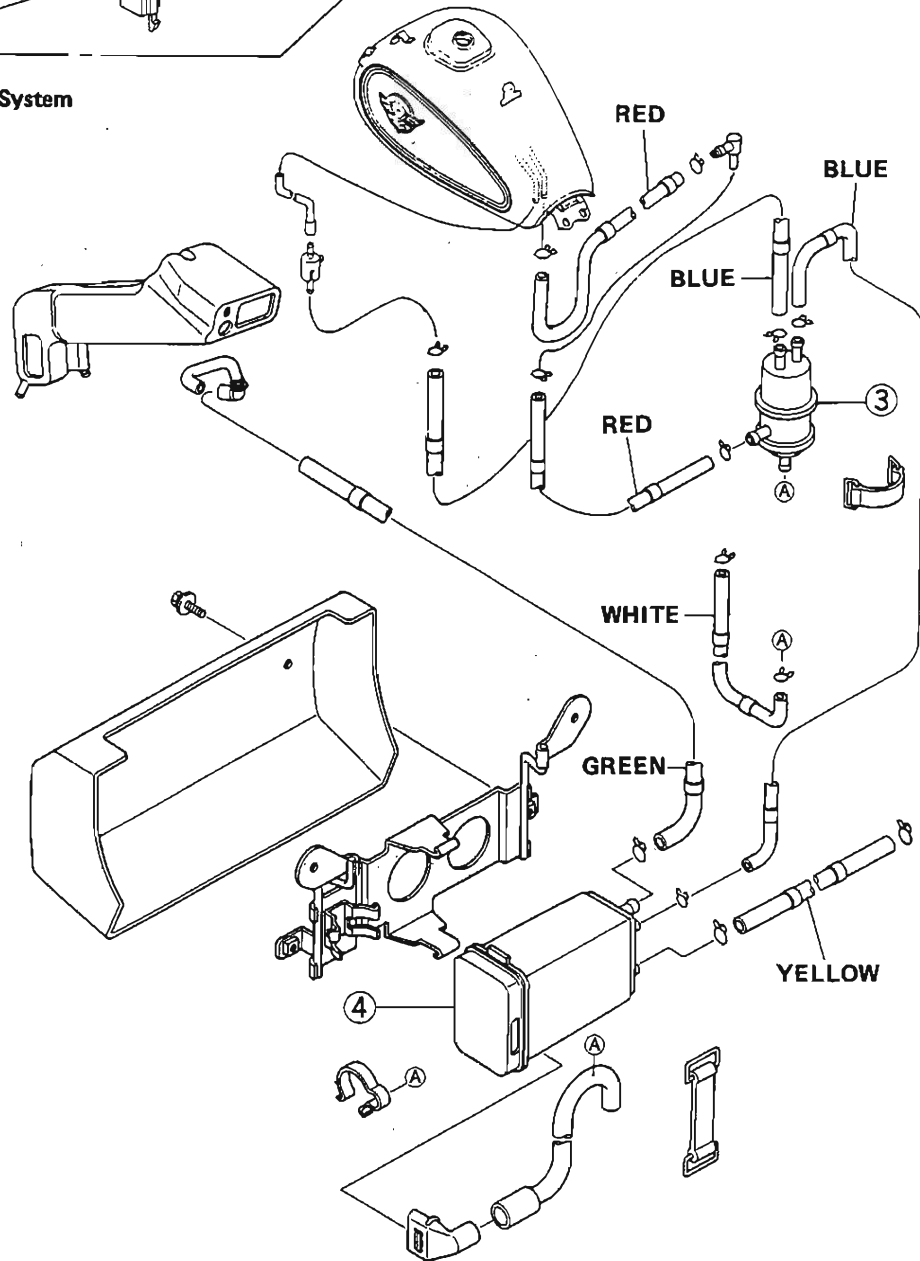
FUEL SYSTEM 2-3



2-4 FUEL SYSTEM



Evaporative Emission Control System (California Model)



1. Fuel Pump
2. Bracket
3. Liquid/Vapor Separator
4. Canister

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Specifications

Item	Standard	
Throttle Grip :		
Throttle grip free play	2—3 mm	
Carburetors :	VN1500-A	VN1500-B
Make, type	Keihin, CVK36	←←
Main jet:		
Front	#112,(Cal) #118	#130
Rear	#112,(US)(C) #115,(Cal) #118	#132
Jet needle:		
Front	N53S,(Cal) N53U, (W) N67F	N36P,(Cal)N36R,(W)N77D
Rear	N67A,(US)(C) N53T, (Cal) N53V, (W) N67G	N36Q,(Cal)N36S,(W)N77D
Pilot screw	1 1/2 turns out, A3-(FG) ,A4-(EU): 2 1/4 turns out,(US)(W)←	←←
Service fuel level:		
Front	2. 2 ± 1 mm	←←
Rear	4. 2 ± 1 mm	←←
Idle speed	750—850 r/min (rpm)	←←
Synchronization vacuum	Less than 2.7 kPa (2 cm Hg)	(W) 850—950 r/min (rpm) ←←

(US) : U.S.A. Model

(Cal) : California Model

(Swi) : Switzerland Model

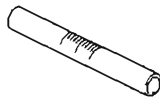
(C) : Canada Model

(FG) : Germany Model

(EU) : Europe Model

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Special Tools

Fuel Level Gauge: 57001-1017



2-6 FUEL SYSTEM

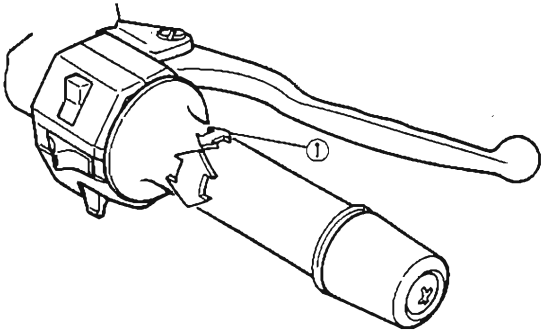
Throttle Grip and Cables

Throttle Cable Adjustment

- Check throttle grip free play.

Throttle Grip Free Play

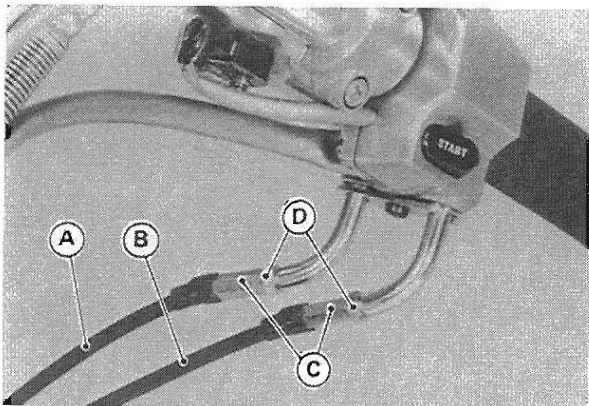
Standard: 2 – 3 mm



1. Throttle Grip Free Play

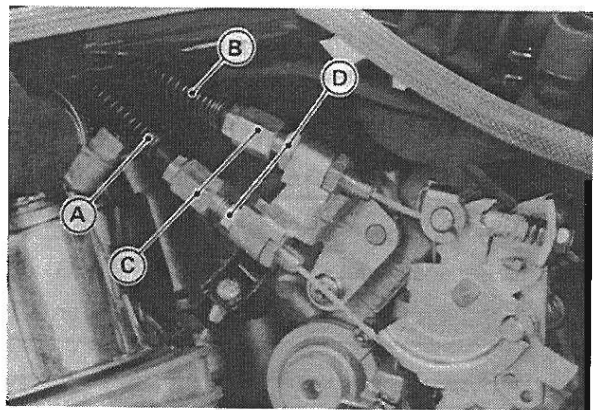
- ★ If the free play is incorrect, adjust the throttle cables.

- Loosen the locknuts, and screw both throttle cable adjusters in completely at the upper ends of the throttle cables so as to give the throttle grip plenty of play.
- While holding the throttle grip stop against the stopper inside, turn out the decelerator cable adjuster stopping at the point where the grip just begins to be turned back from the completely stopped position. Tighten the locknut.



A. Accelerator Cable
B. Decelerator Cable
C. Adjusters
D. Locknuts

- Turn the accelerator cable adjuster until 2 – 3 mm of throttle grip play is obtained. Tighten the locknut.
- ★ If the throttle cables cannot be adjusted by using the cable adjusters at the upper ends of the throttle cables, use the adjusters at the lower ends of the cables.
- Remove the fuel tank mounting bolts and move the tank toward the rear.
- First give the throttle grip plenty of play at the upper ends of the throttle cables as mentioned above. Tighten the locknuts.
- Loosen the locknuts, and screw both throttle cable adjusting nuts in fully at the lower ends of the throttle cables so as to give the throttle grip plenty of play.



A. Accelerator Cable
B. Decelerator Cable
C. Adjusting Nuts
D. Locknuts

- Turn out the decelerator cable adjusting nut in the same way with the adjuster at the upper end of the decelerator cable making sure that the throttle grip is not turned back at all. Tighten the locknut.
- Turn the accelerator cable adjusting nut until the correct throttle grip free play is obtained.
- Check the following.
 - Start the engine.
 - Turn the handlebar from side to side while idling the engine.
- ★ If the speed varies, the throttle cable may be poorly routed or it may be damaged.
- Correct any problem before operating the motorcycle.

WARNING

- Operation with an improperly adjusted, incorrectly routed, or damaged cable could result in an unsafe riding condition.

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Carburetors

Idle Speed Adjustment

- Start the engine and warm it up thoroughly.
- Turn the handlebar from side to side while idling the engine.
- ★ If idle speed varies, the throttle cables may be poorly routed or they may be damaged.
- Correct any problem before operating the motorcycle.

WARNING

○ Operation with an improperly adjusted, incorrectly routed, or damaged cable could result in an unsafe riding condition.

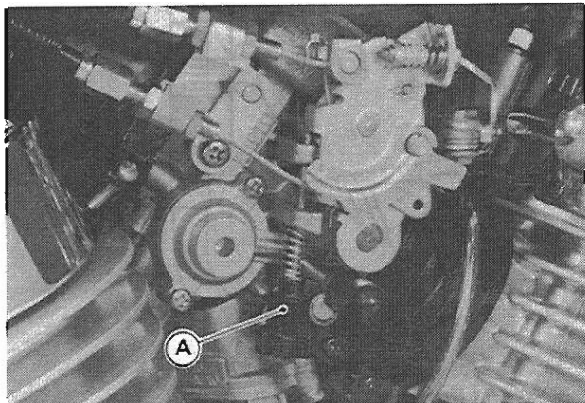
- Check idle speed with a tachometer.

Idle Speed

Standard: 750 – 850 r/min (rpm)
 (W) 850 – 950 r/min (rpm)

(W) : Swiss Model (VN1500-B)

- Turn the idle adjusting screw until idle speed is correct.



A. Idle Adjusting Screw

High Altitude Performance Adjustment (US model)

- To improve the EMISSION CONTROL PERFORMANCE of vehicles operated above 4000 feet, Kawasaki recommends the following Environmental Protection Agency (EPA) approved modification.
- Change the main jet and pilot jet for high altitude use.

High Altitude Carburetor Specifications

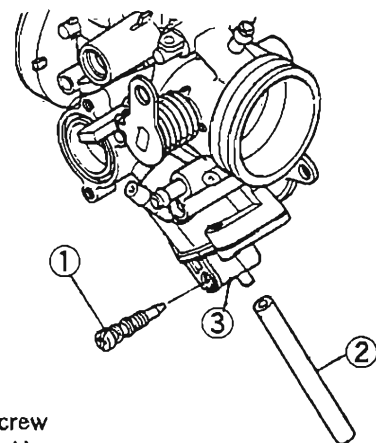
Main Jet	VN1500-A
	Front : #110 (Cal) #115
	Rear : #112 (Cal) #115
	VN1500-B
	Front : #128
	Rear : #130
Pilot Jet	#40

Fuel System Cleanliness Inspection

WARNING

○ Gasoline is extremely flammable and can be explosive under certain conditions. Turn the ignition switch OFF. Do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

- Connect a suitable hose to the fitting at each carburetor bottom cover.
- Run the lower ends of the hoses into a suitable container.
- Turn out each drain plug a few turns and drain the float chambers.



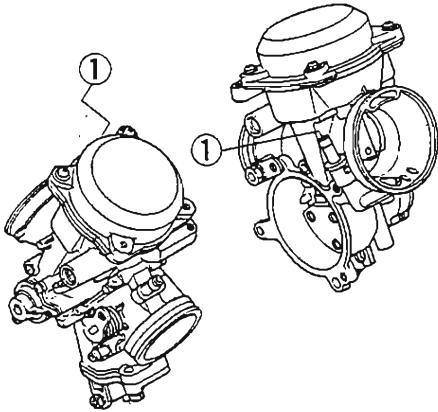
1. Drain Screw
2. Suitable Hose
3. Bottom Cover

- Check to see if water or dirt comes out.
- Tighten the drain plugs.
- ★ If any water or dirt appeared during the above inspection, clean the fuel system.

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Carburetor Synchronization

- Warm up the engine.
- Check idle speed and adjust if necessary.
- Attach a commercially available vacuum gauge to the vacuum hose fittings on the carburetors.



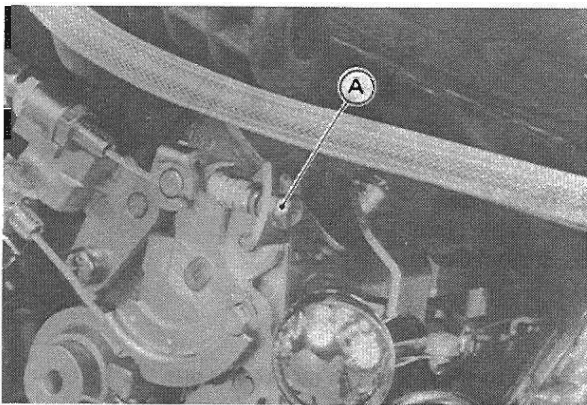
1. Vacuum Hose Fittings

- Start the engine and let it idle to measure the engine intake vacuum.
- ★ If the intake vacuum difference between the cylinders exceeds the limit, synchronize the carburetors.

Carburetor Synchronization Vacuum

Less than 2.7 kPa (2 cmHg) difference between two carburetors

- With the engine idling, turn the adjuster bolt to synchronize the butterfly valves.
- When the adjuster bolt is **turned in**, the rear cylinder vacuum increases. When the bolt is **backed out**, the rear cylinder vacuum decreases.



A. Adjuster Bolt

- ★ If proper carburetor synchronization cannot be obtained by using the adjusting bolt, check for dirt or blockage, and then check the pilot screw settings.
- Check the carburetor synchronization again.

NOTE

○ Do not turn the pilot screws carelessly during carburetors synchronization. You may cause poor running at low engine speed.

- Check idle speed.

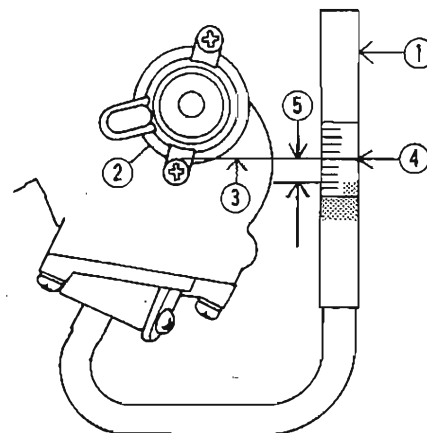
Service Fuel Level Adjustment

NOTE

○ Carburetor fuel level cannot be checked with the carburetors removed. If there is any doubt, check the fuel level before removing the carburetors.

WARNING

- Gasoline is extremely flammable and can be explosive under certain conditions. Turn the ignition switch OFF. Do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.
- Secure the motorcycle in a true vertical position.
- When the engine has been removed, set it on a flat surface with the carburetors installed. Put the fuel tank on a bench, and connect the fuel tap to the carburetors using a suitable hose.
- Prepare a fuel hose.
- Connect a fuel level gauge (special tool) to the carburetor bottom cover with the hose.
- Hold the gauge vertically against the side of the carburetor body so that the "zero" line is at the upper edge of the coasting enricher mounting screw.



1. Fuel Level Gauge: 57001-1017
2. Coasting Enricher
3. Upper Edge of the Screw
4. "Zero" Line

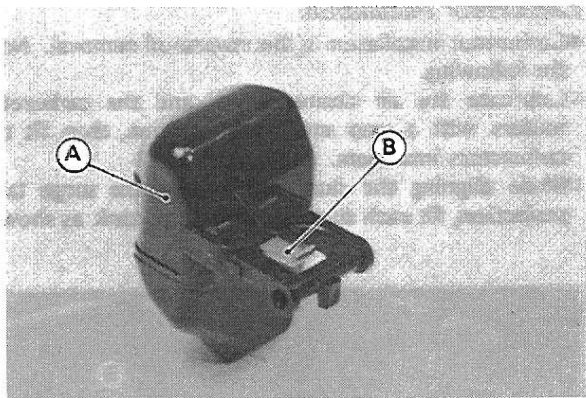
- Turn the fuel tap to the ON or RES position to feed fuel to the carburetor, then turn out the carburetor drain plug a few turns.
- Read the fuel level in the gauge and compare it to the specification. Screw in the carburetor drain plug.

Service Fuel Level

From the upper edge of the coasting enricher mounting lower screw.

- Front : below 1.2 – 3.2 mm
- Rear : below 3.2 – 5.2 mm

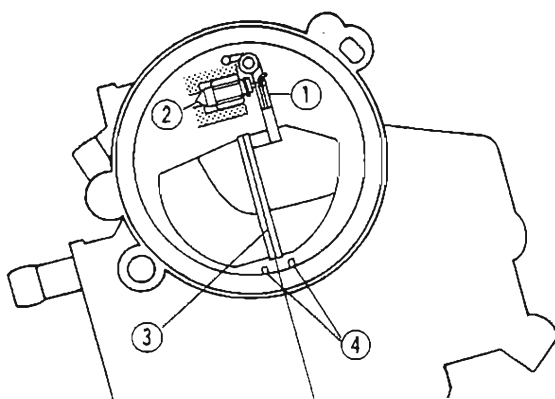
- ★ If the fuel level is incorrect, remove the carburetors and separate them (see Carburetor Separation).
- To adjust the fuel level, bend the tang on the float arm to change the float height.



A. Float B. Tang

○ Increasing the float height lowers the fuel level and decreasing the float height raises the fuel level.

Fuel Level Adjustment



1. Float Tang
2. Float Valve
3. Float Mating Edge
4. Chamber Ribs

NOTE

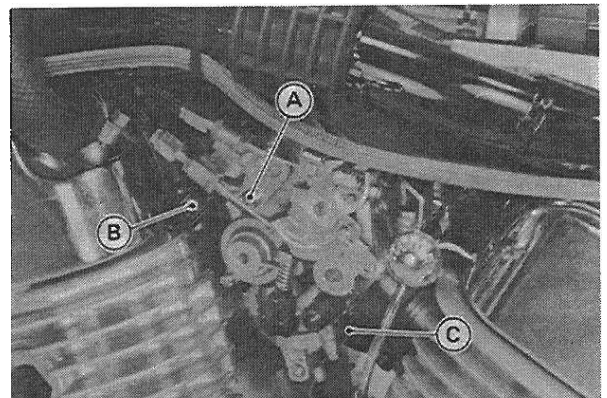
○ Do not push the needle rod in during the float height measurement.

Carburetor Removal

WARNING

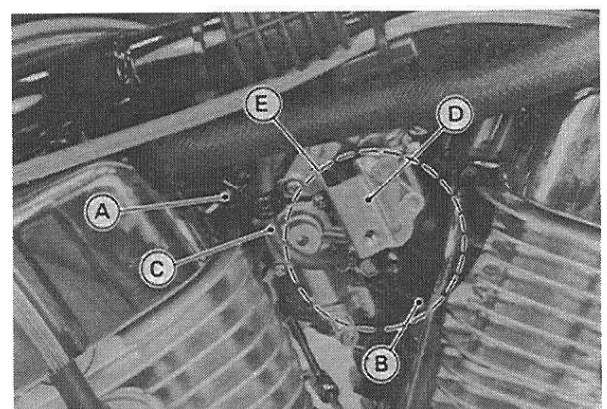
○ Gasoline is extremely flammable and can be explosive under certain conditions. Turn the ignition switch OFF. Do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

- First remove the following.
 - Seat
 - Fuel Tank
 - Drain the fuel from the carburetor.
 - Loosen the throttle cable adjuster.
- Then remove the following from the left side.
 - Throttle Cable Holder Screw
 - Surge Tank Duct Clamp Screw (Loosen)
 - Carburetor Holder Clamp Screw (Loosen)
 - Vacuum Hose



A. Throttle Cable Holder Screw
B. Surge Tank Duct Clamp Screw
C. Carburetor Holder Clamp Screw

- Then remove the following from the right side.
 - Carburetor Cover
 - Carburetor Cover Bracket
 - Surge Tank Duct Clamp Screw (Loosen)
 - Carburetor Holder Clamp Screw (Loosen)
 - Vacuum Hose



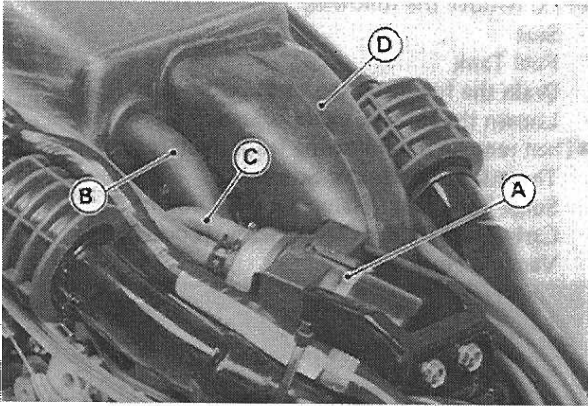
A. Surge Tank Duct Clamp Screw
B. Carburetor Holder Clamp Screw
C. Vacuum Hose
D. Carburetor Cover Bracket
E. Carburetor Cover

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- Then remove the following from the upper end.
 - Clean Air System Hose
 - Fuel Pump and Pull the output hose from the carburetor.
 - Fuel Pump Wire Connector
 - Surge Tank Duct (Front Carburetor)

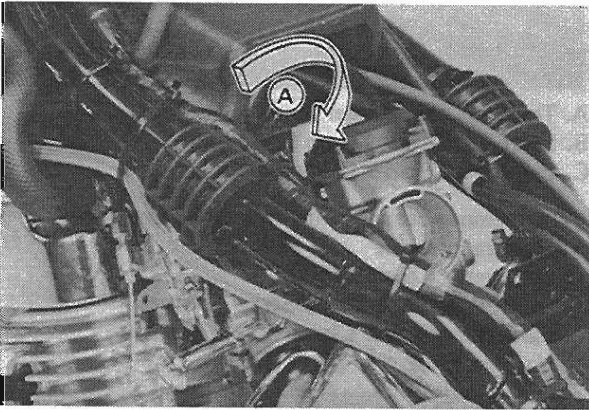
WARNING

- Fuel spilled from the fuel pump is hazardous.

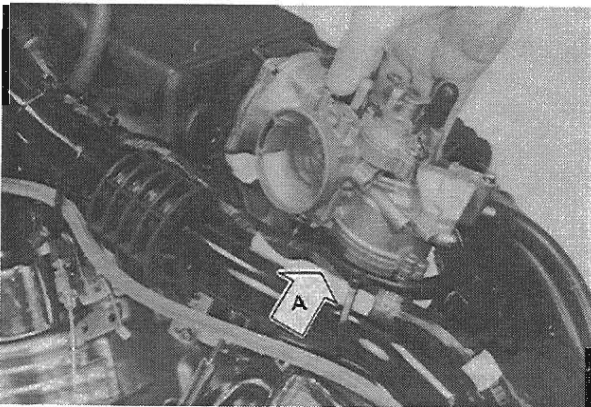


A. Fuel Pump C. Output Hose
B. Clean Air System Hose D. Surge Tank Duct

- Push the surge tank with the thermostat housing toward the front.
- Remove the carburetors as shown.



A. Turn the carburetor assembly clockwise.



A. Take the carburetor set out from between the cylinder heads.

WARNING

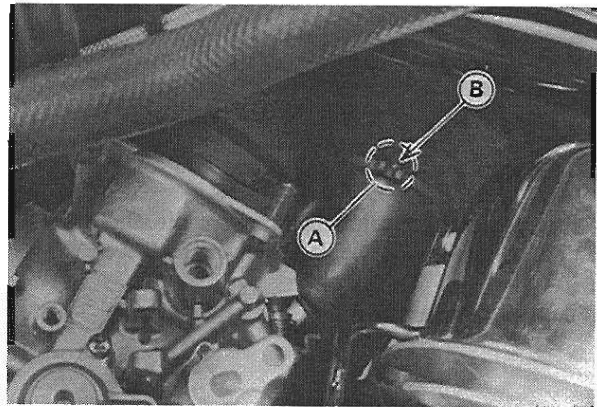
- If dirt or dust is allowed to pass through into the carburetors, the throttle may become stuck, possibly causing an accident.

CAUTION

- If dirt gets through into the engine, excessive engine wear and possibly engine damage will occur.

Carburetor Installation

- Carburetor installation is the reverse of removal. Note the following.
 - Lubricate the air cleaner ducts and the carburetor holders with a soap and water solution, then fit the carburetors into them.
 - While aligning the duct notch onto the surge tank projection, fit each duct into the surge tank as shown.



A. Notch B. Surge Tank Projection

CAUTION

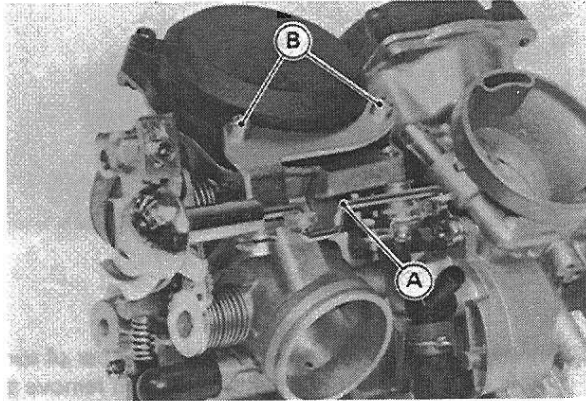
- Keep the hoses free of obstruction.
- After installing the carburetors, perform the following.
 - Check fuel leakage from the carburetors.

WARNING

- Fuel spilled from the carburetors is hazardous.
- Adjust the following items if necessary.
 - Idle Speed
 - Carburetor Synchronization
 - Throttle Cables

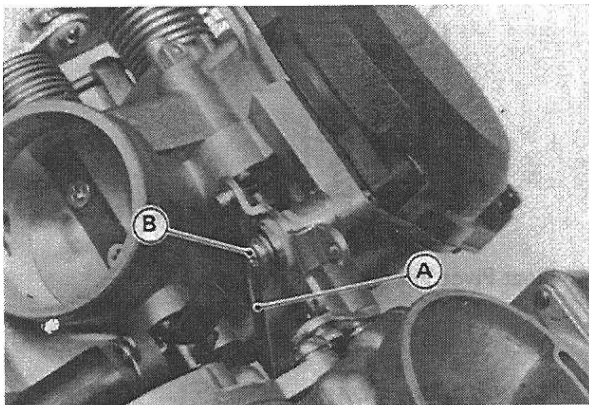
Carburetor Separation

- Remove the front carburetor.
- Remove the following parts.
 - Choke Rod Mounting Plate Screws
 - Choke Rod



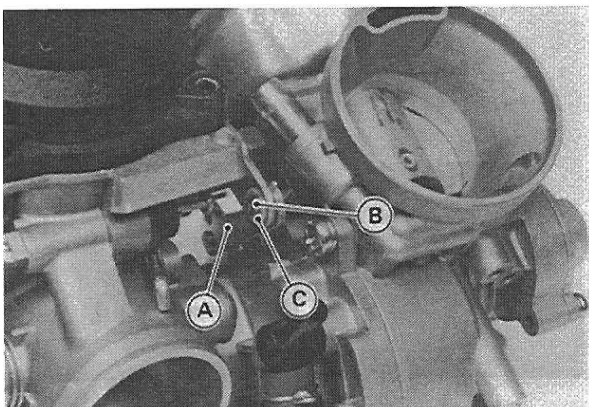
A. Choke Rod B. Screws

Rear Carburetor Choke Rod Pivot Screw
Choke Link Rod



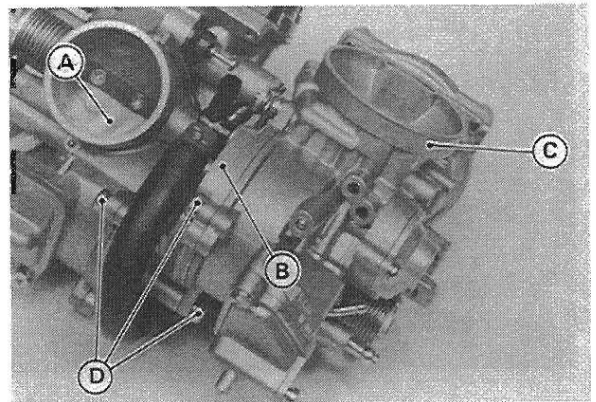
A. Choke Link Rod B. Choke Rod Pivot Screw

Throttle Link Rod Cotter Pin and Plastic Washer



A. Throttle Link Lever C. Plastic Washer
B. Cotter Pin

Front Carburetor Float Chamber Screws (3)

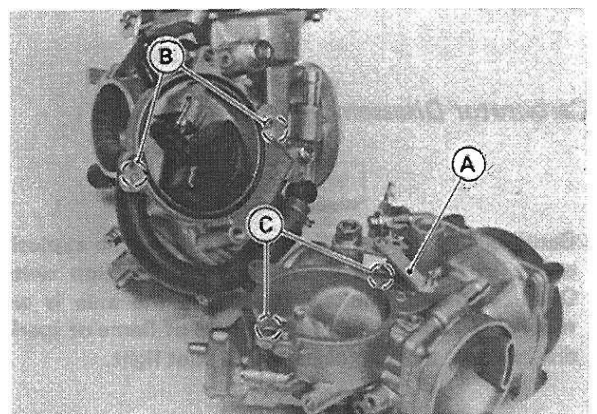


A. Rear Carburetor C. Front Carburetor
B. Float Chamber D. Screws

- Remove the rear carburetor float chamber screws and separate the rear carburetor.

Carburetor Combination

- Installation is reverse of removal. Note the following.
- Fit the front carburetor to the float chamber as shown.

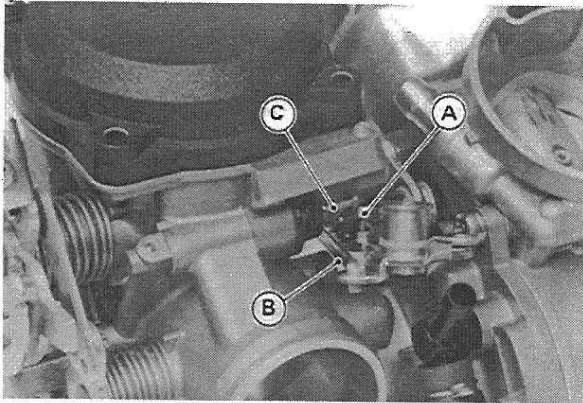


A. Throttle Link Lever C. Notches
B. Projections

- Connect the choke link rods and install the plastic washer and the throttle link lever cotter pin.

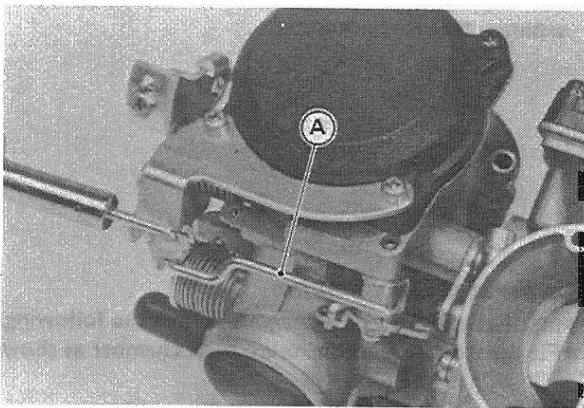
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○Install the rear carburetor starter plunger lever as shown.



A. Starter Plunger Lever C. Starter Plunger
B. Choke Link Rod

○Install the choke rod to the carburetor.



A. Choke Rod

Carburetor Disassembly

WARNING

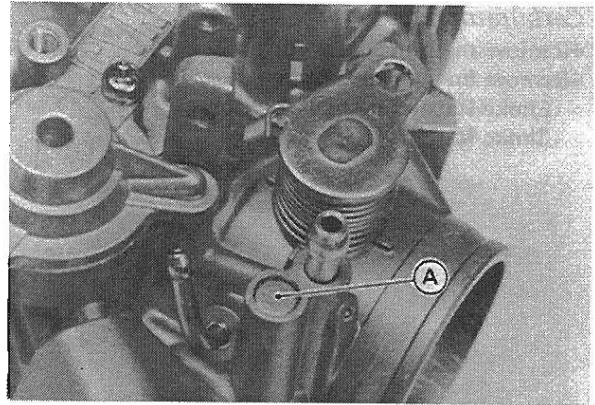
○Gasoline is extremely flammable and can be explosive under certain conditions. Turn the ignition switch OFF. Do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

CAUTION

○During carburetor disassembly, be careful not to damage the diaphragm. Never use a sharp edge to remove the diaphragm.

●Remove the pilot screw plug as follows:

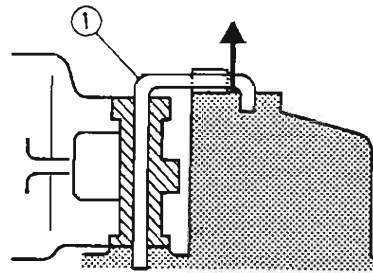
○Punch a hole in the plug and pry it out with an awl or other suitable tool.



A. Pilot Screw Plug

○Turn in the pilot screw and count the number of turns until it seats fully but not tightly, and then remove the screw. Use this number of turns to set the screw to its original position during assembly.

●While prying out the float pivot pin with an awl or other suitable tool, pull it out with needle nose pliers.



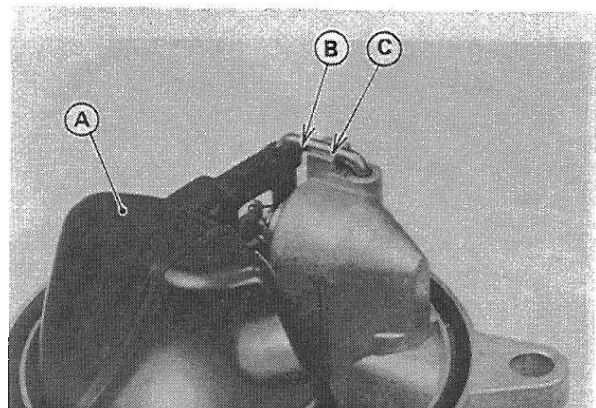
1. Float Pivot Pin

Carburetor Assembly

●Note the following

●Install the float on the carburetor.

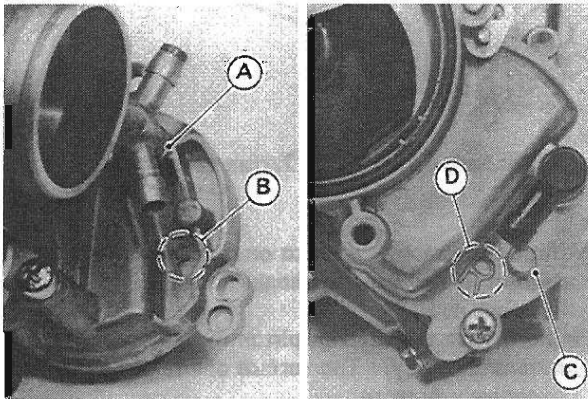
○Tap the float pivot pin lightly, to press it evenly into the float chamber body as shown.



A. Float
B. Do not tap here.

C. Tap the pin as far as it will go.

- Replace the float chamber and bottom cover O-rings with new ones when installing.
- Install the front carburetor onto the **F** marked chamber and the rear carburetor onto the **R** marked chamber respectively.



A. Front Carburetor C. Rear Carburetor
B. F Mark D. R Mark

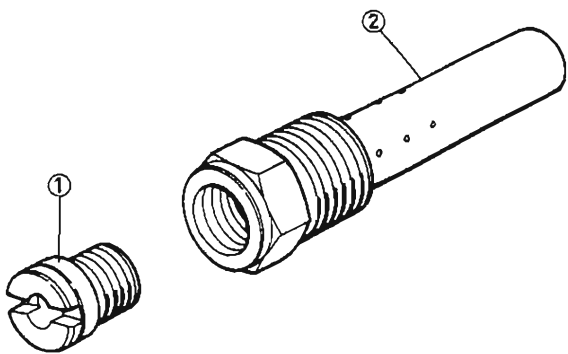
- Keep dirt or other foreign material from entering into the float chamber.

CAUTION

- If dirt gets into the float chamber, the float valve may become stuck open, causing carburetor overflow and requiring carburetor cleaning.

CAUTION

- Do not force the needle jet holder (air bleed pipe) and main jet or overtighten them. They could be damaged requiring replacement.

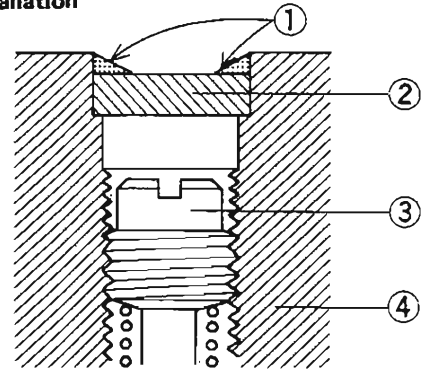


1. Main Jet 2. Needle Jet Holder

- Turn in the pilot screw fully but not tightly, and then back it out the same number of turns counted during disassembly.
- A carburetor has different "turns out" of the pilot screw for each individual unit. When setting the pilot screw, use the "turns out" determined during disassembly. Use the specifications in this manual only if the original number is unknown.
- For the US and Switzerland models, install the pilot screw plug as follows:
- Install a new plug in the pilot screw hole, and apply a small amount of a bonding agent to the circumference of the plug to fix the plug.

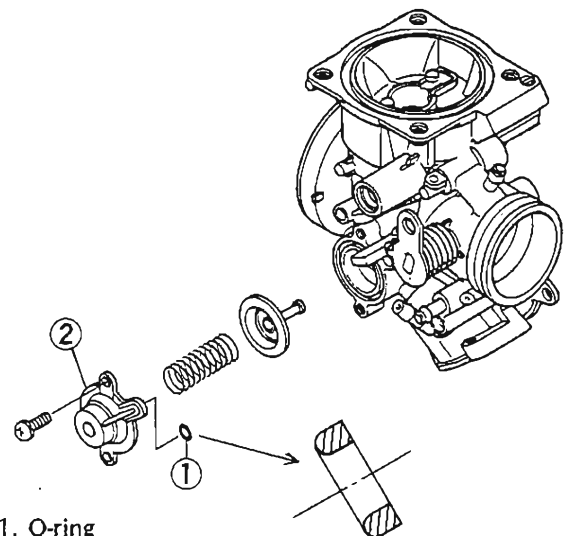
CAUTION
Do not apply too much bonding agent to the plug, or the pilot screw itself may be fixed.

Plug Installation



1. Apply a bonding agent. 3. Pilot Screw
2. Plug 4. Carburetor Body

- Install the O-ring in the coating enricher system cover so that the flat side faces in.



1. O-ring
2. Cover

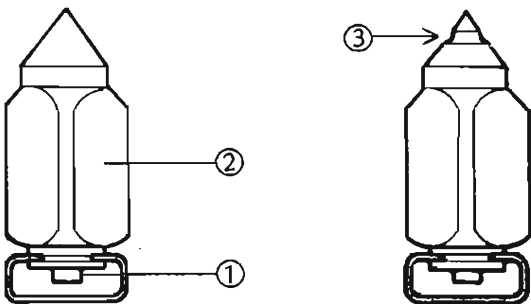
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Carburetor Inspection

WARNING

○Gasoline is extremely flammable and can be explosive under certain conditions. Turn the ignition switch OFF. Do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.

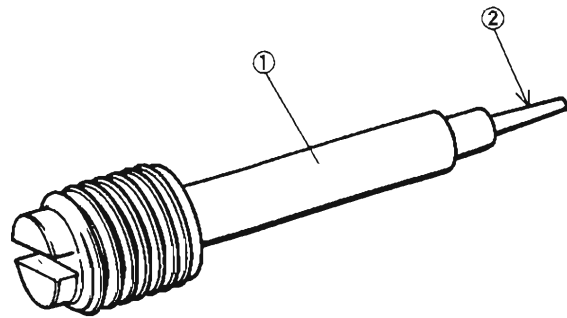
- Move the choke lever to check that the starter plungers move smoothly and return by spring tension.
- ★If the starter plungers do not work properly, replace the carburetor.
- Turn the throttle lever to check that the throttle butterfly valves move smoothly and return by spring tension.
- ★If the throttle valves do not move smoothly, replace the carburetors.
- Check that the O-rings and diaphragms are in good condition.
 - O-rings for Drain Plug and Coasting Enricher
 - Diaphragms for Vacuum Piston and Coasting Enricher
- ★If any of the O-rings or diaphragms are not in good condition, replace them.
- Check the plastic tip of the float valve needle. It should be smooth, without any grooves, scratches, or other damage.



1. Rod
2. Valve Needle

3. Valve Needle Wear

- ★If the plastic tip is damaged, replace the needle.
- ★If it does not spring out, replace the needle.
- Check the tapered portion of the pilot screw for wear or damage.



1. Pilot Screw

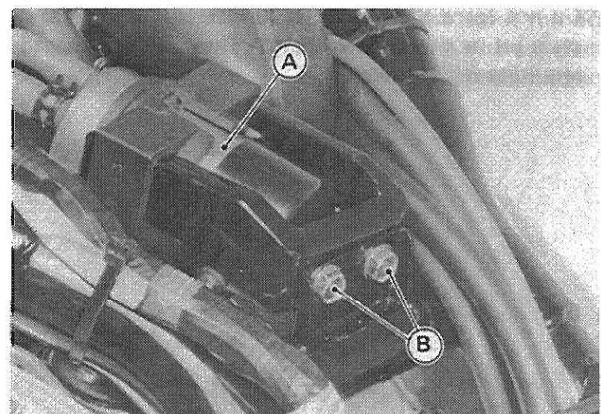
2. Tapered Portion

- ★If the pilot screw is worn or damaged on the tapered portion, it will prevent the engine from idling smoothly. Replace it.
- Check that the vacuum piston moves smoothly in the carburetor body. The surface of the piston must not be excessively worn.
- ★If the vacuum piston does not move smoothly, or if it is very loose in the carburetor body, replace both the body and the vacuum piston.
- Check the inlet vacuum passage for the coasting enricher system, if backfiring occurs too often.
- ★If the passage is clogged, blow it clear with compressed air.

Fuel Pump

Removal

- Remove the fuel tank.



A. Fuel Pump

B. Pump Bolts

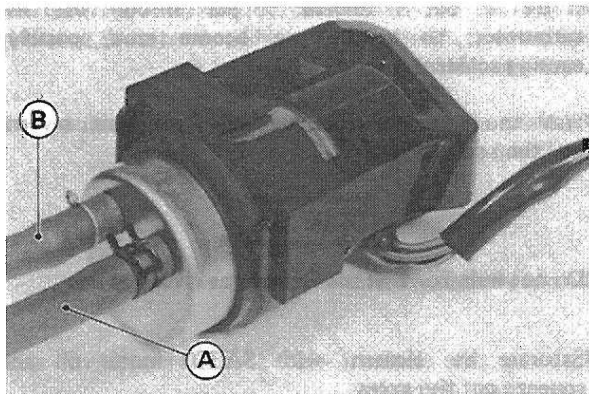
- Remove the bolts and take the fuel pump out of the frame.
- Disconnect the pump wire connector.
- Pull the fuel hoses off the fuel pump.

WARNING

- Gasoline is extremely flammable and can be explosive under certain conditions. Turn the ignition switch OFF. Do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.
- Be prepared for fuel spillage.

Installation Notes

- Connect the fuel hoses to the pump fittings as shown.



A. Fuel Hose from Filter
B. Fuel Hose to Carburetors

- Be sure to route the hoses so they will not be kinked or stretched.

Fuel Filter

Removal

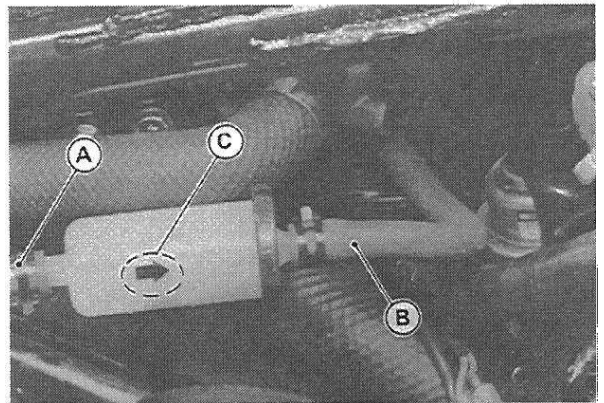
- Remove the fuel tank.
- Remove the RH frame top tube cover.
- Pull the filter off the hose.

WARNING

- Gasoline is extremely flammable and can be explosive under certain conditions. Turn the ignition switch OFF. Do not smoke. Make sure the area is well ventilated and free from any source of flame or sparks; this includes any appliance with a pilot light.
- Be prepared for fuel spillage.

Installation Notes

- Install the fuel filter so that the arrow on it shows the fuel flow from the fuel tank to the fuel pump.



A. Fuel Hose from Tank C. Arrow
B. Fuel Hose to Pump

- Be sure to route the hoses so they will not be kinked or stretched.

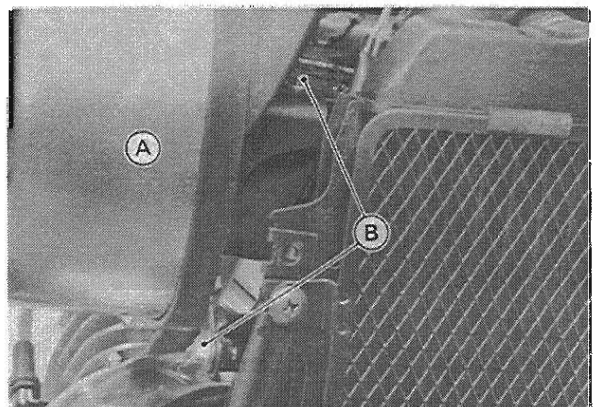
Inspection

- Visually inspect the fuel filter.
- ★If the filter is clear with no signs of dirt or other contamination, it is OK and need not be replaced.
- ★If the filter is dark or looks dirty, replace it. Also, check the rest of the fuel system for contamination.

Air Cleaner

Element (Housing) Removal

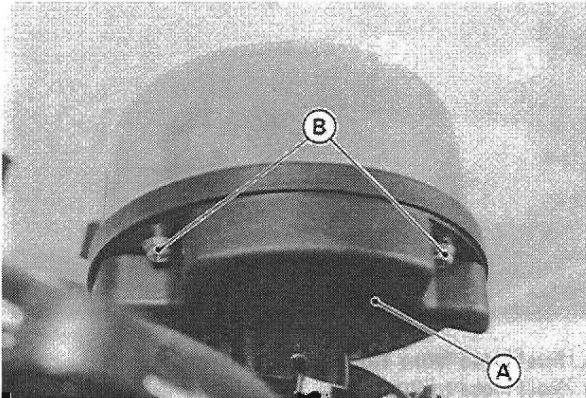
- Remove the following parts.
 - Seat
 - Fuel Tank
 - Frame Top Tube Cover
 - Radiator Cover
- Remove the air cleaner housing mounting bolts.



A. Air Cleaner Housing B. Bolts

2-16 FUEL SYSTEM

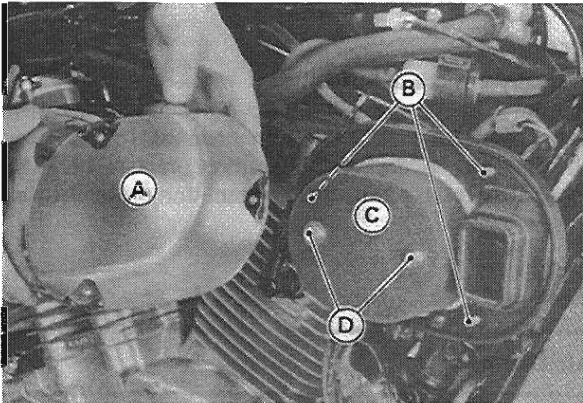
- Remove the screws and take the inner cover off the housing (VN1500-B Only).



A. Inner Cover B. Screws

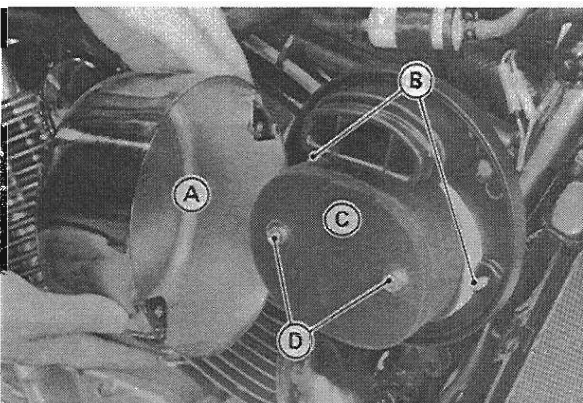
- Remove the air cleaner cover by taking out the cover bolts.

VN1500-A



A. Cover C. Element
B. Cover Bolts D. Element Bolts

VN1500-B



A. Cover C. Element
B. Cover Bolts D. Element Bolts

- Remove the bolts to remove the element.
- Remove the other side element in the same manner.

Element Cleaning

WARNING

- Clean the element in a well-ventilated area, and take care that there is no spark or flame anywhere near the working area; this includes any appliance with a pilot light. Because of the danger of highly flammable liquids, do not use gasoline or low flash-point solvents to clean the element. A fire or explosion could result.

- Remove the air cleaner element.

WARNING

- If dirt or dust is allowed to pass through into the carburetors, the throttle may become stuck, possibly causing accident.

- Wash the element in a bath of high flash-point solvent and then squeeze it dry.

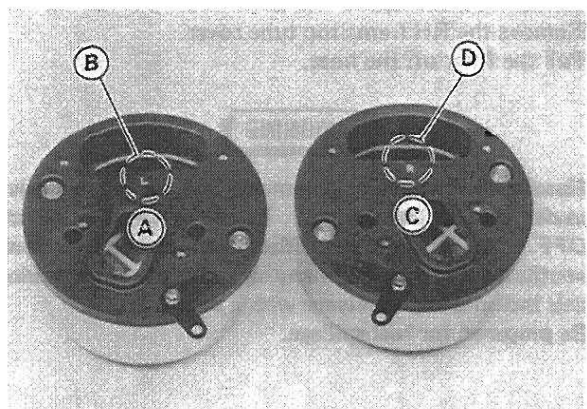
CAUTION

- Do not wring or twist the element as it may tear.

- Saturate the element with SAE30 motor oil and squeeze out the excess.
- Wrap the element in a clean dry cloth and squeeze it as dry as possible.

Air Cleaner Housing Installation

- Note the following.
- The right and left air cleaner housing are identical. Use the marked R for the right side and L for the left side.



A. LH Housing C. RH Housing
B. "L" Mark D. "R" Mark

