PREFACE

This manual provides a wide range of information about Honda float bowl carburetors.

Unless otherwise noted, the instructions are based on the GX engine series, but they hold true for the majority of Honda Power Equipment carburetors.

Since 1995, Honda has produced engines that comply with either or both the California Air Resources Board (CARB) and/or the Environmental Protection Agency (EPA) regulations. All engines produced since August 31, 1995, are certified.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at any time without notice.

As you read this manual, you will find information that is preceded by a NOTICE symbol. The purpose of this message is to help prevent damage to the carburetor, other property, or the environment.

SAFETY MESSAGES

Your safety and the safety of others are very important. To help you make informed decisions, we have provided safety messages and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing these products. You must use your own good judgement.

You will find important safety information in a variety of forms, including:

- **Safety Labels** – on the product.
- **Safety Messages** – preceded by a safety alert symbol ⚠ and one of three signal words: DANGER, WARNING, or CAUTION.

These signal words mean:

⚠ DANGER	You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.
⚠ WARNING	You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.
⚠ CAUTION	You CAN be HURT if you don't follow instructions.

- **Instructions** – how to service carburetors correctly and safely.

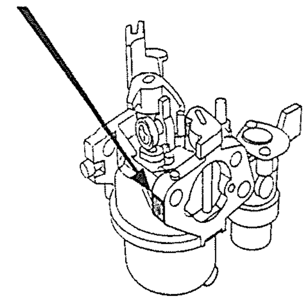
CONTENTS

MEMO

INTRODUCTION 1

INTRODUCTION

CARBURETOR
CODE



All Honda Power Equipment engines (except metering diaphragm, LPG-fueled, and diesel models) have float-bowl-type carburetors. Currently there are eleven (eight most popular covered in this manual) distinct carburetor code groups. The code is cast into the carburetor as shown in the illustration.

The code groups differ in body shape, control location, and jet types, but they all share similar inspection and adjustment procedures. This manual is intended to be a general guide to Honda Power Equipment float bowl type and metering diaphragm carburetors. Refer to the appropriate shop manual for more specific information about individual models.

CARBURETOR CODE GROUPS LISTED BY ENGINE TYPE AND MODEL

Carburetor Code	Engine Type	Applicable engine models (Applicable power product)
BB	4-stroke SV (Side Valve) • G-GV engine	G100, G150, G200, G300, G400 GV100, GV150, GV200, GV400, EX800, EM/EX500 (Generator, Tiller, Snowblower, Pump, Lawn Mower, etc.)
	4-stroke, air-cooled OHC (Overhead Cam) • GC/GS/GCV/GSV engine	GC135, GC160, GC190, GS190, GCV135, GCV160, GCV190, GSV190 (Generator, Tiller, Snowblower, Pump, Lawn Mower, etc.)
	4-stroke, liquid-cooled OHC (Overhead Cam)	GX360K0
BE	4-stroke OHV (Overhead Valve) • GX engine • GXV engine	GX110, GX120, GX140, GX160, GX200, GX240, GX270, GX340, GX390, GXV120, GXV140, GXV160, GXV270, GXV340, GXV390 iGX440 (Generator, Tiller, Snowblower, Pump, Lawn Mower Power Carrier, Tractor, Riding Mower, Lawn Tractor)
	4-stroke, water-cooled OHC (Overhead Cam)	GX360K1 (Generator, Tractor)
BF	4-stroke SV (Side Valve), OHC, OHV	G100K1, GE100, GV100K1, EG550/650, EX800K1, EX1000, F210/220, HR173, GX100, GXH50, GXV50, GXV57 (Generator, Tiller, Lawn Mower)
BG	4-stroke, air cooled OHV, V-twin (Overhead Valve)	GX610, GX620, GXV610, GXV620, GX610K1, GX620K1, GXV610K1, GXV620K1
	4-stroke, liquid-cooled OHC (Overhead Cam)	GX640 (Tractor)
BK	4-stroke, air cooled OHV, V-twin (Overhead Valve)	GX670/GXV670
BW	4-stroke, air cooled OHC, V-twin (Overhead Cam)	GCV520, GXV530
	4-stroke, air cooled OHV, V-twin (Overhead Valve)	GX630, GX660, GX690, GXV630, GXV660, GXV690
HDA	Mini 4-stroke, OHC (Overhead Cam)	GX100 (Rammer engine with diaphragm type carburetor)
WYB	Mini 4-stroke, OHC (Overhead Cam)	GX25, GX35 (Tiller, Trimmer, Water Pump)
WYL	Mini 4-stroke, OHV (Overhead Valve)	GX22, GX31 (Tiller, Trimmer, Water Pump)

SERVICE INFORMATION 2

SERVICE RULES

1. Use Honda Genuine parts and lubricants or their equivalents. Parts that do not meet Honda's design specifications may damage the unit or result in emission violations (see page 2-8).
2. Use the special tools designed for the product.
3. Always install new gaskets, O-rings, etc. when reassembling.
4. Tighten all fasteners to the specified torque during reassembly.
5. Clean the outside of the carburetor before disassembly.
6. Clean dissassembled parts with Honda Carburetor/Combustion Cleaner and then blow dry them with low pressure compressed air.

   Some commercially available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.

   Honda Carburetor Cleaner is 100% free of chlorinated solvents. This product removes gum, varnish, and deposits from carburetor components. Honda Carburetor Cleaner is available in 15-ounce aerosol cans and is specially formulated for use in California.

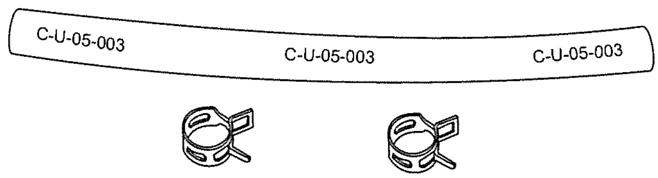
Description	Part Number	Multiple
Carburetor/Combustion Chamber cleaner	CA66916	12

7. After reassembly, check all parts for proper operation, and always check for fuel leakage after repairing a carburetor.

FUEL LINE AND CLAMP CHANGES

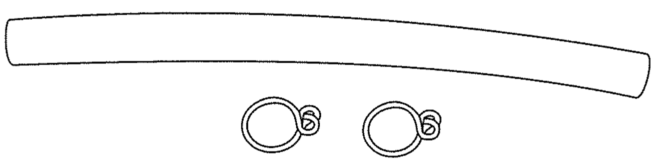
All Honda Power Equipment manufactured after January 1, 2009 (and some manufactured after 1/1/06), uses low-permeable fuel line. The low-permeable fuel line is easy to spot. The fuel line has the EPA Executive Order (C-U-05-003) printed on it and requires "D" style hose clamps.

This type of fuel line is required to ensure proper emissions compliance. Substituting non-low-permeable fuel line is considered tampering (page 2-8).



The low-permeable fuel line has a coating on the inside to keep fuel vapors from escaping. The coating makes the inside of the fuel line slick. To ensure the fuel line stays in place, you must only use the "D" style fuel clamps. The old wire-type clamps will not hold the low-permeable fuel line in place.

The old-style fuel line and wire hose clamps are shown below.



You may use "D" style fuel clamps on the old-style fuel line, but never use wire fuel line clamps on low-permeable fuel line.

FUEL RECOMMENDATIONS

Engines are certified to operate on regular unleaded gasoline with a pump octane rating of 86 or higher.

Never use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt or water in the fuel tank.

You may use regular unleaded gasoline containing no more than 10% ethanol (E10) or 5% methanol by volume. In addition, methanol must contain cosolvents and corrosion inhibitors.

Use of fuels with a content of ethanol or methanol greater than shown above may cause starting and/or performance problems. It may also damage metal, rubber, and plastic parts of the fuel system.

Engine damage or performance problems that result from using a fuel with percentages of ethanol or methanol greater than shown above are not covered under warranty.

If the equipment will be used on an infrequent basis, please refer to STORAGE AND FUEL DETERIORATION (see page 2-6) for additional information regarding fuel deterioration and storage.

Ethanol and Honda Engines

Honda engines are designed and certified to run on regular unleaded gasoline. Honda product owner's manuals specify a maximum of 10% ethanol in gasoline for our products; other oxygenates are also listed. Honda engines are designed for good performance and efficient operation using gasoline containing from 0 to 10% ethanol.

Some facts about ethanol:

- Ethanol is hygroscopic, which means it attracts and retains water. The lower the fuel level in the tank, the more likely you are to experience water contamination. Water from the air ends up in your fuel tank and engine.
- Ethanol is produced from corn, soybeans, sugar cane, and other organic material. It is blended with gasoline (10% ethanol, 90% gasoline) to produce E10.
- Ethanol has less energy than gasoline, so it reduces fuel efficiency.
- Ethanol is an excellent solvent. In high concentrations it will clean and dissolve deposits, rust in the fuel system, and some fuel tank materials. The dissolved material can clog filters or pass through and leave deposits on carburetor jets.
- E85, a mixture of 85% ethanol and 15% gasoline, has been in the news recently. E85 is an alternative fuel; it is not gasoline. Honda engines are not designed or certified to run on E85.
- Refer to the owner's manual for your Honda to get information about the recommended fuels and the currently approved additives.
- To help prevent water contamination problems when using E10, always keep your fuel tank full when storing your equipment.

FUEL SYSTEM PREVENTIVE MAINTENANCE (IN SEASON)

Fuel deterioration is a significant issue affecting carbureted engines. This may cause engine hard starting, fluctuating or no idle, hunting or surging at full throttle, or low power. Current gasoline formulations have a limited shelf life when exposed to heat and air, and can deteriorate in as little as 3 to 4 weeks. So if your equipment is only used once a month or so, storage preparation should be considered.

Carburetor

When exposed to air or heat, the fuel in a carburetor's float bowl begins to oxidize, turning into a varnish-like or gummy substance that will restrict or block the carburetor jets. All carburetor float bowls are vented to the atmosphere, allowing the fuel to oxidize at a slow, steady rate. Potential problems can be reduced by closing the fuel valve and running the engine out of gas after each use.

Equipment Fuel tank

The gasoline in the equipment's tank is also exposed to the air through the tank's vent. To slow the deterioration of gasoline in the tank, keep as much air as possible out of the tank by keeping the tank full during periods of inactivity.

Fuel Storage Container

Gasoline should be stored in a clean, plastic, sealed container designed for fuel storage. Close the vent (if equipped) and store the container away from direct sunlight in a cool area if possible. The use of metal fuel containers is discouraged, as over time, they can rust. If the tiny particles of rust are transported into the carburetor by the fuel, they may block the tiny passages in the carburetor.

If it takes more than 3 months to use the fuel in the container, we suggest adding a fuel stabilizer to the fuel when the container is filled.

The *Distributor's Limited Warranty* does not cover fuel system damage or engine performance problems resulting from improper storage.

STORAGE (OFF SEASON)

Depending on the region where the equipment is operated, fuel formulations may deteriorate and oxidize rapidly. Fuel deterioration and oxidation can occur in as little as 30 days and may cause damage to the carburetor and/or fuel system.

Gasoline will oxidize and deteriorate in storage. Old gasoline will cause hard starting, and it leaves gum deposits that clog the fuel system. If the gasoline in the engine deteriorates during storage, the carburetor and other fuel system components may need to be serviced or replaced.

The length of time that gasoline can be left in the fuel tank and carburetor without causing functional problems will vary with such factors as gasoline blend, storage temperatures, and whether the fuel tank is partially or completely filled. The air in a partially filled fuel tank promotes fuel deterioration. Very warm storage temperatures accelerate fuel deterioration. Fuel deterioration problems may occur within a few months, or even less if the gasoline was not fresh when you filled the fuel tank.

The *Distributor's Limited Warranty* does not cover fuel system damage or engine performance problems resulting from neglected storage preparation.

You can extend fuel storage life by adding a gasoline stabilizer that is formulated for that purpose, or you can avoid fuel deterioration problems by draining the fuel tank and carburetor.

Service according to the table below:

STORAGE TIME	RECOMMENDED SERVICE PROCEDURE TO PREVENT HARD STARTING
Less than 1 month	No preparation required
1 to 2 months	1. Fill with fresh gasoline. 2. Add gasoline stabilizer*.
2 months to 1 year	1. Fill with fresh gasoline 2. Add gasoline stabilizer*. 3. Drain the carburetor float bowl.
1 year or more	1. Drain the fuel tank and carburetor. 2. Change the engine oil. 3. Lubricate the cylinder.

* Use Honda's fuel stabilizer that is formulated to extend storage life. Follow the instructions on the container.

Fuel Stabilizer, 500ml
Part Number: CA66926

Using a Fuel Stabilizer

Use a fuel stabilizer if the equipment will be used infrequently, but more than once a year.

To counteract the deterioration of gasoline, use Honda's fuel stabilizer (see page 2-6) at the recommended ratio. The amount of stabilizer required varies, depending on how long the fuel will be stored. Follow the manufacturer's instructions listed on the fuel stabilizer container. If the equipment is used less than twice monthly, you should keep fuel stabilizer in the equipment's fuel tank at all times. Be sure you run the engine for at least 10 minutes after adding the stabilizer. This allows the stabilized fuel mixture to reach and fill the carburetor.

Draining the Fuel

The fuel tank and carburetor should be drained for long term storage (one year or longer). Even fuel stabilizer will not prevent fuel deterioration problems when the equipment is in long-term storage. The volatile components of the fuel will vaporize and flow out the fuel tank vent and carburetor vent, leaving gummy non-volatile deposits in the fuel system.

In many cases, the equipment can simply be run out of fuel. Or the fuel can be drained from the fuel tank by removing the carburetor float bowl drain bolt (if applicable), leaving the fuel valve open, and draining the fuel into an appropriate container for proper disposal.

The owner's manual describes the procedure for proper storage of the equipment. See the STORAGE or HELPFUL TIPS AND SUGGESTIONS chapter of your owner's manual.

EMISSION REGULATIONS

REPLACEMENT PARTS

The use of non-original equipment replacement parts may impair the effectiveness of the engine's emission control system. If such a replacement part is used in the repair or maintenance of the engine and it is determined that it causes a failure of a warranted part, any claims for repair of the engine may be denied. If the part in question is not related to the reason your engine requires repair, the claim will not be denied. If the use of a non-original part causes the engine's emission level to change, you may be tampering (see below).

The easiest way to insure the proper parts are placed on the engine is to use only Honda Genuine parts and have the equipment/engine model, type, and serial number when accessing the appropriate parts diagram. When replacing a carburetor assembly, it may also help to have the carburetor ID number.

COMPLIANCE: TAMPERING

Tampering is defined simply as doing something that adversely affects engine emissions.

Don't modify the engine. Make all necessary engine adjustments and repairs according to the engine manufacturer's shop manuals and service bulletins.

Manufacturers, distributors, and dealers are held to a different standard on tampering than owners of the equipment.

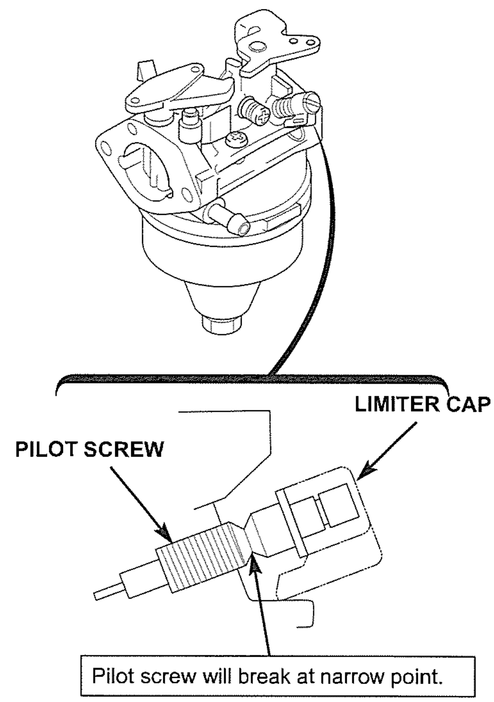
PILOT SCREW/LIMITER CAP REPLACEMENT

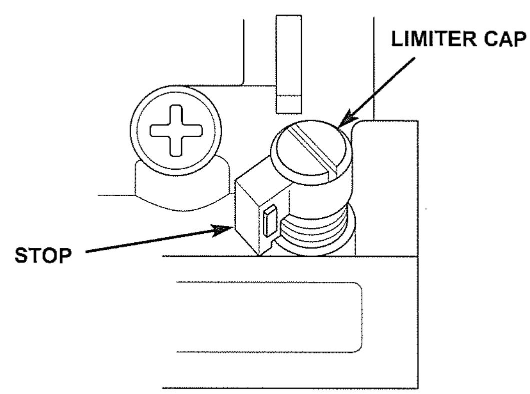
Removal of the limiter cap requires breaking the pilot screw. A new pilot screw and limiter cap must be installed.

1. When the limiter cap has been broken off, remove the broken pilot screw.
2. Place the spring on the replacement pilot screw, and install it on the carburetor.
3. Turn the pilot screw in until it is lightly seated, then turn the screw out the required number of turns.

   Refer to the appropriate shop manual for carburetor pilot screw initial opening setting.
4. Apply Loctite® 638 to the inside of the limiter cap, then install the cap so the stop prevents the pilot screw from being turned counterclockwise.

   Be careful to avoid turning the pilot screw while installing the limiter cap. The pilot screw must stay at its required setting.





CARBURETOR SERVICE 3

BB-TYPE

GC135/160/190 • GS160/190

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

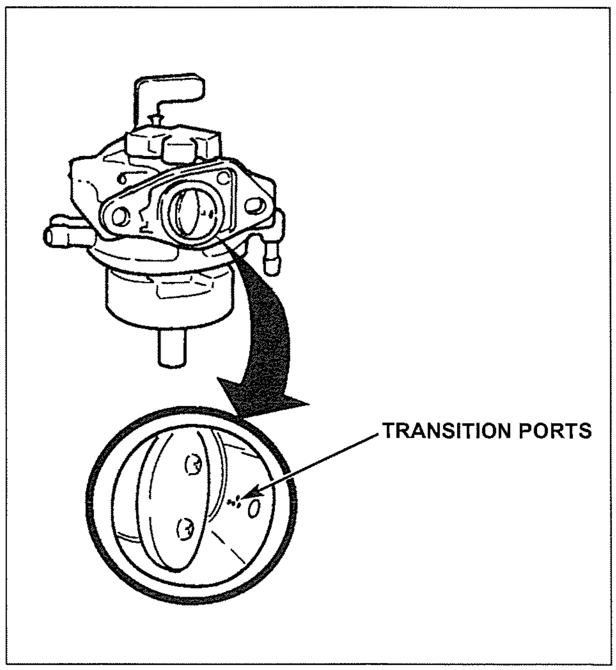
Transition Circuit

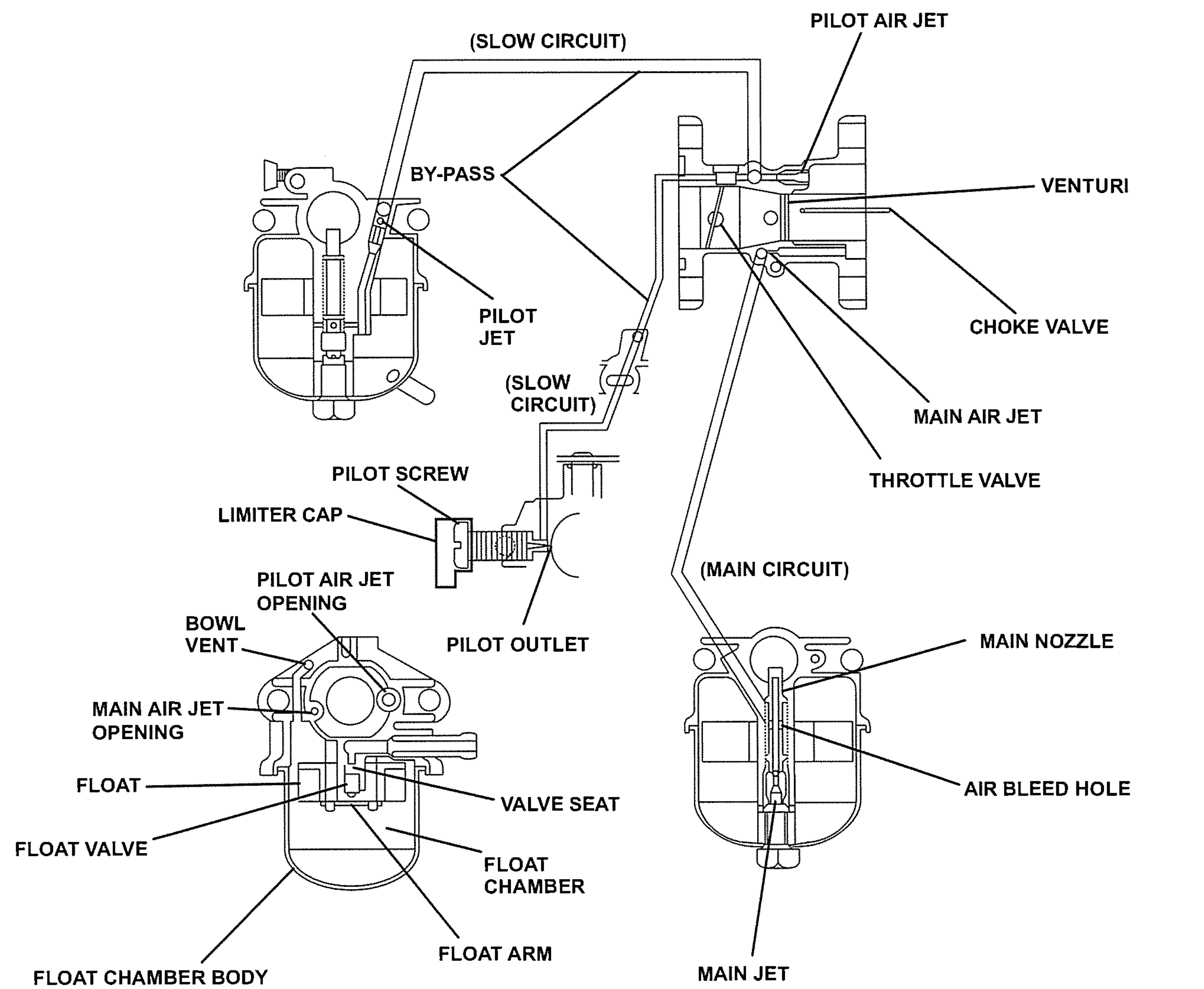
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




PILOT AIR JET
(SLOW CIRCUIT)
BY-PASS
VENTURI
PILOT
JET
CHOKE VALVE
(SLOW
CIRCUIT)
MAIN AIR JET
PILOT SCREW
THROTTLE VALVE
LIMITER CAP
(MAIN CIRCUIT)
PILOT AIR JET
OPENING
BOWL
VENT
PILOT OUTLET
MAIN NOZZLE
MAIN AIR JET
OPENING
FLOAT
VALVE SEAT
AIR BLEED HOLE
FLOAT VALVE
FLOAT
CHAMBER
FLOAT ARM
FLOAT CHAMBER BODY
MAIN JET

CARBURETOR TROUBLESHOOTING INSPECTION POINTS

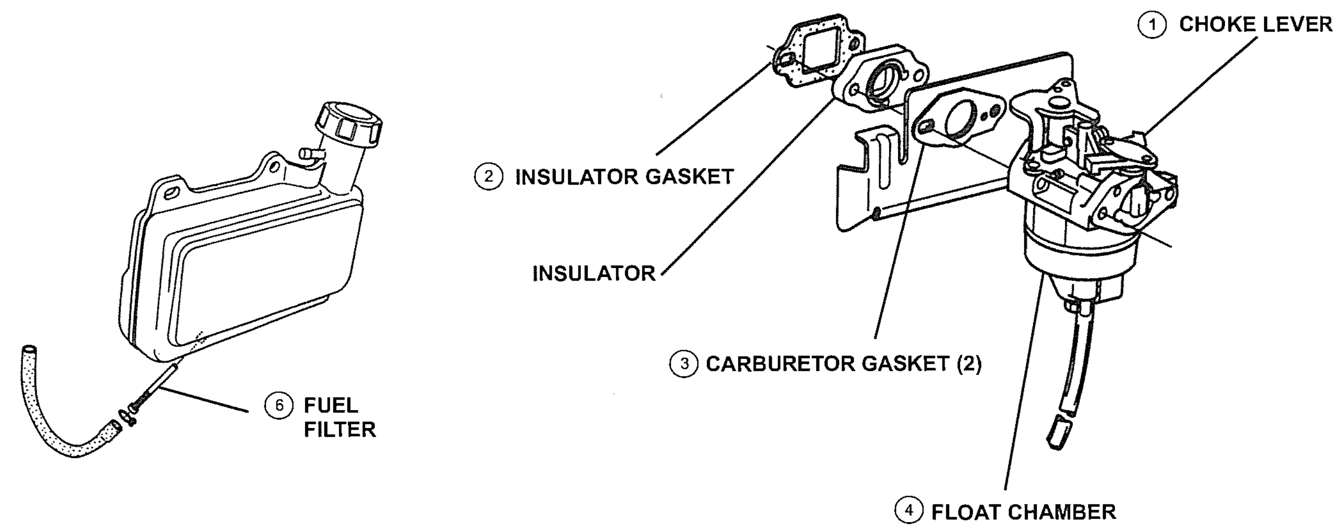
The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

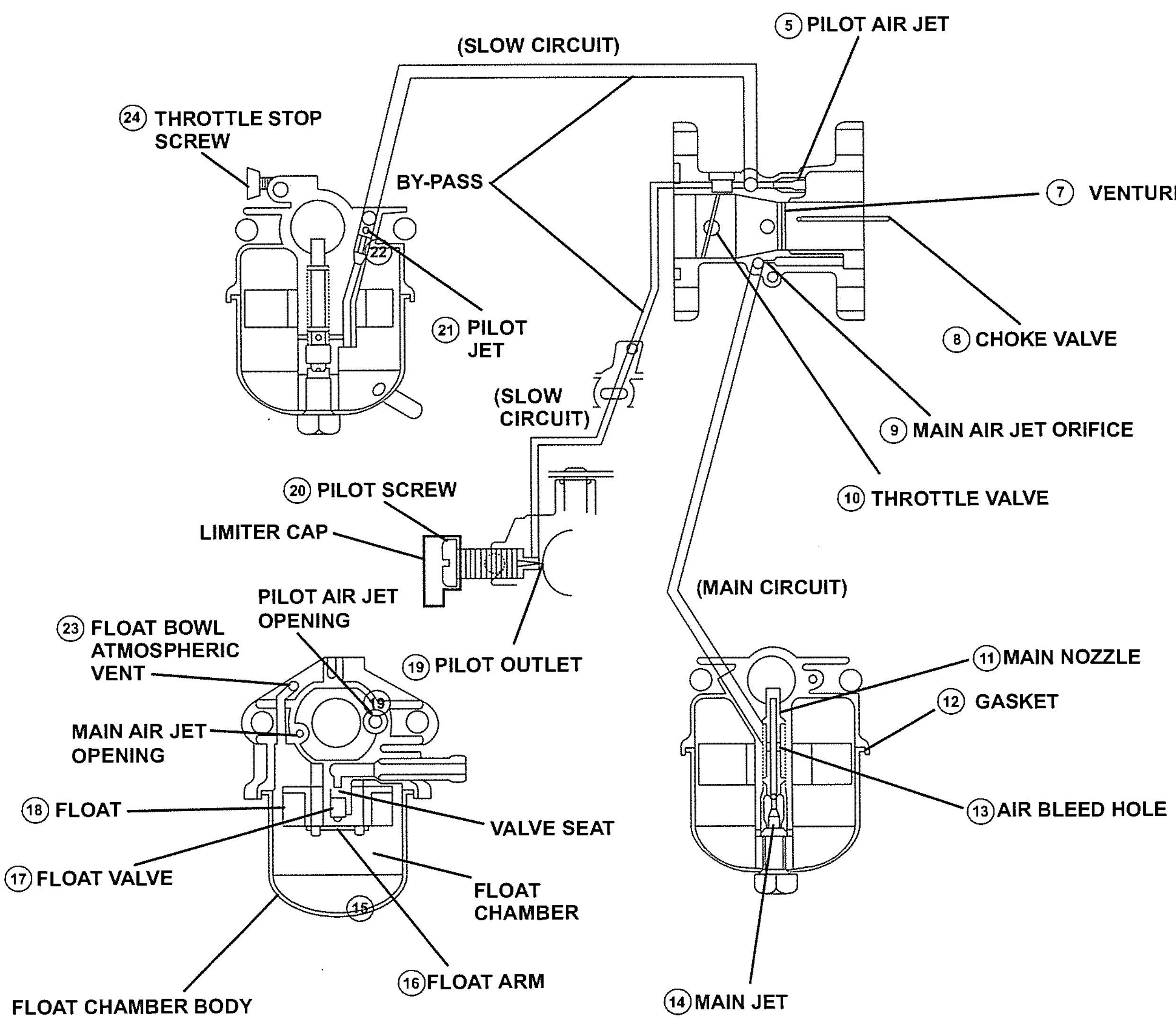
❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom>	<Inspection Point>			<Symptom>
• Hard Starting • Engine starts but soon stops	❶	Faulty choke valve operation	⑧	• Poor performance at low speed • rpm does not decrease
	❷	Misadjusted pilot screw	⑳	
	❸	Foreign material on the tip of the pilot screw	⑳	
	❹	Clogged pilot outlet	⑲	
	❺	Misadjusted throttle stop screw	㉔	
	❻	Water/foreign materials in the fuel sediment cup	⑥	
	❼	Faulty throttle valve operation	⑩	
	❽	Faulty throttle shaft operation	⑩	
		Clogged main jet	⑭	
• Hunting • rpm does not stabilize		Improper installation of carburetor gasket	③	• Poor performance at high speed • rpm does not increase
		Improper installation of insulator gasket	②	
		Air leaking through broken carburetor, insulator gasket or broken insulator	③	
		Clogged pilot jet	㉒	
		Clogged pilot air jet	⑤	
		Clogged main jet	⑭	
		Wrong main jet size	⑭	
		Clogged float bowl atmospheric vent	㉓	
		Clogged main air jet	⑨	
		Clogged main nozzle air bleed hole	⑬	
	❶	Water/foreign material in the fuel filter	⑥	
	❷	Water/foreign materials in the float chamber, corroded chamber	④	
	❸	Deteriorated gasoline in the float chamber	④	
• Float bowl overflowing • Gasoline leaks	❶	Damaged/contaminated float valve seating surface	⑮	
		Foreign materials on the tip of float valve	⑰	
	❷	Clogged float bowl atmospheric vent	㉓	
	❸	Faulty chamber gasket (improperly installed)	⑫	
		Fuel inside the float	⑱	
		Faulty float operation, float does not operate smoothly	⑯	
		Deformed chamber (mating face, joint)	④	

Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)



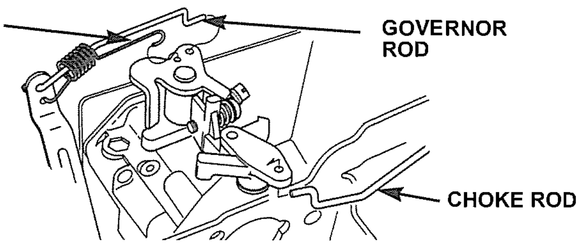


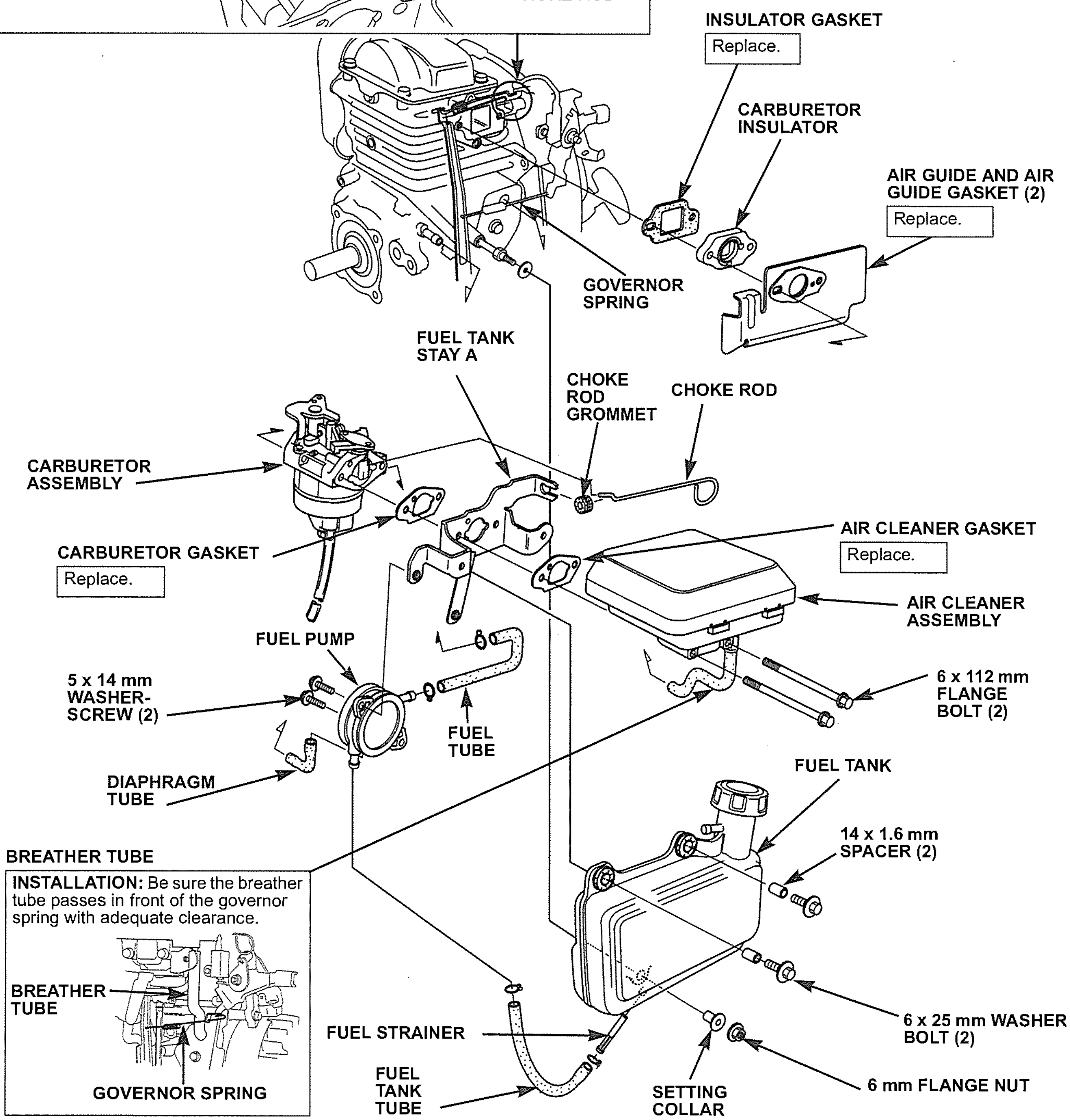
CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.

GOVERNOR ROD/THROTTLE RETURN SPRING

REMOVAL:
Remove the choke rod and grommet from the fuel tank stay A, and then remove the choke rod from the choke lever. Remove the throttle return spring, and then remove the governor rod from the carburetor.





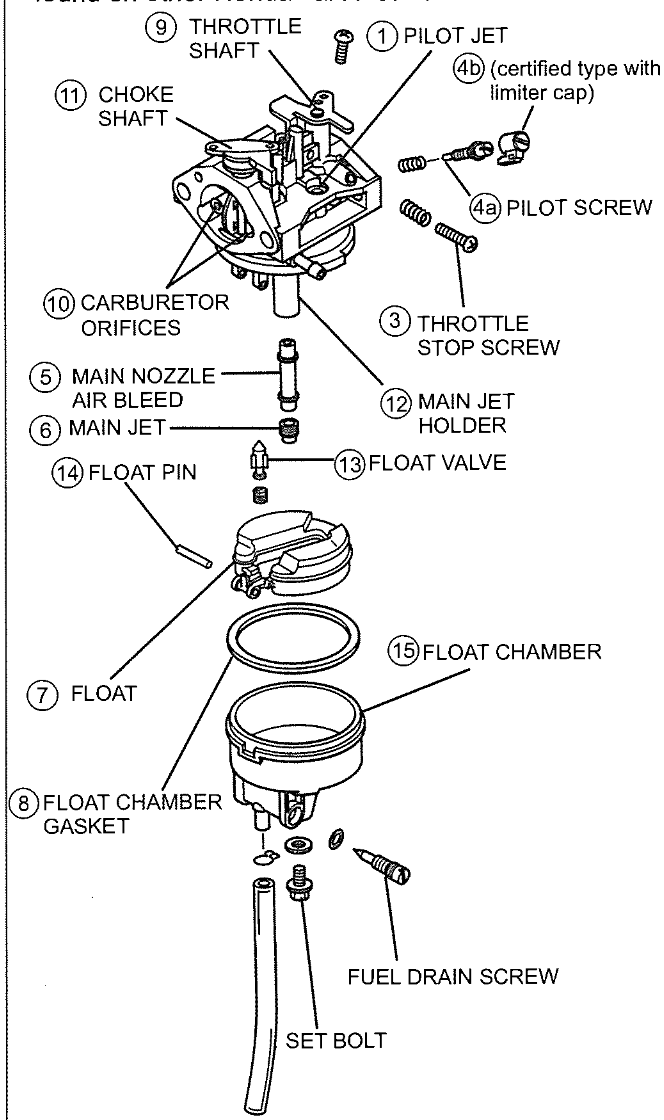
DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly

BE-type carburetor shown.

The BE-type has some components that are not found on other Honda carburetors.



Inspection

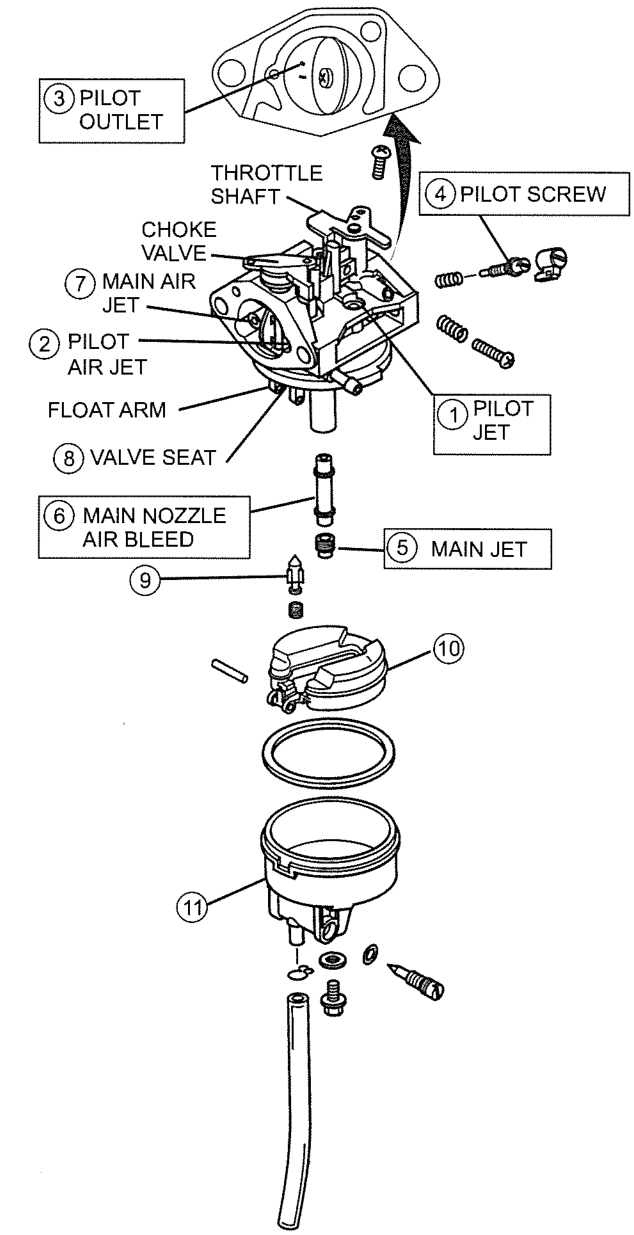
No.	Item	Clean	Replace
1	Check the pilot jet hole for clogging.	○	
2	Check the fuel drain screw O-ring for damage.		●
3	Check the stop screw for proper setting.		
4a	Check screw tip for contamination.	○	
4b	All Honda certified engines have a tamper resistant limiter cap installed on the pilot screw. Any attempt to remove the cap will break the pilot screw, requiring screw and limiter cap replacement. Generally, leave this type of pilot screw installed on the carburetor.		●
5	Check the air bleed holes for clogging.	○	
6	Check the main jet size. Check the jet orifice for clogging.	○	
7	Check the float height, and make sure there is no gasoline in the float.		●
8	Check the gasket for damage (Do not remove the gasket).		●
9	Check the shaft for smooth movement and looseness.		●
10	Check the orifices in the carburetor body for clogging.	○	
11	Check the choke shaft for smooth movement and looseness.		●
12	Check the main jet holder for corrosion.	○	
13	Check the tip of the valve for contamination or damage.	○	●
14	Check the float pin for wear or loose fit.		●
15	Check for dirt or foreign material in the chamber. Check the chamber for corrosion and deformation.	○	●

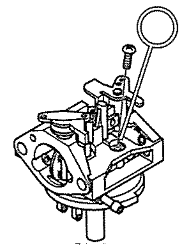
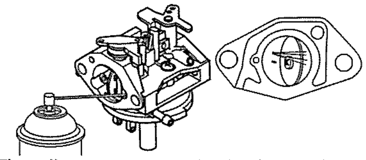
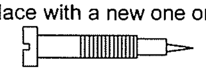
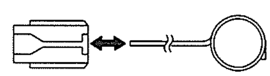
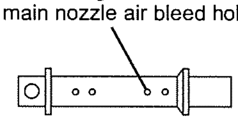
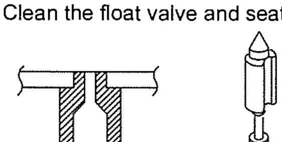
CLEANING

BB-type carburetor shown.

The BB-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.



Item		Inspection/ Cleaning Tool
Slow Circuit		
(1)	Remove foreign material from the pilot jet. 	Jet Cleaner Set
(2)	Clean the pilot air jet orifice.	Honda Carburetor Cleaner Low pressure compressed air
(3)	Clean the pilot outlet. Spray carburetor cleaner through the pilot air jet. If a good spray pattern is observed from the pilot oulet, the pilot screw does not need to be removed. 	
(4)	The pilot screw must be broken to be removed. Replace with a new one on reassembly. 	
Main Circuit		
(5)	Remove foreign material from the main jet. 	Jet Cleaner Set
(6)	Remove foreign material from the main nozzle air bleed holes. 	Honda Carburetor Cleaner Low pressure compressed air
(7)	Clean the main air jet orifice.	
Float Circuit		
(8)	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
(9)	Clean the float valve and seat.  Do not damage the seat and valve.	Low pressure compressed air
(10)	Check the float level.	Float level gauge
(11)	Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.

NOTICE

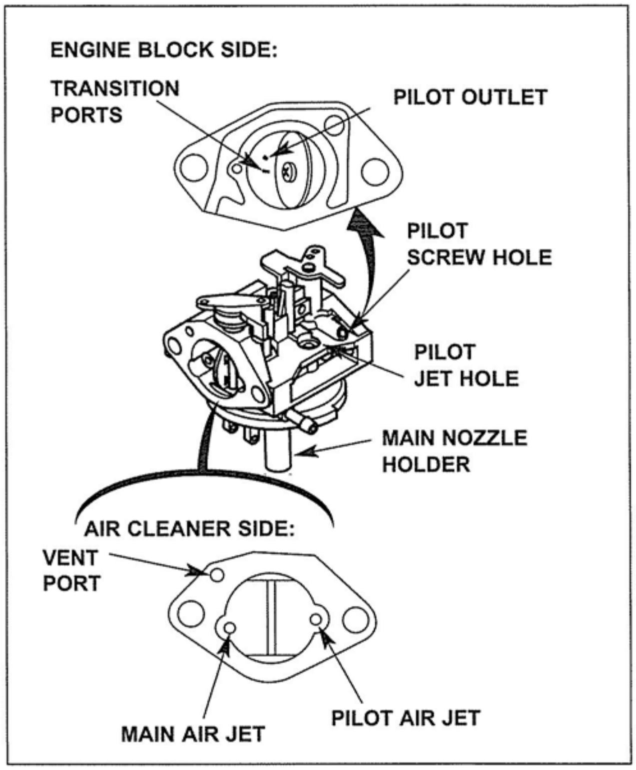
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

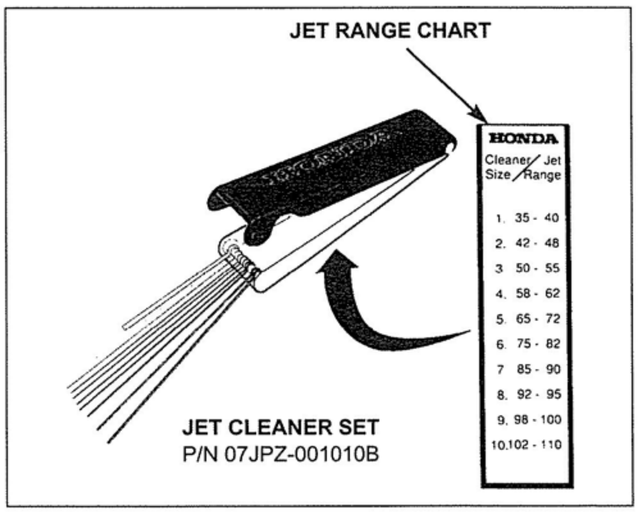
1. Clean the jets and passages with Honda Carburetor Cleaner (P/N 08732-CC000).
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

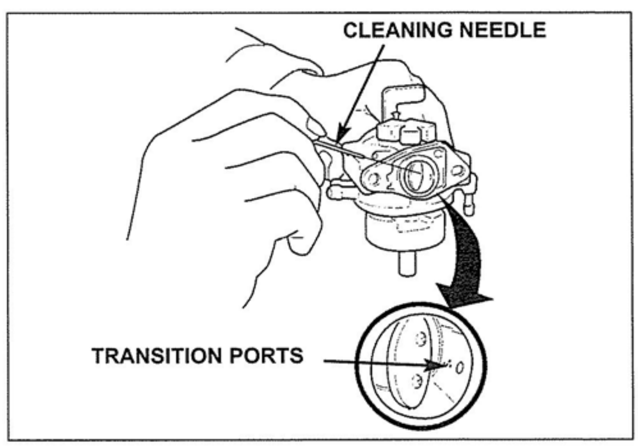
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.
4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).







ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

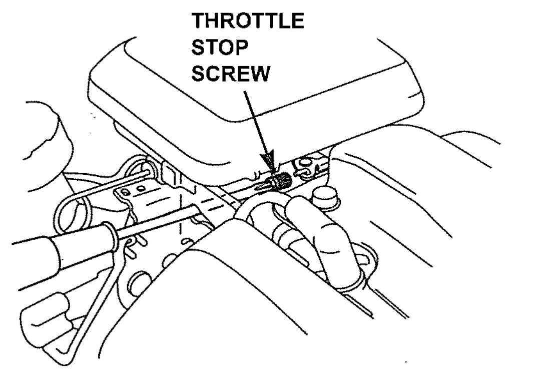
1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

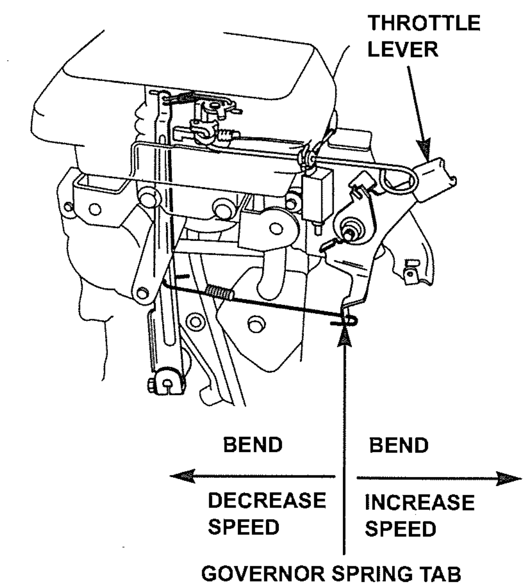
Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases

Maximum Engine Speed Adjustment

1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST
3. If the engine speed is not within specification, bend the governor spring arm tab.
   - Right increases spring tension and engine speed.
   - Left decreases spring tension and engine speed.





NOTES

BB-TYPE

GCV135/160/190 • GSV160/190

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

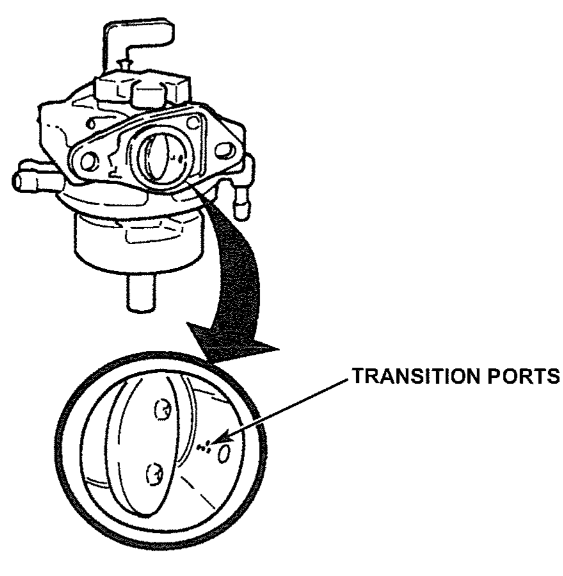
Transition Circuit

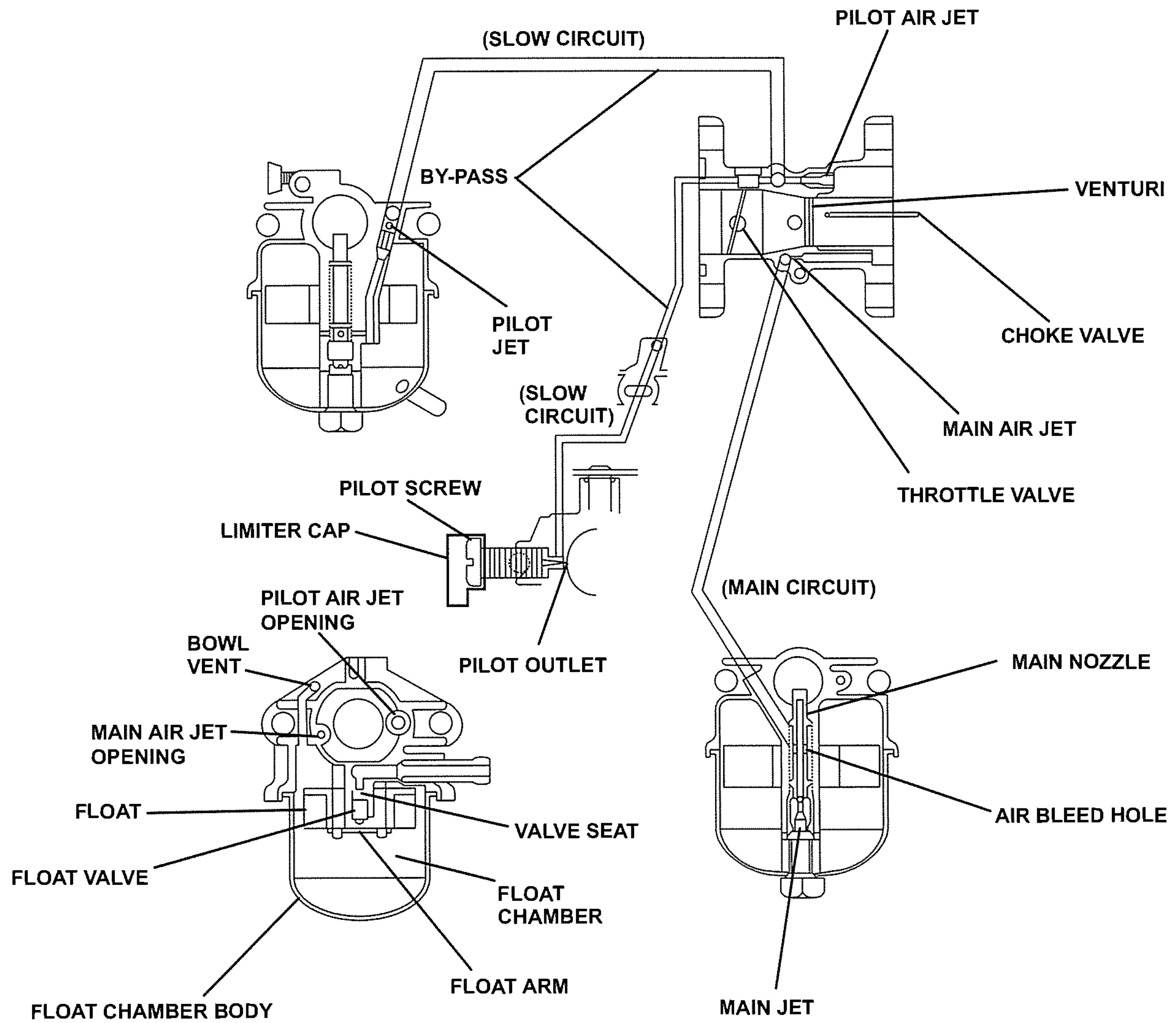
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




PILOT AIR JET
(SLOW CIRCUIT)
BY-PASS
VENTURI
PILOT
JET
CHOKE VALVE
(SLOW
CIRCUIT)
MAIN AIR JET
PILOT SCREW
THROTTLE VALVE
LIMITER CAP
(MAIN CIRCUIT)
PILOT AIR JET
OPENING
BOWL
VENT
PILOT OUTLET
MAIN NOZZLE
MAIN AIR JET
OPENING
FLOAT
VALVE SEAT
AIR BLEED HOLE
FLOAT VALVE
FLOAT
CHAMBER
FLOAT ARM
MAIN JET
FLOAT CHAMBER BODY

CARBURETOR TROUBLESHOOTING INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

Symptom:
- Hard Starting
- Engine starts but soon stops

Symptom:
- Poor performance at low speed
- rpm does not decrease

	Inspection Point	Ref.
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Water/foreign materials in the fuel sediment cup	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

Symptom:
- Hunting
- rpm does not stabilize

Symptom:
- Poor performance at high speed
- rpm does not increase

	Inspection Point	Ref.
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel filter	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

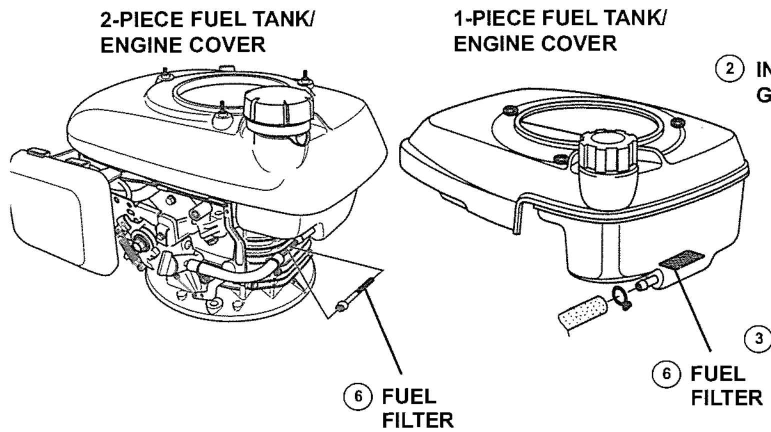
Symptom:
- Float bowl overflowing
- Gasoline leaks

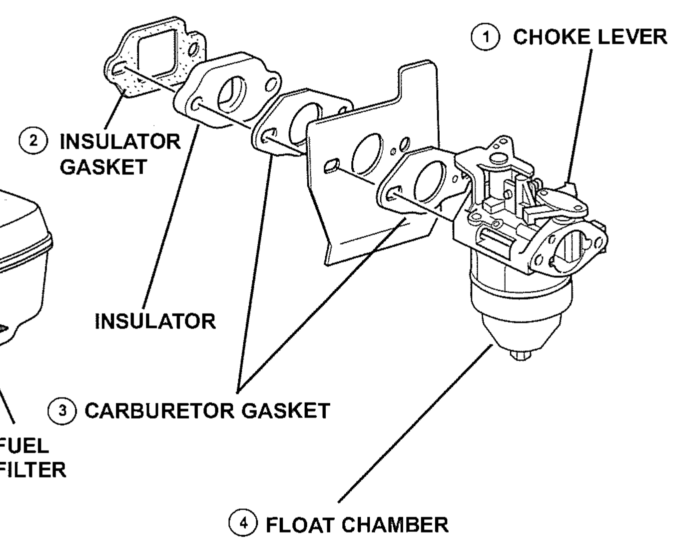
	Inspection Point	Ref.
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

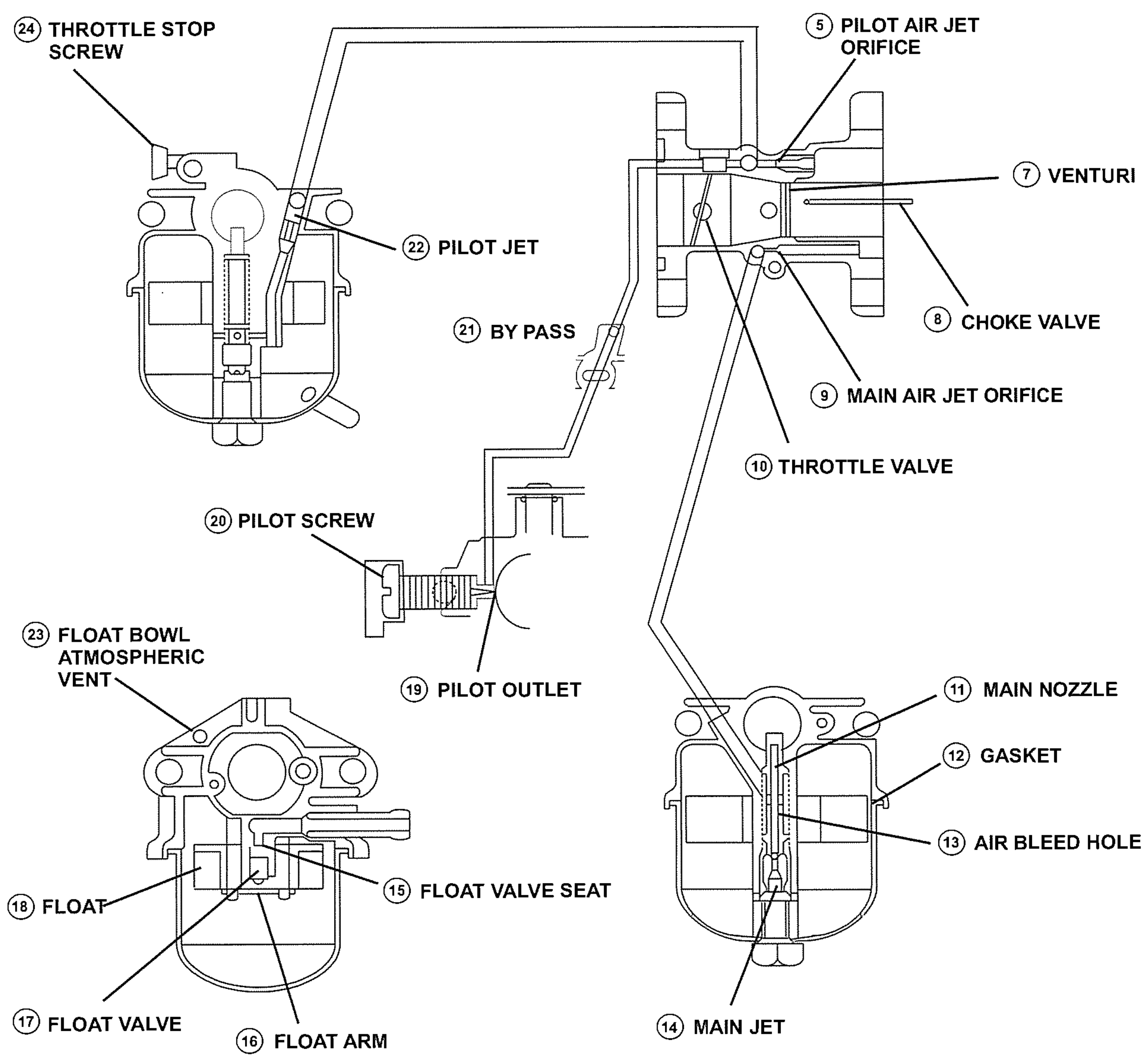
Symptom	Inspection Point	Cause
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)

BE-type carburetor shown.
The BE-type carburetor has some components that are not found on other Honda carburetors.



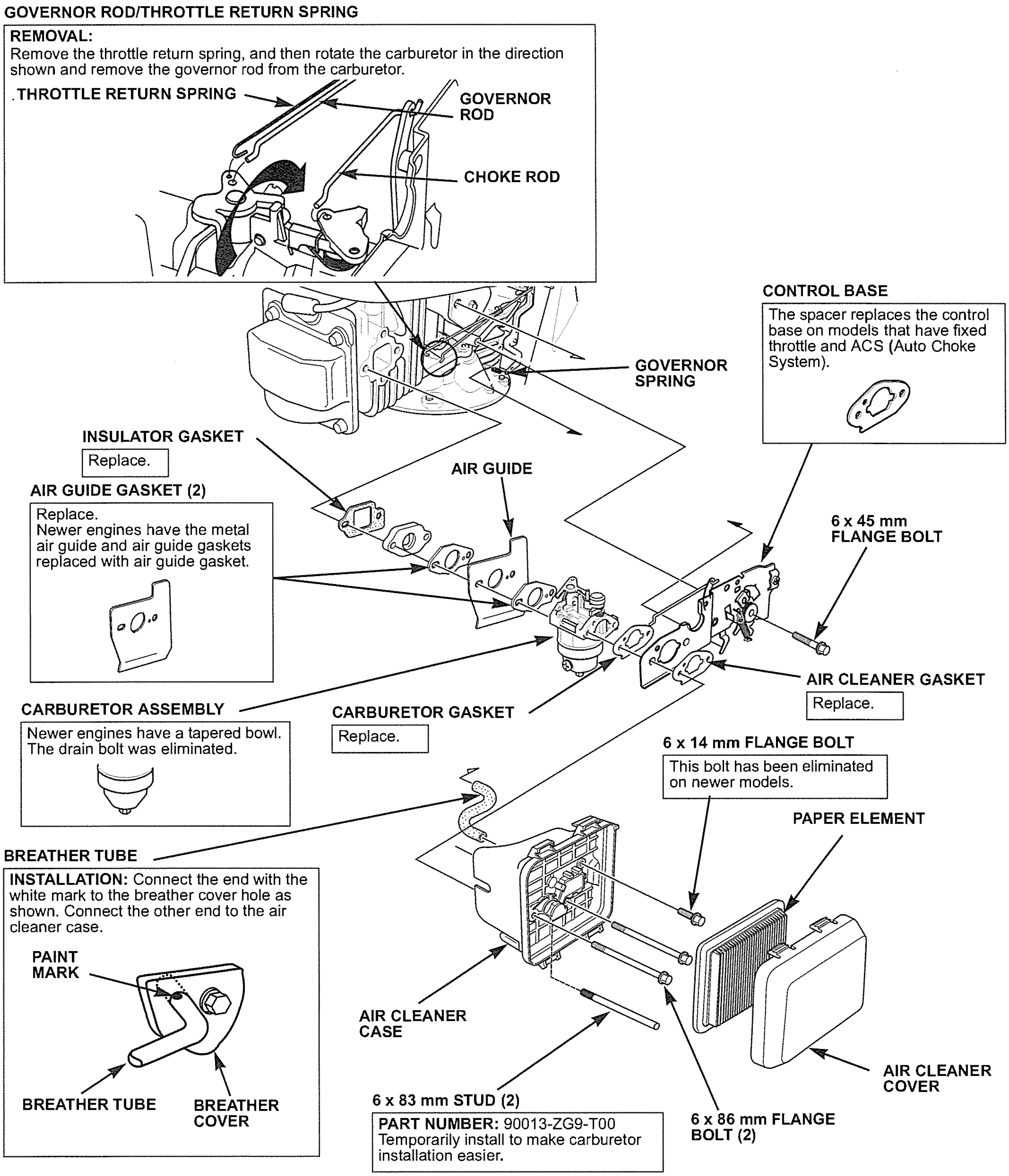




CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.

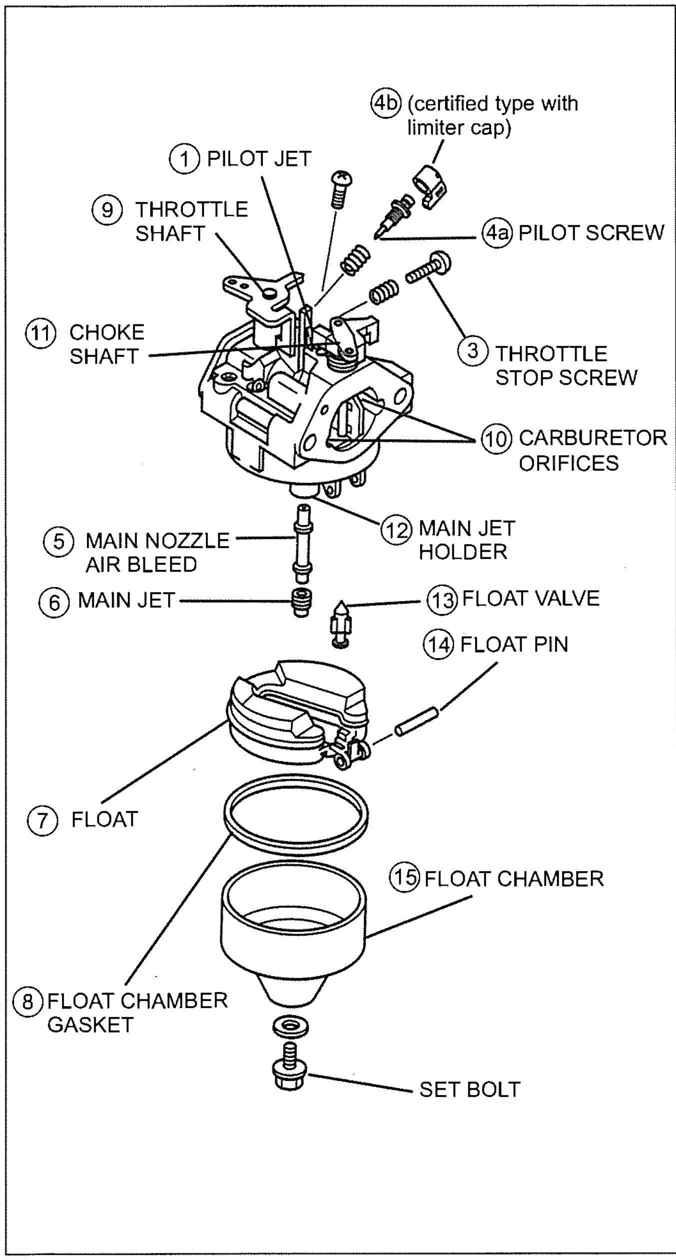
Refer to Section 6 for types with ARCS (Auto Return Choke System) and ACS (Auto Choke System)



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

No.	Item	Clean	Replace
(1)	Check the pilot jet hole for clogging.	○	
(2)	Check the fuel drain screw O-ring for damage.		●
(3)	Check the stop screw for proper setting.		
(4a)	Check screw tip for contamination.	○	
(4b)	Honda certified engines have a tamper resistant limiter cap installed on the pilot screw (*). Any attempt to remove the cap will break the pilot screw, requiring screw and limiter cap replacement. Generally, leave this type of pilot screw installed on the carburetor.		●
(5)	Check the air bleed holes for clogging.	○	
(6)	Check the main jet size. Check the jet orifice for clogging.	○	
(7)	Check the float height, and make sure there is no gasoline in the float.		●
(8)	Check the gasket for damage (Do not remove the gasket).		●
(9)	Check the shaft for smooth movement and looseness.		●
(10)	Check the orifices in the carburetor body for clogging.	○	
(11)	Check the choke shaft for smooth movement and looseness.		●
(12)	Check the main jet holder for corrosion.	○	
(13)	Check the tip of the valve for contamination or damage.	○	●
(14)	Check the float pin for wear or loose fit.		●
(15)	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●

* GCV160 engines with ACS (Auto Choke System) do not have a pilot screw.

CLEANING

Use Honda Carburetor/Combustion Chamber Cleaner with it's plastic spray nozzle to clean the carburetor ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.

NOTICE

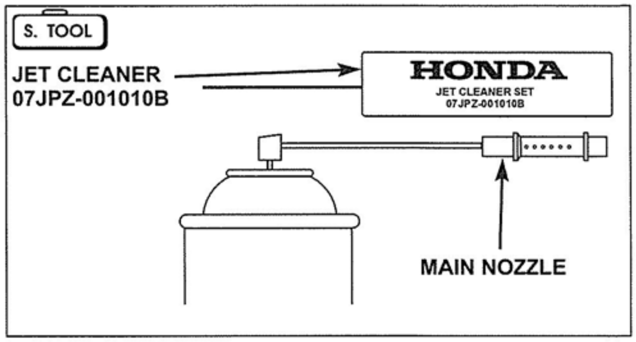
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Completely disassemble the carburetor except for the pilot jet screw (P. 3-17). This cleaning procedure is performed without removing the pilot jet screw.

2. Clean the main nozzle thoroughly using carburetor cleaner, appropriate size jet cleaning tool, and compressed air. Do not use a welding tip cleaning needle.

   Using a welding tip cleaning needle or a jet needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

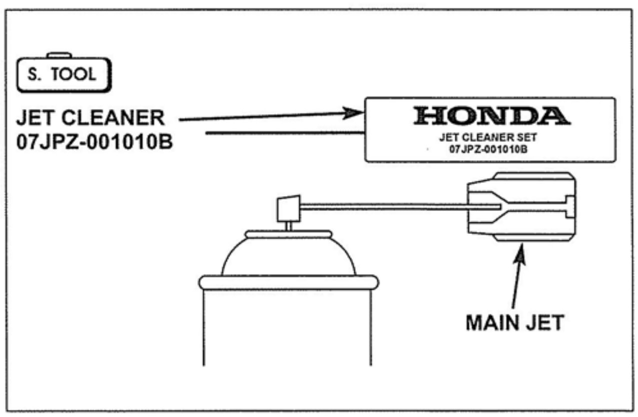
   Inspect the center and side holes for damage or contamination by holding the main nozzle up to a light to verify they are clean.



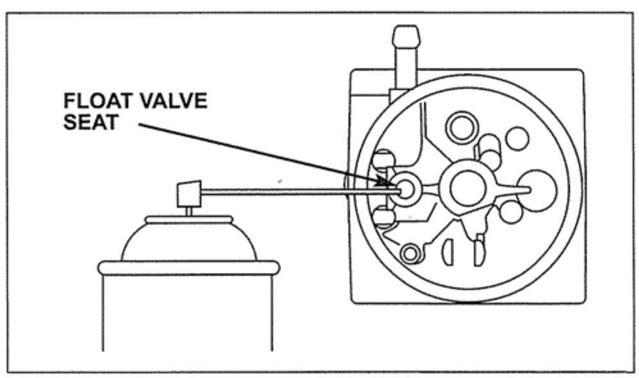
3. Clean the main jet by spraying carburetor cleaner through the jet and using the appropriate size jet cleaning tool and compressed air. Do not use a welding tip cleaning needle.

   Using a welding tip cleaning needle or a jet needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Carefully inspect the main jet for damage or contamination.

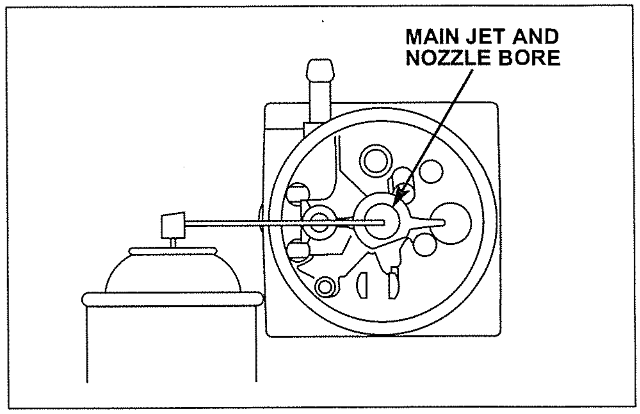


4. Clean the float valve seat using carburetor cleaner and compressed air.



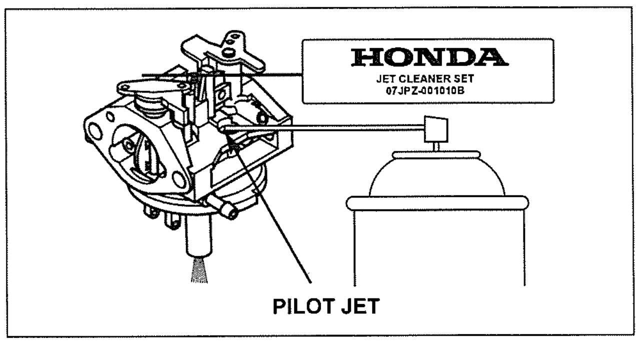
5. Clean the main jet and nozzle bore thoroughly using carburetor cleaner and compressed air.

   Inspect the inside of the bore for contamination.

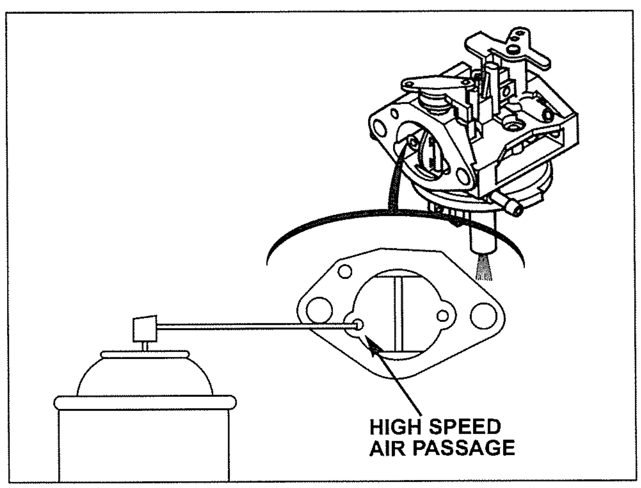


6. Clean the pilot jet thoroughly by using the appropriate size jet cleaning tool, carburetor cleaner, and compressed air.

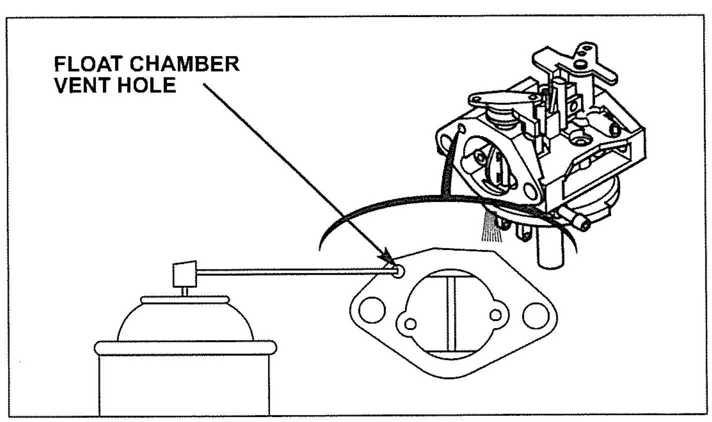
   The passage is small and easily obstructed, so repeat several times.
   It is not necessary to remove the pilot screw at this point.



7. Clean the high speed air passage with carburetor cleaner and compressed air.

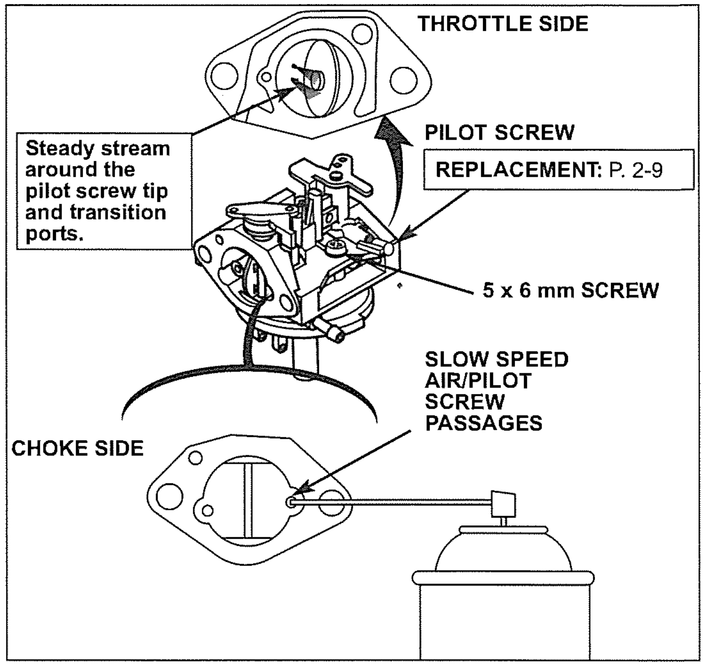


8. Clean the float chamber vent hole with carburetor cleaner and compressed air.



9. Reinstall the 5 x 6 mm screw covering the pilot jet.
10. Check the slow speed air/pilot screw channels for obstructions.

    Spray carburetor cleaner through the slow speed air passage.
    From the opposite end, confirm that a steady stream of carburetor cleaner sprays out from around the pilot screw tip and transition ports.
    If it does not flow around the pilot screw tip, remove the pilot screw and clean the passage The pilot screw must be destroyed and replaced if it is removed. It may be more cost-effective to replace the carburetor.
11. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
12. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
13. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

- If the pilot screw was removed, it must be properly set before making any the idle speed adjustment. Refer to the appropriate shop manual.
- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

Types with fixed throttle do not have a throttle stop screw.

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

Throttle stop screw:

- Turn clockwise.......................... rpm increases
- Turn counterclockwise.............. rpm decreases

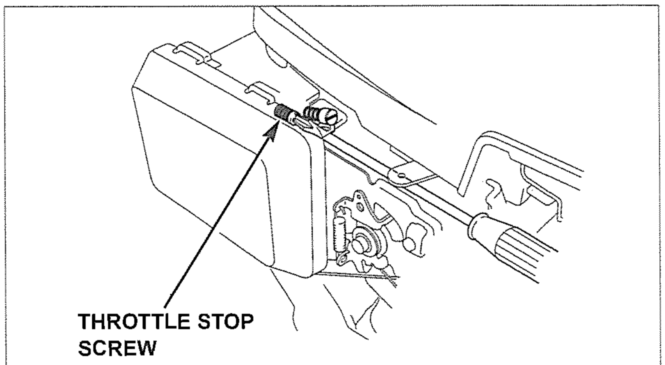
Maximum Engine Speed Adjustment

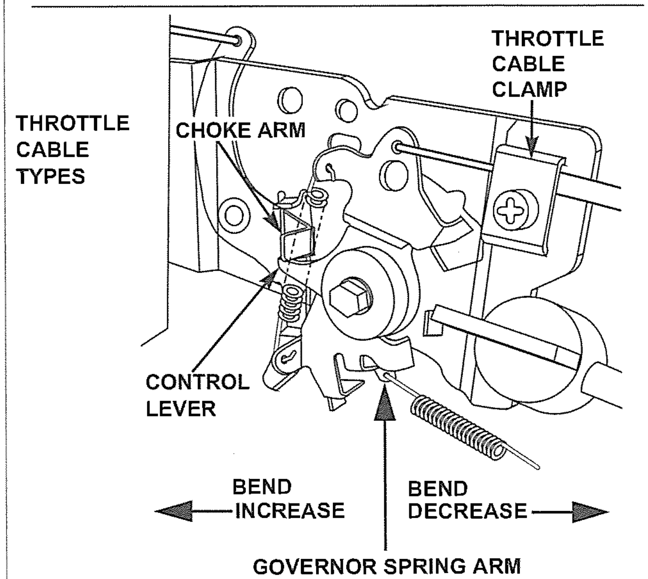
- **Types With Control Base - Throttle Cable**

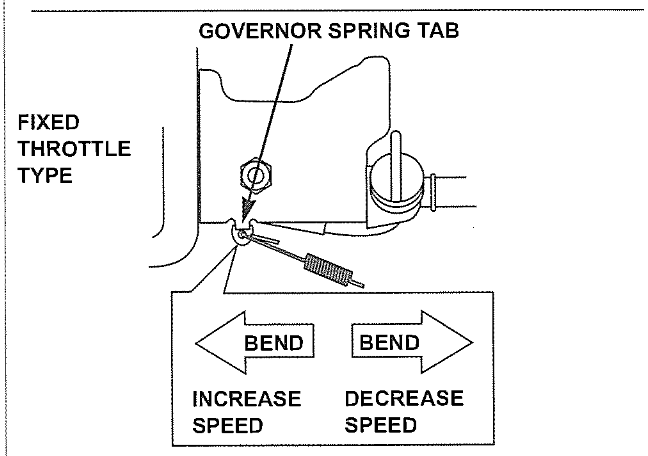
1. Move the throttle to FAST.
2. Check the clearance between the choke arm and control lever.
3. The control lever should just contact, but not move, the choke arm.
4. If necessary, loosen the throttle cable clamp to achieve the proper position.
5. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST
6. If the engine speed is not within specification, bend the governor spring arm tab.
   - Left increases spring tension and engine speed.
   - Right decreases spring tension and engine speed.

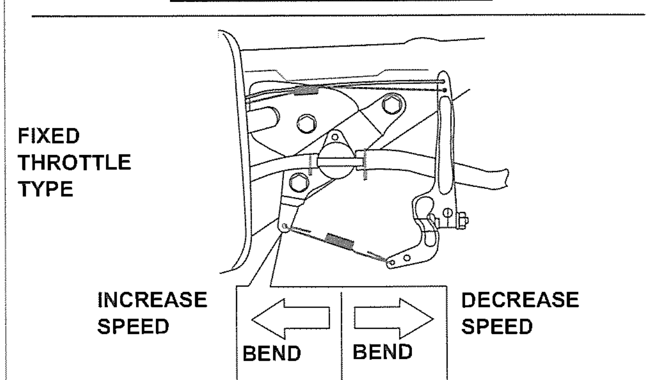
- **Types With Fixed Throttle - No Throttle Cable**

1. Check the maximum engine speed.
   Refer to the appropriate shop manual for maximum engine speed specification.
2. If adjustment is necessary, bend the governor spring tab on the throttle control plate very slightly.
   - Left increases spring tension and engine speed.
   - Right decreases spring tension and engine speed.









BB-TYPE

G150/200/300/400

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

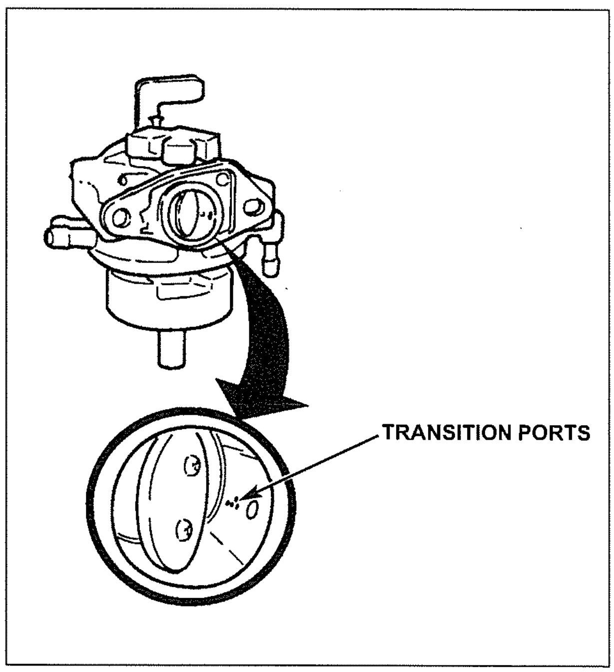
Transition Circuit

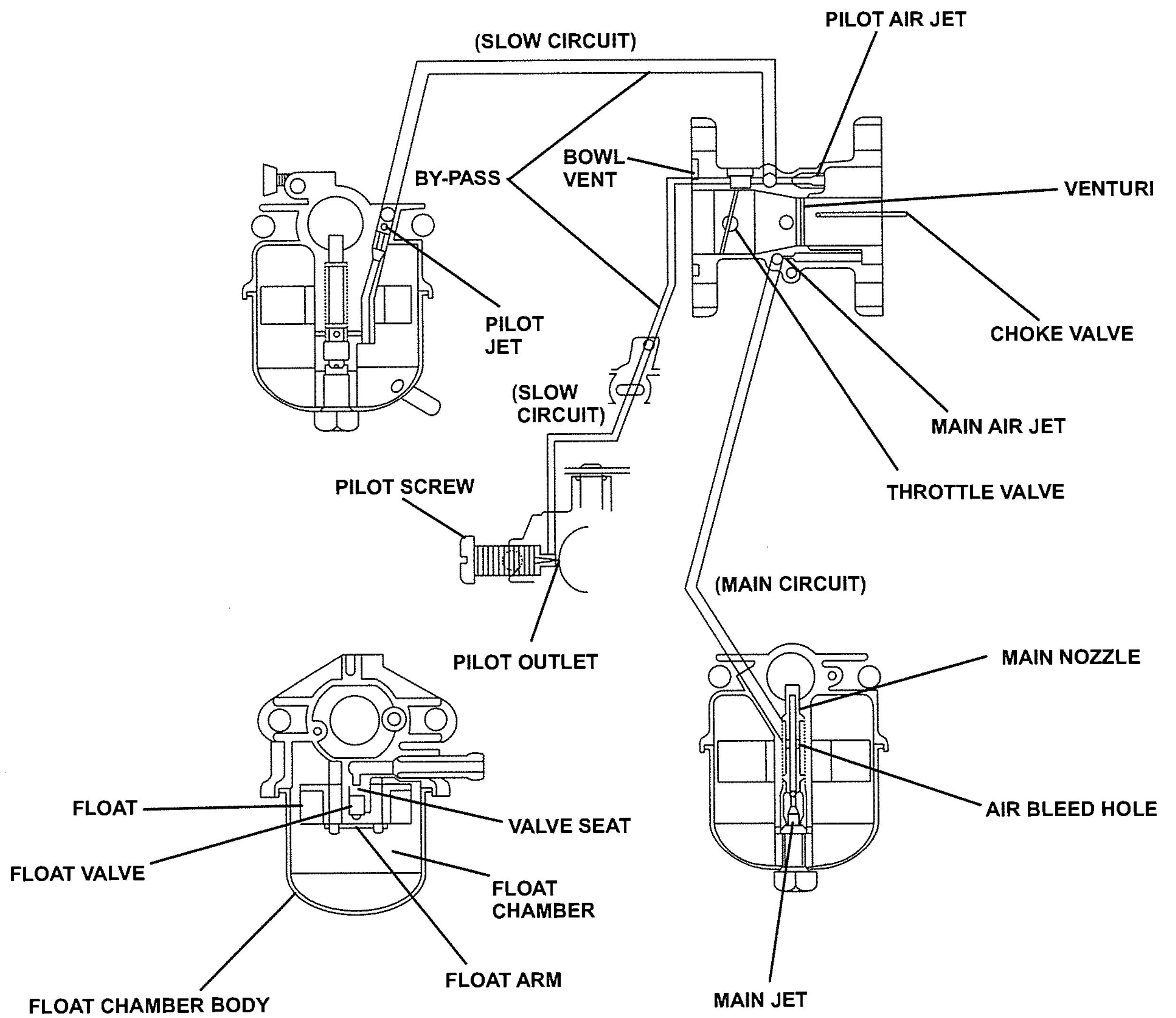
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




(SLOW CIRCUIT)
PILOT AIR JET
BY-PASS
BOWL VENT
VENTURI
PILOT JET
CHOKE VALVE
(SLOW CIRCUIT)
MAIN AIR JET
PILOT SCREW
THROTTLE VALVE
(MAIN CIRCUIT)
PILOT OUTLET
MAIN NOZZLE
FLOAT
VALVE SEAT
AIR BLEED HOLE
FLOAT VALVE
FLOAT CHAMBER
FLOAT ARM
FLOAT CHAMBER BODY
MAIN JET

CARBURETOR TROUBLESHOOTING INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

Symptoms (left): • Hard Starting • Engine starts but soon stops

Symptoms (right): • Poor performance at low speed • rpm does not decrease

	Inspection Point	Ref.
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Water/foreign materials in the fuel sediment cup	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

Symptoms (left): • Hunting • rpm does not stabilize

Symptoms (right): • Poor performance at high speed • rpm does not increase

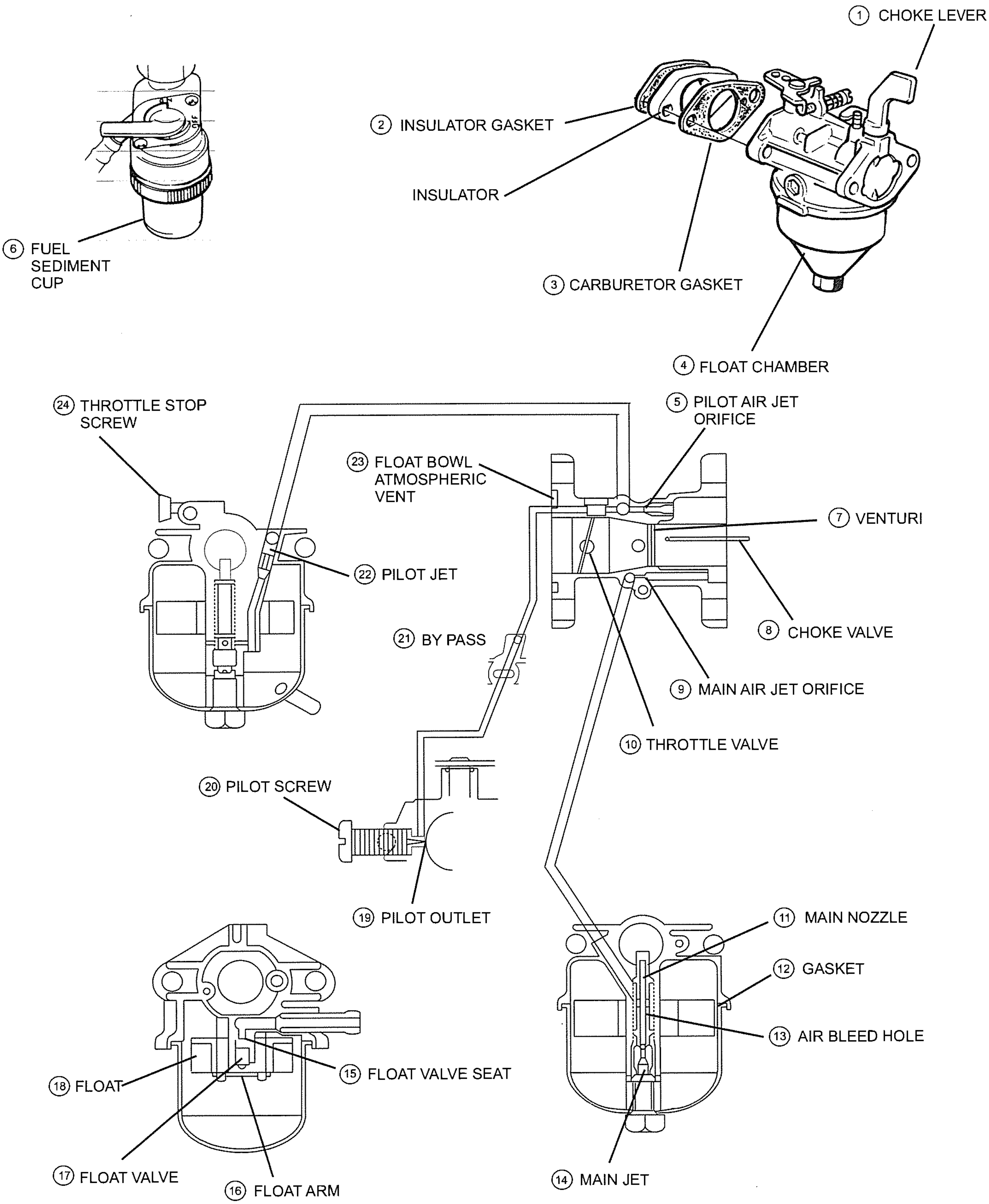
	Inspection Point	Ref.
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel sediment cup	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

Symptoms: • Float bowl overflowing • Gasoline leaks

	Inspection Point	Ref.
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

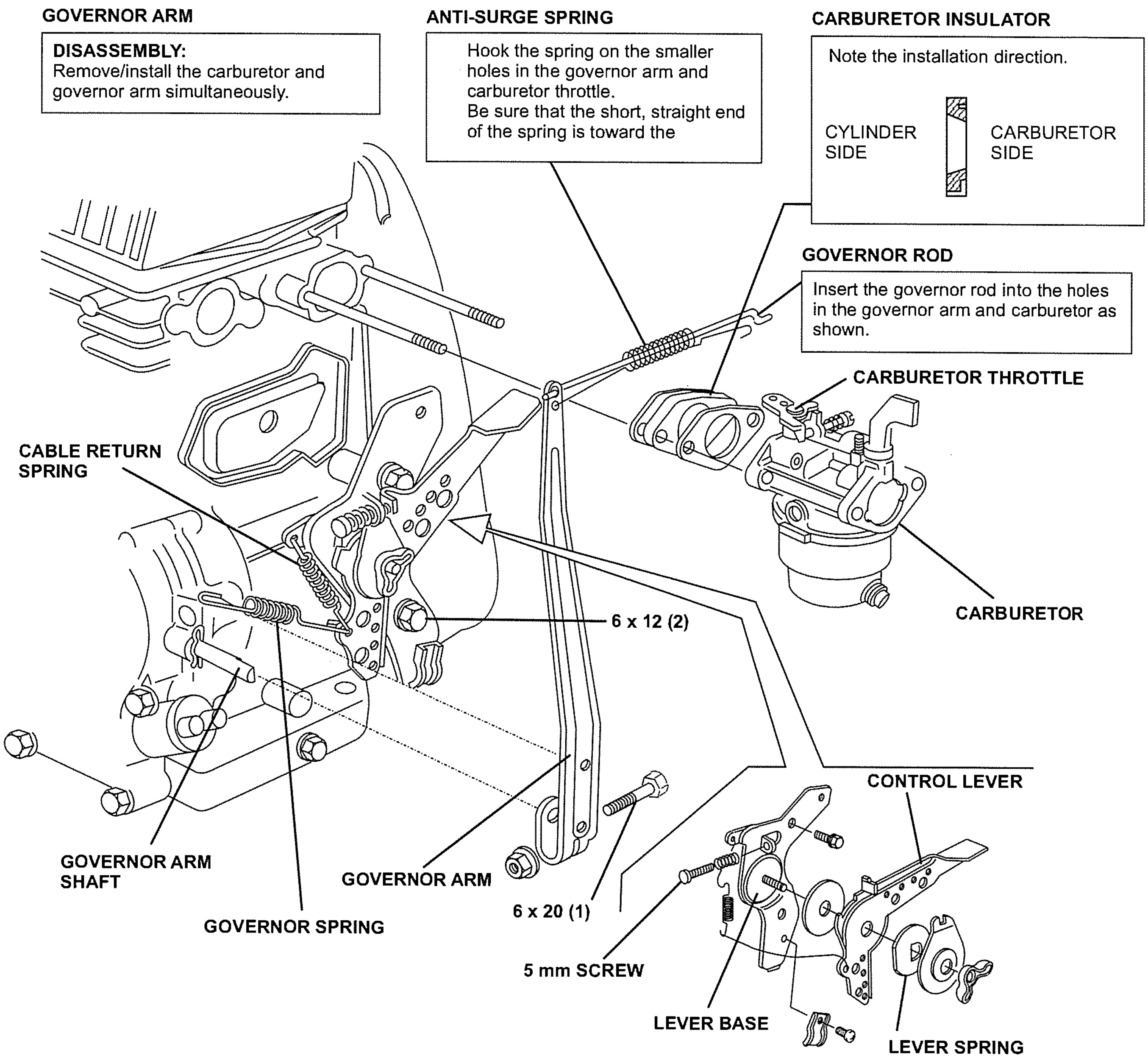
Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)



CARBURETOR REMOVAL

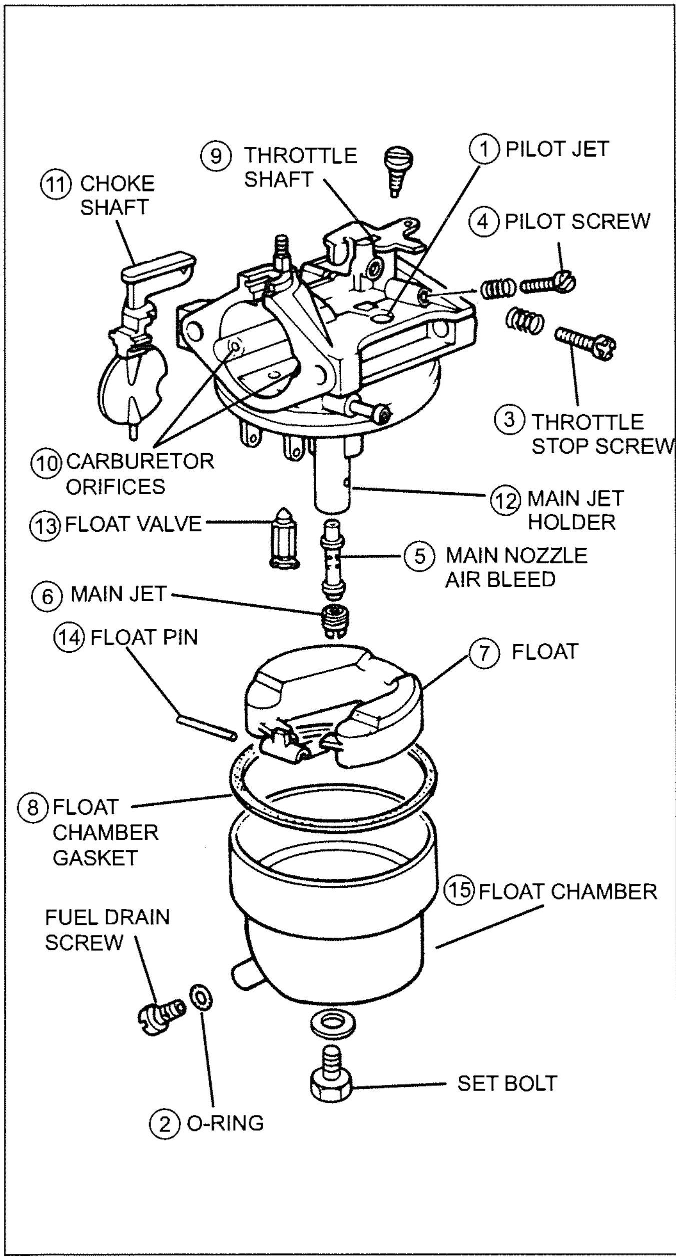
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

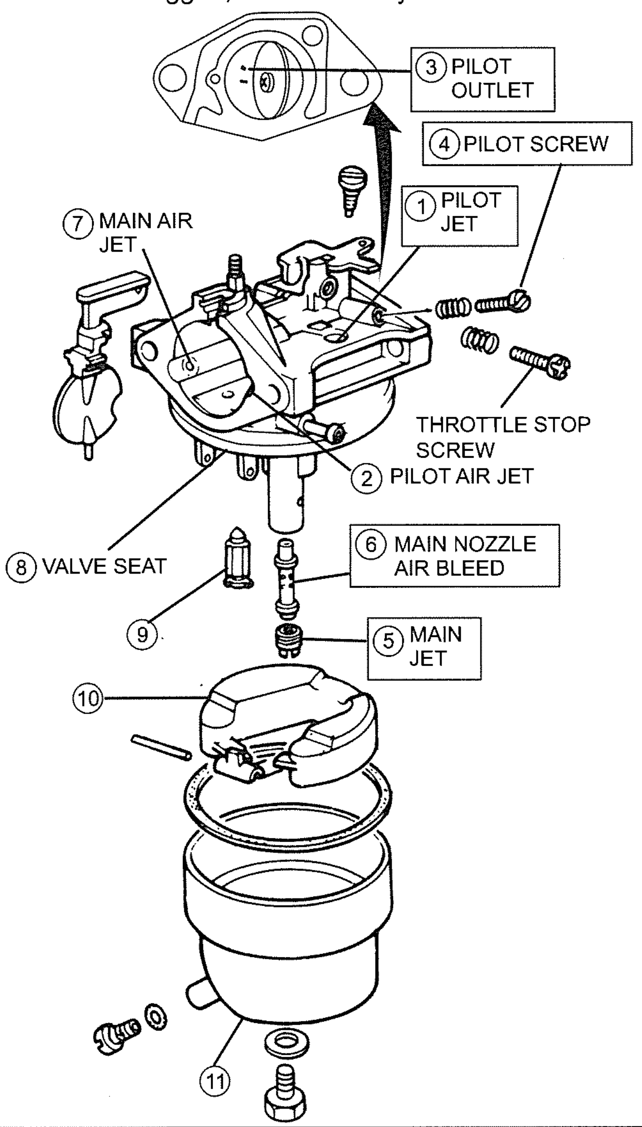
No.	Item	Clean	Replace
①	Check the pilot jet hole for clogging.	○	
②	Check the fuel drain screw O-ring for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination.	○	
⑤	Check the air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the gasket for damage (Do not remove the gasket).		●
⑨	Check the shaft for smooth movement and looseness.		●
⑩	Check the orifices in the carburetor body for clogging.	○	
⑪	Check the choke shaft for smooth movement and looseness.		●
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber. Check the chamber for corrosion and deformation.	○	●

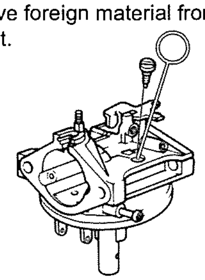
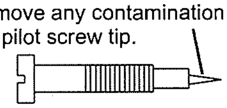
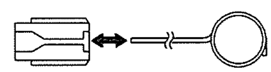
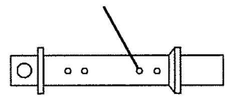
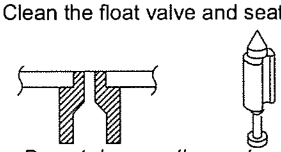
CLEANING

BB-type carburetor shown.

The BB-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.

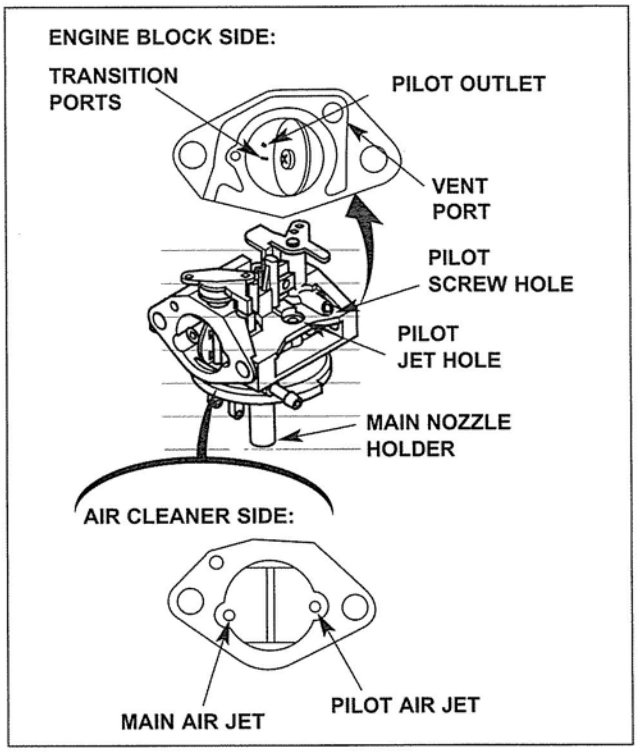


	Item	Inspection/ Cleaning Tool
Slow Circuit		
①	Remove foreign material from the pilot jet. 	Jet Cleaner Set Honda Carburetor Cleaner
②	Clean the pilot air jet orifice.	Low pressure compressed air
③	Clean the pilot outlet.	
④	Remove any contamination from the pilot screw tip. 	
Main Circuit		
⑤	Remove foreign material from the main jet. 	Jet Cleaner Set Honda Carburetor Cleaner
⑥	Remove foreign material from the main nozzle air bleed holes. 	Low pressure compressed air
⑦	Clean the main air jet orifice.	
Float Circuit		
⑧	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
⑨	Clean the float valve and seat.  *Do not damage the seat and valve.*	Low pressure compressed air
⑩	Check the float level.	Float level gauge
⑪	Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

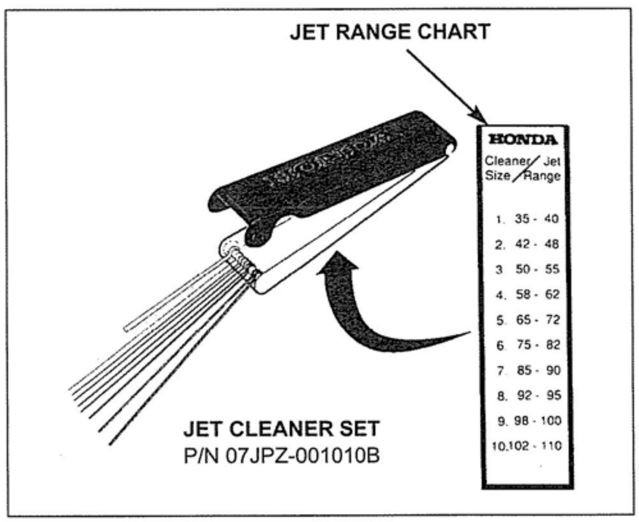
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

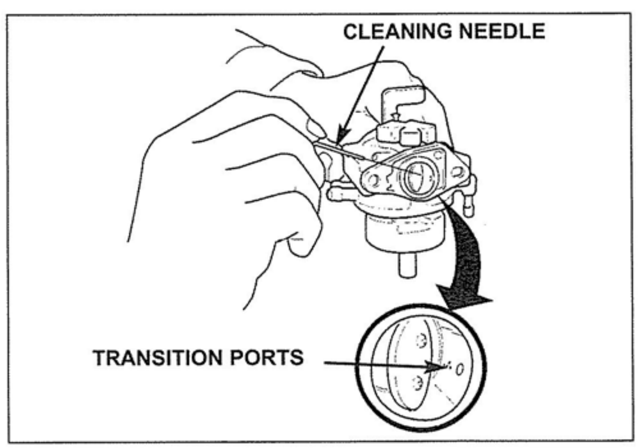
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).

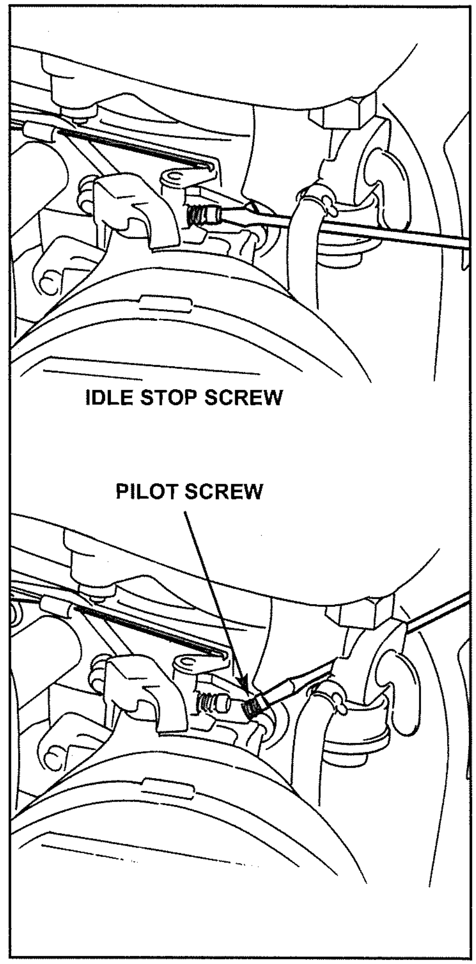


ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

1. IDLE SLOW SPEED ADJUSTMENT UNDER NO LOAD



Use the throttle stop screw and pilot screw (non-certified engines) to adjust the idle slow speed.

Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases

Pilot screw (non-certified engines):

Refer to the appropriate shop manual for adjustment and reassembly procedures.

- Turn clockwise .... leaner fuel mixture
- Turn counterclockwise .... richer fuel mixture

Idle Adjustment

(1) With the engine off, turn the throttle stop screw clockwise until it contacts the throttle lever, and then make 3 more turns to open the throttle plate. Be sure the throttle lever is touching the end of the screw.

(2) Turn the pilot screw clockwise until it lightly seats, and then back it out the number of turns specified in the appropriate shop manual.

NOTICE

Overtightening the pilot screw may damage the carburetor.

(3) Start the engine, and let it warm up to normal operating temperature. When the engine is warm, slowly turn the throttle stop screw counterclockwise until the engine is running at the standard idle speed specified in the shop manual.

(4) Turn the pilot screw (non-certified engines) in or out to obtain the highest engine rpm.

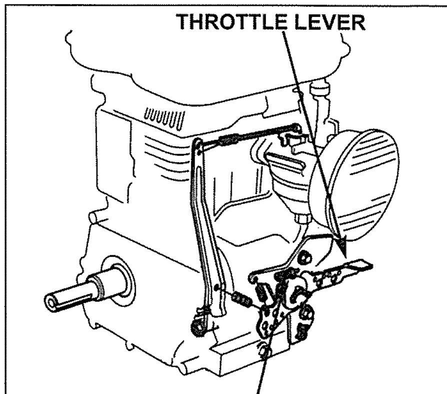
(5) Repeat steps (3) and (4) above until the pilot screw (non-certified engines) setting is as close as possible to the standard idle speed.

If the pilot screw (non-certified engines) must be turned more than one turn in either direction from the shop manual specification, the carburetor may have a blocked passage. Be sure all air and fuel passages are clear before proceeding.

(6) Adjust the throttle stop screw to obtain the standard idle speed.

2. MAXIMUM SPEED ADJUSTMENT UNDER NO LOAD

Set the throttle cable on the control lever to set maximum speed.



Maximum Speed Adjustment

(1) Start the engine, and let it warm up to normal operating temperature. When
the engine is warm, turn the control lever adjusting screw until the engine is running at the specified maximum speed at full throttle.

(2) Close the throttle, and then slowly open it again.

(3) If hunting occurs as the throttle is opened, adjust the pilot screw (non-certified engines).

(4) Check the idle slow speed, and adjust the throttle stop screw if necessary.

BB-TYPE

GV150/200/400

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

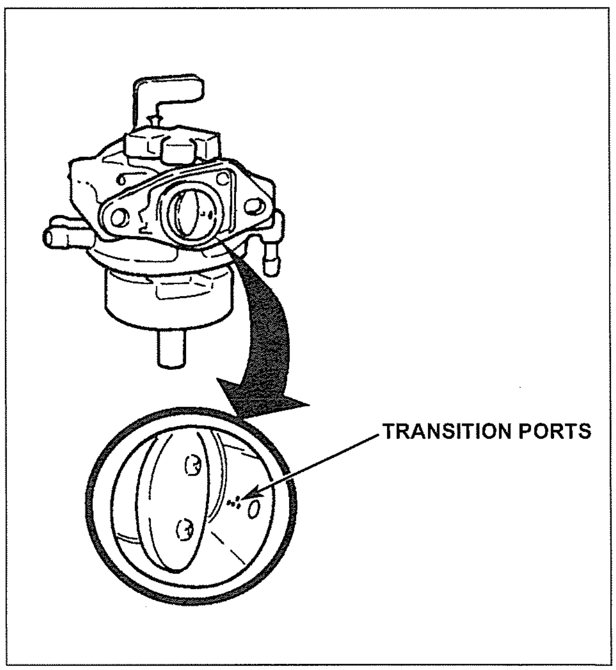
Transition Circuit

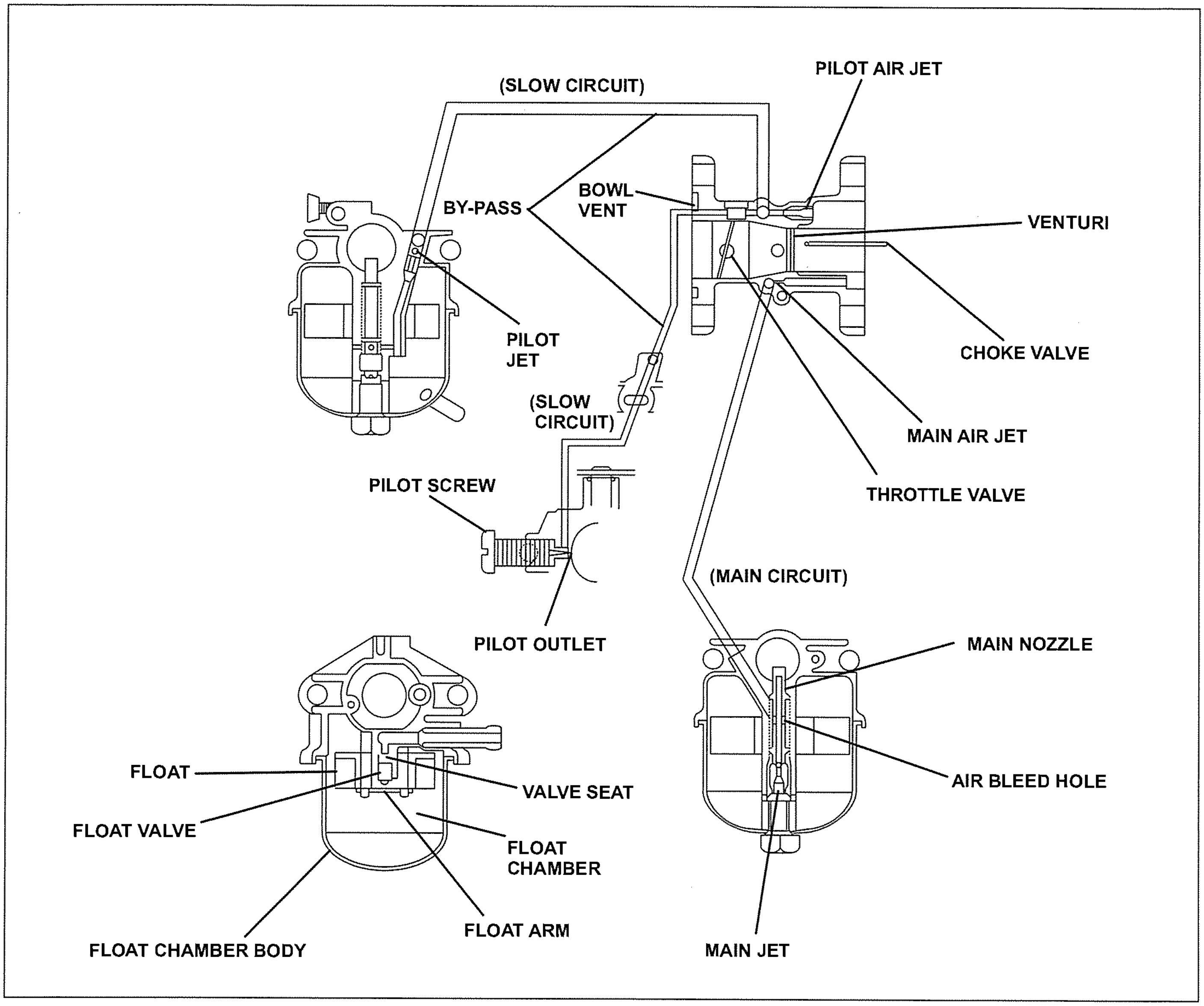
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




PILOT AIR JET
(SLOW CIRCUIT)
BOWL VENT
BY-PASS
VENTURI
PILOT JET
CHOKE VALVE
(SLOW CIRCUIT)
MAIN AIR JET
PILOT SCREW
THROTTLE VALVE
(MAIN CIRCUIT)
PILOT OUTLET
MAIN NOZZLE
FLOAT
VALVE SEAT
AIR BLEED HOLE
FLOAT VALVE
FLOAT CHAMBER
FLOAT ARM
FLOAT CHAMBER BODY
MAIN JET

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

- Hard Starting
- Engine starts but soon stops

- Poor performance at low speed
- rpm does not decrease

❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Water/foreign materials in the fuel sediment cup	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

- Hunting
- rpm does not stabilize

- Poor performance at high speed
- rpm does not increase

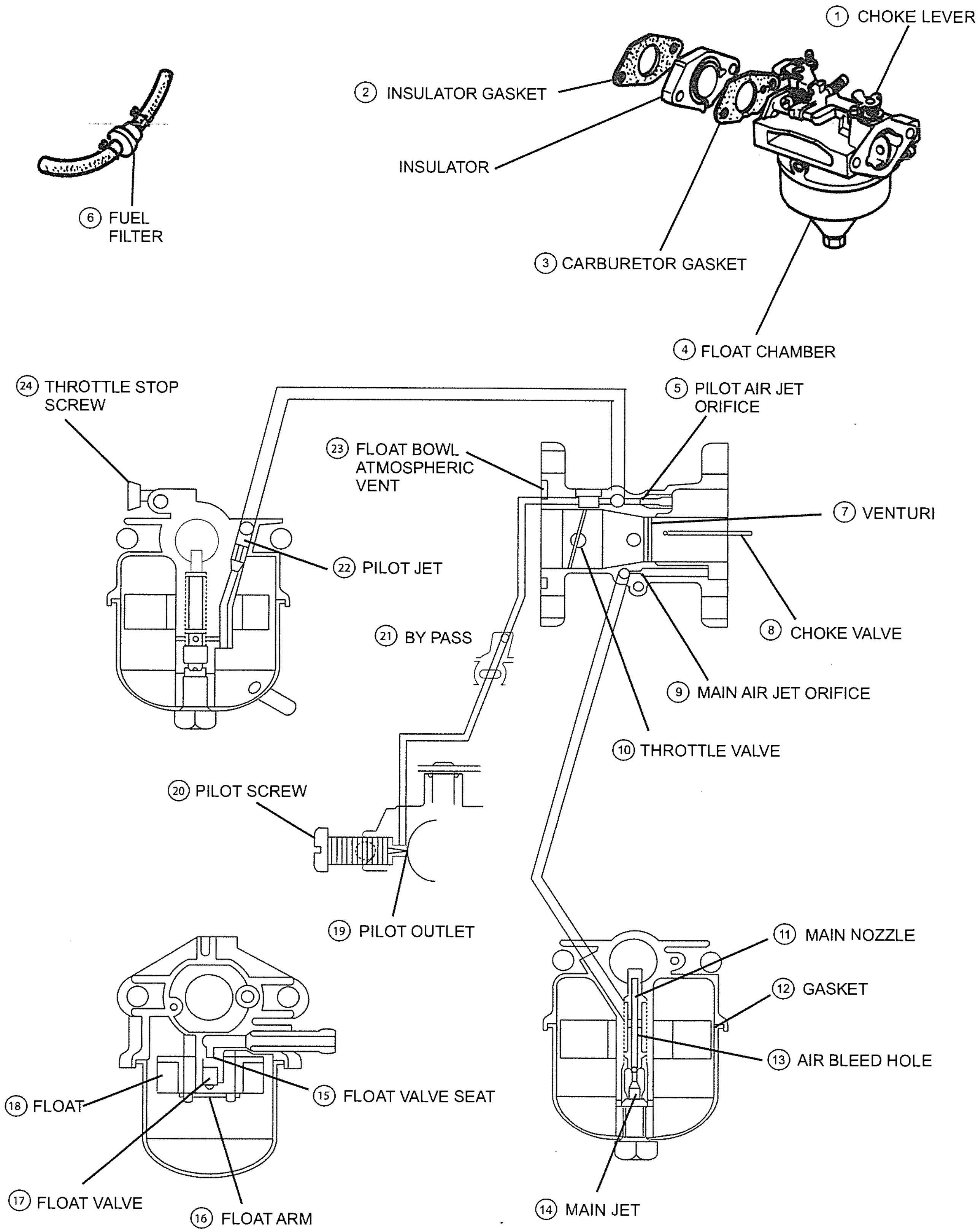
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel filter	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

- Float bowl overflowing
- Gasoline leaks

❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

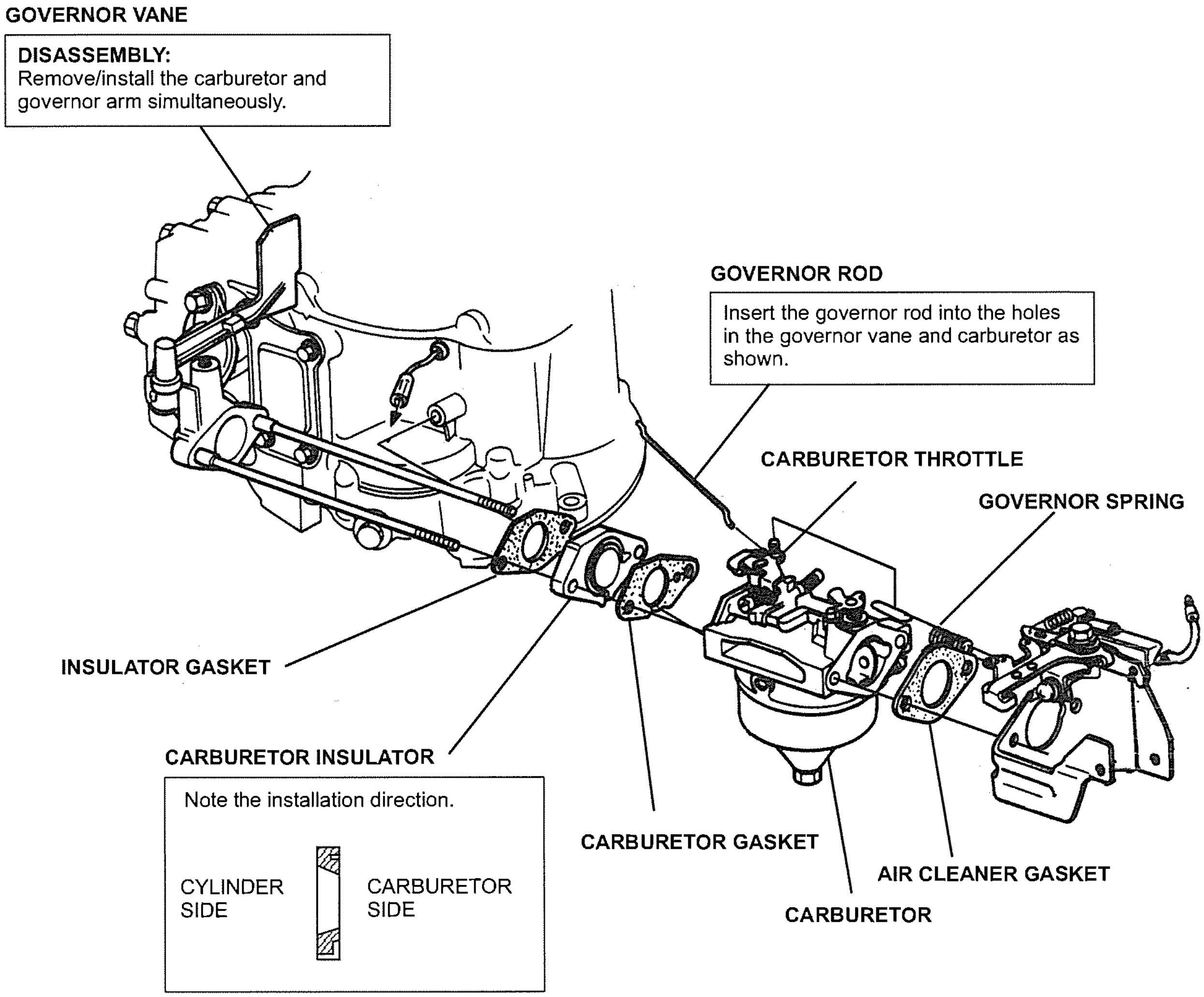
Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)



CARBURETOR REMOVAL

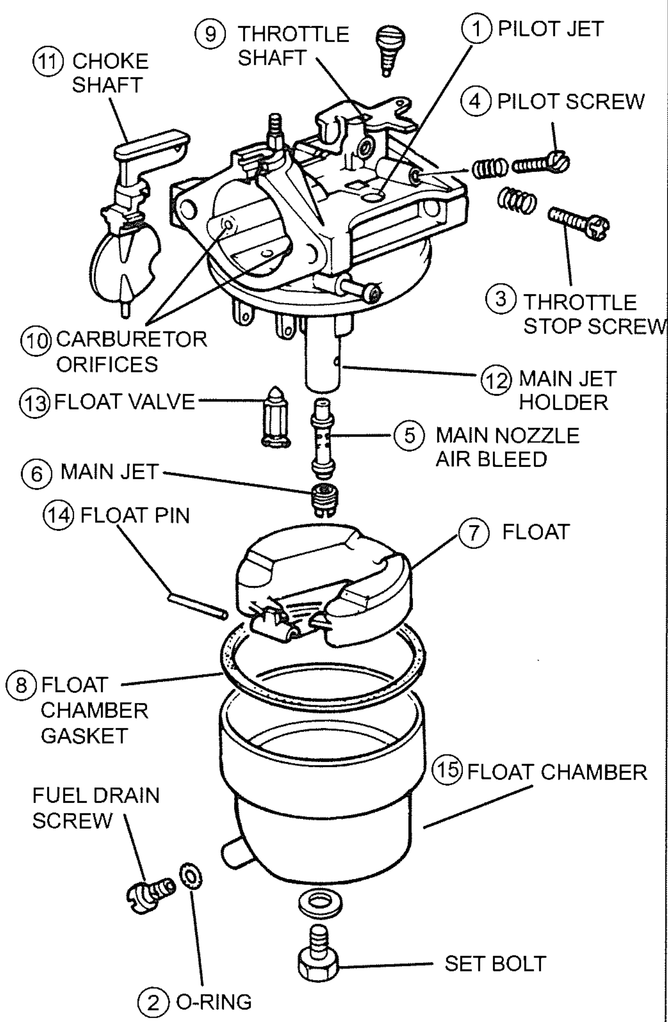
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

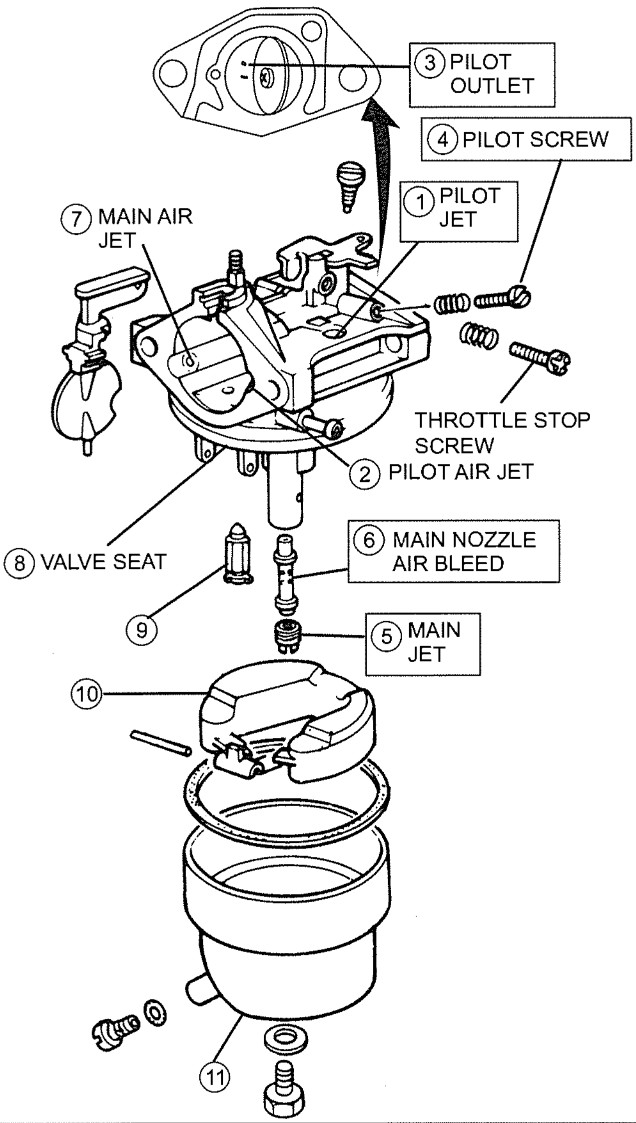
No.	Item	Clean	Replace
1	Check the pilot jet hole for clogging.	○	
2	Check the fuel drain screw O-ring for damage.		●
3	Check the stop screw for proper setting.		
4	Check screw tip for contamination.	○	
5	Check the air bleed holes for clogging.	○	
6	Check the main jet size. Check the jet orifice for clogging.	○	
7	Check the float height, and make sure there is no gasoline in the float.		●
8	Check the gasket for damage (Do not remove the gasket).		●
9	Check the shaft for smooth movement and looseness.		●
10	Check the orifices in the carburetor body for clogging.	○	
11	Check the choke shaft for smooth movement and looseness.		●
12	Check the main jet holder for corrosion.	○	
13	Check the tip of the valve for contamination or damage.	○	●
14	Check the float pin for wear or loose fit.		●
15	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●

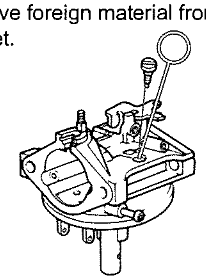
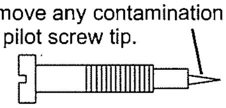
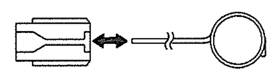
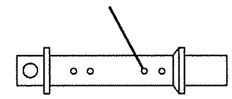
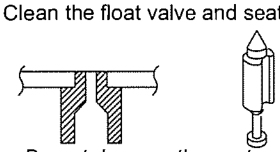
CLEANING

BB-type carburetor shown.

The BB-type has some components that are not found on other Honda carburetors.

☐ : Indicates parts that are likely to be clogged; clean carefully.

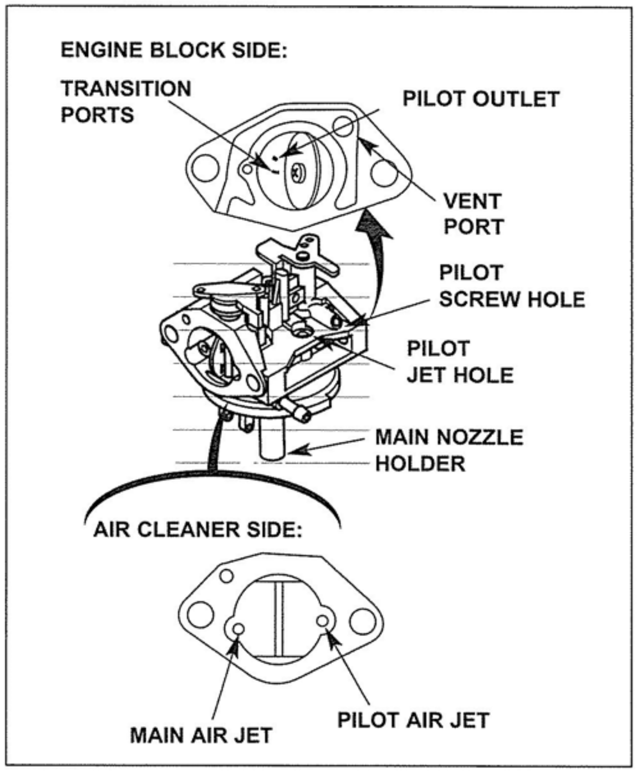


Item	Inspection/ Cleaning Tool
Slow Circuit	
① Remove foreign material from the pilot jet. 	Jet Cleaner Set Honda Carburetor Cleaner
② Clean the pilot air jet orifice. ③ Clean the pilot outlet. ④ Remove any contamination from the pilot screw tip. 	Low pressure compressed air
Main Circuit	
⑤ Remove foreign material from the main jet. 	Jet Cleaner Set
⑥ Remove foreign material from the main nozzle air bleed holes. 	Honda Carburetor Cleaner Low pressure compressed air
⑦ Clean the main air jet orifice.	
Float Circuit	
⑧ Remove foreign materials from the valve seat. ⑨ Clean the float valve and seat.  *Do not damage the seat and valve.*	Honda Carburetor Cleaner Low pressure compressed air
⑩ Check the float level. ⑪ Remove foreign material from the float chamber.	Float level gauge

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

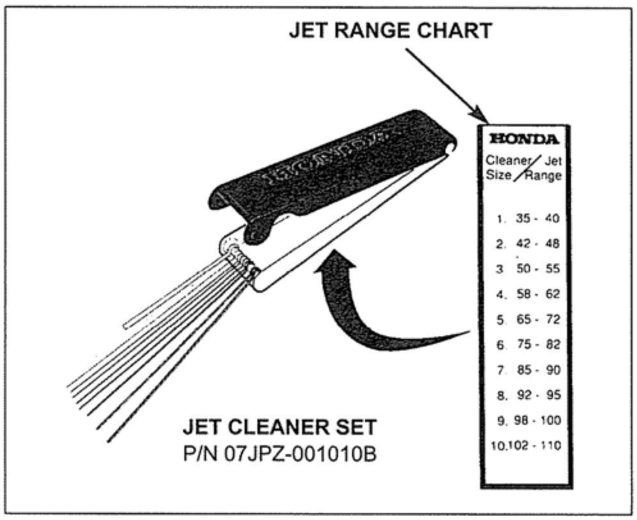
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

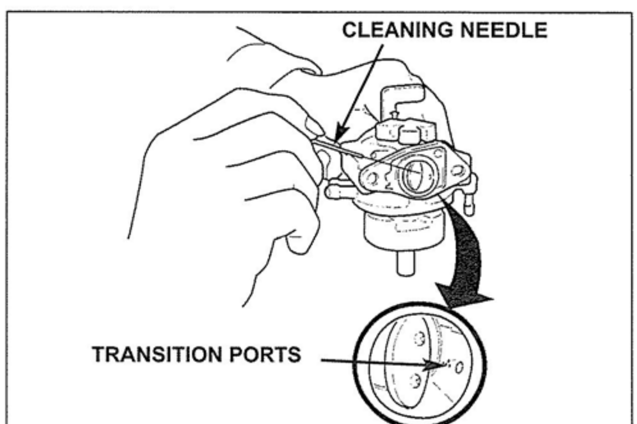
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



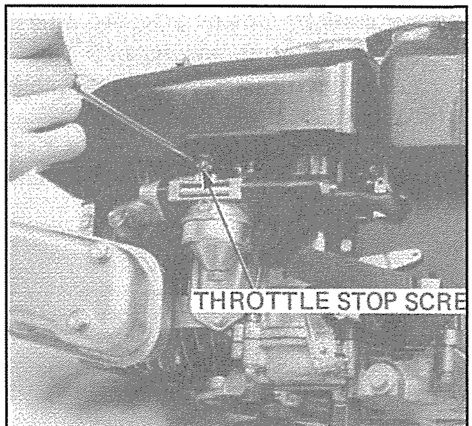
ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

1. Idle slow speed adjustment under no load

Use the throttle stop screw and pilot screw (non-certified engines) to adjust the idle slow speed.



Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases

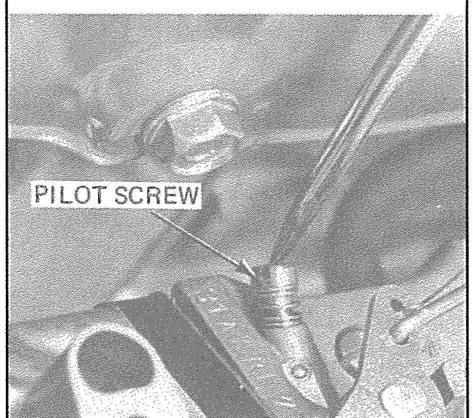
Pilot screw (non-certified engines):

Refer to the appropriate shop manual for adjustment and reassembly procedures.

- Turn clockwise .... leaner fuel mixture
- Turn counterclockwise .... richer fuel mixture

IDLE ADJUSTMENT

(1) With the engine off, turn the throttle stop screw clockwise until it contacts the throttle lever, and then make 3 more turns to open the throttle plate. Be sure the throttle lever is touching the end of the screw.



(2) Turn the pilot screw clockwise until it lightly seats, and then back it out the number of turns specified in the appropriate shop manual. On certified engines, after the pilot screw is backed out the correct number of turns.

NOTICE

Overtightening the pilot screw may damage the carburetor.

(3) Start the engine, and let it warm up to normal operating temperature. When the engine is warm, slowly turn the throttle stop screw counterclockwise until the engine is running at the standard idle speed specified in the shop manual.

(4) Turn the pilot screw (non-certified engines) in or out to obtain the highest engine rpm.

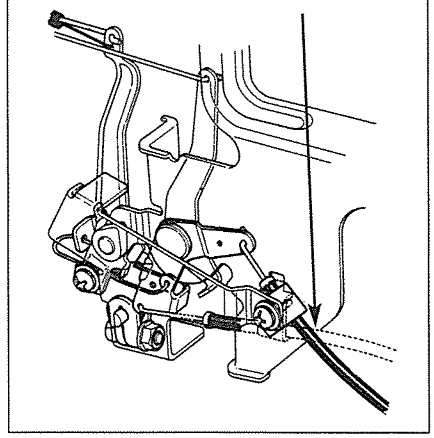
(5) Repeat steps (3) and (4) above until the pilot screw (non-certified engines) setting is as close as possible to the standard idle speed.

If the pilot screw (non-certified engines) must be turned more than one turn in either direction from the shop manual specification, the carburetor may have a blocked passage. Be sure all air and fuel passages are clear before proceeding.

(6) Adjust the throttle stop screw to obtain the standard idle speed.

2. **Maximum speed adjustment under no load**

Set the throttle cable on the control lever to set maximum speed.



MAXIMUM SPEED ADJUSTMENT

(1) Start the engine, and let it warm up to normal operating temperature. When the engine is warm, turn the control lever adjusting screw until the engine is running at the specified maximum speed at full throttle.

(2) Close the throttle, and then slowly open it again.

(3) If hunting occurs as the throttle is opened, adjust the pilot screw (non-certified engines).

(4) Check the idle slow speed, and adjust the throttle stop screw if necessary.

BE-TYPE

EU3000is

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

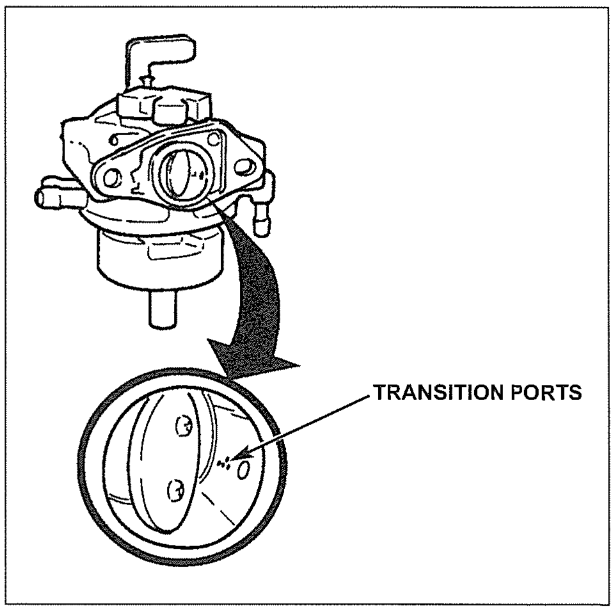
Transition Circuit

The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

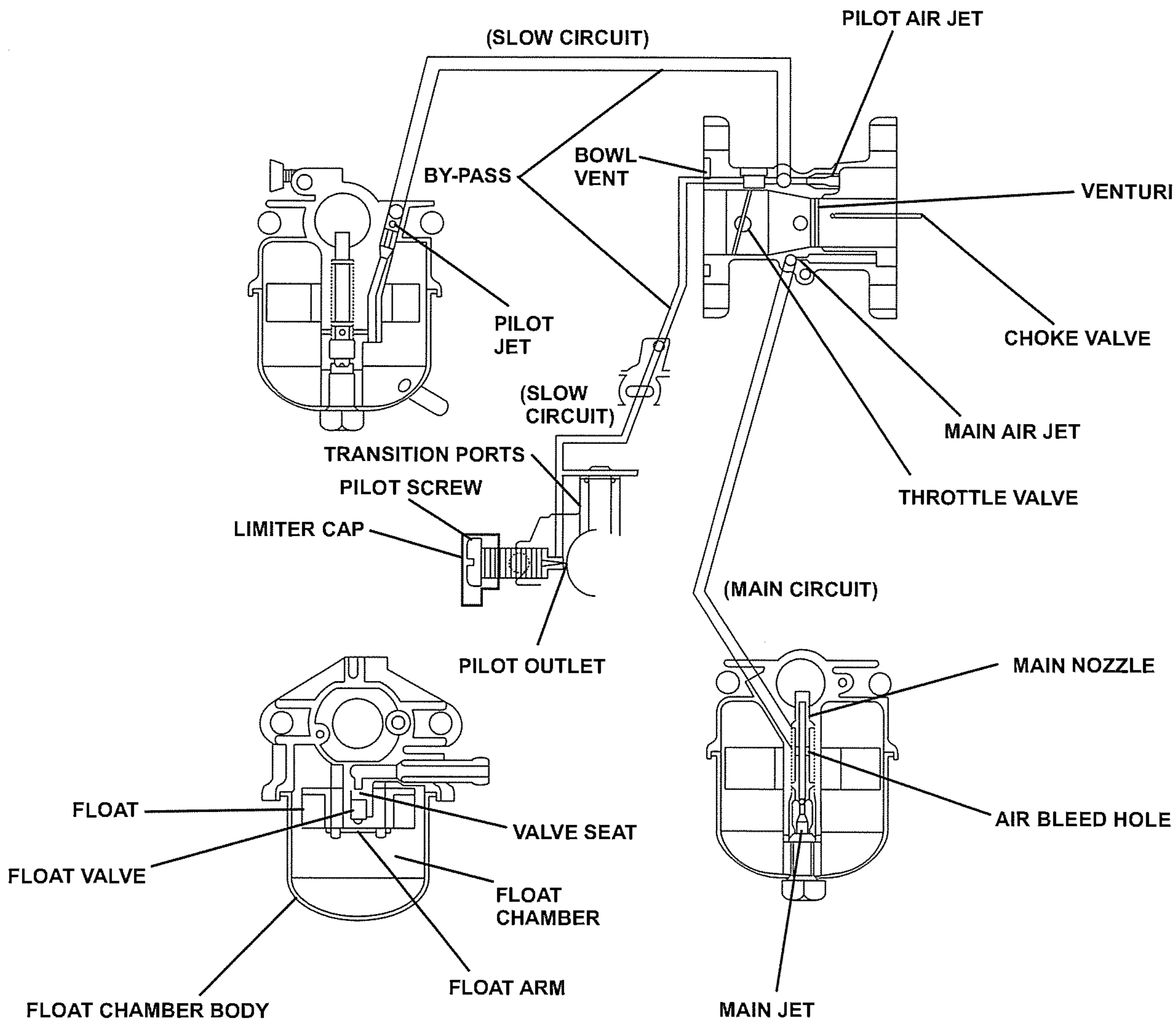
The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.



Electronic Governor/Throttle Control

The inverter's CPU compares the current output voltage, current, and engine speed with what is programed it its memory and sets the throttle position accordingly. The actual required engine speed is based on generator load ratio and temperature. As a load is applied, the engine speed, and generator output power will drop momentarily. The inverter will calculate the type of load (how much of power drop is occurring) and set the engine speed accordingly.


PILOT AIR JET
(SLOW CIRCUIT)
BOWL VENT
BY-PASS
VENTURI
PILOT JET
CHOKE VALVE
(SLOW CIRCUIT)
MAIN AIR JET
TRANSITION PORTS
PILOT SCREW
THROTTLE VALVE
LIMITER CAP
(MAIN CIRCUIT)
PILOT OUTLET
MAIN NOZZLE
FLOAT
VALVE SEAT
AIR BLEED HOLE
FLOAT VALVE
FLOAT CHAMBER
FLOAT ARM
FLOAT CHAMBER BODY
MAIN JET

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

● . . . . Inspection order before disassembly
○ . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

Symptom:
- Hard Starting
- Engine starts but soon stops

Symptom:
- Poor performance at low speed
- rpm does not decrease

Order	Inspection Point	Ref.
1	Faulty choke valve operation	8
2	Misadjusted pilot screw	20
3	Foreign material on the tip of the pilot screw	20
4	Clogged pilot outlet	19
5	Misadjusted throttle stop screw	24
6	Contaminated fuel sediment cup/fuel filter	6
7	Faulty throttle control motor operation	10
8	Faulty throttle shaft/valve operation	10
9	Clogged main jet	14

Symptom:
- Hunting
- rpm does not stabilize

Symptom:
- Poor performance at high speed
- rpm does not increase

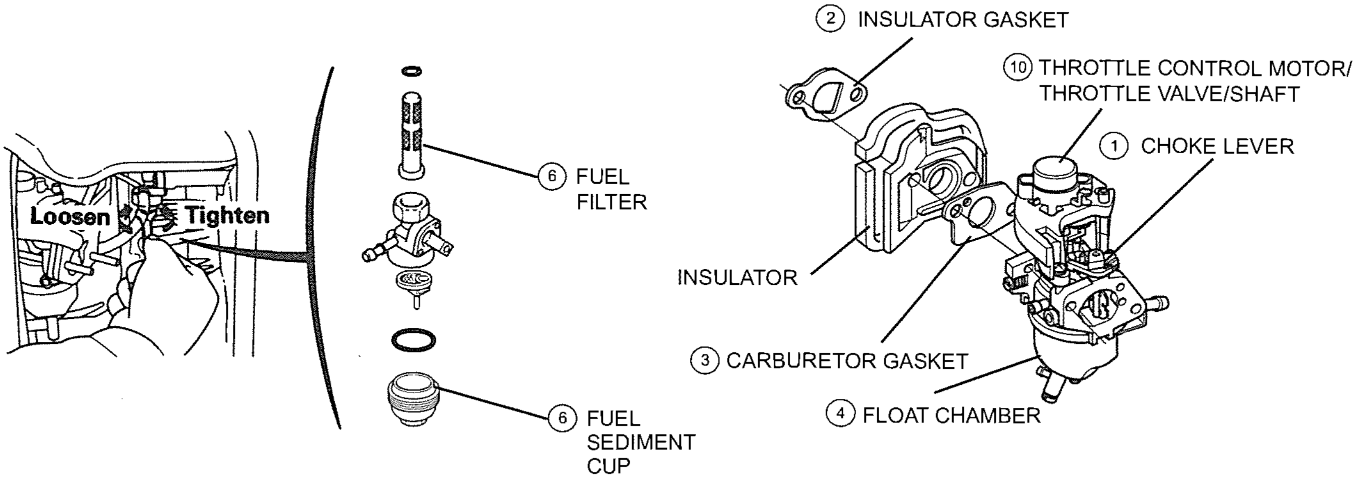
Order	Inspection Point	Ref.
	Improper installation of carburetor gasket	3
	Improper installation of insulator gasket	2
	Air leaking through broken carburetor, insulator gasket or broken insulator	3
	Clogged pilot jet	22
	Clogged pilot air jet	5
	Clogged main jet	14
	Wrong main jet size	14
	Clogged float bowl atmospheric vent	23
4	Clogged main air jet	9
5	Clogged main nozzle air bleed hole	13
1	Contaminated fuel sediment cup/fuel filter	6
2	Water/foreign materials in the float chamber, corroded chamber	4
3	Deteriorated gasoline in the float chamber	4

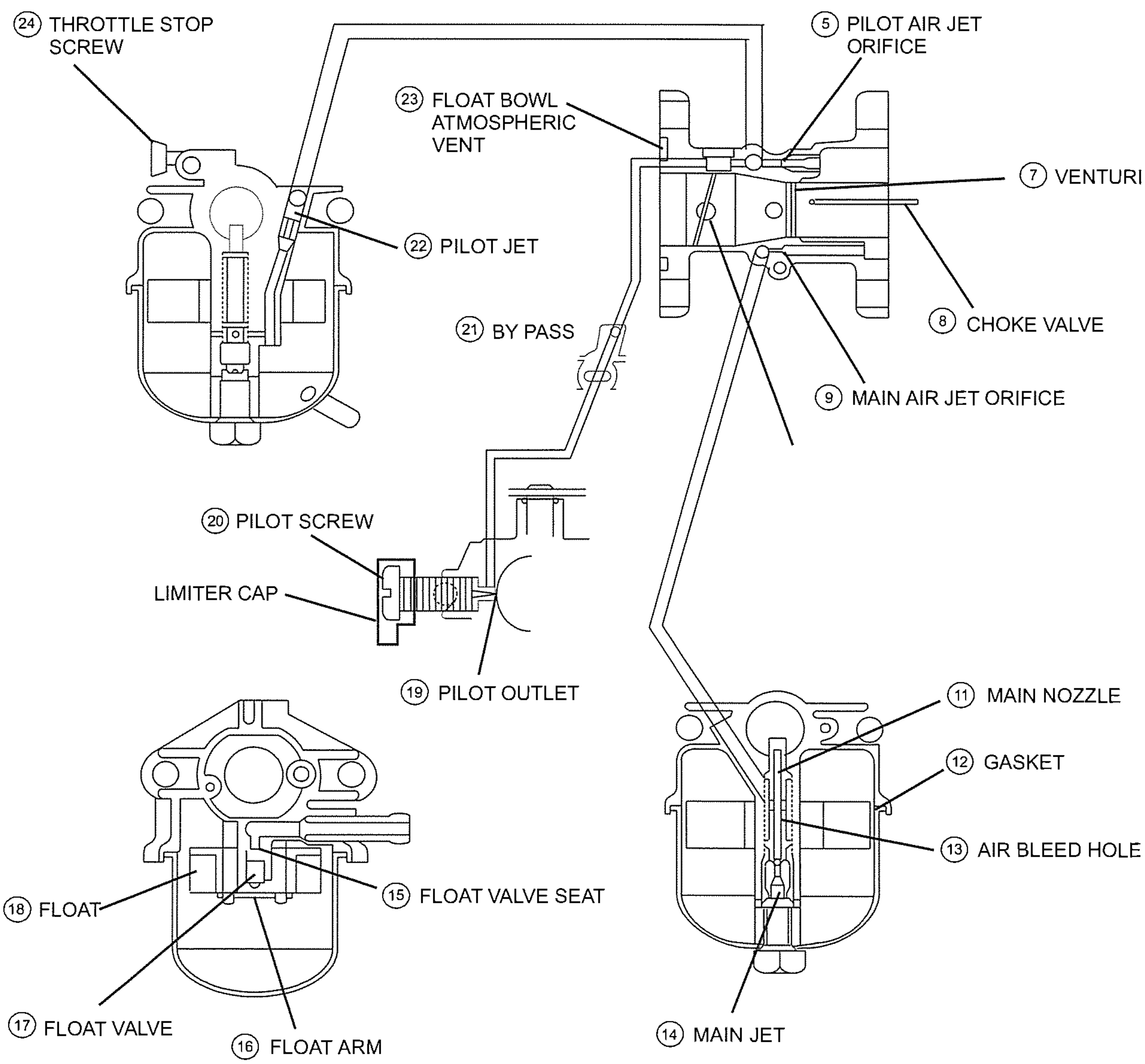
Symptom:
- Float bowl overflowing
- Gasoline leaks

Order	Inspection Point	Ref.
1	Damaged/contaminated float valve seating surface	15
	Foreign materials on the tip of float valve	17
2	Clogged float bowl atmospheric vent	23
3	Faulty chamber gasket (improperly installed)	12
	Fuel inside the float	18
	Faulty float operation, float does not operate smoothly	16
	Deformed chamber (mating face, joint)	4

Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

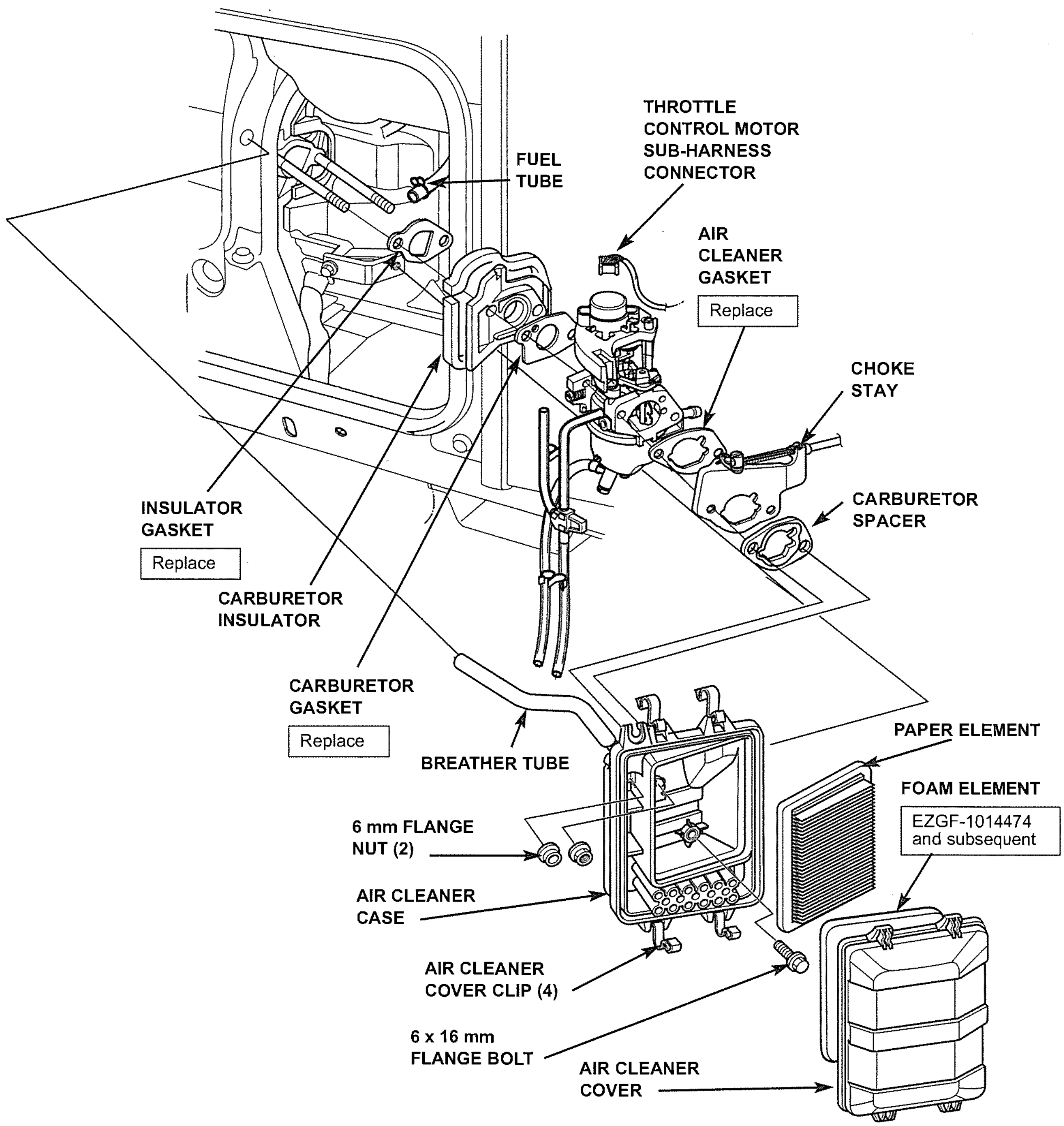
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)





CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.

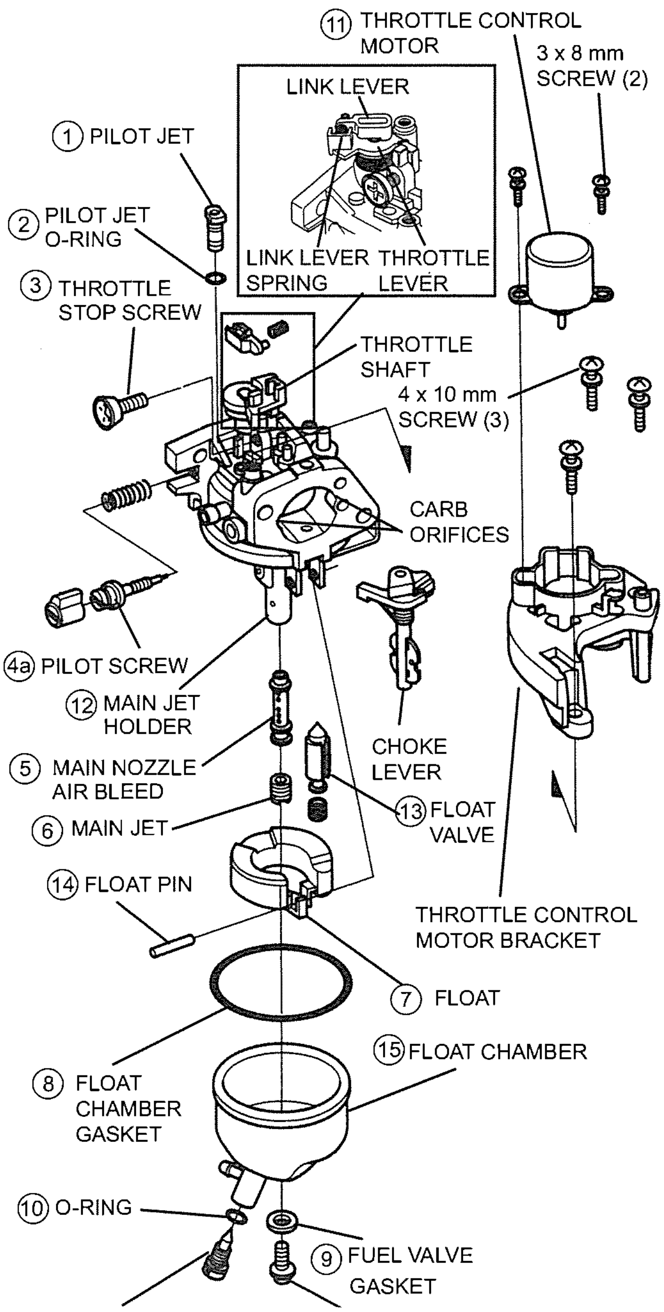


DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly

BE-type carburetor shown.
The BE-type has some components that are not found on other Honda carburetors.



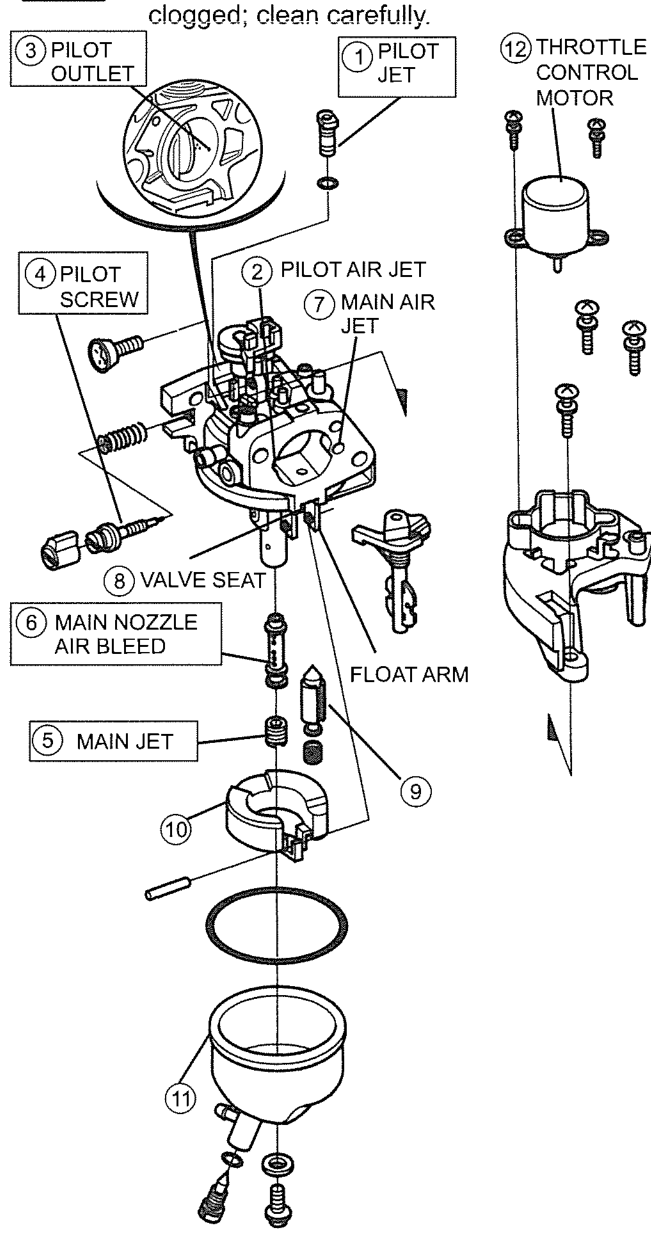
Inspection

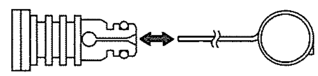
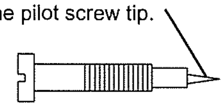
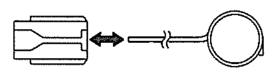
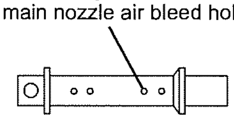
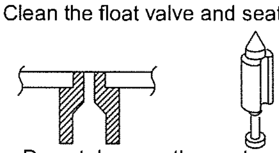
No.	Item	Clean	Replace
(1)	Check the pilot jet holes for clogging.	○	
(2)	Check the pilot jet O-ring for damage.		●
(3)	Check the stop screw for proper setting.		
(4)	All Honda certified engines have a tamper resistant limiter cap installed on the pilot screw. Any attempt to remove the cap will break the pilot screw, requiring screw and limiter cap replacement. Generally, leave this type of pilot screw installed on the carburetor.		●
(5)	Check the air bleed hole for clogging.	○	
(6)	Check the main jet size. Check the jet orifice for clogging.	○	
(7)	Check the float height, and make sure there is no gasoline in the float.		●
(8)	Check the gasket for damage (Do not remove the gasket).		●
(9)	Check the gasket for damage if gasoline leaks from the fuel valve.		●
(10)	Check the O-ring for damage.		●
(11)	Check the throttle control motor for worn gears. Replace if necessary.		●
(12)	Check the main jet holder for corrosion.	○	
(13)	Check the tip of the valve for contamination or damage.	○	●
(14)	Check the float pin for wear or loose fit.		●
(15)	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

CLEANING

BE-type carburetor shown.
The BE-type has some components that are not found on other Honda carburetors.

▭ : Indicates parts that are likely to be clogged; clean carefully.



	Item	Inspection/ Cleaning Tool
Slow Circuit		
(1)	Remove foreign material from the pilot jet. 	Jet Cleaner Set
(2)	Clean the pilot air jet orifice.	Honda Carburetor Cleaner Low pressure compressed air
(3)	Clean the pilot outlet.	
(4)	* Remove any contamination from the pilot screw tip. 	
Main Circuit		
(5)	Remove foreign material from the main jet. 	Jet Cleaner Set
(6)	Remove foreign material from the main nozzle air bleed holes. 	Honda Carburetor Cleaner Low pressure compressed air
(7)	Clean the main air jet orifice.	
Float Circuit		
(8)	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner Low pressure compressed air
(9)	Clean the float valve and seat.  Do not damage the seat and valve.	
(10)	Check the float level.	
(11)	Remove foreign material from the float chamber.	Float level gauge
(12)	Check the throttle control motor for worn gears. Replace if necessary.	

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.

NOTICE

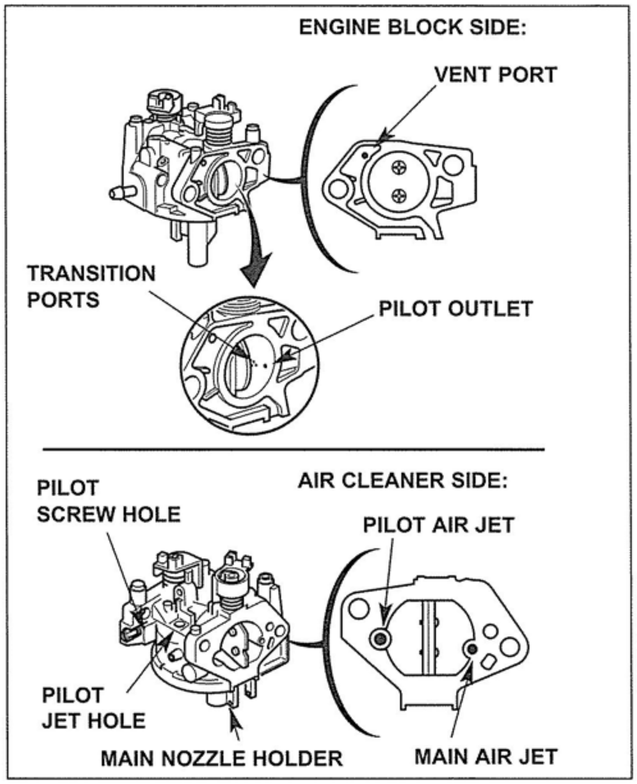
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

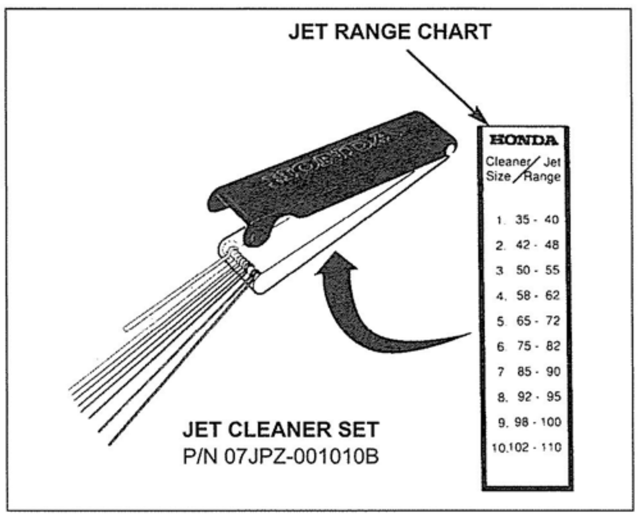
1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

   NOTICE

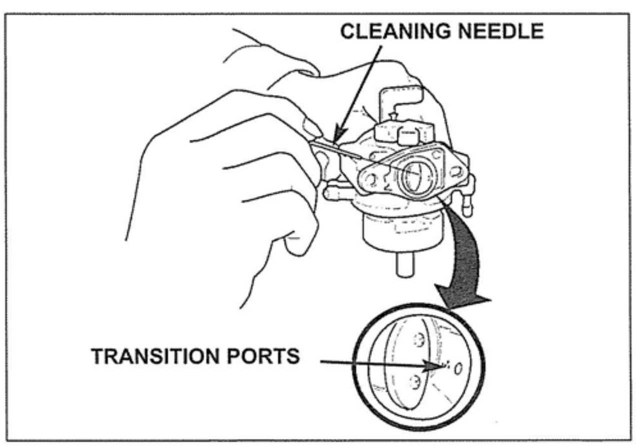
   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.





4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section.



ADJUSTMENT

No adjustments are necessary.

BE-TYPE

GX110/120/140/200/160/270/340/390

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

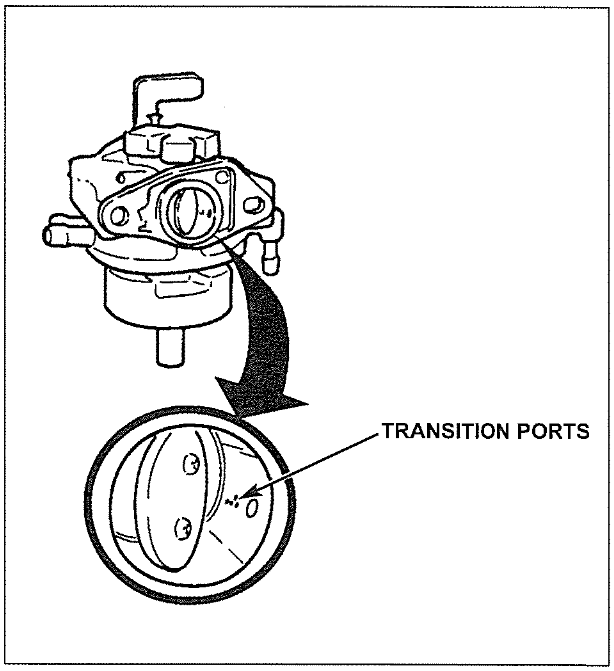
Transition Circuit

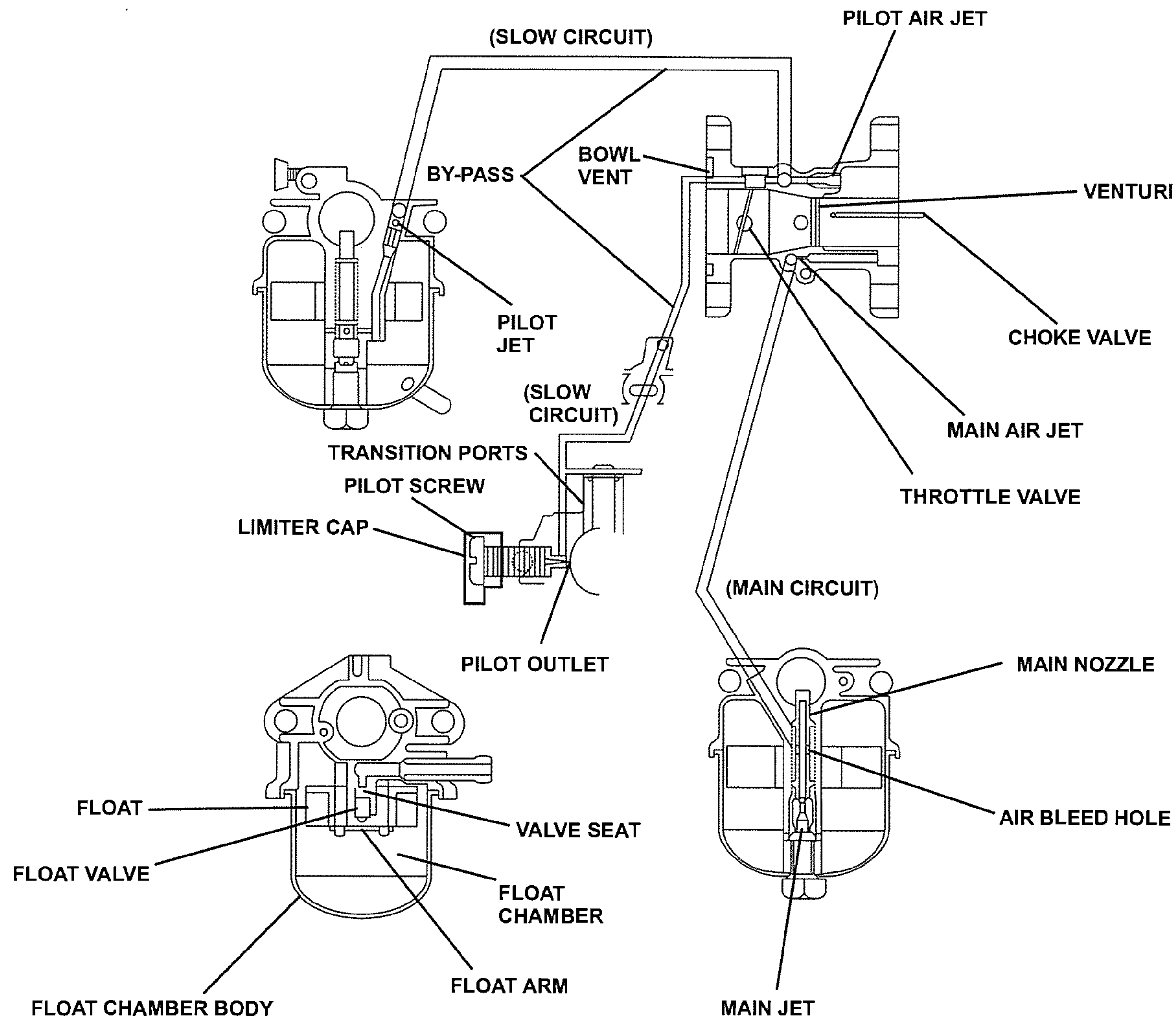
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




PILOT AIR JET
(SLOW CIRCUIT)
BOWL VENT
BY-PASS
VENTURI
PILOT JET
CHOKE VALVE
(SLOW CIRCUIT)
MAIN AIR JET
TRANSITION PORTS
PILOT SCREW
THROTTLE VALVE
LIMITER CAP
(MAIN CIRCUIT)
PILOT OUTLET
MAIN NOZZLE
FLOAT
VALVE SEAT
AIR BLEED HOLE
FLOAT VALVE
FLOAT CHAMBER
FLOAT ARM
FLOAT CHAMBER BODY
MAIN JET

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ .... Inspection order before disassembly
① .... Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

Symptom (left):
- Hard Starting
- Engine starts but soon stops

Symptom (right):
- Poor performance at low speed
- rpm does not decrease

	Inspection Point	Ref.
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Water/foreign materials in the fuel sediment cup	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

Symptom (left):
- Hunting
- rpm does not stabilize

Symptom (right):
- Poor performance at high speed
- rpm does not increase

	Inspection Point	Ref.
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel sediment cup	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

Symptom:
- Float bowl overflowing
- Gasoline leaks

	Inspection Point	Ref.
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

Symptom:
- Hunting
- Spitting
- Engine stalling
- Hard Starting

Inspection Point:
- Air leaking past the carburetor insulator gasket
- Clogged jets, worn throttle shaft
- Overheating of the carburetor chamber/fuel passage
- Wrong main jet size
- Restricted pilot jet

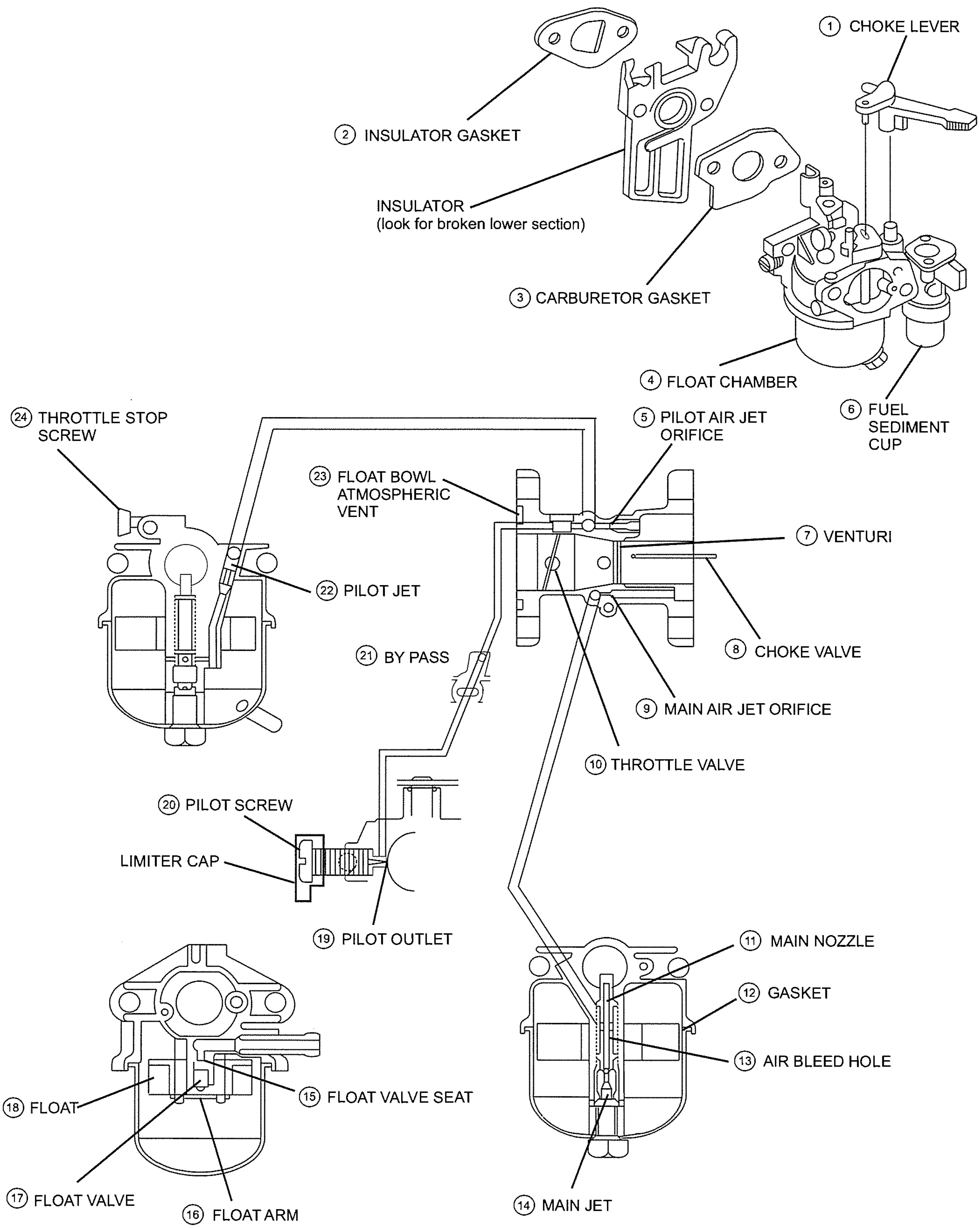
Cause:
- Lean fuel mixture
- Percolation
- Overheating
- Set for high elevation

Symptom:
- Wet fouled spark plug
- Power drops, rpm does not stabilize
- Black smoke from muffler, engine stalls

Inspection Point:
- Clogged air cleaner
- Faulty choke operation
- Wrong main jet size
- Deteriorated gasoline
- Blocked main nozzle/venturi bore

Cause:
- Rich fuel mixture
- Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

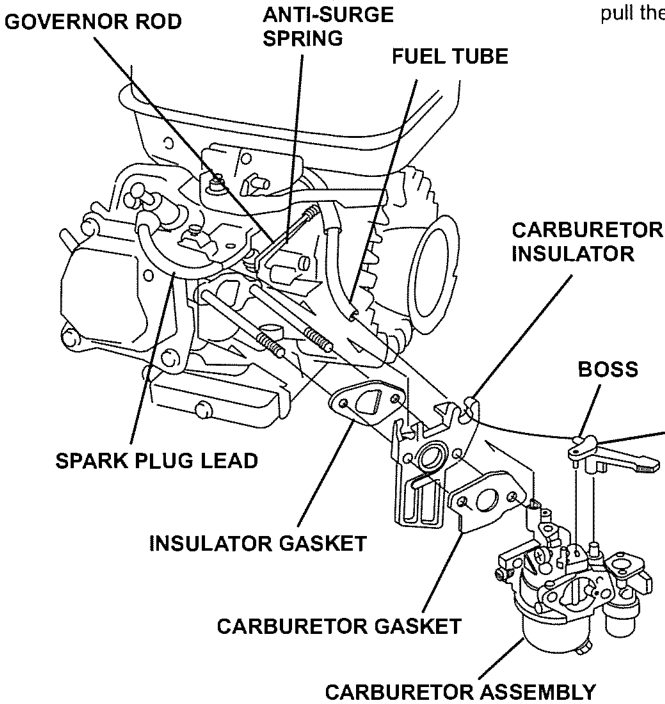
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)



CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.

Do not strike or tap on the carburetor with a hammer during removal. Do not bend the governor rod or anti-surge spring. Be careful not to pull them with excessive force.



NOTICE

Excessive force may damage the throttle lever and choke lever.

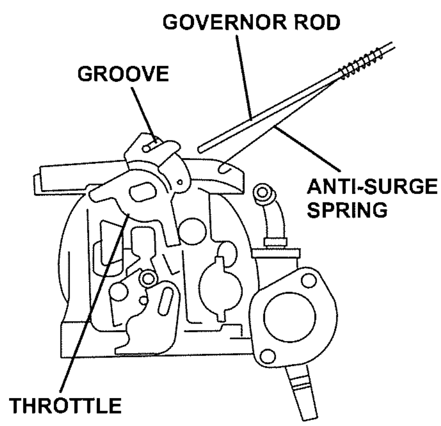
CHOKE LEVER DISASSEMBLY:
Disconnect the fuel tube from the carburetor, then plug the boss on the choke lever into the hose to prevent fuel leakage.

GOVERNOR ROD/ANTI-SURGE SPRING

REMOVAL:
Pull the carburetor slowly toward you unitl the throttle groove and governor rod are aligned, and then remove the govenor rod.

Unhook the anti-surge spring and then remove the carburetor from the cylinder head.

Not all products have an anti-surge spring.



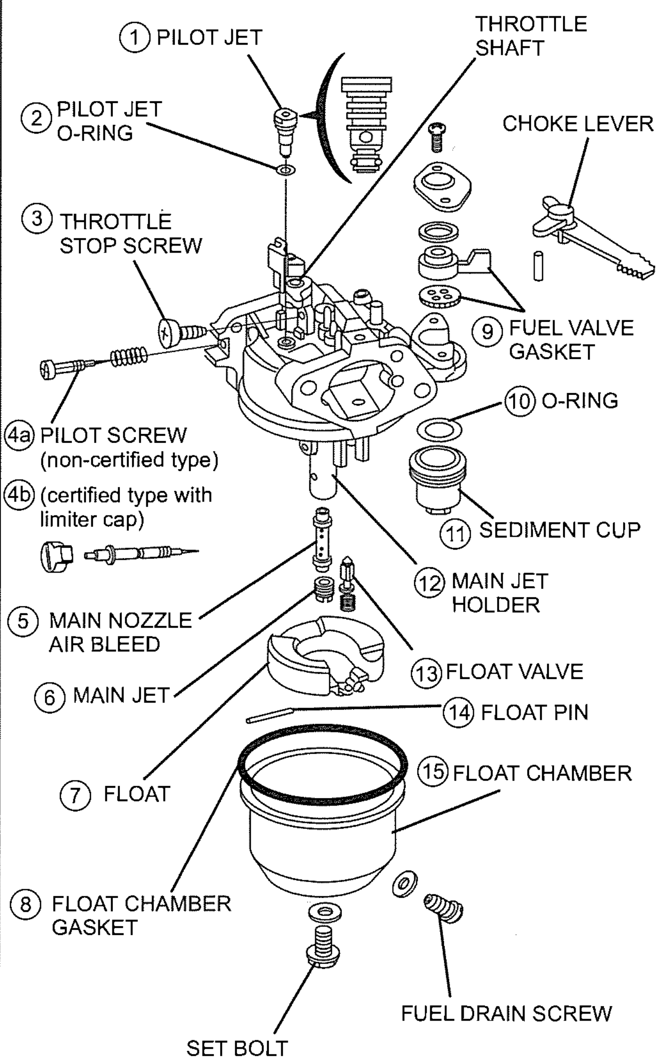
DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly

BE-type carburetor shown.

The BE-type has some components that are not found on other Honda carburetors.



Inspection

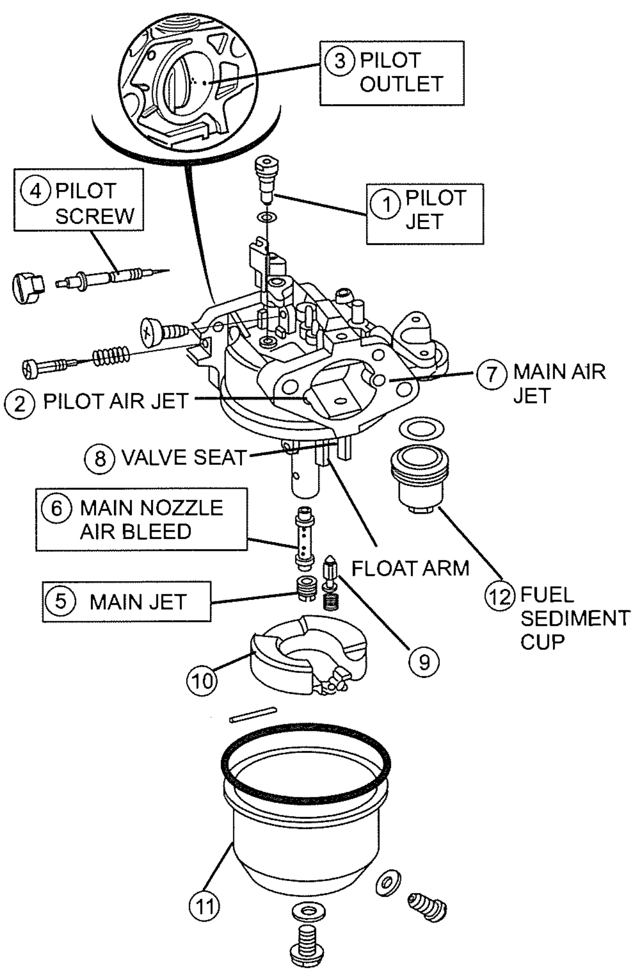
No.	Item	Clean	Replace
①	Check the pilot jet holes for clogging.	○	
②	Check the pilot jet O-ring for damage.		●
③	Check the stop screw for proper setting.		
④a	Check screw tip for contamination.	○	
④b	All Honda certified engines have a tamper resistant limiter cap installed on the pilot screw. Any attempt to remove the cap will break the pilot screw, requiring screw and limiter cap replacement. Generally, leave this type of pilot screw installed on the carburetor.		●
⑤	Check the air bleed hole for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the gasket for damage (Do not remove the gasket).		●
⑨	Check the gasket for damage if gasoline leaks from the fuel valve.		●
⑩	Check the O-ring for damage.		●
⑪	Check for dirt or foreign materials in the cup.	○	
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

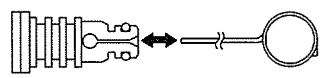
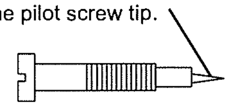
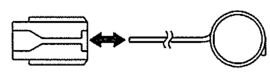
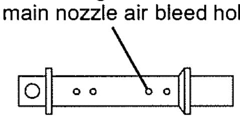
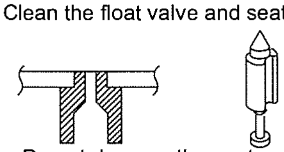
CLEANING

BE-type carburetor shown.

The BE-type has some components that are not found on other Honda carburetors.

☐ : Indicates parts that are likely to be clogged; clean carefully.



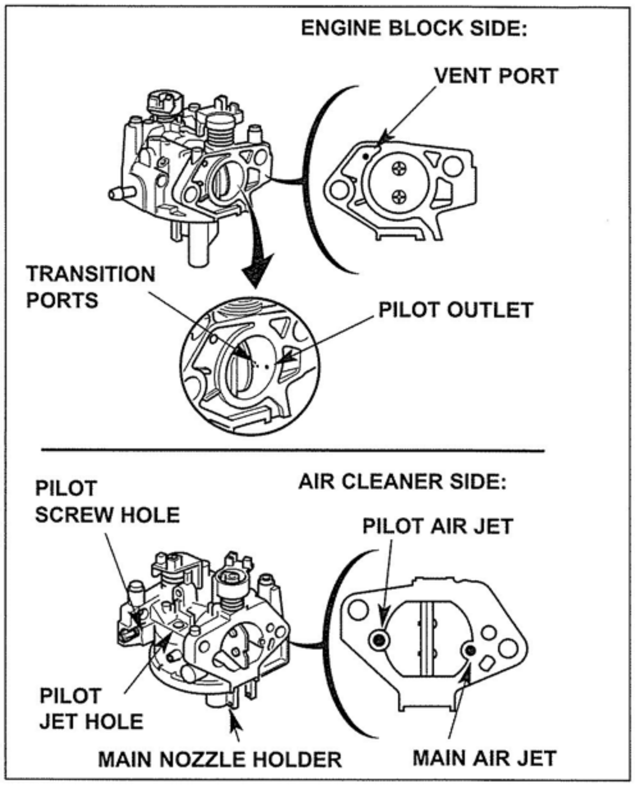
	Item	Inspection/ Cleaning Tool
Slow Circuit		
(1)	Remove foreign material from the pilot jet. 	Jet Cleaner Set
(2)	Clean the pilot air jet orifice.	Honda Carburetor Cleaner
(3)	Clean the pilot outlet.	
(4)	* Remove any contamination from the pilot screw tip. 	Low pressure compressed air
Main Circuit		
(5)	Remove foreign material from the main jet. 	Jet Cleaner Set
(6)	Remove foreign material from the main nozzle air bleed holes. 	Honda Carburetor Cleaner Low pressure compressed air
(7)	Clean the main air jet orifice.	
Float Circuit		
(8)	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
(9)	Clean the float valve and seat.  Do not damage the seat and valve.	Low pressure compressed air
(10)	Check the float level.	Float level gauge
(11)	Remove foreign material from the float chamber.	
(12)	Remove foreign material from the fuel sediment cup.	

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

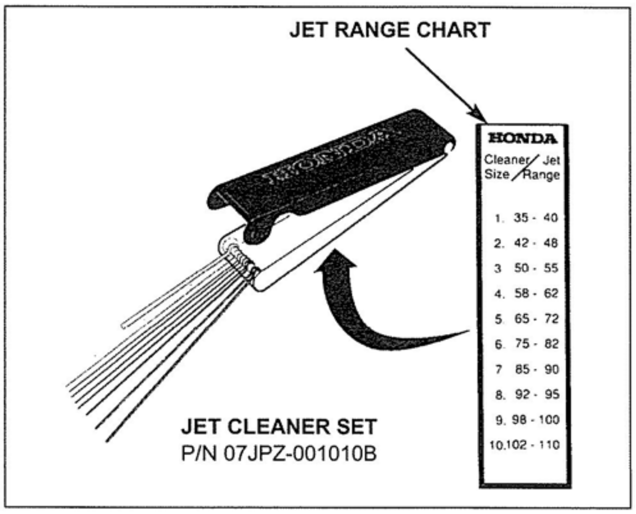
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

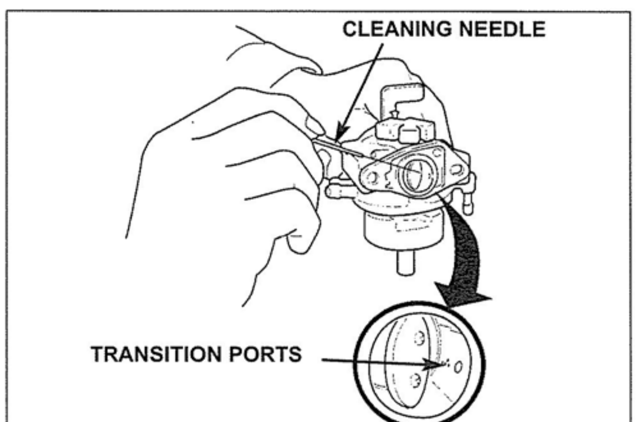
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

1. IDLE SLOW SPEED ADJUSTMENT UNDER NO LOAD

Use the throttle stop screw and pilot screw (non-certified engines) to adjust the idle slow speed.

Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases

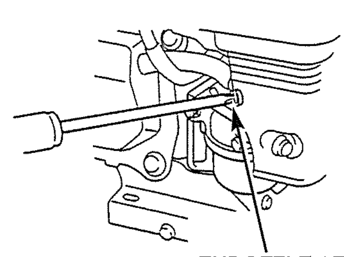
Pilot screw (non-certified engines):

- Turn clockwise .... leaner fuel mixture
- Turn counterclockwise .... richer fuel mixture

Pilot screw (certified engines):

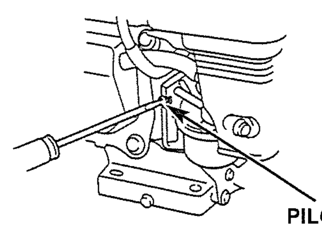
Refer to the appropriate shop manual for adjustment and reassembly procedures.

Idle Adjustment



(1) With the engine off, turn the throttle stop screw clockwise until it contacts the throttle lever, and then make 3 more turns to open the throttle plate. Be sure the throttle lever is touching the end of the screw.

(2) Turn the pilot screw clockwise until it lightly seats, and then back it out the number of turns specified in the appropriate shop manual. On certified engines, after the pilot screw is backed out the correct number of turns, install the limiter cap.



NOTICE

Overtightening the pilot screw may damage the carburetor.

(3) Start the engine, and let it warm up to normal operating temperature. When the engine is warm, slowly turn the throttle stop screw counterclockwise until the engine is running at the standard idle speed specified in the shop manual.

(4) Turn the pilot screw (non-certified engines) in or out to obtain the highest engine rpm.

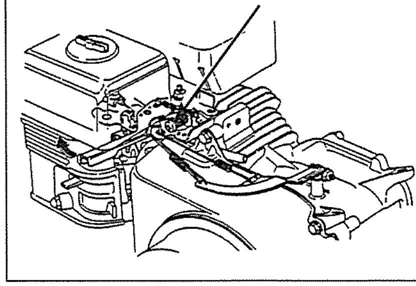
(5) Repeat steps (3) and (4) above until the pilot screw (non-certified engines) setting is as close as possible to the standard idle speed.

If the pilot screw (non-certified engines) must be turned more than one turn in either direction from the shop manual specification, the carburetor may have a blocked passage. Be sure all air and fuel passages are clear before proceeding.

(6) Adjust the throttle stop screw to obtain the standard idle speed.

2. **MAXIMUM SPEED ADJUSTMENT UNDER NO LOAD**

Use the adjusting screw on the control lever to set maximum speed.



Control lever adjusting screw:

- Turn clockwise.......................... rpm decreases
- Turn counterclockwise.............. rpm increase

Maximum Speed Adjustment

(1) Start the engine, and let it warm up to normal operating temperature. When the engine is warm, turn the control lever adjusting screw until the engine is running at the specified maximum speed at full throttle.

(2) Close the throttle, and then slowly open it again.

(3) If hunting occurs as the throttle is opened, adjust the pilot screw (non-certified engines).

(4) Check the idle slow speed, and adjust the throttle stop screw if necessary.

BE-TYPE

GXV120/140/160/270/340/390

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

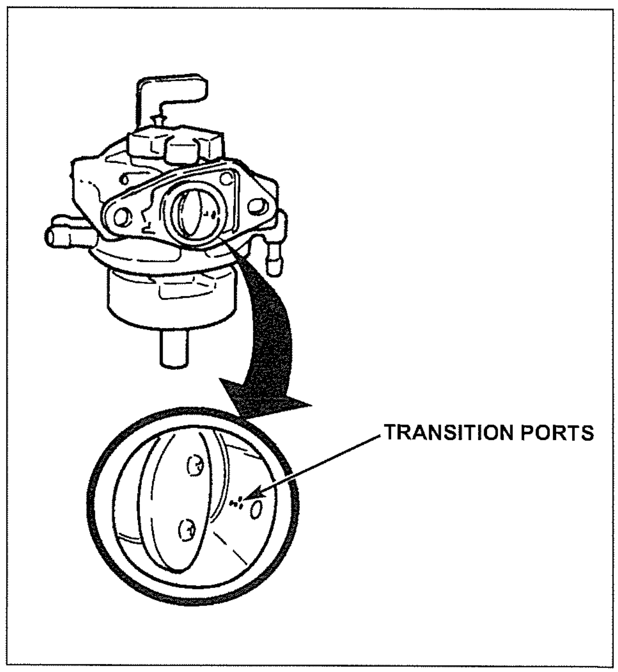
Transition Circuit

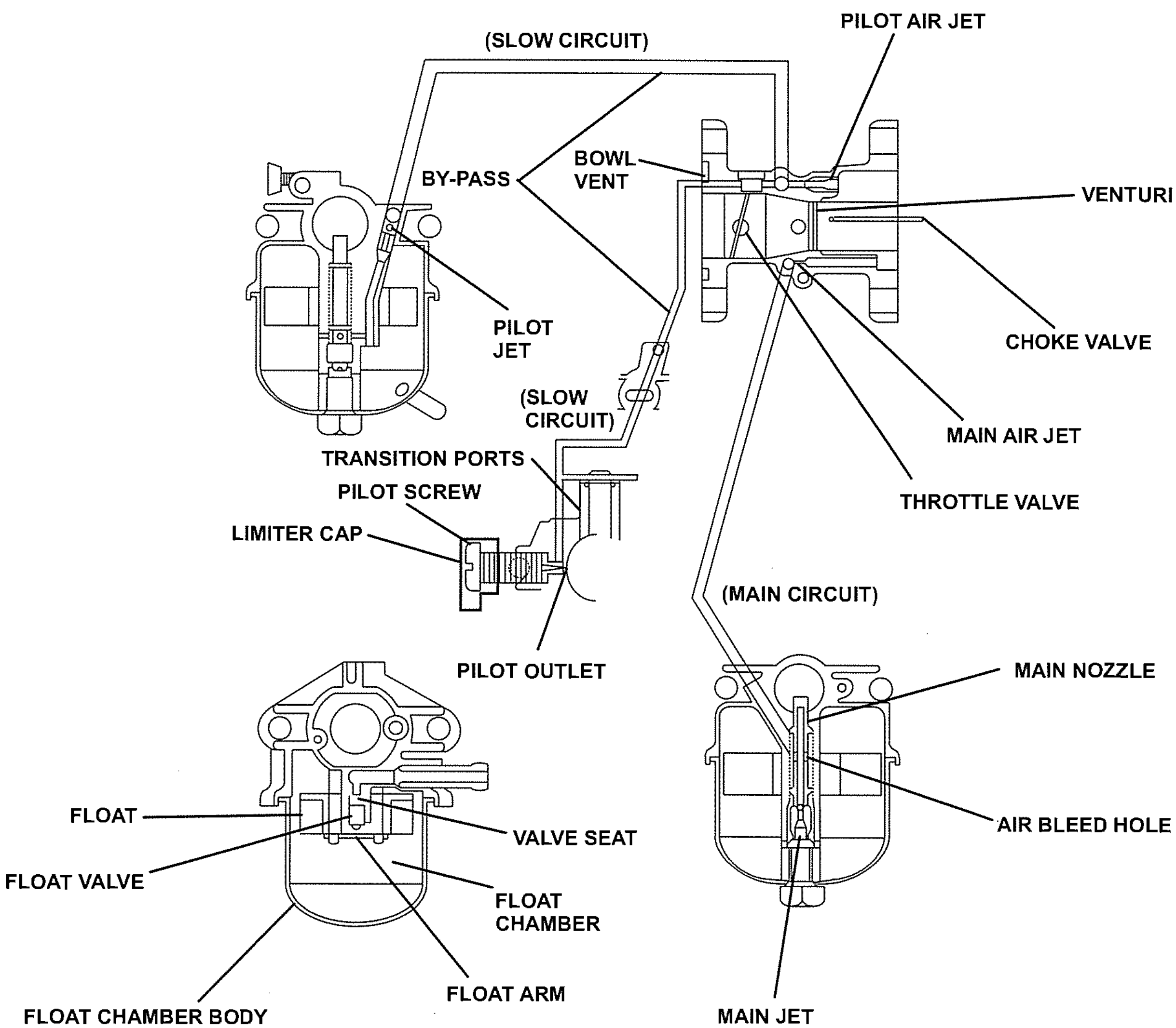
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




(SLOW CIRCUIT)
PILOT AIR JET
BY-PASS
BOWL VENT
VENTURI
PILOT JET
CHOKE VALVE
(SLOW CIRCUIT)
MAIN AIR JET
TRANSITION PORTS
PILOT SCREW
THROTTLE VALVE
LIMITER CAP
(MAIN CIRCUIT)
PILOT OUTLET
MAIN NOZZLE
FLOAT
VALVE SEAT
AIR BLEED HOLE
FLOAT VALVE
FLOAT CHAMBER
FLOAT CHAMBER BODY
FLOAT ARM
MAIN JET

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

Symptom:
- Hard Starting
- Engine starts but soon stops

Symptom:
- Hunting
- rpm does not stabilize

	Inspection Point	Ref.
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Water/foreign materials in the fuel sediment cup	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

Symptom:
- Poor performance at low speed
- rpm does not decrease

	Inspection Point	Ref.
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel filter	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

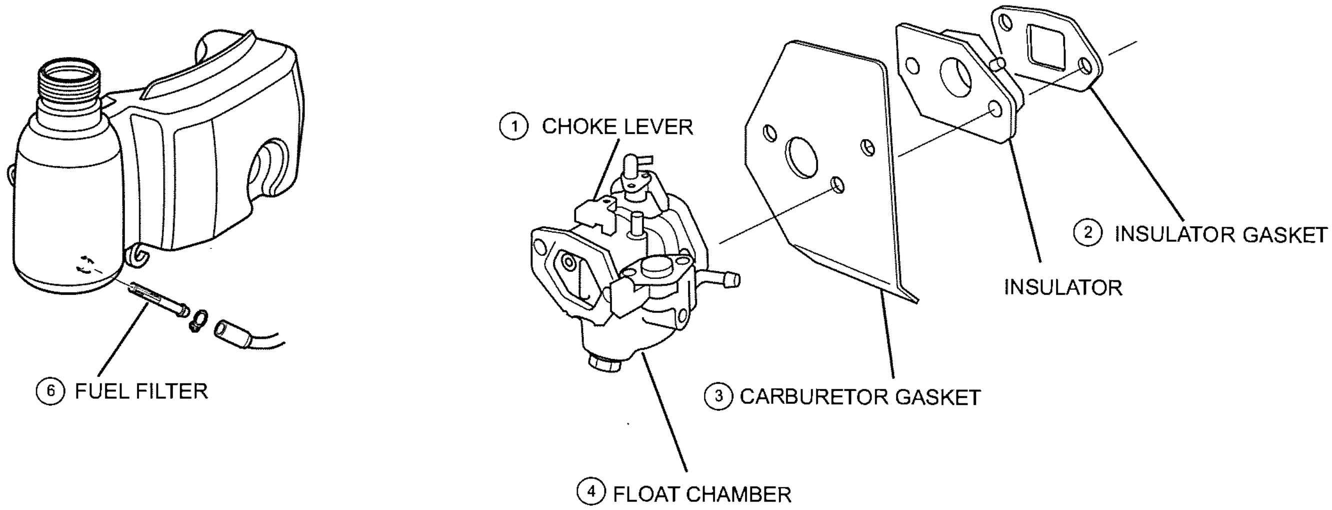
Symptom:
- Poor performance at high speed
- rpm does not increase

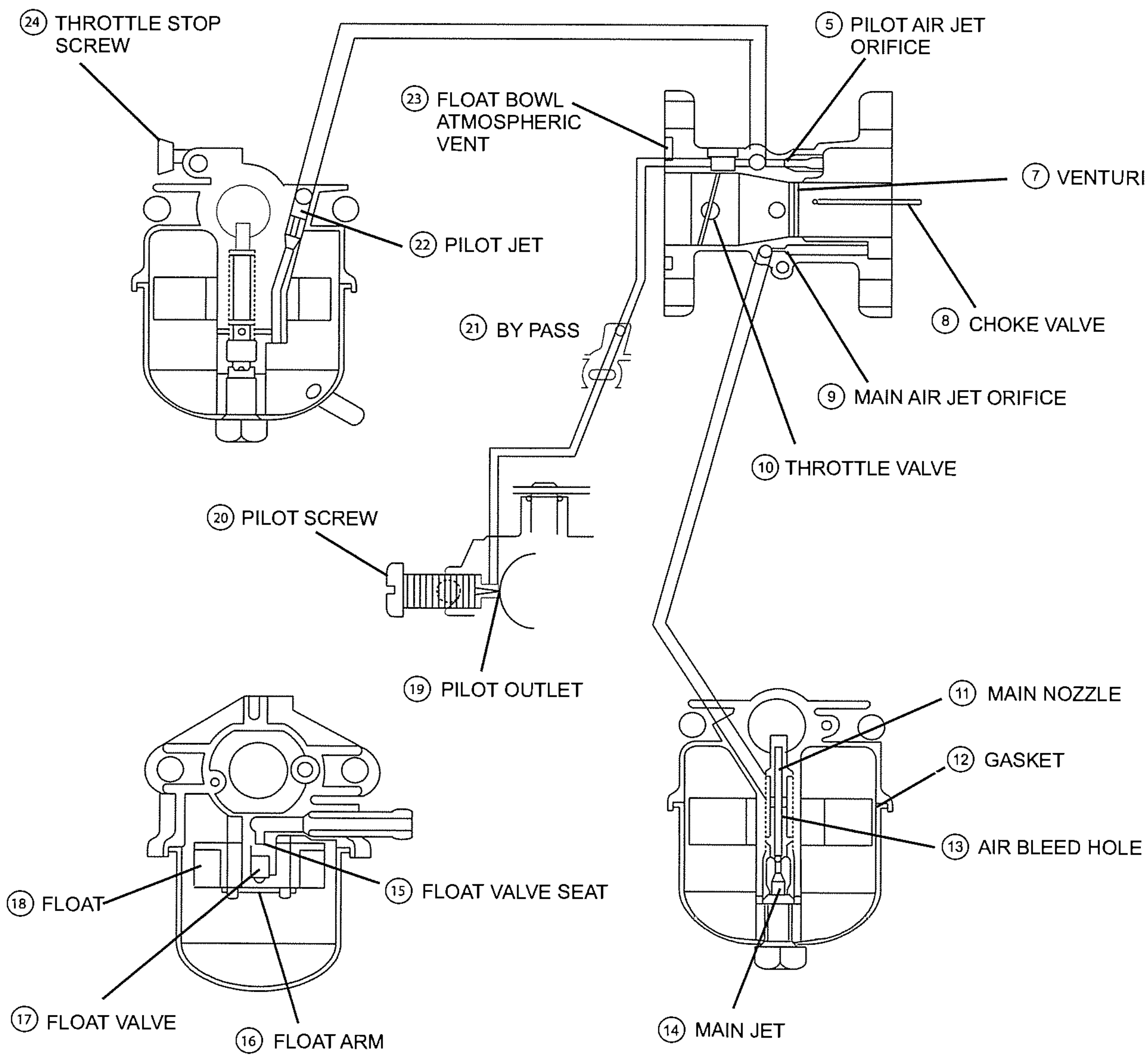
Symptom:
- Float bowl overflowing
- Gasoline leaks

	Inspection Point	Ref.
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)





CARBURETOR REMOVAL

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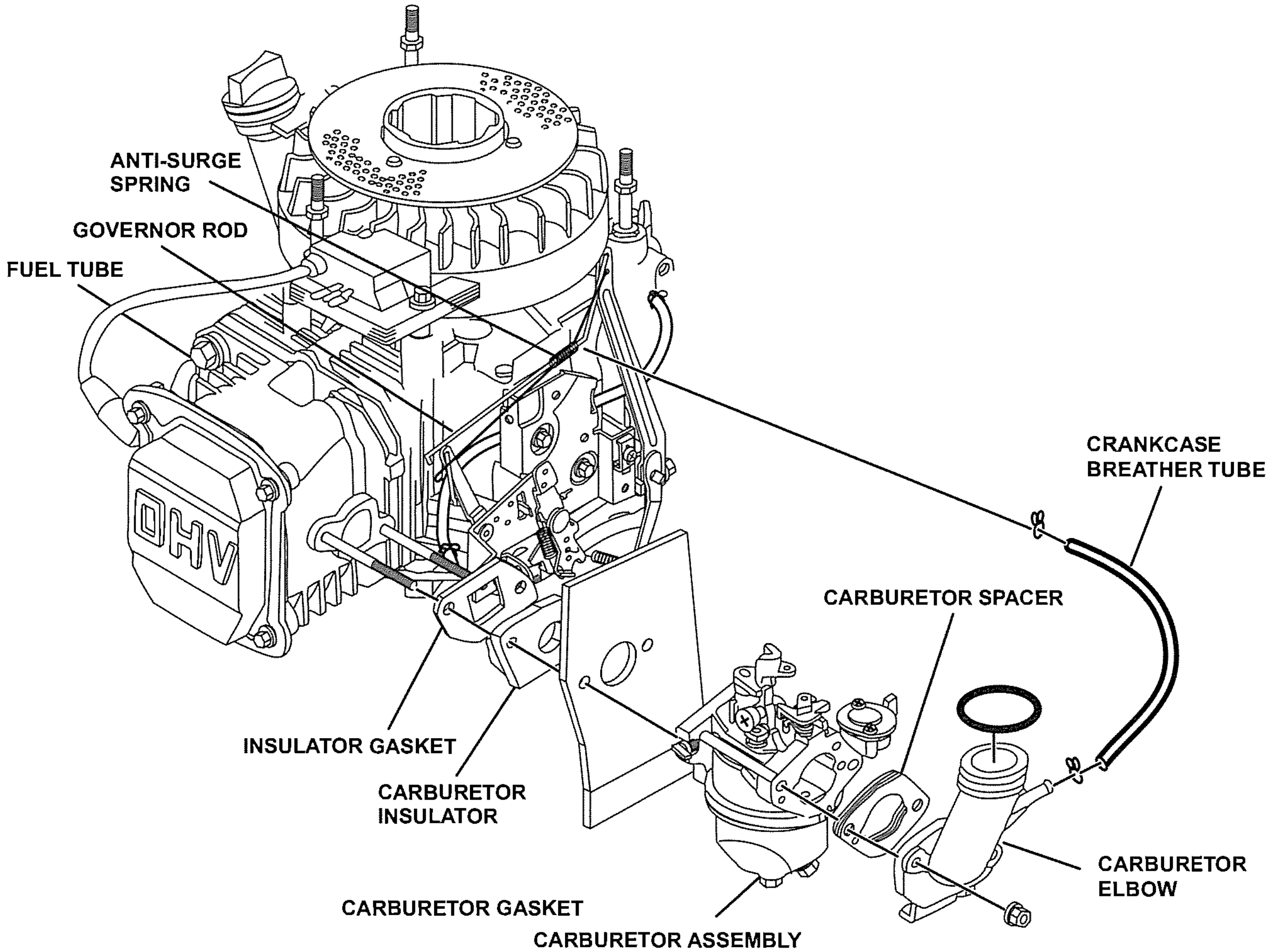
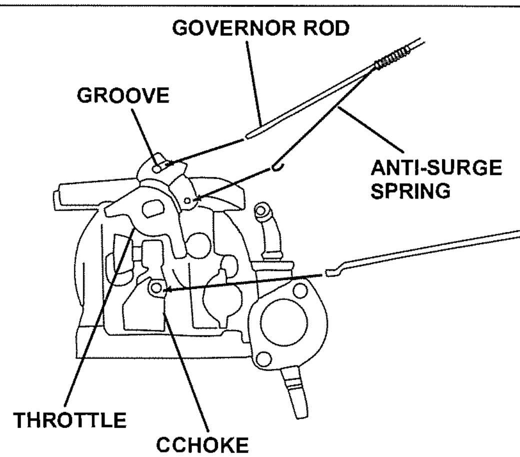


GOVERNOR ROD/ANTI-SURGE SPRING

REMOVAL:
Pull the carburetor slowly toward you unitl the throttle groove and governor rod are aligned, and then remove the govenor rod.

Unhook the anti-surge spring and then remove the carburetor from the cylinder head.

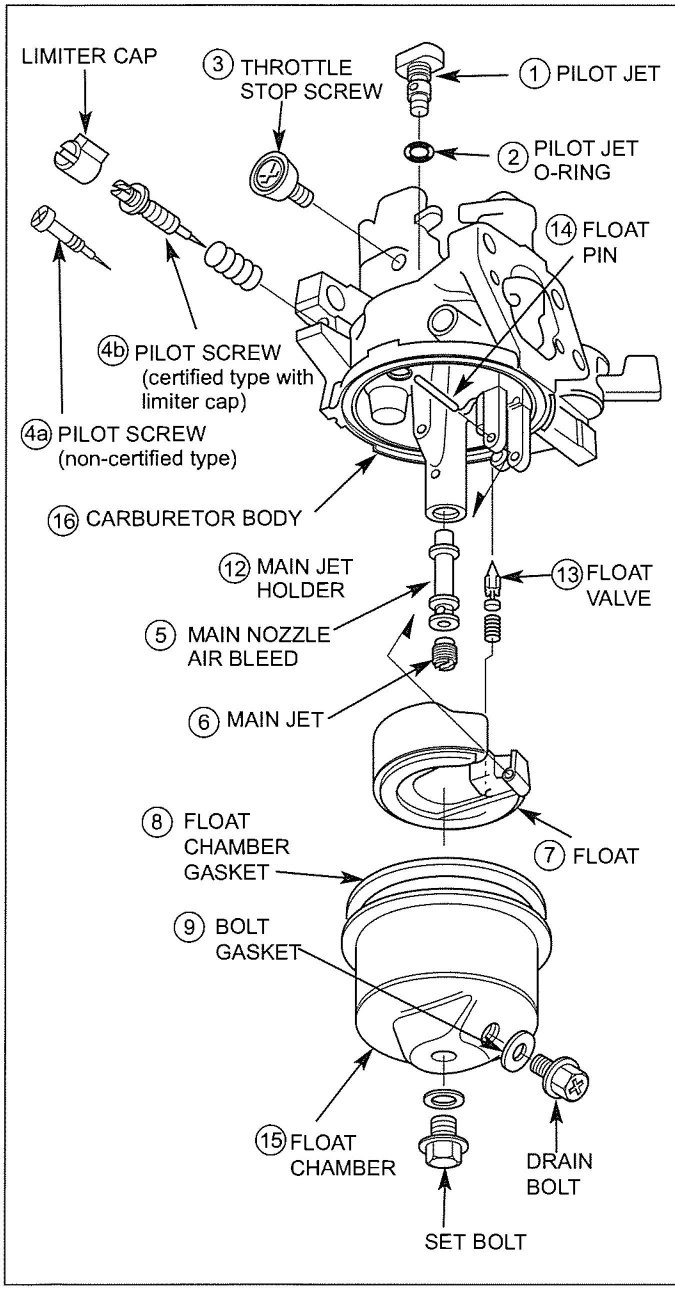
Not all products have an anti-surge spring.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

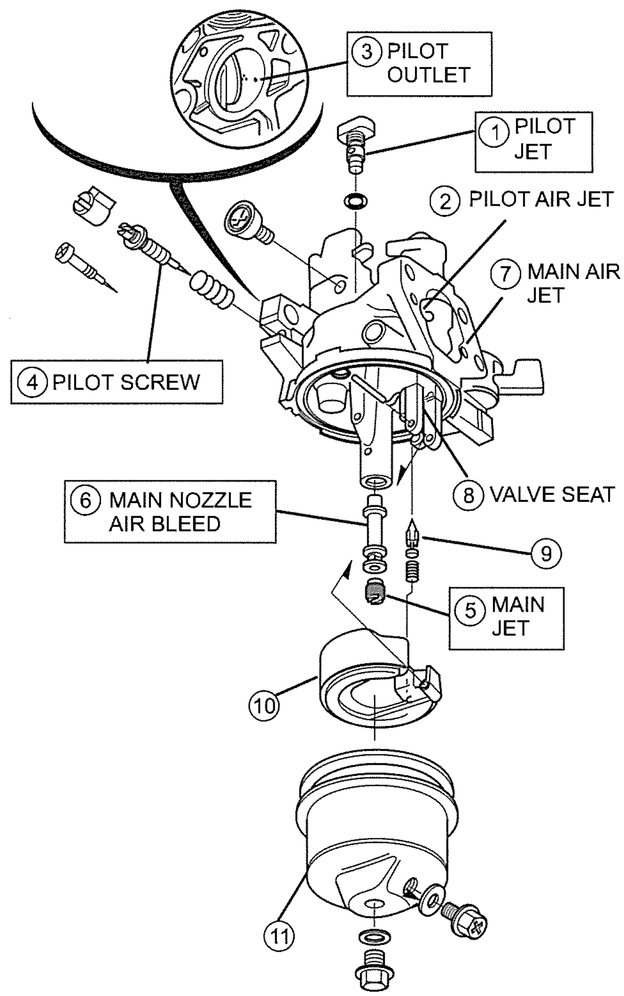
No.	Item	Clean	Replace
1	Check the pilot jet holes for clogging.	○	
2	Check the pilot jet O-ring for damage.		●
3	Check the stop screw for proper setting.		
4a	Check screw tip for contamination.	○	
4b	All Honda certified engines have a tamper resistant limiter cap installed on the pilot screw. Any attempt to remove the cap will break the pilot screw, requiring screw and limiter cap replacement. Generally, leave this type of pilot screw installed on the carburetor.		●
5	Check the air bleed hole for clogging.	○	
6	Check the main jet size. Check the jet orifice for clogging.	○	
7	Check the float height, and make sure there is no gasoline in the float.		●
8	Check the gasket for damage (Do not remove the gasket).		●
9	Check the gasket for damage if gasoline leaks from the fuel valve.		●
12	Check the main jet holder for corrosion.	○	
13	Check the tip of the valve for contamination or damage.	○	●
14	Check the float pin for wear or loose fit.		●
15	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
16	Check the orifices in the carburetor body for clogging.	○	
	Check the throttle and choke shafts for smooth movement.		●

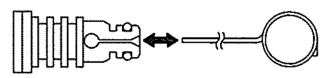
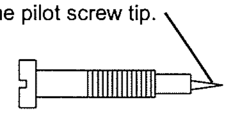
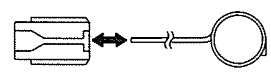
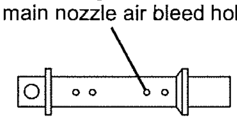
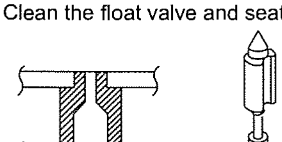
CLEANING

BE-type carburetor shown.

The BE-type has some components that are not found on other Honda carburetors.

: Indicates parts that are likely to be clogged; clean carefully.



Item	Inspection/ Cleaning Tool
Slow Circuit	
① Remove foreign material from the pilot jet. 	Jet Cleaner Set
② Clean the pilot air jet orifice. ③ Clean the pilot outlet. ④ * Remove any contamination from the pilot screw tip. 	Honda Carburetor Cleaner Low pressure compressed air
Main Circuit	
⑤ Remove foreign material from the main jet. 	Jet Cleaner Set
⑥ Remove foreign material from the main nozzle air bleed holes.  ⑦ Clean the main air jet orifice.	Honda Carburetor Cleaner Low pressure compressed air
Float Circuit	
⑧ Remove foreign materials from the valve seat. ⑨ Clean the float valve and seat.  Do not damage the seat and valve.	Honda Carburetor Cleaner Low pressure compressed air
⑩ Check the float level.	Float level gauge
⑪ Remove foreign material from the float chamber.	

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

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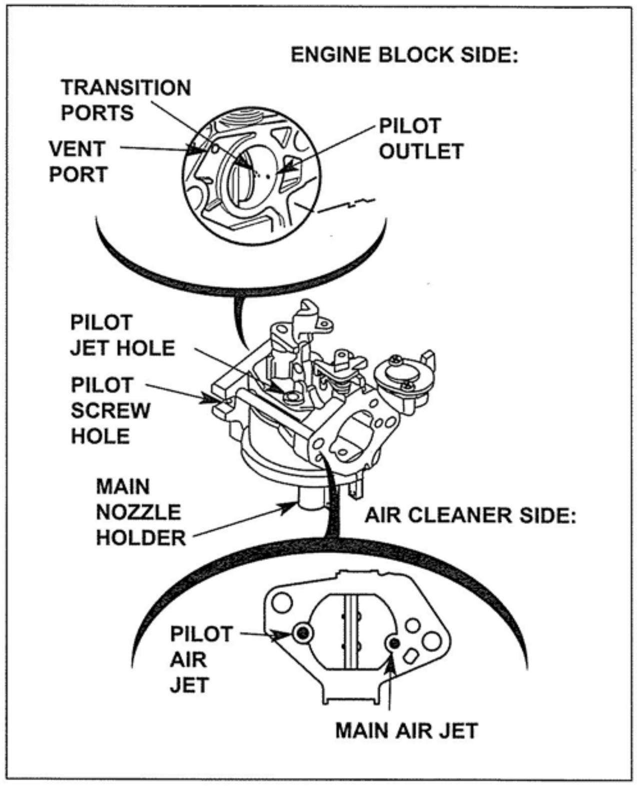

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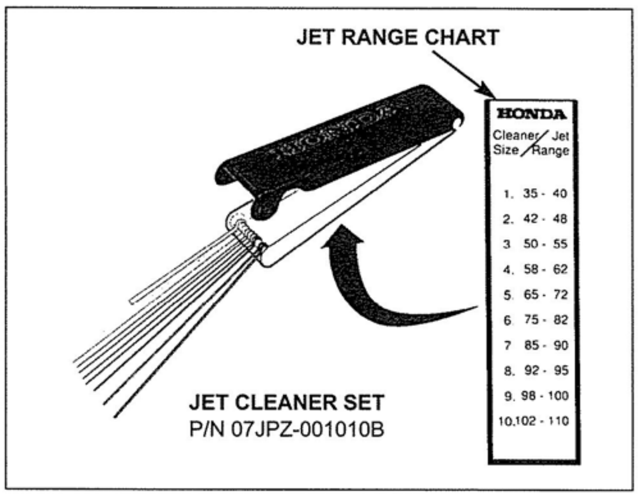
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

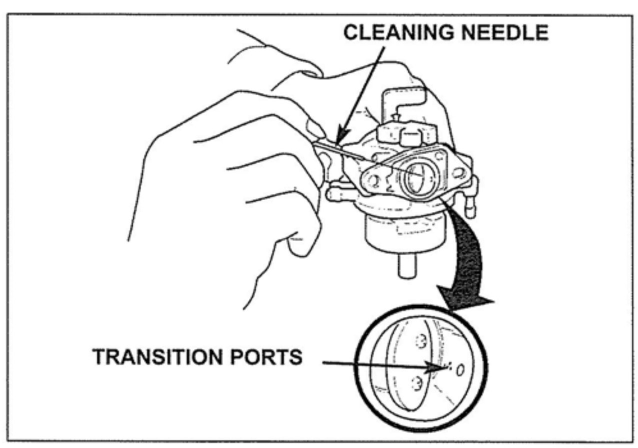
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

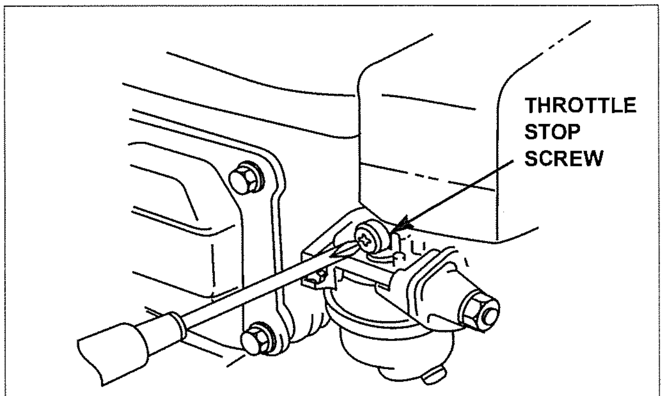
• GXV120/140/160 Engines

Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

Throttle stop screw:

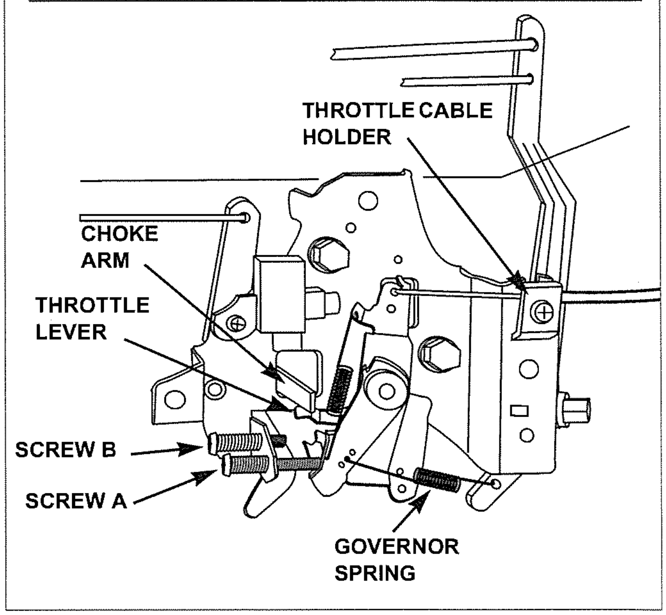
- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases



Maximum Engine Speed Adjustment

1. Move the throttle lever to the FAST position.
2. The throttle lever should just contact the choke arm (0 ~ 1 mm clearance) and the choke should be fully open. If adjustment is necessary, loosen the throttle cable holder and adjust the cable as required.
3. Move the throttle lever to the CHOKE position and verify that the choke arm is fully raised (choke fully closed). If necessary, adjust screw B (upper screw) so it just contacts the choke arm when the lever is fully raised.
4. Start the engine and move the throttle lever to the FAST position.
5. Adjust screw A (lower screw) to obtain the specified engine speed.

   If the engine speed is too slow and cannot be adjusted using screw A, reposition the governor spring in the lower hole of the control lever.



Control lever adjusting screw:

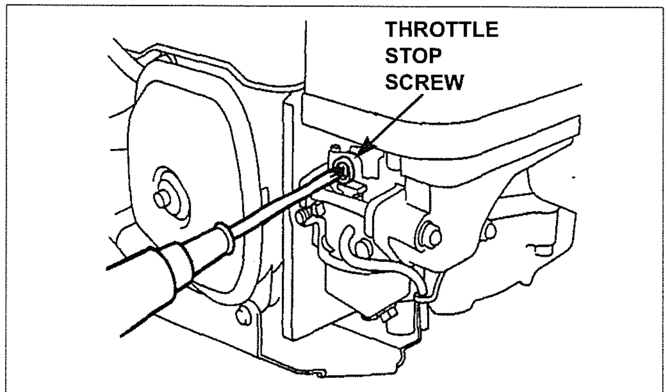
- Turn clockwise .... rpm decreases
- Turn counterclockwise .... rpm increase

• GXV240/270/340/390 Engines

Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

   Throttle stop screw:
   - Turn clockwise.......................... rpm increases
   - Turn counterclockwise............. rpm decreases

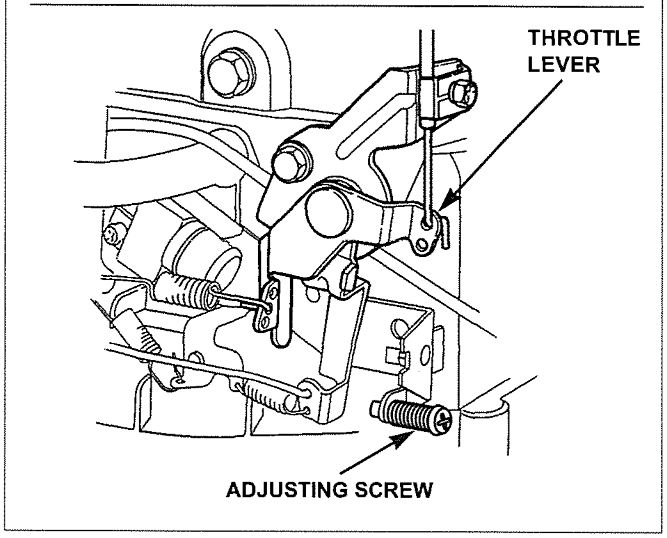


Maximum Engine Speed Adjustment

1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST.

   Use the adjusting screw on the control lever to set maximum speed.

   Control lever adjusting screw:
   - Turn clockwise.......................... rpm decreases
   - Turn counterclockwise............. rpm increase



BE-TYPE

iGX440

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

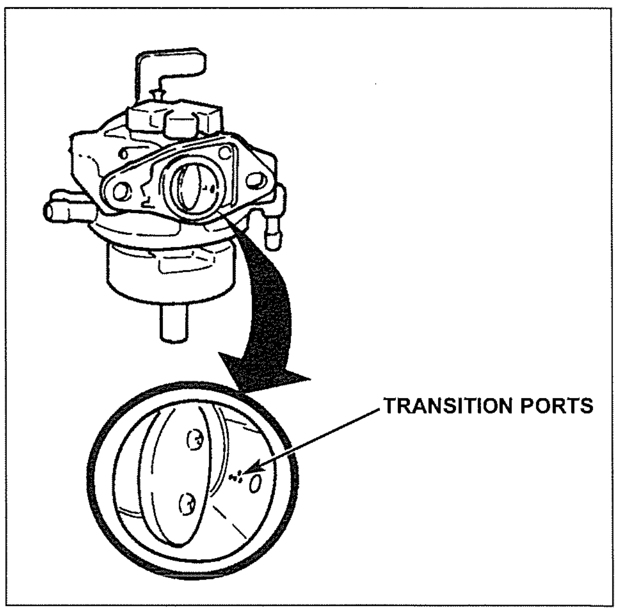
Transition Circuit

The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

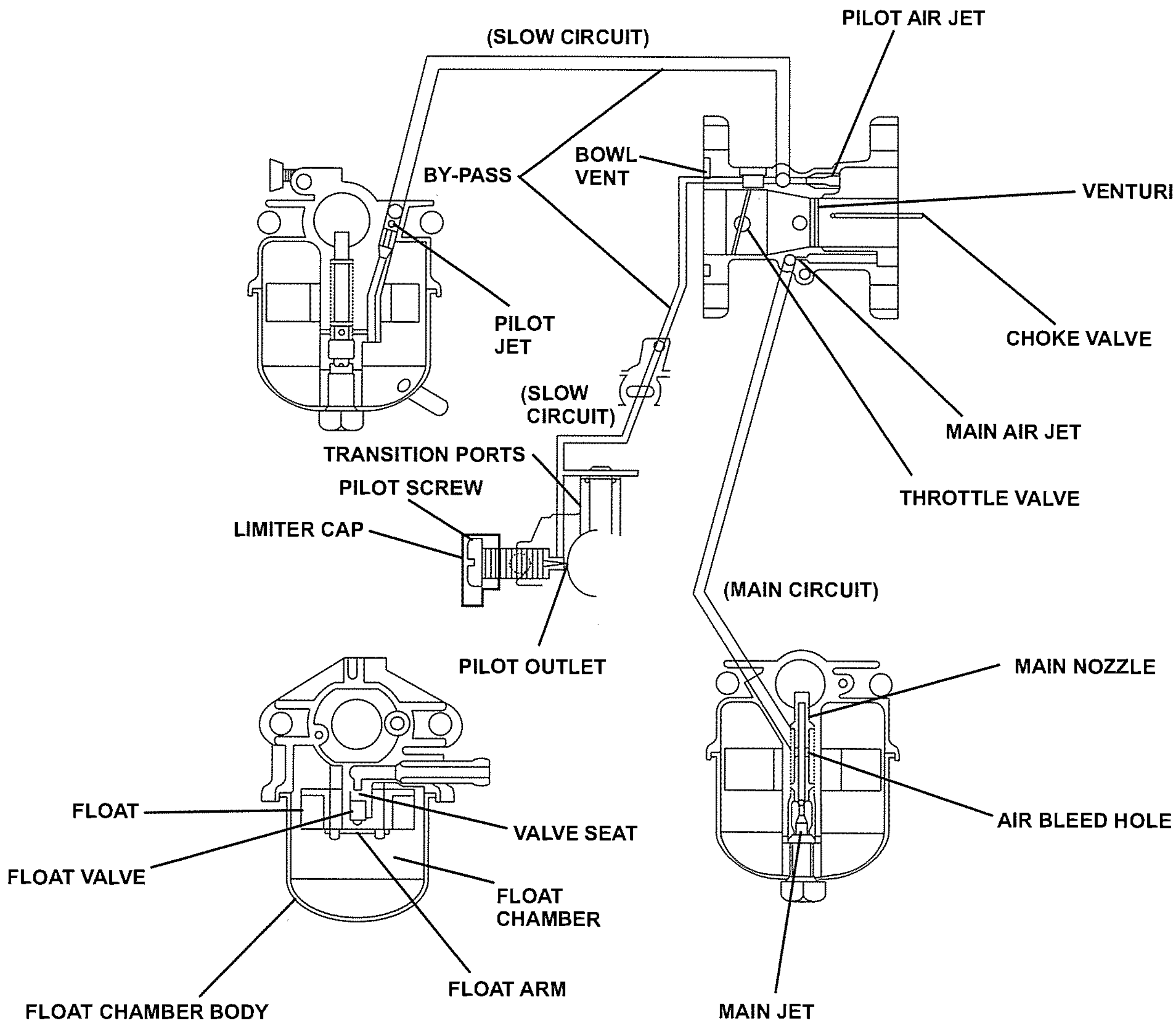
As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.



Electronic Throttle/Choke Controls

The ECM detects engine speed from the crankshaft position sensor (CKP), and controls the throttle position and constantly adjusts to the most appropriate engine speed. Setting the engine speed can be done by changing the program in the ECM for the different applications.

The ECM automatically controls the choke. Since the ECM detects the engine temperature from the engine temperature sensor, the choke valve position is automatically adjusted to the most appropriate opening from the time the engine starts until the engine warms up.


(SLOW CIRCUIT)
PILOT AIR JET
BY-PASS
BOWL VENT
VENTURI
PILOT JET
CHOKE VALVE
(SLOW CIRCUIT)
MAIN AIR JET
TRANSITION PORTS
PILOT SCREW
THROTTLE VALVE
LIMITER CAP
(MAIN CIRCUIT)
PILOT OUTLET
MAIN NOZZLE
FLOAT
AIR BLEED HOLE
VALVE SEAT
FLOAT VALVE
FLOAT CHAMBER
FLOAT ARM
FLOAT CHAMBER BODY
MAIN JET

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ .... Inspection order before disassembly
① .... Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

Symptoms (left):
- Hard Starting
- Engine starts but soon stops

- Hunting
- rpm does not stabilize

Symptoms (right):
- Poor performance at low speed
- rpm does not decrease

- Poor performance at high speed
- rpm does not increase

Order	Inspection Point	Ref.
1	Faulty choke/throttle valve control motor operation	8
2	Misadjusted pilot screw	20
3	Foreign material on the tip of the pilot screw	20
4	Clogged pilot outlet	19
5	Misadjusted throttle stop screw	24
6	Water/foreign materials in the fuel sediment cup	6
7	Faulty throttle valve operation	10
8	Faulty throttle shaft operation	10
9	Faulty fuel cut solenoid operation	25
	Clogged main jet	14

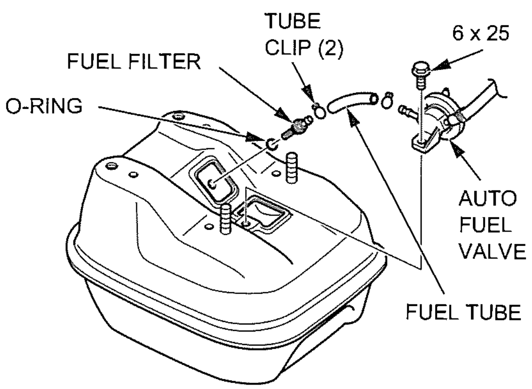
Order	Inspection Point	Ref.
	Improper installation of carburetor gasket	3
	Improper installation of insulator gasket	2
	Air leaking through broken carburetor, insulator gasket or broken insulator	3
	Clogged pilot jet	22
	Clogged pilot air jet	5
	Clogged main jet	14
	Wrong main jet size	14
	Clogged float bowl atmospheric vent	23
	Clogged main air jet	9
	Clogged main nozzle air bleed hole	13
1	Water/foreign material in the fuel seciment cup	6
2	Water/foreign materials in the float chamber, corroded chamber	4
3	Deteriorated gasoline in the float chamber	4

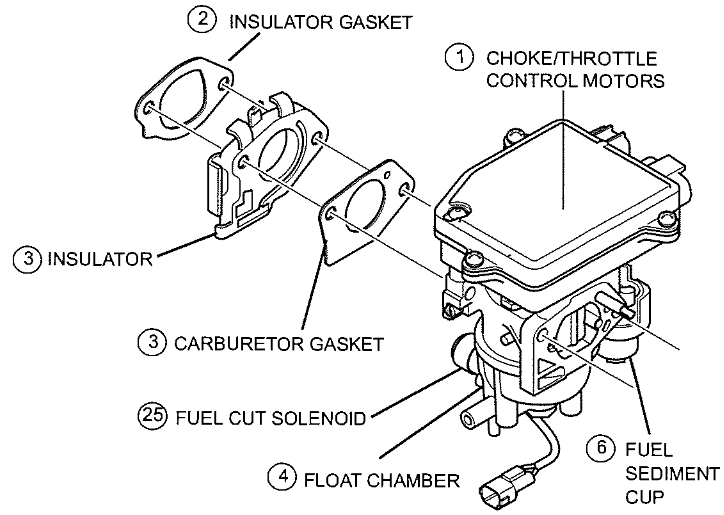
Symptom:
- Float bowl overflowing
- Gasoline leaks

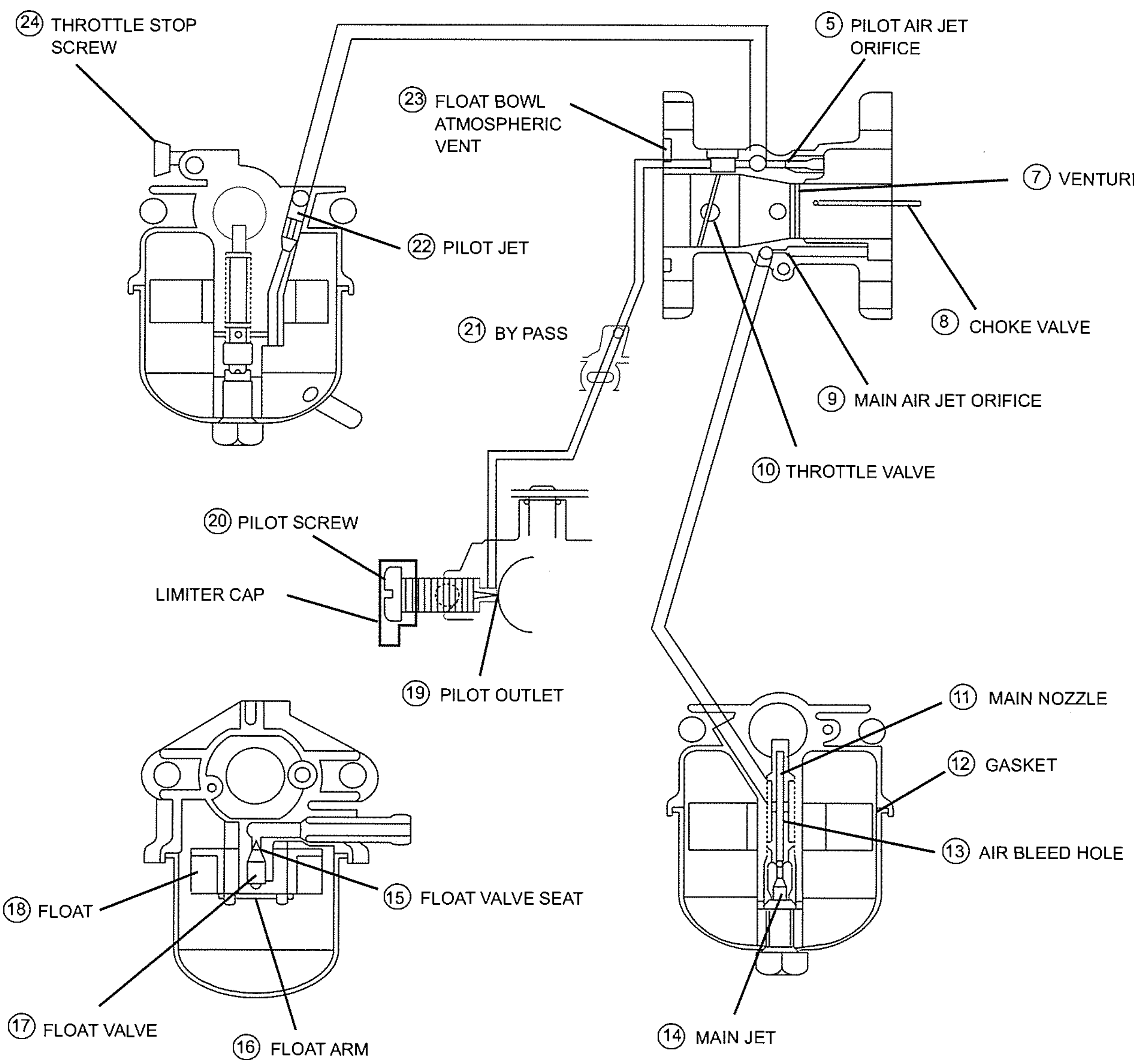
Order	Inspection Point	Ref.
1	Damaged/contaminated float valve seating surface	15
	Foreign materials on the tip of float valve	17
2	Clogged float bowl atmospheric vent	23
3	Faulty chamber gasket (improperly installed)	12
	Fuel inside the float	18
	Faulty float operation, float does not operate smoothly	16
	Deformed chamber (mating face, joint)	4

Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)

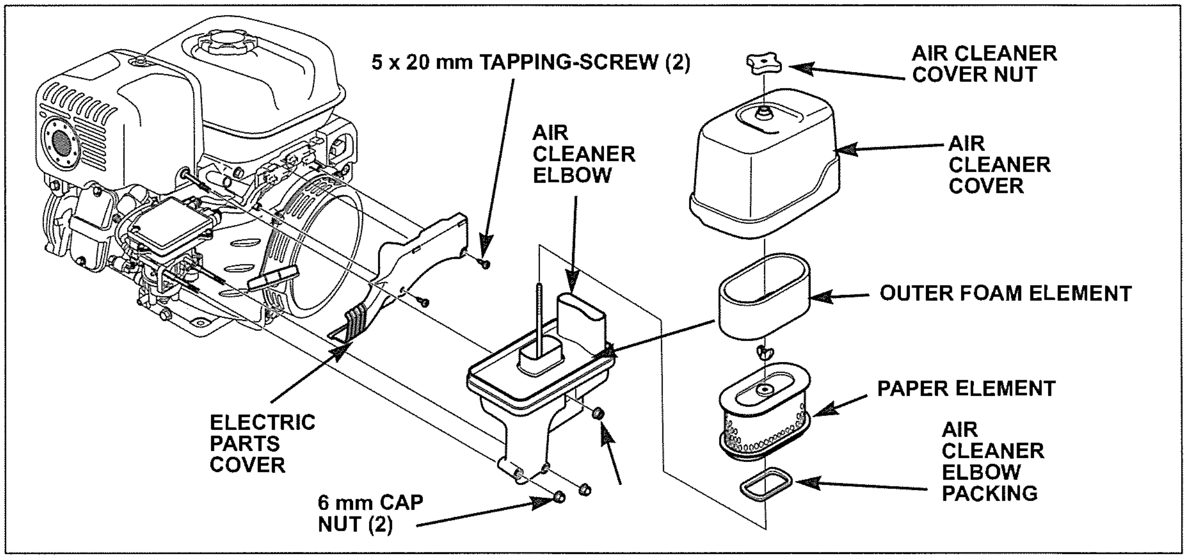


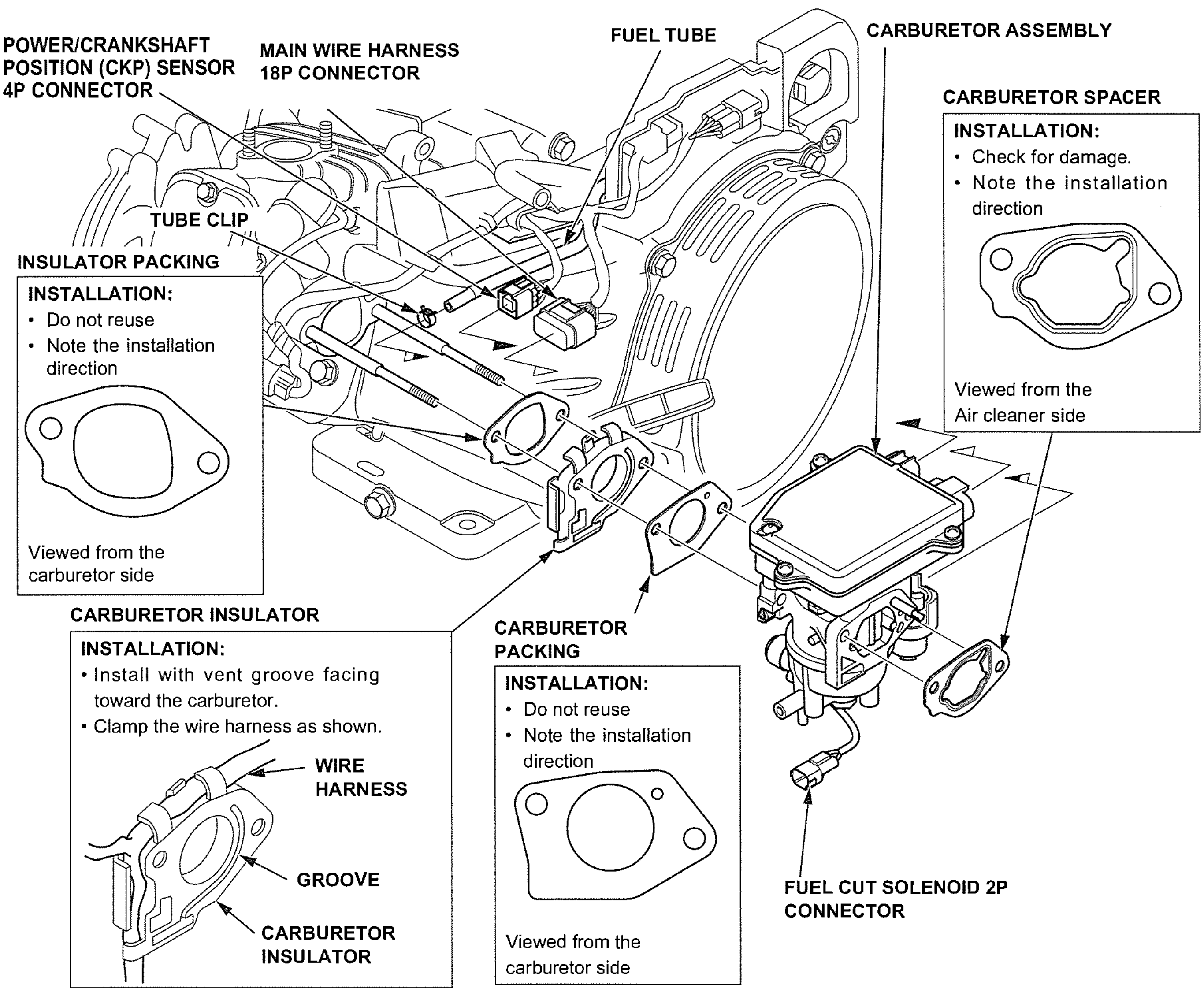




CARBURETOR REMOVAL

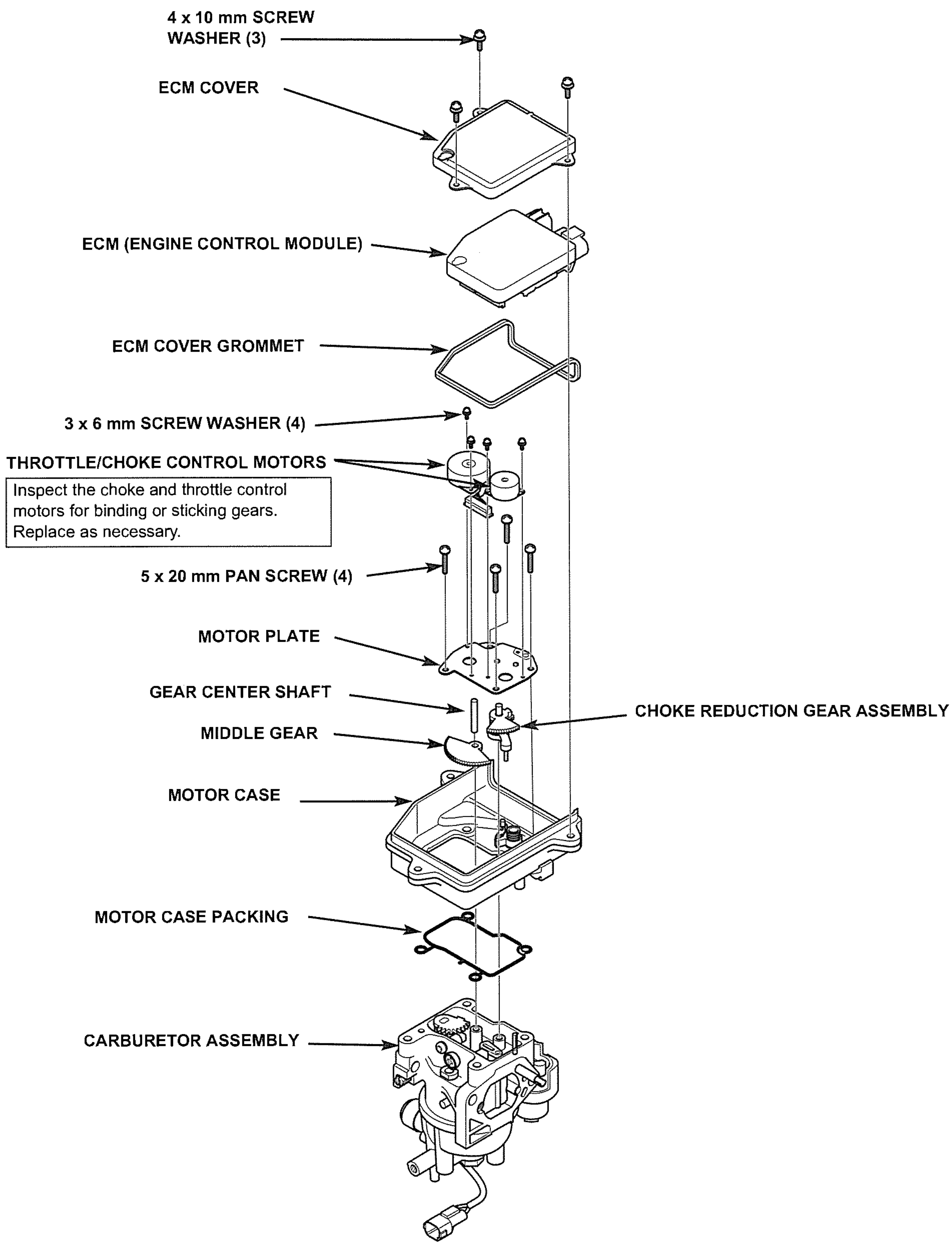
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.





DISASSEMBLY/INSPECTION

Remove the ECM, throttle and choke motors, middle gear, choke reduction gear, motor plate, and the motor case.



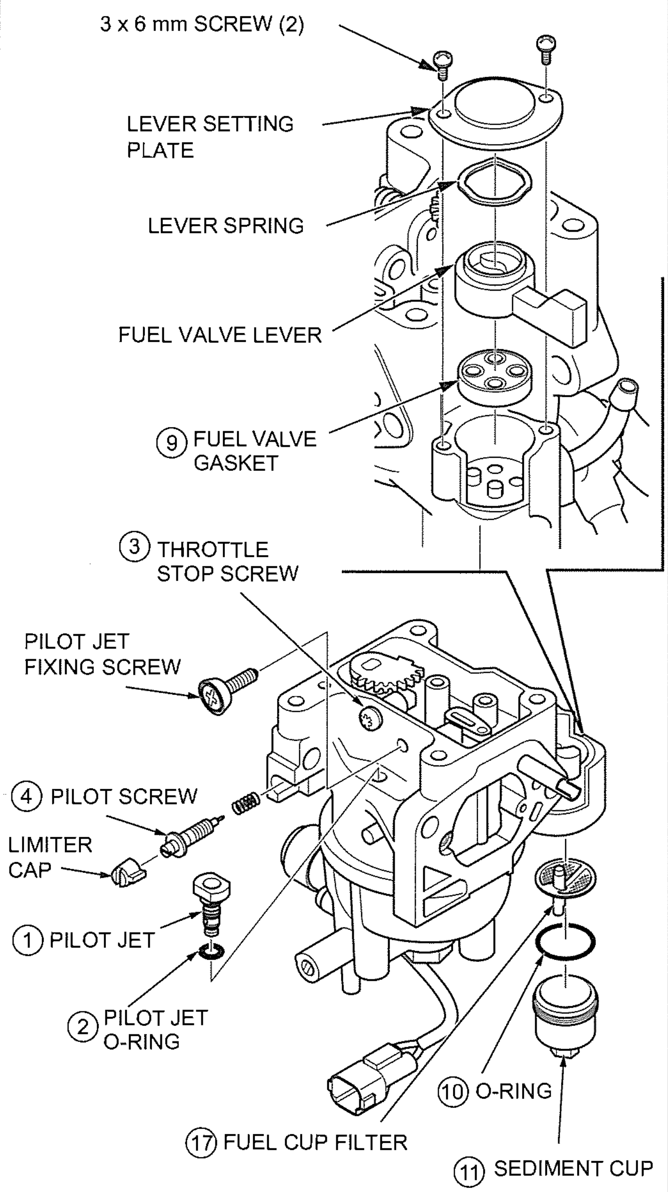
DISASSEMBLY/INSPECTION (Cont.)

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly

BE-type carburetor shown.

The BE-type has some components that are not found on other Honda carburetors.



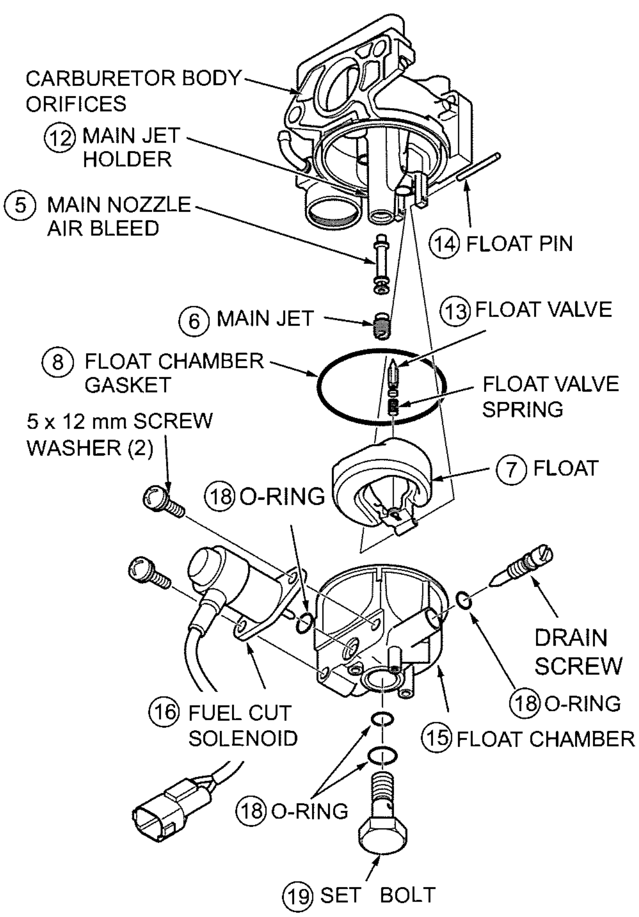
Inspection

No.	Item	Clean	Replace
①	Check the pilot jet holes for clogging.	○	
②	Check the pilot jet O-ring for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination.	○	
⑤	Check the air bleed hole for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the gasket for damage (Do not remove the gasket).		●
⑨	Check the gasket for damage if gasoline leaks from the fuel valve.		●
⑩	Check the O-ring for damage.		●
⑪	Check for dirt or foreign materials in the cup.	○	
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Apply battery voltage to the fuel cut solenoid and check for proper operation.		
⑰	Check for dirt or foreign materials in restricting the filter		
⑱	Check the O-rings for damage. Replace as necessary.		
⑲	Check the set bolt hole for obstruction. Clean as necessary.		
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

Disassembly

BE-type carburetor shown.

The BE-type has some components that are not found on other Honda carburetors.



Inspection

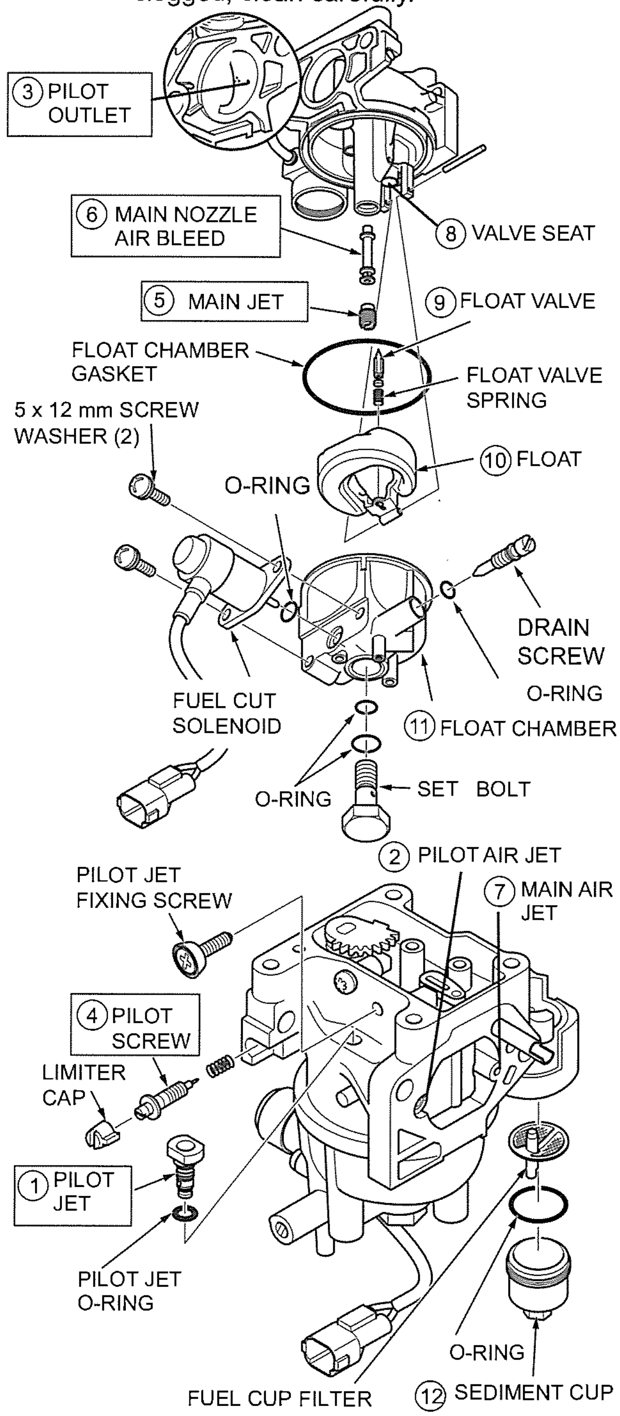
No.	Item	Clean	Replace
①	Check the pilot jet holes for clogging.	○	
②	Check the pilot jet O-ring for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination.	○	
⑤	Check the air bleed hole for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the gasket for damage (Do not remove the gasket).		●
⑨	Check the gasket for damage if gasoline leaks from the fuel valve.		●
⑩	Check the O-ring for damage.		●
⑪	Check for dirt or foreign materials in the cup.	○	
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber. Check the chamber for corrosion and deformation.	○	●
⑯	Apply battery voltage to the fuel cut solenoid and check for proper operation.		
⑰	Check for dirt or foreign materials in restricting the filter		
⑱	Check the O-rings for damage. Replace as necessary.		
⑲	Check the set bolt hole for obstruction. Clean as necessary.		
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

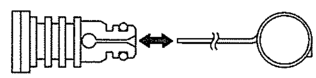
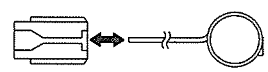
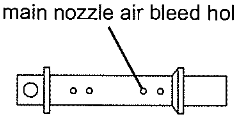
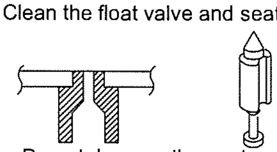
CLEANING

BE-type carburetor shown.

The BE-type has some components that are not found on other Honda carburetors.

☐ : Indicates parts that are likely to be clogged; clean carefully.

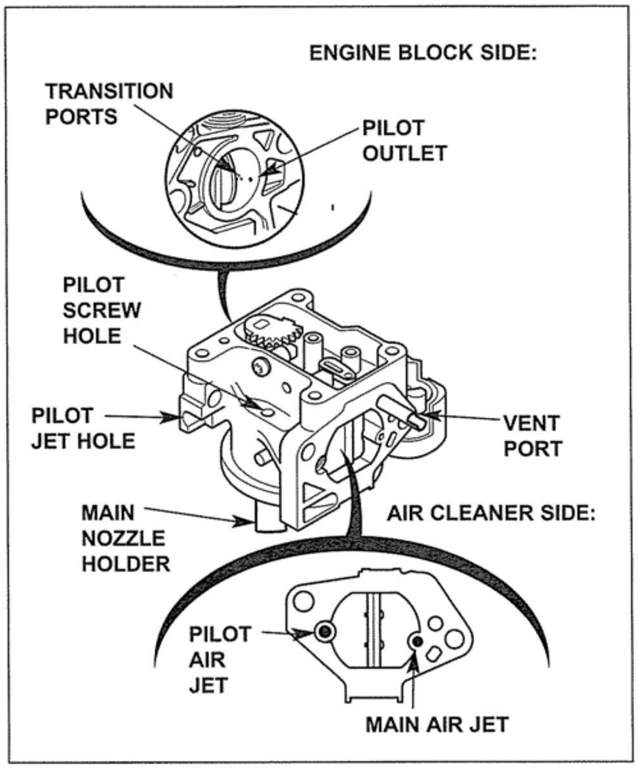


	Item	Inspection/ Cleaning Tool
	Slow Circuit	
①	Remove foreign material from the pilot jet. 	Jet Cleaner Set
②	Clean the pilot air jet orifice.	Honda Carburetor Cleaner
③	Clean the pilot outlet.	
④	The pilot screw must be broken to be removed. Replace the pilot screw. 	Low pressure compressed air
	Main Circuit	
⑤	Remove foreign material from the main jet. 	Jet Cleaner Set
⑥	Remove foreign material from the main nozzle air bleed holes. 	Honda Carburetor Cleaner Low pressure compressed air
⑦	Clean the main air jet orifice.	
	Float Circuit	
⑧	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
⑨	Clean the float valve and seat.  Do not damage the seat and valve.	Low pressure compressed air
⑩	Check the float level.	Float level gauge
⑪	Remove foreign material from the float chamber.	
⑫	Remove foreign material from the fuel sediment cup.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

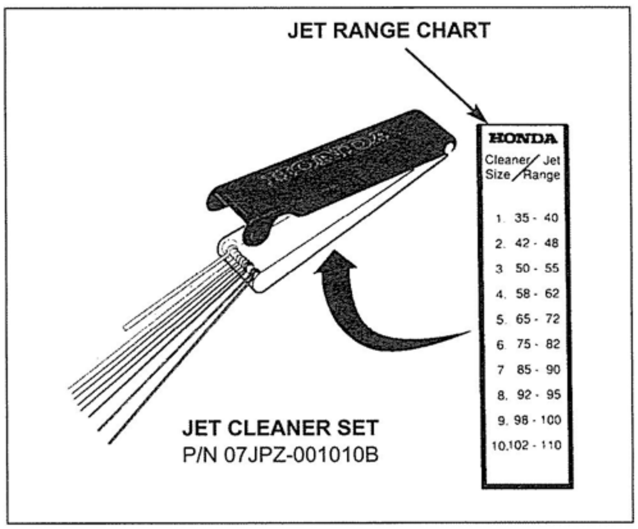
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

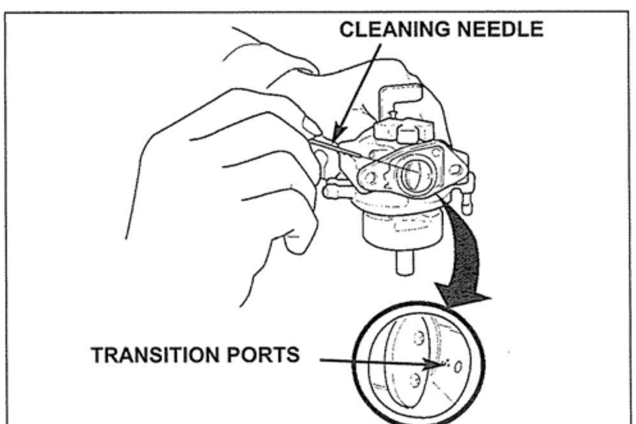
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.



ADJUSTMENT

Adjustments can only be made with computer software. Contact your Honda Engine Distributor for information on making carburetor adjustments.

BE-TYPE

GX360

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

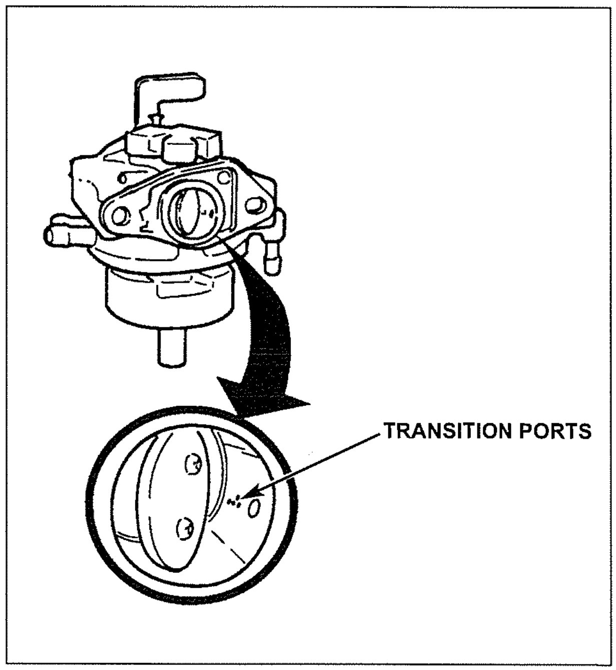
Transition Circuit

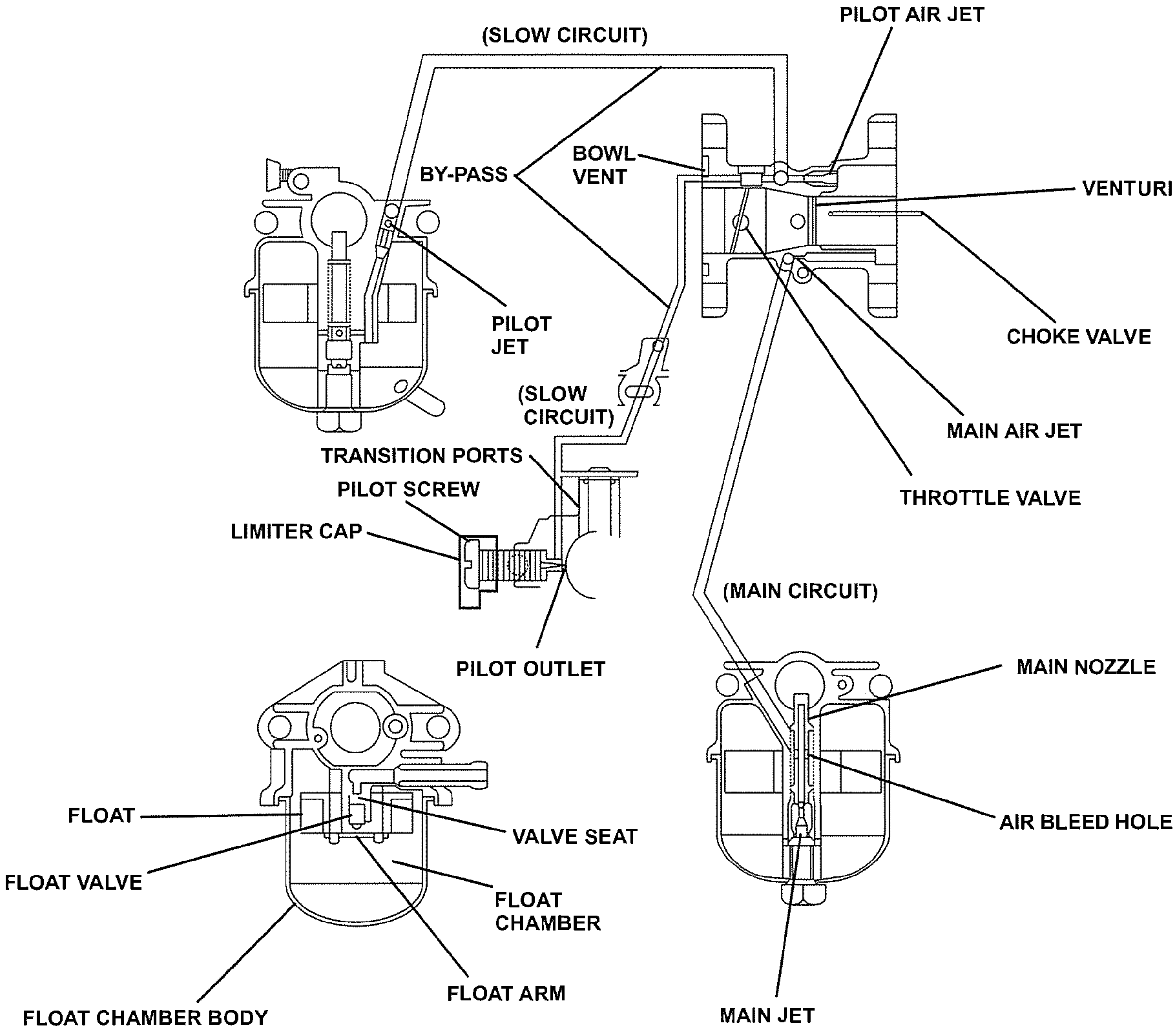
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




(SLOW CIRCUIT)
PILOT AIR JET
BOWL VENT
BY-PASS
VENTURI
PILOT JET
CHOKE VALVE
(SLOW CIRCUIT)
MAIN AIR JET
TRANSITION PORTS
PILOT SCREW
THROTTLE VALVE
LIMITER CAP
(MAIN CIRCUIT)
PILOT OUTLET
MAIN NOZZLE
FLOAT
VALVE SEAT
AIR BLEED HOLE
FLOAT VALVE
FLOAT CHAMBER
FLOAT ARM
FLOAT CHAMBER BODY
MAIN JET

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

- Hard Starting
- Engine starts but soon stops

	Inspection Point	
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Water/foreign materials in the fuel filter	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

- Poor performance at low speed
- rpm does not decrease

- Hunting
- rpm does not stabilize

	Inspection Point	
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel filter	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

- Poor performance at high speed
- rpm does not increase

- Float bowl overflowing
- Gasoline leaks

	Inspection Point	
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

- Hunting
- Spitting
- Engine stalling
- Hard Starting

- Air leaking past the carburetor insulator gasket
- Clogged jets, worn throttle shaft
- Overheating of the carburetor chamber/fuel passage
- Wrong main jet size
- Restricted pilot jet

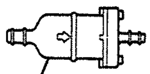
- Lean fuel mixture
- Percolation
- Overheating
- Set for high elevation

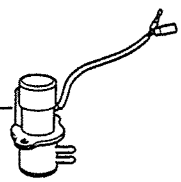
- Wet fouled spark plug
- Power drops, rpm does not stabilize
- Black smoke from muffler, engine stalls

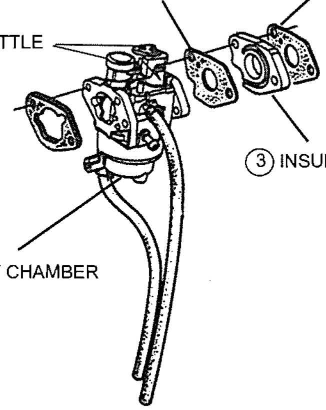
- Clogged air cleaner
- Faulty choke operation
- Wrong main jet size
- Deteriorated gasoline
- Blocked main nozzle/venturi bore

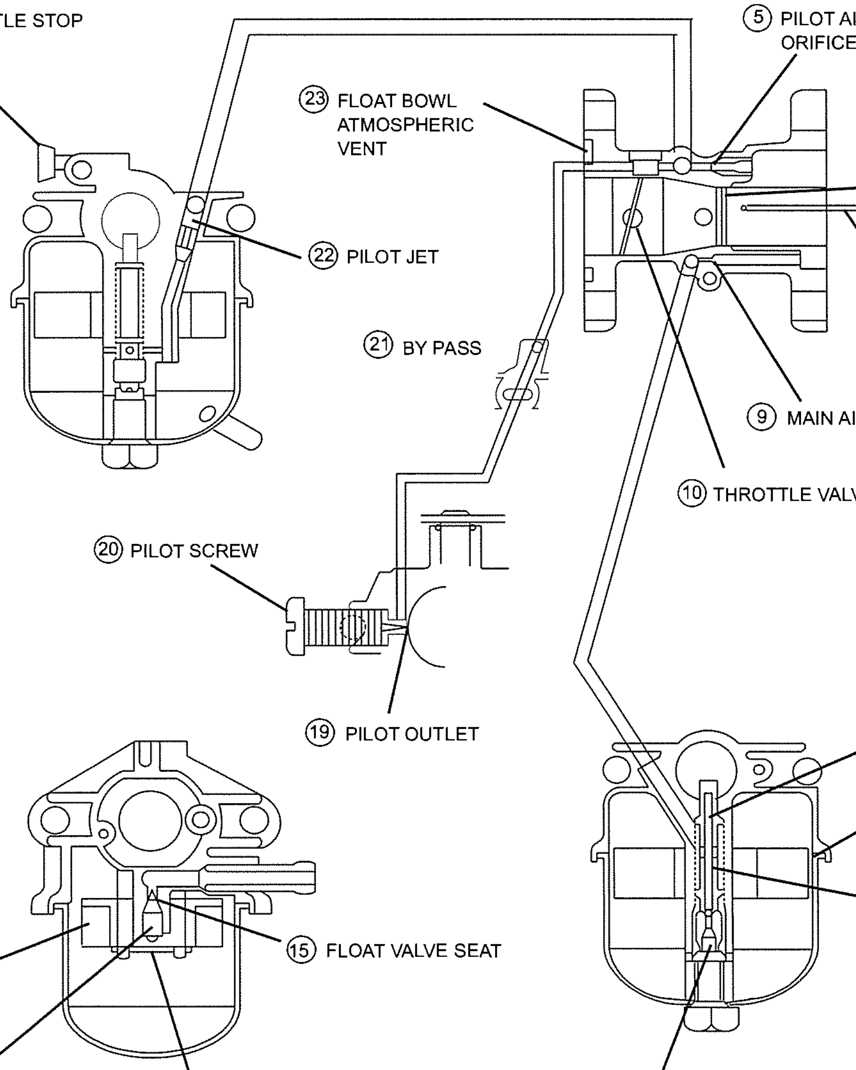
- Rich fuel mixture
- Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)



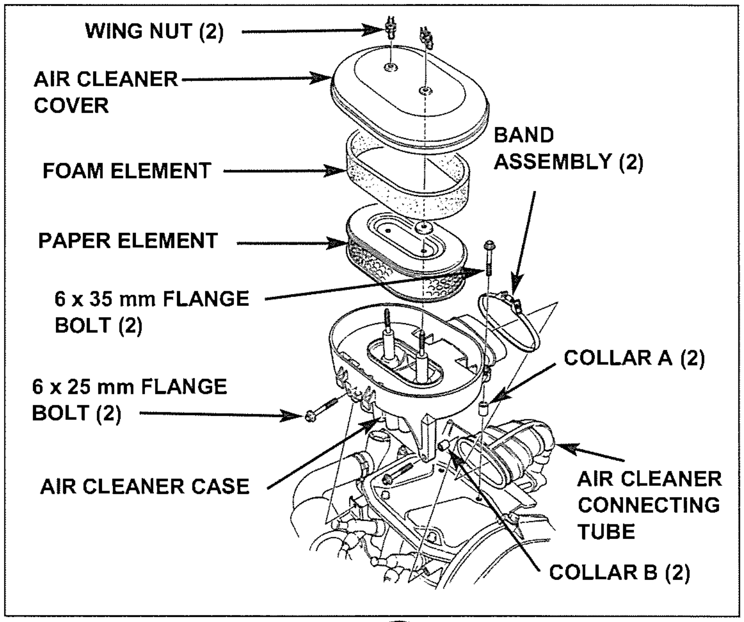






CARBURETOR REMOVAL

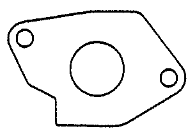
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



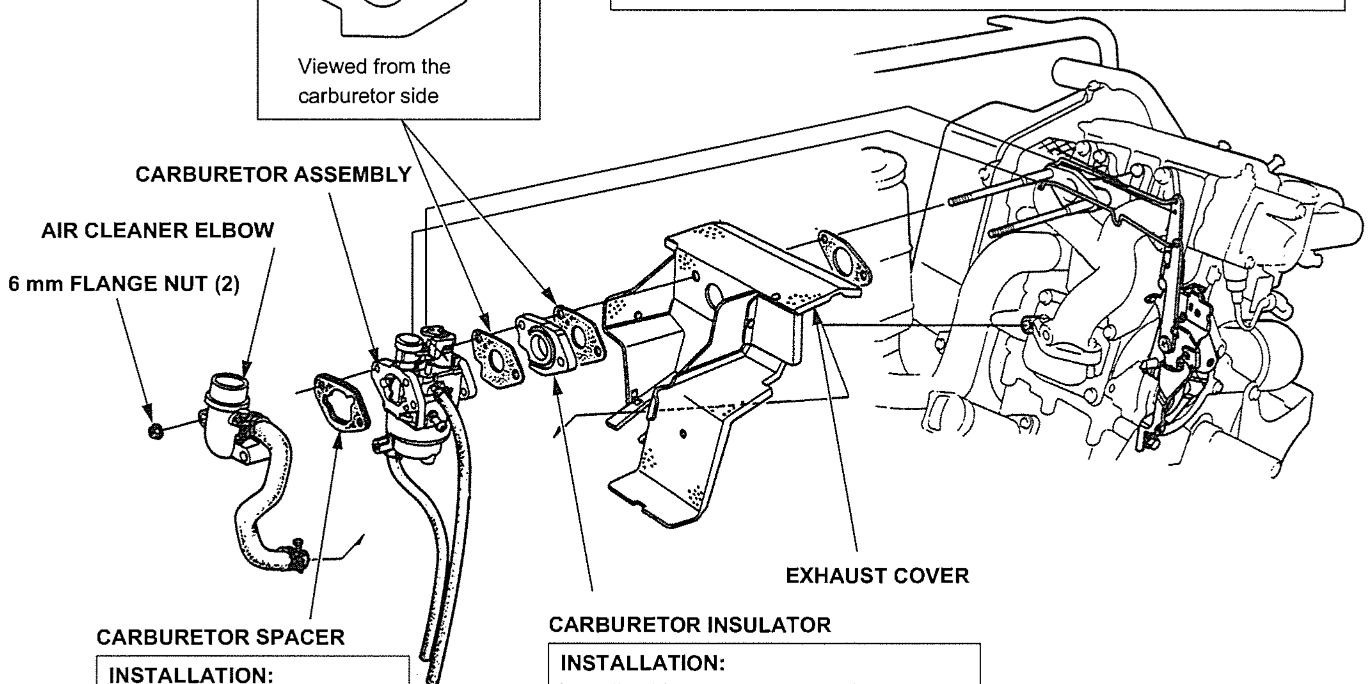
INSULATOR PACKING

INSTALLATION:

- Do not reuse
- Note the installation direction



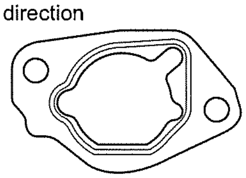
Viewed from the carburetor side



CARBURETOR SPACER

INSTALLATION:

- Check for damage.
- Note the installation direction

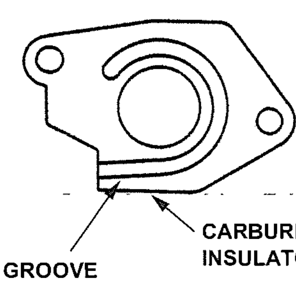


Viewed from the air cleaner side

CARBURETOR INSULATOR

INSTALLATION:

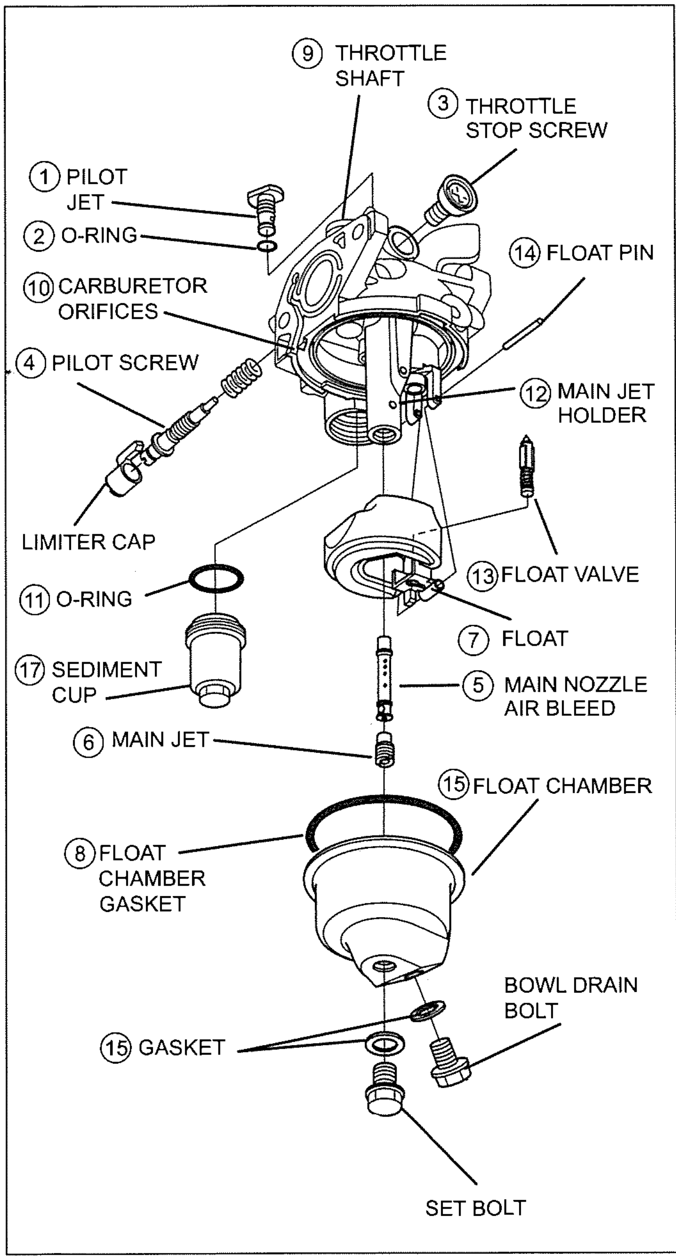
Install with vent groove facing toward the carburetor.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



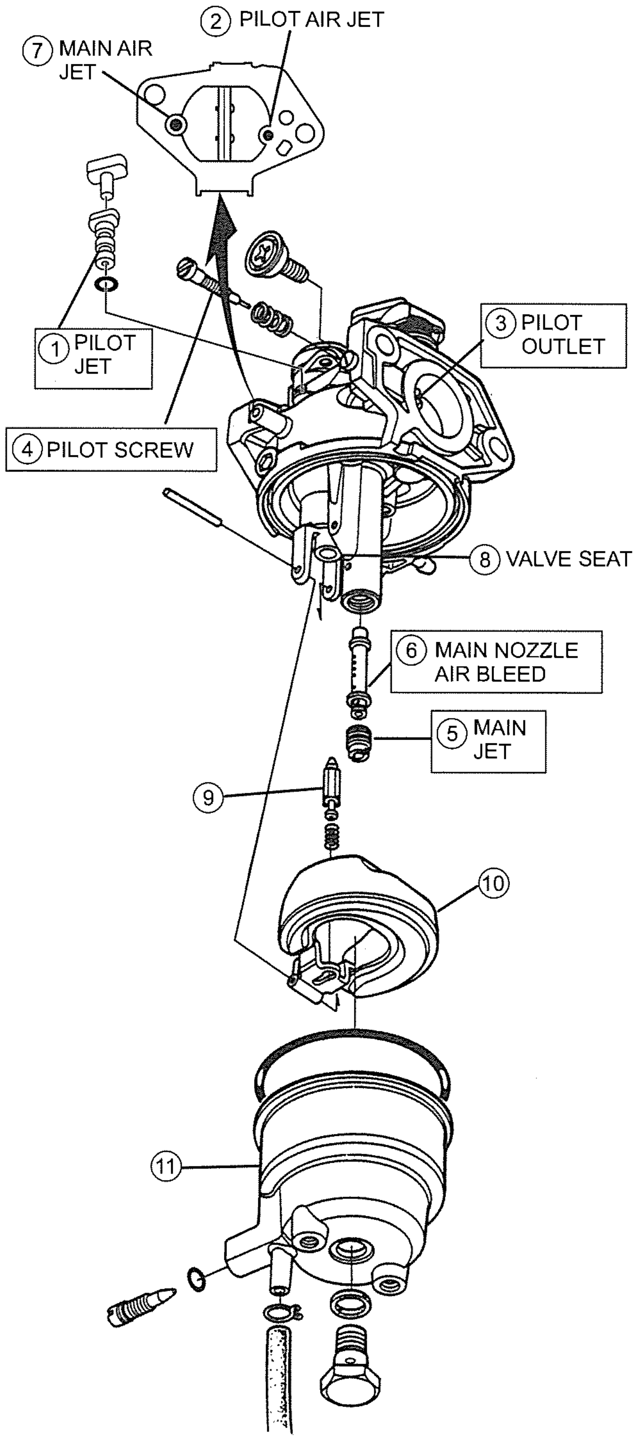
Inspection

No.	Item	Clean	Replace
①	Check the pilot jet hole for clogging.	○	
②	Check the pilot jet O-ring for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination.	○	
⑤	Check the air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the gasket for damage (Do not remove the gasket).		●
⑨	Check the shaft for smooth movement and looseness.		●
⑩	Check the orifices in the carburetor body for clogging.	○	
⑪	Check the sediment cup O-ring for damage.		●
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the gaskets for damage.		●
⑰	Check the sediment cup for debris and contamination.	○	

CLEANING

BE-type carburetor shown.
The BE-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.



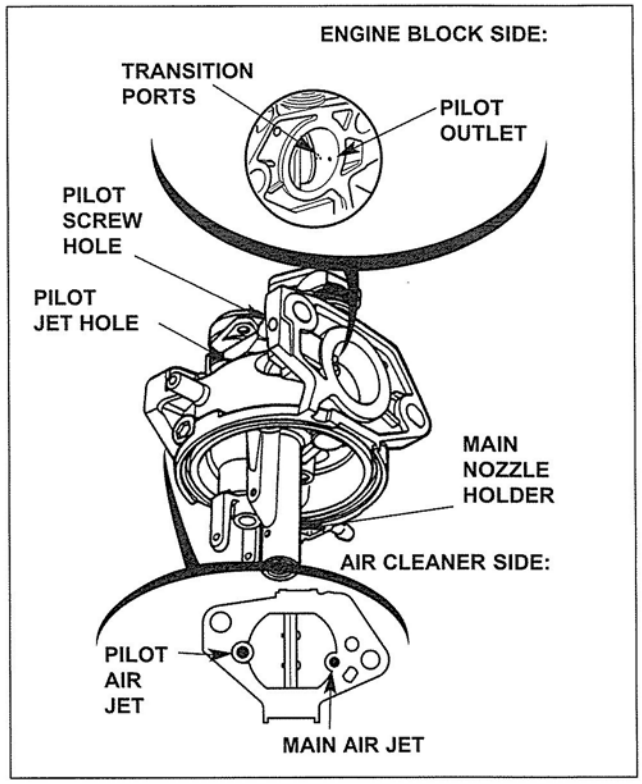
Item	Inspection/ Cleaning Tool
Slow Circuit	
① Remove foreign material from the pilot jet.	Jet Cleaner Set
② Clean the pilot air jet orifice.	Honda Carburetor Cleaner
③ Clean the pilot outlet.	
④ * Remove any contamination from the pilot screw tip.	Low pressure compressed air
Main Circuit	
⑤ Remove foreign material from the main jet.	Jet Cleaner Set
⑥ Remove foreign material from the main nozzle air bleed holes.	Honda Carburetor Cleaner Low pressure compressed air
⑦ Clean the main air jet orifice.	
Float Circuit	
⑧ Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
⑨ Clean the float valve and seat. Do not damage the seat and valve.	Low pressure compressed air
⑩ Check the float level.	Float level gauge
⑪ Remove foreign material from the float chamber.	

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

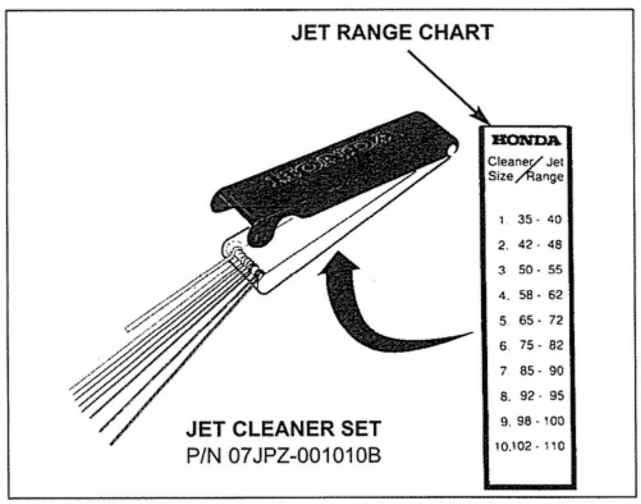
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

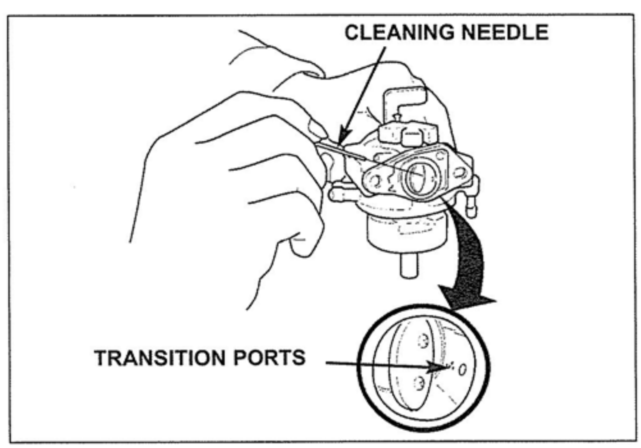
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



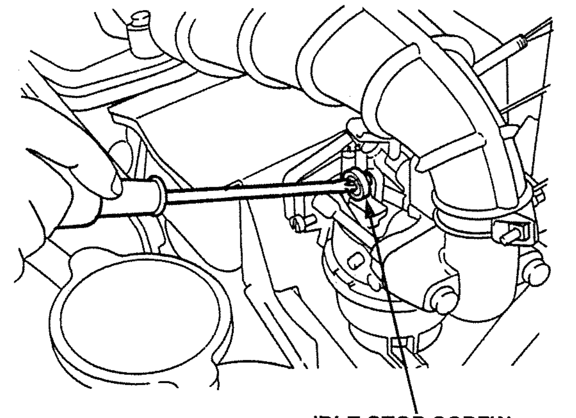
4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.



1. Start the engine and allow it to warm up to normal operating temperature (approximately 10 minutes).
2. Attach a tachometer to the engine and turn the throttle stop screw to obtain the standard idle speed.

Standard idle speed	1,300 rpm

3. Refer to the equipment manufacture's manual for proper maximum engine speed adjustment.

NOTES

BF-TYPE

EU1000i

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

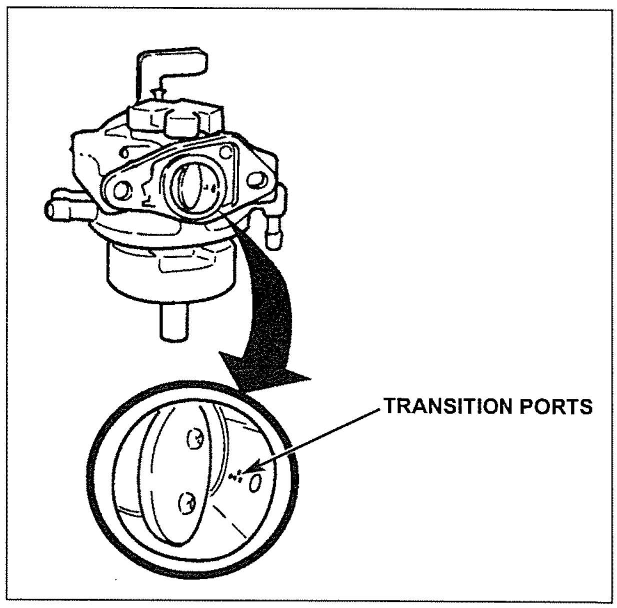
Transition Circuit

The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

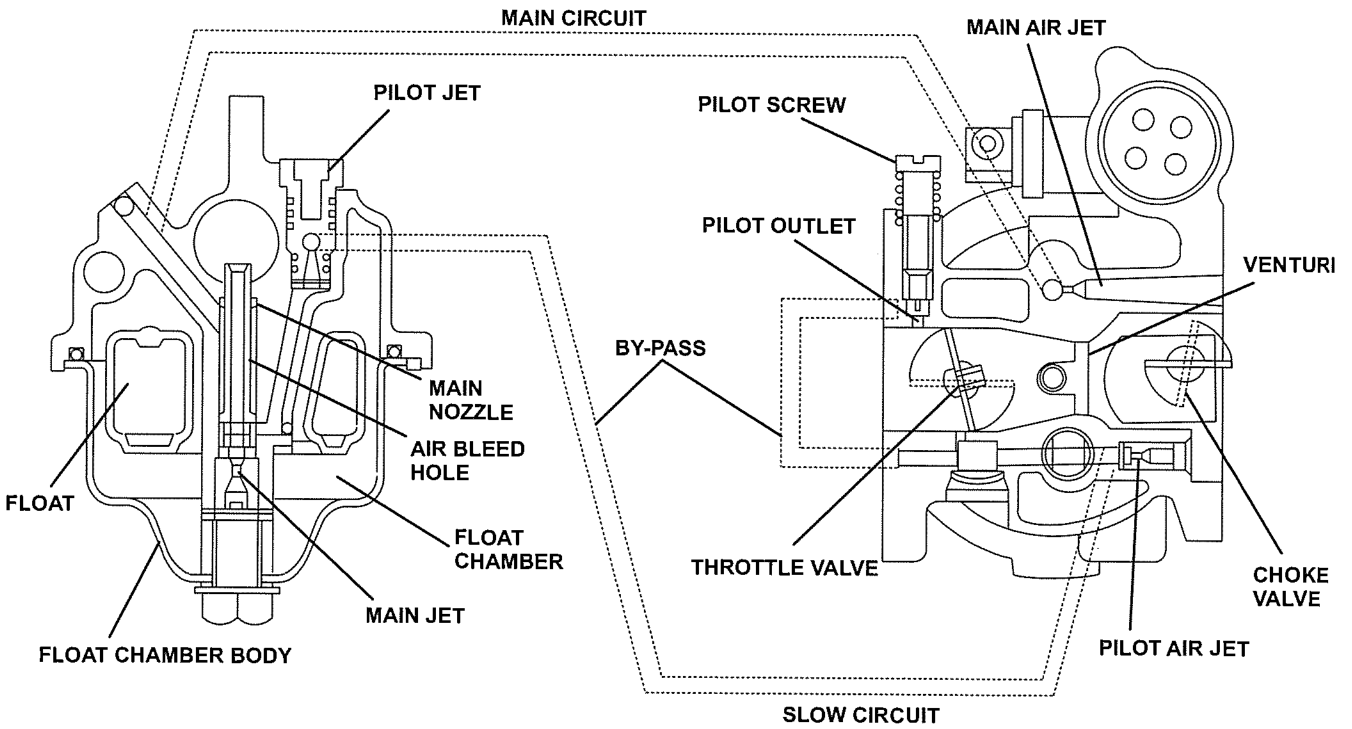
The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.



Electronic Governor/Throttle Control

The inverter's CPU compares the current output voltage, current, and engine speed with what is programed it its memory and sets the throttle position accordingly. The actual required engine speed is based on generator load ratio and temperature. As a load is applied, the engine speed, and generator output power will drop momentarily. The inverter will calculate the type of load (how much of power drop is occurring) and set the engine speed accordingly.


MAIN CIRCUIT
MAIN AIR JET
PILOT JET
PILOT SCREW
PILOT OUTLET
VENTURI
BY-PASS
MAIN
NOZZLE
AIR BLEED
HOLE
FLOAT
FLOAT
CHAMBER
THROTTLE VALVE
CHOKE
VALVE
MAIN JET
FLOAT CHAMBER BODY
PILOT AIR JET
SLOW CIRCUIT

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ .... Inspection order before disassembly
① .... Reference number shown on next page

<Symptom> (left):
- Hard Starting
- Engine starts but soon stops

- Hunting
- rpm does not stabilize

<Symptom> (right):
- Poor performance at low speed
- rpm does not decrease

- Poor performance at high speed
- rpm does not increase

<Inspection Point>

❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Water/foreign materials in the fuel filter	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

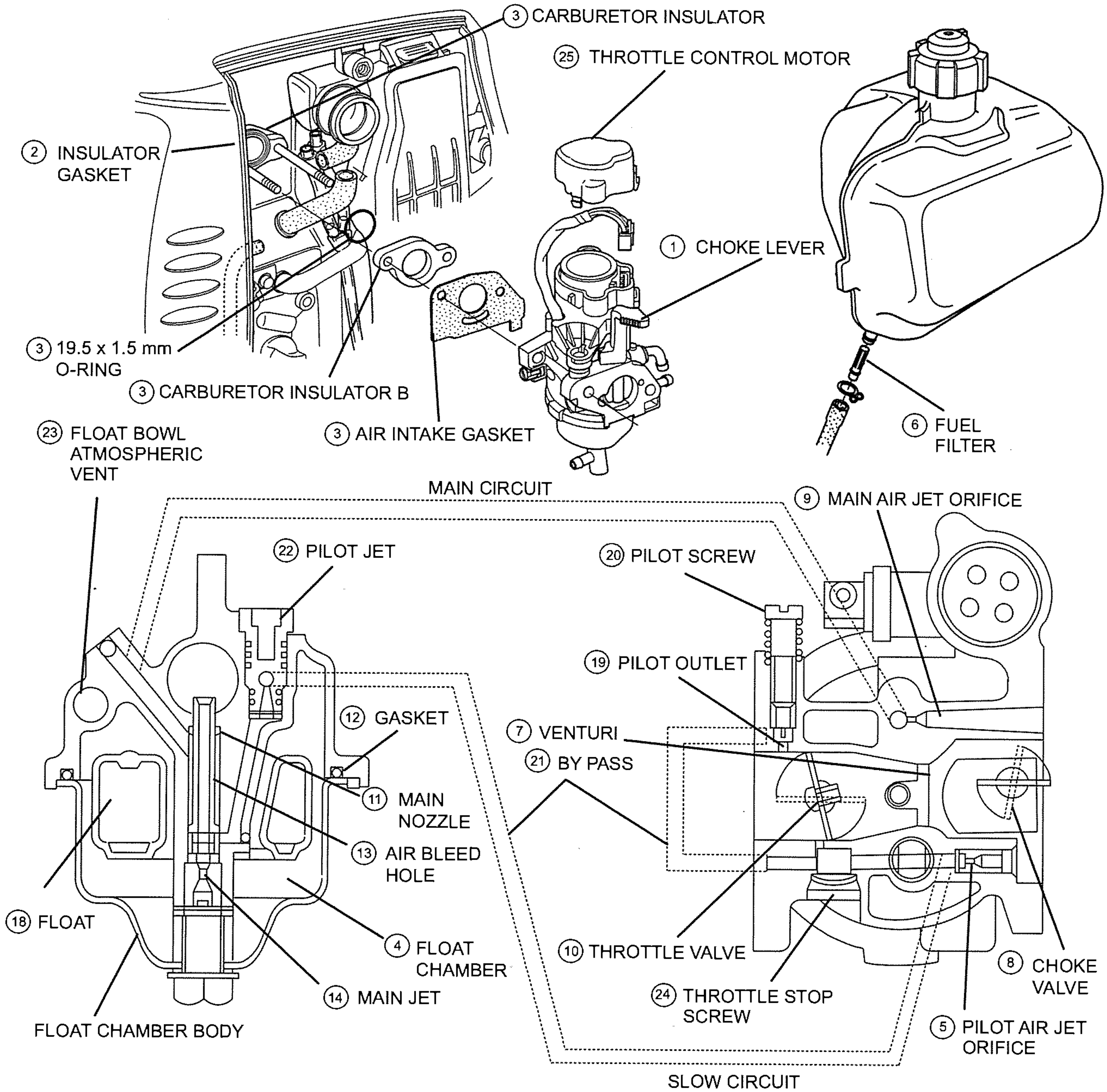
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket, O-ring, or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel filter	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④
❾	Worn throttle motor gear teeth	㉕

<Symptom>:
- Float bowl overflowing
- Gasoline leaks

❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

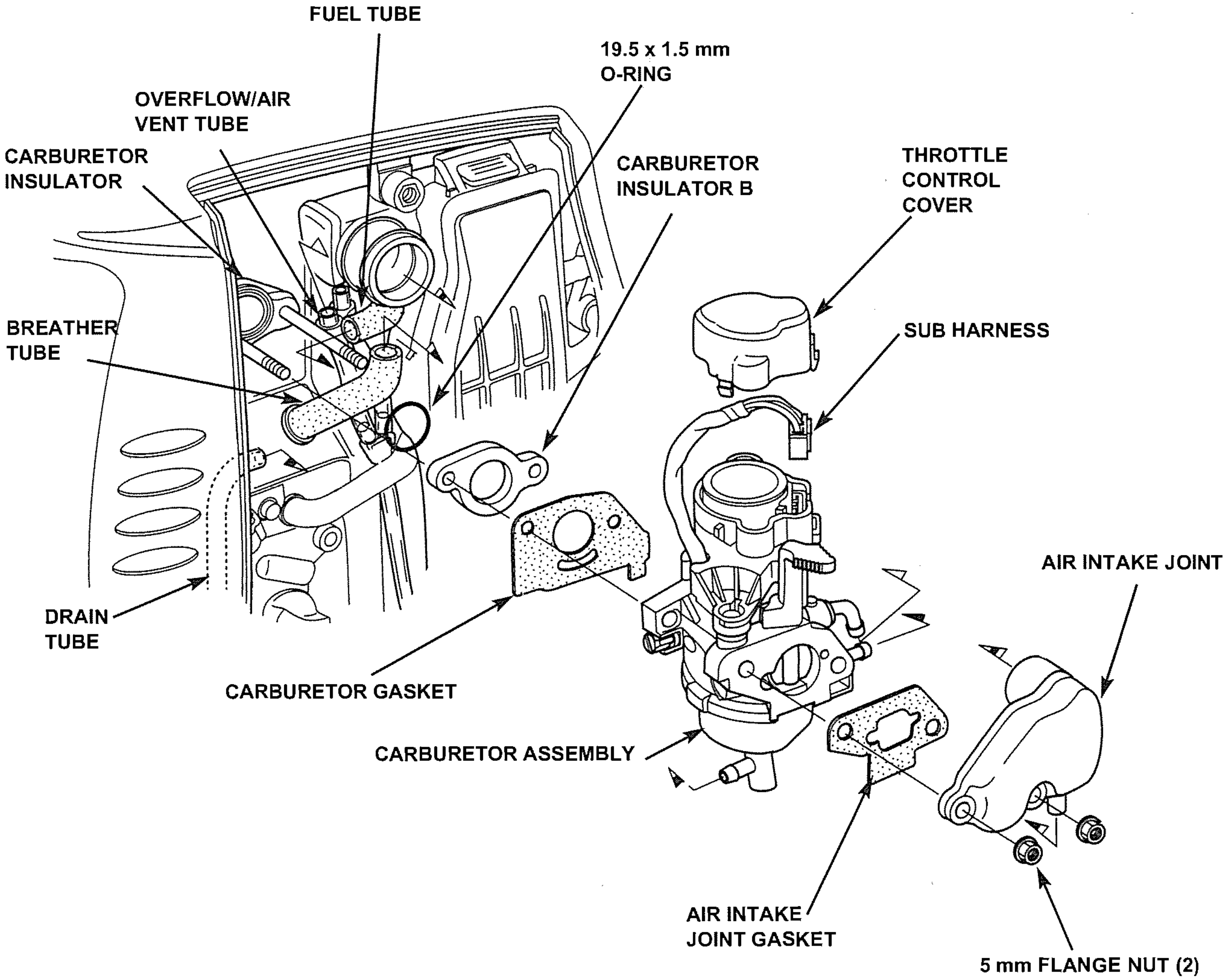
<Symptom>	<Inspection Point>	<Symptom>
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)



CARBURETOR REMOVAL

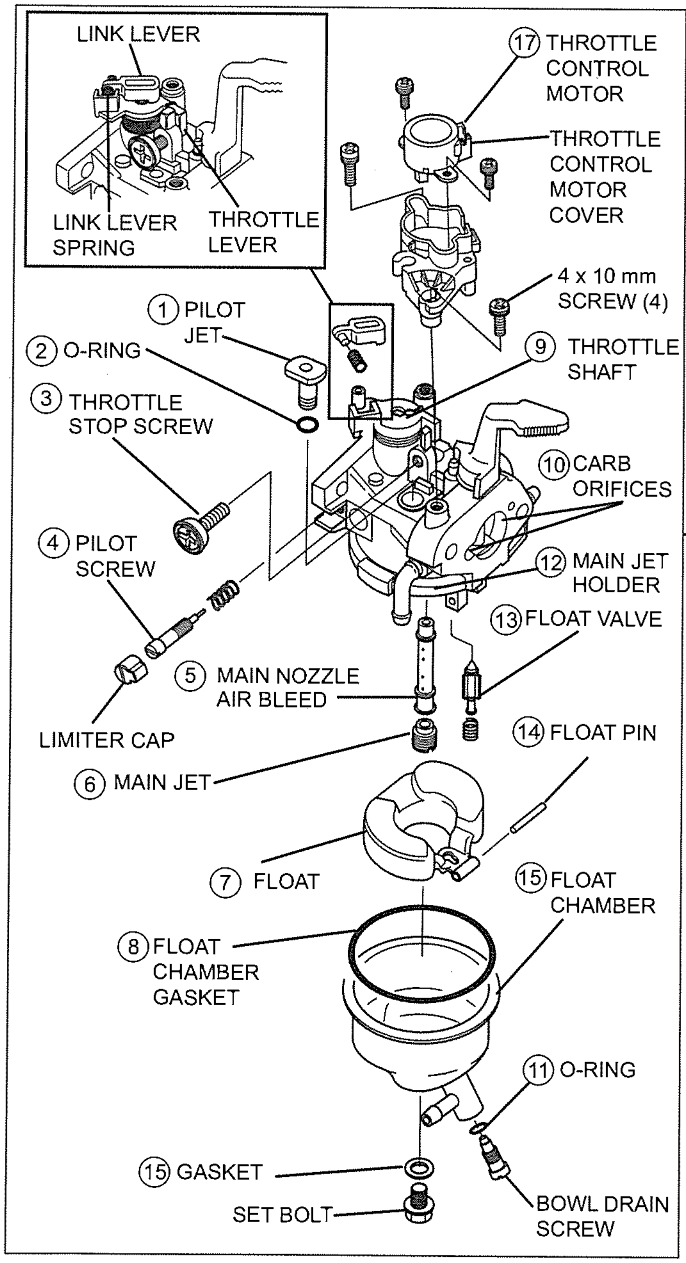
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

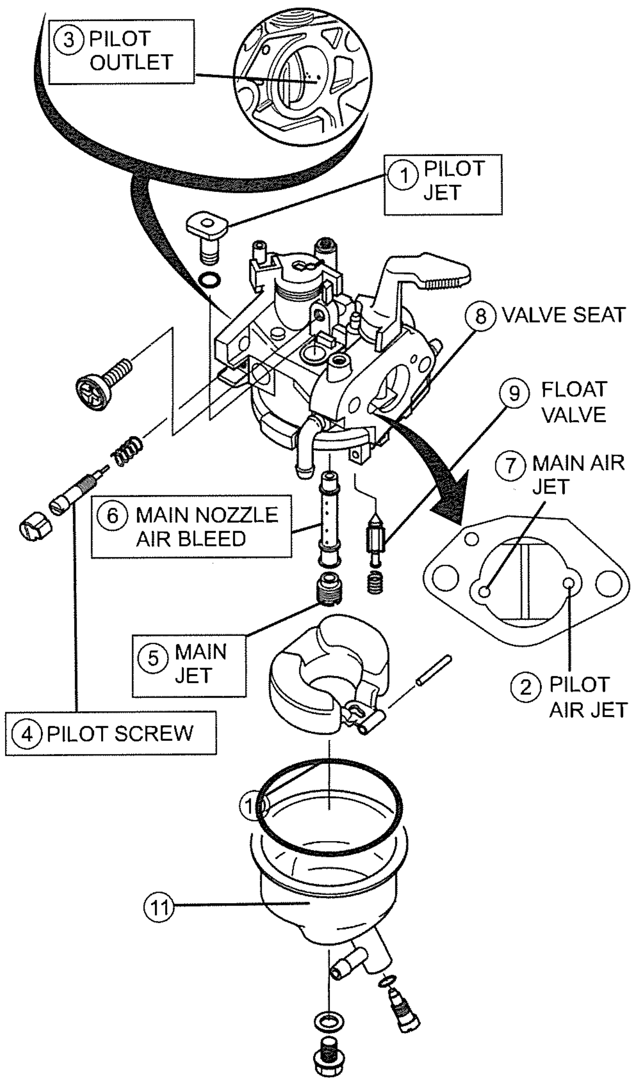
No.	Item	Clean	Replace
①	Check the pilot jet hole for clogging.	○	
②	Check the pilot jet O-ring for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination.	○	
⑤	Check the air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the gasket for damage (Do not remove the gasket).		●
⑨	Check the shaft for smooth movement and looseness.		●
⑩	Check the orifices in the carburetor body for clogging.	○	
⑪	Check the bowl drain screw O-ring for damage.		●
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the gaskets for damage.		●
⑰	Check the throttle control motor for worn gears. Replace if necessary.		●

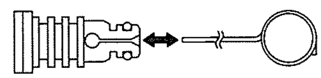
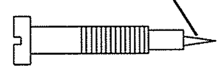
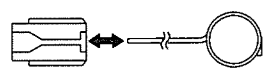
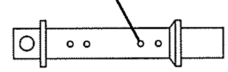
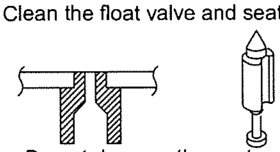
CLEANING

BF-type carburetor shown.

The BF-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.



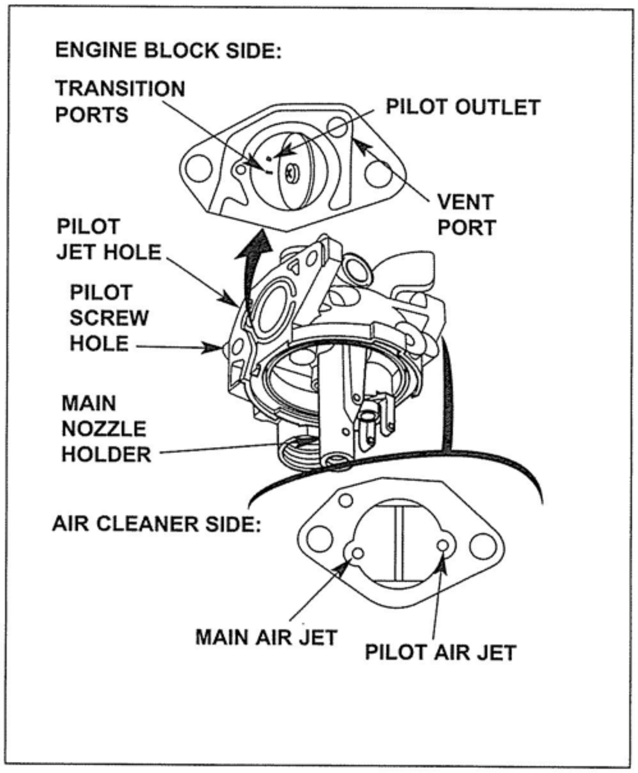
Item	Inspection/ Cleaning Tool
Slow Circuit	
① Remove foreign material from the pilot jet. 	Jet Cleaner Set
② Clean the pilot air jet orifice. ③ Clean the pilot outlet. ④ * Remove any contamination from the pilot screw tip. 	Honda Carburetor Cleaner Low pressure compressed air
Main Circuit	
⑤ Remove foreign material from the main jet. 	Jet Cleaner Set
⑥ Remove foreign material from the main nozzle air bleed holes.  ⑦ Clean the main air jet orifice.	Honda Carburetor Cleaner Low pressure compressed air
Float Circuit	
⑧ Remove foreign materials from the valve seat. ⑨ Clean the float valve and seat.  *Do not damage the seat and valve.*	Honda Carburetor Cleaner Low pressure compressed air
⑩ Check the float level.	Float level gauge
⑪ Remove foreign material from the float chamber.	

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

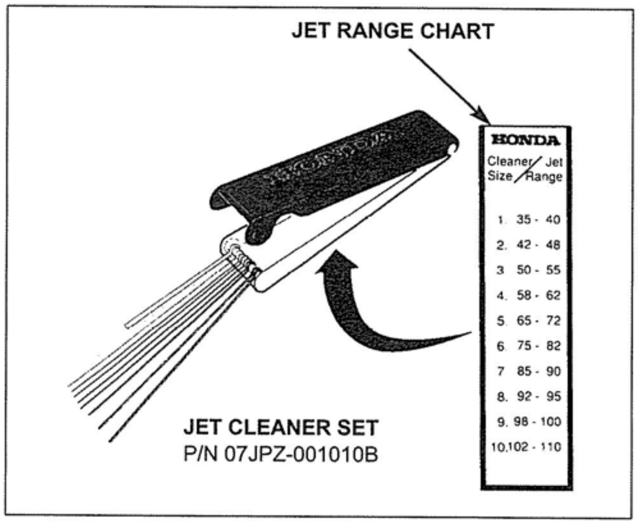
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

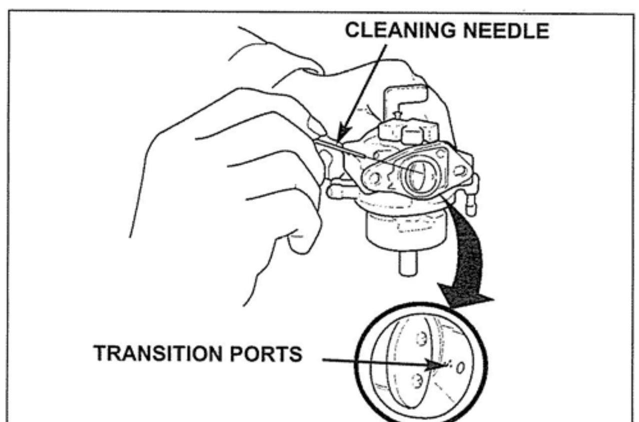
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section.



ADJUSTMENT

There are no adjustments with this type of carburetor.

BF-TYPE

EU2000i

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

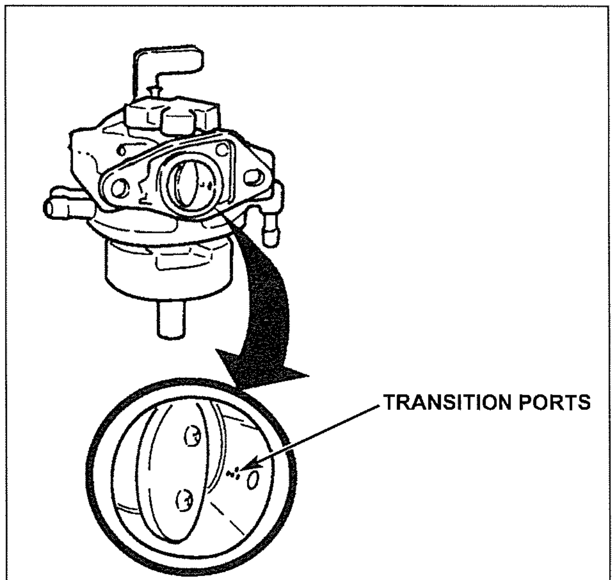
Transition Circuit

The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

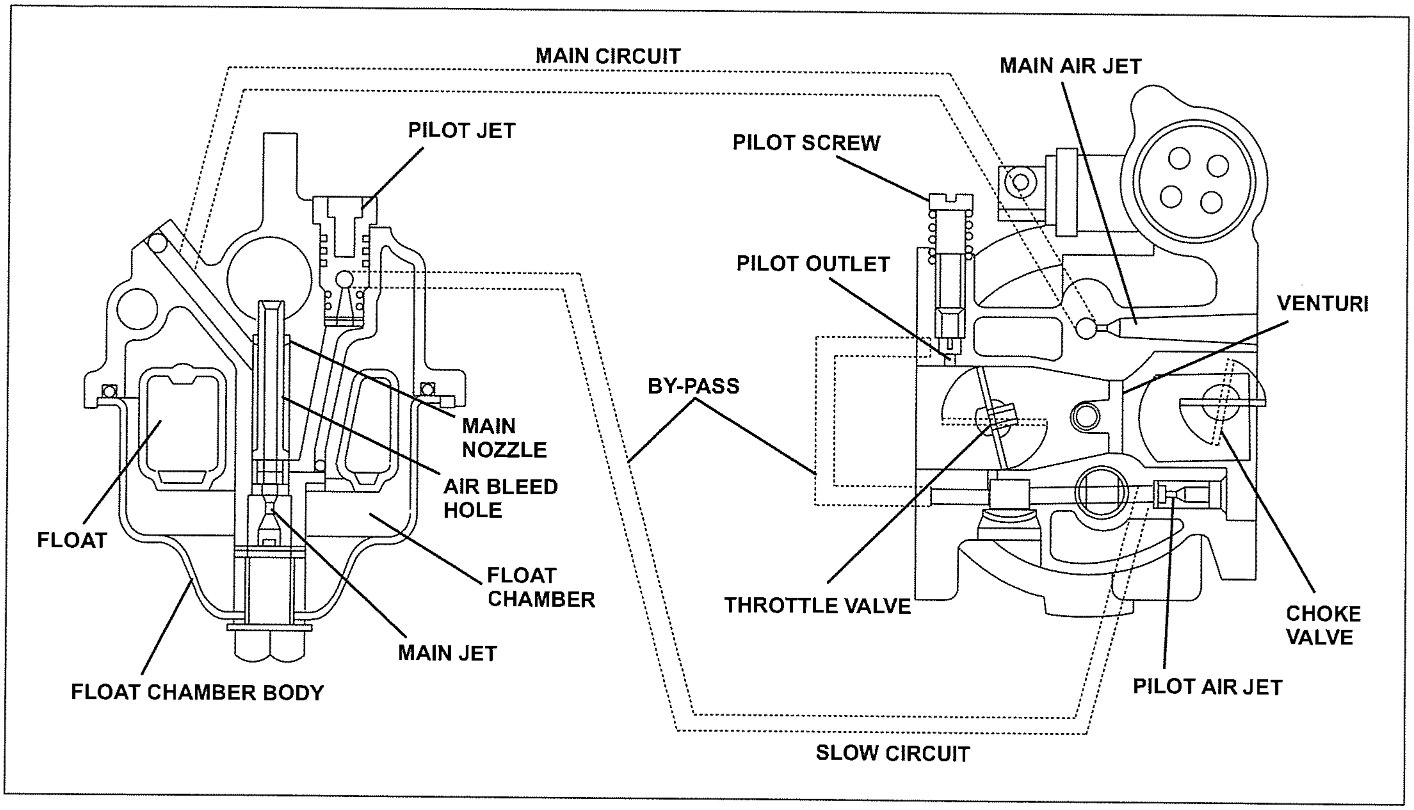
The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.



Electronic Governor/Throttle Control

The inverter's CPU compares the current output voltage, current, and engine speed with what is programed it its memory and sets the throttle position accordingly. The actual required engine speed is based on generator load ratio and temperature. As a load is applied, the engine speed, and generator output power will drop momentarily. The inverter will calculate the type of load (how much of power drop is occurring) and set the engine speed accordingly.


MAIN CIRCUIT
MAIN AIR JET
PILOT JET
PILOT SCREW
PILOT OUTLET
VENTURI
BY-PASS
MAIN
NOZZLE
AIR BLEED
HOLE
FLOAT
FLOAT
CHAMBER
THROTTLE VALVE
CHOKE
VALVE
MAIN JET
PILOT AIR JET
FLOAT CHAMBER BODY
SLOW CIRCUIT

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

Symptoms (left):
- Hard Starting
- Engine starts but soon stops

Symptoms (right):
- Poor performance at low speed
- rpm does not decrease

Order	Inspection Point	Ref.
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Water/foreign materials in the fuel filter	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

Symptoms (left):
- Hunting
- rpm does not stabilize

Symptoms (right):
- Poor performance at high speed
- rpm does not increase

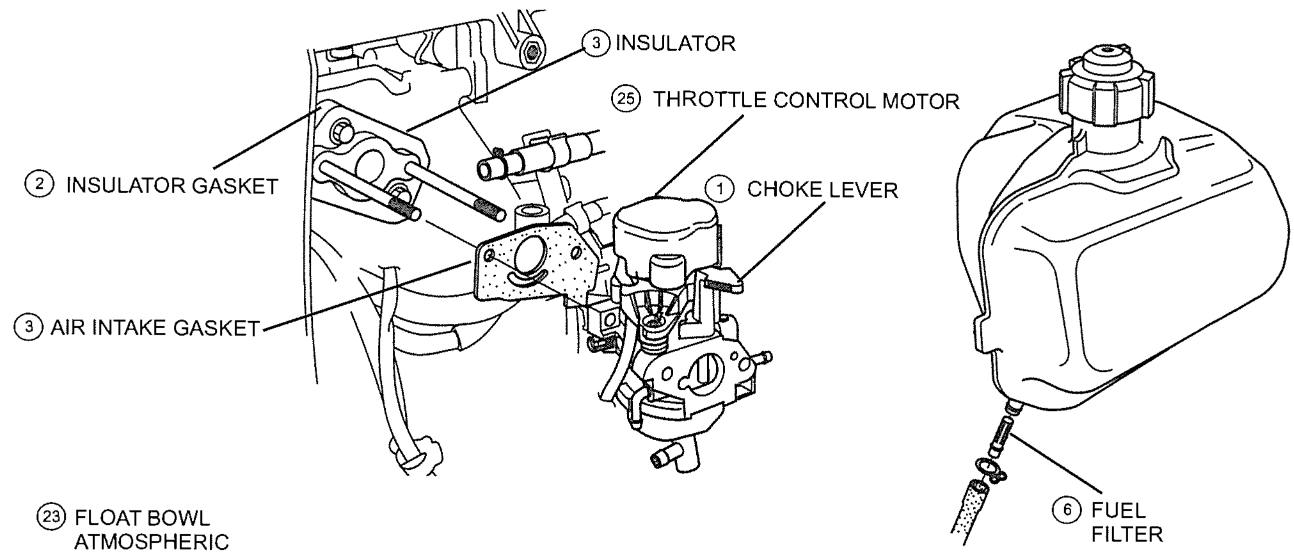
Order	Inspection Point	Ref.
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel filter	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④
❾	Worn throttle motor gear teeth	㉕

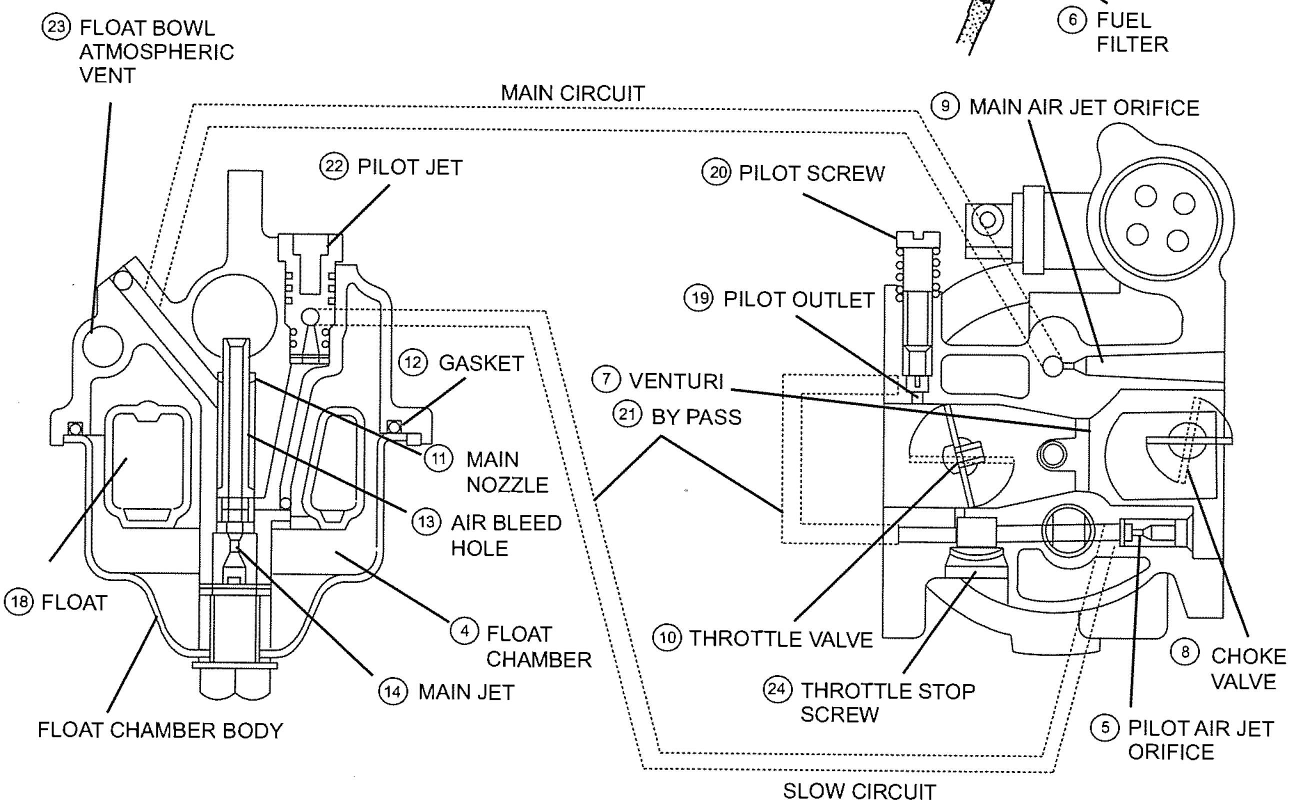
Symptoms (left):
- Float bowl overflowing
- Gasoline leaks

Order	Inspection Point	Ref.
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

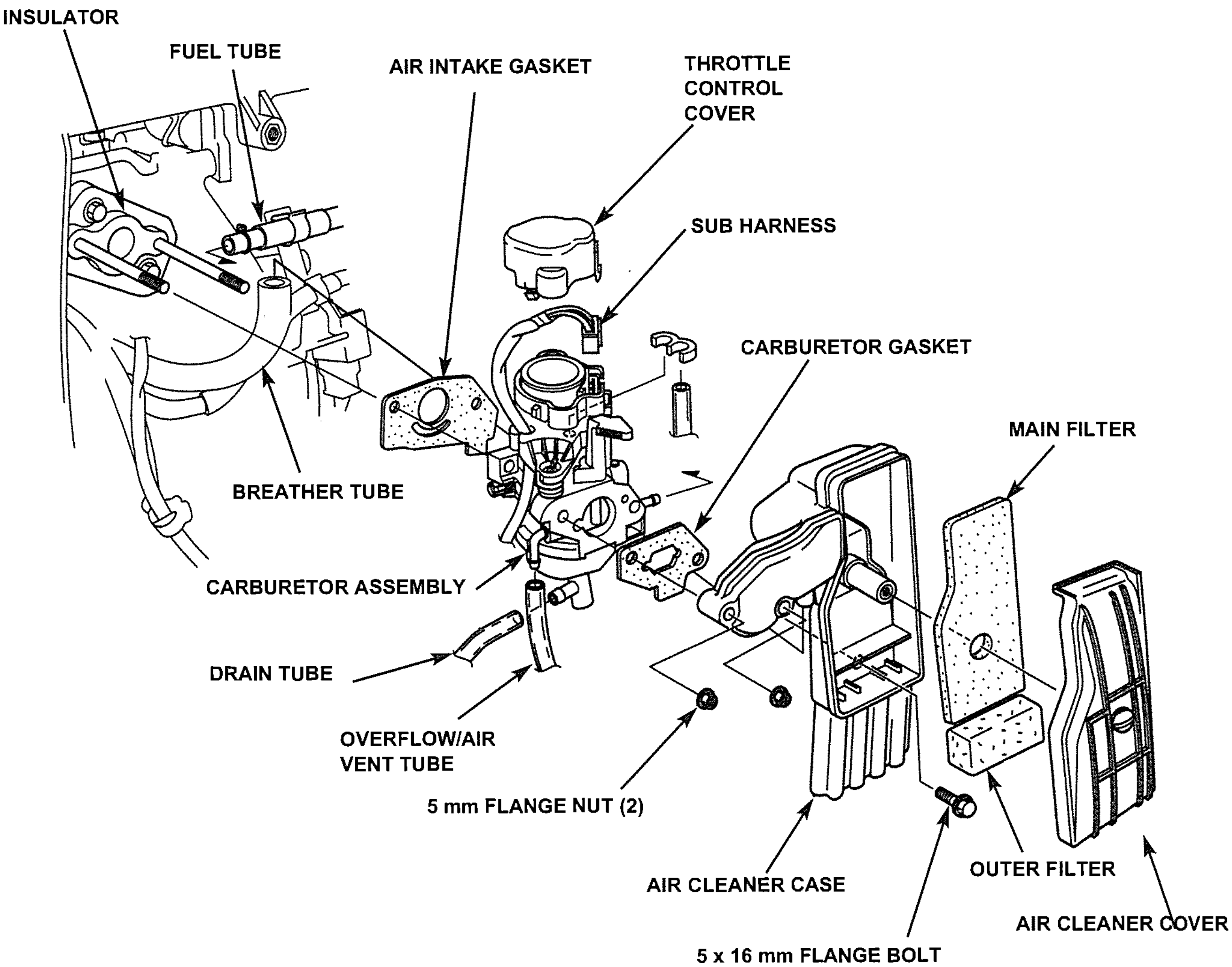
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)





CARBURETOR REMOVAL

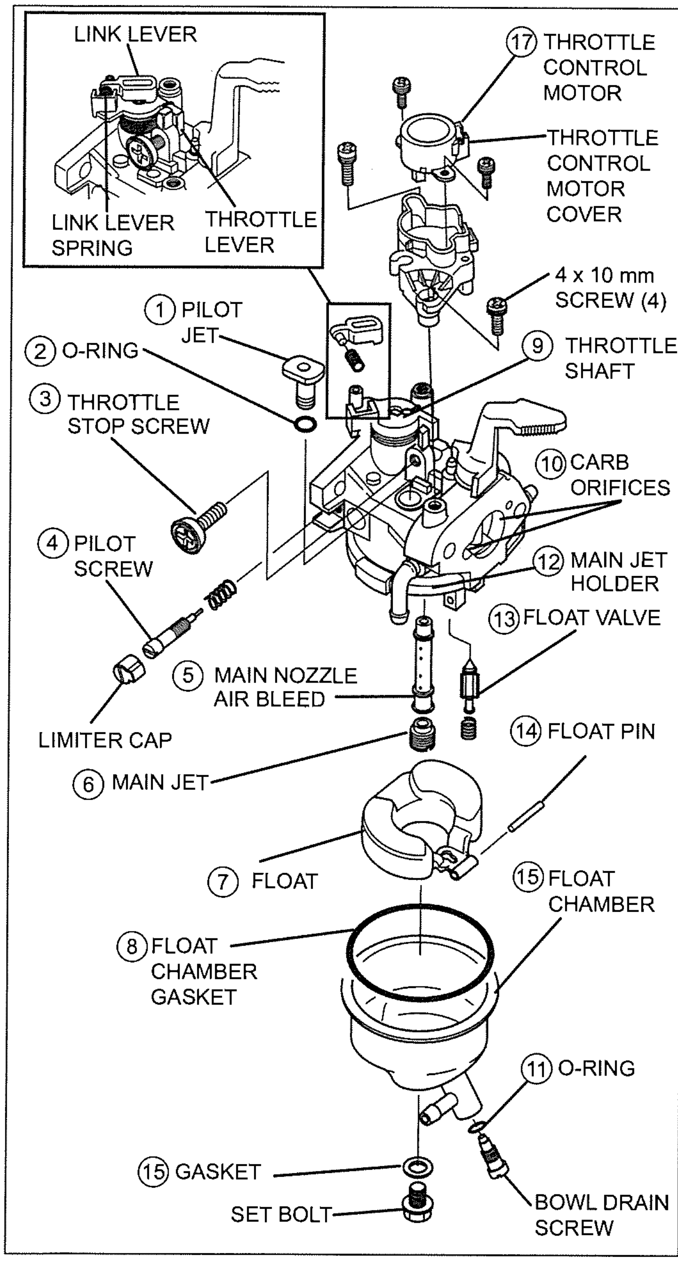
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

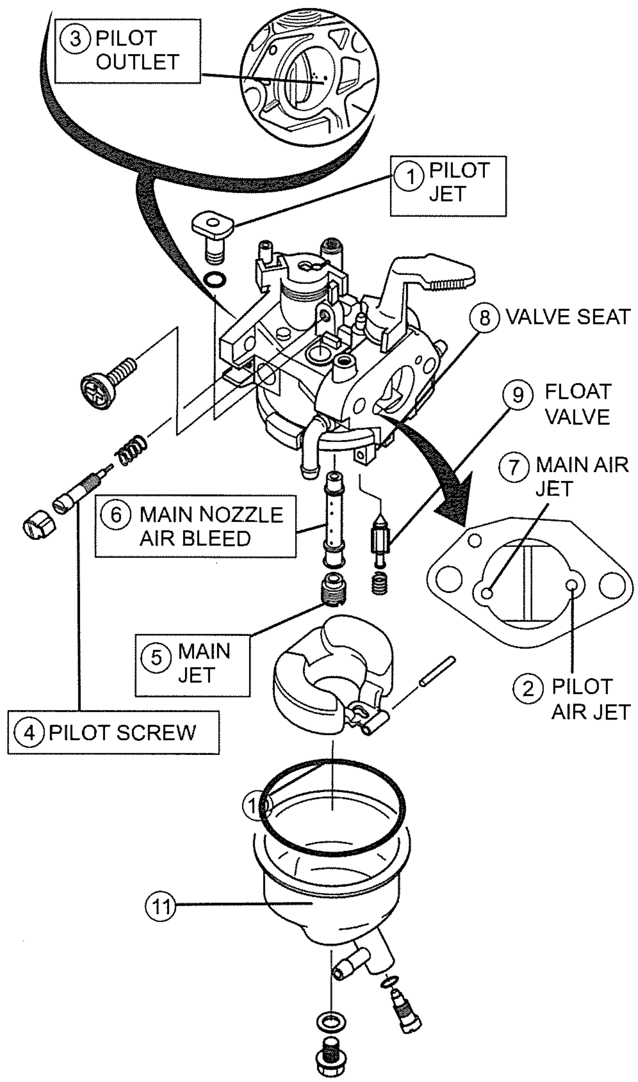
No.	Item	Clean	Replace
(1)	Check the pilot jet hole for clogging.	○	
(2)	Check the pilot jet O-ring for damage.		●
(3)	Check the stop screw for proper setting.		
(4)	Check screw tip for contamination.	○	
(5)	Check the air bleed holes for clogging.	○	
(6)	Check the main jet size. Check the jet orifice for clogging.	○	
(7)	Check the float height, and make sure there is no gasoline in the float.		●
(8)	Check the gasket for damage (Do not remove the gasket).		●
(9)	Check the shaft for smooth movement and looseness.		●
(10)	Check the orifices in the carburetor body for clogging.	○	
(11)	Check the bowl drain screw O-ring for damage.		●
(12)	Check the main jet holder for corrosion.	○	
(13)	Check the tip of the valve for contamination or damage.	○	●
(14)	Check the float pin for wear or loose fit.		●
(15)	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
(16)	Check the gaskets for damage.		●
(17)	Check the throttle control motor for worn gears. Replace if necessary.		●

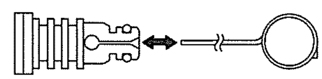
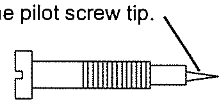
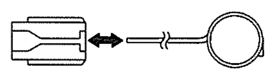
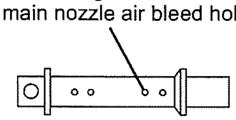
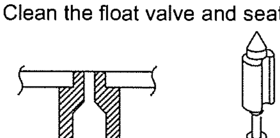
CLEANING

BF-type carburetor shown.

The BF-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.



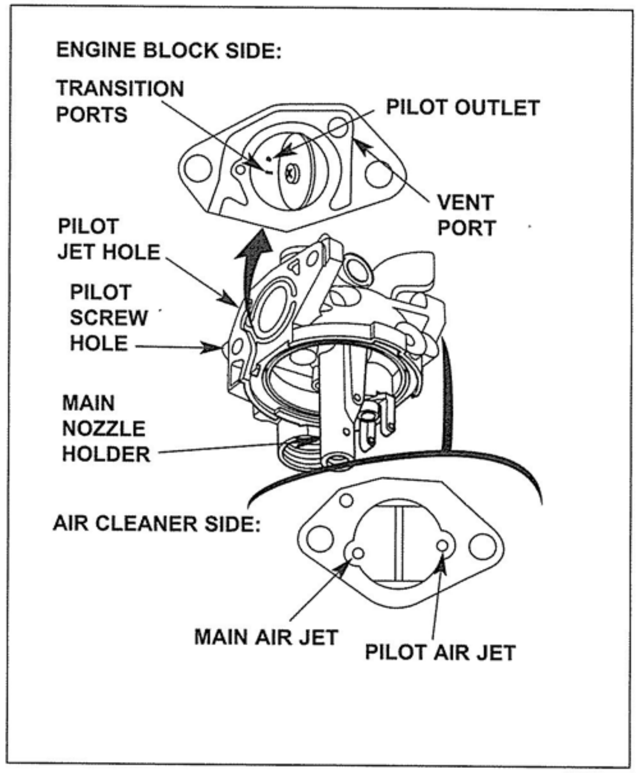
Item	Inspection/ Cleaning Tool
Slow Circuit	
(1) Remove foreign material from the pilot jet. 	Jet Cleaner Set
(2) Clean the pilot air jet orifice. (3) Clean the pilot outlet. (4) * Remove any contamination from the pilot screw tip. 	Honda Carburetor Cleaner Low pressure compressed air
Main Circuit	
(5) Remove foreign material from the main jet. 	Jet Cleaner Set
(6) Remove foreign material from the main nozzle air bleed holes.  (7) Clean the main air jet orifice.	Honda Carburetor Cleaner Low pressure compressed air
Float Circuit	
(8) Remove foreign materials from the valve seat. (9) Clean the float valve and seat.  *Do not damage the seat and valve.*	Honda Carburetor Cleaner Low pressure compressed air
(10) Check the float level. (11) Remove foreign material from the float chamber.	Float level gauge

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

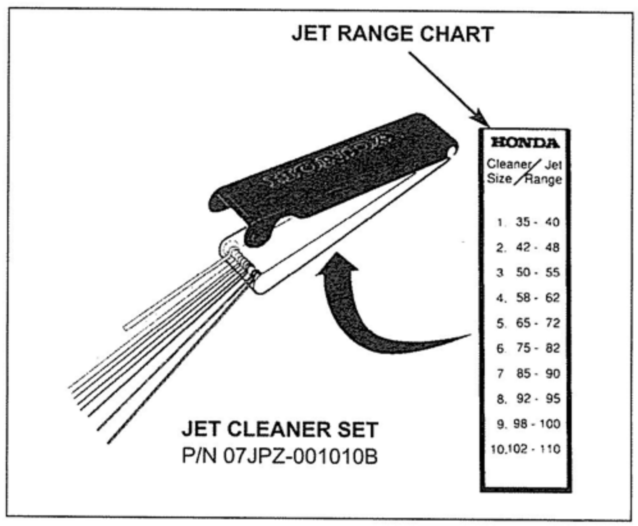
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

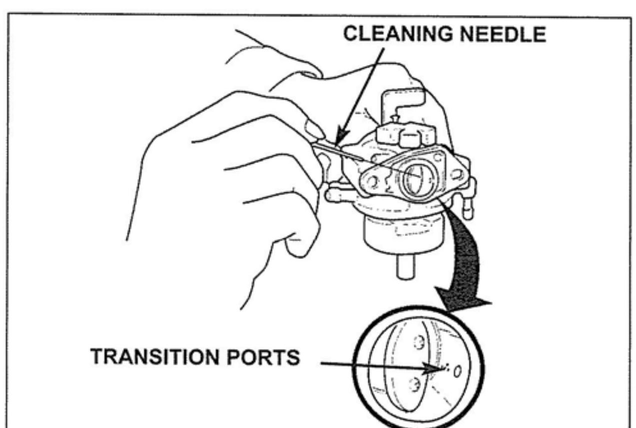
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section.



ADJUSTMENT

There are no adjustments with this type of carburetor.

BF-TYPE

G100K1

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

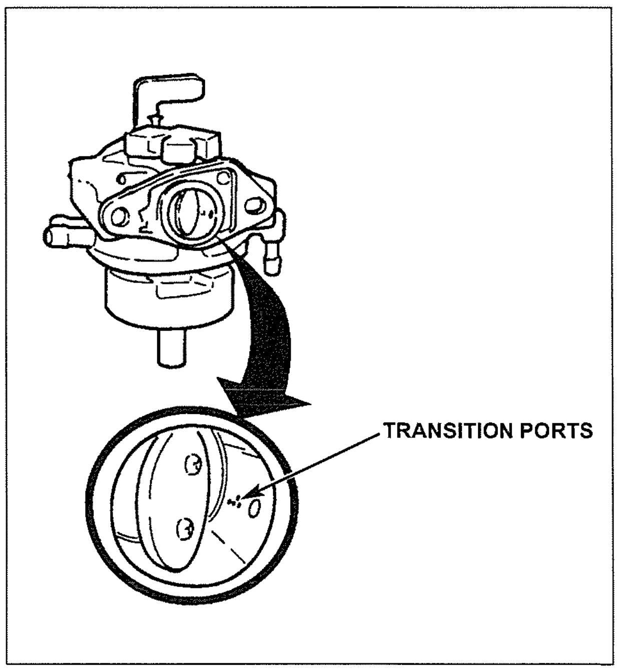
Transition Circuit

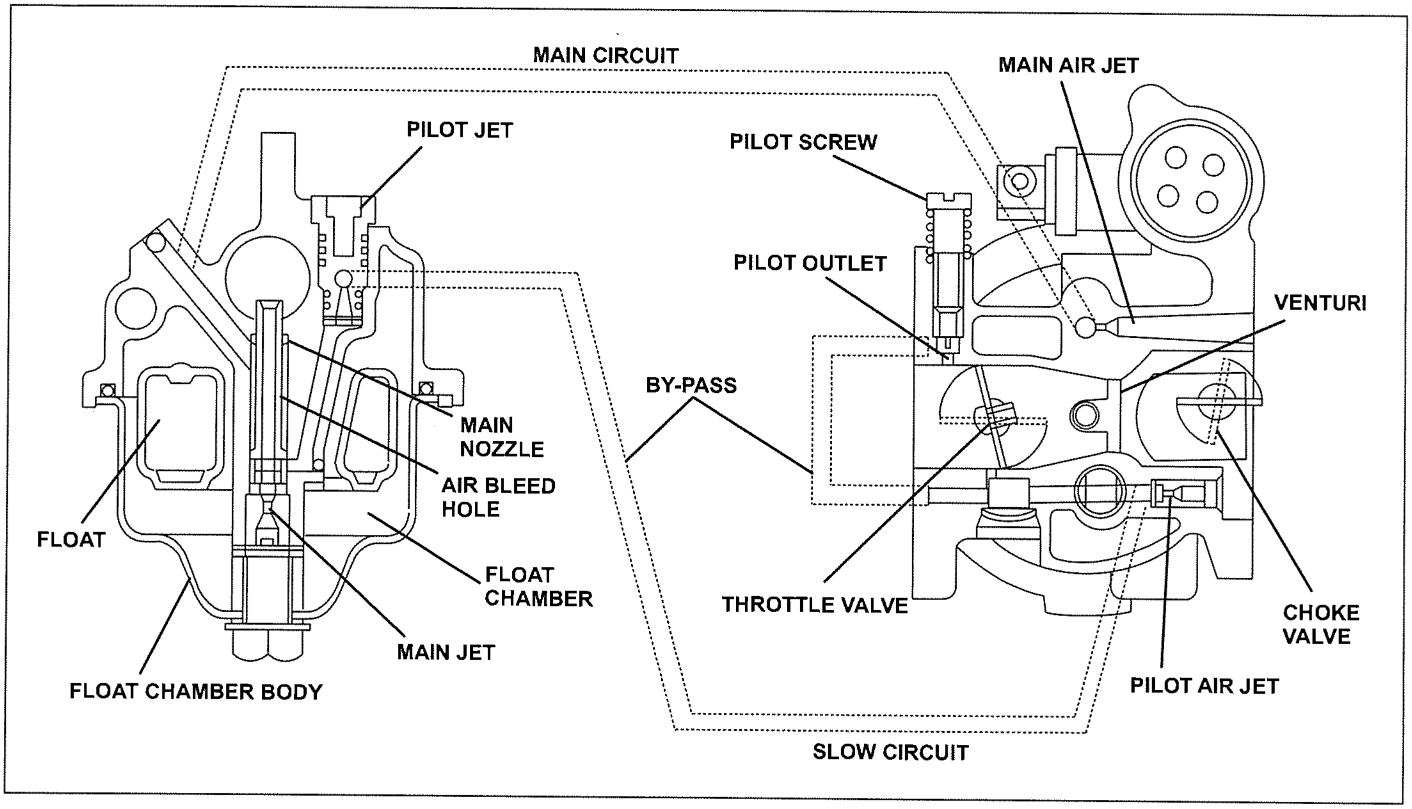
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




MAIN CIRCUIT
MAIN AIR JET
PILOT JET
PILOT SCREW
PILOT OUTLET
VENTURI
BY-PASS
MAIN
NOZZLE
AIR BLEED
HOLE
FLOAT
FLOAT
CHAMBER
THROTTLE VALVE
CHOKE
VALVE
MAIN JET
PILOT AIR JET
FLOAT CHAMBER BODY
SLOW CIRCUIT

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

<Symptom>
- Hard Starting
- Engine starts but soon stops

<Inspection Point>

Order	Inspection point	Ref.
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Water/foreign materials in the fuel sediment cup	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

<Symptom>
- Poor performance at low speed
- rpm does not decrease

<Symptom>
- Hunting
- rpm does not stabilize

<Inspection Point>

Order	Inspection point	Ref.
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel sediment cup	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

<Symptom>
- Poor performance at high speed
- rpm does not increase

<Symptom>
- Float bowl overflowing
- Gasoline leaks

<Inspection Point>

Order	Inspection point	Ref.
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

<Symptom>
- Hunting
- Spitting
- Engine stalling
- Hard Starting

<Inspection Point>
- Air leaking past the carburetor insulator gasket
- Clogged jets, worn throttle shaft
- Overheating of the carburetor chamber/fuel passage
- Wrong main jet size
- Restricted pilot jet

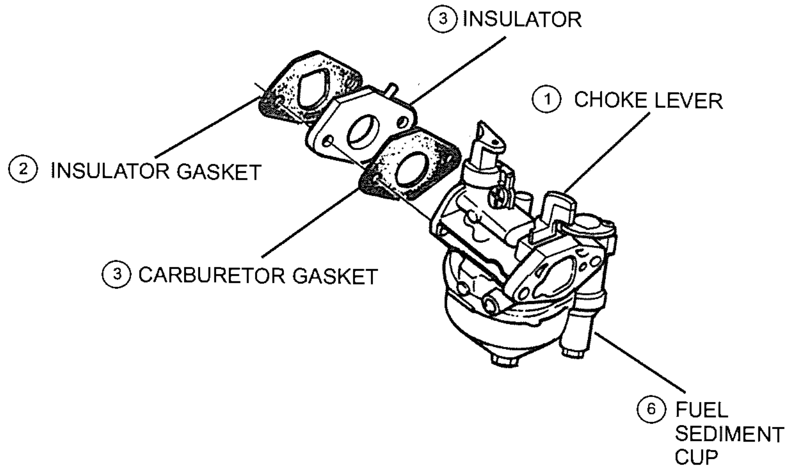
<Symptom>
- Lean fuel mixture
- Percolation
- Overheating
- Set for high elevation

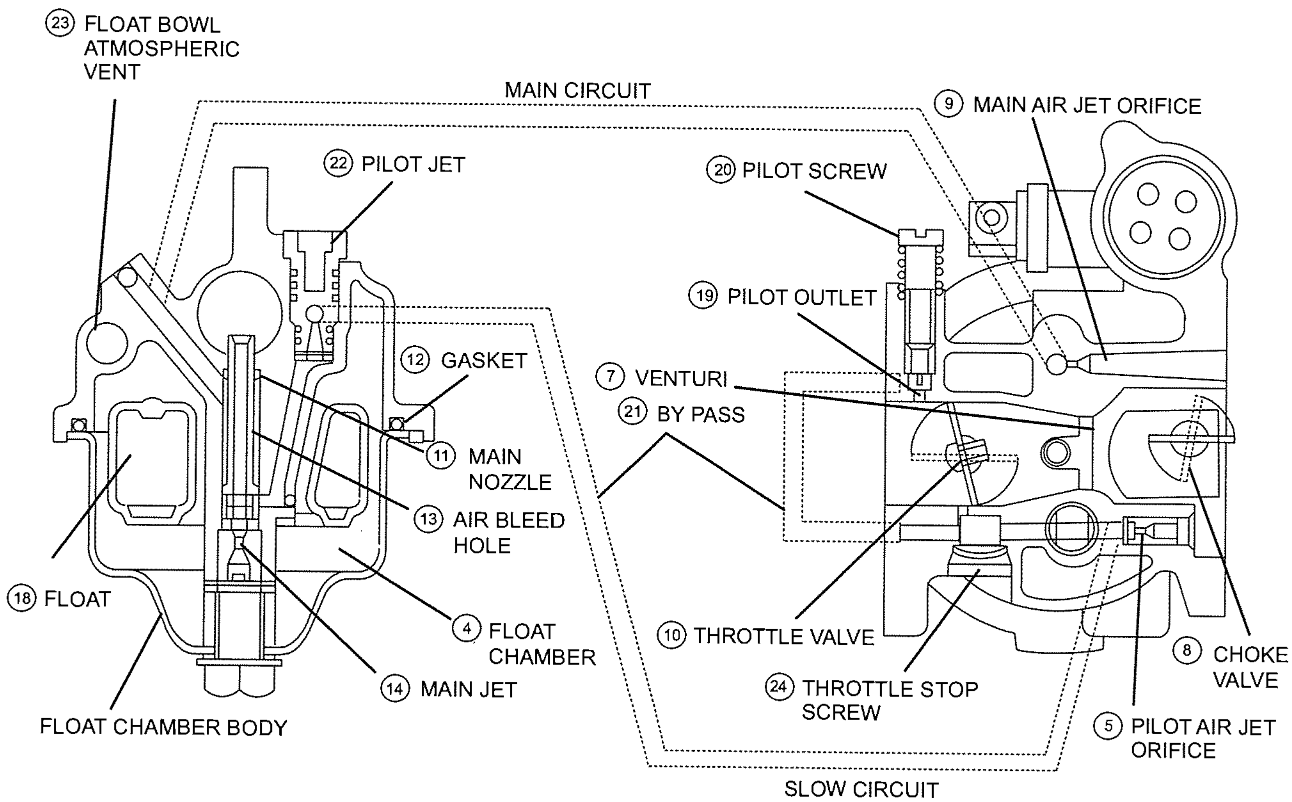
<Symptom>
- Wet fouled spark plug
- Power drops, rpm does not stabilize
- Black smoke from muffler, engine stalls

<Inspection Point>
- Clogged air cleaner
- Faulty choke operation
- Wrong main jet size
- Deteriorated gasoline
- Blocked main nozzle/venturi bore

<Symptom>
- Rich fuel mixture
- Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

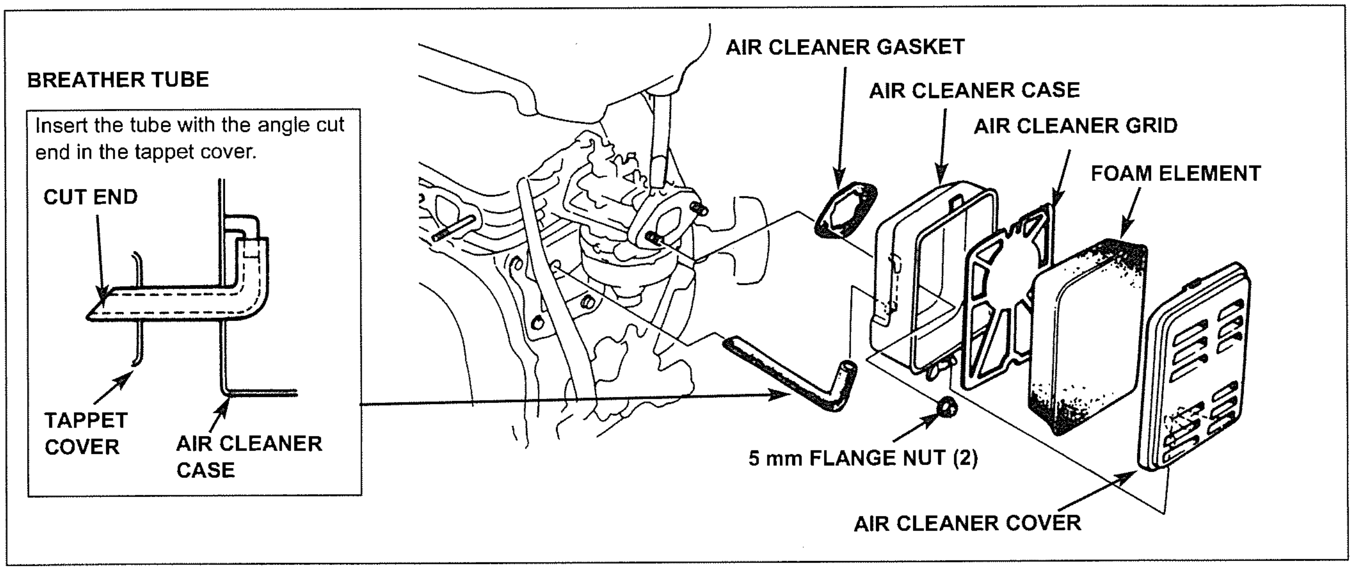
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)

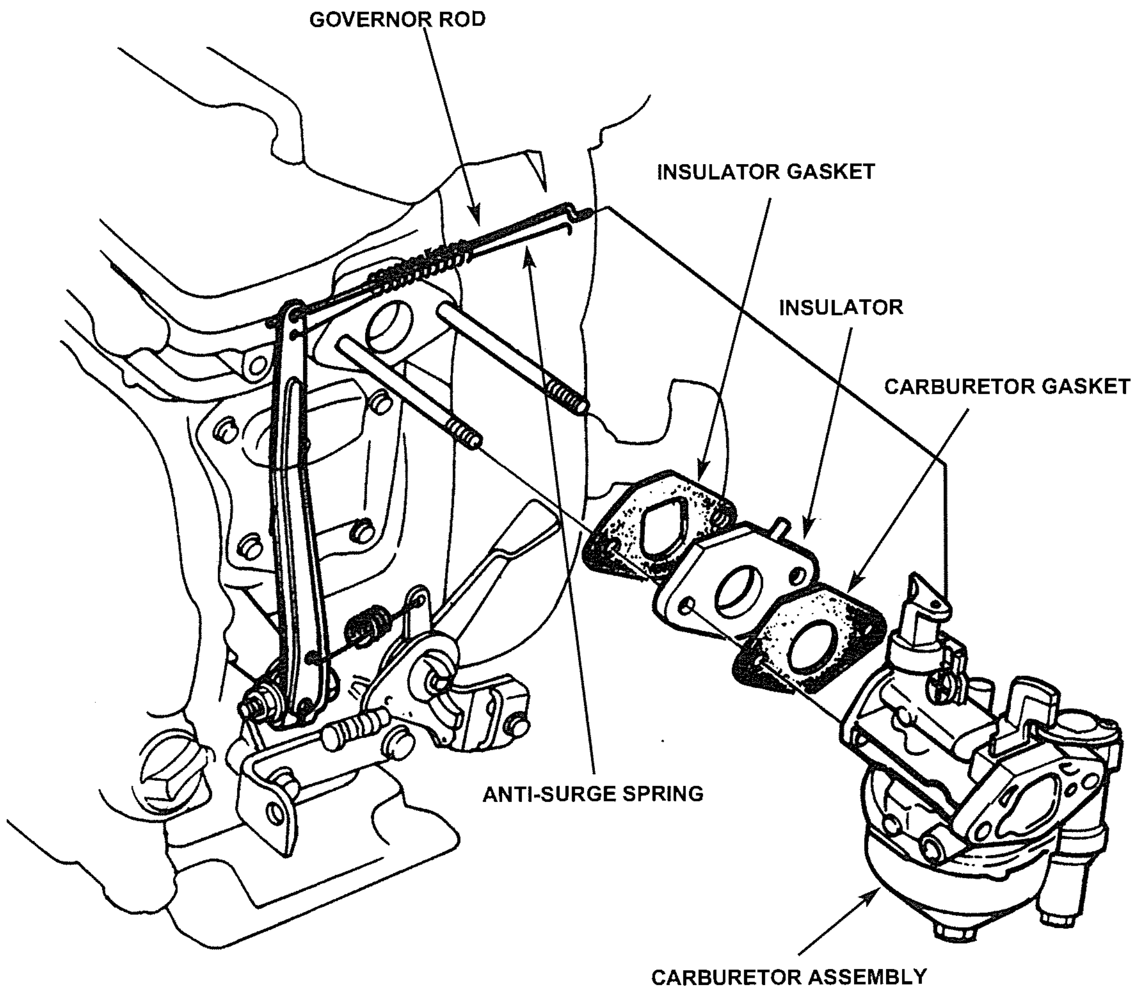




CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.

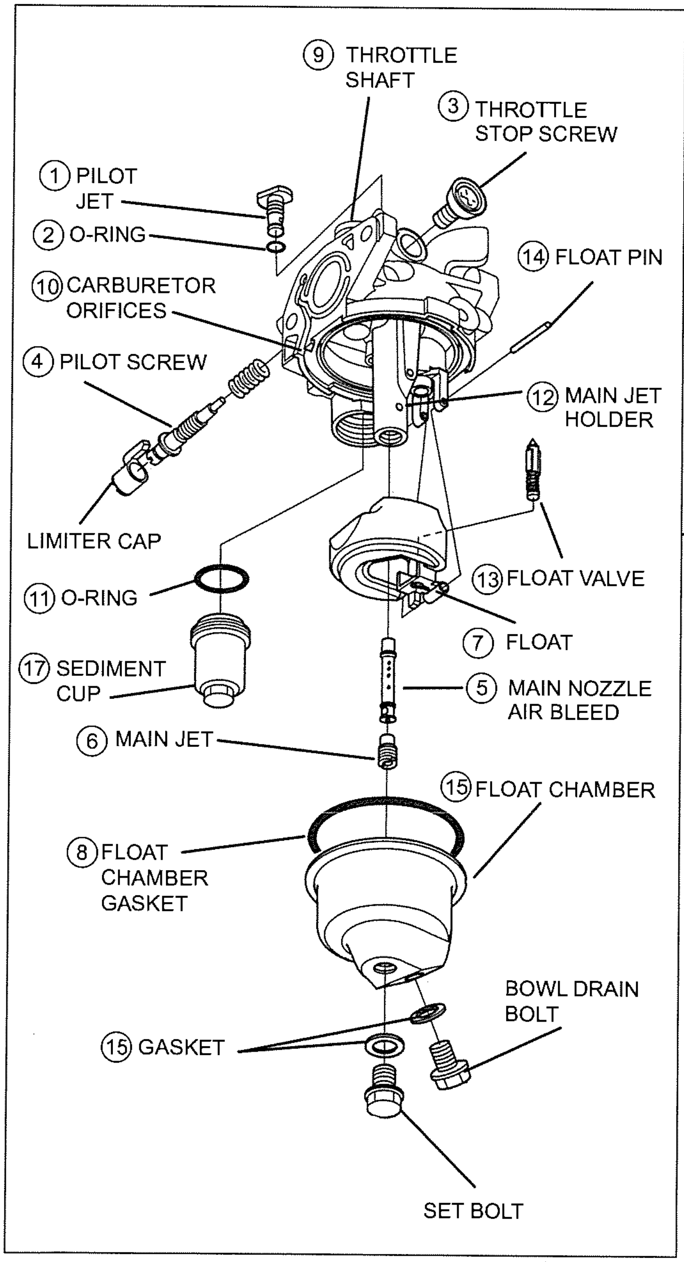




DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

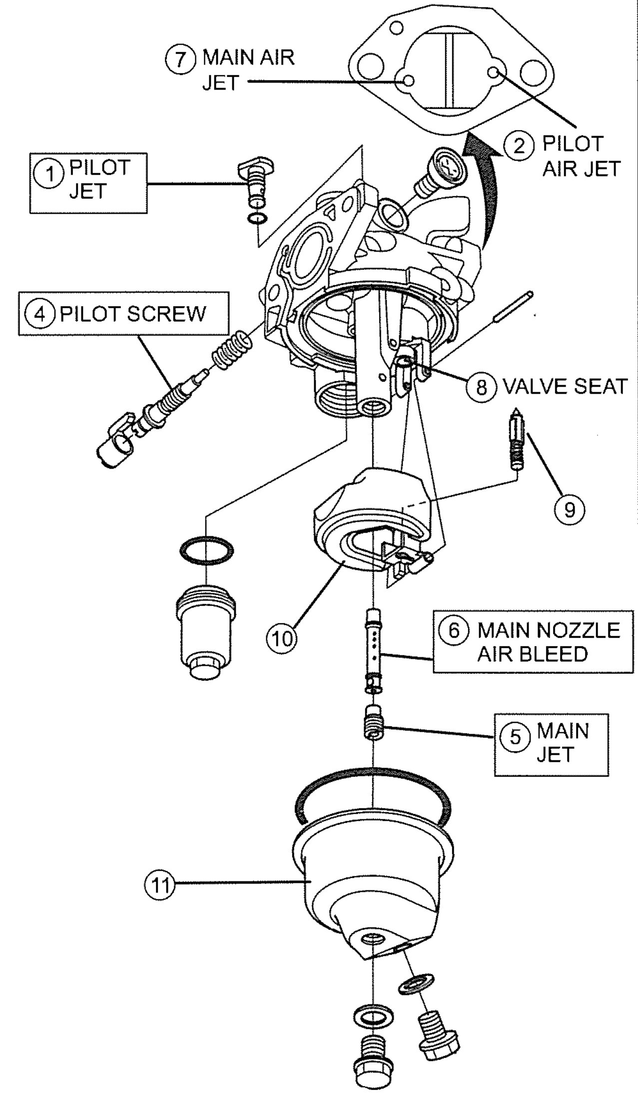
No.	Item	Clean	Replace
①	Check the pilot jet hole for clogging.	○	
②	Check the pilot jet O-ring for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination.	○	
⑤	Check the air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the gasket for damage (Do not remove the gasket).		●
⑨	Check the shaft for smooth movement and looseness.		●
⑩	Check the orifices in the carburetor body for clogging.	○	
⑪	Check the sediment cup O-ring for damage.		●
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the gaskets for damage.		●
⑰	Check the sediment cup for debris and contamination.	○	

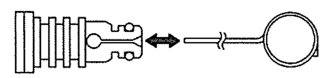
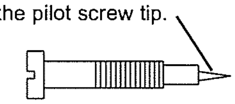
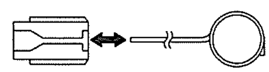
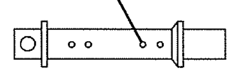
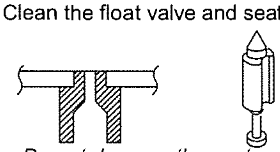
CLEANING

BF-type carburetor shown.

The BF-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.



Item	Inspection/ Cleaning Tool
Slow Circuit	
1 Remove foreign material from the pilot jet. 	Jet Cleaner Set
2 Clean the pilot air jet orifice. 3 Clean the pilot outlet. 4 * Remove any contamination from the pilot screw tip. 	Honda Carburetor Cleaner Low pressure compressed air
Main Circuit	
5 Remove foreign material from the main jet. 	Jet Cleaner Set
6 Remove foreign material from the main nozzle air bleed holes.  7 Clean the main air jet orifice.	Honda Carburetor Cleaner Low pressure compressed air
Float Circuit	
8 Remove foreign materials from the valve seat. 9 Clean the float valve and seat.  *Do not damage the seat and valve.*	Honda Carburetor Cleaner Low pressure compressed air
10 Check the float level. 11 Remove foreign material from the float chamber.	Float level gauge

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.

NOTICE

High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

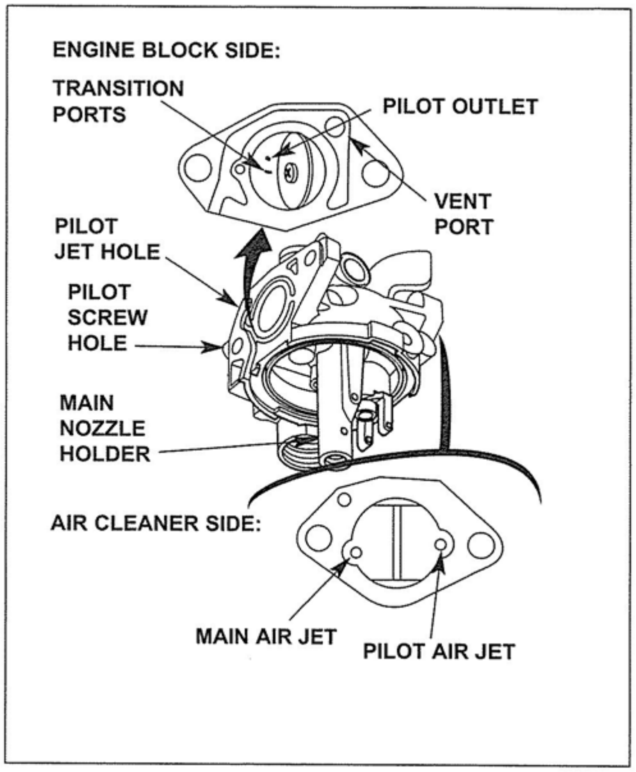
1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

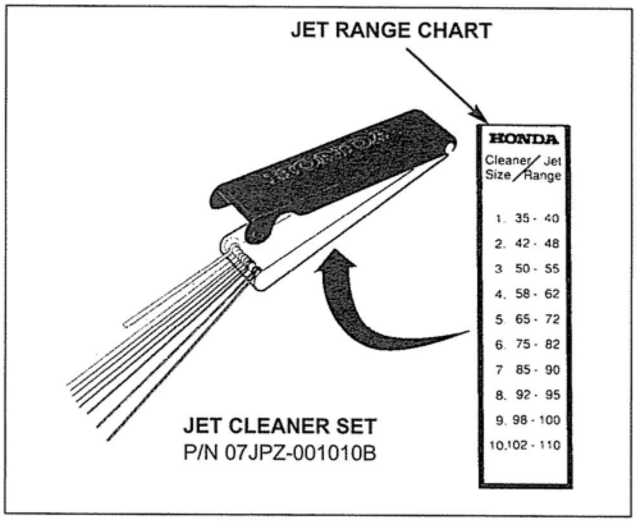
   NOTICE

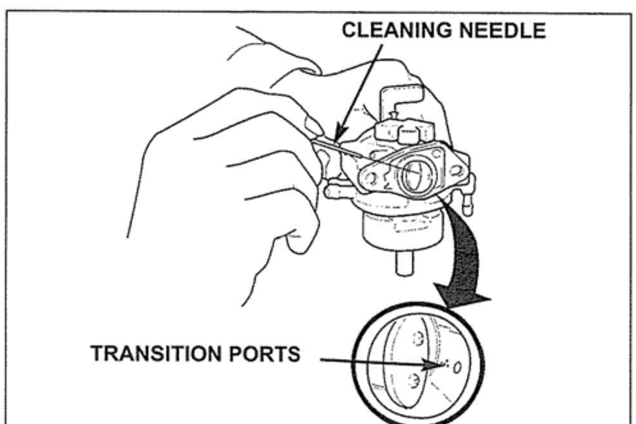
   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.

4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).







ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

1. IDLE SLOW SPEED ADJUSTMENT UNDER NO LOAD

Use the throttle stop screw and pilot screw (non-certified engines) to adjust the idle slow speed.

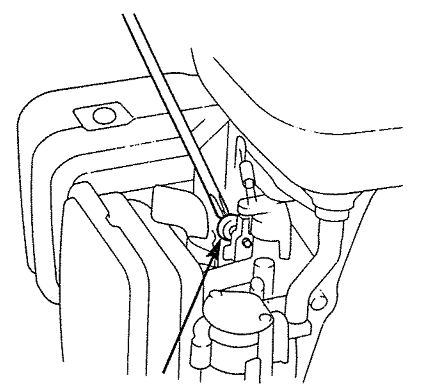
Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases

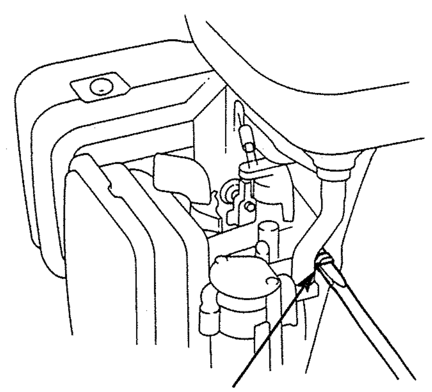
Pilot screw (non-certified engines):

Refer to the appropriate shop manual for adjustment and reassembly procedures.

- Turn clockwise .... leaner fuel mixture
- Turn counterclockwise .... richer fuel mixture



IDLE STOP SCREW



PILOT SCREW

Idle Adjustment

(1) With the engine off, turn the throttle stop screw clockwise until it contacts the throttle lever, and then make 3 more turns to open the throttle plate. Be sure the throttle lever is touching the end of the screw.

(2) Turn the pilot screw clockwise until it lightly seats, and then back it out the number of turns specified in the appropriate shop manual.

NOTICE

Overtightening the pilot screw may damage the carburetor.

(3) Start the engine, and let it warm up to normal operating temperature. When the engine is warm, slowly turn the throttle stop screw counterclockwise until the engine is running at the standard idle speed specified in the shop manual.

(4) Turn the pilot screw (non-certified engines) in or out to obtain the highest engine rpm.

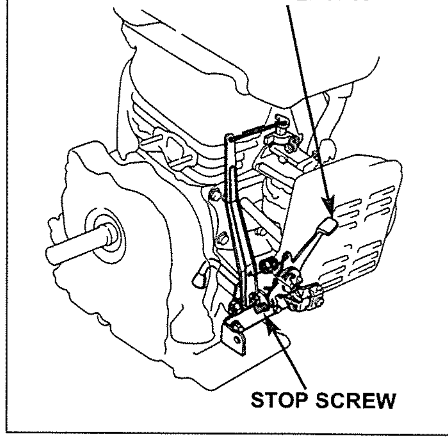
(5) Repeat steps (3) and (4) above until the pilot screw (non-certified engines) setting is as close as possible to the standard idle speed.

If the pilot screw (non-certified engines) must be turned more than one turn in either direction from the shop manual specification, the carburetor may have a blocked passage. Be sure all air and fuel passages are clear before proceeding.

(6) Adjust the throttle stop screw to obtain the standard idle speed.

2. MAXIMUM SPEED ADJUSTMENT UNDER NO LOAD

Set the throttle lever to the maximum speed position.



Maximum Speed Adjustment

(1) Start the engine, and let it warm up to normal operating temperature. When
the engine is warm, turn the control lever adjusting screw until the engine is running at the specified maximum speed at full throttle.

(2) Close the throttle, and then slowly open it again.

(3) If hunting occurs as the throttle is opened, adjust the pilot screw (non-certified engines).

(4) Check the idle slow speed, and adjust the throttle stop screw if necessary.

BF-TYPE

GX100

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

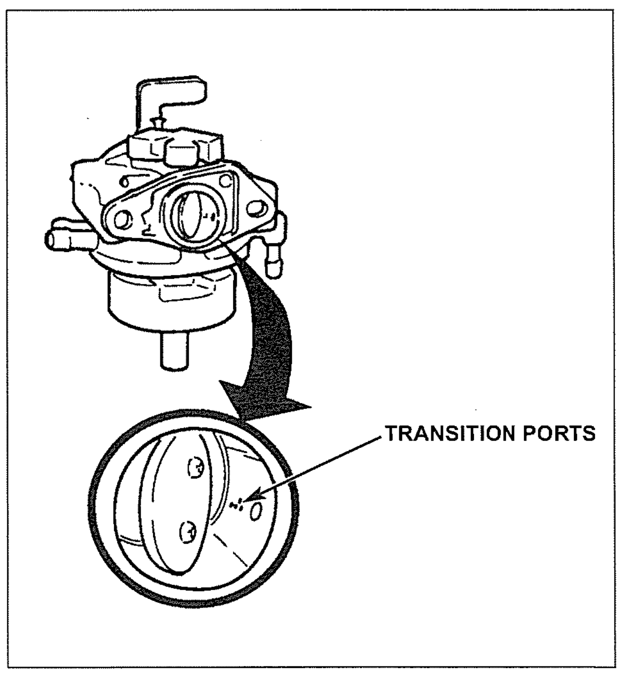
Transition Circuit

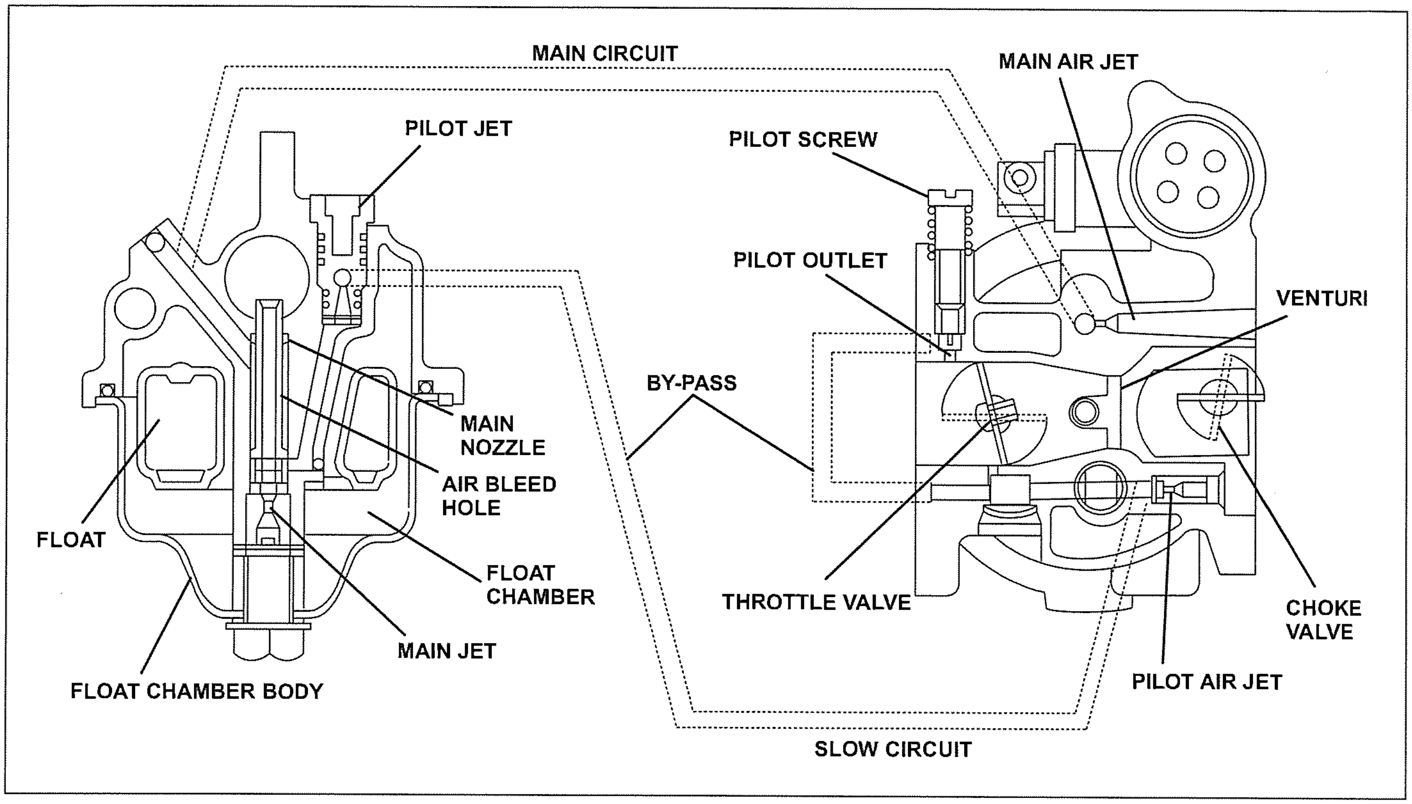
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




MAIN CIRCUIT
MAIN AIR JET
PILOT JET
PILOT SCREW
PILOT OUTLET
VENTURI
BY-PASS
MAIN
NOZZLE
AIR BLEED
HOLE
FLOAT
FLOAT
CHAMBER
THROTTLE VALVE
CHOKE
VALVE
MAIN JET
FLOAT CHAMBER BODY
PILOT AIR JET
SLOW CIRCUIT

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

<Symptom>

- Hard Starting
- Engine starts but soon stops

- Hunting
- rpm does not stabilize

- Float bowl overflowing
- Gasoline leaks

<Inspection Point>

Order	Inspection Point	Ref.
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Water/foreign materials in the fuel filter	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

Order	Inspection Point	Ref.
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel filter	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

Order	Inspection Point	Ref.
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

<Symptom>

- Poor performance at low speed
- rpm does not decrease

- Poor performance at high speed
- rpm does not increase

- Hunting
- Spitting
- Engine stalling
- Hard Starting

- Air leaking past the carburetor insulator gasket
- Clogged jets, worn throttle shaft
- Overheating of the carburetor chamber/fuel passage
- Wrong main jet size
- Restricted pilot jet

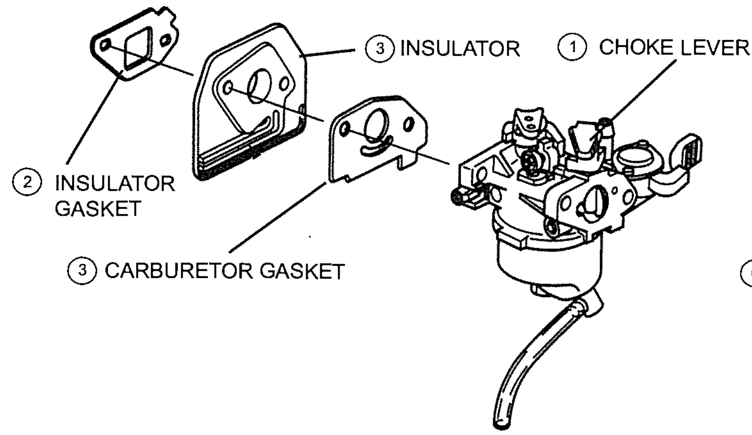
- Lean fuel mixture
- Percolation
- Overheating
- Set for high elevation

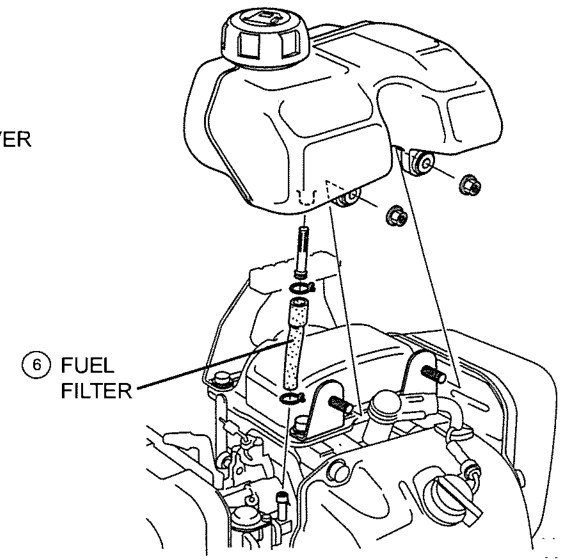
- Wet fouled spark plug
- Power drops, rpm does not stabilize
- Black smoke from muffler, engine stalls

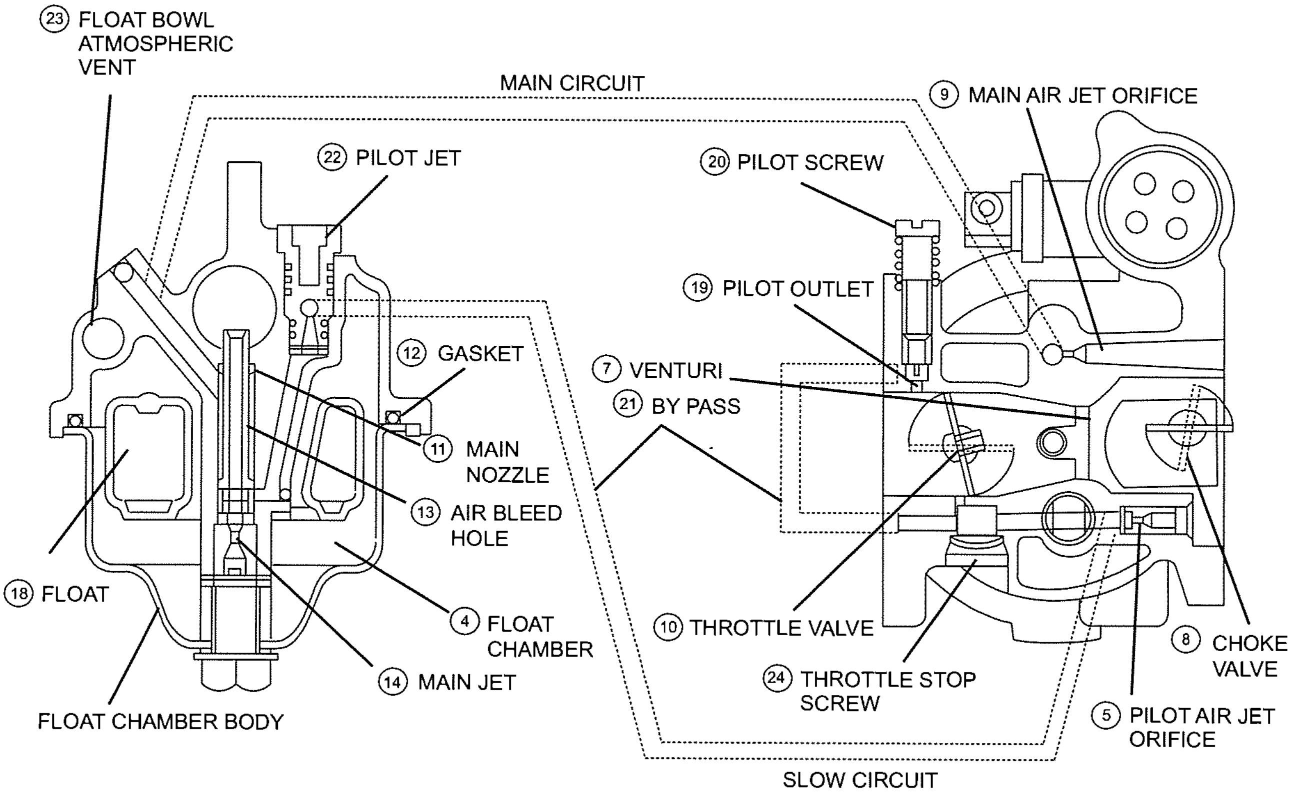
- Clogged air cleaner
- Faulty choke operation
- Wrong main jet size
- Deteriorated gasoline
- Blocked main nozzle/venturi bore

- Rich fuel mixture
- Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)

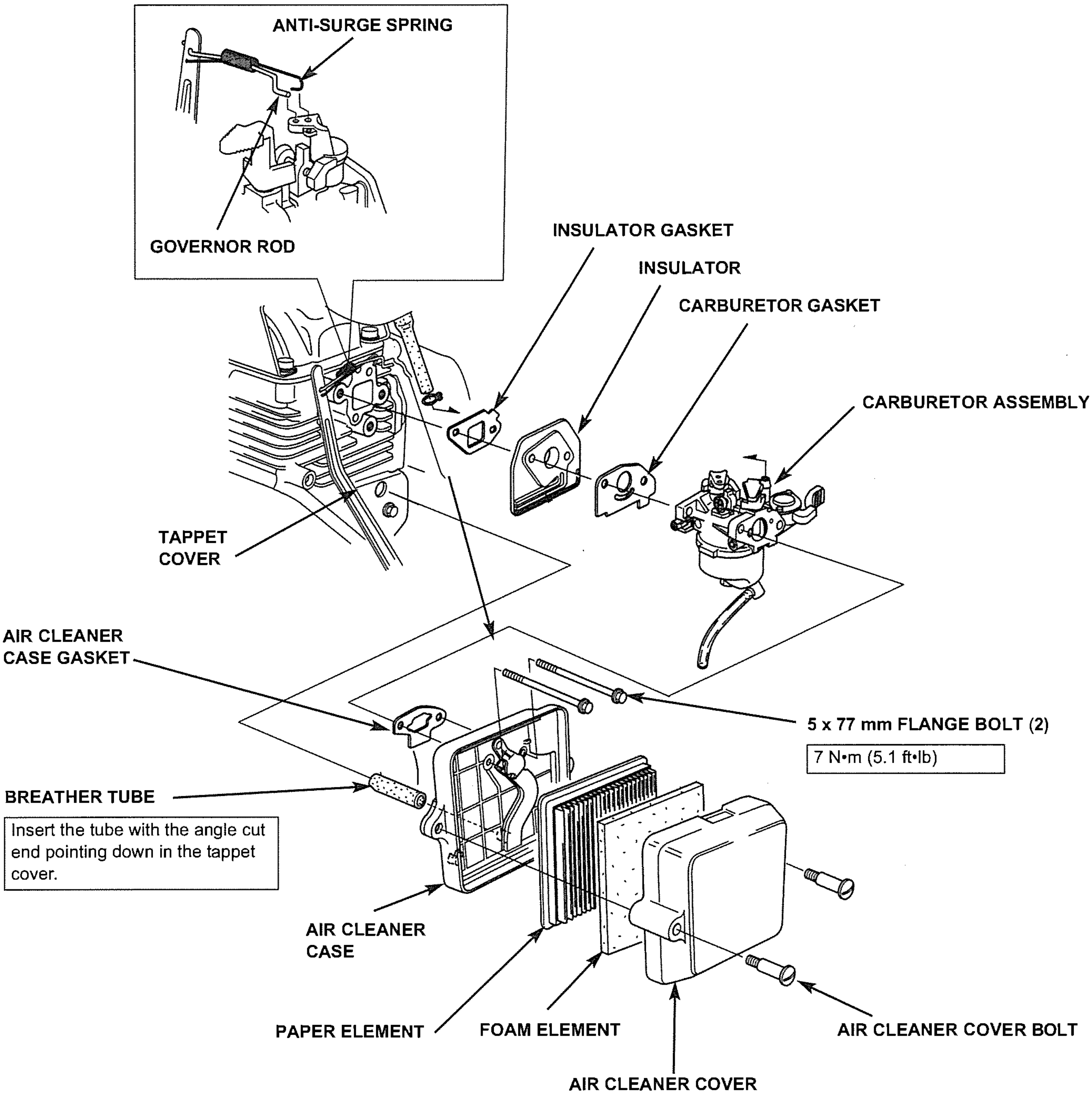






CARBURETOR REMOVAL

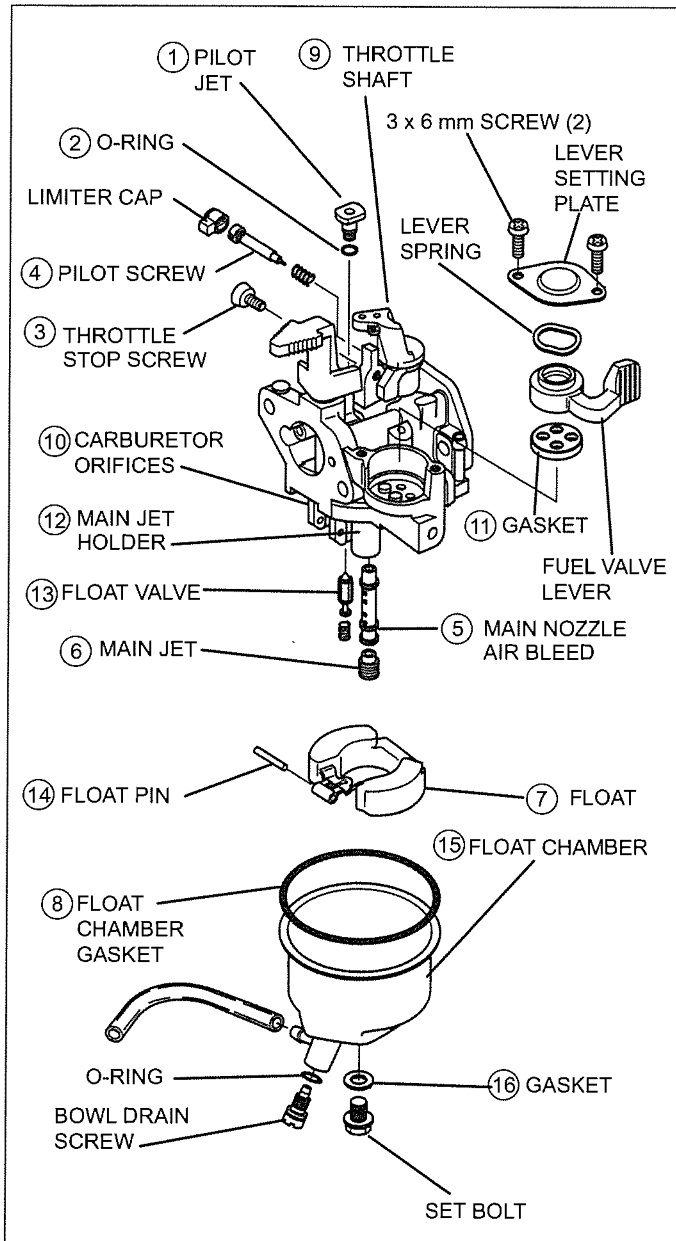
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

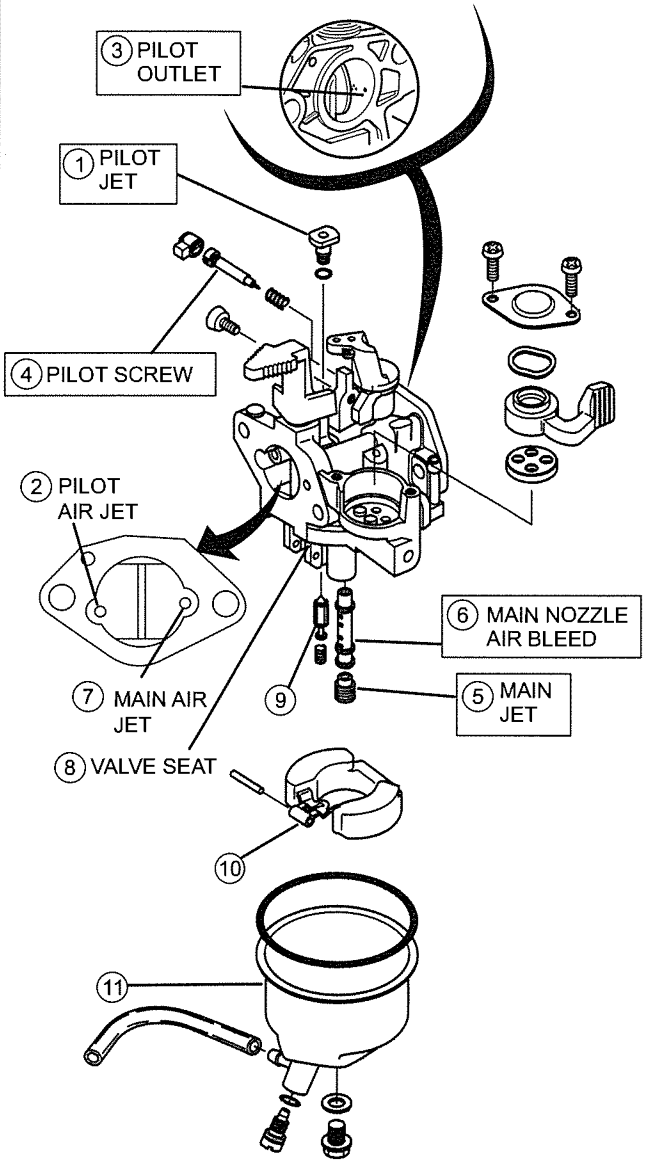
No.	Item	Clean	Replace
①	Check the pilot jet hole for clogging.	○	
②	Check the pilot jet O-ring for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination.	○	
⑤	Check the air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the gasket for damage (Do not remove the gasket).		●
⑨	Check the shaft for smooth movement and looseness.		●
⑩	Check the orifices in the carburetor body for clogging.	○	
⑪	Check the fuel lever gasket for wear or damage.		●
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the gaskets for damage.		●

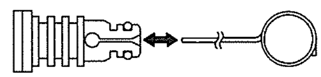
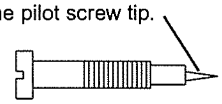
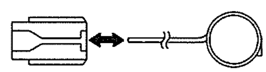
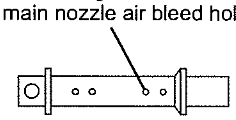
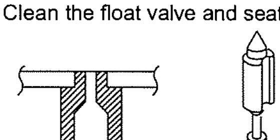
CLEANING

BF-type carburetor shown.

The BF-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.



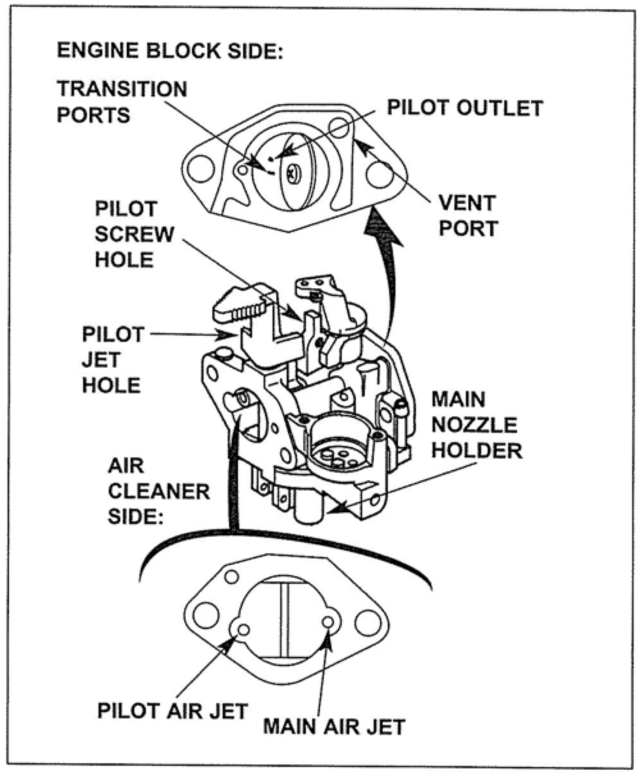
Item		Inspection/ Cleaning Tool
Slow Circuit		
①	Remove foreign material from the pilot jet. 	Jet Cleaner Set Honda Carburetor Cleaner
② ③ ④	Clean the pilot air jet orifice. Clean the pilot outlet. * Remove any contamination from the pilot screw tip. 	Low pressure compressed air
Main Circuit		
⑤	Remove foreign material from the main jet. 	Jet Cleaner Set Honda Carburetor Cleaner
⑥	Remove foreign material from the main nozzle air bleed holes. 	Low pressure compressed air
⑦	Clean the main air jet orifice.	
Float Circuit		
⑧	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
⑨	Clean the float valve and seat.  *Do not damage the seat and valve.*	Low pressure compressed air
⑩	Check the float level.	
⑪	Remove foreign material from the float chamber.	Float level gauge

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

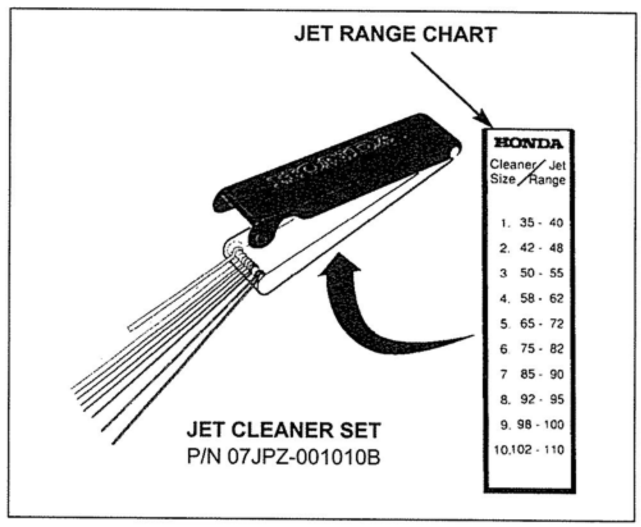
Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

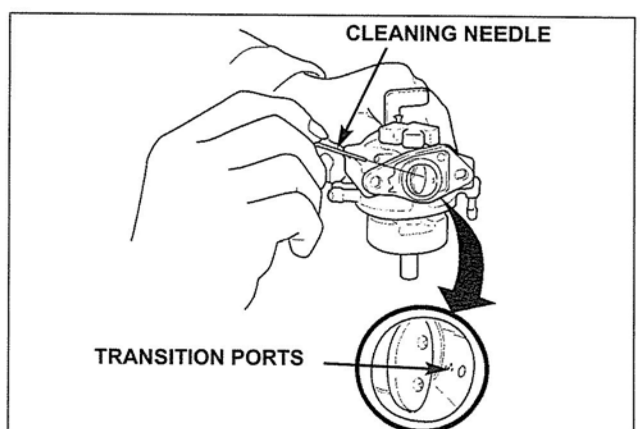


NOTICE

Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.

4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



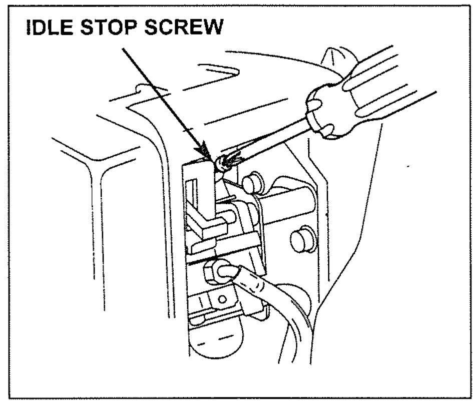
ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

1. Idle slow speed adjustment under no load

Use the throttle stop screw to adjust the idle slow speed.



Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases

IDLE ADJUSTMENT

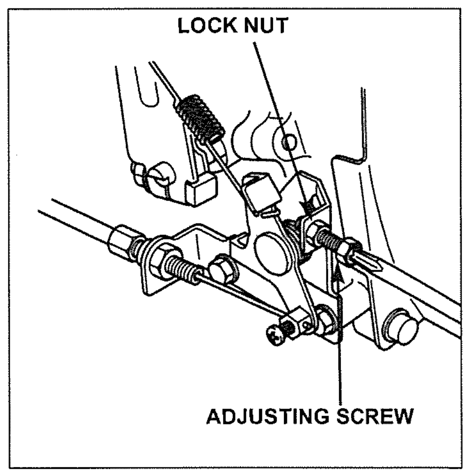
(1) With the engine off, turn the throttle stop screw clockwise until it contacts the throttle lever, and then make 3 more turns to open the throttle plate. Be sure the throttle lever is touching the end of the screw.

(2) Start the engine, and let it warm up to normal operating temperature.

(3) Adjust the throttle stop screw to obtain the standard idle speed.

2. Maximum speed adjustment under no load

Set the throttle lever to the maximum speed position.



MAXIMUM SPEED ADJUSTMENT

(1) Start the engine, and let it warm up to normal operating temperature.

(2) Loosen the lock nut.

(3) Turn the control lever adjusting screw until the engine is running at the specified maximum speed at full throttle.

(4) Tighten the lock nut.

(5) Close the throttle, and then slowly open it again.

NOTES

BF-TYPE

GX100 (RAMMER, BOWL TYPE)

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

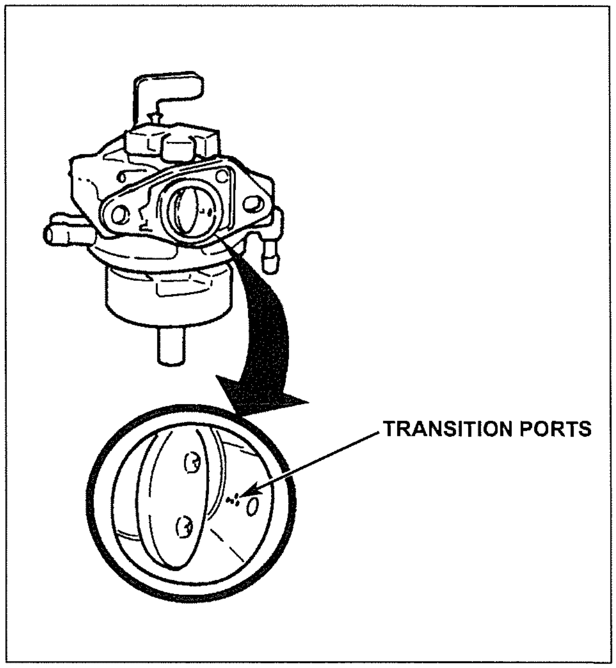
Transition Circuit

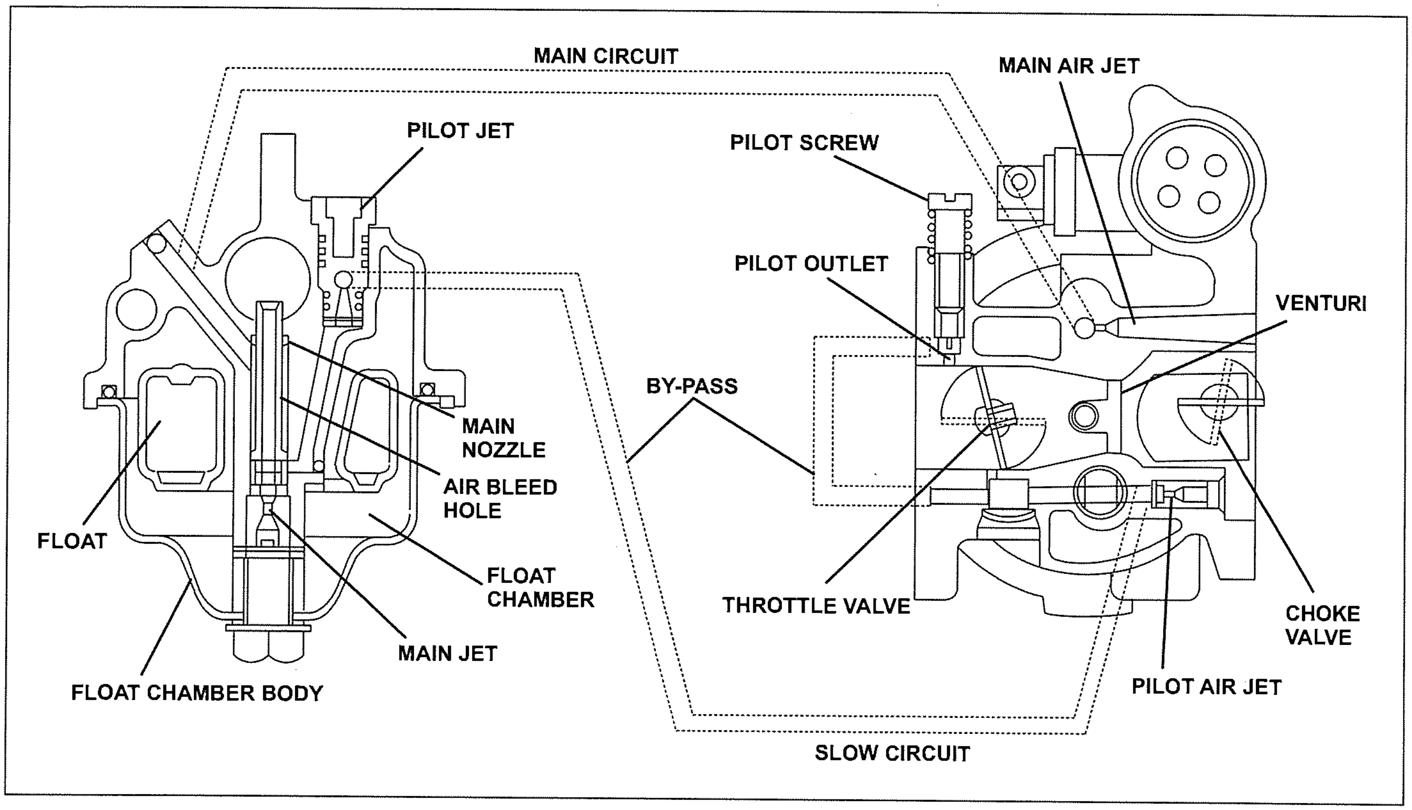
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




MAIN CIRCUIT
MAIN AIR JET
PILOT JET
PILOT SCREW
PILOT OUTLET
VENTURI
BY-PASS
MAIN
NOZZLE
AIR BLEED
HOLE
FLOAT
FLOAT
CHAMBER
THROTTLE VALVE
CHOKE
VALVE
MAIN JET
FLOAT CHAMBER BODY
PILOT AIR JET
SLOW CIRCUIT

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

- Hard Starting
- Engine starts but soon stops

- Hunting
- rpm does not stabilize

	Inspection Point	Ref.
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Restriction in the air vent tube	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

- Poor performance at low speed
- rpm does not decrease

	Inspection Point	Ref.
	Improper installation of carburetor gasket	③
	Improper installation of insulator gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Restriction in the air vent tube	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

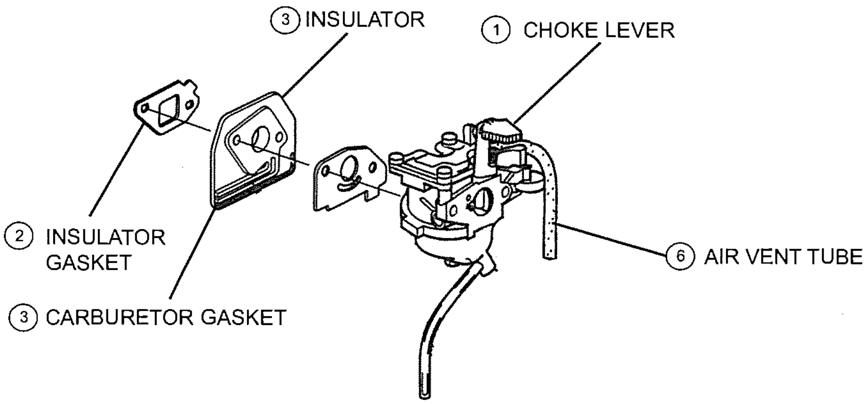
- Poor performance at high speed
- rpm does not increase

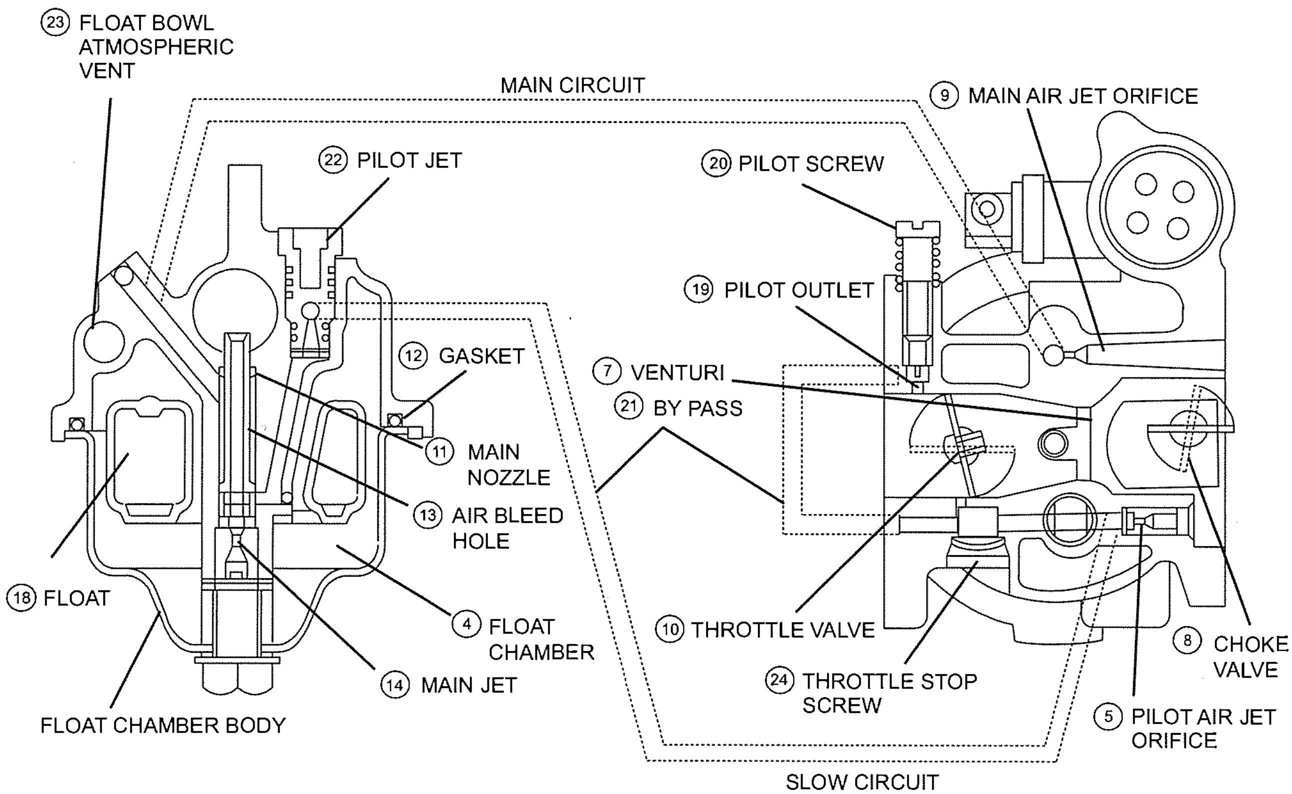
- Float bowl overflowing
- Gasoline leaks

	Inspection Point	Ref.
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

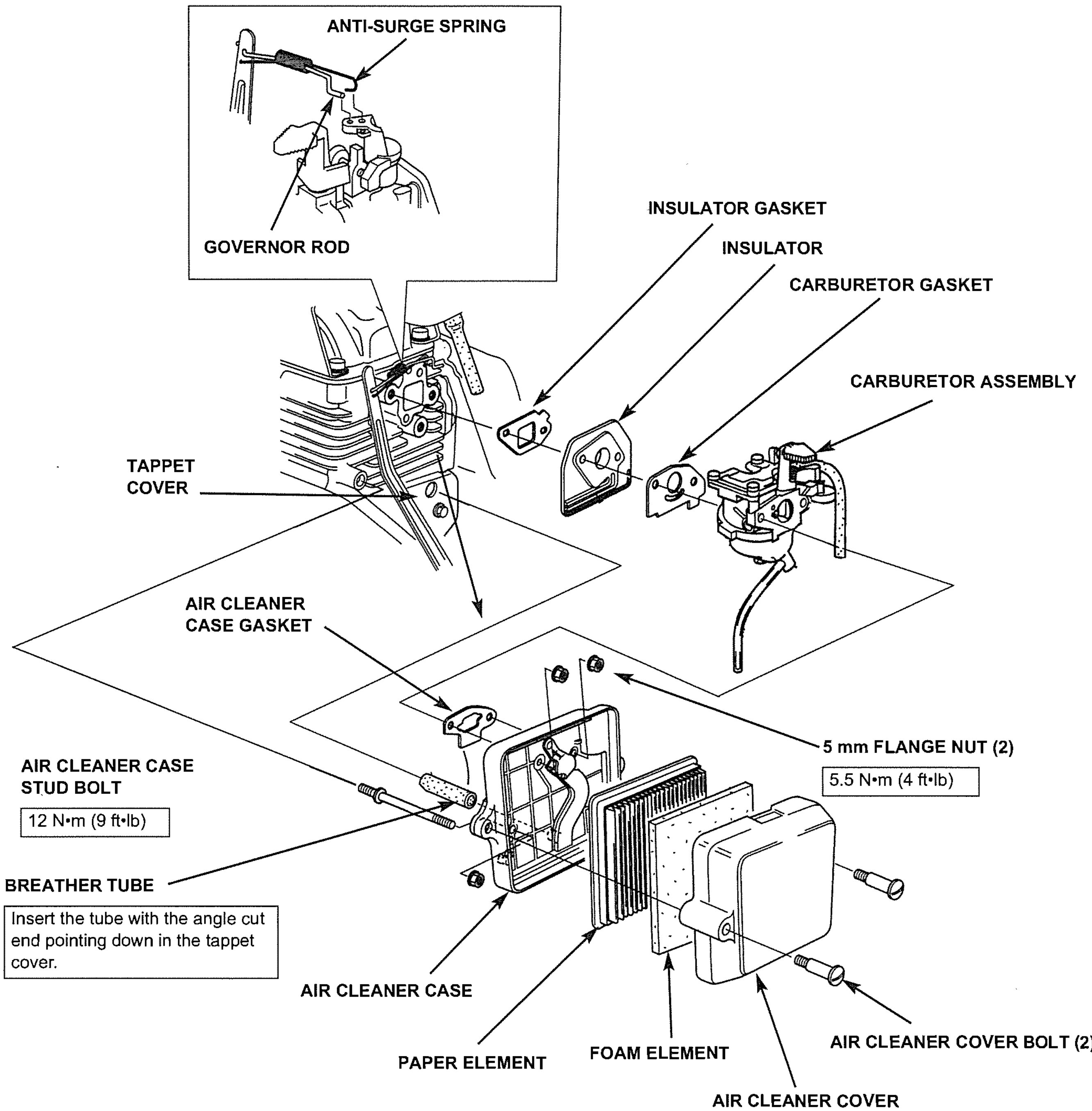
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)





CARBURETOR REMOVAL

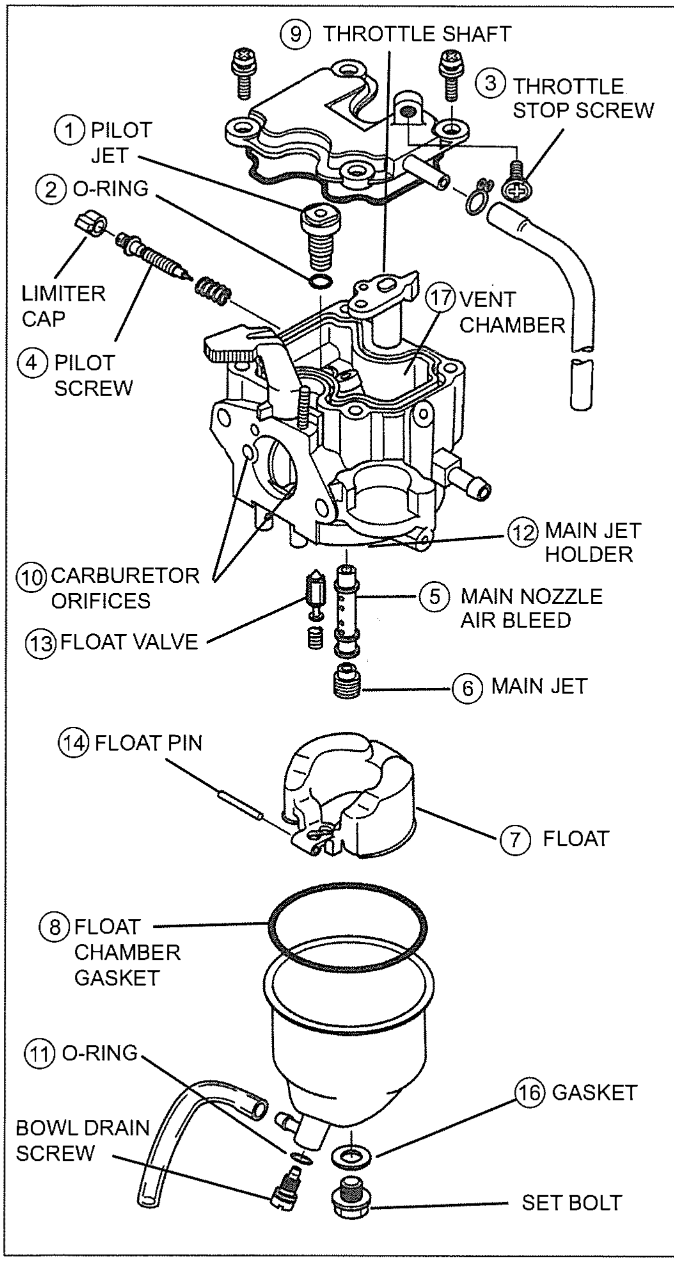
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

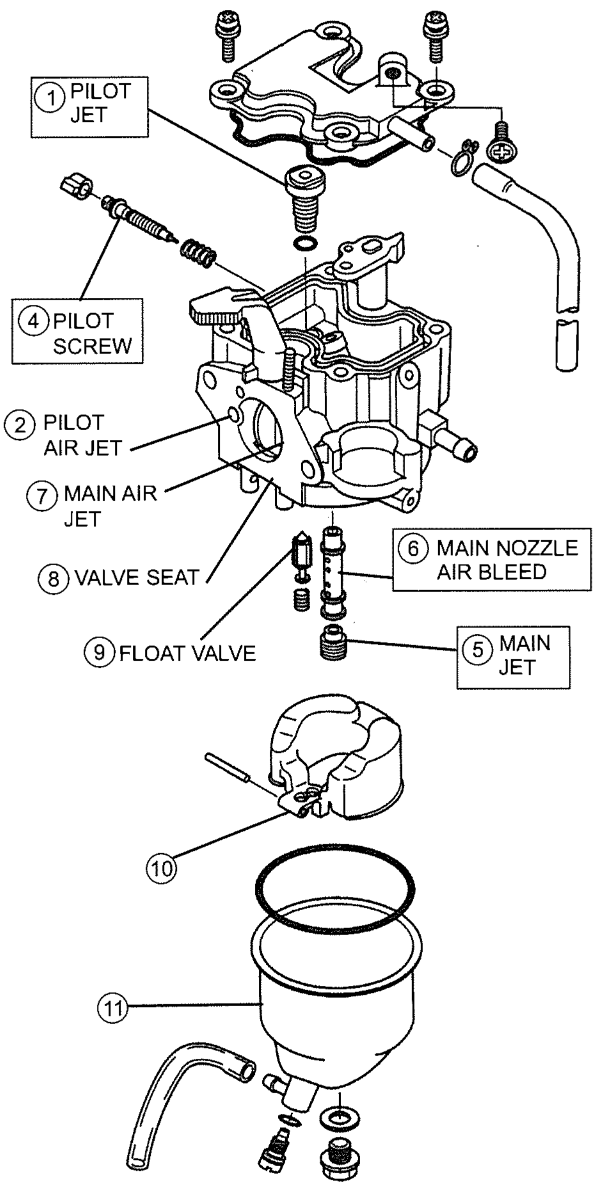
No.	Item	Clean	Replace
(1)	Check the pilot jet hole for clogging.	○	
(2)	Check the pilot jet O-ring for damage.		●
(3)	Check the stop screw for proper setting.		
(4)	Check screw tip for contamination.	○	
(5)	Check the air bleed holes for clogging.	○	
(6)	Check the main jet size. Check the jet orifice for clogging.	○	
(7)	Check the float height, and make sure there is no gasoline in the float.		●
(8)	Check the gasket for damage (Do not remove the gasket).		●
(9)	Check the shaft for smooth movement and looseness.		●
(10)	Check the orifices in the carburetor body for clogging.	○	
(11)	Check the bowl drain screw O-ring for damage.		●
(12)	Check the main jet holder for corrosion.	○	
(13)	Check the tip of the valve for contamination or damage.	○	●
(14)	Check the float pin for wear or loose fit.		●
(15)	Check for dirt or foreign material in the chamber. Check the chamber for corrosion and deformation.	○	●
(16)	Check the gaskets for damage.		●
(17)	Check the vent chamber for debris and contamination.	○	

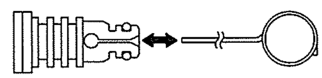
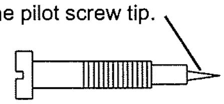
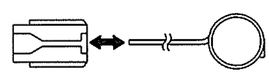
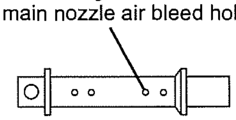
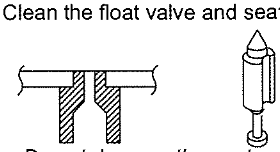
CLEANING

BF-type carburetor shown.

The BF-type has some components that are not found on other Honda carburetors.

▭ : Indicates parts that are likely to be clogged; clean carefully.



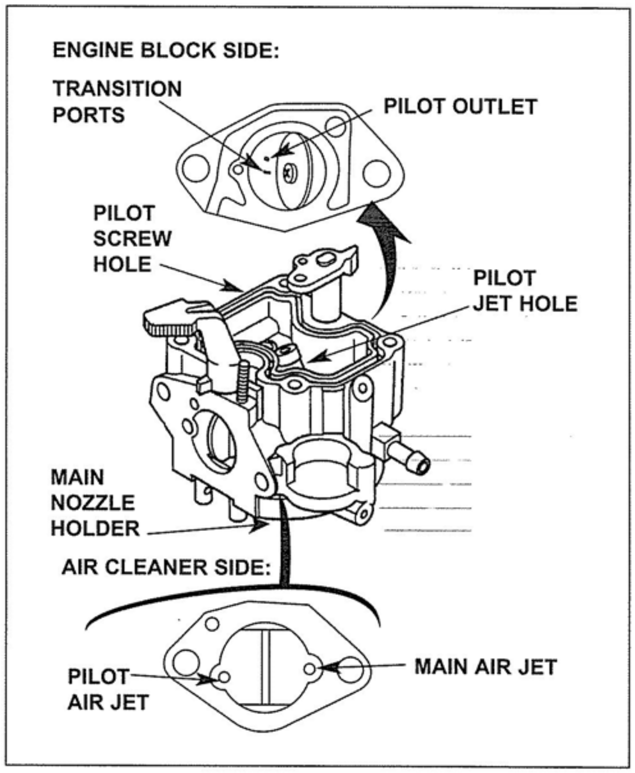
Item	Inspection/ Cleaning Tool
Slow Circuit	
① Remove foreign material from the pilot jet. 	Jet Cleaner Set Honda Carburetor Cleaner
② Clean the pilot air jet orifice. ③ Clean the pilot outlet. ④ * Remove any contamination from the pilot screw tip. 	Low pressure compressed air
Main Circuit	
⑤ Remove foreign material from the main jet. 	Jet Cleaner Set Honda Carburetor Cleaner
⑥ Remove foreign material from the main nozzle air bleed holes. 	Low pressure compressed air
⑦ Clean the main air jet orifice.	
Float Circuit	
⑧ Remove foreign materials from the valve seat. ⑨ Clean the float valve and seat.  *Do not damage the seat and valve.*	Honda Carburetor Cleaner Low pressure compressed air
⑩ Check the float level. ⑪ Remove foreign material from the float chamber.	Float level gauge

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

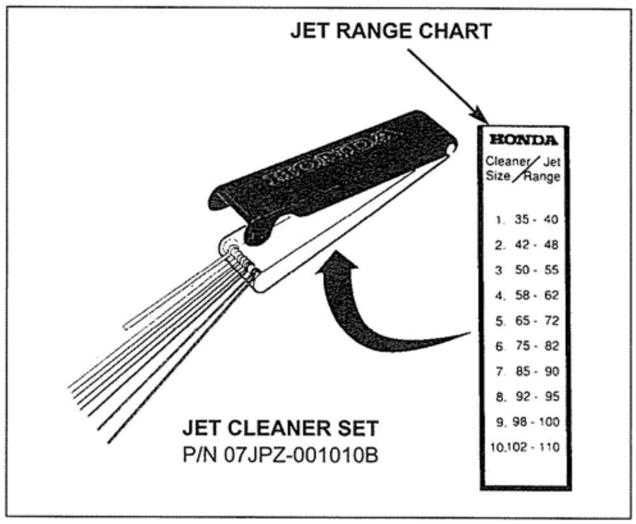
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

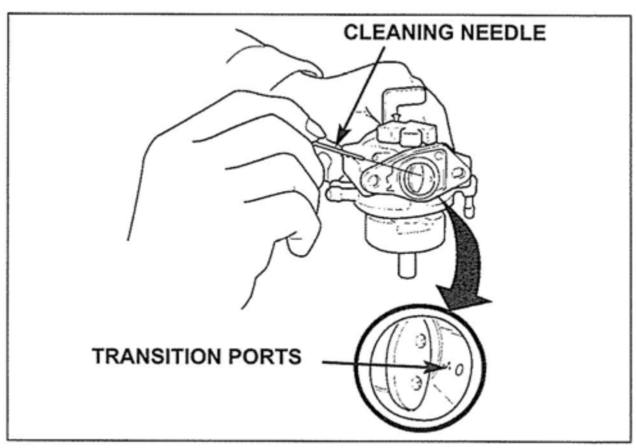
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



NOTES

BF-TYPE

GXH50

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

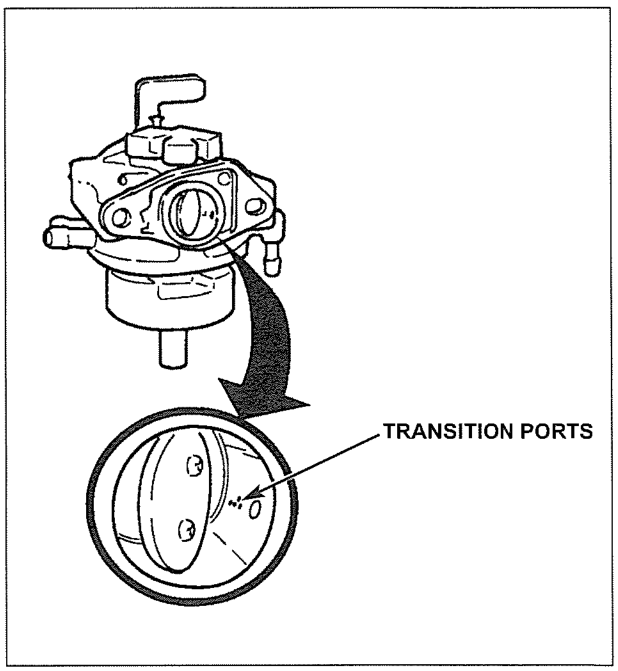
Transition Circuit

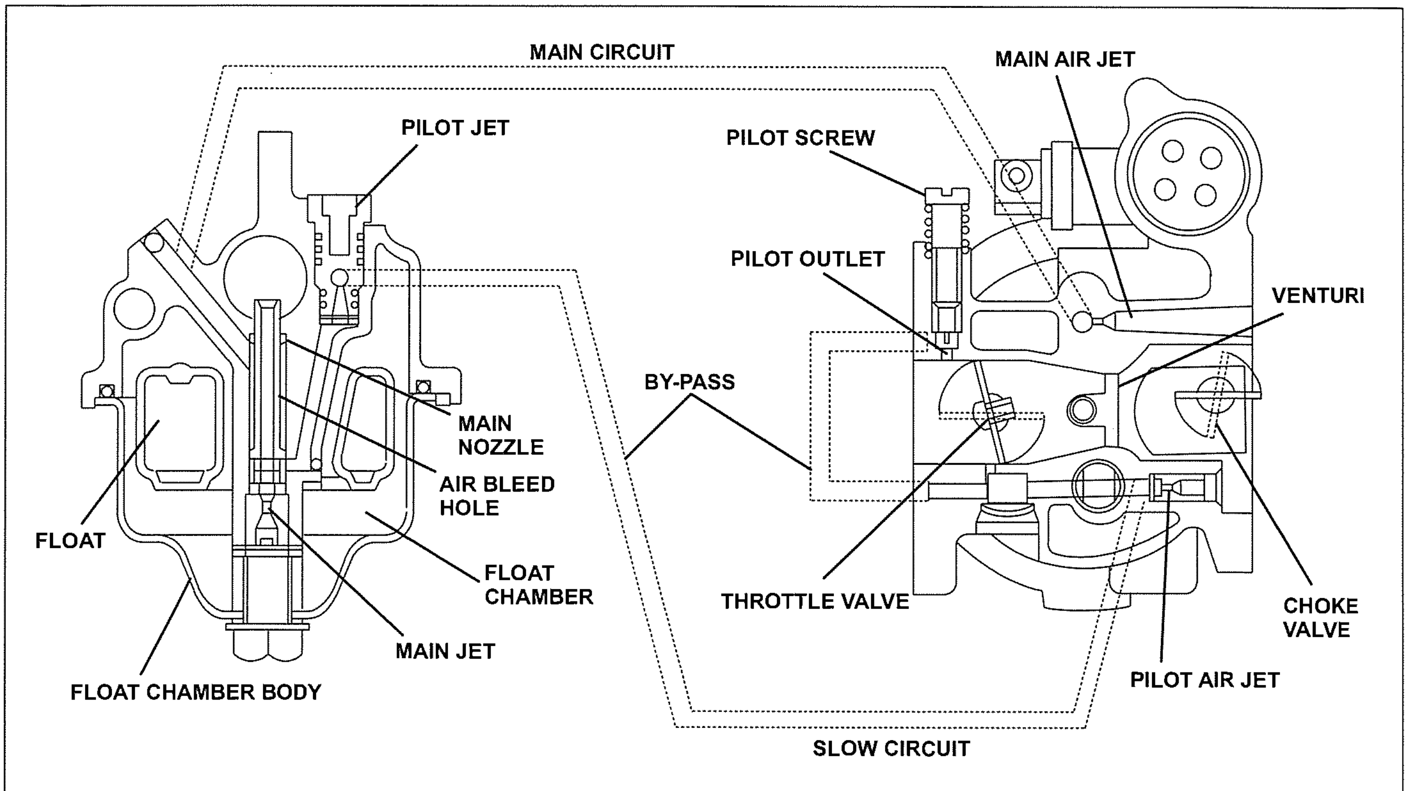
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




MAIN CIRCUIT
PILOT JET
MAIN AIR JET
PILOT SCREW
PILOT OUTLET
VENTURI
BY-PASS
MAIN
NOZZLE
AIR BLEED
HOLE
FLOAT
FLOAT
CHAMBER
THROTTLE VALVE
CHOKE
VALVE
MAIN JET
PILOT AIR JET
FLOAT CHAMBER BODY
SLOW CIRCUIT

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

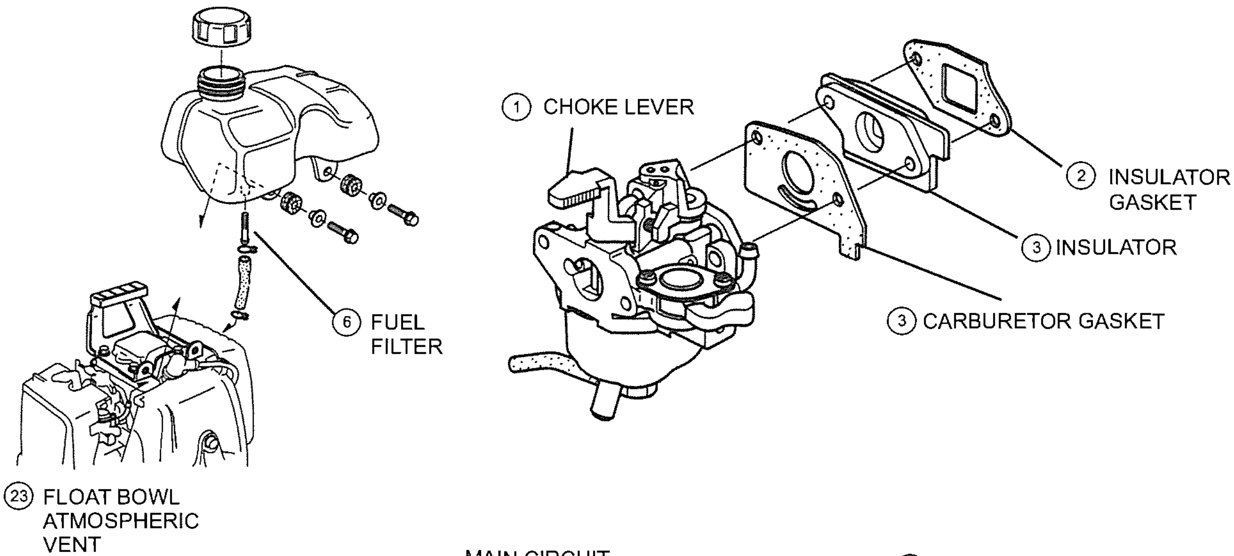
The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

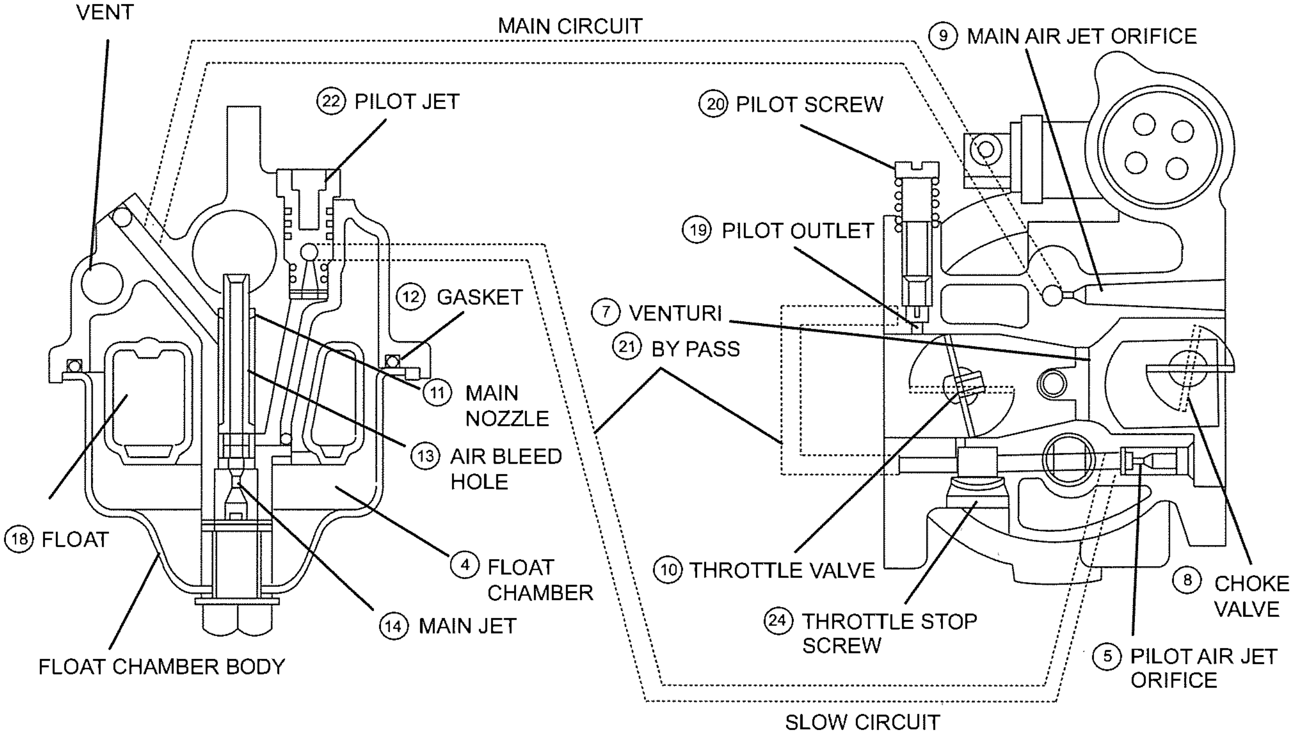
❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom>		<Inspection Point>		<Symptom>
• Hard Starting • Engine starts but soon stops	❶	Faulty choke valve operation	⑧	• Poor performance at low speed • rpm does not decrease
	❷	Misadjusted pilot screw	⑳	
	❸	Foreign material on the tip of the pilot screw	⑳	
	❹	Clogged pilot outlet	⑲	
	❺	Misadjusted throttle stop screw	㉔	
	❻	Check the fuel valve for leaking gasket	⑥	
	❼	Faulty throttle valve operation	⑩	
	❽	Faulty throttle shaft operation	⑩	
		Clogged main jet	⑭	
• Hunting • rpm does not stabilize		Improper installation of carburetor gasket	③	• Poor performance at high speed • rpm does not increase
		Improper installation of insulator gasket	②	
		Air leaking through broken carburetor, insulator gasket or broken insulator	③	
		Clogged pilot jet	㉒	
		Clogged pilot air jet	⑤	
		Clogged main jet	⑭	
		Wrong main jet size	⑭	
		Clogged float bowl atmospheric vent	㉓	
		Clogged main air jet	⑨	
		Clogged main nozzle air bleed hole	⑬	
	❶	Water/foreign material in the fuel filter	⑥	
	❷	Water/foreign materials in the float chamber, corroded chamber	④	
	❸	Deteriorated gasoline in the float chamber	④	
• Float bowl overflowing • Gasoline leaks	❶	Damaged/contaminated float valve seating surface	⑮	
		Foreign materials on the tip of float valve	⑰	
	❷	Clogged float bowl atmospheric vent	㉓	
	❸	Faulty chamber gasket (improperly installed)	⑫	
		Fuel inside the float	⑱	
		Faulty float operation, float does not operate smoothly	⑯	
		Deformed chamber (mating face, joint)	④	

<Symptom>	<Inspection Point>	<Symptom>
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

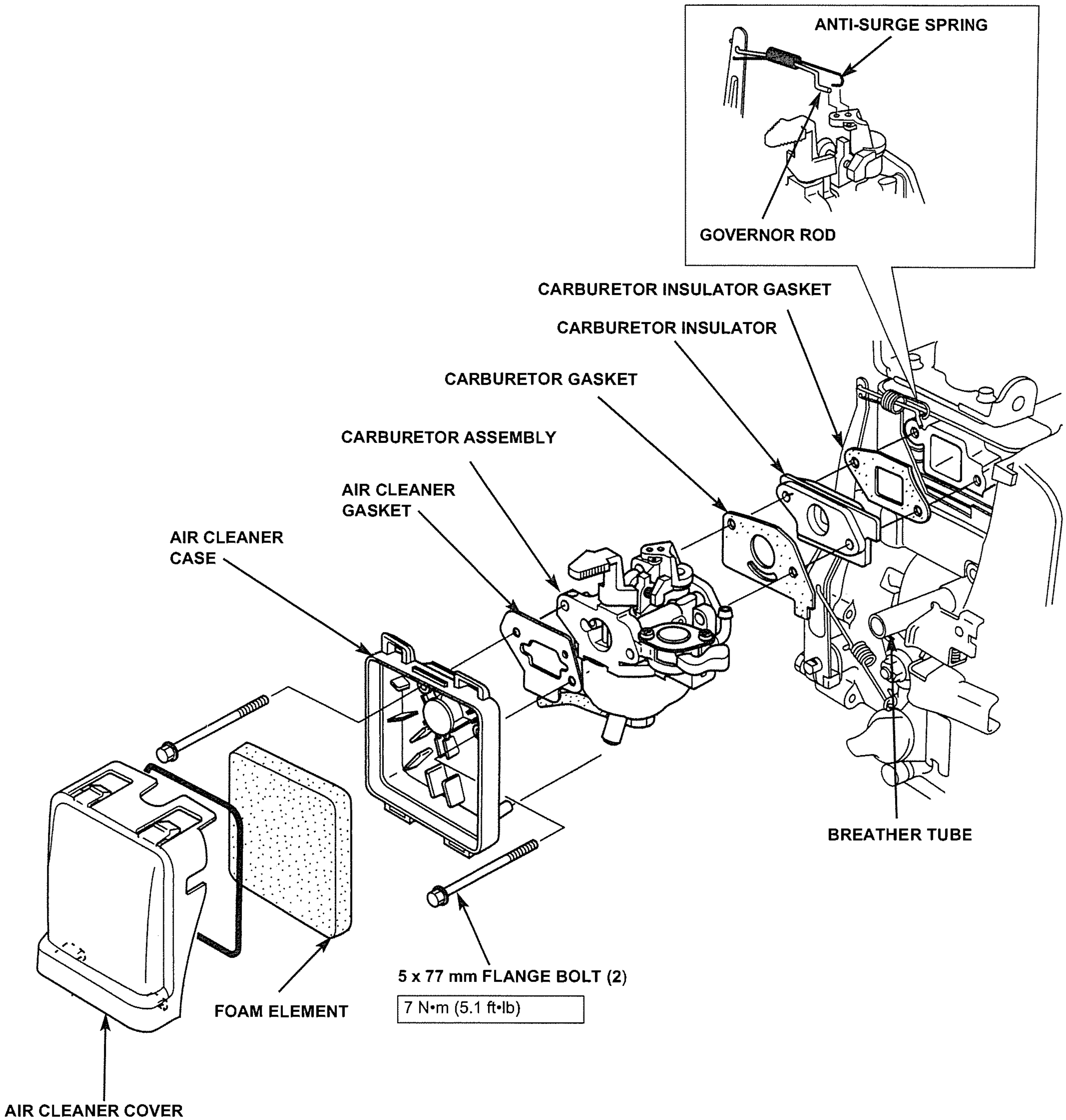
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)





CARBURETOR REMOVAL

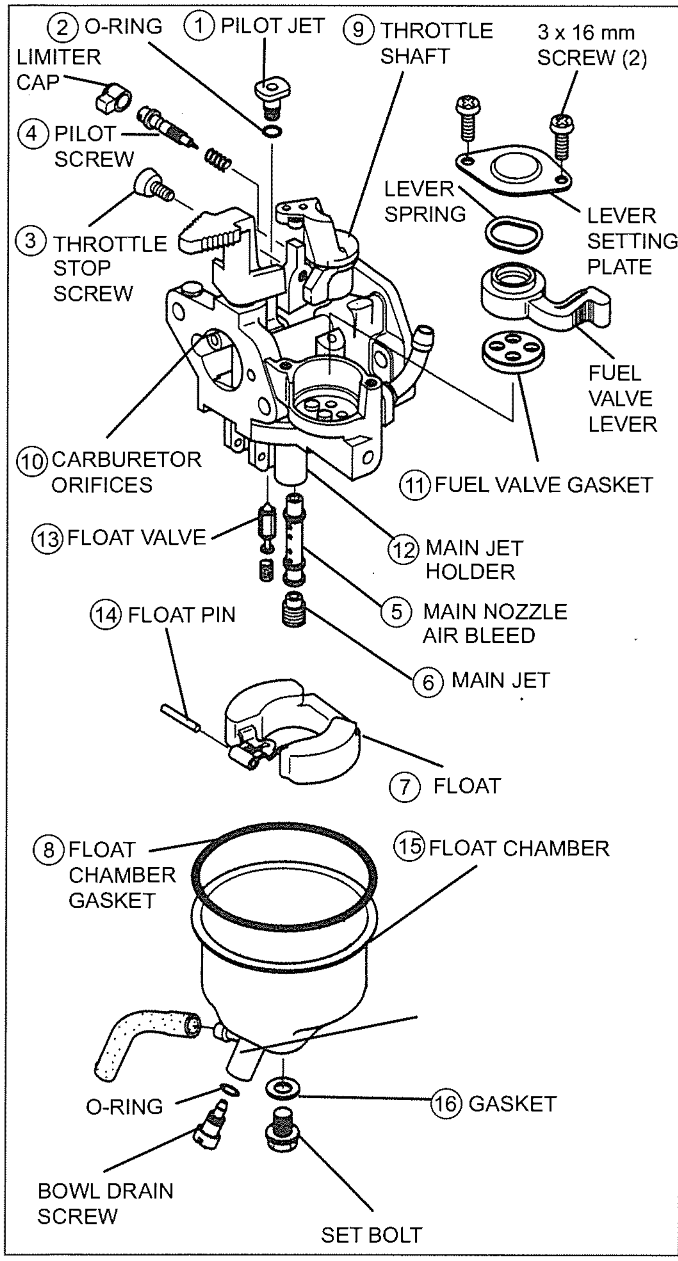
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

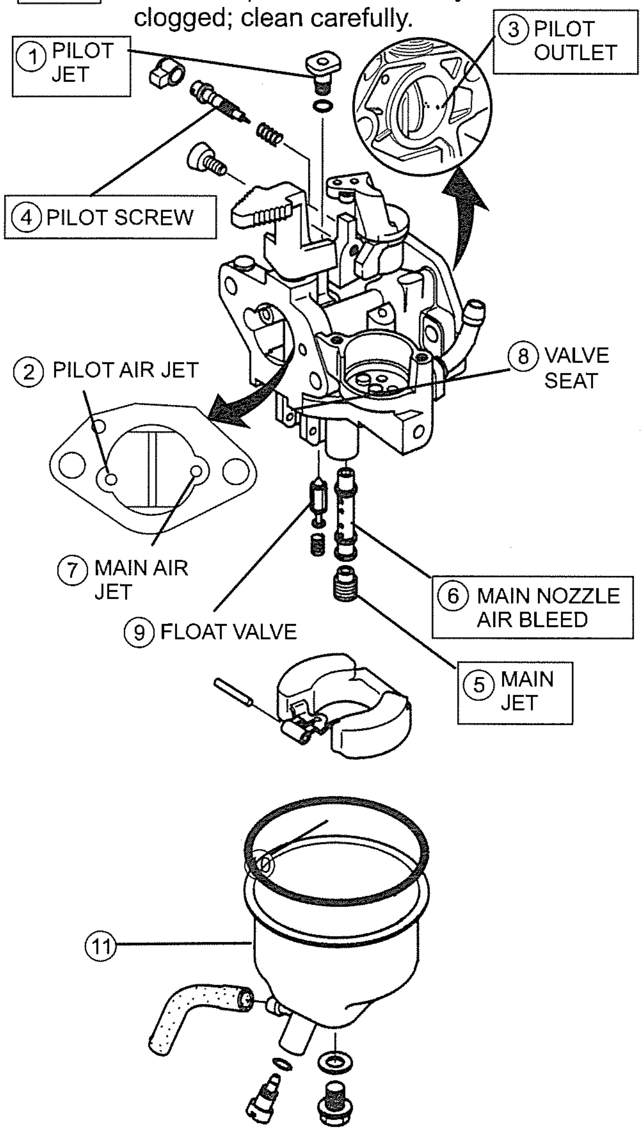
No.	Item	Clean	Replace
①	Check the pilot jet hole for clogging.	○	
②	Check the pilot jet O-ring for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination.	○	
⑤	Check the air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the gasket for damage (Do not remove the gasket).		●
⑨	Check the shaft for smooth movement and looseness.		●
⑩	Check the orifices in the carburetor body for clogging.	○	
⑪	Check the fuel valve gasket for wear or damage.		●
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the gasket for damage.		●

CLEANING

BF-type carburetor shown.

The BF-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.



	Item	Inspection/ Cleaning Tool
Slow Circuit		
①	Remove foreign material from the pilot jet.	Jet Cleaner Set
②	Clean the pilot air jet orifice.	Honda Carburetor Cleaner
③	Clean the pilot outlet.	Low pressure compressed air
④	* Remove any contamination from the pilot screw tip.	
Main Circuit		
⑤	Remove foreign material from the main jet.	Jet Cleaner Set
⑥	Remove foreign material from the main nozzle air bleed holes.	Honda Carburetor Cleaner Low pressure compressed air
⑦	Clean the main air jet orifice.	
Float Circuit		
⑧	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
⑨	Clean the float valve and seat. *Do not damage the seat and valve.*	Low pressure compressed air
⑩	Check the float level.	
⑪	Remove foreign material from the float chamber.	Float level gauge

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

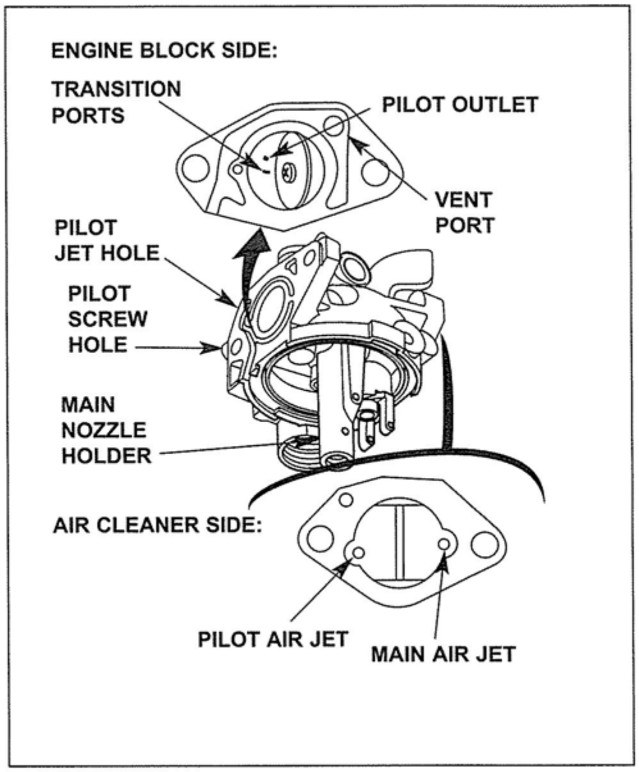
Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.

NOTICE

High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder

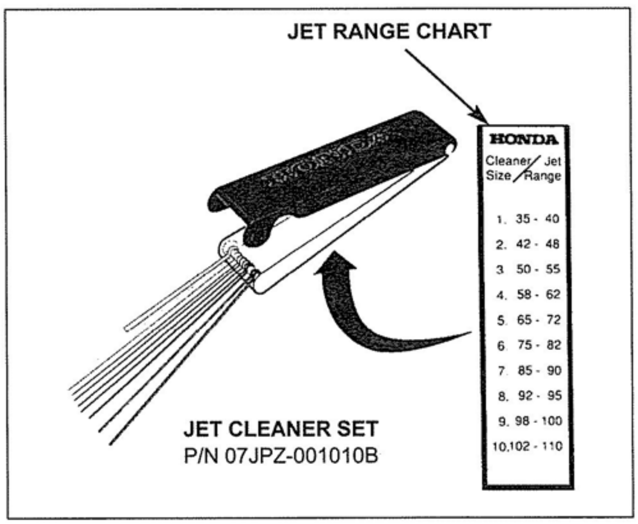


3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

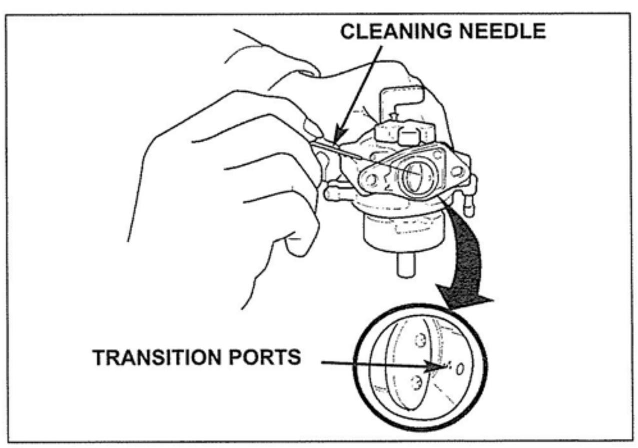
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

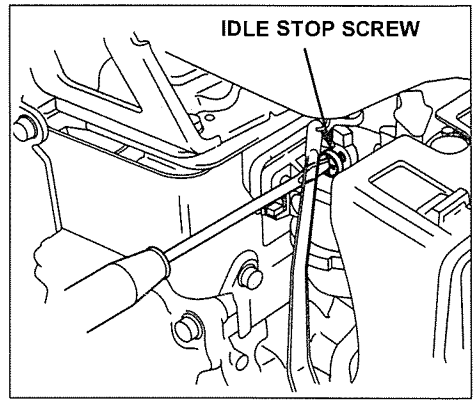
- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

1. Idle slow speed adjustment under no load

Use the throttle stop screw to adjust the idle slow speed.

Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases



IDLE ADJUSTMENT

(1) With the engine off, turn the throttle stop screw clockwise until it contacts the throttle lever, and then make 3 more turns to open the throttle plate. Be sure the throttle lever is touching the end of the screw.

(2) Start the engine, and let it warm up to normal operating temperature.

(3) Adjust the throttle stop screw to obtain the standard idle speed.

2. Maximum speed adjustment under no load

Set the throttle lever to the maximum speed position.

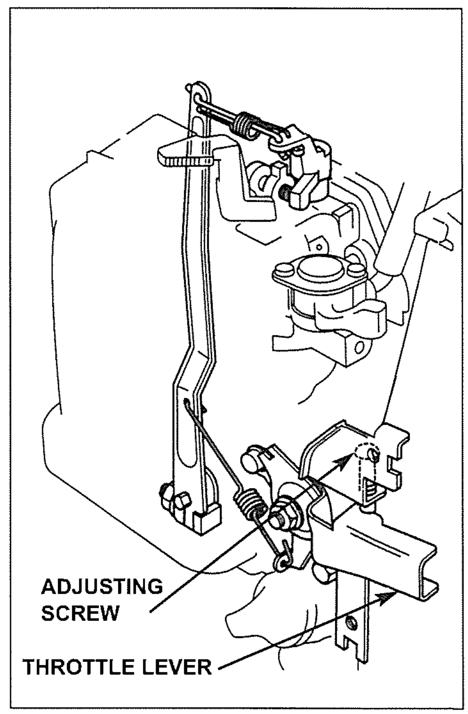
MAXIMUM SPEED ADJUSTMENT

(1) Start the engine, and let it warm up to normal operating temperature.

(2) Move the throttle lever to the HIGH position.

(3) Turn the control lever adjusting screw until the engine is running at the specified maximum speed at full throttle.

(4) Close the throttle, and then slowly open it again.



NOTES

BF-TYPE

GXV50/57

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

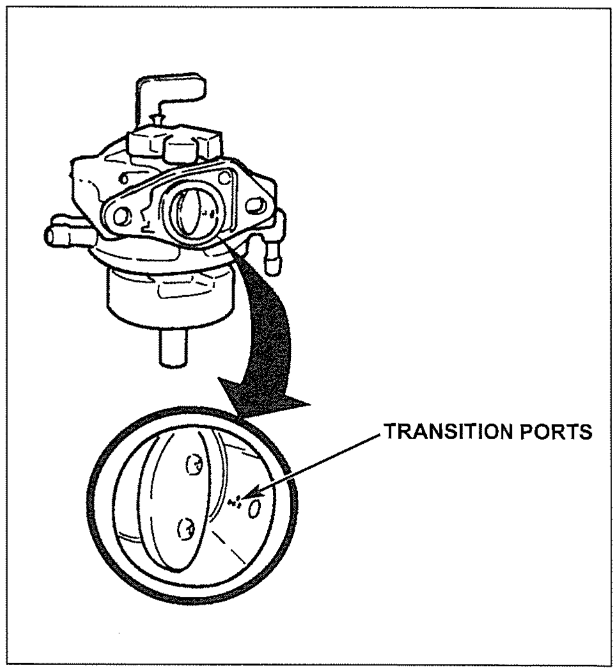
Transition Circuit

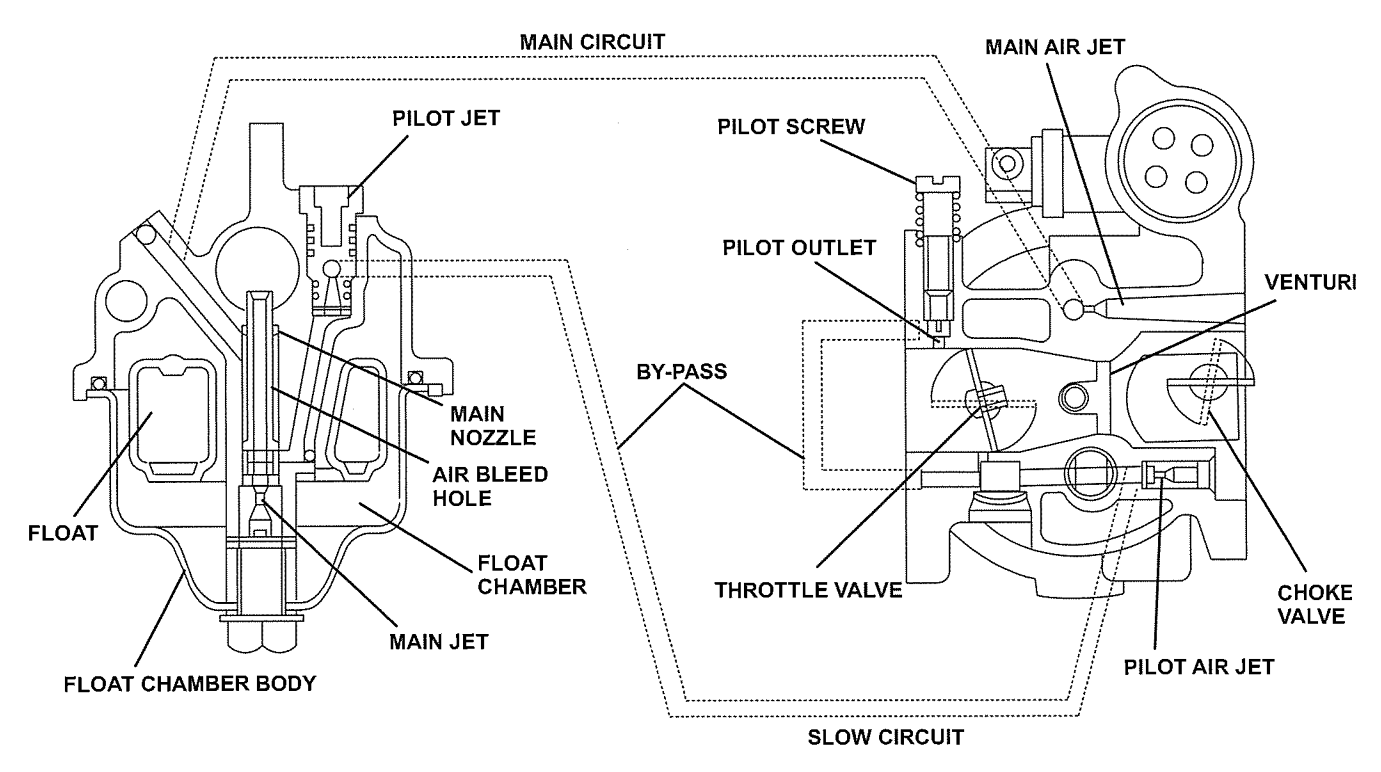
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




MAIN CIRCUIT
MAIN AIR JET
PILOT JET
PILOT SCREW
PILOT OUTLET
VENTURI
BY-PASS
MAIN
NOZZLE
AIR BLEED
HOLE
FLOAT
FLOAT
CHAMBER
THROTTLE VALVE
CHOKE
VALVE
MAIN JET
PILOT AIR JET
FLOAT CHAMBER BODY
SLOW CIRCUIT

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ .... Inspection order before disassembly
① .... Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

- Hard Starting
- Engine starts but soon stops

❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Check the fuel filter for being clogged	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

- Poor performance at low speed
- rpm does not decrease

- Hunting
- rpm does not stabilize

	Improper installation of carburetor gasket	②
	Improper installation of insulator gasket A and B	②
	Air leaking through broken carburetor, insulator, or carburetor joint plate	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Water/foreign material in the fuel filter	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

- Poor performance at high speed
- rpm does not increase

- Float bowl overflowing
- Gasoline leaks

❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

- Hunting
- Spitting
- Engine stalling
- Hard Starting

- Air leaking past the carburetor insulator gasket
- Clogged jets, worn throttle shaft
- Overheating of the carburetor chamber/fuel passage
- Wrong main jet size
- Restricted pilot jet

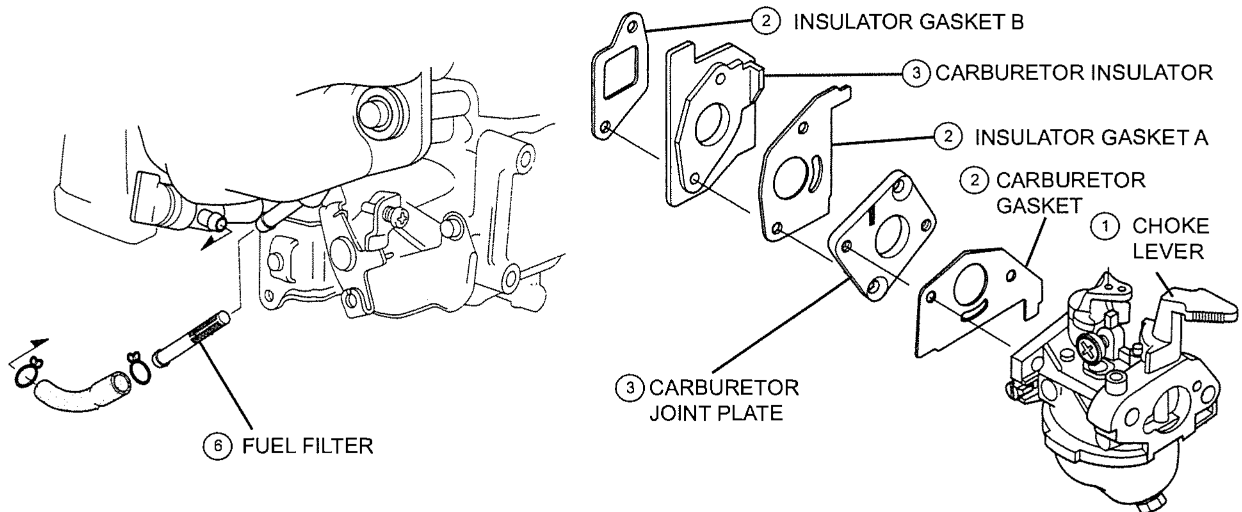
- Lean fuel mixture
- Percolation
- Overheating
- Set for high elevation

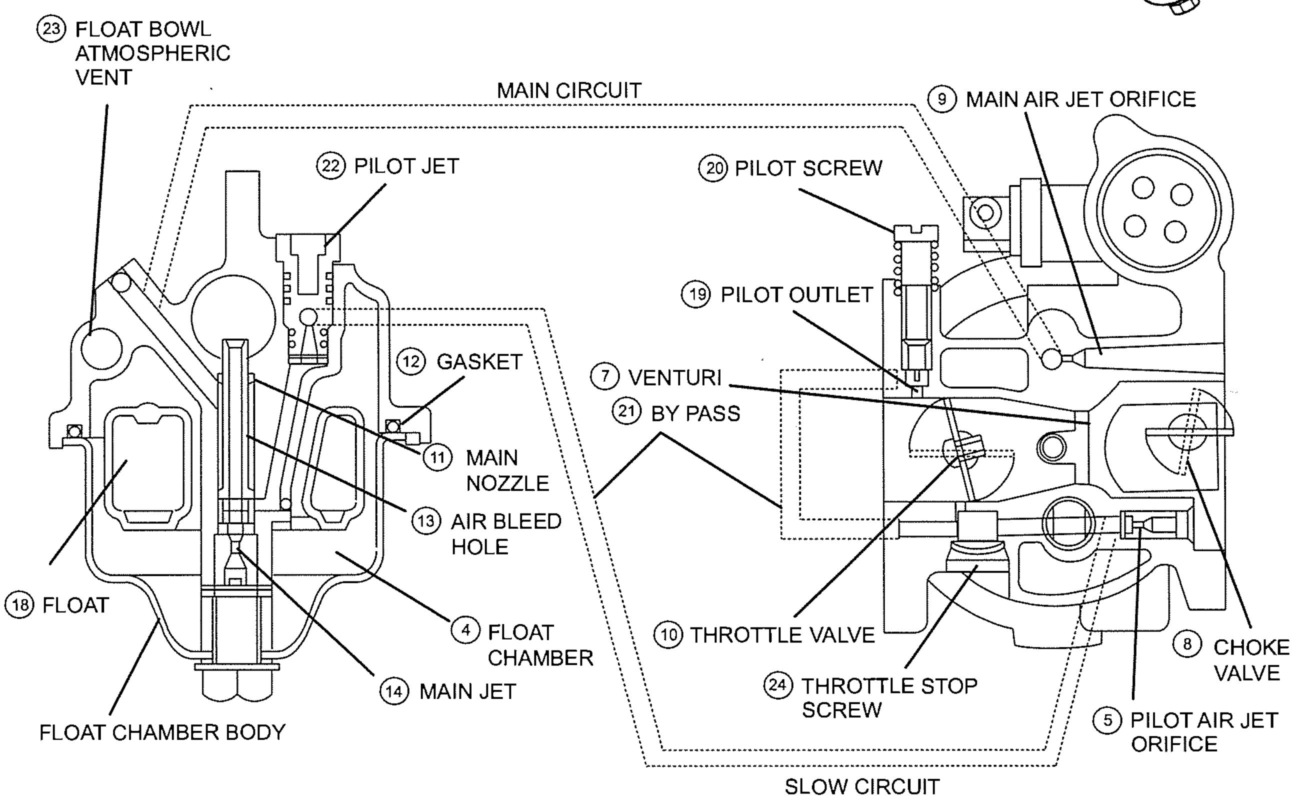
- Wet fouled spark plug
- Power drops, rpm does not stabilize
- Black smoke from muffler, engine stalls

- Clogged air cleaner
- Faulty choke operation
- Wrong main jet size
- Deteriorated gasoline
- Blocked main nozzle/venturi bore

- Rich fuel mixture
- Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

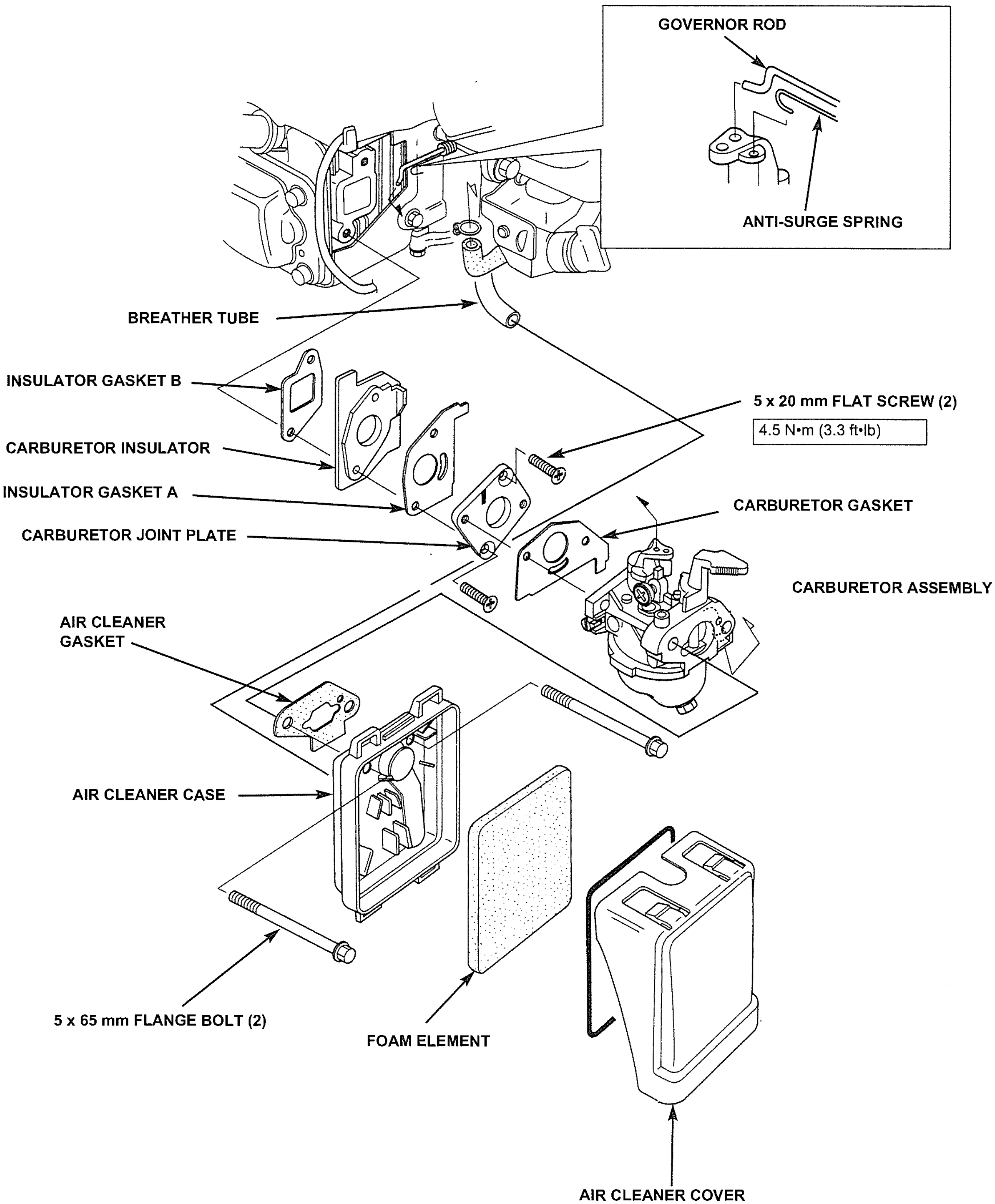
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)





CARBURETOR REMOVAL

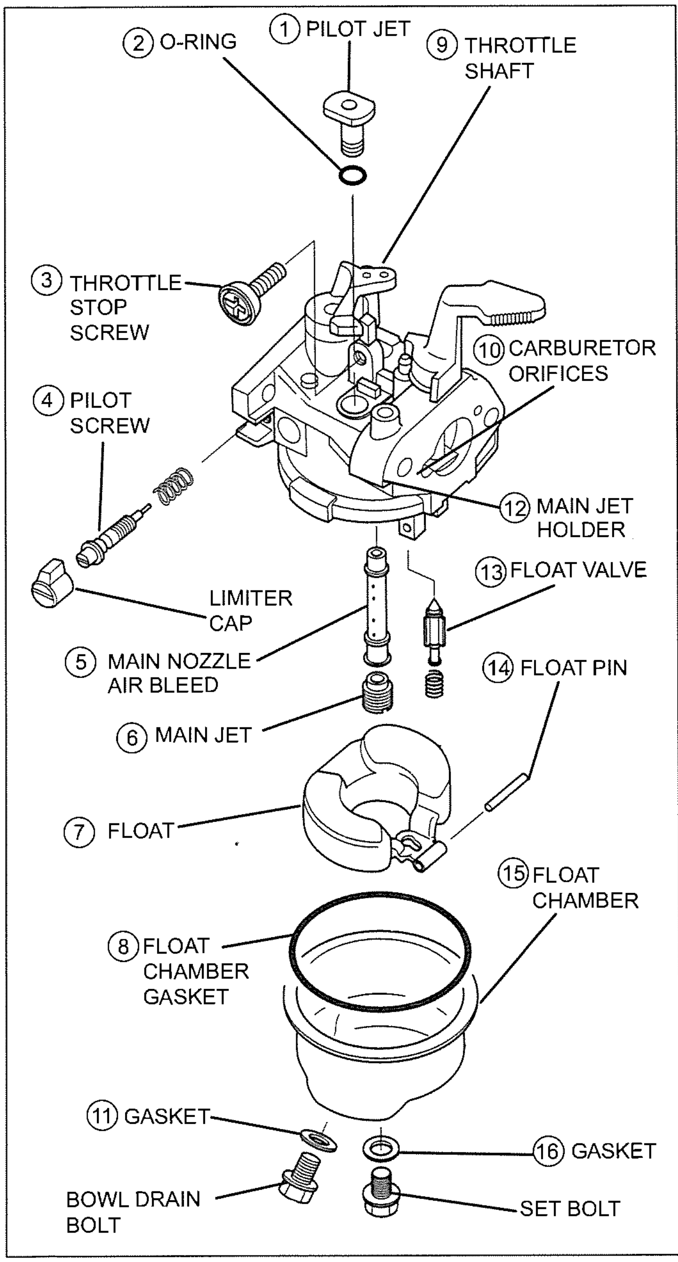
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

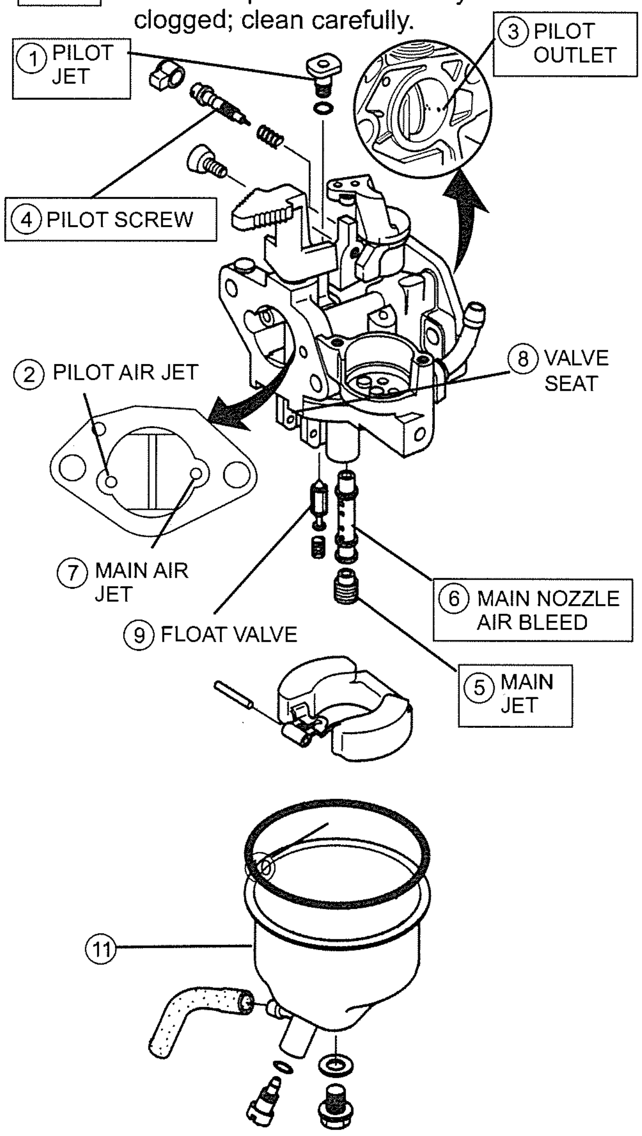
No.	Item	Clean	Replace
①	Check the pilot jet hole for clogging.	○	
②	Check the pilot jet O-ring for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination.	○	
⑤	Check the air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the gasket for damage (Do not remove the gasket).		●
⑨	Check the shaft for smooth movement and looseness.		●
⑩	Check the orifices in the carburetor body for clogging.	○	
⑪	Check the drain Sbolt gasket for wear or damage.		●
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the gasket for damage.		●

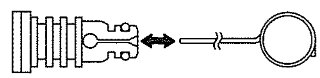
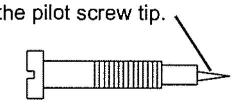
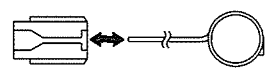
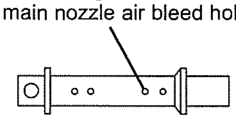
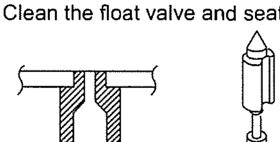
CLEANING

BF-type carburetor shown.

The BF-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.



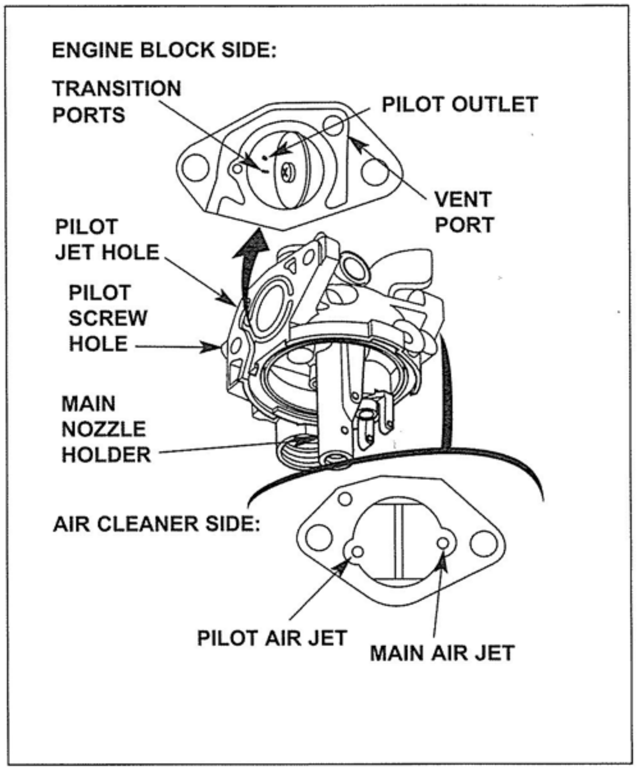
Item	Inspection/ Cleaning Tool
Slow Circuit	
(1) Remove foreign material from the pilot jet. 	Jet Cleaner Set Honda Carburetor Cleaner
(2) Clean the pilot air jet orifice. (3) Clean the pilot outlet. (4) * Remove any contamination from the pilot screw tip. 	Low pressure compressed air
Main Circuit	
(5) Remove foreign material from the main jet. 	Jet Cleaner Set Honda Carburetor Cleaner
(6) Remove foreign material from the main nozzle air bleed holes. 	Low pressure compressed air
(7) Clean the main air jet orifice.	
Float Circuit	
(8) Remove foreign materials from the valve seat. (9) Clean the float valve and seat.  *Do not damage the seat and valve.*	Honda Carburetor Cleaner Low pressure compressed air
(10) Check the float level.	Float level gauge
(11) Remove foreign material from the float chamber.	

* The pilot screw must be broken to be removed on engines with a limiter cap. Replace the pilot screw.

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

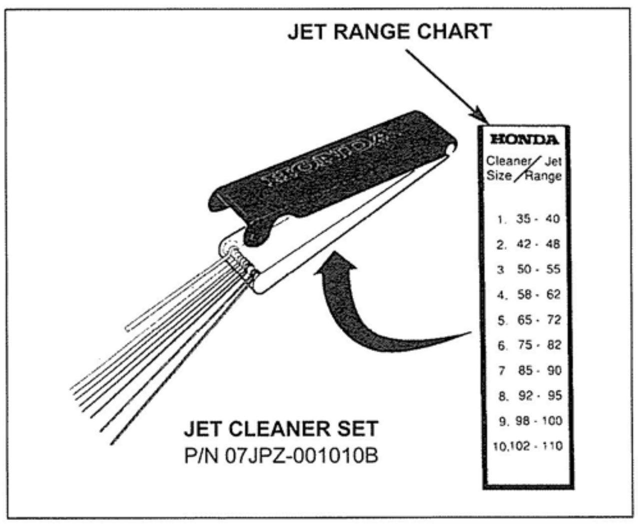
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

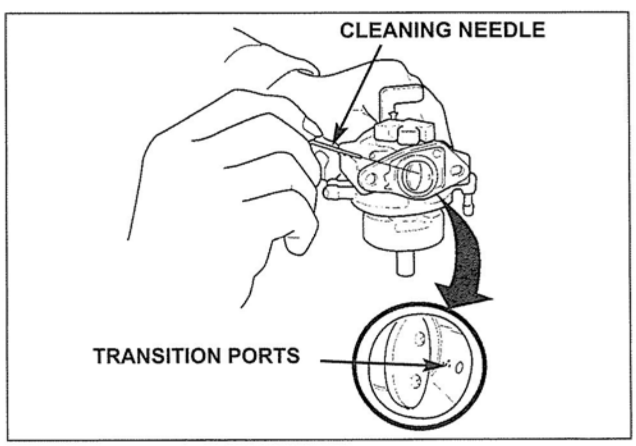
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



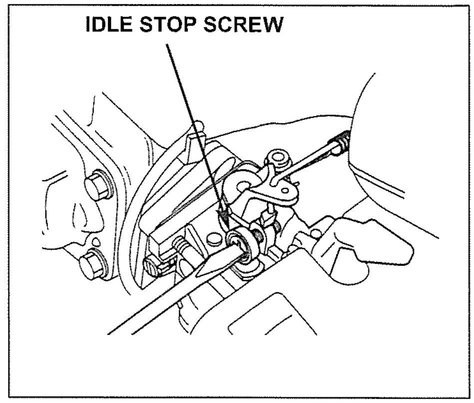
ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

1. Idle slow speed adjustment under no load

Use the throttle stop screw to adjust the idle slow speed.



Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases

IDLE ADJUSTMENT

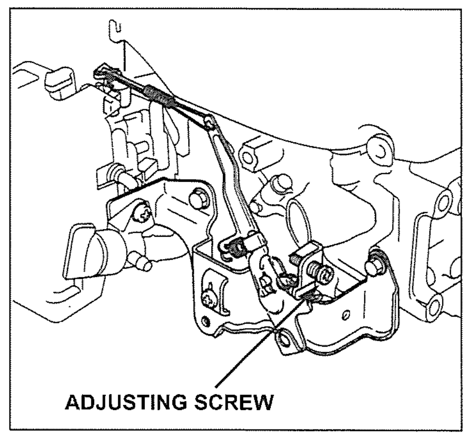
(1) With the engine off, turn the throttle stop screw clockwise until it contacts the throttle lever, and then make 3 more turns to open the throttle plate. Be sure the throttle lever is touching the end of the screw.

(2) Start the engine, and let it warm up to normal operating temperature.

(3) Adjust the throttle stop screw to obtain the standard idle speed.

2. Maximum speed adjustment under no load

Set the throttle lever to the maximum speed position.



MAXIMUM SPEED ADJUSTMENT

(1) Start the engine, and let it warm up to normal operating temperature.

(2) Move the throttle lever to the HIGH position.

(3) Turn the control lever adjusting screw until the engine is running at the specified maximum speed at full throttle.

(4) Close the throttle, and then slowly open it again.

NOTES

BG-TYPE

GX610K0 • GX620K0

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

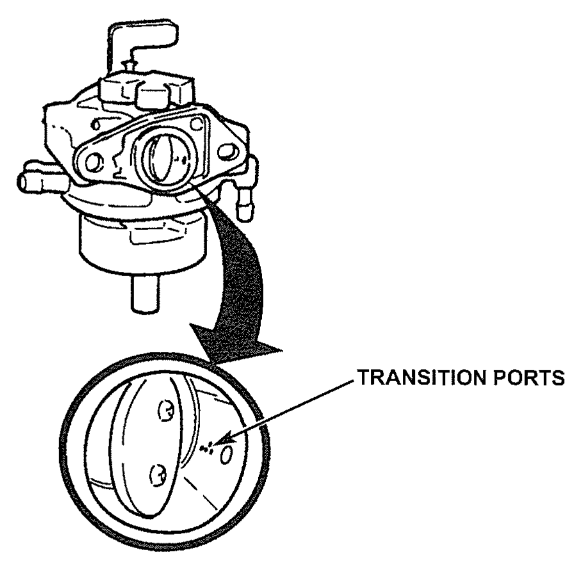
Transition Circuit

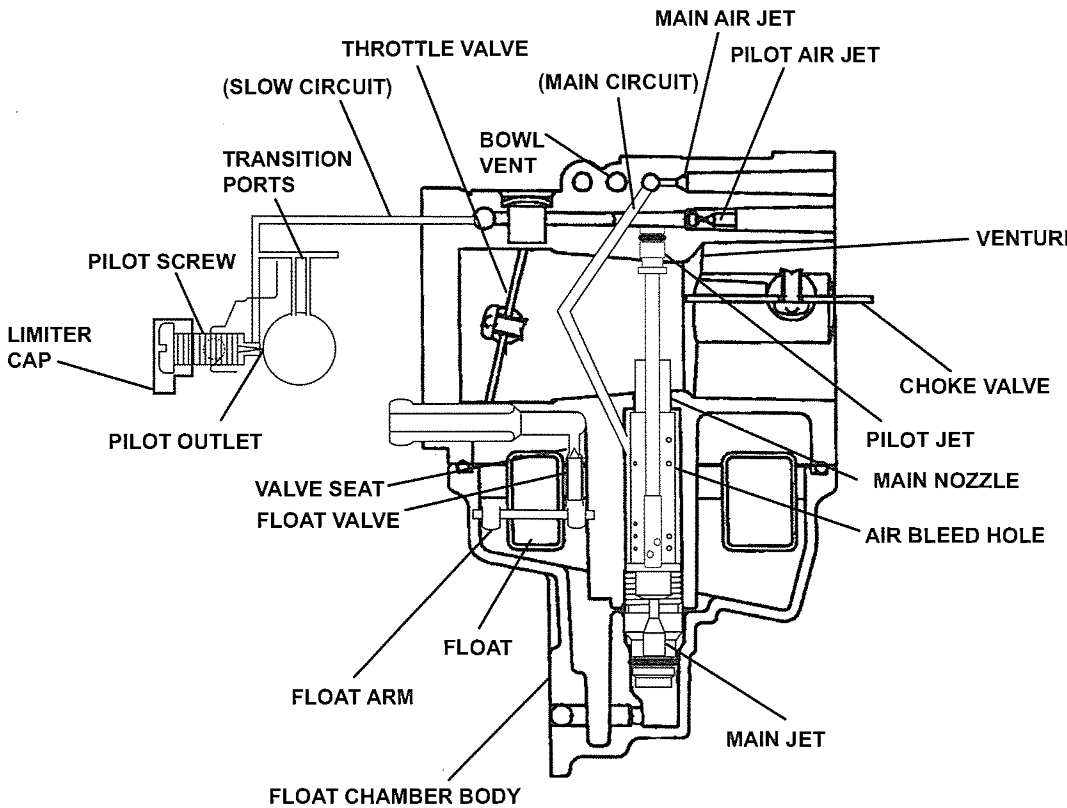
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




MAIN AIR JET
THROTTLE VALVE
PILOT AIR JET
(SLOW CIRCUIT)
(MAIN CIRCUIT)
BOWL
VENT
TRANSITION
PORTS
VENTURI
PILOT SCREW
LIMITER
CAP
CHOKE VALVE
PILOT OUTLET
PILOT JET
VALVE SEAT
MAIN NOZZLE
FLOAT VALVE
AIR BLEED HOLE
FLOAT
FLOAT ARM
MAIN JET
FLOAT CHAMBER BODY

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ .... Inspection order before disassembly
① .... Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

Symptoms:
- Hard Starting
- Engine starts but soon stops

Symptoms:
- Poor performance at low speed
- rpm does not decrease

Order	Inspection Point	Ref.
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Fuel cut solenoid is not working properly	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

Symptoms:
- Hunting
- rpm does not stabilize

Symptoms:
- Poor performance at high speed
- rpm does not increase

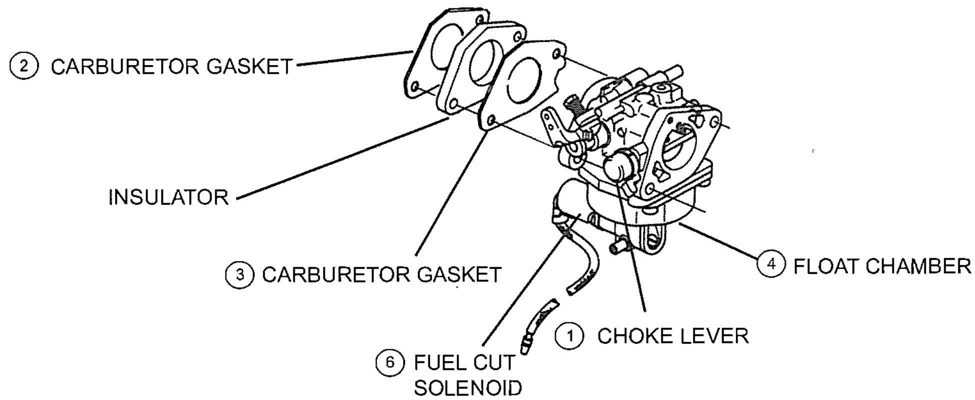
Order	Inspection Point	Ref.
	Improper installation of carburetor gasket	③
	Improper installation of carburetor gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Fuel cut solenoid is not working properly	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

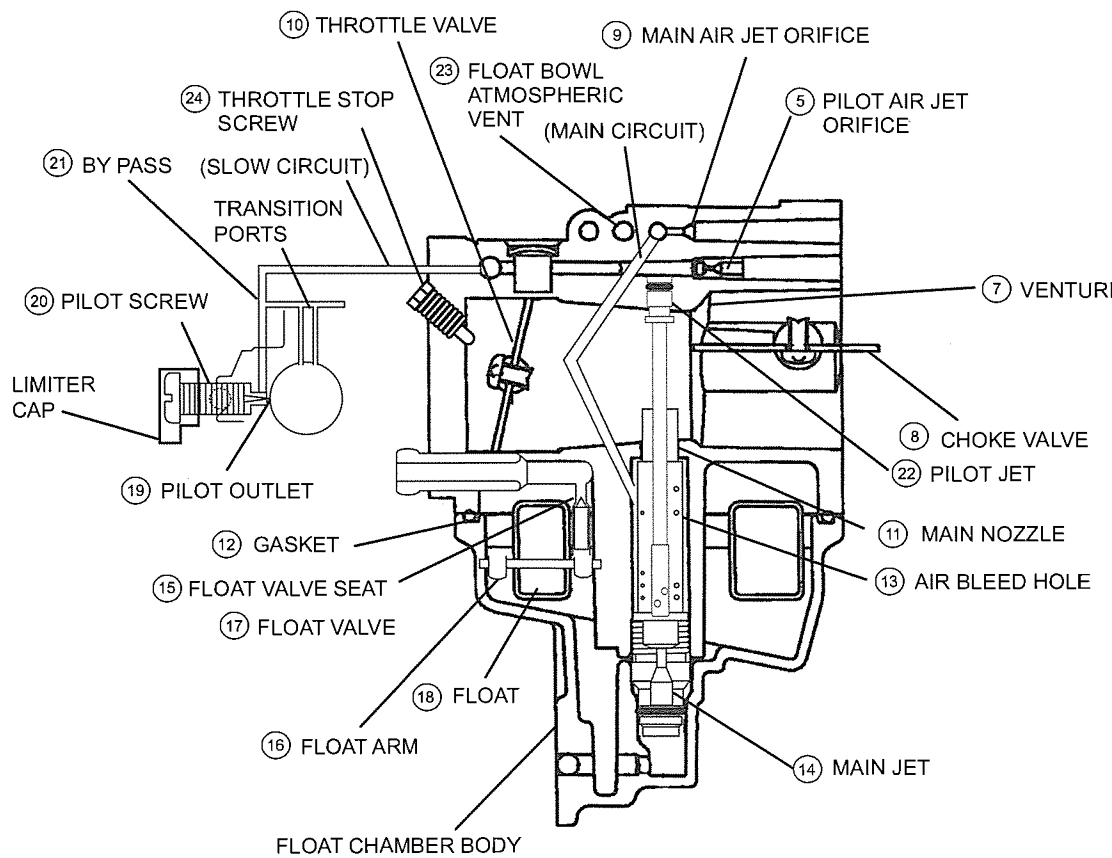
Symptoms:
- Float bowl overflowing
- Gasoline leaks

Order	Inspection Point	Ref.
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

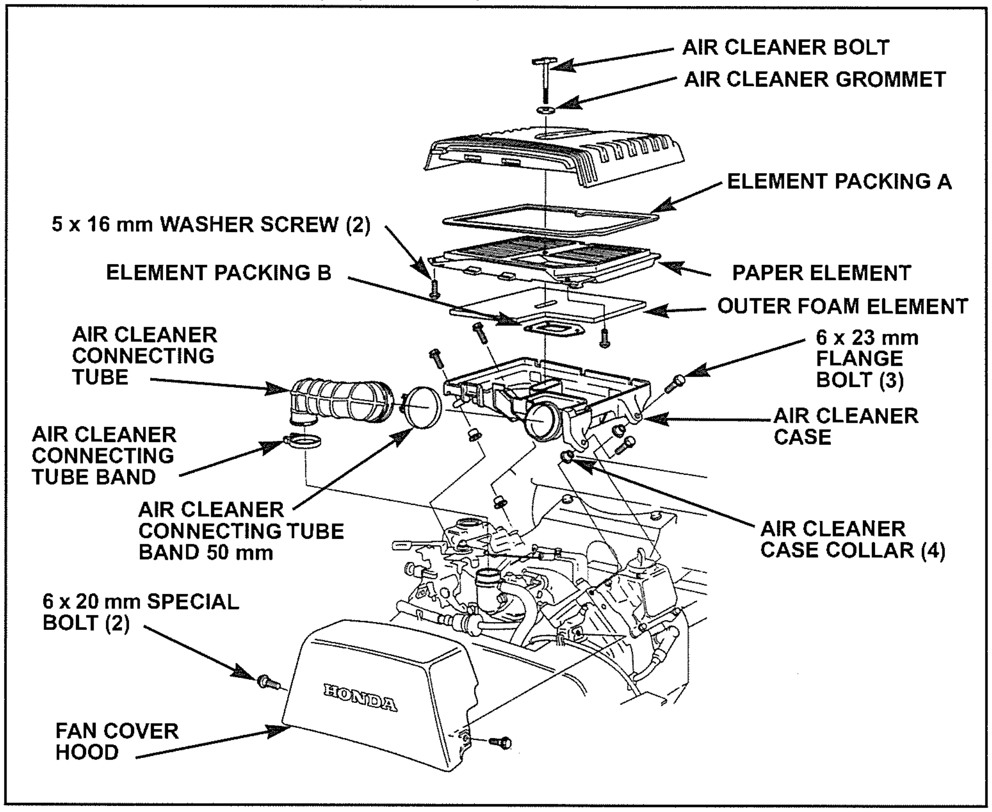
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)

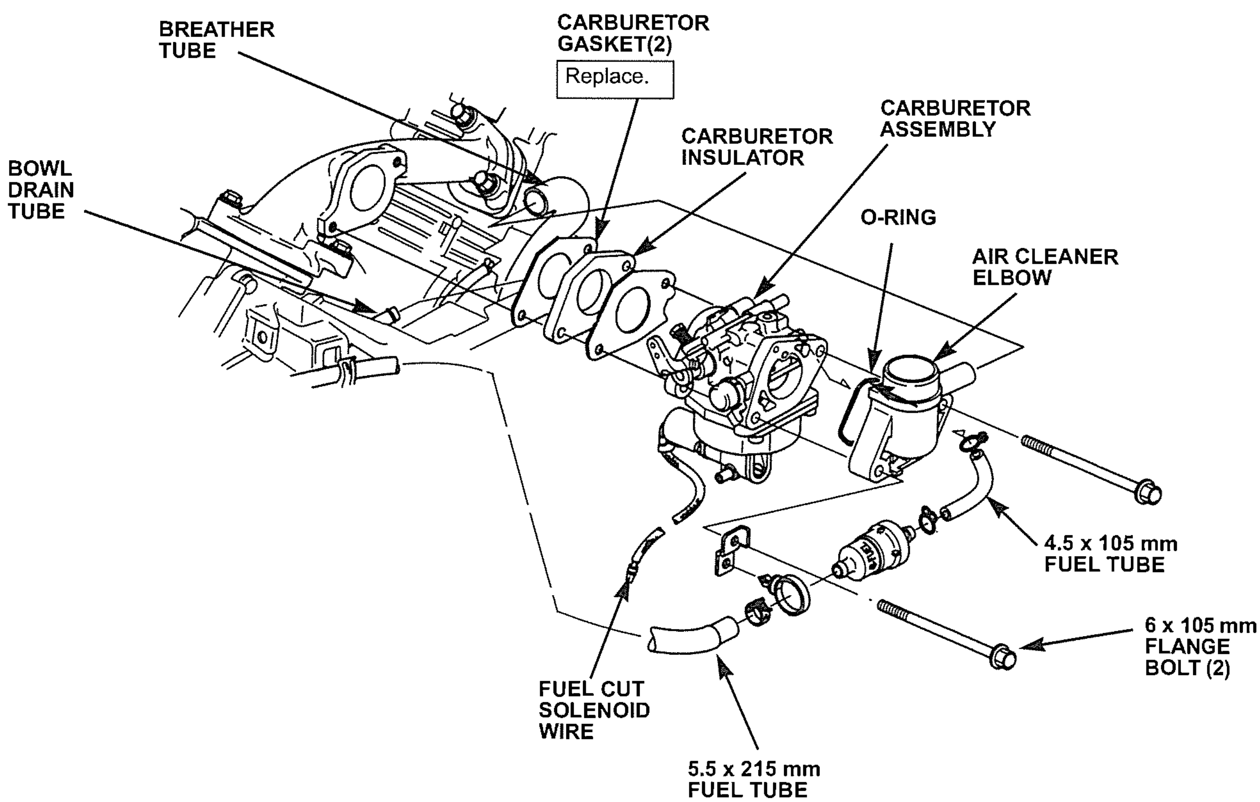




CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.

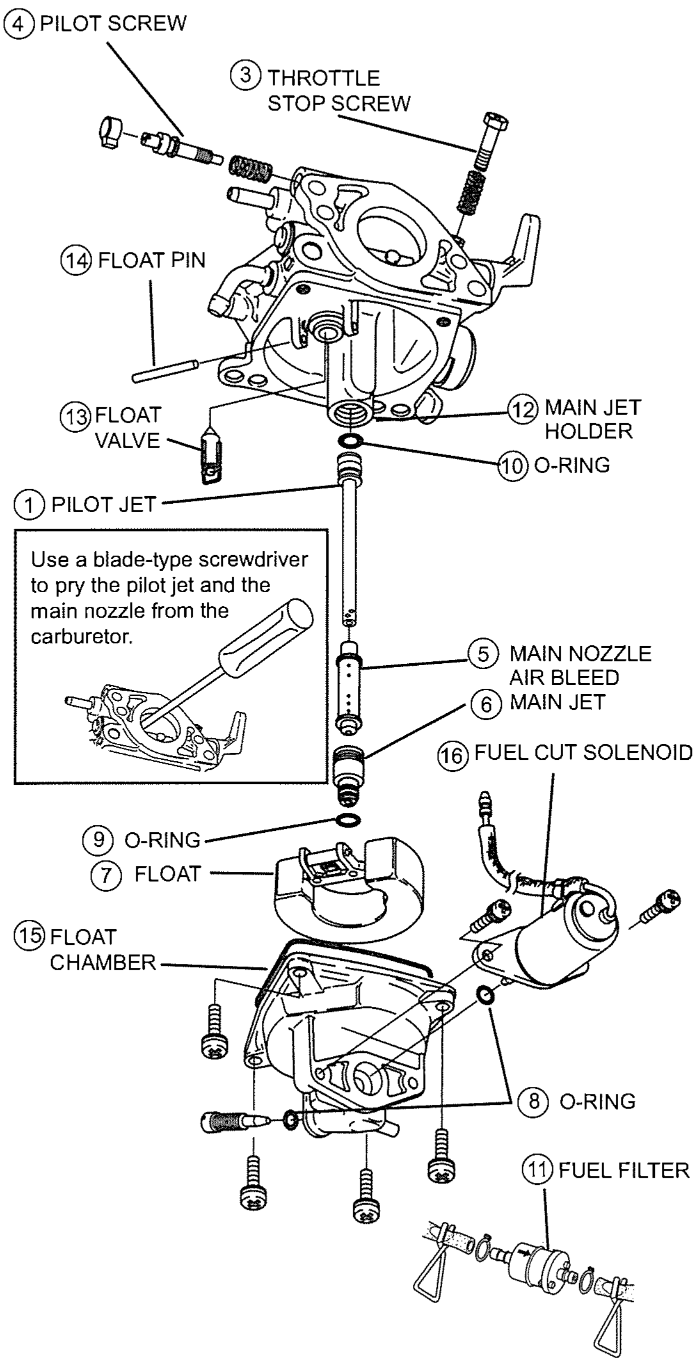




DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

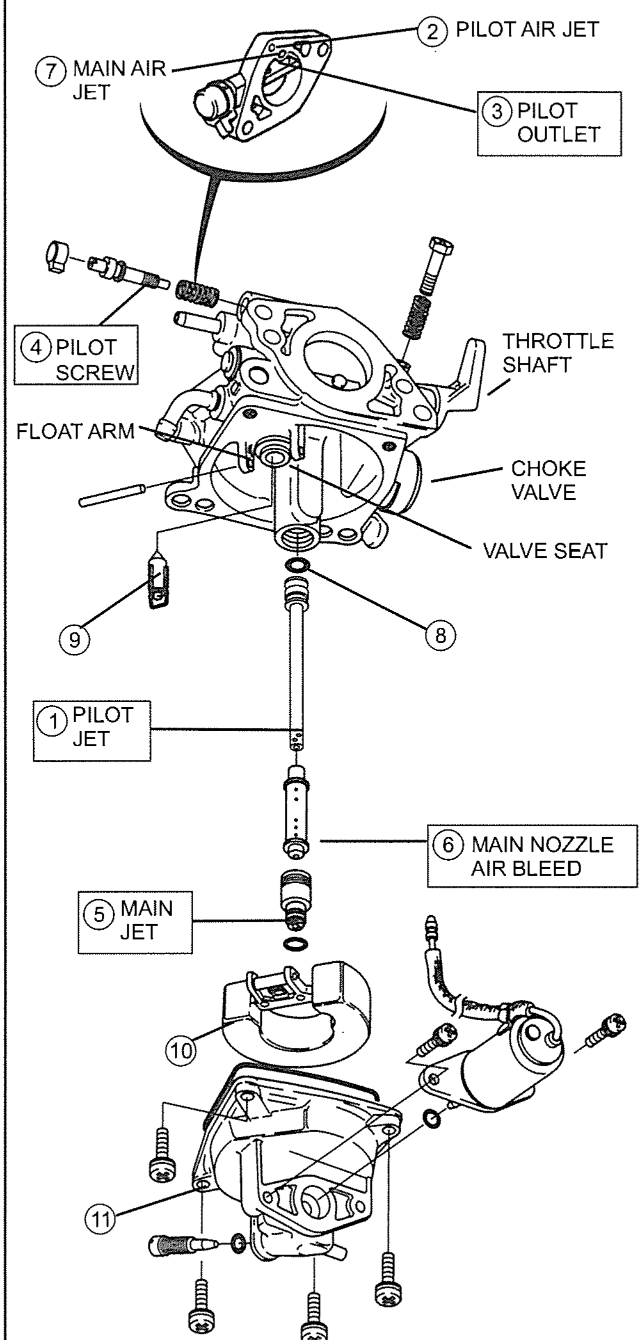
No.	Item	Clean	Replace
(1)	Check the pilot jet holes for clogging.	○	
(2)	Check the cover for damage.		●
(3)	Check the stop screw for proper setting.		
(4)	Check screw tip for contamination and adjustment.	○	
(5)	Check the main nozzle air bleed holes for clogging.	○	
(6)	Check the main jet size. Check the jet orifice for clogging.	○	
(7)	Check the float height, and make sure there is no gasoline in the float.		●
(8)	Check the O-rings for damage (Do not remove unless damaged).		●
(9)	Check the main jet O-ring for damage.		●
(10)	Check the pilot screw O-rings for damage.		●
(11)	Check for dirt or foreign materials in the filter.	○	
(12)	Check the main jet holder for corrosion.	○	
(13)	Check the tip of the valve for contamination or damage.	○	●
(14)	Check the float pin for wear or loose fit.		●
(15)	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
(16)	Check the fuel cut solenoid for proper operation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

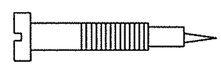
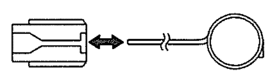
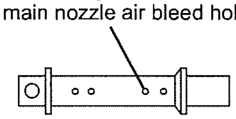
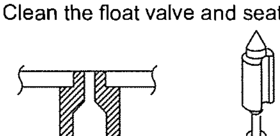
CLEANING

BG-type carburetor shown.

The BG-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.

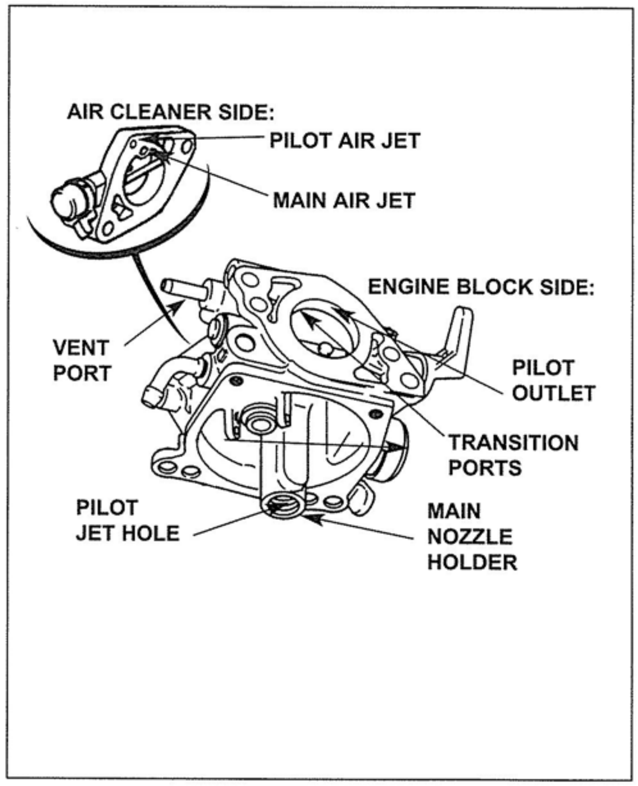


	Item	Inspection/ Cleaning Tool
Slow Circuit		
(1)	Remove foreign material from the pilot jet. 	Jet Cleaner Set
(2)	Clean the pilot air jet orifice.	Honda Carburetor Cleaner
(3)	Clean the pilot outlet.	
(4)	The pilot screw must be broken to be removed. Replace the pilot screw. 	Low pressure compressed air
Main Circuit		
(5)	Remove foreign material from the main jet. 	Jet Cleaner Set
(6)	Remove foreign material from the main nozzle air bleed holes. 	Honda Carburetor Cleaner Low pressure compressed air
(7)	Clean the main air jet orifice.	
Float Circuit		
(8)	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
(9)	Clean the float valve and seat.  Do not damage the seat and valve.	Low pressure compressed air
(10)	Check the float level.	Float level gauge
(11)	Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

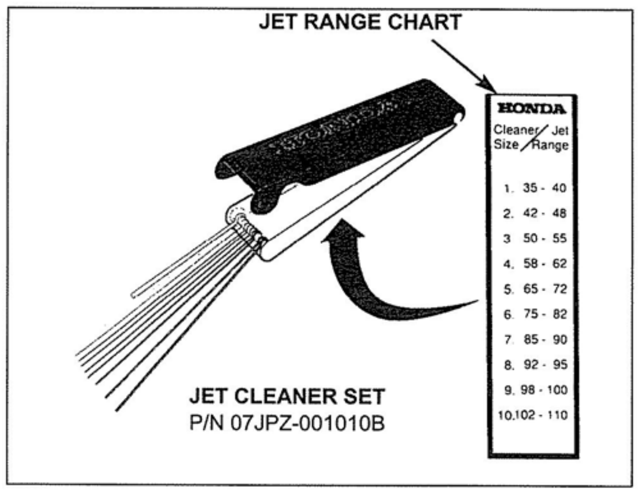
Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

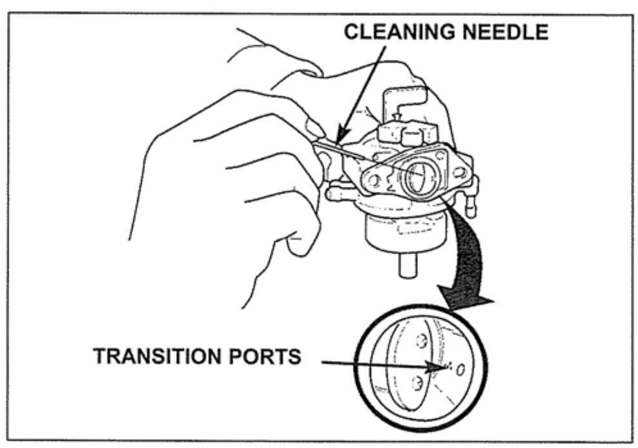


NOTICE

Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.

4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

   Throttle stop screw:

   - Turn clockwise .... rpm increases
   - Turn counterclockwise .... rpm decreases

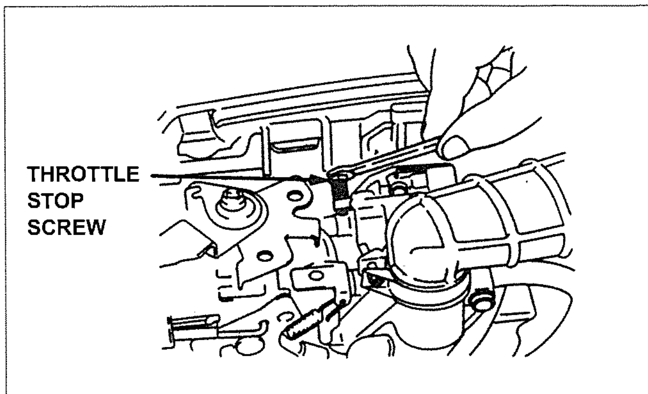
Maximum Engine Speed Adjustment

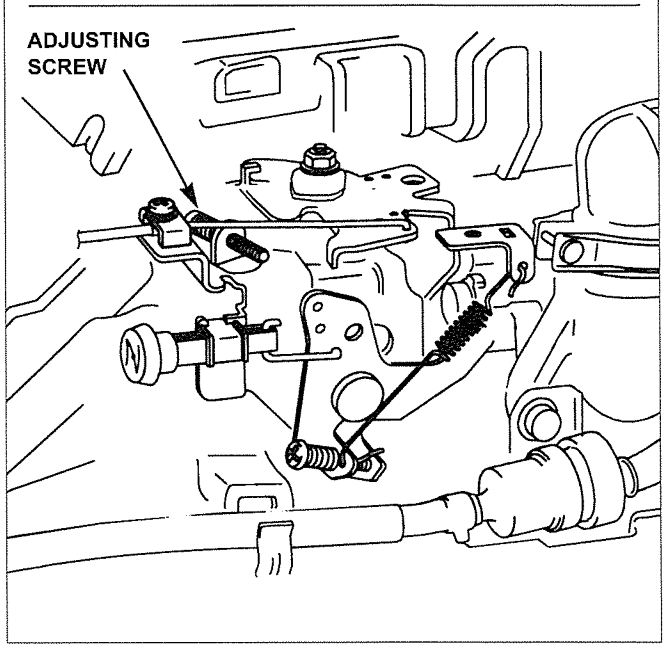
1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST.

   Turn the adjusting screw on the control lever to set maximum speed.

   Control lever adjusting screw:

   - Turn clockwise .... rpm decreases
   - Turn counterclockwise .... rpm increase





NOTES

BG-TYPE

GX610K1 • GX620K1

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

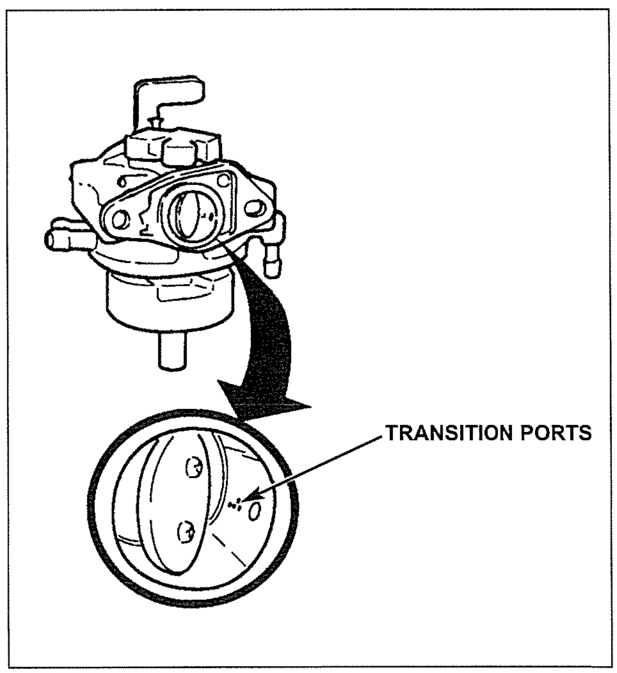
Transition Circuit

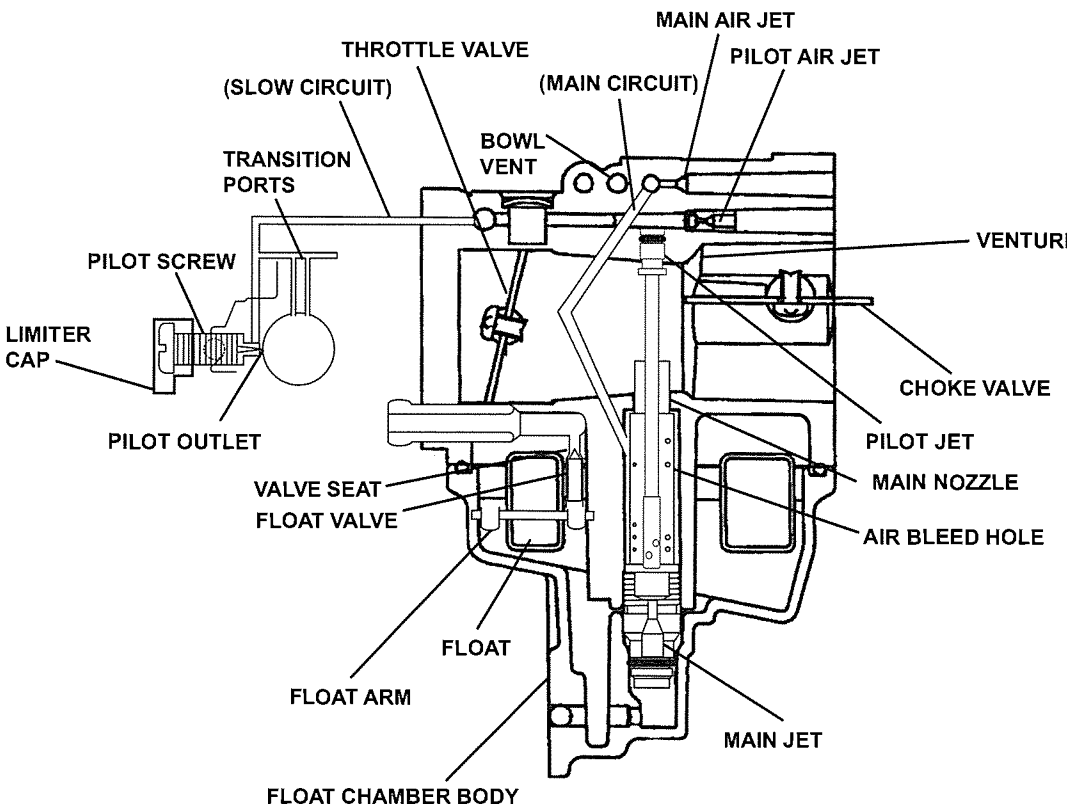
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




MAIN AIR JET
THROTTLE VALVE
PILOT AIR JET
(SLOW CIRCUIT)
(MAIN CIRCUIT)
BOWL VENT
TRANSITION PORTS
VENTURI
PILOT SCREW
LIMITER CAP
CHOKE VALVE
PILOT OUTLET
PILOT JET
VALVE SEAT
MAIN NOZZLE
FLOAT VALVE
AIR BLEED HOLE
FLOAT
FLOAT ARM
MAIN JET
FLOAT CHAMBER BODY

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ .... Inspection order before disassembly
① .... Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

- Hard Starting
- Engine starts but soon stops

- Poor performance at low speed
- rpm does not decrease

Order	Inspection Point	Ref.
1	Faulty choke valve operation	8
2	Misadjusted pilot screw	20
3	Foreign material on the tip of the pilot screw	20
4	Clogged pilot outlet	19
5	Misadjusted throttle stop screw	24
6	Fuel cut solenoid is not working properly	6
7	Faulty throttle valve operation	10
8	Faulty throttle shaft operation	10
	Clogged main jet	14

- Hunting
- rpm does not stabilize

- Poor performance at high speed
- rpm does not increase

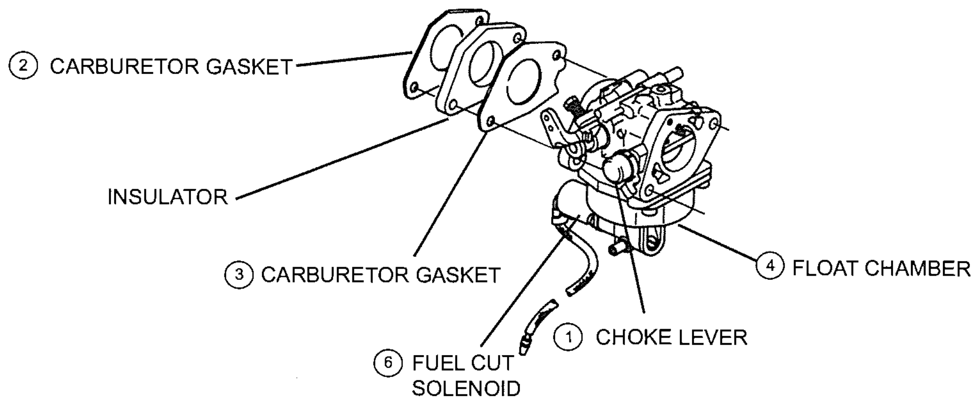
Order	Inspection Point	Ref.
	Improper installation of carburetor gasket	3
	Improper installation of carburetor gasket	2
	Air leaking through broken carburetor, insulator gasket or broken insulator	3
	Clogged pilot jet	22
	Clogged pilot air jet	5
	Clogged main jet	14
	Wrong main jet size	14
	Clogged float bowl atmospheric vent	23
	Clogged main air jet	9
	Clogged main nozzle air bleed hole	13
1	Fuel cut solenoid is not working properly	6
2	Water/foreign materials in the float chamber, corroded chamber	4
3	Deteriorated gasoline in the float chamber	4

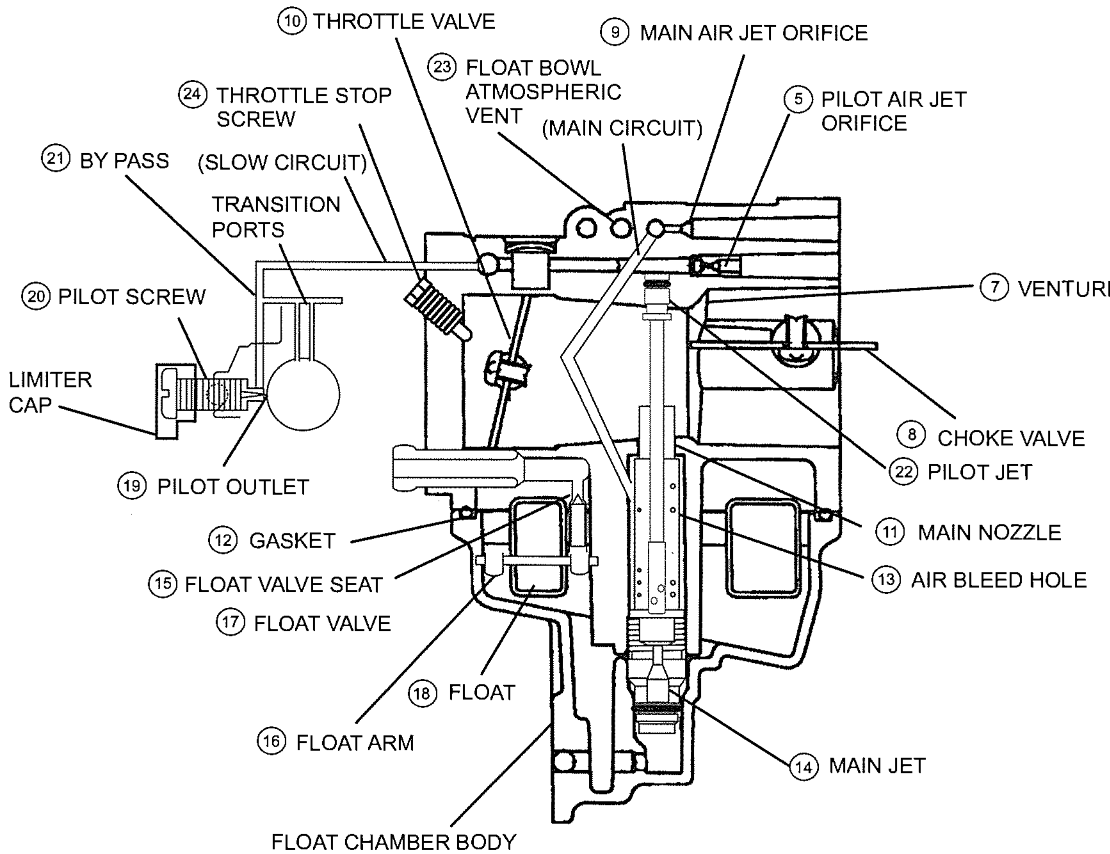
- Float bowl overflowing
- Gasoline leaks

Order	Inspection Point	Ref.
1	Damaged/contaminated float valve seating surface	15
	Foreign materials on the tip of float valve	17
2	Clogged float bowl atmospheric vent	23
3	Faulty chamber gasket (improperly installed)	12
	Fuel inside the float	18
	Faulty float operation, float does not operate smoothly	16
	Deformed chamber (mating face, joint)	4

Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

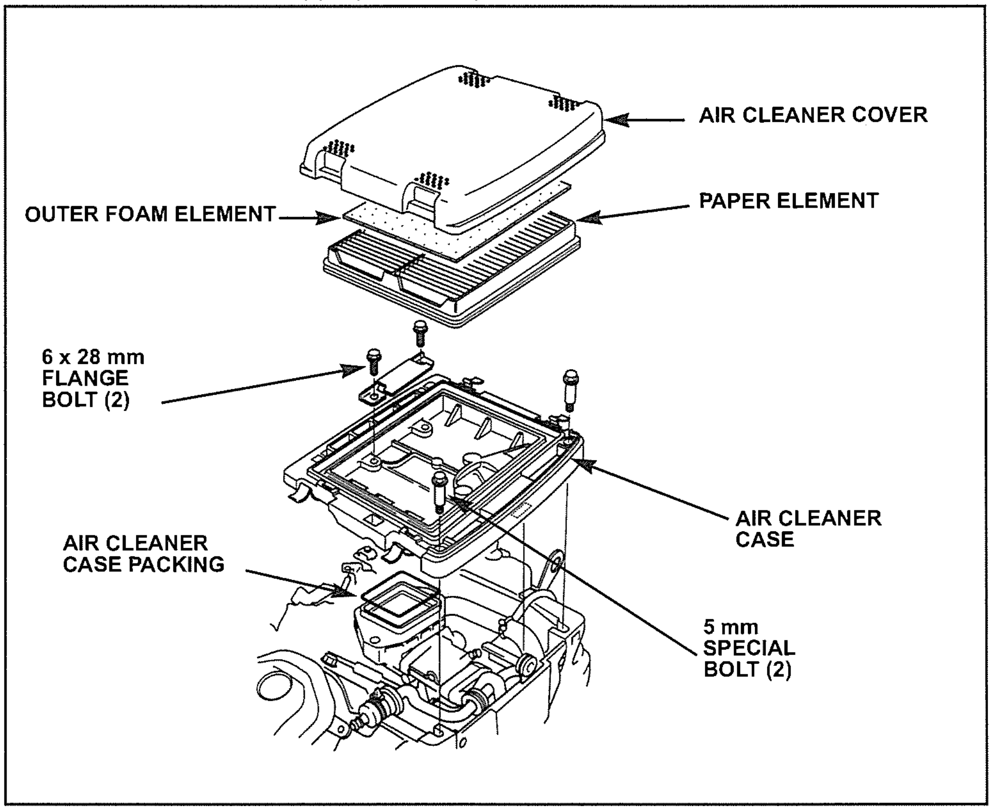
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)

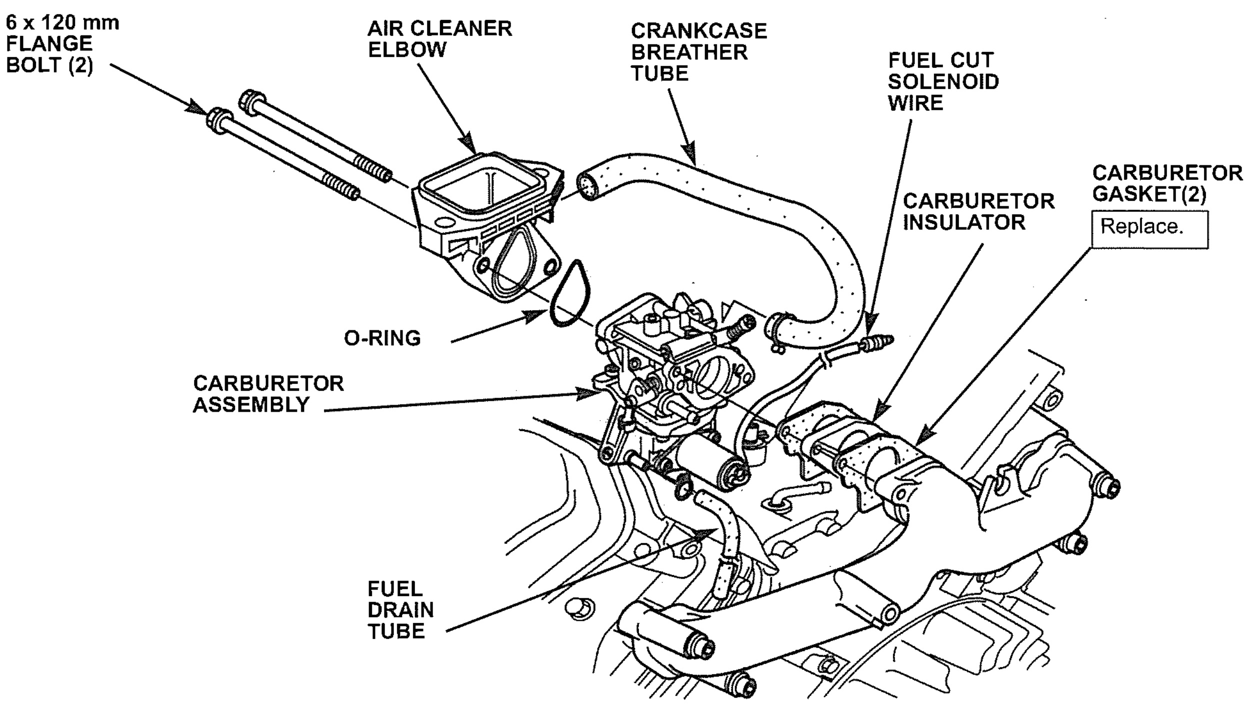




CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.

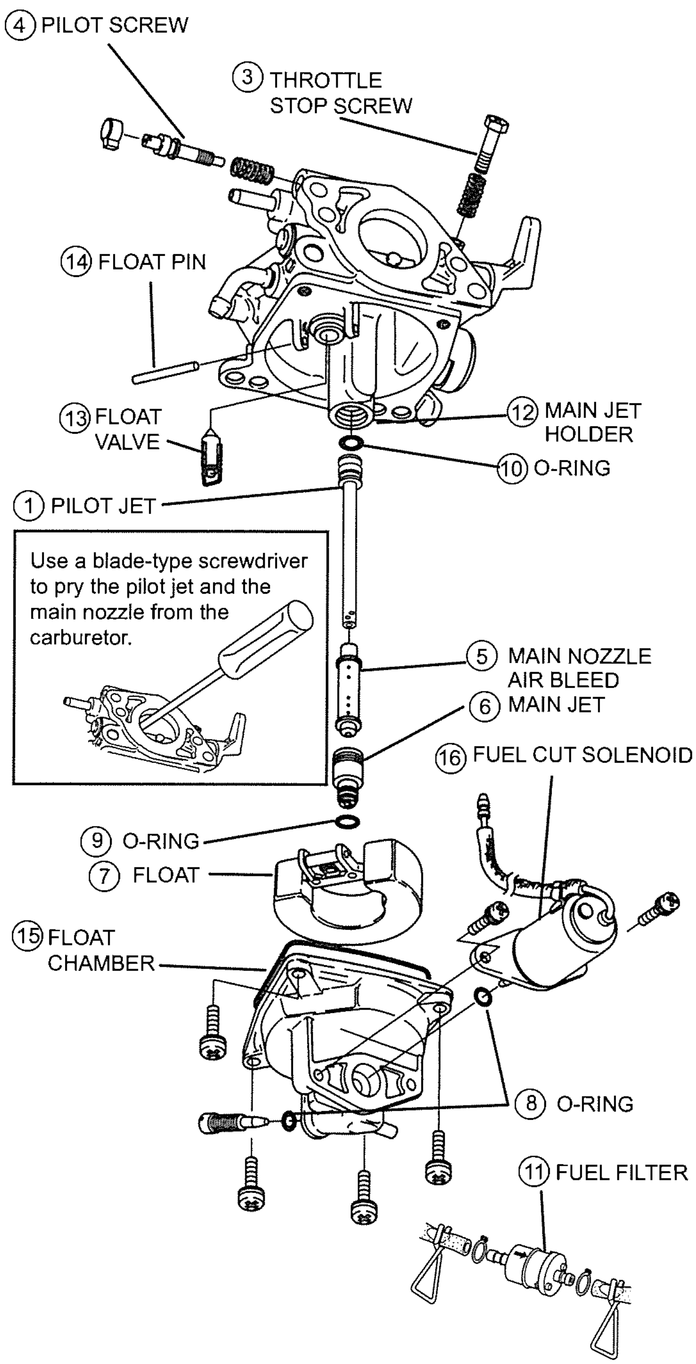




DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

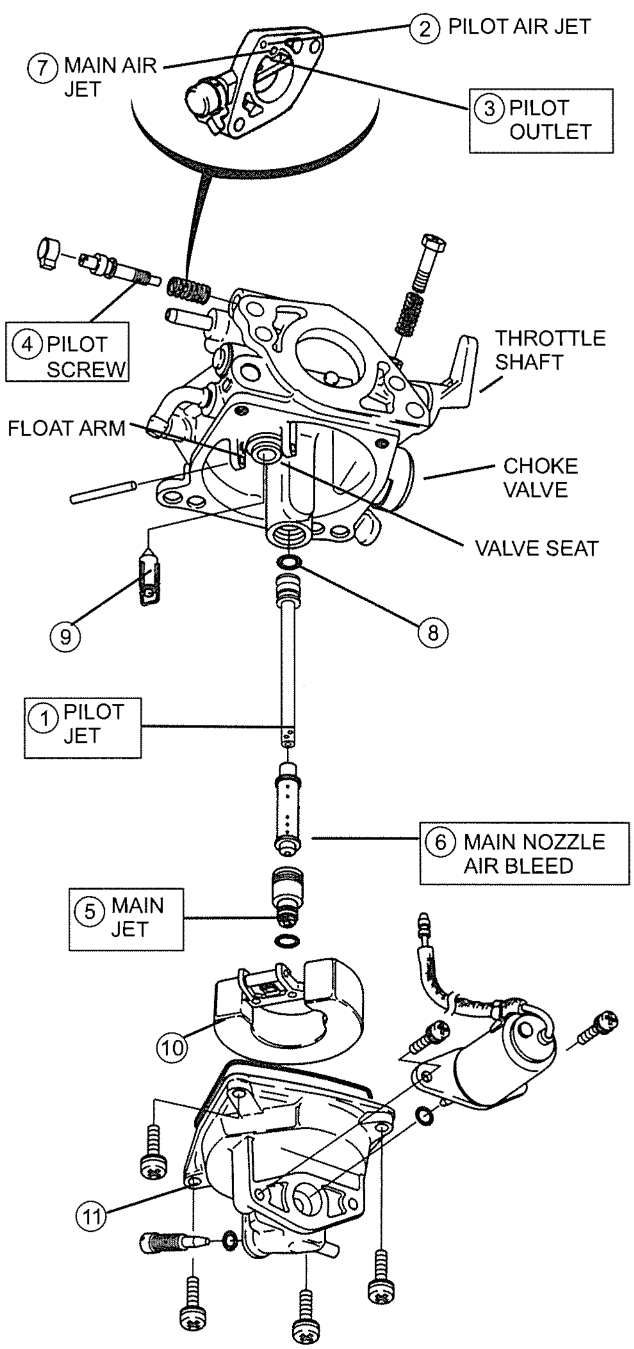
No.	Item	Clean	Replace
(1)	Check the pilot jet holes for clogging.	○	
(2)	Check the cover for damage.		●
(3)	Check the stop screw for proper setting.		
(4)	Check screw tip for contamination and adjustment.	○	
(5)	Check the main nozzle air bleed holes for clogging.	○	
(6)	Check the main jet size. Check the jet orifice for clogging.	○	
(7)	Check the float height, and make sure there is no gasoline in the float.		●
(8)	Check the O-rings for damage (Do not remove unless damaged).		●
(9)	Check the main jet O-ring for damage.		●
(10)	Check the pilot screw O-rings for damage.		●
(11)	Check for dirt or foreign materials in the filter.	○	
(12)	Check the main jet holder for corrosion.	○	
(13)	Check the tip of the valve for contamination or damage.	○	●
(14)	Check the float pin for wear or loose fit.		●
(15)	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
(16)	Check the fuel cut solenoid for proper operation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

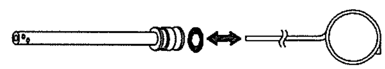
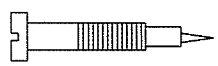
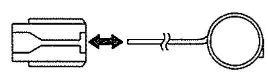
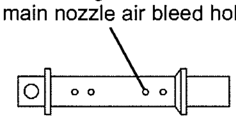
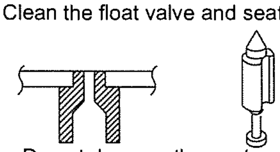
CLEANING

BG-type carburetor shown.

The BG-type has some components that are not found on other Honda carburetors.

☐ : Indicates parts that are likely to be clogged; clean carefully.

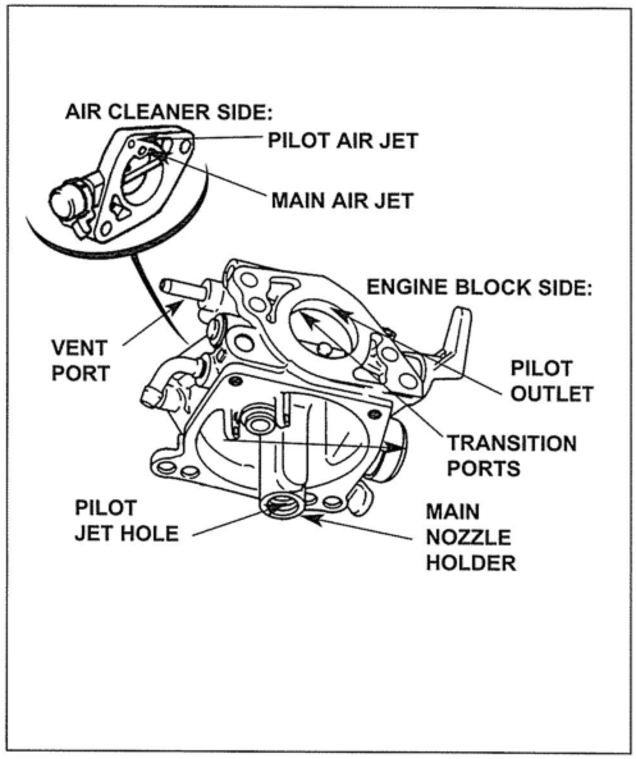


	Item	Inspection/ Cleaning Tool
Slow Circuit		
(1)	Remove foreign material from the pilot jet. 	Jet Cleaner Set
(2)	Clean the pilot air jet orifice.	Honda Carburetor Cleaner
(3)	Clean the pilot outlet.	
(4)	The pilot screw must be broken to be removed. Replace the pilot screw. 	Low pressure compressed air
Main Circuit		
(5)	Remove foreign material from the main jet. 	Jet Cleaner Set
(6)	Remove foreign material from the main nozzle air bleed holes. 	Honda Carburetor Cleaner Low pressure compressed air
(7)	Clean the main air jet orifice.	
Float Circuit		
(8)	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
(9)	Clean the float valve and seat.  Do not damage the seat and valve.	Low pressure compressed air
(10)	Check the float level.	Float level gauge
(11)	Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

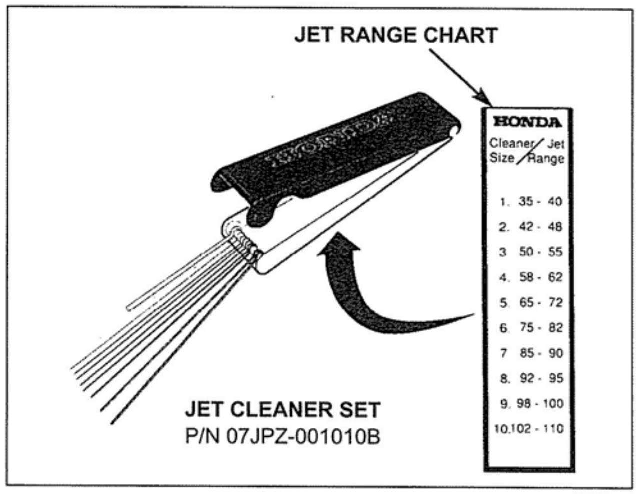
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

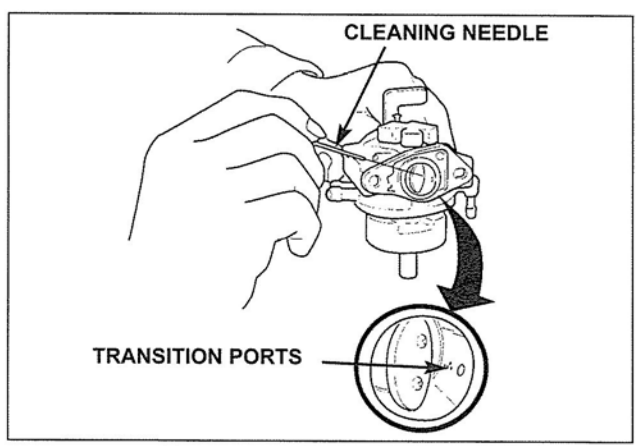
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



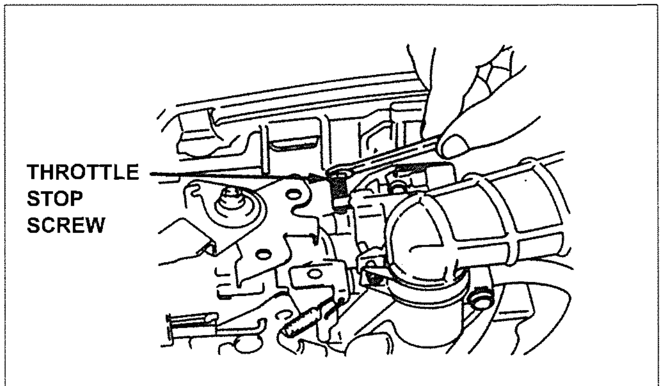
4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).

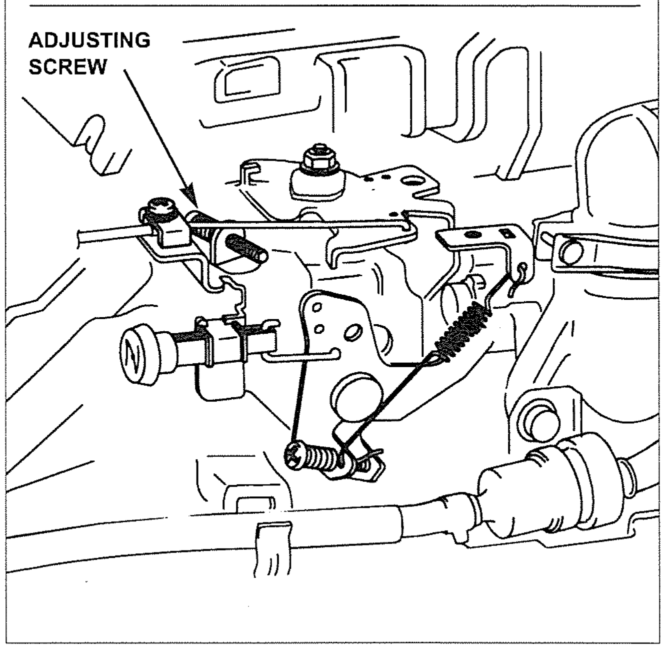


ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.





Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases

Maximum Engine Speed Adjustment

1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST.

   Turn the adjusting screw on the control lever to set maximum speed.

Control lever adjusting screw:

- Turn clockwise .... rpm decreases
- Turn counterclockwise .... rpm increase

NOTES

BG-TYPE

GXV610K0 • GXV620K0

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

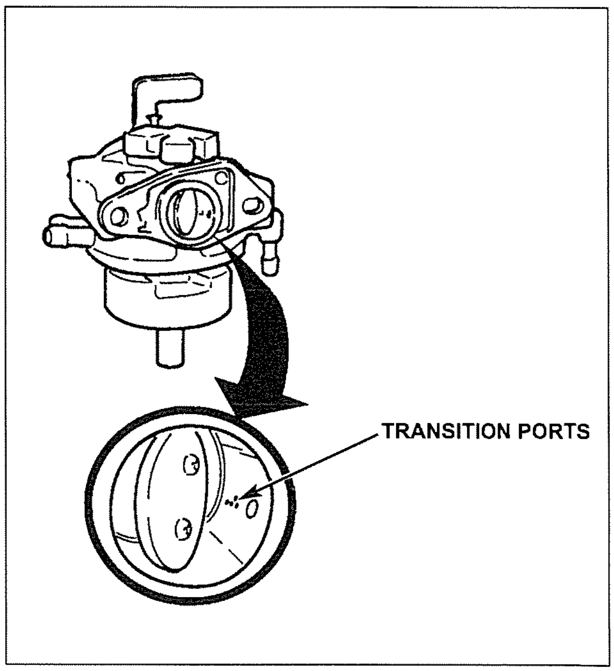
Transition Circuit

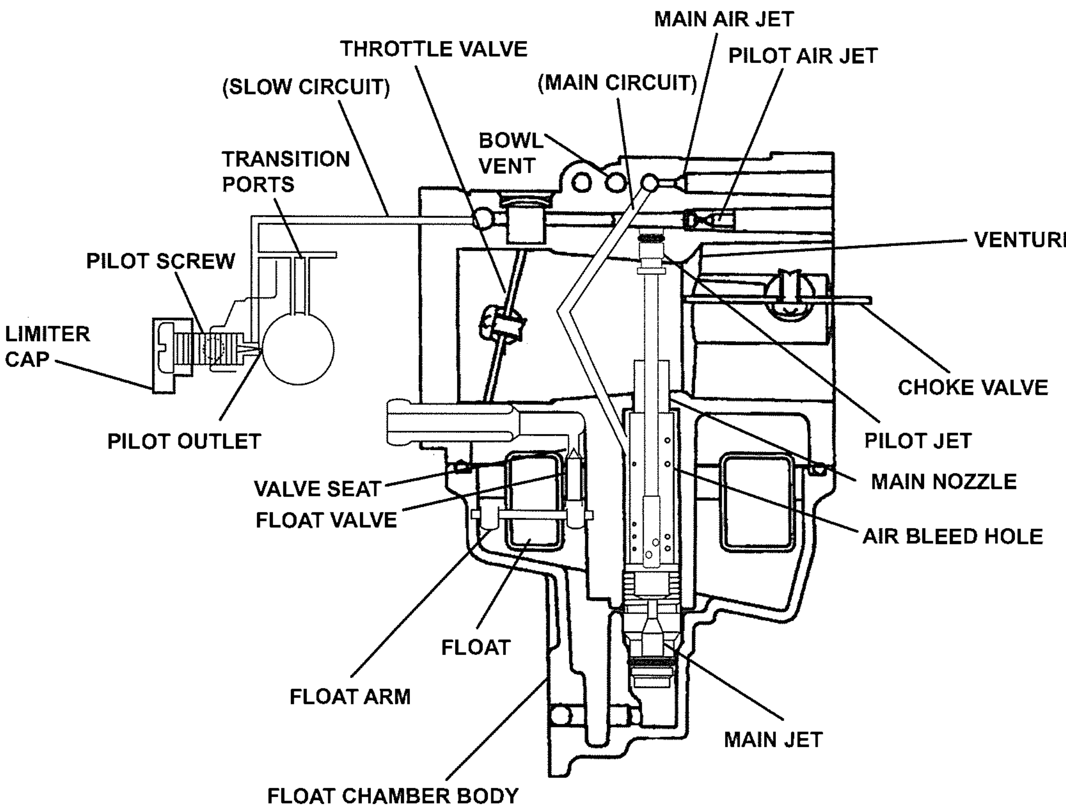
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




MAIN AIR JET
THROTTLE VALVE
PILOT AIR JET
(SLOW CIRCUIT)
(MAIN CIRCUIT)
BOWL VENT
TRANSITION PORTS
VENTURI
PILOT SCREW
LIMITER CAP
CHOKE VALVE
PILOT OUTLET
PILOT JET
VALVE SEAT
MAIN NOZZLE
FLOAT VALVE
AIR BLEED HOLE
FLOAT
FLOAT ARM
MAIN JET
FLOAT CHAMBER BODY

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ .... Inspection order before disassembly
① .... Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

- Hard Starting
- Engine starts but soon stops

- Hunting
- rpm does not stabilize

	Inspection Point	
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Fuel cut solenoid is not working properly	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

	Inspection Point	
	Improper installation of carburetor gasket	③
	Improper installation of carburetor gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Fuel cut solenoid is not working properly	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

- Poor performance at low speed
- rpm does not decrease

- Poor performance at high speed
- rpm does not increase

- Float bowl overflowing
- Gasoline leaks

	Inspection Point	
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

- Hunting
- Spitting
- Engine stalling
- Hard Starting

- Air leaking past the carburetor insulator gasket
- Clogged jets, worn throttle shaft
- Overheating of the carburetor chamber/fuel passage
- Wrong main jet size
- Restricted pilot jet

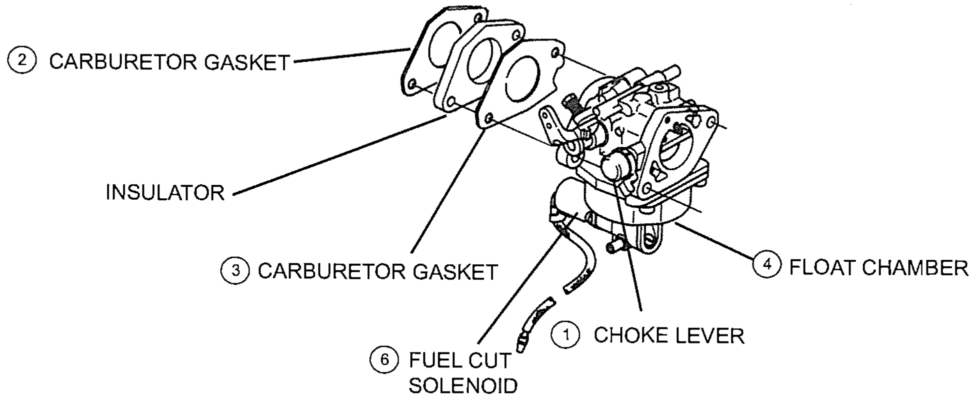
- Lean fuel mixture
- Percolation
- Overheating
- Set for high elevation

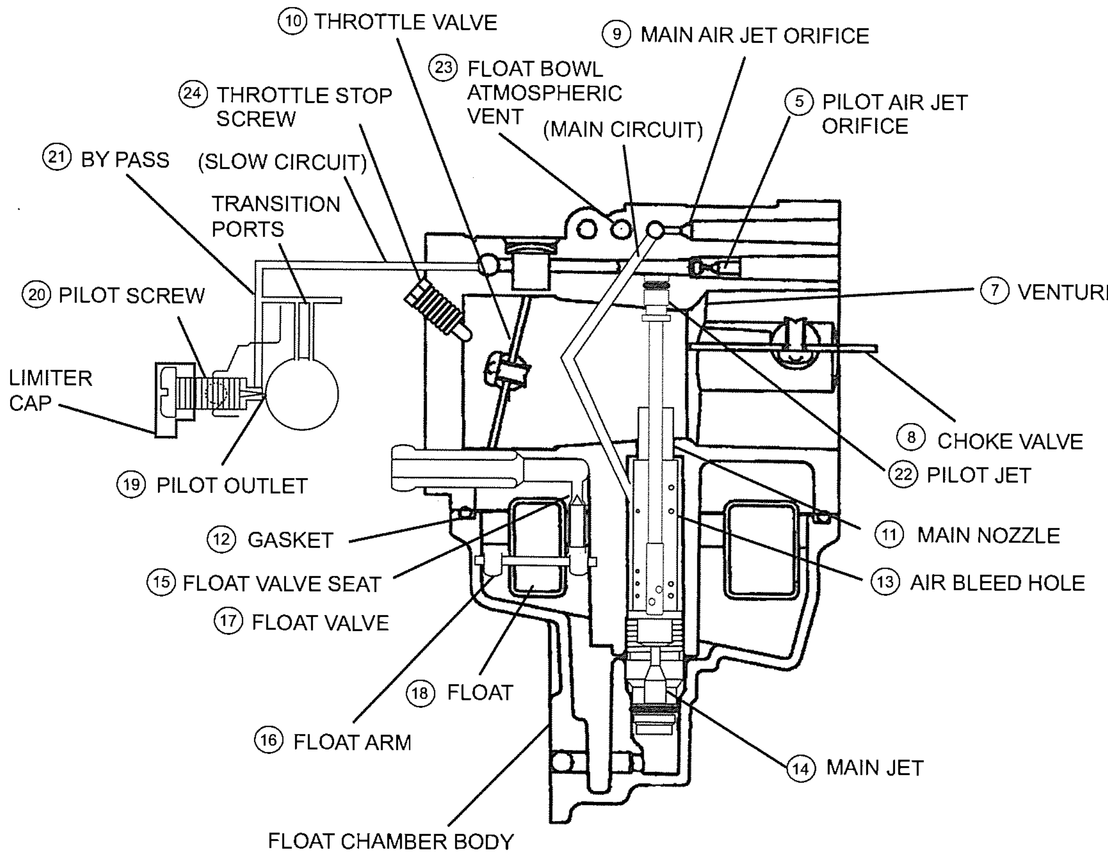
- Wet fouled spark plug
- Power drops, rpm does not stabilize
- Black smoke from muffler, engine stalls

- Clogged air cleaner
- Faulty choke operation
- Wrong main jet size
- Deteriorated gasoline
- Blocked main nozzle/venturi bore

- Rich fuel mixture
- Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

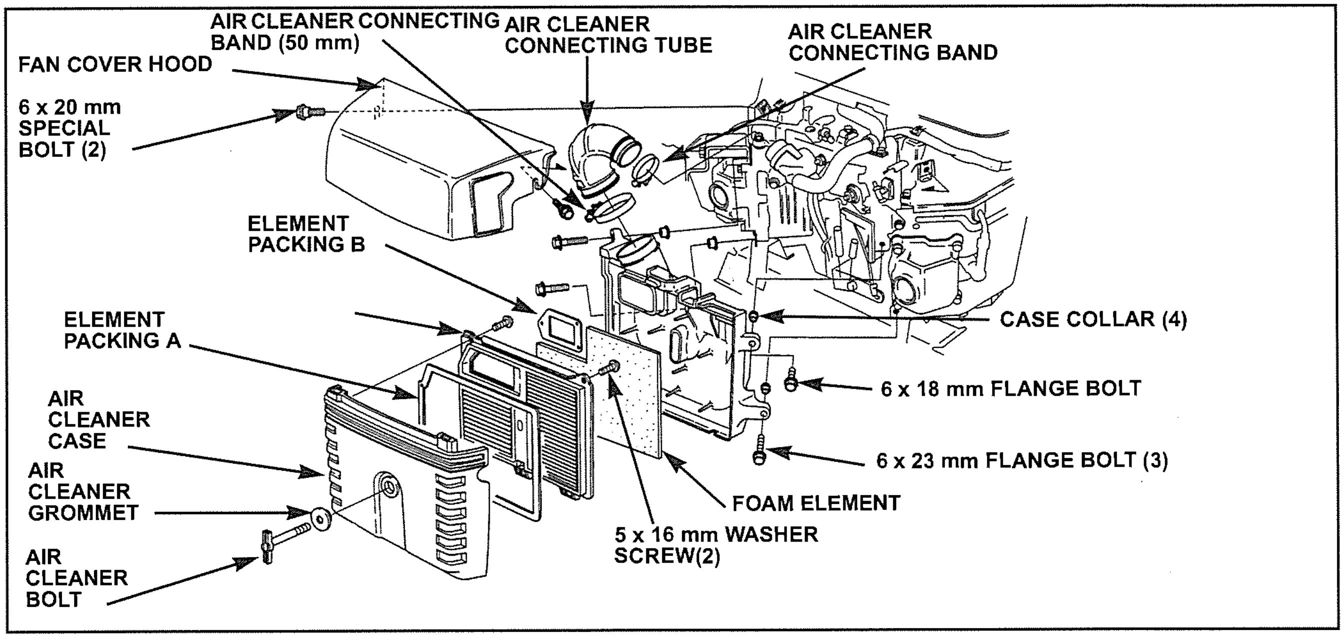
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)

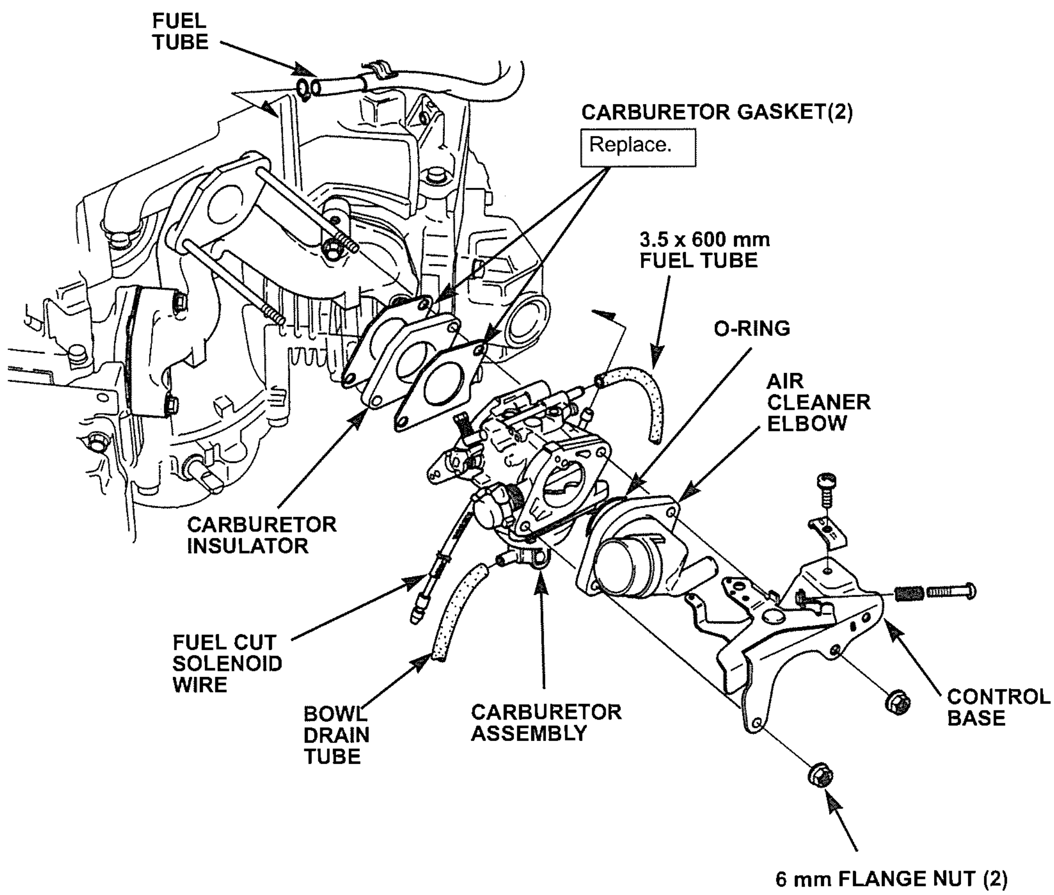




CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.

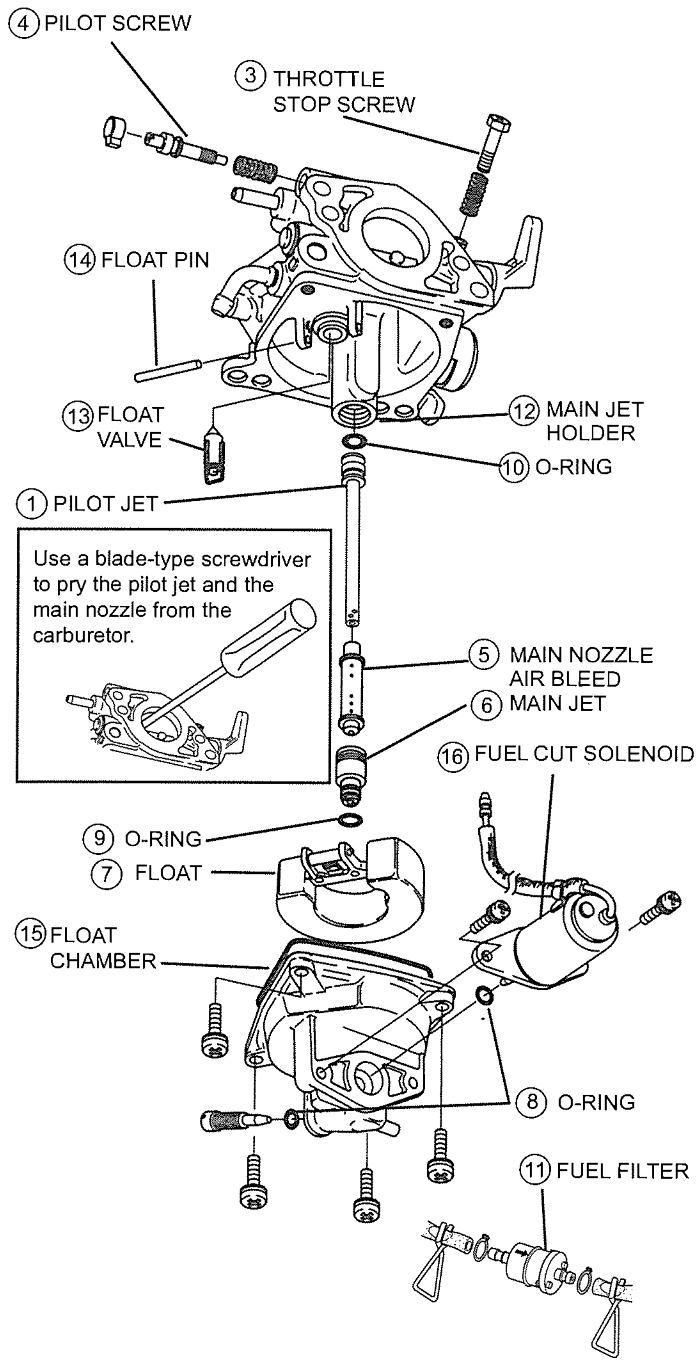




DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

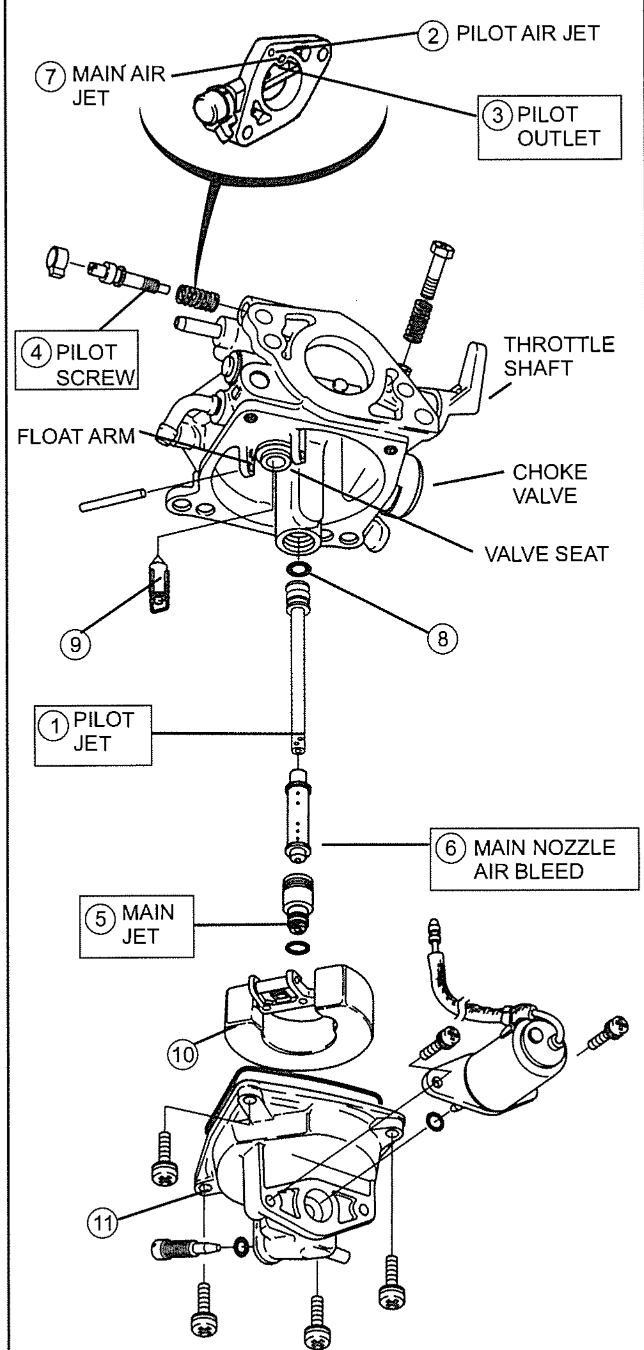
No.	Item	Clean	Replace
①	Check the pilot jet holes for clogging.	○	
②	Check the cover for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination and adjustment.	○	
⑤	Check the main nozzle air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the O-rings for damage (Do not remove unless damaged).		●
⑨	Check the main jet O-ring for damage.		●
⑩	Check the pilot screw O-rings for damage.		●
⑪	Check for dirt or foreign materials in the filter.	○	
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the fuel cut solenoid for proper operation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

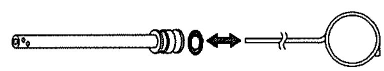
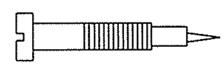
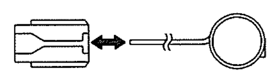
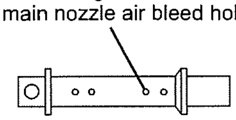
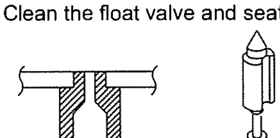
CLEANING

BG-type carburetor shown.

The BG-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.

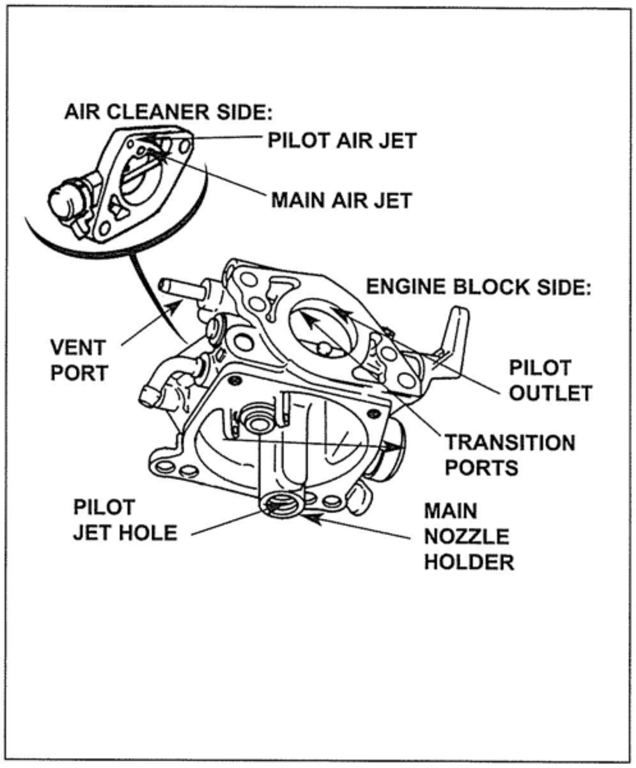


Item	Inspection/ Cleaning Tool
Slow Circuit	
(1) Remove foreign material from the pilot jet. 	Jet Cleaner Set
(2) Clean the pilot air jet orifice. (3) Clean the pilot outlet. (4) The pilot screw must be broken to be removed. Replace the pilot screw. 	Honda Carburetor Cleaner Low pressure compressed air
Main Circuit	
(5) Remove foreign material from the main jet. 	Jet Cleaner Set
(6) Remove foreign material from the main nozzle air bleed holes.  (7) Clean the main air jet orifice.	Honda Carburetor Cleaner Low pressure compressed air
Float Circuit	
(8) Remove foreign materials from the valve seat. (9) Clean the float valve and seat.  Do not damage the seat and valve.	Honda Carburetor Cleaner Low pressure compressed air
(10) Check the float level.	Float level gauge
(11) Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

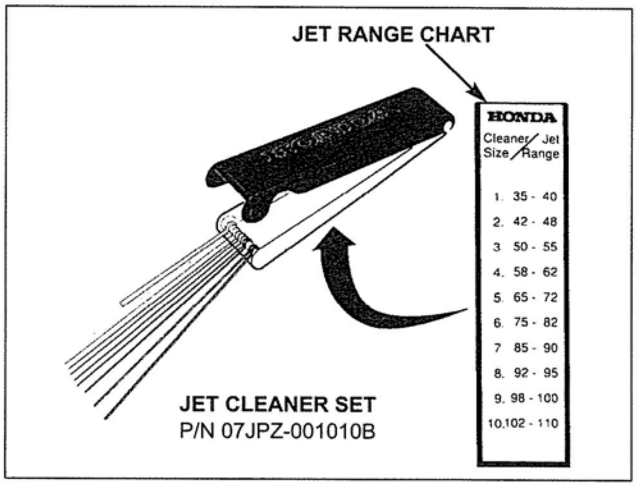
Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

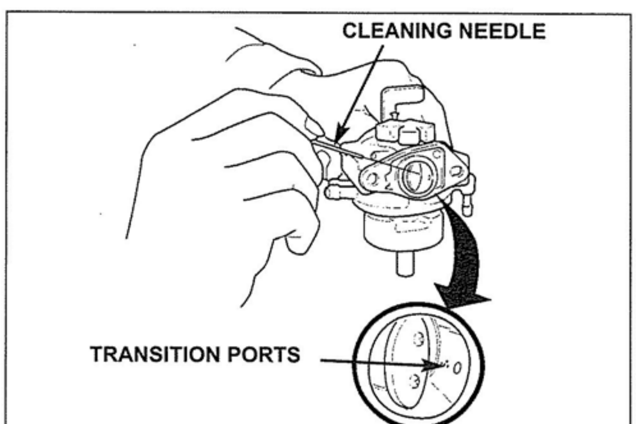


NOTICE

Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.

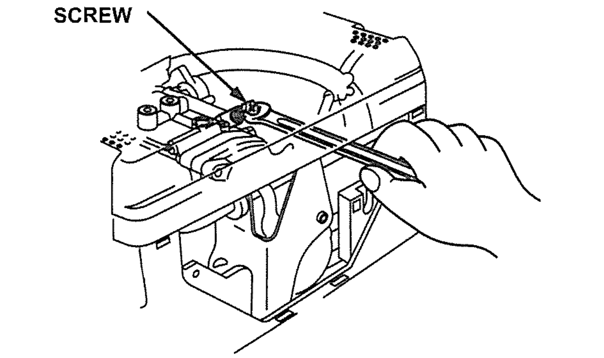
4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).

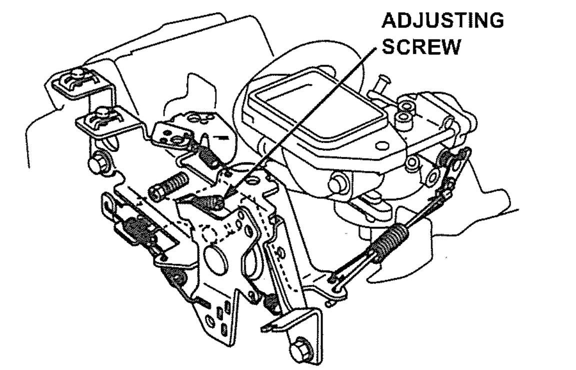


ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.





Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

   Throttle stop screw:

   - Turn clockwise .... rpm increases
   - Turn counterclockwise .... rpm decreases

Maximum Engine Speed Adjustment

1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST.

   Turn the adjusting screw on the control lever to set maximum speed.

   Control lever adjusting screw:

   - Turn clockwise .... rpm decreases
   - Turn counterclockwise .... rpm increase

NOTES

BG-TYPE

GXV610K1 • GXV620K1

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

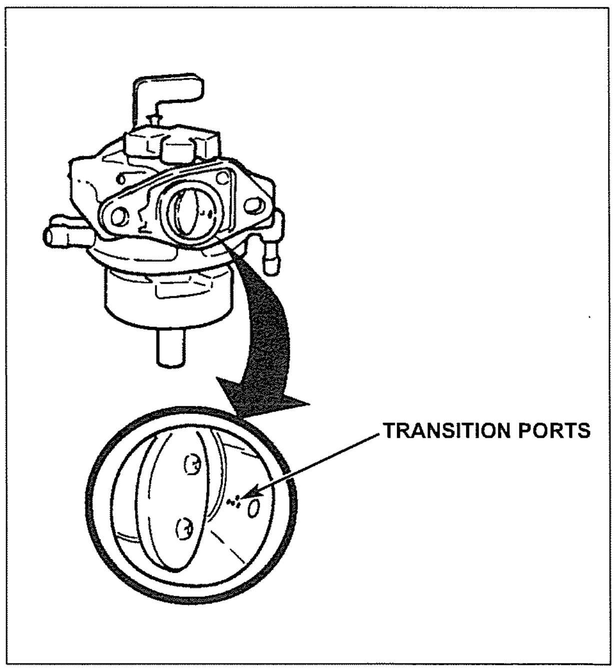
Transition Circuit

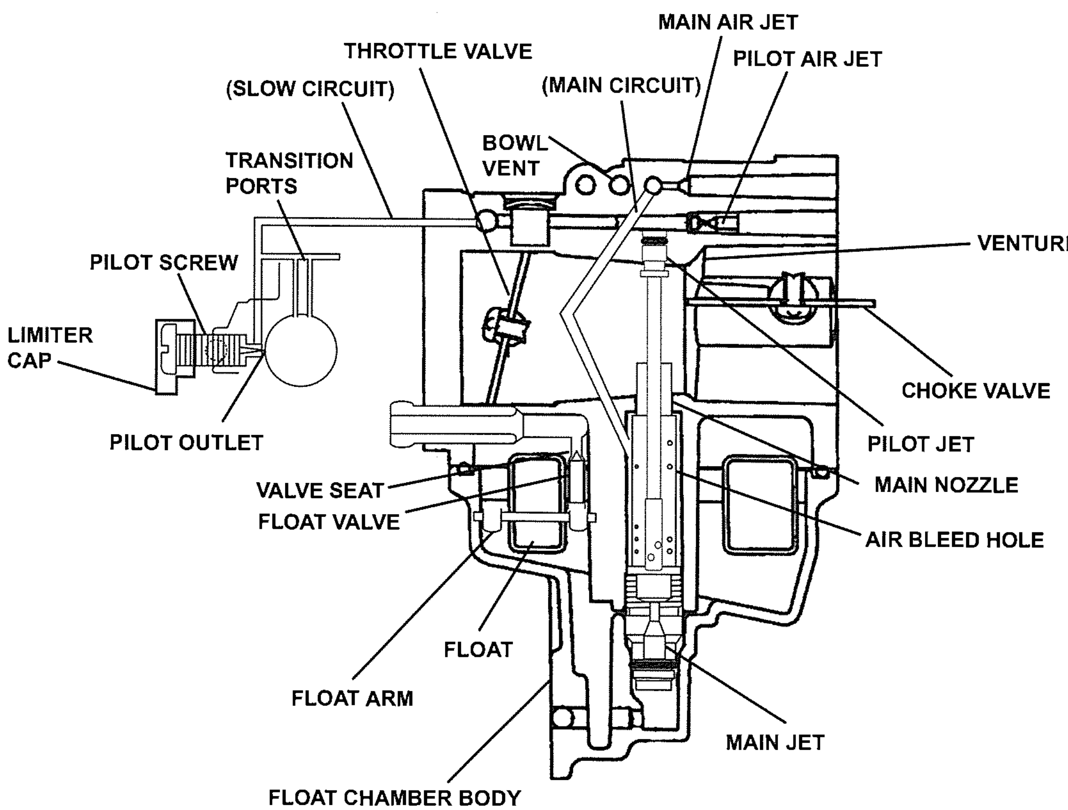
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




MAIN AIR JET
THROTTLE VALVE
PILOT AIR JET
(SLOW CIRCUIT)
(MAIN CIRCUIT)
BOWL VENT
TRANSITION PORTS
VENTURI
PILOT SCREW
LIMITER CAP
CHOKE VALVE
PILOT OUTLET
PILOT JET
VALVE SEAT
MAIN NOZZLE
FLOAT VALVE
AIR BLEED HOLE
FLOAT
FLOAT ARM
MAIN JET
FLOAT CHAMBER BODY

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

● 1 . . . . Inspection order before disassembly
(1) . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

Symptoms (left):
- Hard Starting
- Engine starts but soon stops

Symptoms (right):
- Poor performance at low speed
- rpm does not decrease

Order	Inspection Point	Ref.
1	Faulty choke valve operation	8
2	Misadjusted pilot screw	20
3	Foreign material on the tip of the pilot screw	20
4	Clogged pilot outlet	19
5	Misadjusted throttle stop screw	24
6	Fuel cut solenoid is not working properly	6
7	Faulty throttle valve operation	10
8	Faulty throttle shaft operation	10
	Clogged main jet	14

Symptoms (left):
- Hunting
- rpm does not stabilize

Symptoms (right):
- Poor performance at high speed
- rpm does not increase

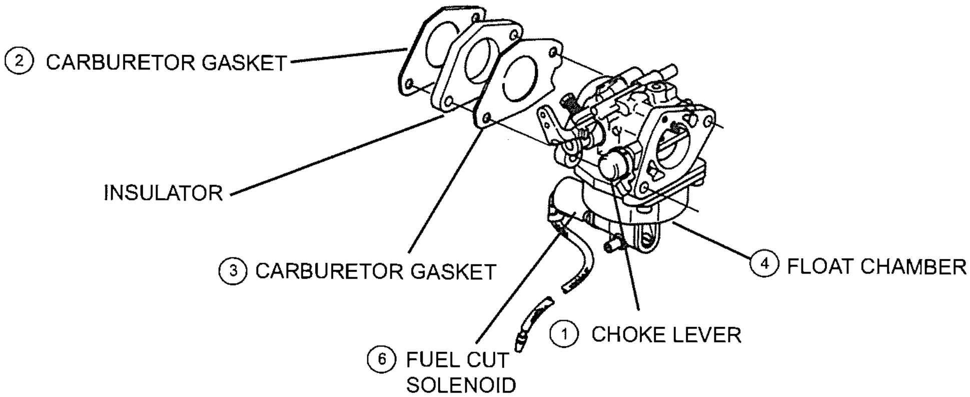
Order	Inspection Point	Ref.
	Improper installation of carburetor gasket	3
	Improper installation of carburetor gasket	2
	Air leaking through broken carburetor, insulator gasket or broken insulator	3
	Clogged pilot jet	22
	Clogged pilot air jet	5
	Clogged main jet	14
	Wrong main jet size	14
	Clogged float bowl atmospheric vent	23
	Clogged main air jet	9
	Clogged main nozzle air bleed hole	13
1	Fuel cut solenoid is not working properly	6
2	Water/foreign materials in the float chamber, corroded chamber	4
3	Deteriorated gasoline in the float chamber	4

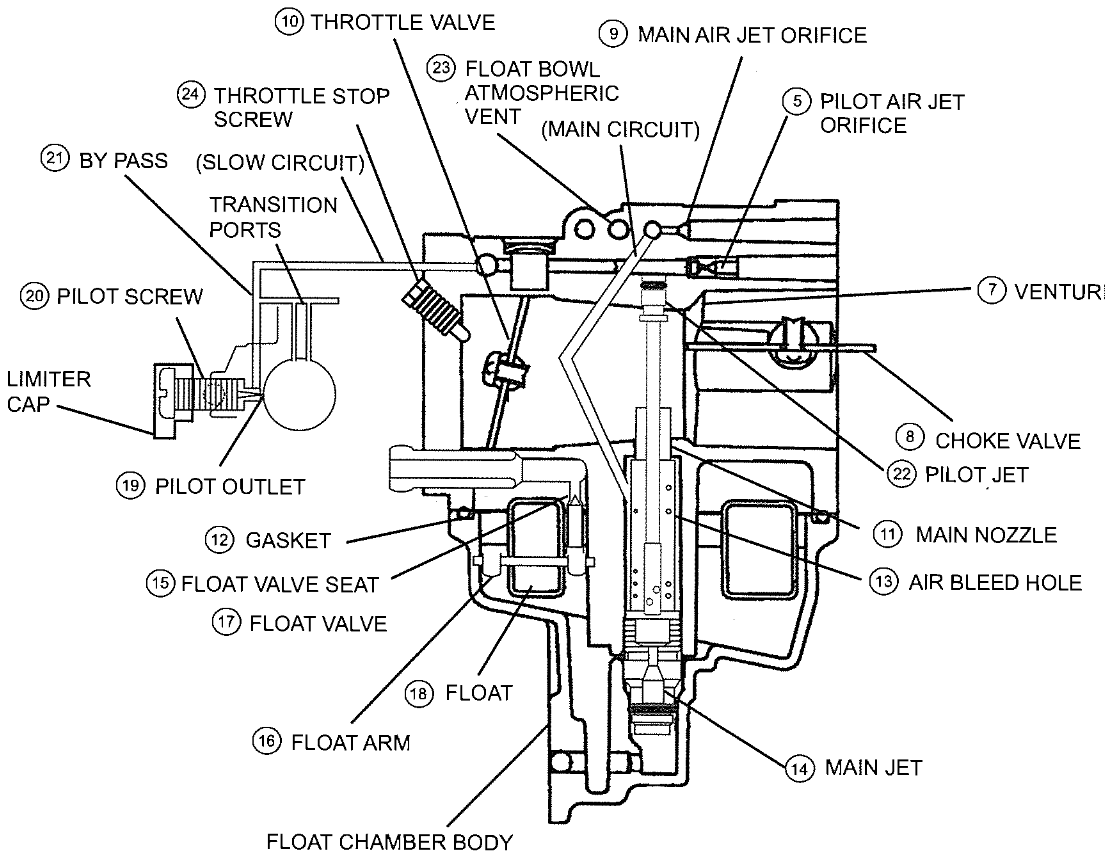
Symptoms (left):
- Float bowl overflowing
- Gasoline leaks

Order	Inspection Point	Ref.
1	Damaged/contaminated float valve seating surface	15
	Foreign materials on the tip of float valve	17
2	Clogged float bowl atmospheric vent	23
3	Faulty chamber gasket (improperly installed)	12
	Fuel inside the float	18
	Faulty float operation, float does not operate smoothly	16
	Deformed chamber (mating face, joint)	4

Symptom	Inspection Point	Symptom
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

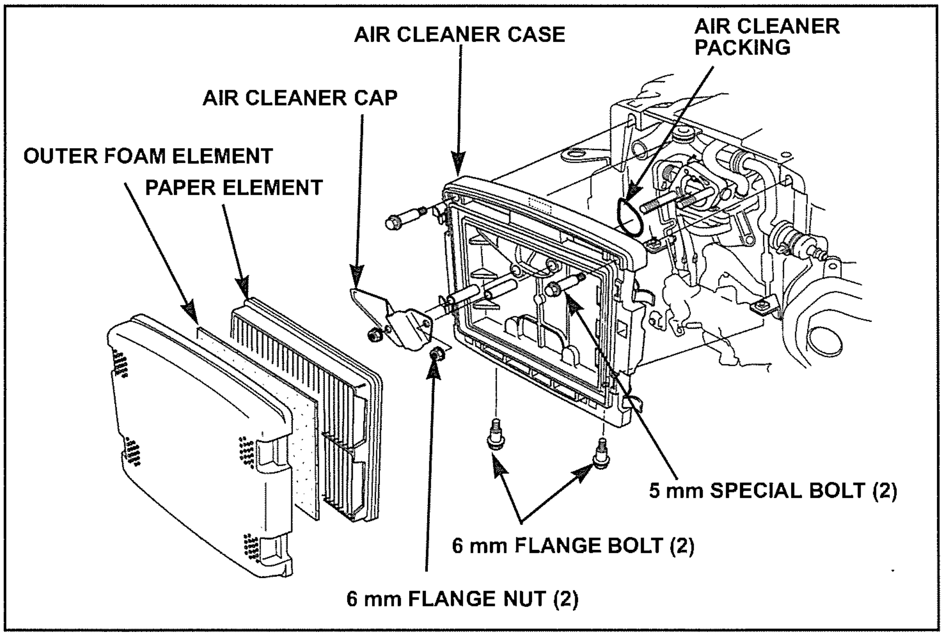
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)

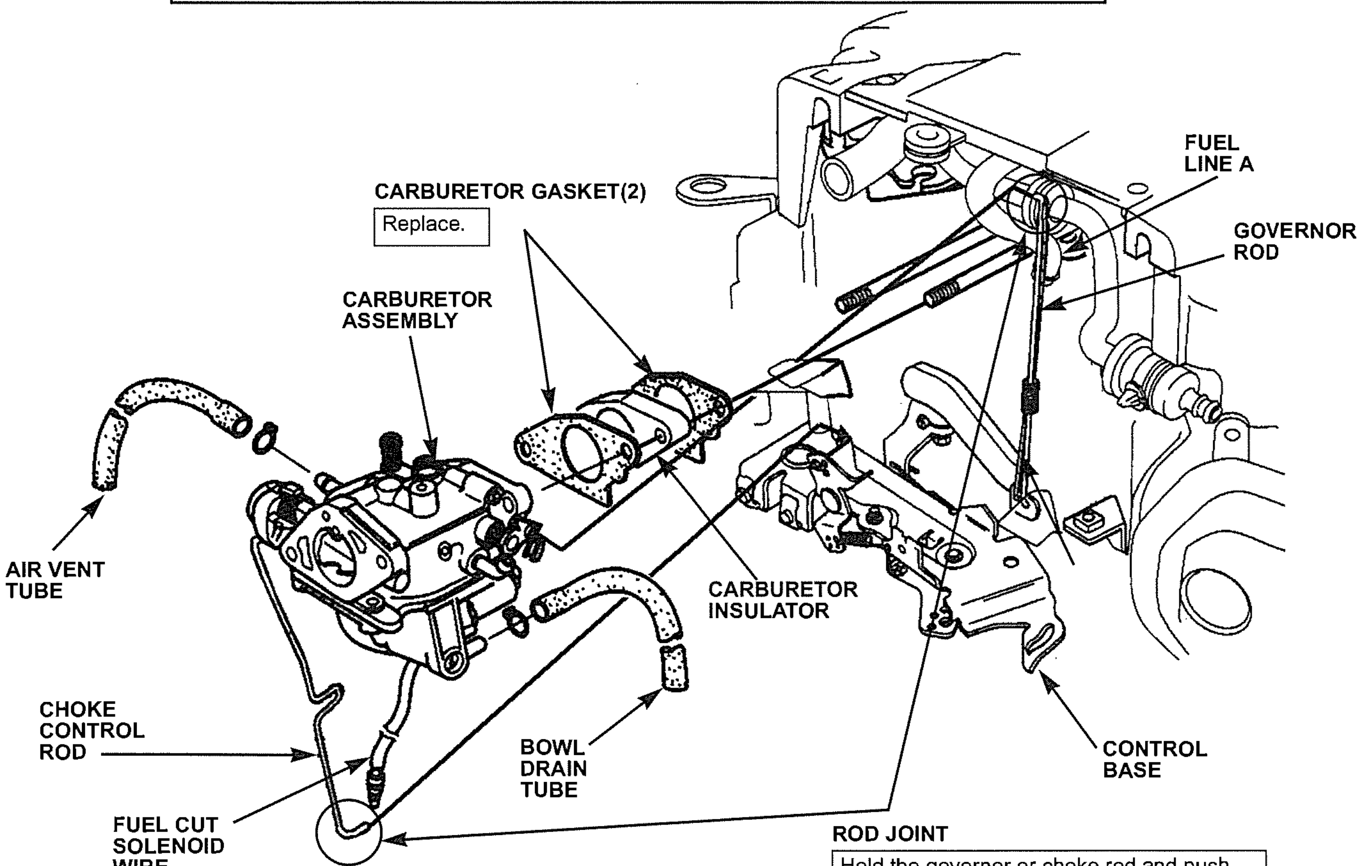




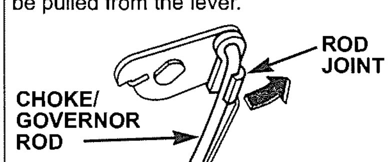
CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.





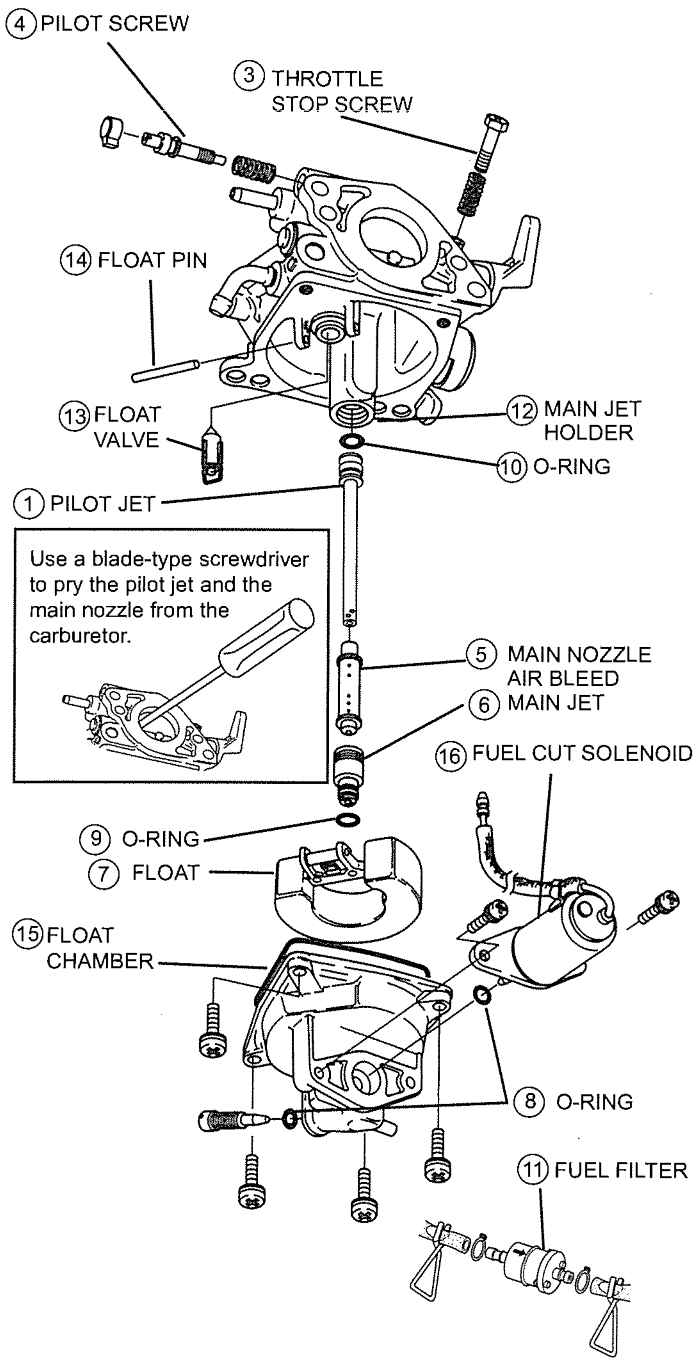
Hold the governor or choke rod and push the rod joint off, releasing the rod so it can be pulled from the lever.



DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

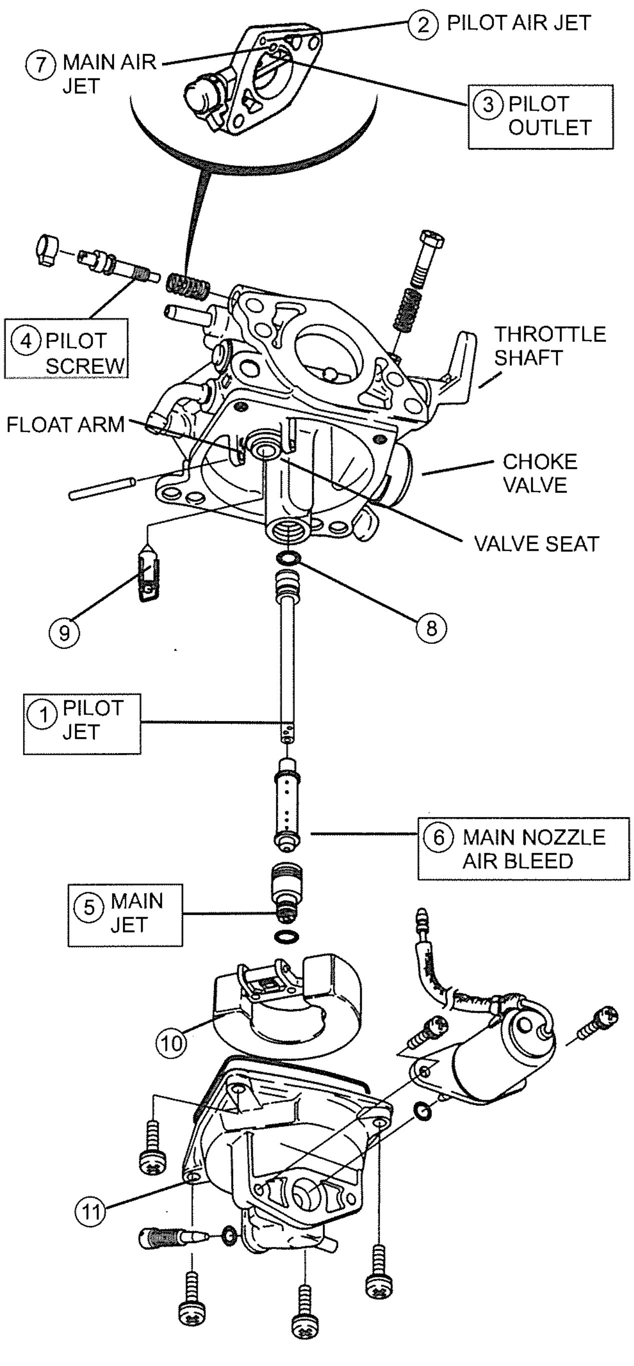
No.	Item	Clean	Replace
①	Check the pilot jet holes for clogging.	○	
②	Check the cover for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination and adjustment.	○	
⑤	Check the main nozzle air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the O-rings for damage (Do not remove unless damaged).		●
⑨	Check the main jet O-ring for damage.		●
⑩	Check the pilot screw O-rings for damage.		●
⑪	Check for dirt or foreign materials in the filter.	○	
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the fuel cut solenoid for proper operation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

CLEANING

BG-type carburetor shown.

The BG-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.

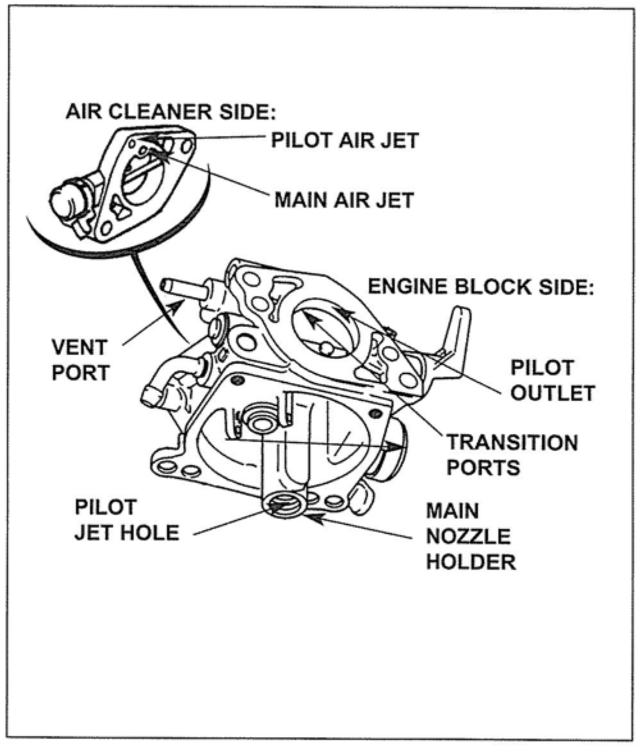


Item		Inspection/ Cleaning Tool
Slow Circuit		
(1)	Remove foreign material from the pilot jet.	Jet Cleaner Set
(2)	Clean the pilot air jet orifice.	Honda Carburetor Cleaner
(3)	Clean the pilot outlet.	
(4)	The pilot screw must be broken to be removed. Replace the pilot screw.	Low pressure compressed air
Main Circuit		
(5)	Remove foreign material from the main jet.	Jet Cleaner Set
(6)	Remove foreign material from the main nozzle air bleed holes.	Honda Carburetor Cleaner Low pressure compressed air
(7)	Clean the main air jet orifice.	
Float Circuit		
(8)	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
(9)	Clean the float valve and seat. Do not damage the seat and valve.	Low pressure compressed air
(10)	Check the float level.	Float level gauge
(11)	Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

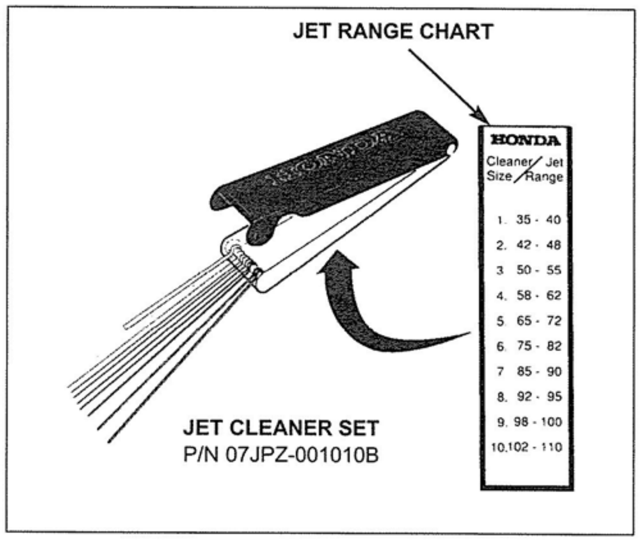
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

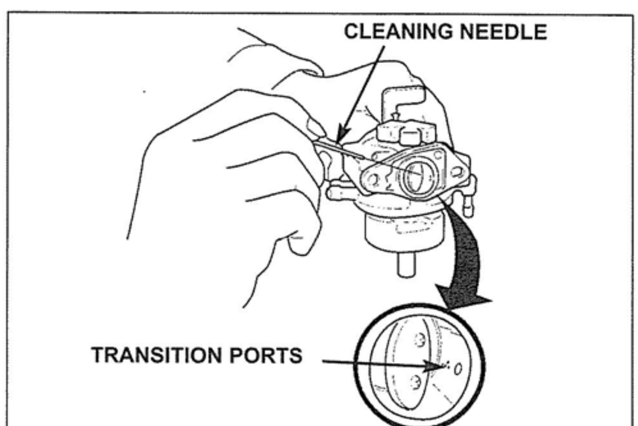
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



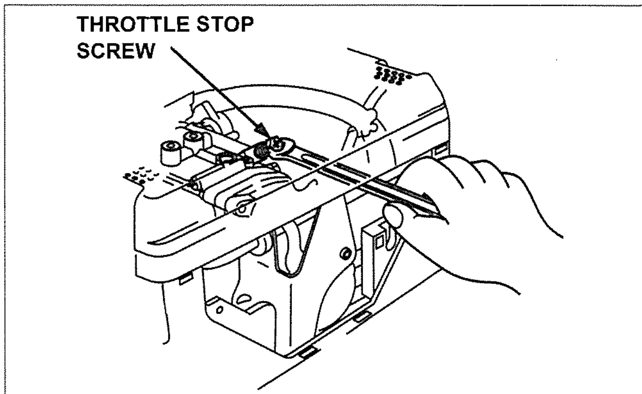
4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).

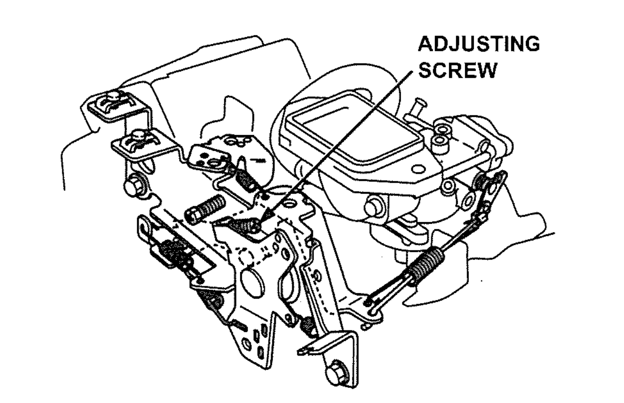


ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.





Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

   Throttle stop screw:
   - Turn clockwise .... rpm increases
   - Turn counterclockwise .... rpm decreases

Maximum Engine Speed Adjustment

1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST.

   Turn the adjusting screw on the control lever to set maximum speed.

   Control lever adjusting screw:
   - Turn clockwise .... rpm decreases
   - Turn counterclockwise .... rpm increase

NOTES

BG-TYPE

GX640

THEORY OF OPERATION

Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

Main Circuit

When the throttle valve opens, air passes through the venturi in the carburetor's throat. Because the venturi's diameter is smaller than the intake opening, the air speeds up as it passes through. This increased air velocity produces low pressure at the outlet of the main nozzle.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet and into the main fuel nozzle. Air passing through the air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.

Slow (Idle) Circuit

When the throttle valve is completely closed (idle), engine vacuum (low pressure) is present at the pilot outlet in the intake tract. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

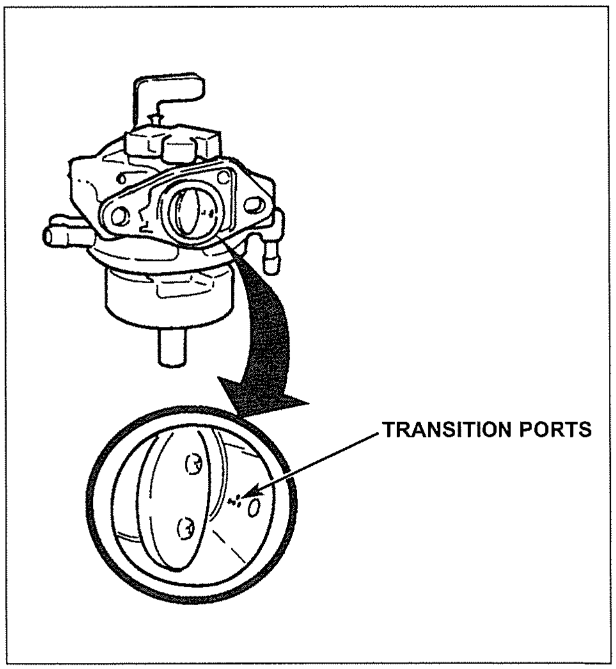
Transition Circuit

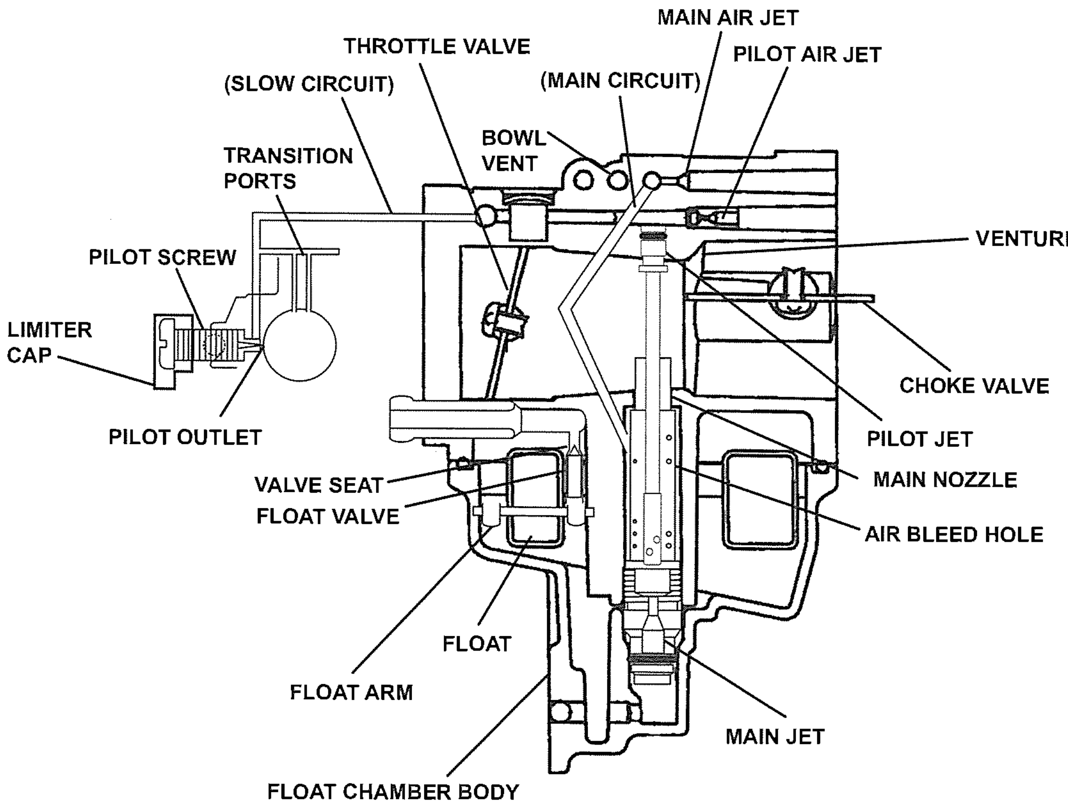
The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

The pilot screw does not control the fuel/air mixture that passes through the transition ports.

As the throttle plate opens farther, the vacuum at the transition ports decreases. As a result, there is very little flow through these orifices, and the air/fuel mixture for mid- and high-speed operation is provided almost completely by the main circuit.




MAIN AIR JET
THROTTLE VALVE
PILOT AIR JET
(SLOW CIRCUIT)
(MAIN CIRCUIT)
BOWL VENT
TRANSITION PORTS
VENTURI
PILOT SCREW
LIMITER CAP
CHOKE VALVE
PILOT OUTLET
PILOT JET
VALVE SEAT
MAIN NOZZLE
FLOAT VALVE
AIR BLEED HOLE
FLOAT
FLOAT ARM
MAIN JET
FLOAT CHAMBER BODY

CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.

❶ . . . . Inspection order before disassembly
① . . . . Reference number shown on next page

<Symptom> <Inspection Point> <Symptom>

Symptoms (left):
- Hard Starting
- Engine starts but soon stops

- Hunting
- rpm does not stabilize

Symptoms (right):
- Poor performance at low speed
- rpm does not decrease

- Poor performance at high speed
- rpm does not increase

Inspection points:

Order	Inspection Point	Ref.
❶	Faulty choke valve operation	⑧
❷	Misadjusted pilot screw	⑳
❸	Foreign material on the tip of the pilot screw	⑳
❹	Clogged pilot outlet	⑲
❺	Misadjusted throttle stop screw	㉔
❻	Fuel cut solenoid is not working properly	⑥
❼	Faulty throttle valve operation	⑩
❽	Faulty throttle shaft operation	⑩
	Clogged main jet	⑭

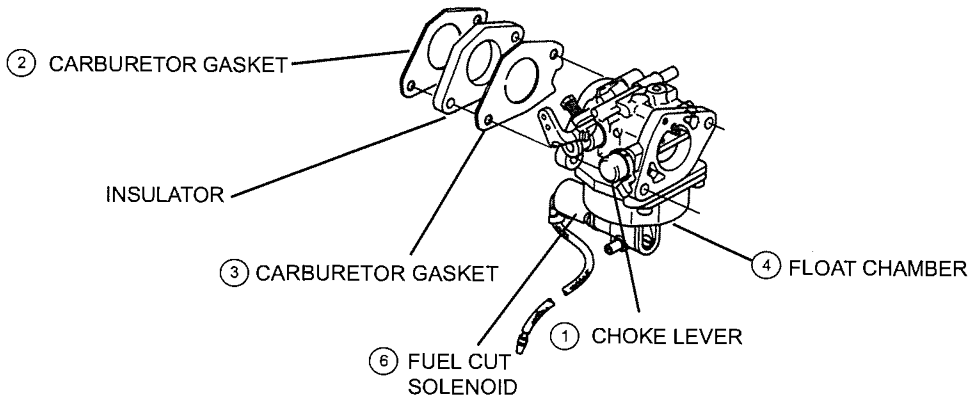
Order	Inspection Point	Ref.
	Improper installation of carburetor gasket	③
	Improper installation of carburetor gasket	②
	Air leaking through broken carburetor, insulator gasket or broken insulator	③
	Clogged pilot jet	㉒
	Clogged pilot air jet	⑤
	Clogged main jet	⑭
	Wrong main jet size	⑭
	Clogged float bowl atmospheric vent	㉓
	Clogged main air jet	⑨
	Clogged main nozzle air bleed hole	⑬
❶	Fuel cut solenoid is not working properly	⑥
❷	Water/foreign materials in the float chamber, corroded chamber	④
❸	Deteriorated gasoline in the float chamber	④

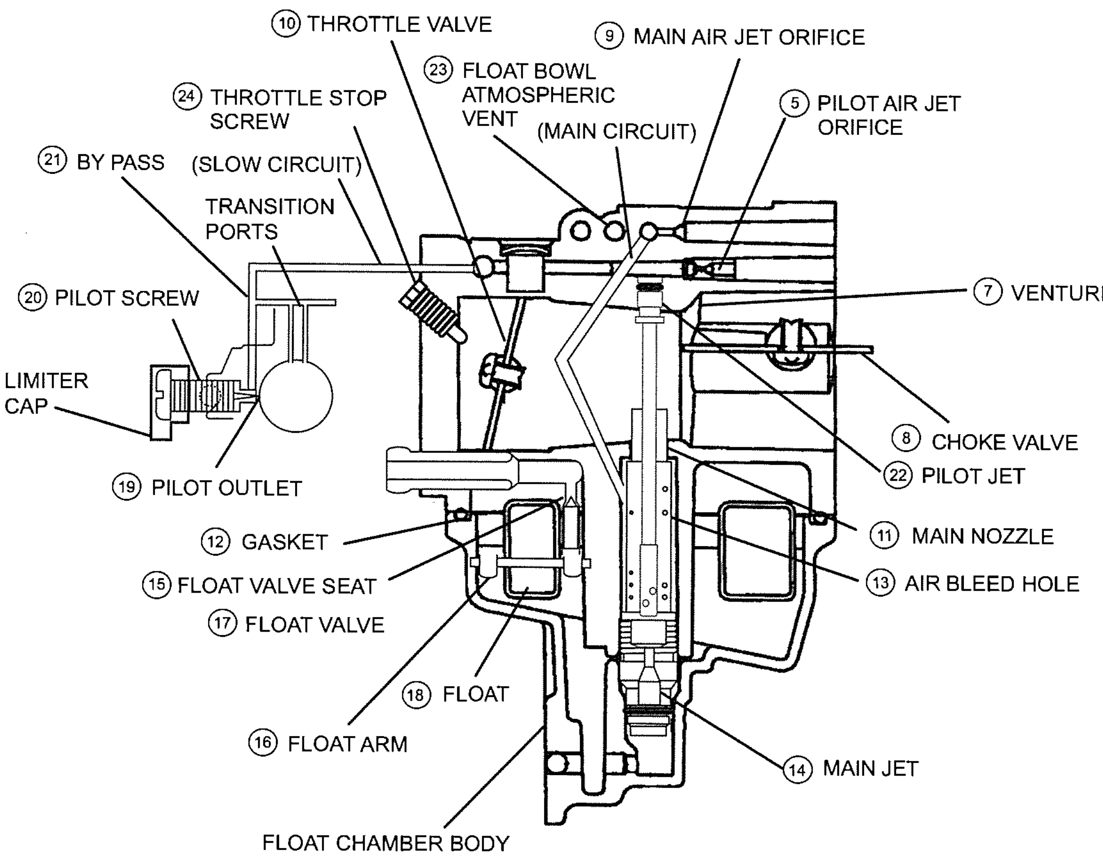
- Float bowl overflowing
- Gasoline leaks

Order	Inspection Point	Ref.
❶	Damaged/contaminated float valve seating surface	⑮
	Foreign materials on the tip of float valve	⑰
❷	Clogged float bowl atmospheric vent	㉓
❸	Faulty chamber gasket (improperly installed)	⑫
	Fuel inside the float	⑱
	Faulty float operation, float does not operate smoothly	⑯
	Deformed chamber (mating face, joint)	④

Symptom	Inspection Point	Cause
• Hunting • Spitting • Engine stalling • Hard Starting	• Air leaking past the carburetor insulator gasket • Clogged jets, worn throttle shaft • Overheating of the carburetor chamber/fuel passage • Wrong main jet size • Restricted pilot jet	• Lean fuel mixture • Percolation • Overheating • Set for high elevation
• Wet fouled spark plug • Power drops, rpm does not stabilize • Black smoke from muffler, engine stalls	• Clogged air cleaner • Faulty choke operation • Wrong main jet size • Deteriorated gasoline • Blocked main nozzle/venturi bore	• Rich fuel mixture • Icing (Low ambient temperature, high humidity, snow in the nozzle/bore)

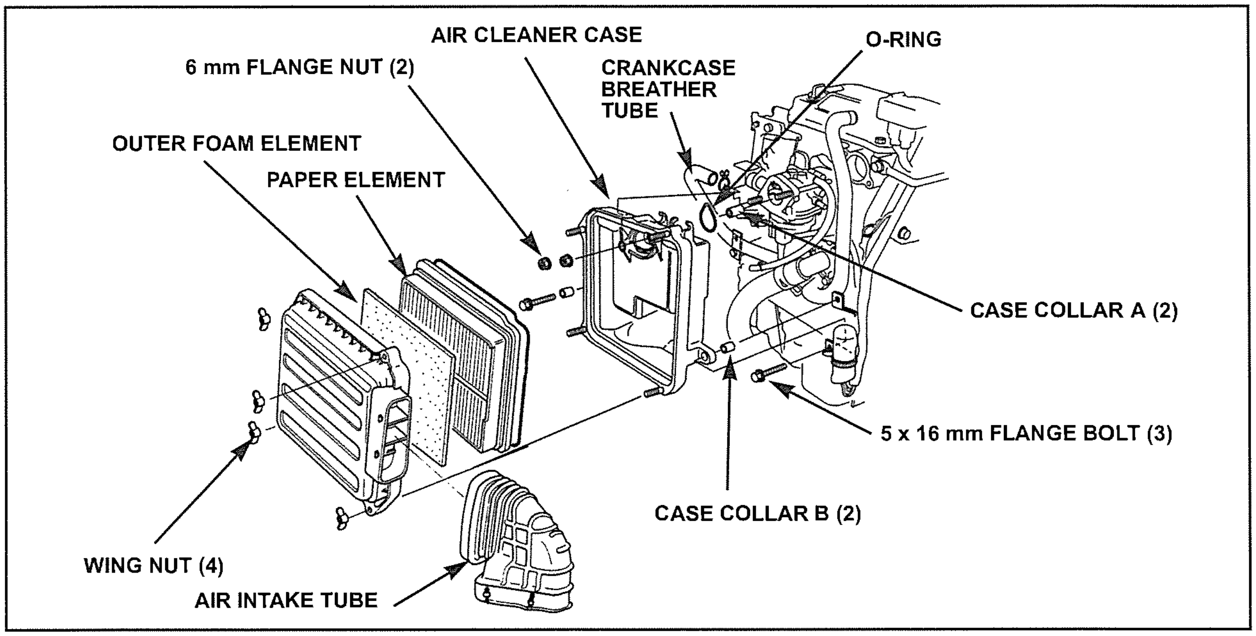
CARBURETOR TROUBLESHOOTING INSPECTION POINTS (CONT.)

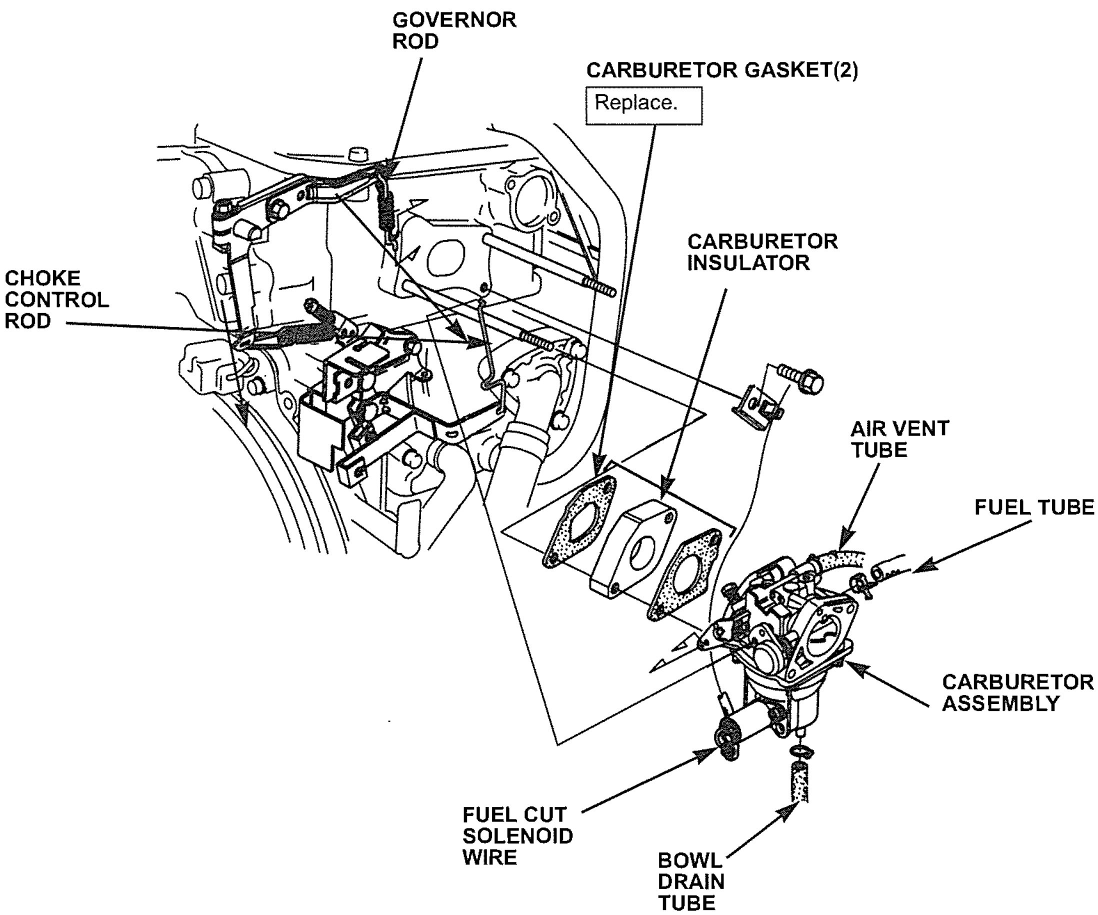




CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.

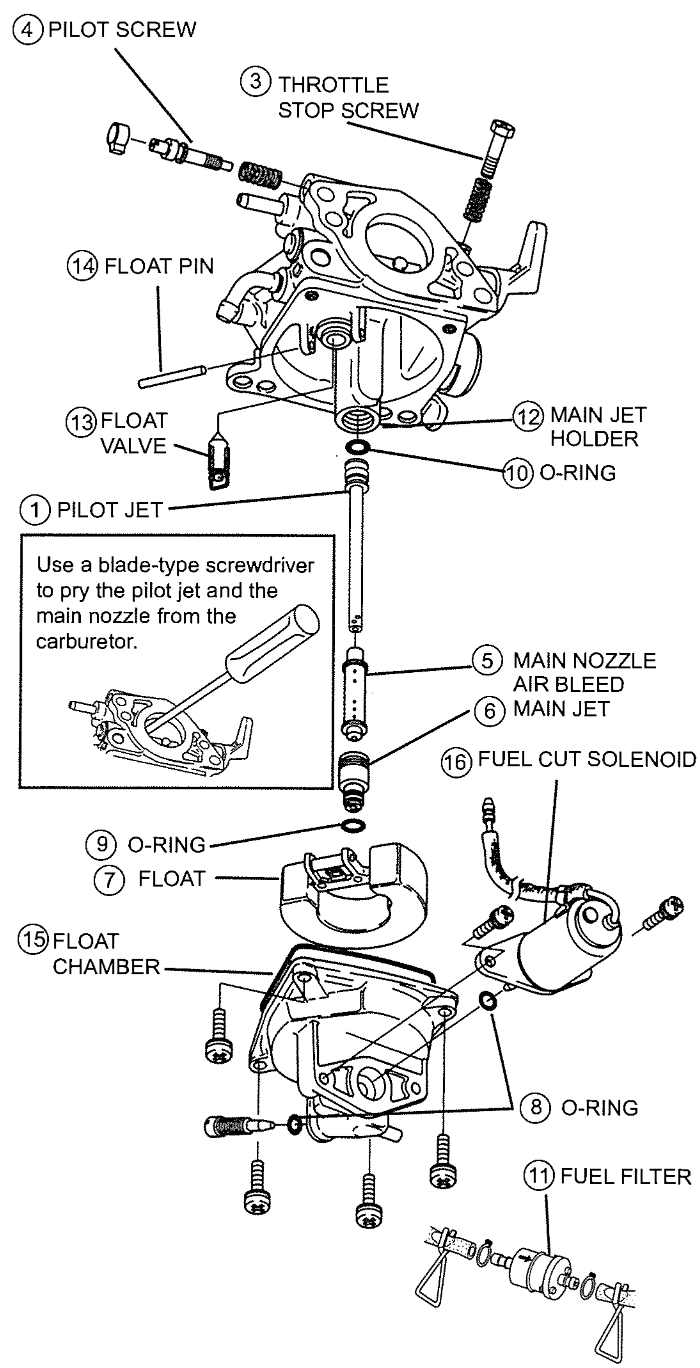




DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

Disassembly



Inspection

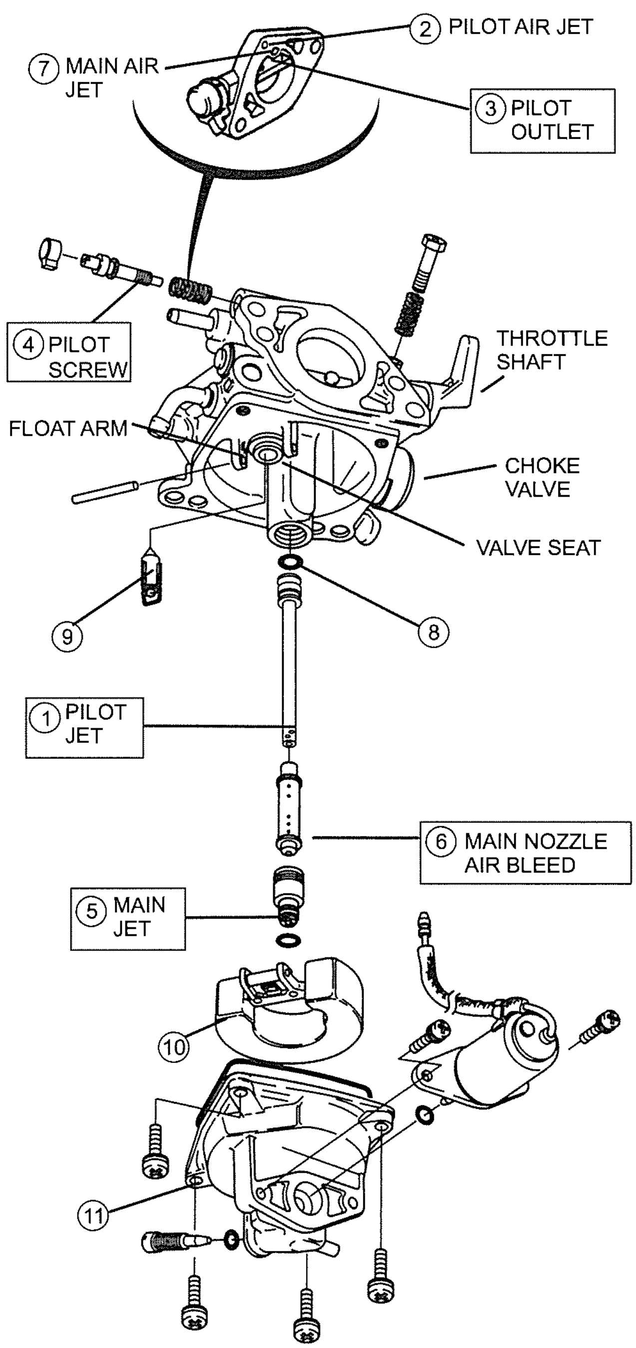
No.	Item	Clean	Replace
①	Check the pilot jet holes for clogging.	○	
②	Check the cover for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination and adjustment.	○	
⑤	Check the main nozzle air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the O-rings for damage (Do not remove unless damaged).		●
⑨	Check the main jet O-ring for damage.		●
⑩	Check the pilot screw O-rings for damage.		●
⑪	Check for dirt or foreign materials in the filter.	○	
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the fuel cut solenoid for proper operation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

CLEANING

BG-type carburetor shown.

The BG-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.



	Item	Inspection/ Cleaning Tool
Slow Circuit		
(1)	Remove foreign material from the pilot jet.	Jet Cleaner Set
(2)	Clean the pilot air jet orifice.	Honda Carburetor Cleaner
(3)	Clean the pilot outlet.	
(4)	The pilot screw must be broken to be removed. Replace the pilot screw.	Low pressure compressed air
Main Circuit		
(5)	Remove foreign material from the main jet.	Jet Cleaner Set
(6)	Remove foreign material from the main nozzle air bleed holes.	Honda Carburetor Cleaner Low pressure compressed air
(7)	Clean the main air jet orifice.	
Float Circuit		
(8)	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
(9)	Clean the float valve and seat. Do not damage the seat and valve.	Low pressure compressed air
(10)	Check the float level.	Float level gauge
(11)	Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.

NOTICE

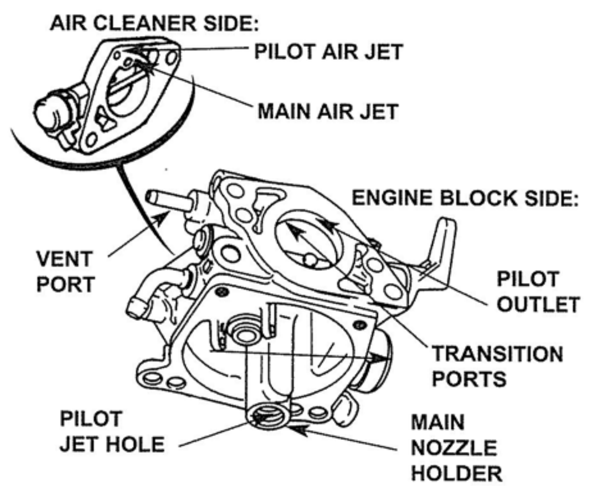
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

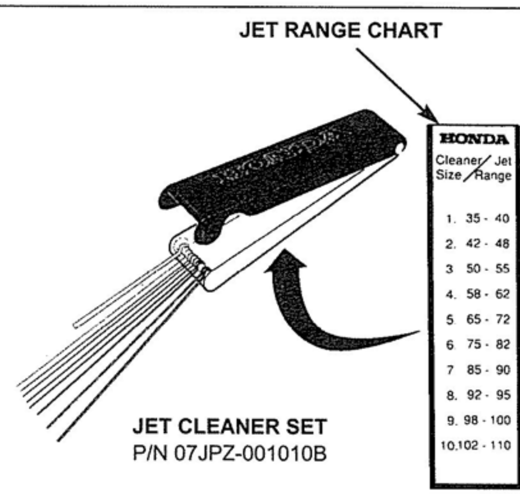
1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

   NOTICE

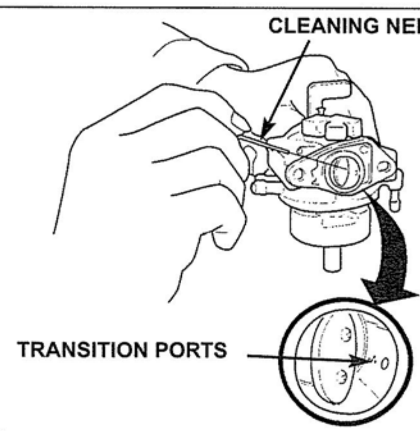
   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.





4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

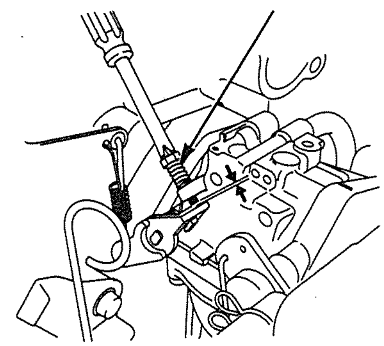
Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

• Idle Speed Adjustment

1. Start the engine and allow it to reach normal operating temperature.
2. Turn the throttle stop screw to obtain the standard idle speed.

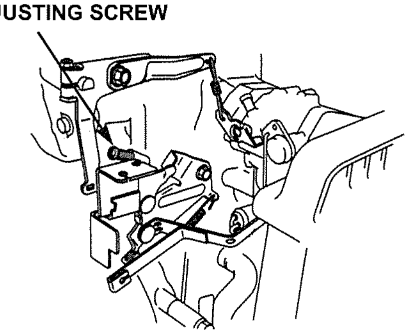
   Standard idle speed: 1,400 ± 100 rpm



• Maximum Speed Adjustment

1. Start the engine and allow it to reach normal operating temperature.
2. Move the throttle lever to the full throttle position and check the maximum engine speed.

   Standard maximum: 3,750 ± 100 rpm
3. Adjust the maximum speed by turning the adjusting screw.



NOTES

BK-TYPE
GX670
Theory Of Operation
• Float Chamber

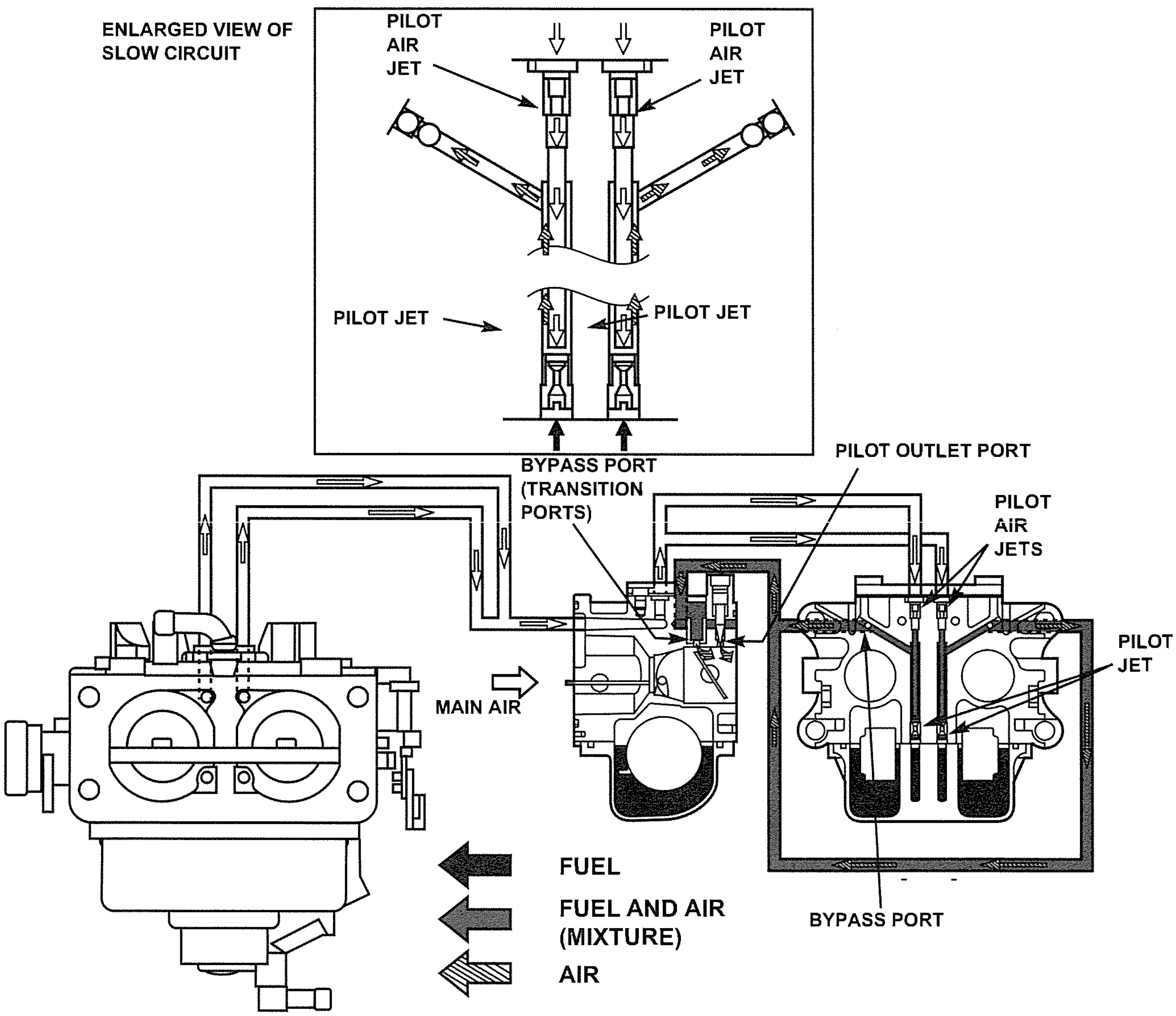
When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

• Slow Circuit

When the throttle is open for the low speed running, vacuum is made downstream of the throttle valve (engine side) by the suction stroke of the piston.

This vacuum is applied to the pilot outlet port and the bypass port (transition ports) located downstream of the throttle valve. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

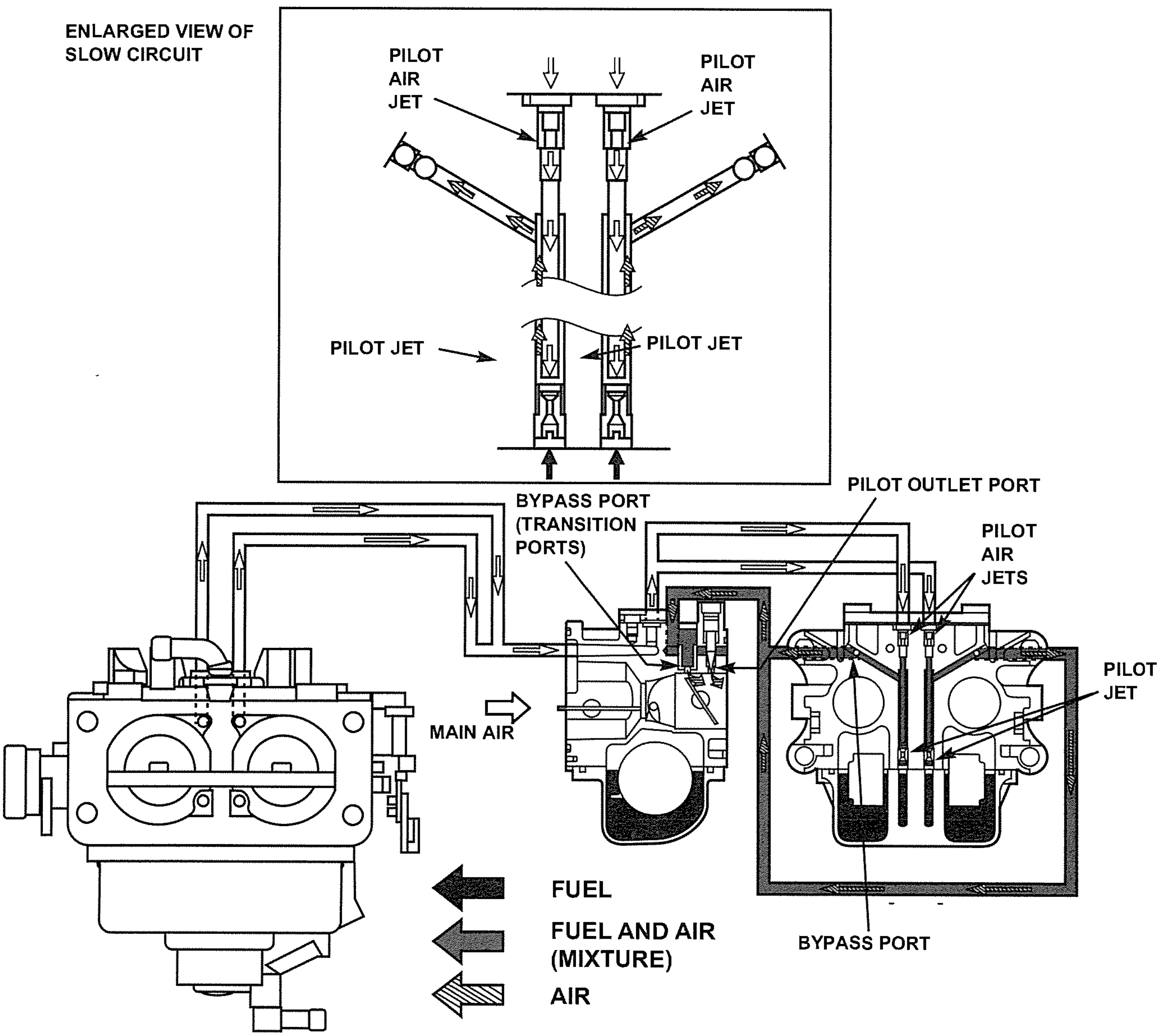


• TRANSITION CIRCUIT

The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

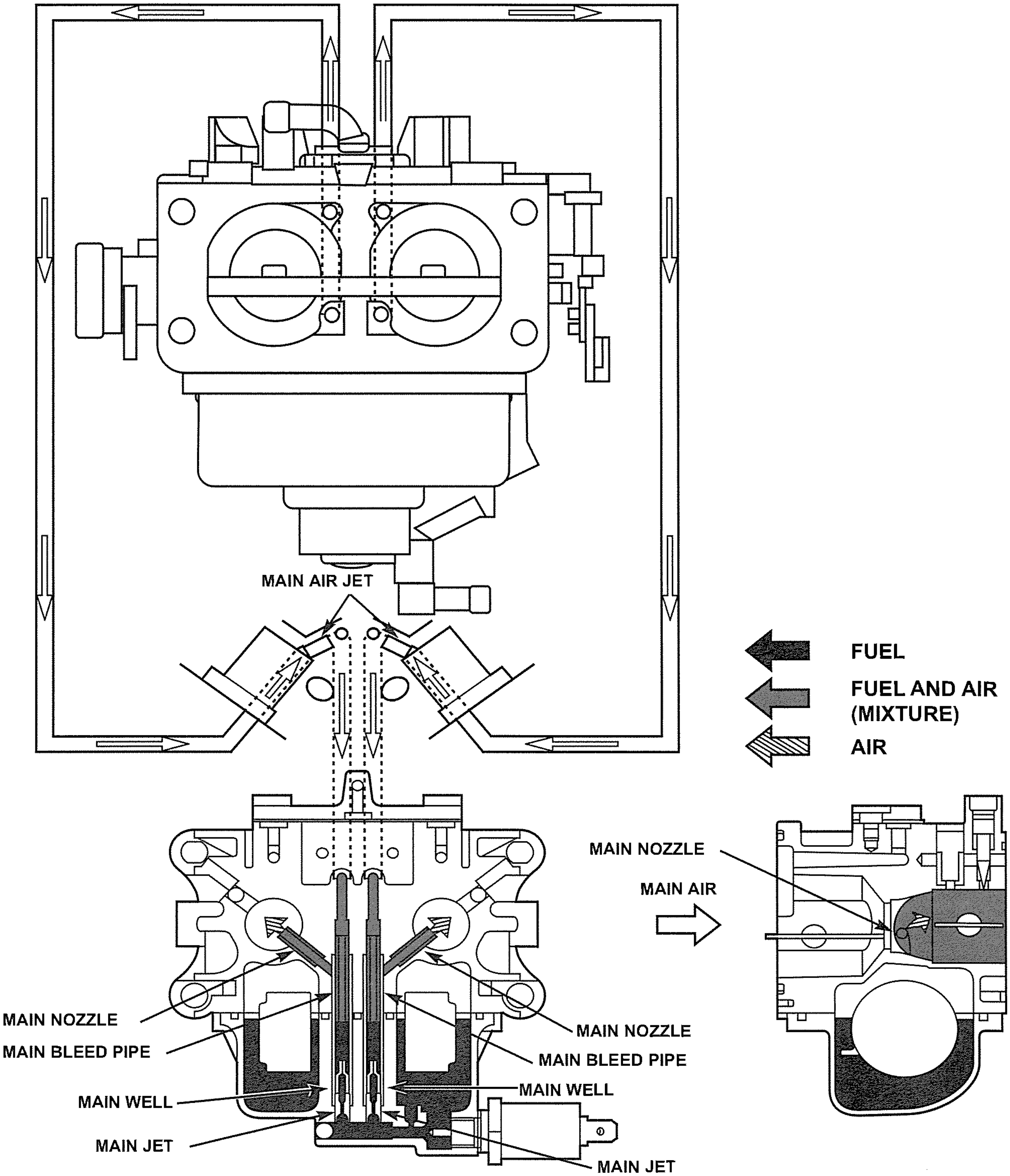
The pilot screw does not control the fuel/air mixture that passes through the transition ports.



• Main Circuit

When the throttle is open for middle speed or high speed running, the air that passed through the air cleaner passes through the suction port and venturi as the main air, and it is sucked into the engine.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet, and into the main bleed pipe. Air passing through the main air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.



CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

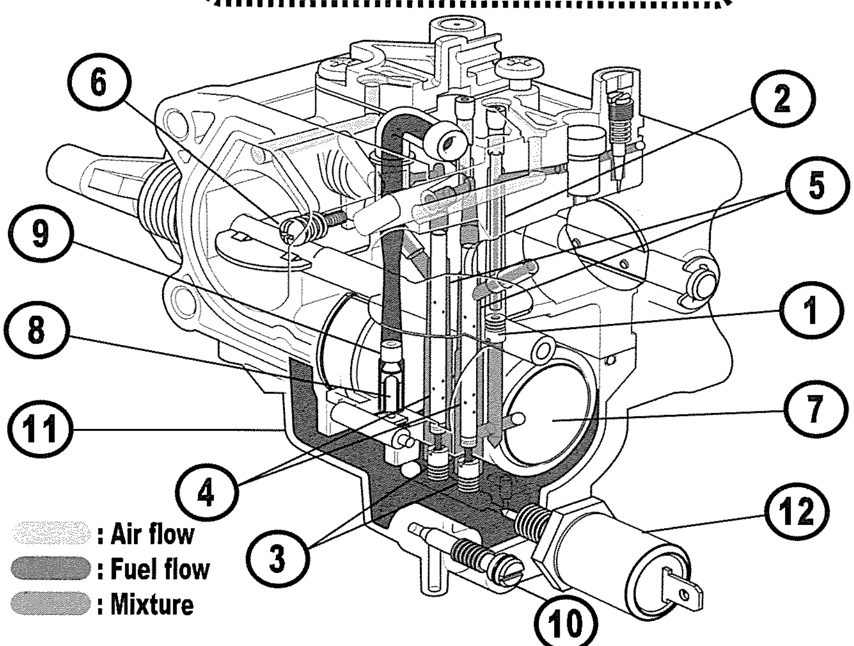
- **Engine does not start**
- **Hard starting**
- **Engine starts but quickly stops**

Symptom	Point	Action
Main jet clogged.	3	Remove foreign materials/dirt.
Main nozzle clogged.	4	Remove foreign materials/dirt.
Main nozzle air path clogged.	5	Remove foreign materials/dirt.
Throttle stop screw position incorrect.	6	Set correct idle speed.
Float doesn't move properly.	7	Remove foreign materials around float pin.

- **Engine speed does not increase**
- **Poor performance at high speed**
- **Unstable engine speed**

Symptom	Point	Action
Pilot jet clogged.	1	Remove foreign materials/dirt.
Pilot jet air path clogged.	2	Remove foreign materials/dirt.
Main jet clogged.	3	Remove foreign materials/dirt.
Main nozzle clogged.	4	Remove foreign materials/dirt.
Main nozzle air path clogged.	5	Remove foreign materials/dirt.

① ③ ④ ⑧ ⑨ : Priority check Points



⑩ Engine storage (More than 3 months)

Drain gasoline from the float chamber by loosening the drain screw while the engine is stopped.

⑪ Check float chamber

Water inside the float chamber can cause engine failure. Remove float chamber and clean or replace.

⑫ Fuel cut solenoid valve

Connect the 12V battery to the fuel cut solenoid valve connector as shown.
Check the needle of the valve, it should retract in when powered.

OFF ON

- **Unstable idle speed**
- **Poor performance at low speed**

Symptom	Point	Action
Pilot jet clogged.	1	
Pilot jet air path clogged.	2	Remove foreign materials/dirt.

- **Overflow**
- **Gasoline leaks**

Symptom	Point	Action
Float valve worn or coated with foreign materials/ dirt.	8	Remove foreign materials/dirt.
Valve seat worn or coated with foreign materials/ dirt.	9	Remove foreign materials/dirt.

Don't damage the seat surface

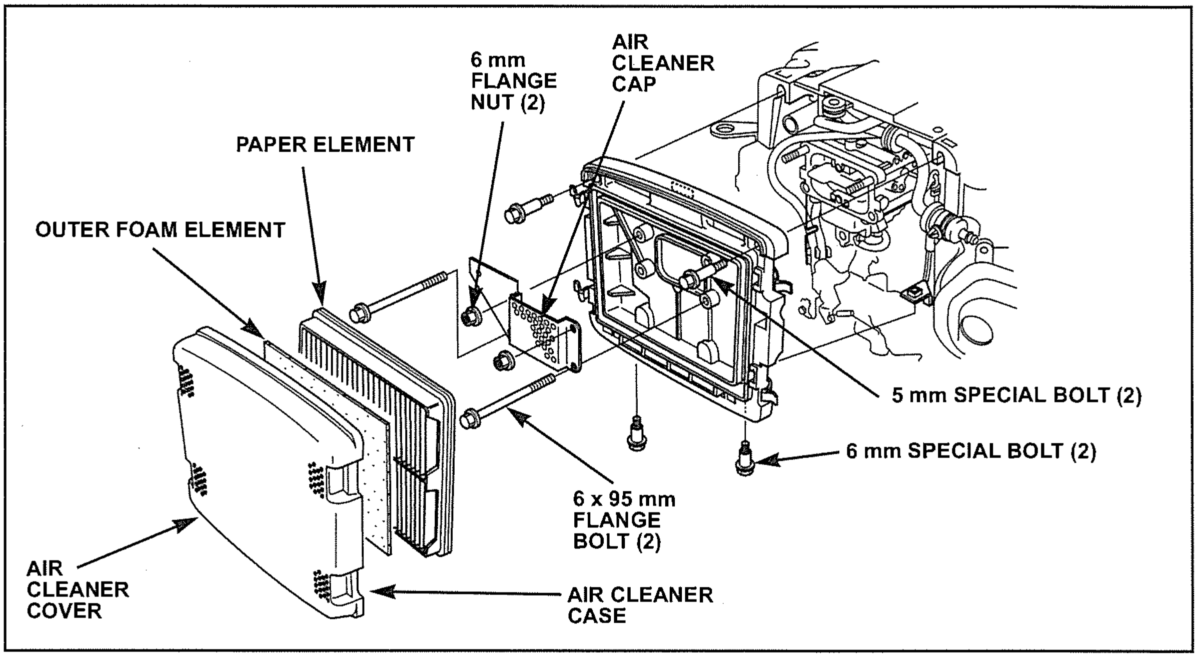
*For General Reference Only**

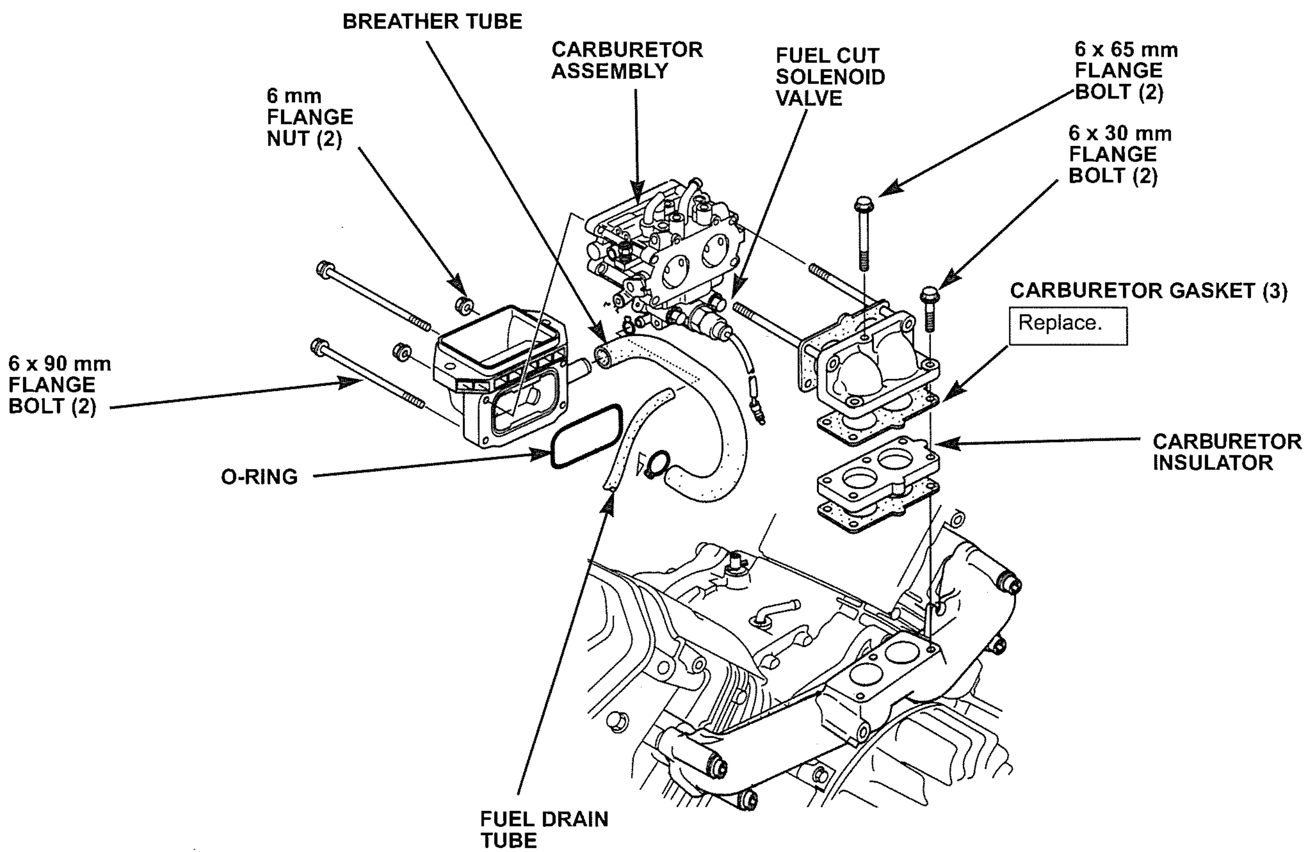
FUEL — COMPRESSION — IGNITION (Three Elements of Engine)

Before inspecting the fuel system, perform the minimum inspection for compression and ignition system.

CARBURETOR REMOVAL

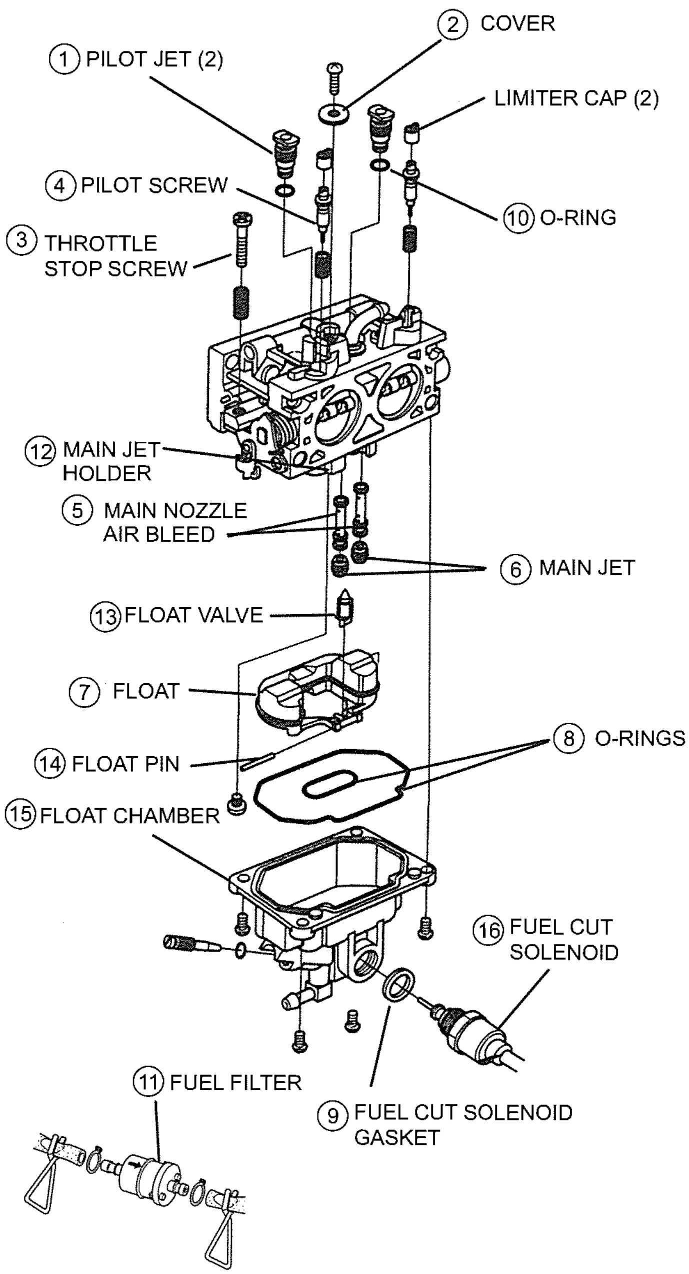
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.





DISASSEMBLY/INSPECTION

Disassembly



Inspection

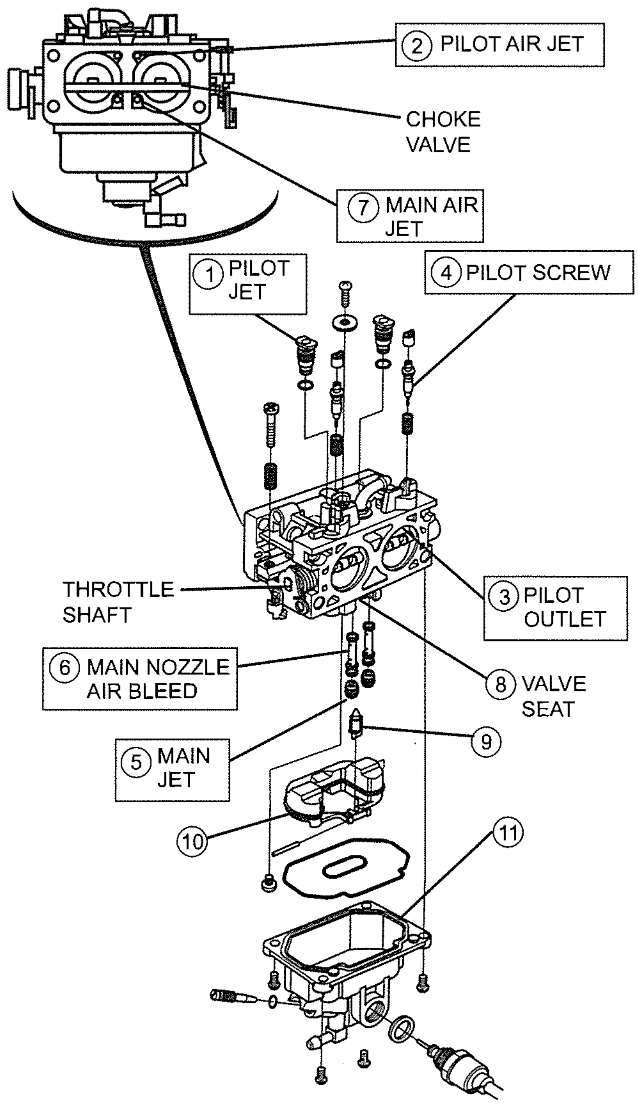
No.	Item	Clean	Replace
①	Check the pilot jet holes for clogging.	○	
②	Check the cover for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination and adjustment.	○	
⑤	Check the main nozzle air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the O-rings for damage (Do not remove unless damaged).		●
⑨	Check the gasket for damage if gasoline leaks from the fuel cut solenoid.		●
⑩	Check the pilot screw O-rings for damage.		●
⑪	Check for dirt or foreign materials in the filter.	○	
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the fuel cut solenoid for proper operation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

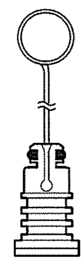
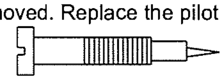
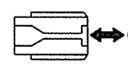
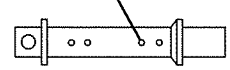
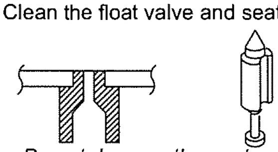
CLEANING

BK-type carburetor shown.

The BK-type has some components that are not found on other Honda carburetors.

▭ : Indicates parts that are likely to be clogged; clean carefully.

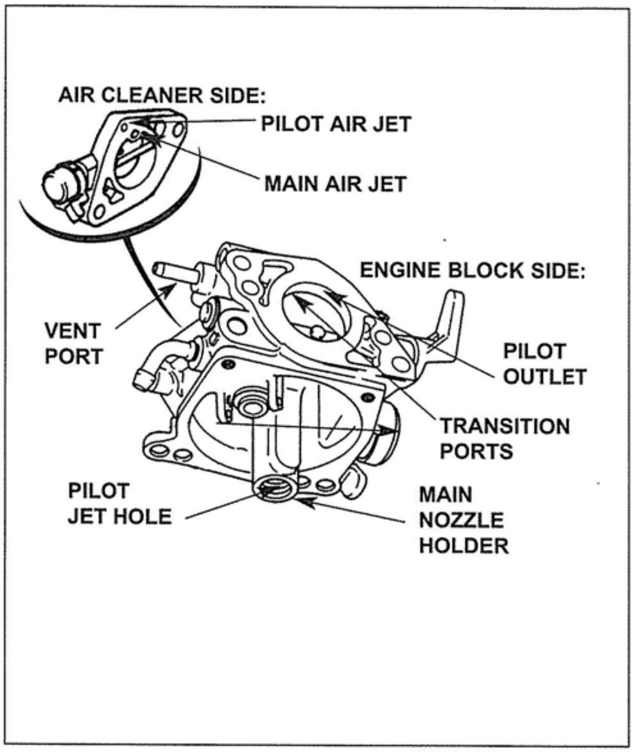


	Item	Inspection/ Cleaning Tool
Slow Circuit		
①	Remove foreign material from the pilot jet. 	Jet Cleaner Set Honda Carburetor Cleaner
②	Clean the pilot air jet orifice.	Low pressure compressed air
③	Clean the pilot outlet.	
④	The pilot screw must be broken to be removed. Replace the pilot screw. 	
Main Circuit		
⑤	Remove foreign material from the main jet. 	Jet Cleaner Set Honda Carburetor Cleaner
⑥	Remove foreign material from the main nozzle air bleed holes. 	Low pressure compressed air
⑦	Clean the main air jet orifice.	
Float Circuit		
⑧	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
⑨	Clean the float valve and seat.  *Do not damage the seat and valve.*	Low pressure compressed air
⑩	Check the float level.	Float level gauge
⑪	Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

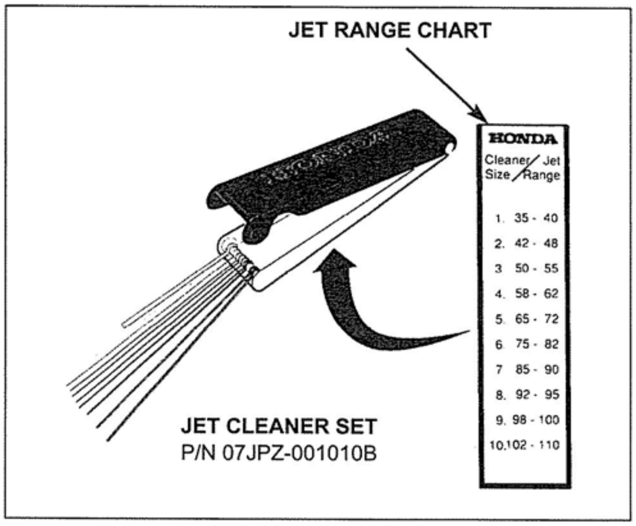
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

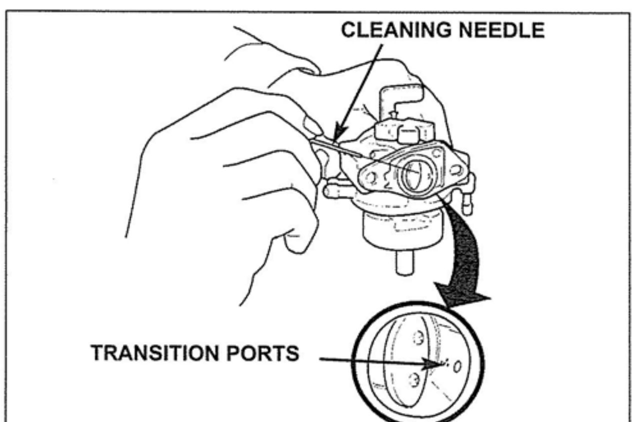
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

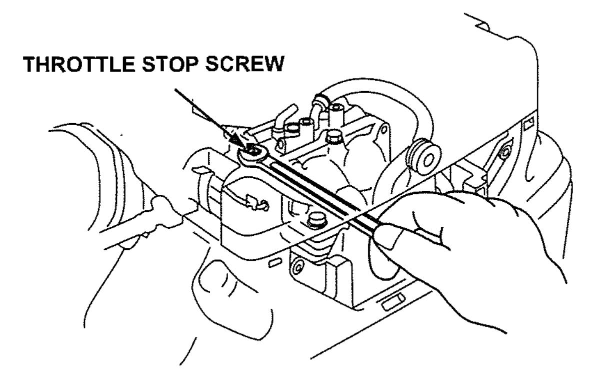
- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

   Throttle stop screw:

   - Turn clockwise .... rpm increases
   - Turn counterclockwise .... rpm decreases



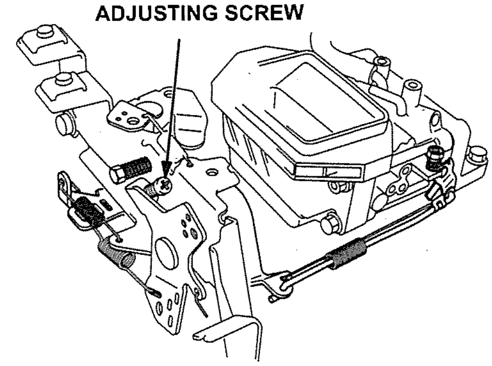
Maximum Engine Speed Adjustment

1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST.

   Turn the adjusting screw on the control lever to set maximum speed.

   Control lever adjusting screw:

   - Turn clockwise .... rpm decreases
   - Turn counterclockwise .... rpm increase



NOTES

BK-TYPE

GXV670

Theory Of Operation

• Float Chamber

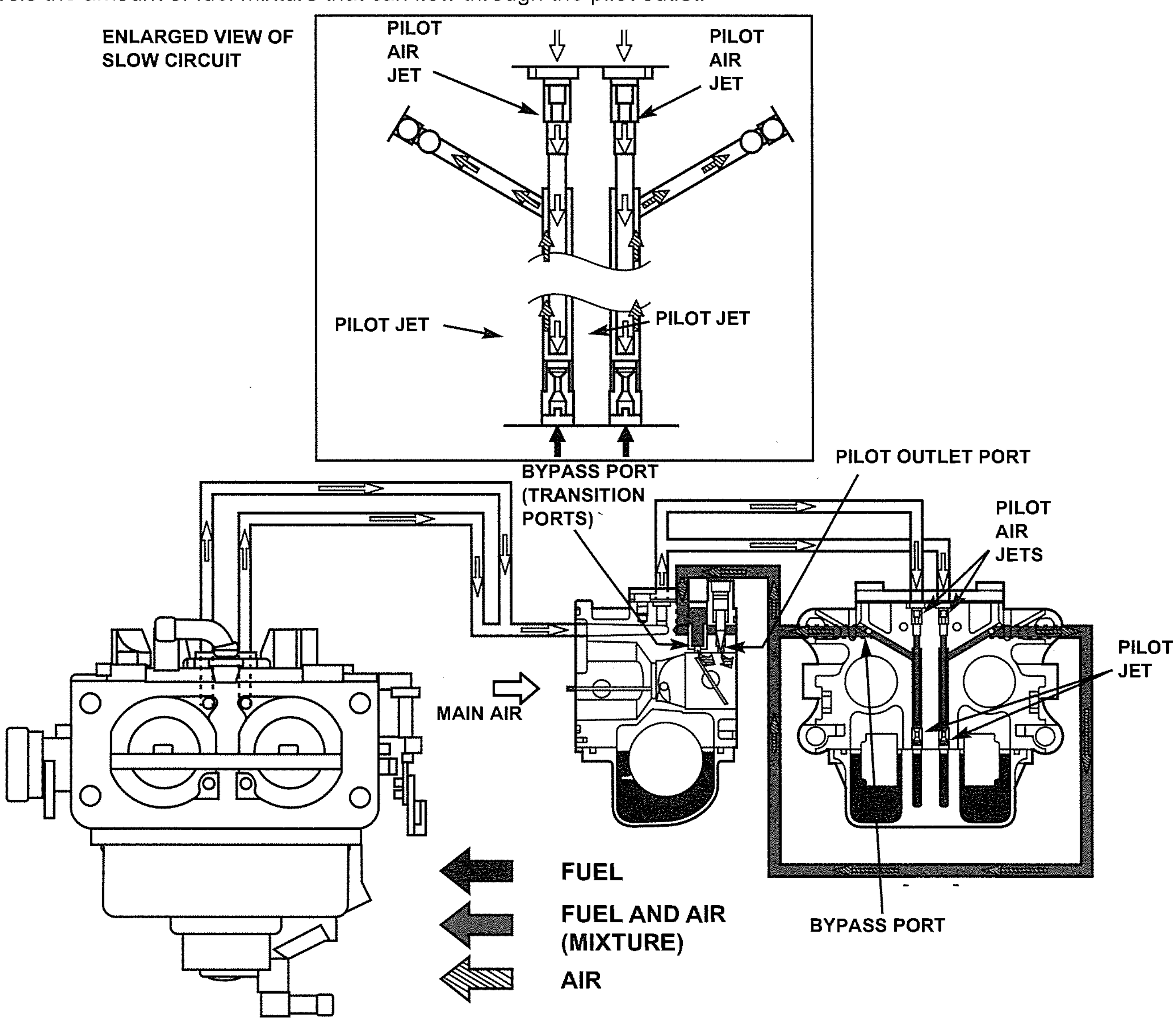
When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

• Slow Circuit

When the throttle is open for the low speed running, vacuum is made downstream of the throttle valve (engine side) by the suction stroke of the piston.

This vacuum is applied to the pilot outlet port and the bypass port (transition ports) located downstream of the throttle valve. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

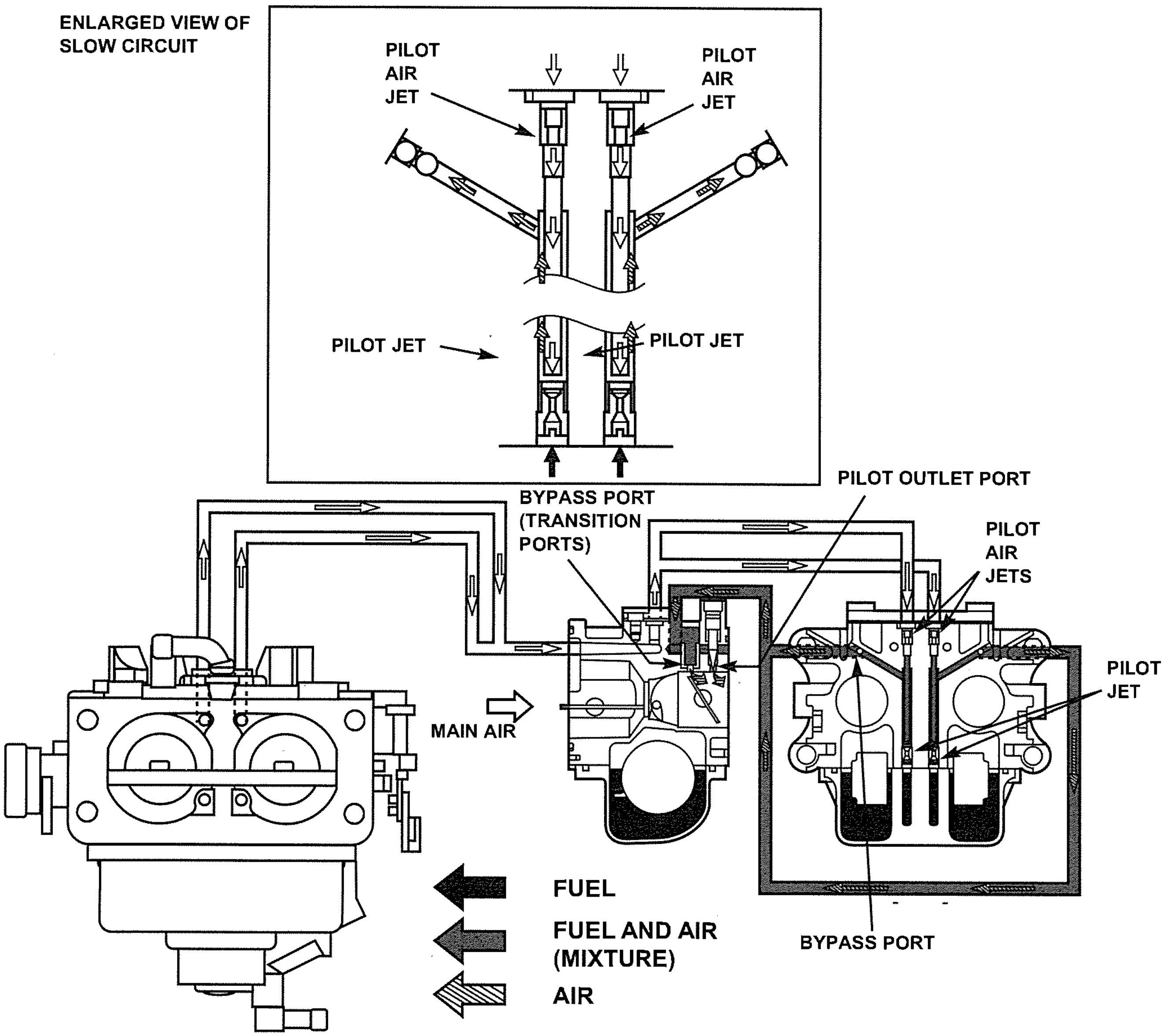


• TRANSITION CIRCUIT

The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

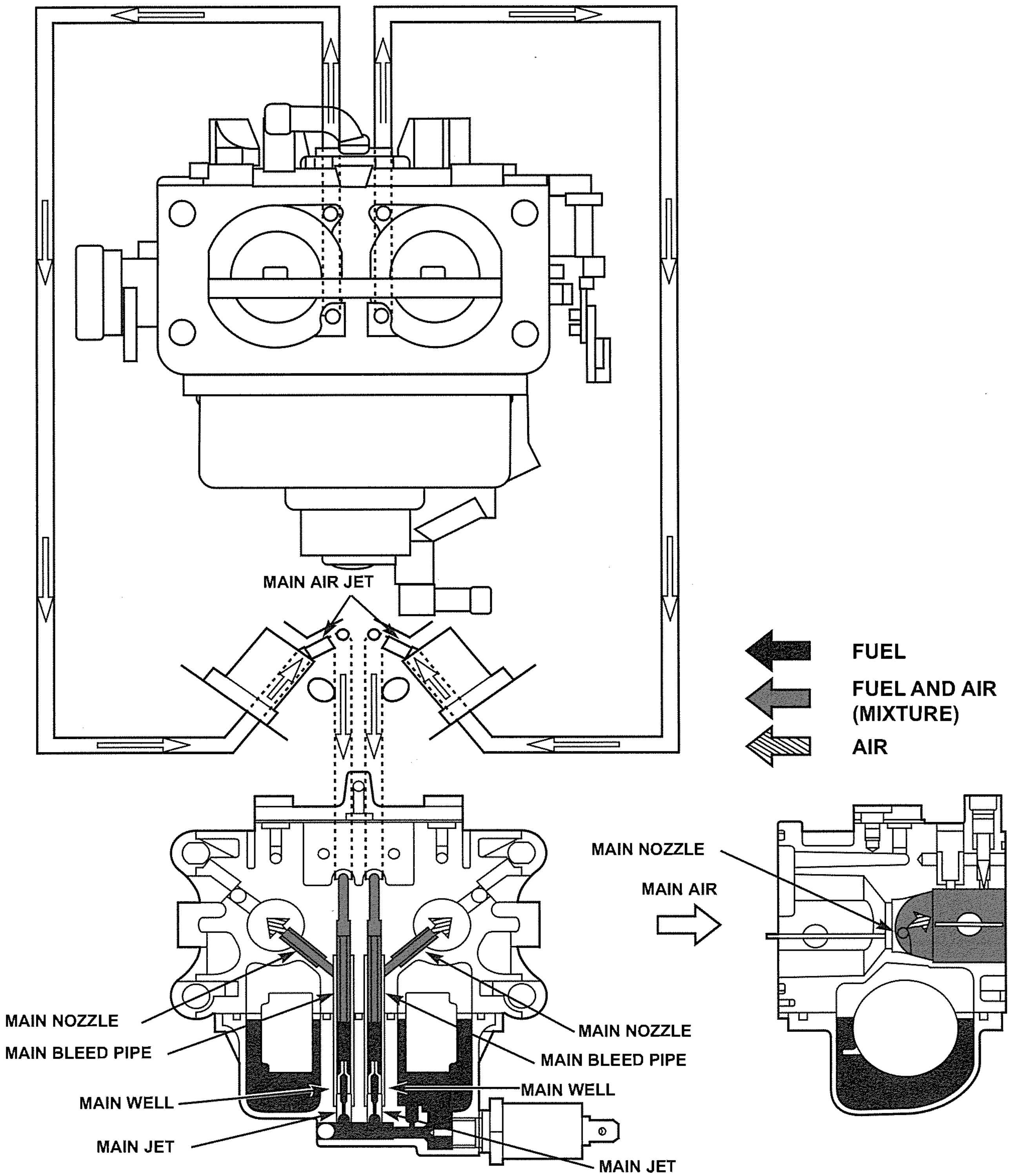
The pilot screw does not control the fuel/air mixture that passes through the transition ports.



• Main Circuit

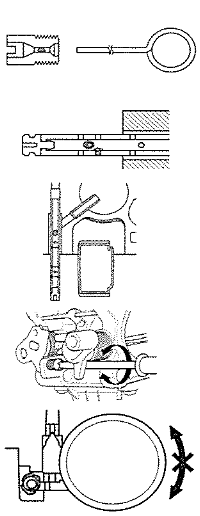
When the throttle is open for middle speed or high speed running, the air that passed through the air cleaner passes through the suction port and venturi as the main air, and it is sucked into the engine.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet, and into the main bleed pipe. Air passing through the main air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.



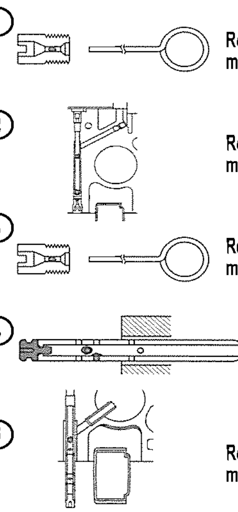
CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

◆ Engine does not start
◆ Hard starting
◆ Engine starts but quickly stops



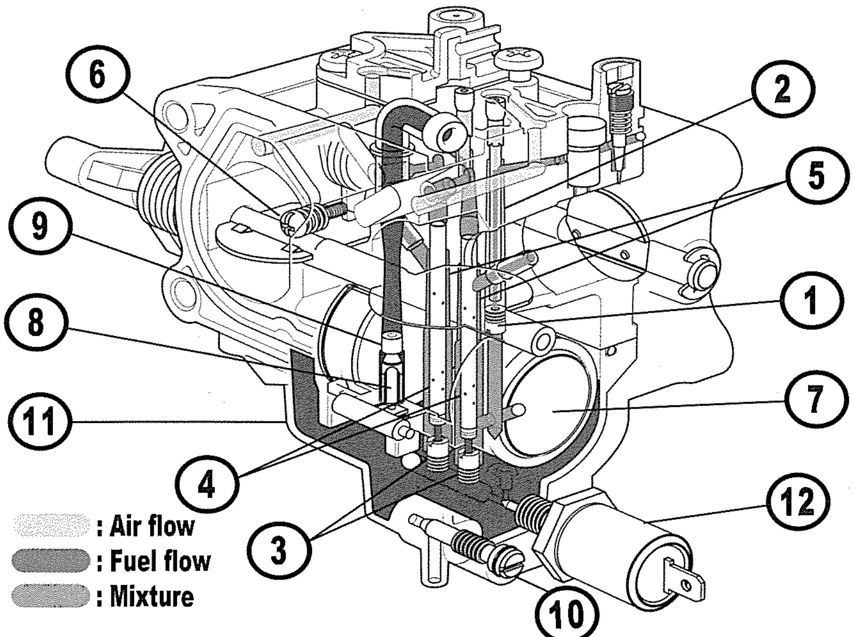
- Main jet clogged. — ③ Remove foreign materials/dirt.
- Main nozzle clogged. — ④ Remove foreign materials/dirt.
- Main nozzle air path clogged. — ⑤ Remove foreign materials/dirt.
- Throttle stop screw position incorrect. — ⑥ Set correct idle speed.
- Float doesn't move properly. — ⑦ Remove foreign materials around float pin.

◆ Engine speed does not increase
◆ Poor performance at high speed
◆ Unstable engine speed



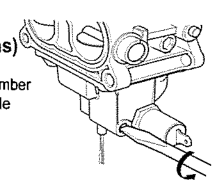
- Pilot jet clogged. — ① Remove foreign materials/dirt.
- Pilot jet air path clogged. — ② Remove foreign materials/dirt.
- Main jet clogged. — ③ Remove foreign materials/dirt.
- Main nozzle clogged. — ④ Remove foreign materials/dirt.
- Main nozzle air path clogged. — ⑤ Remove foreign materials/dirt.

① ③ ④ ⑧ ⑨ : Priority check Points



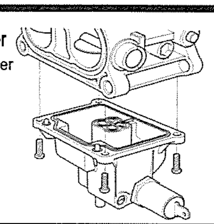
⑩ Engine storage (More than 3 months)

Drain gasoline from the float chamber by loosening the drain screw while the engine is stopped.



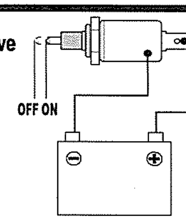
⑪ Check float chamber

Water inside the float chamber can cause engine failure. Remove float chamber and clean or replace.

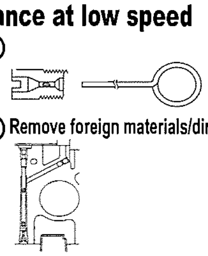


⑫ Fuel cut solenoid valve

Connect the 12V battery to the fuel cut solenoid valve connector as shown. Check the needle of the valve, it should retract in when powered.



◆ Unstable idle speed
◆ Poor performance at low speed



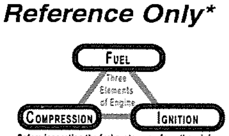
- Pilot jet clogged. — ①
- Pilot jet air path clogged. — ② Remove foreign materials/dirt.

◆ Overflow
◆ Gasoline leaks

- Float valve worn or coated with foreign materials/dirt. — ⑧ Remove foreign materials/dirt.
- Valve seat worn or coated with foreign materials/dirt. — ⑨ Remove foreign materials/dirt.

Don't damage the seat surface

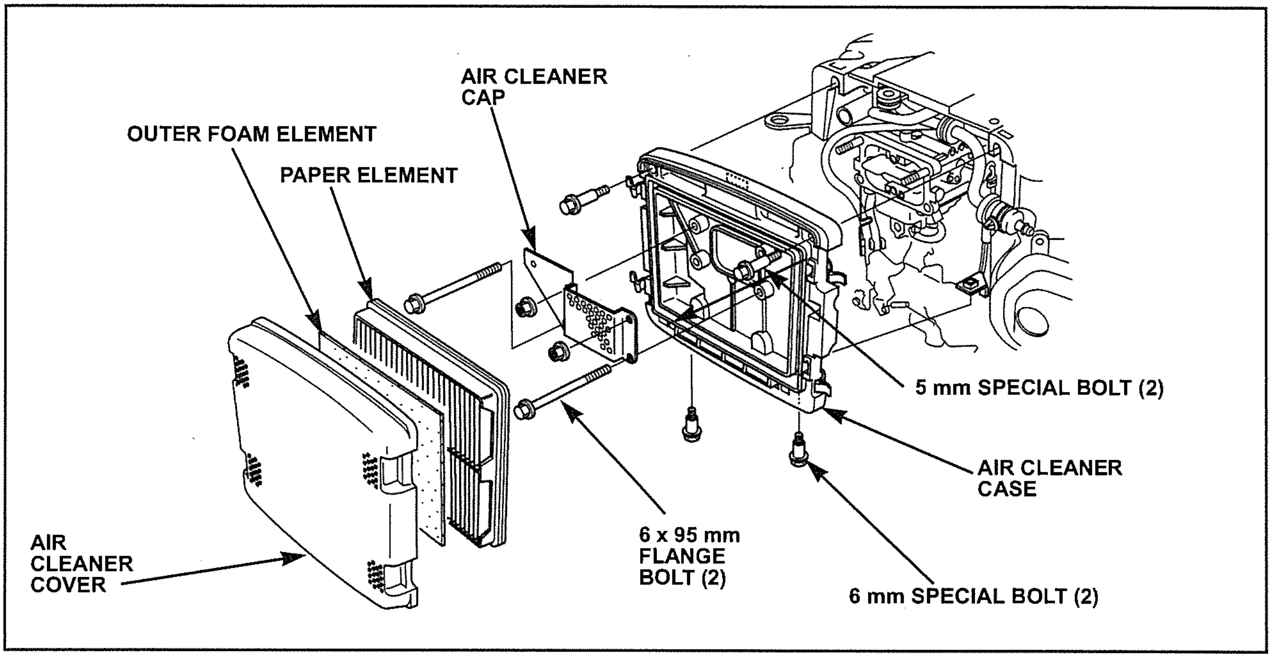
*For General Reference Only**

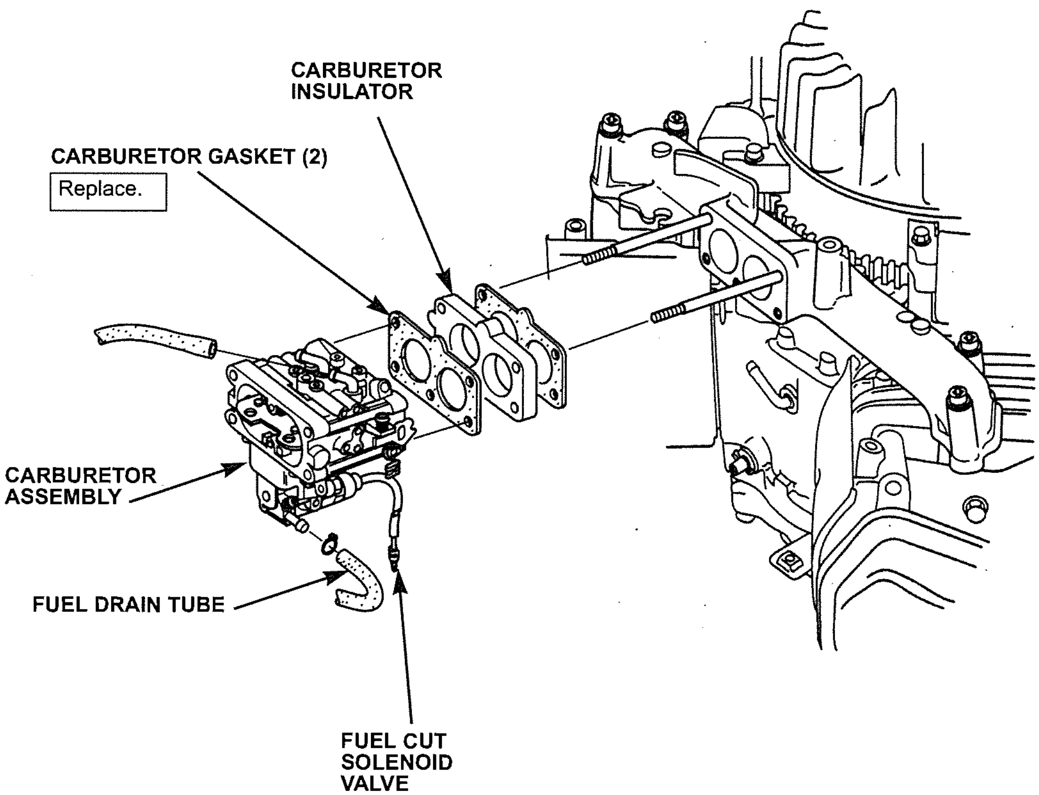


Before inspecting the fuel system, perform the minimum inspection for compression and ignition system.

CARBURETOR REMOVAL

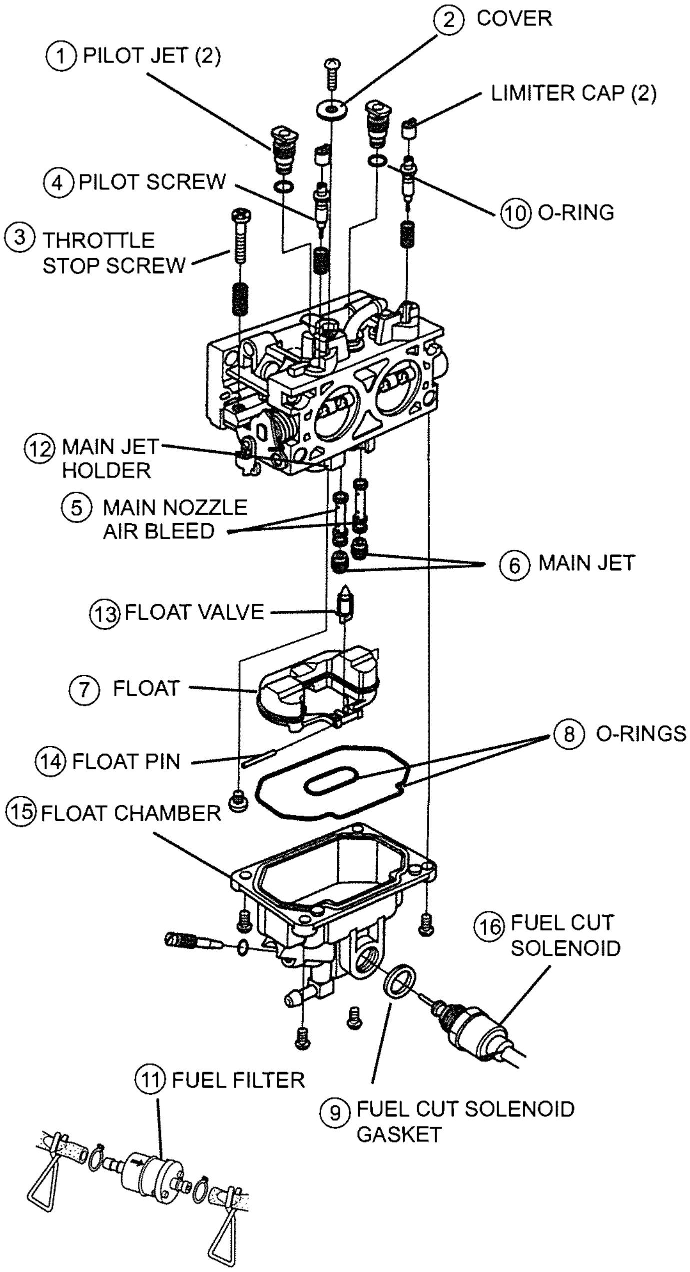
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.





DISASSEMBLY/INSPECTION

Disassembly



Inspection

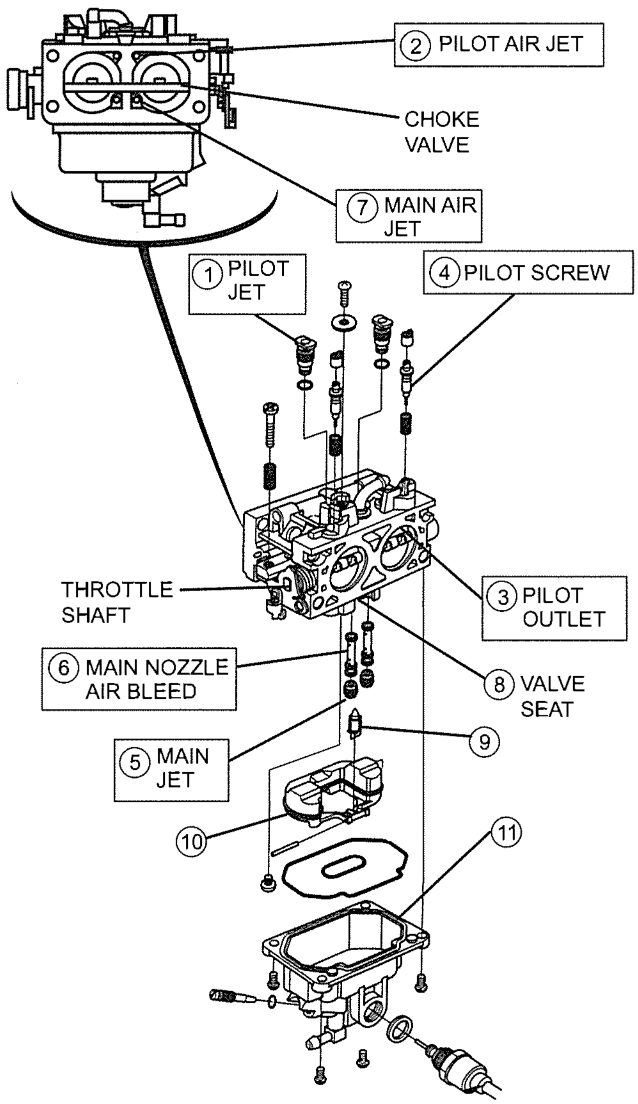
No.	Item	Clean	Replace
①	Check the pilot jet holes for clogging.	○	
②	Check the cover for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination and adjustment.	○	
⑤	Check the main nozzle air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the O-rings for damage (Do not remove unless damaged).		●
⑨	Check the gasket for damage if gasoline leaks from the fuel cut solenoid.		●
⑩	Check the pilot screw O-rings for damage.		●
⑪	Check for dirt or foreign materials in the filter.	○	
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the fuel cut solenoid for proper operation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

CLEANING

BK-type carburetor shown.

The BK-type has some components that are not found on other Honda carburetors.

▭ : Indicates parts that are likely to be clogged; clean carefully.

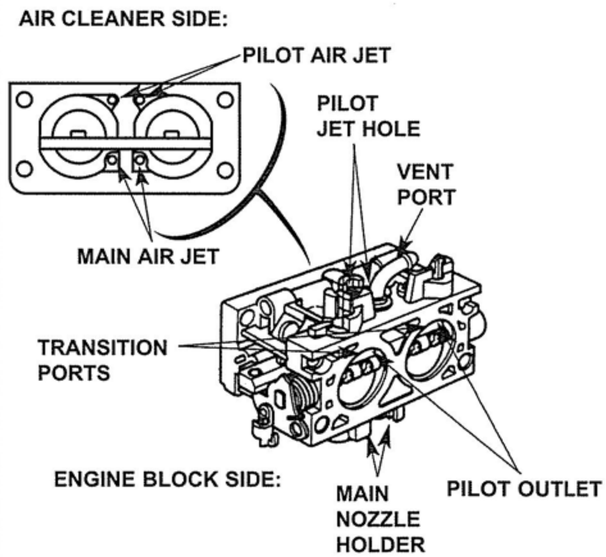


	Item	Inspection/ Cleaning Tool
Slow Circuit		
(1)	Remove foreign material from the pilot jet.	Jet Cleaner Set Honda Carburetor Cleaner
(2)	Clean the pilot air jet orifice.	Low pressure compressed air
(3)	Clean the pilot outlet.	
(4)	The pilot screw must be broken to be removed. Replace the pilot screw.	
Main Circuit		
(5)	Remove foreign material from the main jet.	Jet Cleaner Set Honda Carburetor Cleaner
(6)	Remove foreign material from the main nozzle air bleed holes.	Low pressure compressed air
(7)	Clean the main air jet orifice.	
Float Circuit		
(8)	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
(9)	Clean the float valve and seat. *Do not damage the seat and valve.*	Low pressure compressed air
(10)	Check the float level.	Float level gauge
(11)	Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

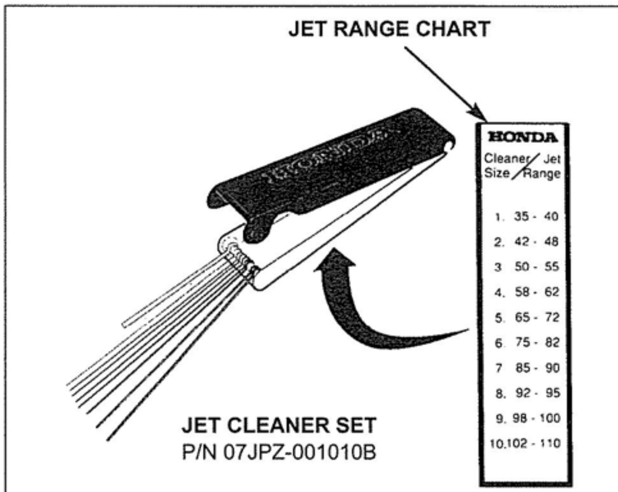
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

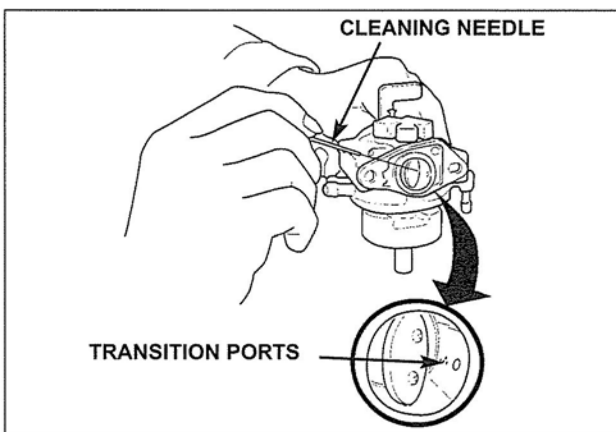
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

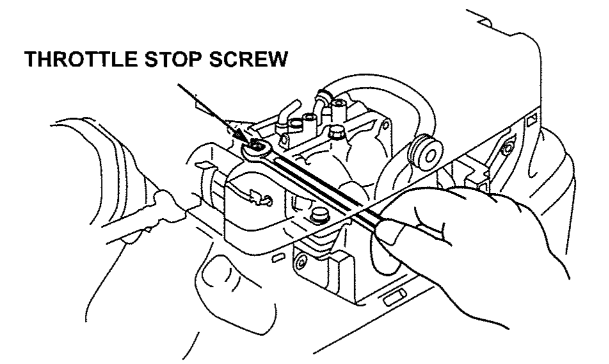
- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases



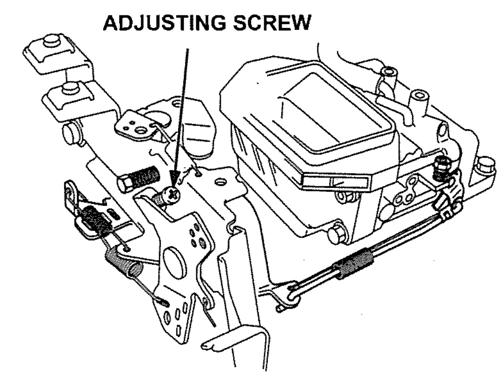
Maximum Engine Speed Adjustment

1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST.

   Turn the adjusting screw on the control lever to set maximum speed.

Control lever adjusting screw:

- Turn clockwise .... rpm decreases
- Turn counterclockwise .... rpm increase



NOTES

BW-TYPE

GCV520/530 • GXV520/530

Theory Of Operation

• Float Chamber

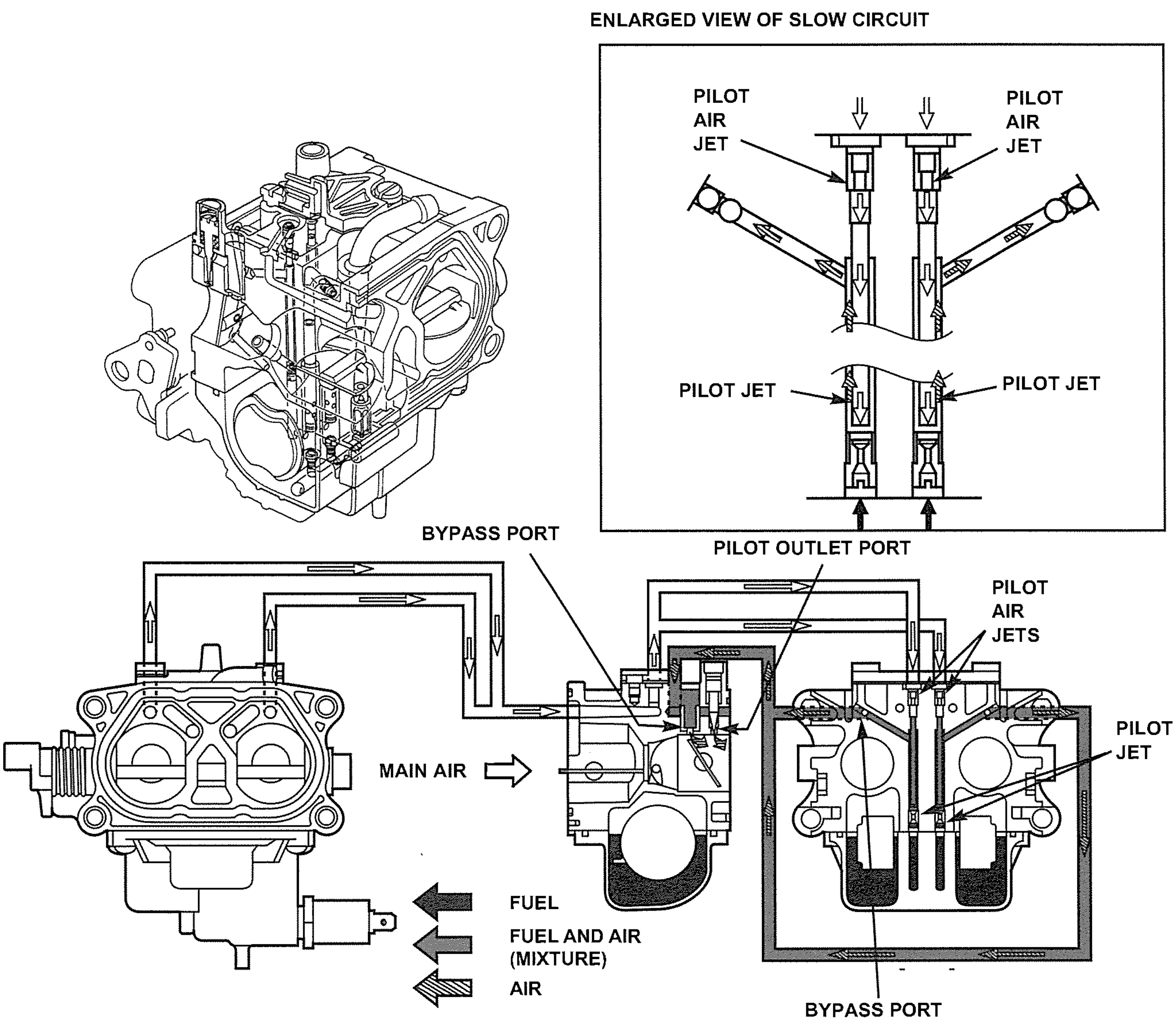
When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

• Slow Circuit

When the throttle is open for the low speed running, vacuum is made downstream of the throttle valve (engine side) by the suction stroke of the piston.

This vacuum is applied to the pilot outlet port and the bypass port located downstream of the throttle valve. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

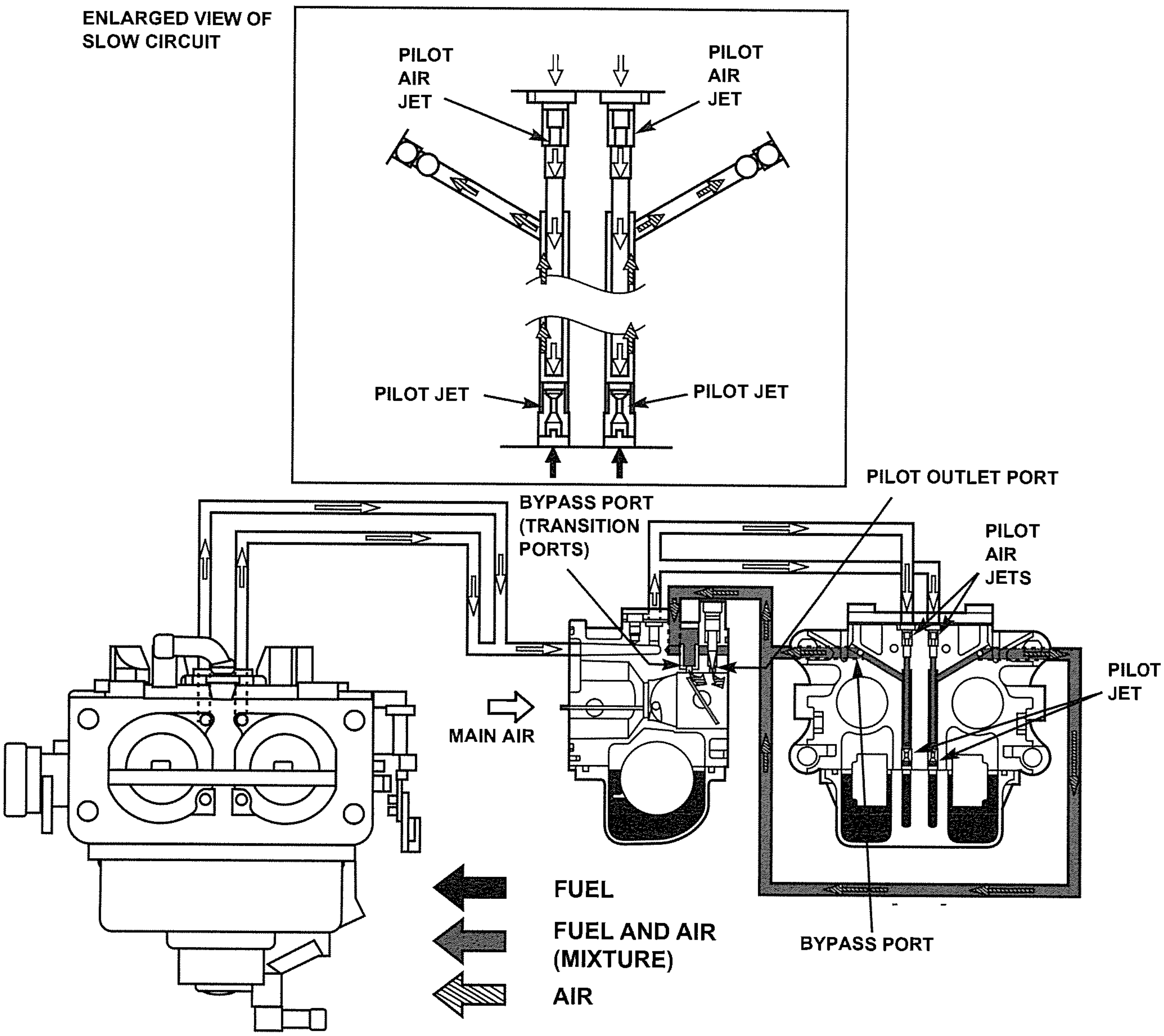


• TRANSITION CIRCUIT

The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

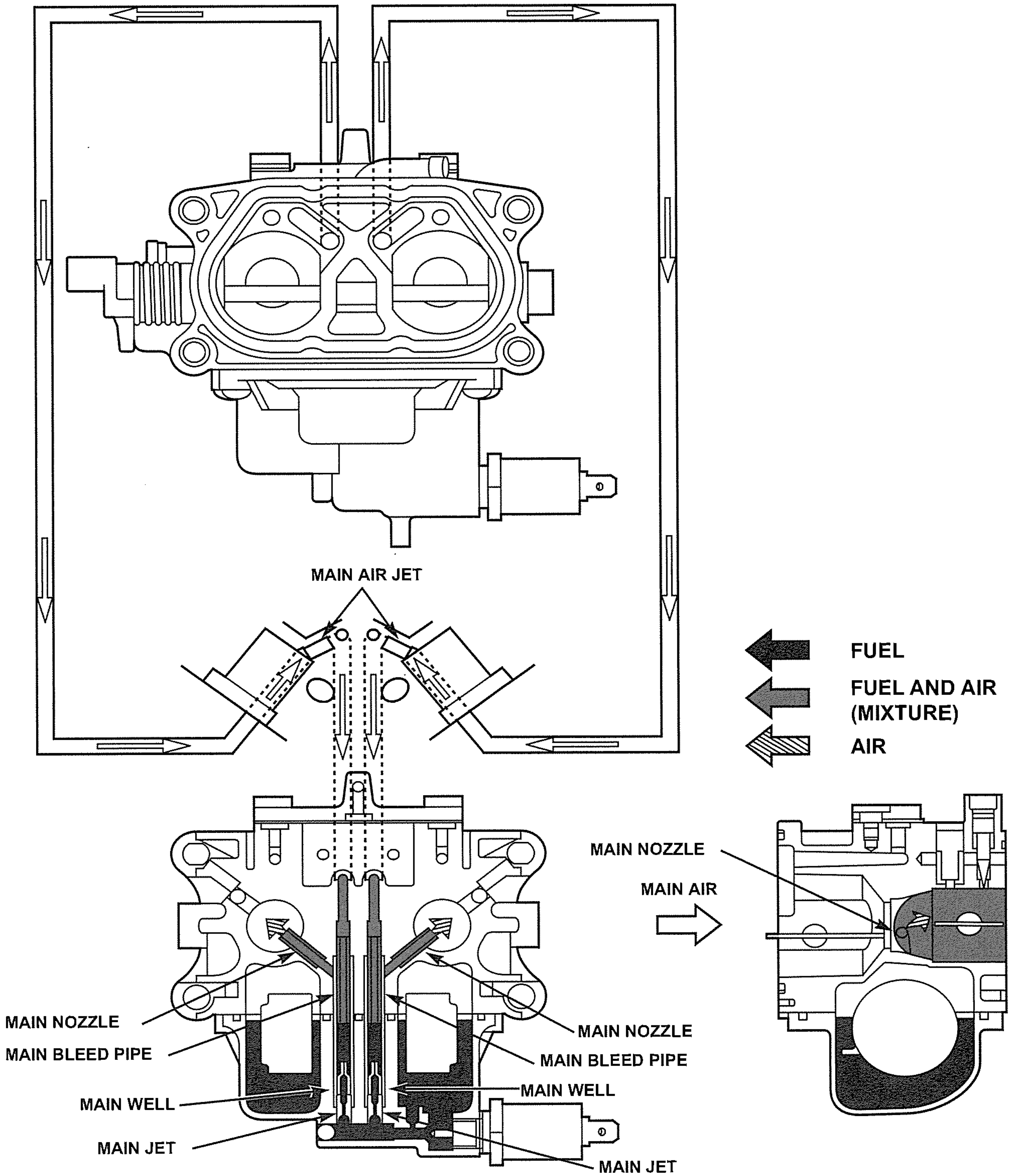
The pilot screw does not control the fuel/air mixture that passes through the transition ports.



• Main Circuit

When the throttle is open for middle speed or high speed running, the air that passed through the air cleaner passes through the suction port and venturi as the main air, and it is sucked into the engine.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet, and into the main bleed pipe. Air passing through the main air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.



CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

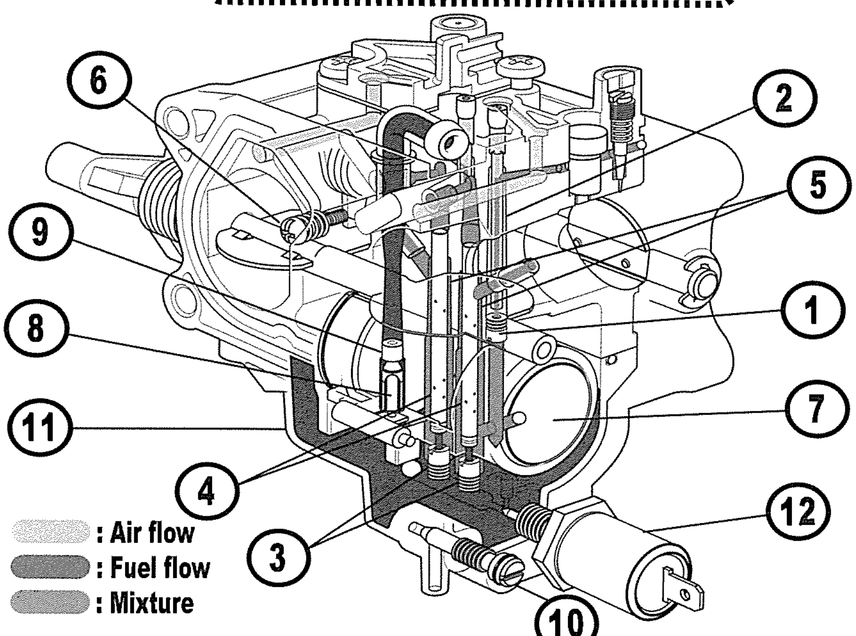
◆ Engine does not start
◆ Hard starting
◆ Engine starts but quickly stops

Main jet clogged.	③	Remove foreign materials/dirt.
Main nozzle clogged.	④	Remove foreign materials/dirt.
Main nozzle air path clogged.	⑤	Remove foreign materials/dirt.
Throttle stop screw position incorrect.	⑥	Set correct idle speed.
Float doesn't move properly.	⑦	Remove foreign materials around float pin.

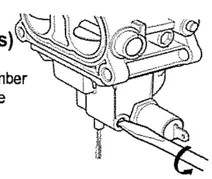
◆ Engine speed does not increase
◆ Poor performance at high speed
◆ Unstable engine speed

Pilot jet clogged.	①	Remove foreign materials/dirt.
Pilot jet air path clogged.	②	Remove foreign materials/dirt.
Main jet clogged.	③	Remove foreign materials/dirt.
Main nozzle clogged.	④	Remove foreign materials/dirt.
Main nozzle air path clogged.	⑤	Remove foreign materials/dirt.

① ③ ④ ⑧ ⑨ : Priority check Points

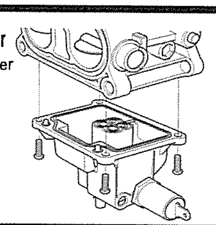


⑩ Engine storage (More than 3 months)



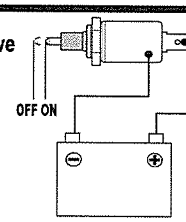
Drain gasoline from the float chamber by loosening the drain screw while the engine is stopped.

⑪ Check float chamber



Water inside the float chamber can cause engine failure. Remove float chamber and clean or replace.

⑫ Fuel cut solenoid valve



Connect the 12V battery to the fuel cut solenoid valve connector as shown.
Check the needle of the valve, it should retract in when powered.

◆ Unstable idle speed
◆ Poor performance at low speed

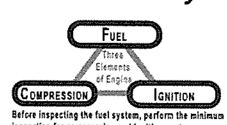
Pilot jet clogged.	①	
Pilot jet air path clogged.	②	Remove foreign materials/dirt.

◆ Overflow
◆ Gasoline leaks

Float valve worn or coated with foreign materials/dirt.	⑧	Remove foreign materials/dirt.
Valve seat worn or coated with foreign materials/dirt.	⑨	Remove foreign materials/dirt.

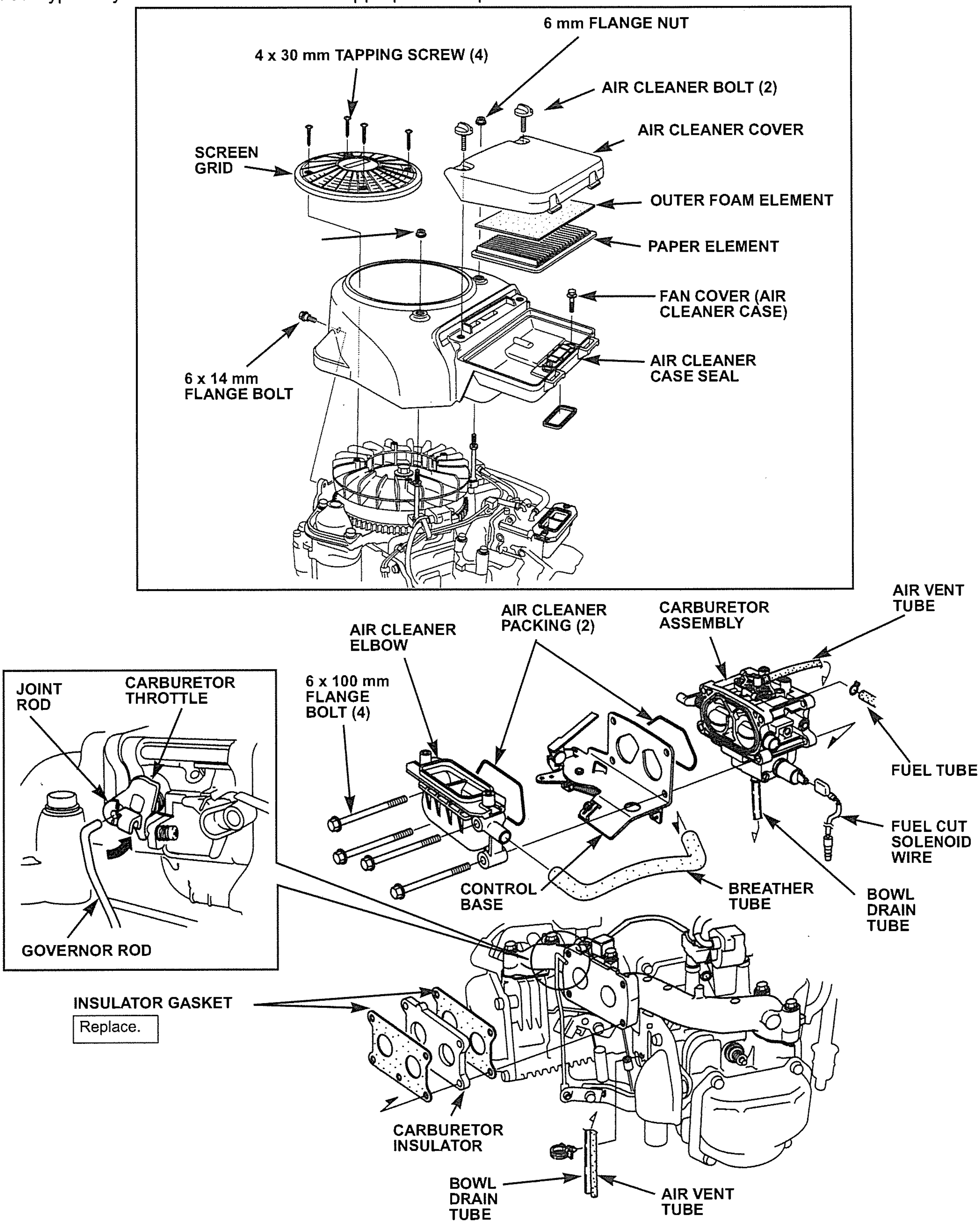
Don't damage the seat surface

*For General Reference Only**



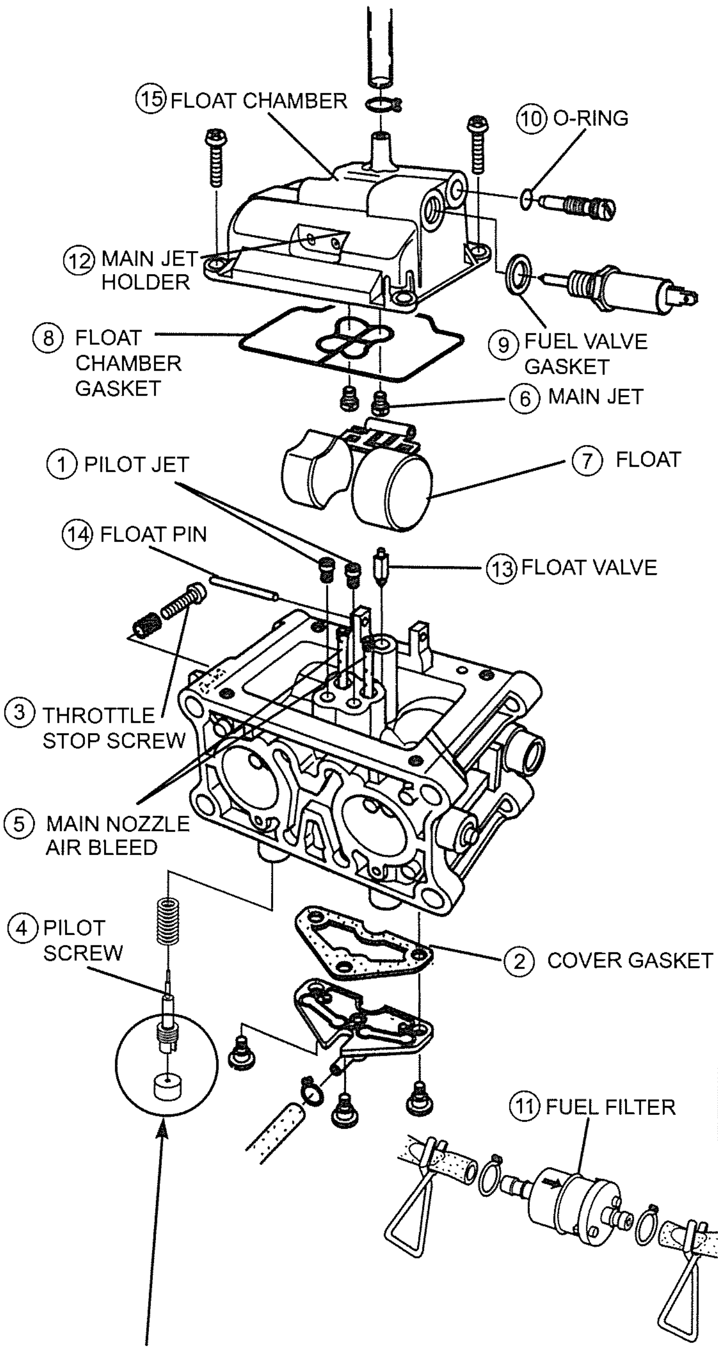
CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



DISASSEMBLY/INSPECTION

Disassembly

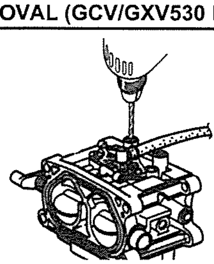


Inspection

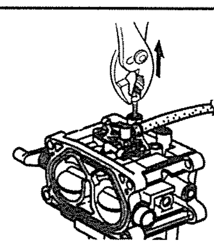
No.	Item	Clean	Replace
1	Check the pilot jet holes for clogging.	○	
2	Check cover gasket for damage.		●
3	Check the stop screw for proper setting.		
4	Check screw tip for contamination and adjustment.	○	
5	Check the main nozzle air bleed holes for clogging.	○	
6	Check the main jet size. Check the jet orifice for clogging.	○	
7	Check the float height, and make sure there is no gasoline in the float.		●
8	Check the gasket for damage (Do not remove the gasket).		●
9	Check the gasket for damage if gasoline leaks from the fuel valve.		●
10	Check the O-ring for damage.		●
11	Check for dirt or foreign materials in the filter.	○	
12	Check the main jet holder for corrosion.	○	
13	Check the tip of the valve for contamination or damage.	○	●
14	Check the float pin for wear or loose fit.		●
15	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

PILOT SCREW REMOVAL (GCV/GXV530 ENGINES ONLY)

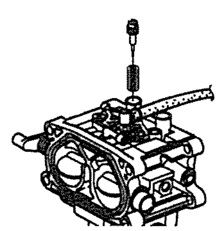
1. Drill the brass plug with a 4 mm (5/37 in) drill bit.



2. Screw in a 4 mm self-tapping screw (P/N 93903-3541) and continue turning until the brass plug rotates. Pull on the screw head with pliers to remove the plug.



3. Remove the pilot screw and spring.

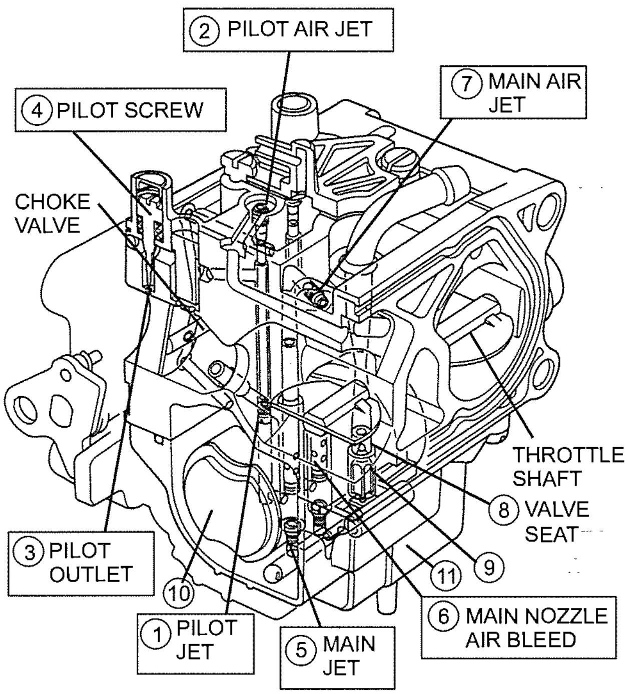


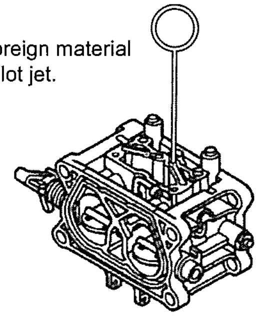
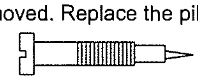
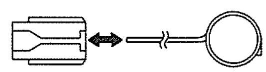
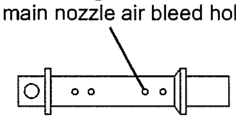
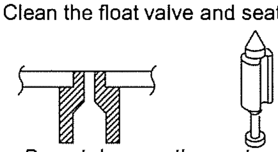
CLEANING

BW-type carburetor shown.

The BW-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.

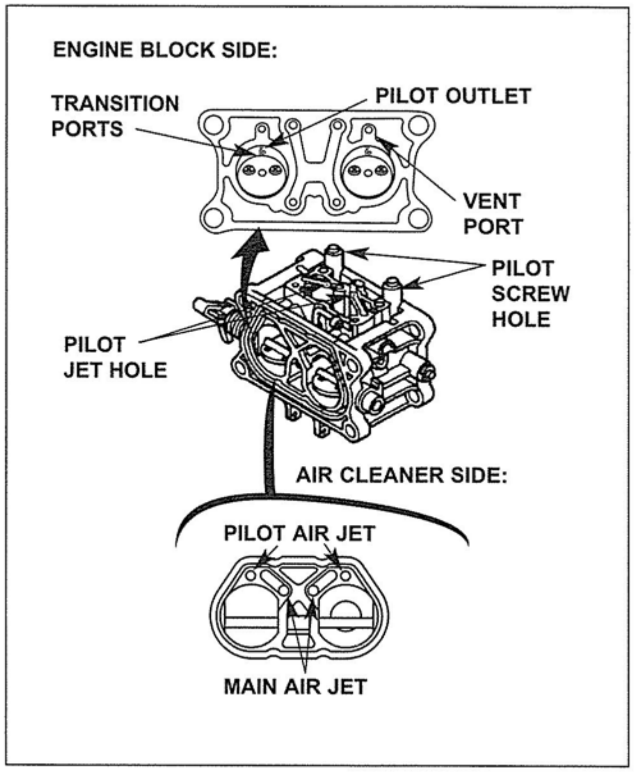


Item	Inspection/ Cleaning Tool
Slow Circuit	
(1) Remove foreign material from the pilot jet. 	Jet Cleaner Set Honda Carburetor Cleaner
(2) Clean the pilot air jet orifice. (3) Clean the pilot outlet. (4) The pilot screw must be broken to be removed. Replace the pilot screw. 	Low pressure compressed air
Main Circuit	
(5) Remove foreign material from the main jet. 	Jet Cleaner Set Honda Carburetor Cleaner
(6) Remove foreign material from the main nozzle air bleed holes.  (7) Clean the main air jet orifice.	Low pressure compressed air
Float Circuit	
(8) Remove foreign materials from the valve seat. (9) Clean the float valve and seat.  *Do not damage the seat and valve.*	Honda Carburetor Cleaner Low pressure compressed air
(10) Check the float level. (11) Remove foreign material from the float chamber.	Float level gauge

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

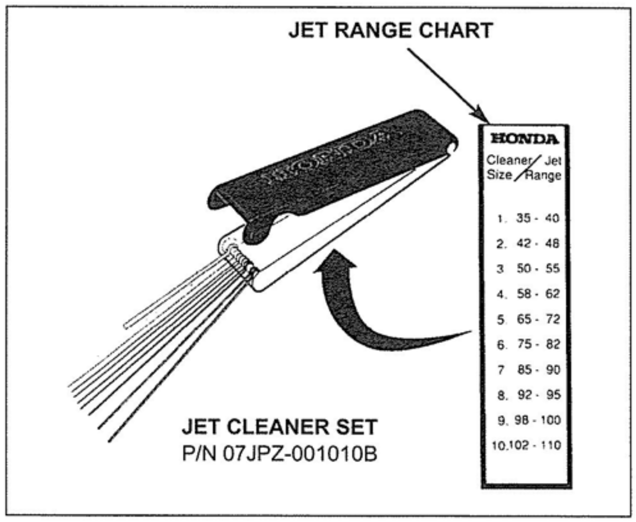
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

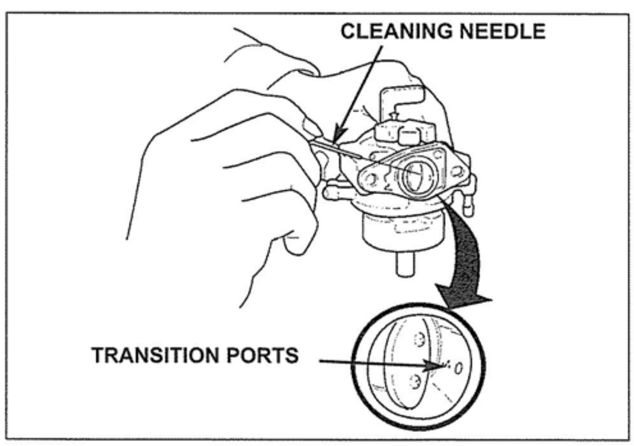
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases

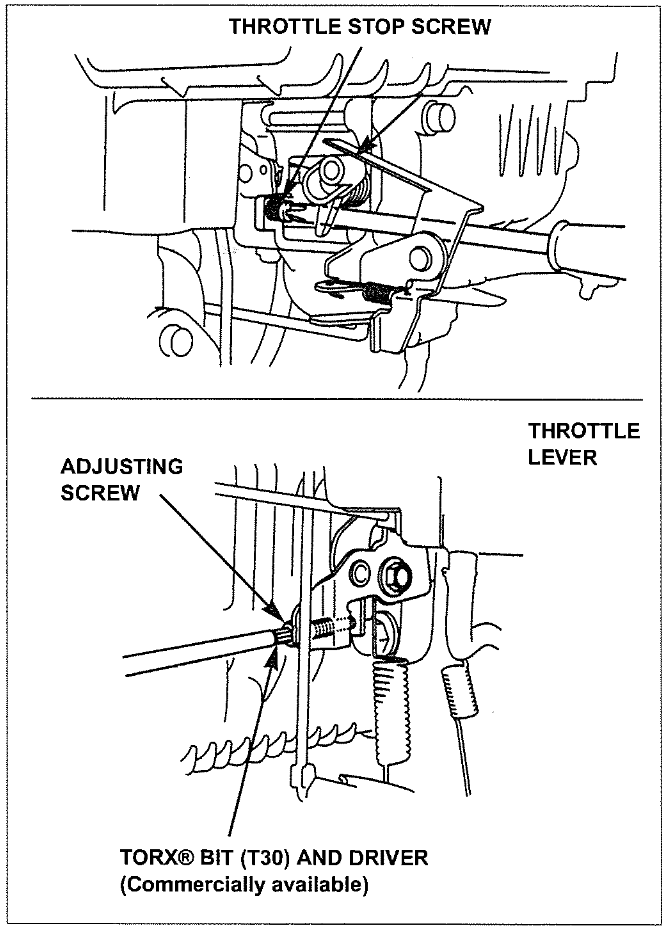
Maximum Engine Speed Adjustment

1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST.

   Use the a Torx® bit (T30) and driver to turn the adjusting screw on the control lever to set maximum speed.

Control lever adjusting screw:

- Turn clockwise .... rpm decreases
- Turn counterclockwise .... rpm increase



NOTES

BW-TYPE

GX630/660/690

Theory Of Operation

• Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

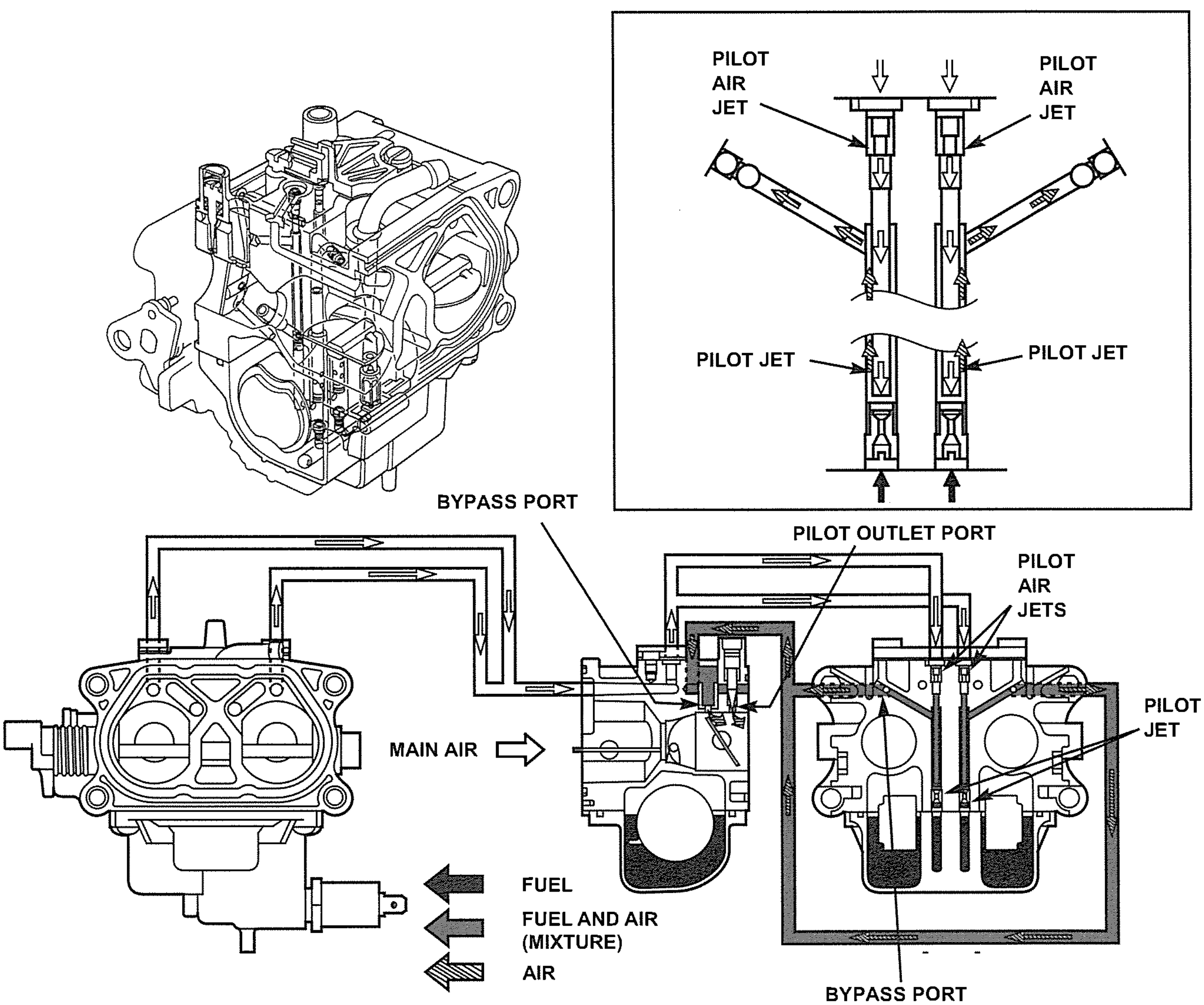
• Slow Circuit

When the throttle is open for the low speed running, vacuum is made downstream of the throttle valve (engine side) by the suction stroke of the piston.

This vacuum is applied to the pilot outlet port and the bypass port located downstream of the throttle valve. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

ENLARGED VIEW OF SLOW CIRCUIT

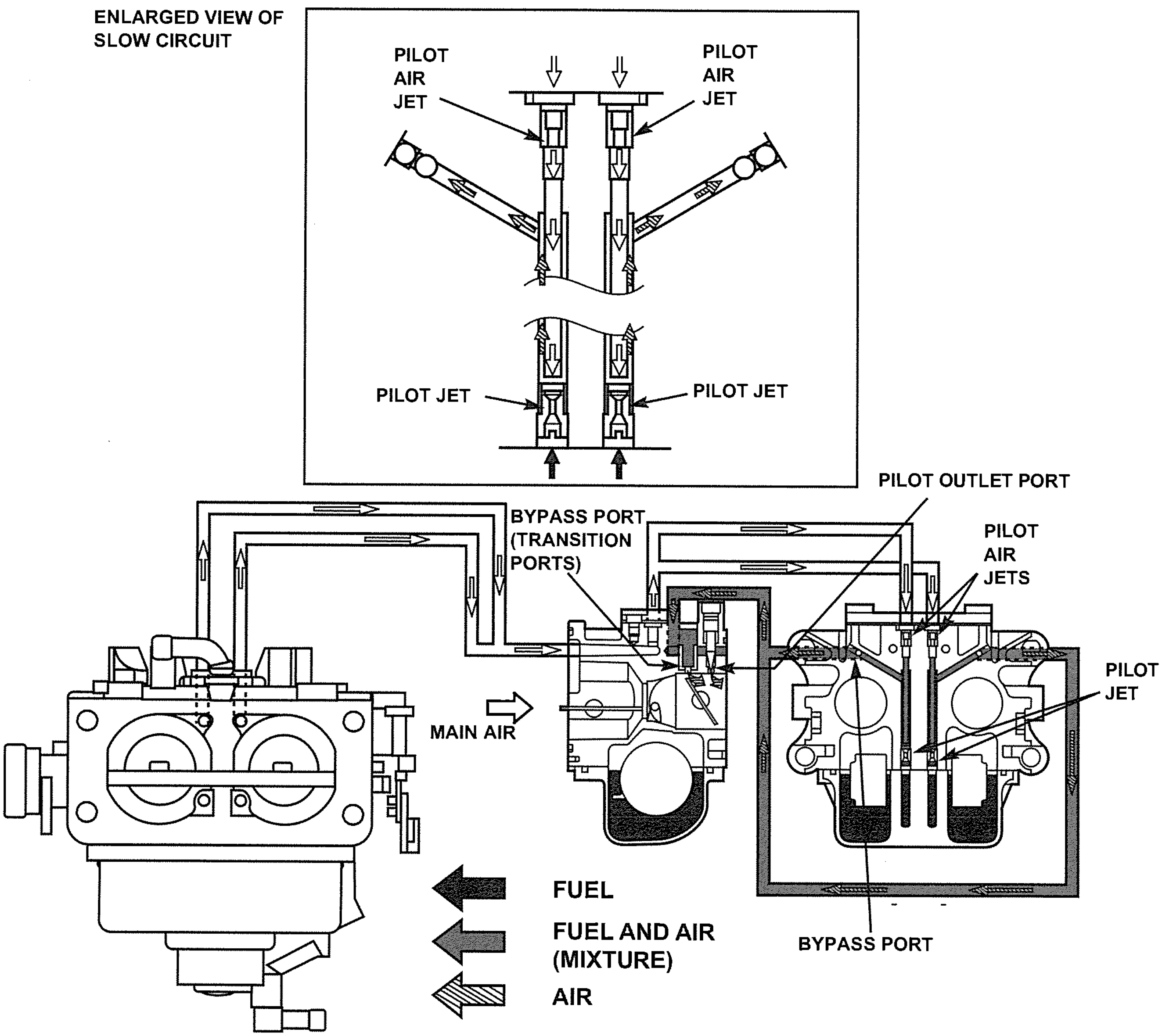


• TRANSITION CIRCUIT

The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

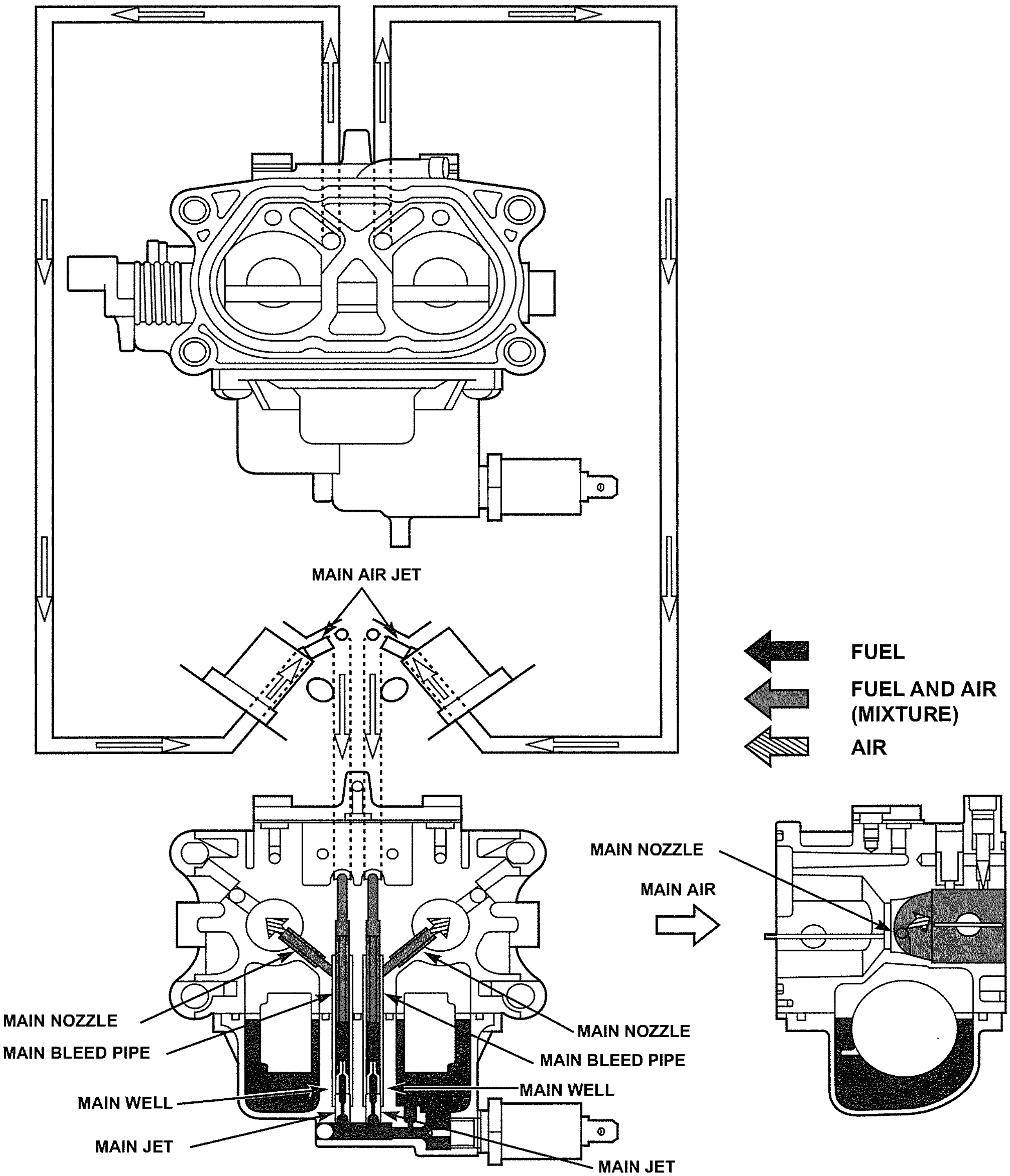
The pilot screw does not control the fuel/air mixture that passes through the transition ports.



• Main Circuit

When the throttle is open for middle speed or high speed running, the air that passed through the air cleaner passes through the suction port and venturi as the main air, and it is sucked into the engine.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet, and into the main bleed pipe. Air passing through the main air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.



CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

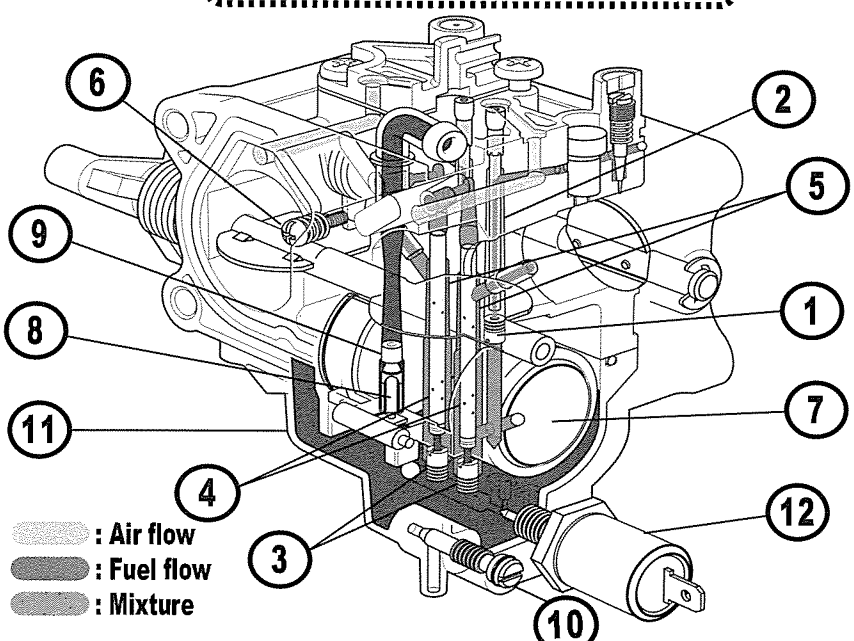
- **Engine does not start**
- **Hard starting**
- **Engine starts but quickly stops**

Cause	Point	Action
Main jet clogged.	③	Remove foreign materials/dirt.
Main nozzle clogged.	④	Remove foreign materials/dirt.
Main nozzle air path clogged.	⑤	Remove foreign materials/dirt.
Throttle stop screw position incorrect.	⑥	Set correct idle speed.
Float doesn't move properly.	⑦	Remove foreign materials around float pin.

- **Engine speed does not increase**
- **Poor performance at high speed**
- **Unstable engine speed**

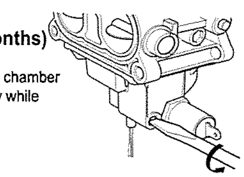
Cause	Point	Action
Pilot jet clogged.	①	Remove foreign materials/dirt.
Pilot jet air path clogged.	②	Remove foreign materials/dirt.
Main jet clogged.	③	Remove foreign materials/dirt.
Main nozzle clogged.	④	Remove foreign materials/dirt.
Main nozzle air path clogged.	⑤	Remove foreign materials/dirt.

① ③ ④ ⑧ ⑨ : Priority check Points



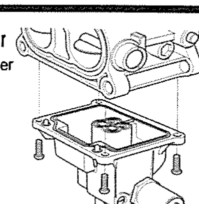
⑩ Engine storage (More than 3 months)

Drain gasoline from the float chamber by loosening the drain screw while the engine is stopped.



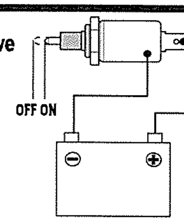
⑪ Check float chamber

Water inside the float chamber can cause engine failure. Remove float chamber and clean or replace.



⑫ Fuel cut solenoid valve

Connect the 12V battery to the fuel cut solenoid valve connector as shown.
Check the needle of the valve, it should retract in when powered.



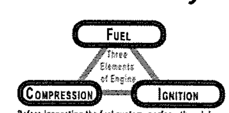
- **Unstable idle speed**
- **Poor performance at low speed**

Cause	Point	Action
Pilot jet clogged.	①	Remove foreign materials/dirt.
Pilot jet air path clogged.	②	Remove foreign materials/dirt.

- **Overflow**
- **Gasoline leaks**

Cause	Point	Action
Float valve worn or coated with foreign materials/dirt.	⑧	Remove foreign materials/dirt.
Valve seat worn or coated with foreign materials/dirt.	⑨	Remove foreign materials/dirt. Don't damage the seat surface

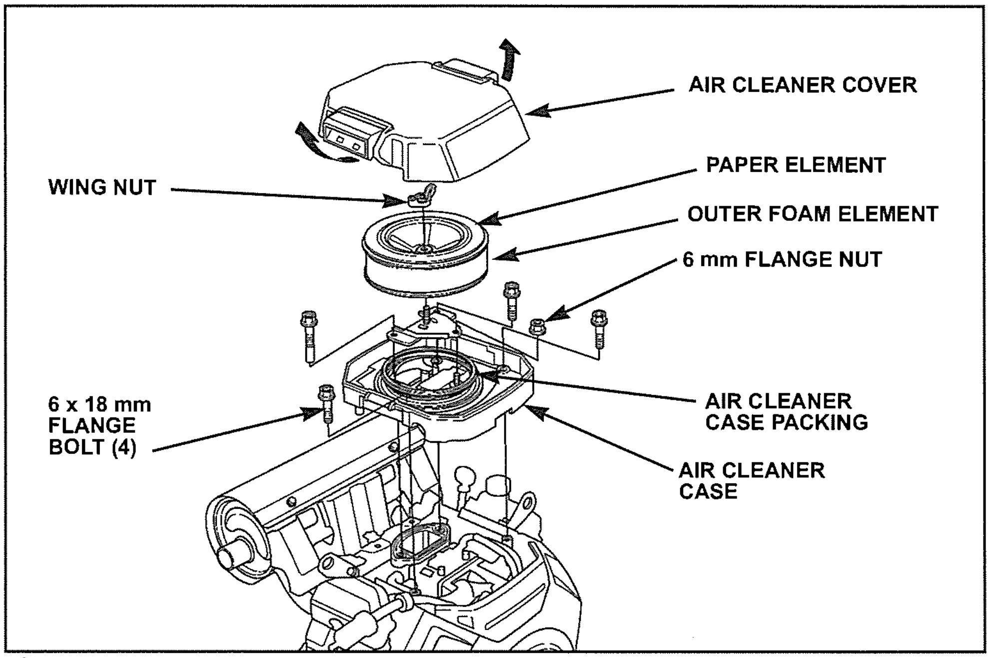
*For General Reference Only**

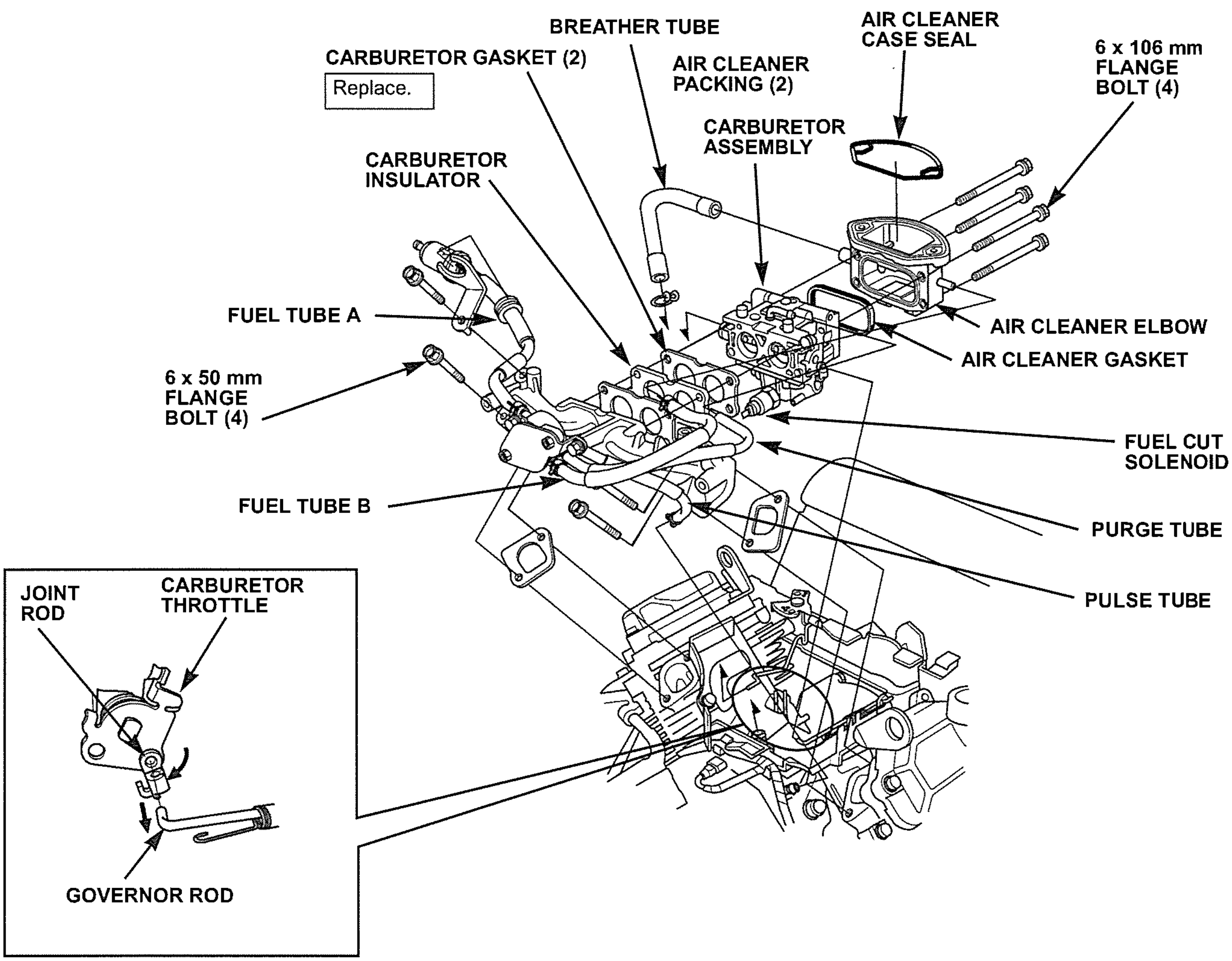


Before inspecting the fuel system, perform the minimum inspection for compression and ignition system.

CARBURETOR REMOVAL

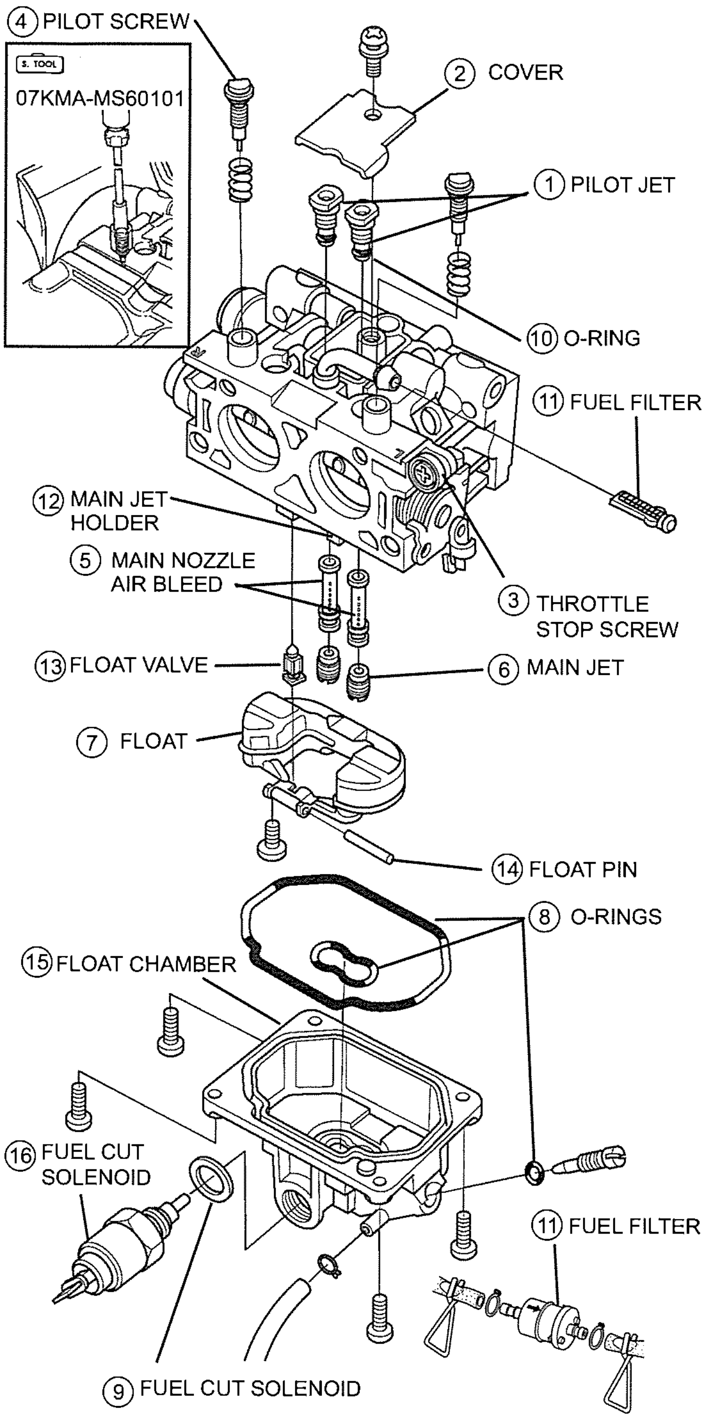
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.





DISASSEMBLY/INSPECTION

Disassembly



Inspection

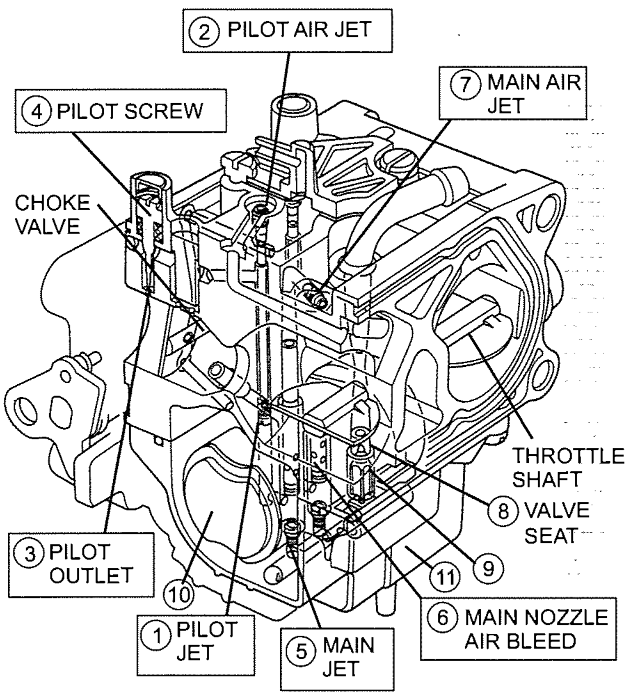
No.	Item	Clean	Replace
①	Check the pilot jet holes for clogging.	○	
②	Check the cover for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination and adjustment.	○	
⑤	Check the main nozzle air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the O-rings for damage (Do not remove unless damaged).		●
⑨	Check the gasket for damage if gasoline leaks from the fuel cut solenoid.		●
⑩	Check the pilot screw O-rings for damage.		●
⑪	Check for dirt or foreign materials in the filter.	○	
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the fuel cut solenoid for proper operation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

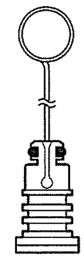
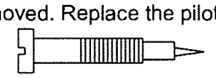
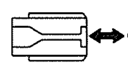
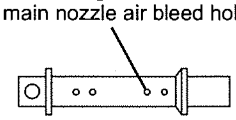
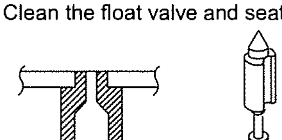
CLEANING

BW-type carburetor shown.

The BW-type has some components that are not found on other Honda carburetors.

[ ] : Indicates parts that are likely to be clogged; clean carefully.

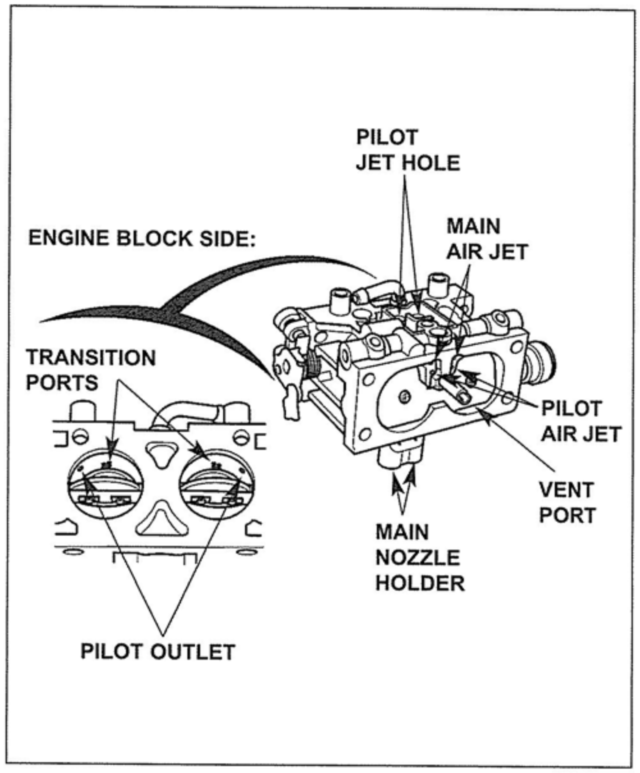


	Item	Inspection/ Cleaning Tool
Slow Circuit		
①	Remove foreign material from the pilot jet. 	Jet Cleaner Set Honda Carburetor Cleaner Low pressure compressed air
②	Clean the pilot air jet orifice.	
③	Clean the pilot outlet.	
④	The pilot screw must be broken to be removed. Replace the pilot screw. 	
Main Circuit		
⑤	Remove foreign material from the main jet. 	Jet Cleaner Set Honda Carburetor Cleaner Low pressure compressed air
⑥	Remove foreign material from the main nozzle air bleed holes. 	
⑦	Clean the main air jet orifice.	
Float Circuit		
⑧	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner Low pressure compressed air
⑨	Clean the float valve and seat.  *Do not damage the seat and valve.*	
⑩	Check the float level.	Float level gauge
⑪	Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.



NOTICE

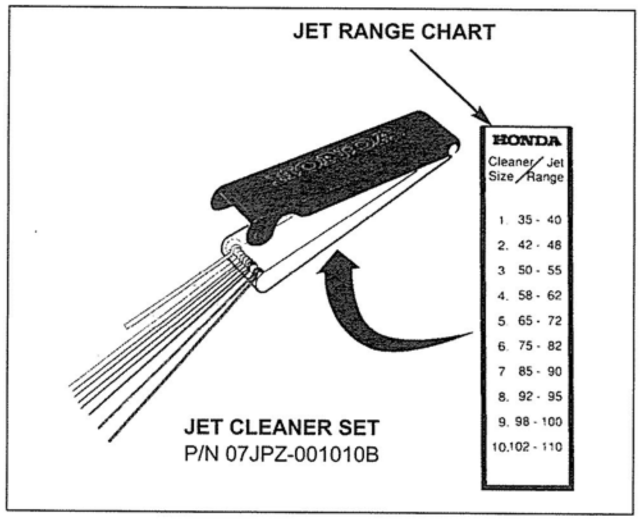
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

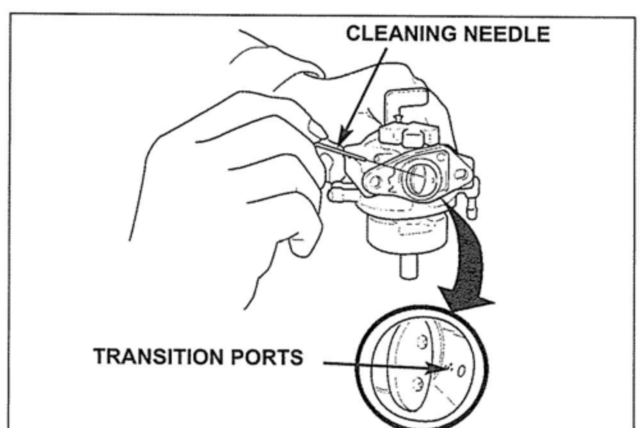
   NOTICE

   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.



4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

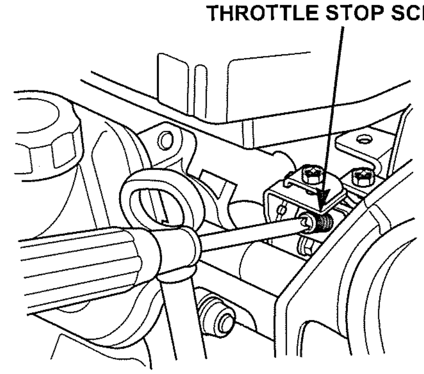
- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases



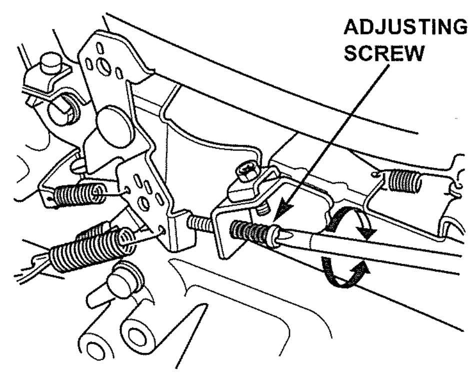
Maximum Engine Speed Adjustment

1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST.

   Turn the adjusting screw to set maximum speed.

Control lever adjusting screw:

- Turn clockwise .... rpm decreases
- Turn counterclockwise .... rpm increase



NOTES

BW-TYPE

GXV630/660/690

Theory Of Operation

• Float Chamber

When the float chamber is empty, fuel from the fuel tank can flow past the float valve into the float chamber. As the fuel level in the chamber rises, the float rises with it. When the float pushes the float valve into its seat, the flow of fuel stops. As fuel is drawn out of the float chamber, the float moves down and opens the float valve. This cycle assures a constant level of fuel in the float chamber.

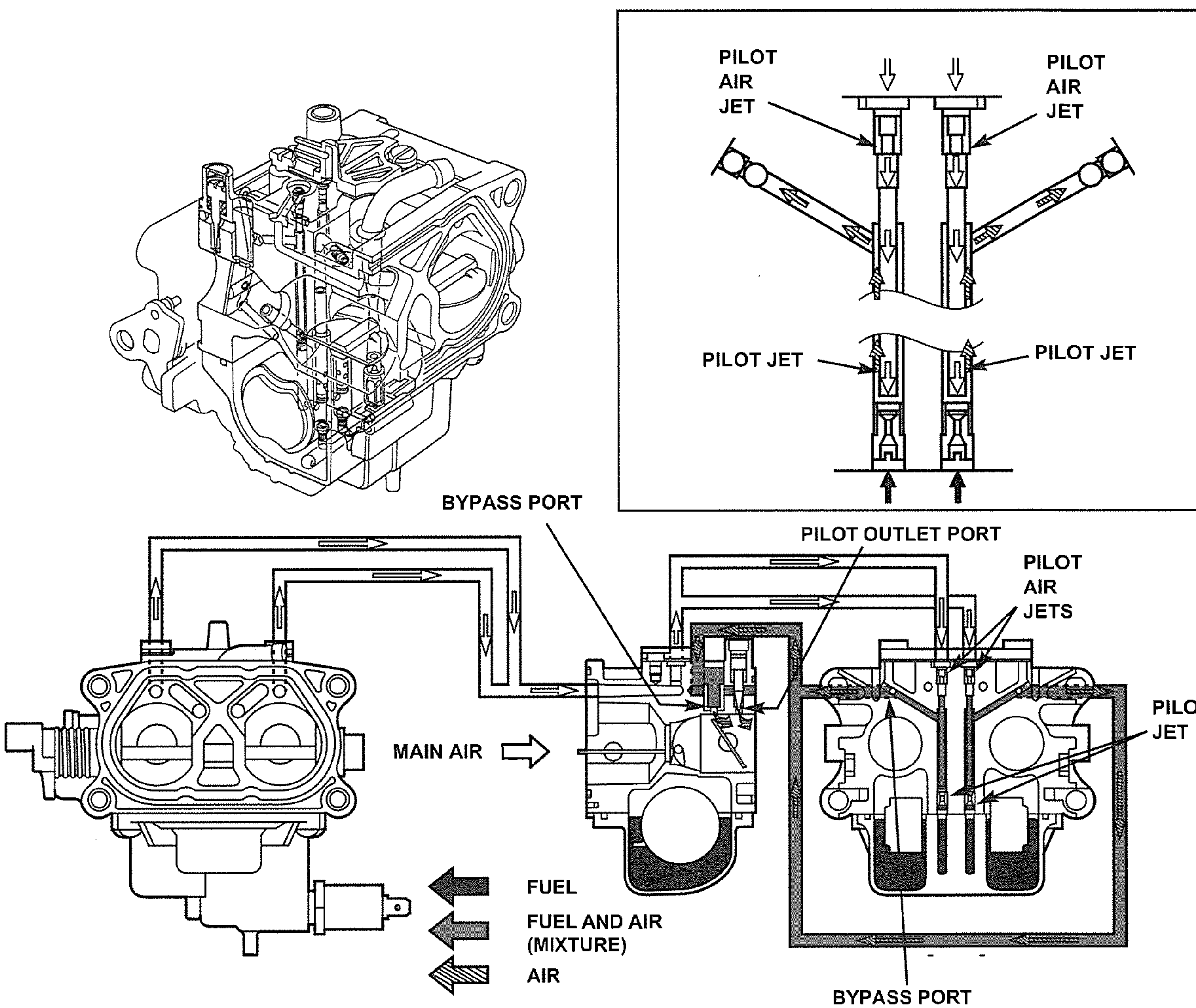
• Slow Circuit

When the throttle is open for the low speed running, vacuum is made downstream of the throttle valve (engine side) by the suction stroke of the piston.

This vacuum is applied to the pilot outlet port and the bypass port located downstream of the throttle valve. Atmospheric pressure in the float chamber then forces fuel through the main jet and into the slow circuit bypass.

The pilot jet controls fuel flow through the slow circuit bypass. The fuel then mixes with air that is metered by the pilot air jet. The resulting fuel/air mixture then flows through the pilot outlet and into the intake tract. The pilot screw controls the amount of fuel mixture that can flow through the pilot outlet.

ENLARGED VIEW OF SLOW CIRCUIT

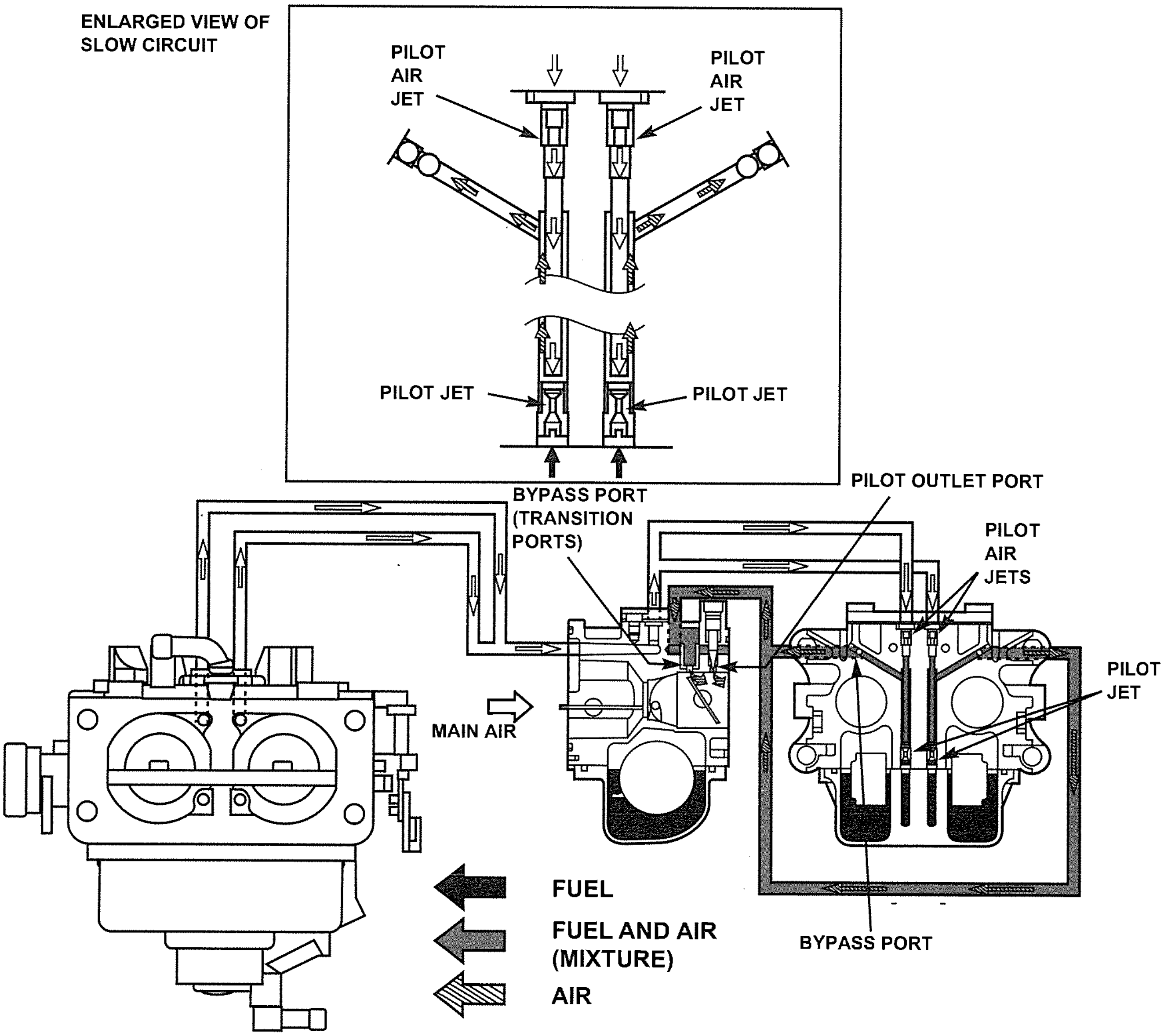


• TRANSITION CIRCUIT

The transition circuit supplies fuel to the engine during the transition from the slow (idle) circuit to the main circuit and vice versa.

When the throttle is opened slightly, high velocity air flows between the edge of the throttle valve and the transition ports, which are located upstream of the pilot outlet. The resulting low pressure (vacuum) draws fuel/air mixture from the slow circuit bypass through the transition ports and into the intake tract, providing the proper fuel charge for low speed operation.

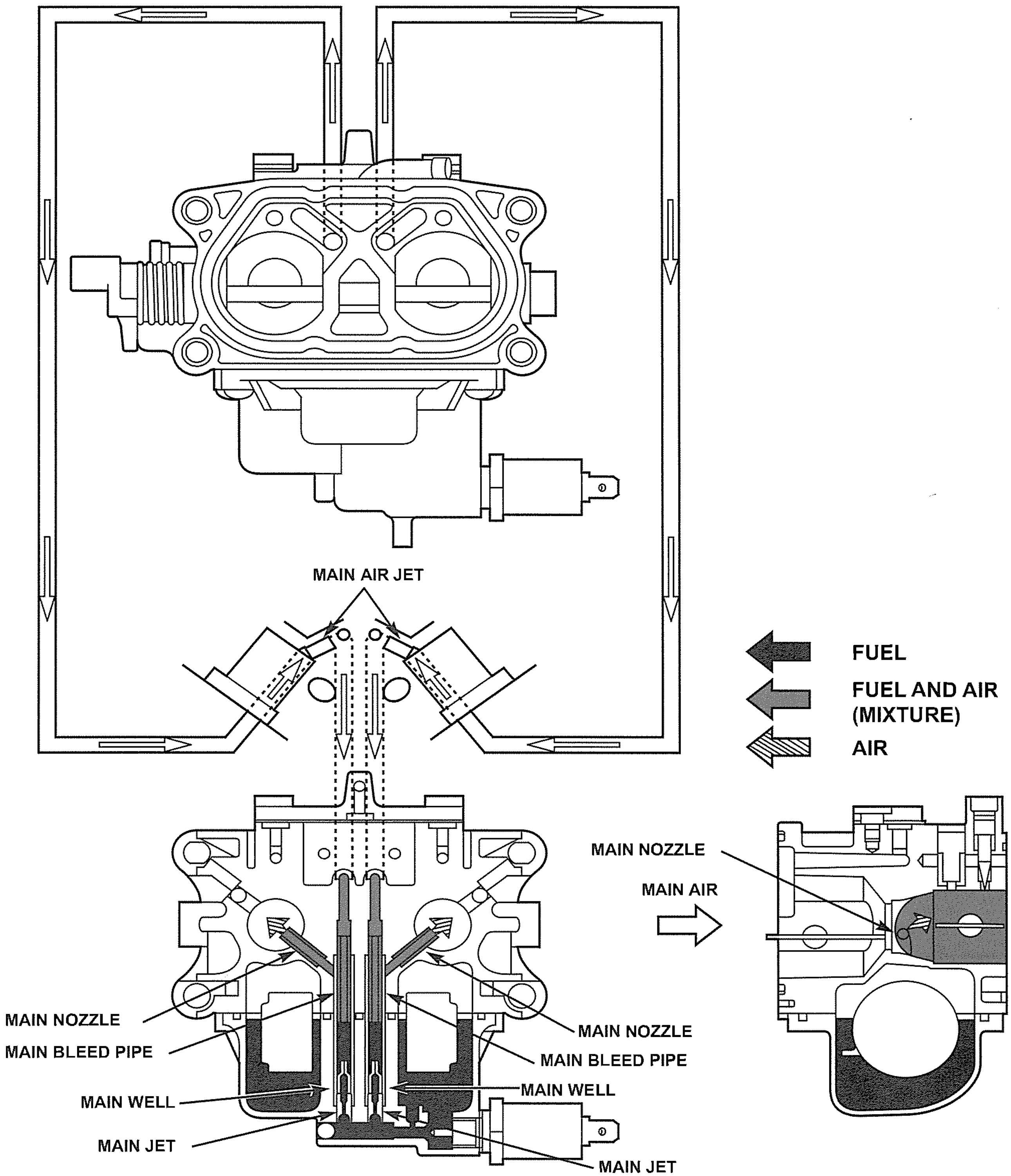
The pilot screw does not control the fuel/air mixture that passes through the transition ports.



• **Main Circuit**

When the throttle is open for middle speed or high speed running, the air that passed through the air cleaner passes through the suction port and venturi as the main air, and it is sucked into the engine.

The float chamber is vented to the atmosphere (bowl vent). Since atmospheric pressure is higher than the pressure in the venturi, fuel is pushed out of the float chamber, through the main jet, and into the main bleed pipe. Air passing through the main air jet mixes with fuel flowing through the main nozzle's air bleed holes. This rich mixture is then drawn into the venturi where it mixes with more air to produce the final air/fuel mixture.



CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

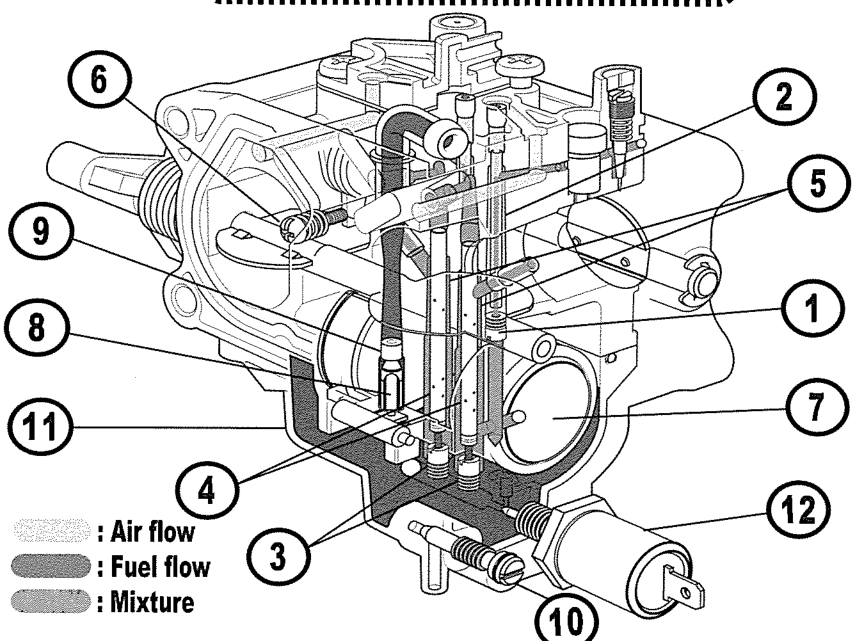
◆ Engine does not start ◆ Hard starting ◆ Engine starts but quickly stops

Main jet clogged.	3	Remove foreign materials/dirt.
Main nozzle clogged.	4	Remove foreign materials/dirt.
Main nozzle air path clogged.	5	Remove foreign materials/dirt.
Throttle stop screw position incorrect.	6	Set correct idle speed.
Float doesn't move properly.	7	Remove foreign materials around float pin.

◆ Engine speed does not increase ◆ Poor performance at high speed ◆ Unstable engine speed

Pilot jet clogged.	1	Remove foreign materials/dirt.
Pilot jet air path clogged.	2	Remove foreign materials/dirt.
Main jet clogged.	3	Remove foreign materials/dirt.
Main nozzle clogged.	4	Remove foreign materials/dirt.
Main nozzle air path clogged.	5	Remove foreign materials/dirt.

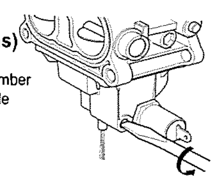
1 3 4 8 9 : Priority check Points



: Air flow
: Fuel flow
: Mixture

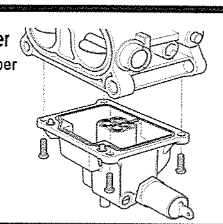
10 Engine storage (More than 3 months)

Drain gasoline from the float chamber by loosening the drain screw while the engine is stopped.



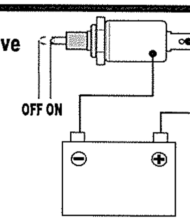
11 Check float chamber

Water inside the float chamber can cause engine failure. Remove float chamber and clean or replace.



12 Fuel cut solenoid valve

Connect the 12V battery to the fuel cut solenoid valve connector as shown.
Check the needle of the valve, it should retract in when powered.

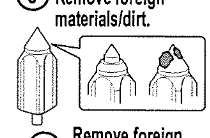


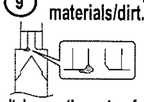
◆ Unstable idle speed ◆ Poor performance at low speed

Pilot jet clogged.	1	
Pilot jet air path clogged.	2	Remove foreign materials/dirt.

◆ Overflow ◆ Gasoline leaks

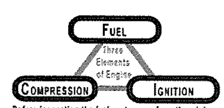
Float valve worn or coated with foreign materials/dirt.	8	Remove foreign materials/dirt.
Valve seat worn or coated with foreign materials/dirt.	9	Remove foreign materials/dirt.





Don't damage the seat surface

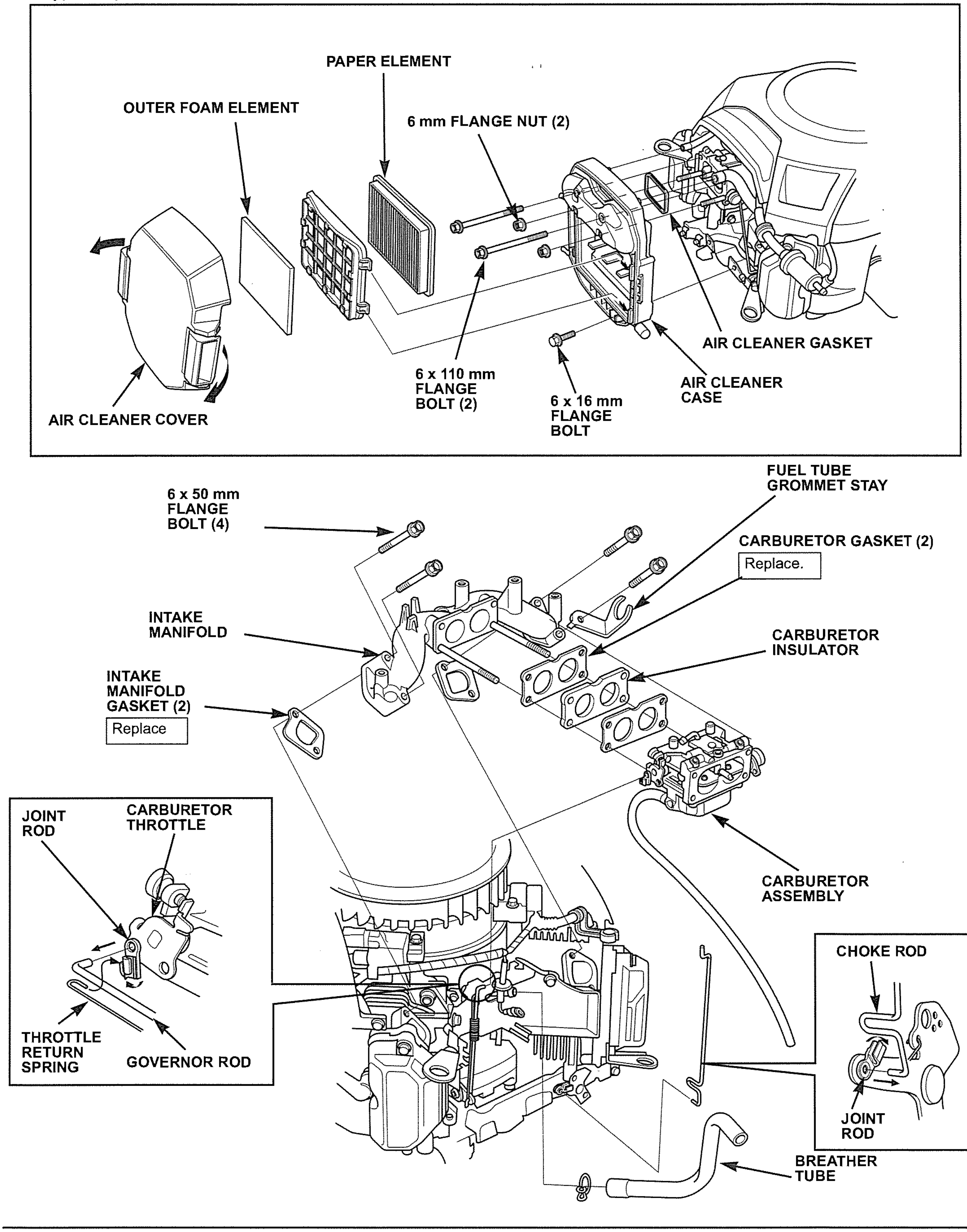
*For General Reference Only**



Before inspecting the fuel system, perform the minimum inspection for compression and ignition system.

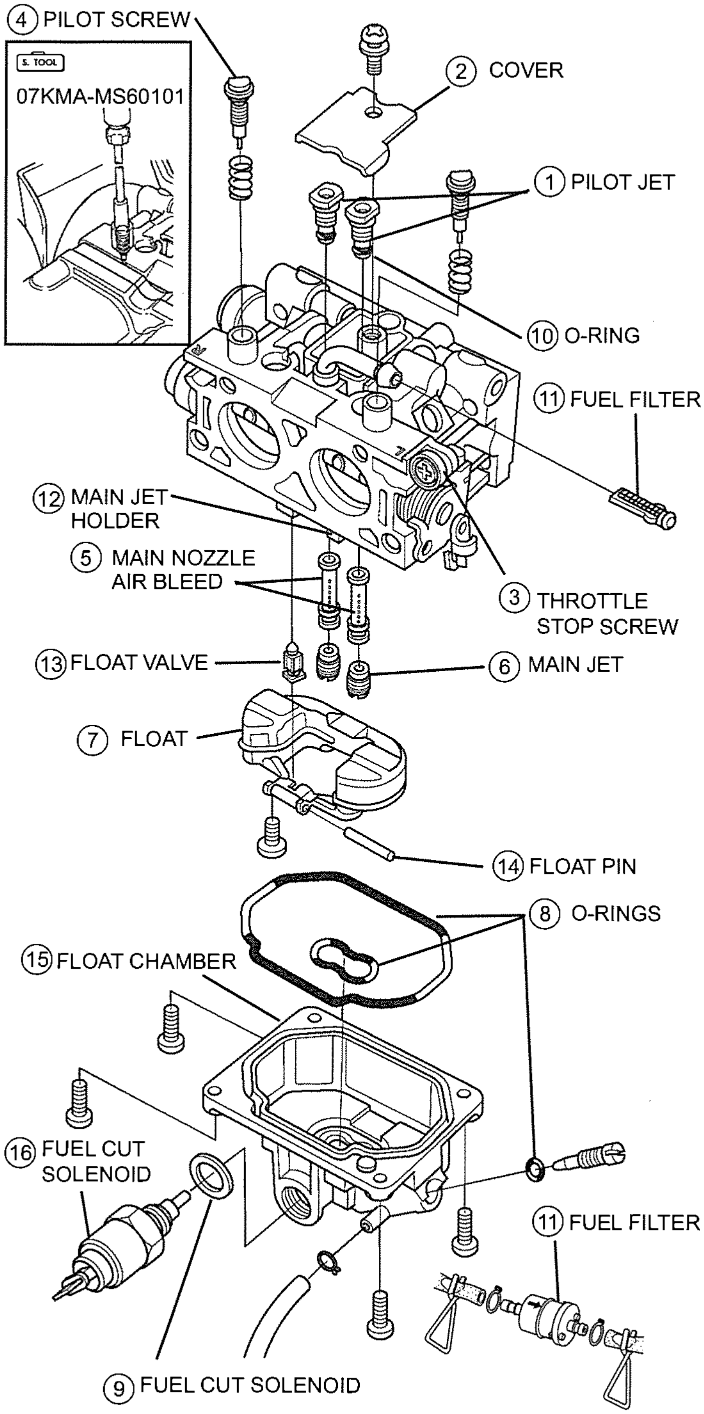
CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



DISASSEMBLY/INSPECTION

Disassembly



Inspection

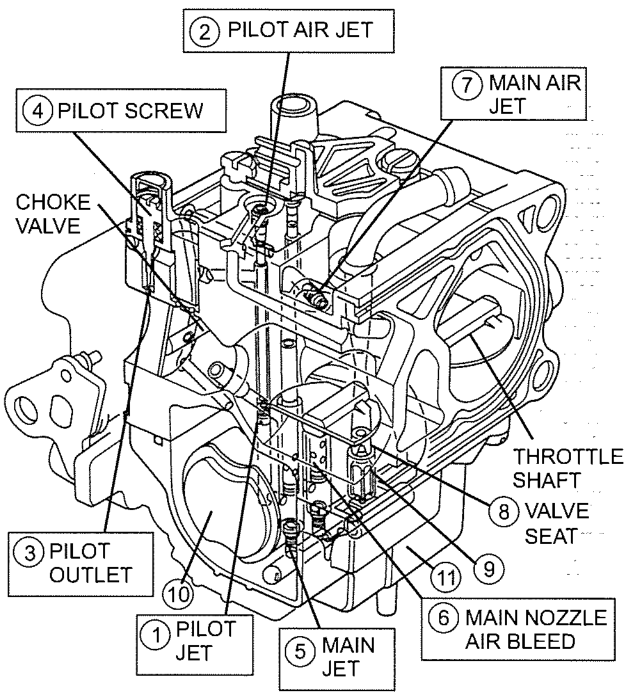
No.	Item	Clean	Replace
①	Check the pilot jet holes for clogging.	○	
②	Check the cover for damage.		●
③	Check the stop screw for proper setting.		
④	Check screw tip for contamination and adjustment.	○	
⑤	Check the main nozzle air bleed holes for clogging.	○	
⑥	Check the main jet size. Check the jet orifice for clogging.	○	
⑦	Check the float height, and make sure there is no gasoline in the float.		●
⑧	Check the O-rings for damage (Do not remove unless damaged).		●
⑨	Check the gasket for damage if gasoline leaks from the fuel cut solenoid.		●
⑩	Check the pilot screw O-rings for damage.		●
⑪	Check for dirt or foreign materials in the filter.	○	
⑫	Check the main jet holder for corrosion.	○	
⑬	Check the tip of the valve for contamination or damage.	○	●
⑭	Check the float pin for wear or loose fit.		●
⑮	Check for dirt or foreign material in the chamber.	○	
	Check the chamber for corrosion and deformation.		●
⑯	Check the fuel cut solenoid for proper operation.		●
	Check the orifices in the carburetor body for clogging.	○	
	Check the shaft for smooth movement.		●

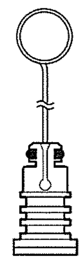
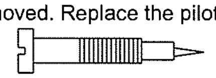
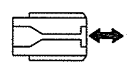
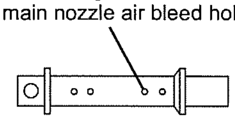
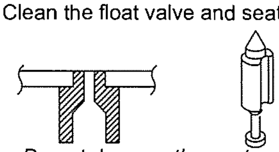
CLEANING

BW-type carburetor shown.

The BW-type has some components that are not found on other Honda carburetors.

: Indicates parts that are likely to be clogged; clean carefully.



	Item	Inspection/ Cleaning Tool
Slow Circuit		
(1)	Remove foreign material from the pilot jet. 	Jet Cleaner Set Honda Carburetor Cleaner
(2)	Clean the pilot air jet orifice.	Low pressure compressed air
(3)	Clean the pilot outlet.	
(4)	The pilot screw must be broken to be removed. Replace the pilot screw. 	
Main Circuit		
(5)	Remove foreign material from the main jet. 	Jet Cleaner Set Honda Carburetor Cleaner
(6)	Remove foreign material from the main nozzle air bleed holes. 	Low pressure compressed air
(7)	Clean the main air jet orifice.	
Float Circuit		
(8)	Remove foreign materials from the valve seat.	Honda Carburetor Cleaner
(9)	Clean the float valve and seat.  *Do not damage the seat and valve.*	Low pressure compressed air
(10)	Check the float level.	Float level gauge
(11)	Remove foreign material from the float chamber.	

CLEANING (cont.)

Use Honda Carburetor/Combustion Chamber Cleaner P/N CA66916 with it's plastic spray nozzle to clean the ports.

Some commercially-available chemical carburetor cleaners are very caustic. These cleaners may damage plastic parts such as O-rings, floats, choke valves, and float valve seats. Check the container for instructions. If you are in doubt, do not use these products to clean Honda carburetors.

NOTICE

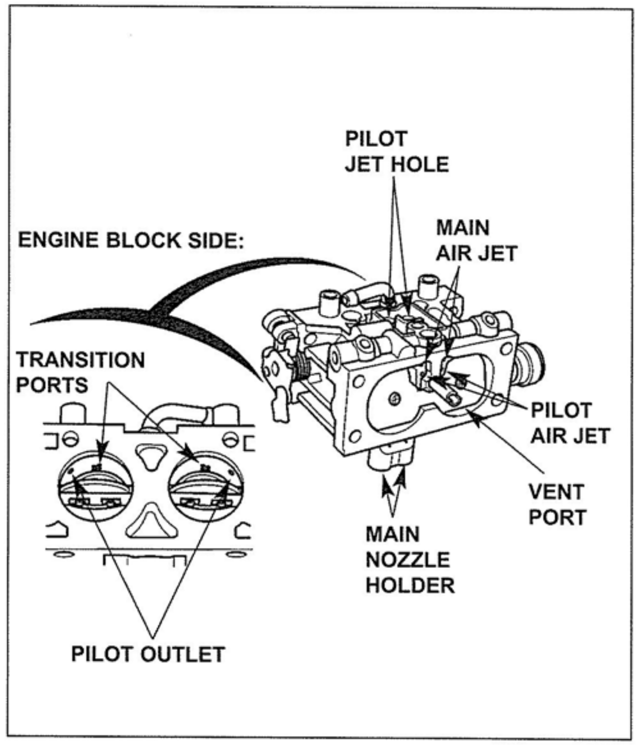
High air pressure may damage the carburetor. Use low pressure settings when cleaning passages.

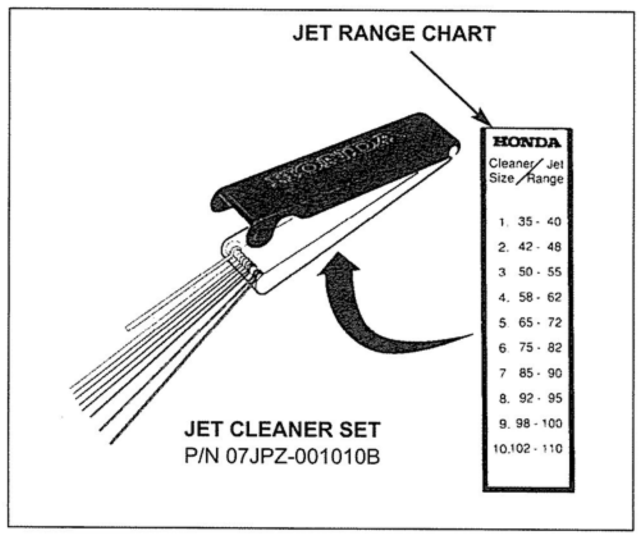
1. Clean the jets and passages with Honda Carburetor/Combustion Chamber Cleaner P/N CA66916
2. Use low air pressure and clean the following passages and ports:
   - Vent port
   - Pilot screw hole
   - Pilot jet hole
   - Main air jet
   - Transition ports
   - Pilot outlet
   - Main nozzle holder
3. Refer to the jet range chart on the back of the Jet Cleaner Set (P/N 07JPZ-001010B), and select the appropriate cleaning needle to remove any dust, dirt, etc. that remains after Step 1 and 2.

   NOTICE

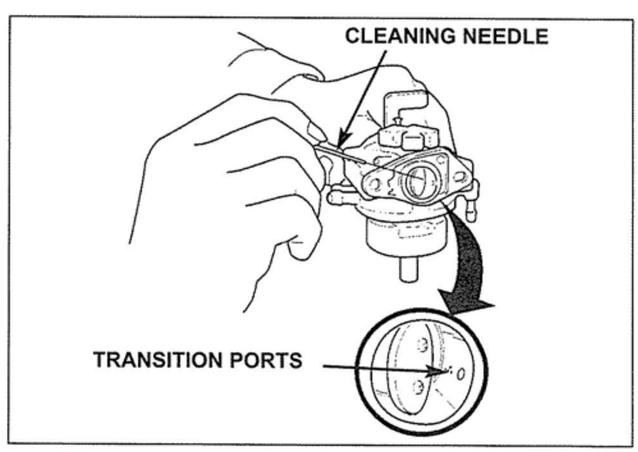
   Using a cleaning needle that is too large may damage the carburetor. Never force a needle, and never use a needle with a bent or damaged tip.

   Due to manufacturing tolerances, it may be necessary to use a needle that is smaller than the one indicated on the chart.





4. Be sure to clean the transition ports located in the side of the carburetor throat near the throttle valve. If these ports are blocked, the engine will run rough or stall just above idle.
5. Reassemble the carburetor carefully. Take care not to overtighten the main jet.
6. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
7. Proceed to the *Adjustment* section (next page).



ADJUSTMENT

Before making any adjustments:

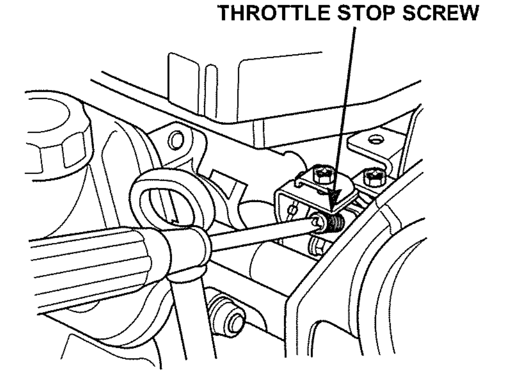
- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. With the engine idling, turn the throttle stop screw to obtain the standard idle speed. Refer to the appropriate shop manual for the standard idle speed specification.

Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases



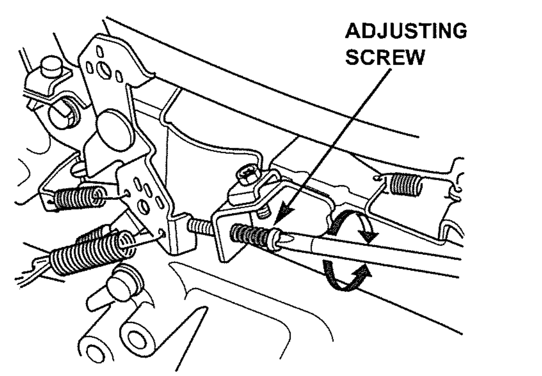
Maximum Engine Speed Adjustment

1. Move the throttle to FAST.
2. Start the engine, let it warm up, and then check the engine speed with the throttle set to FAST.

   Turn the adjusting screw to set maximum speed.

Control lever adjusting screw:

- Turn clockwise .... rpm decreases
- Turn counterclockwise .... rpm increase



NOTES

HDA-TYPE

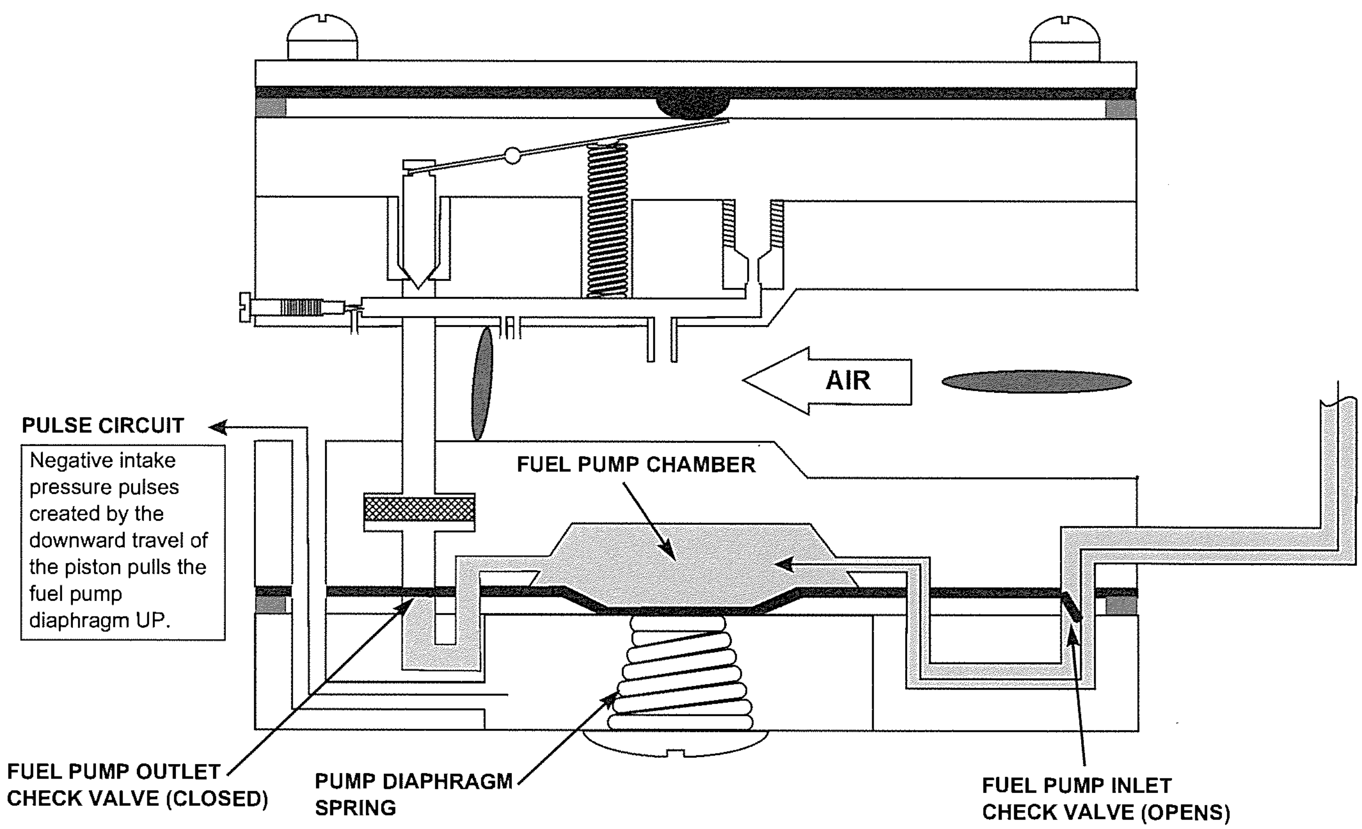
GX100 (RAMMER, DIAPHRAGM TYPE)

THEORY OF OPERATION

• Fuel Pump Circuit

When the intake valve opens and the piston moves down, a negative pressure pulse is created in the intake port, which is transmitted to the fuel pump diaphragm and pulls on the pump diaphragm compressing the pump diaphragm spring.

This creates a negative pressure on the opposite side of the pump diaphragm, and fuel is drawn from the fuel tank, through the fuel pump inlet check valve, and into the fuel pump chamber.



• Metering Circuit

As the intake valve closes, the negative intake pressure pulse stops and the fuel pump diaphragm is pushed back by the pump diaphragm spring.

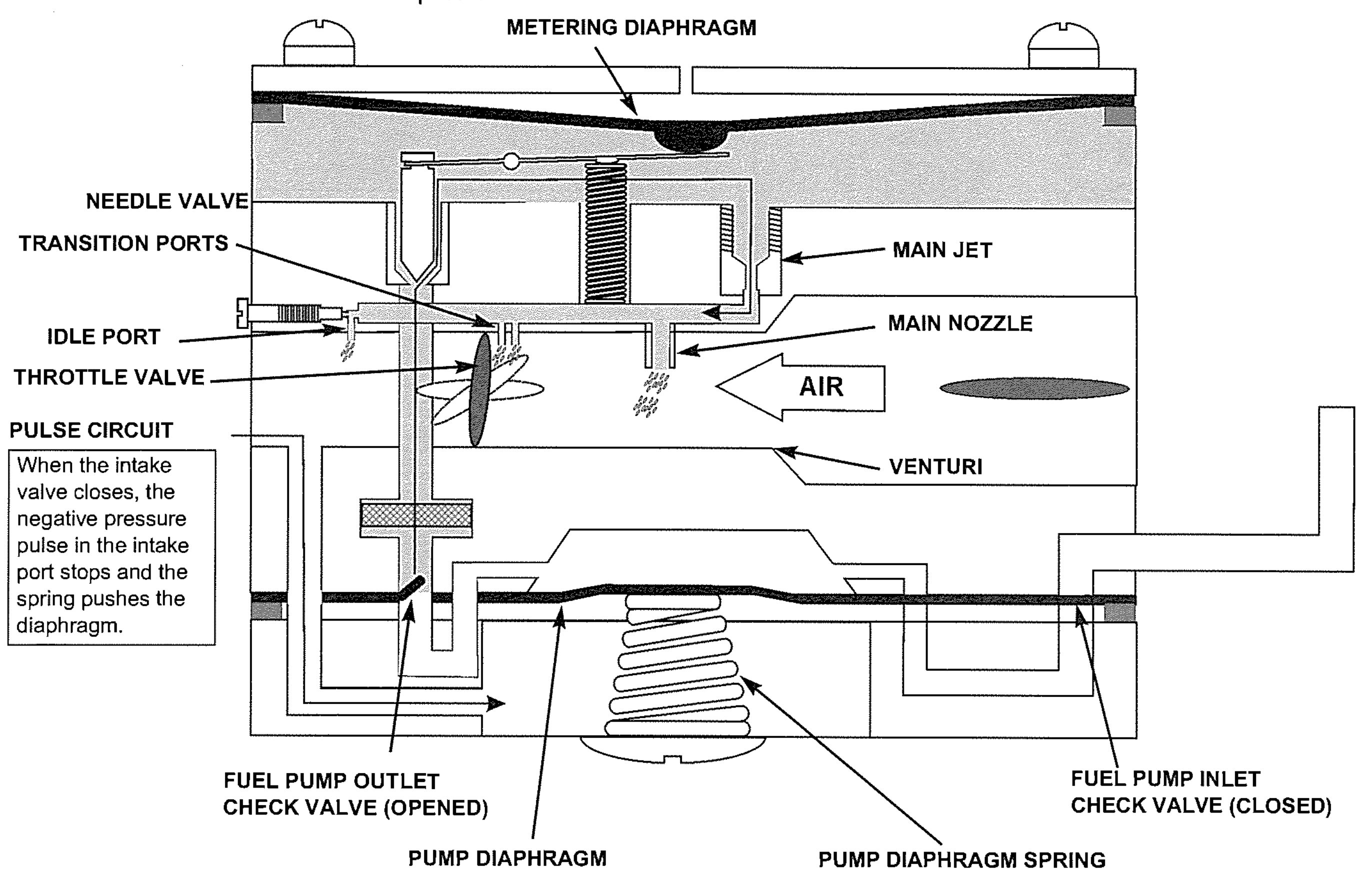
This forces the fuel pump inlet check valve closed and the fuel pump outlet valve open, allowing the fuel to travel to the inlet needle valve.

As air moves through the venturi with the downward movement of the piston on the intake stroke, a vacuum is created and the metering diaphragm is pulled on. This pushes the metering lever which raises inlet needle valve and fuel is allowed to enter the metering chamber.

The fuel is pulled through the main jet by the vacuum created in the venturi where it enters the main air stream and is mixed with the air before entering the combustion chamber.

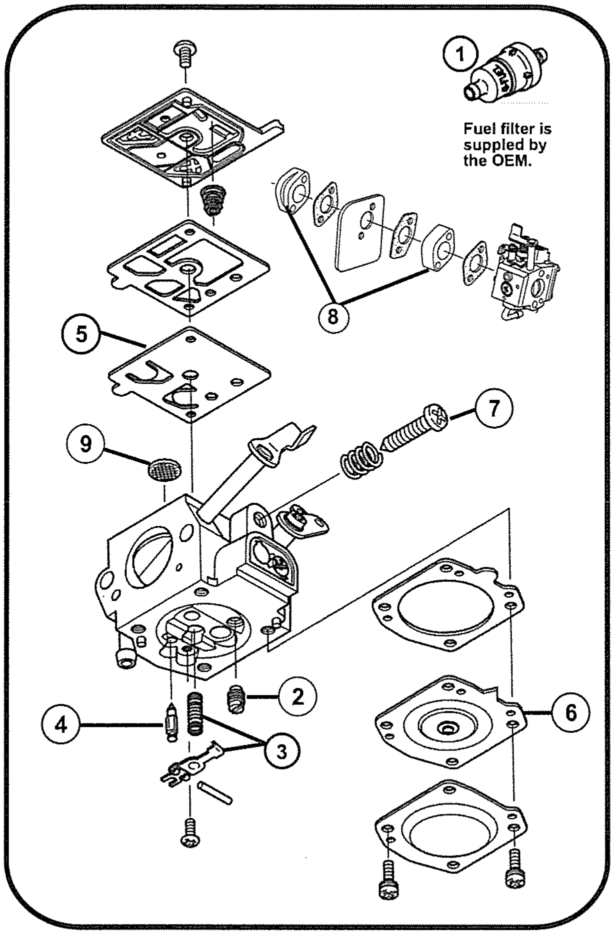
The position of the throttle valve determines how much fuel flows from the idle port, transition ports, and the main nozzle port.

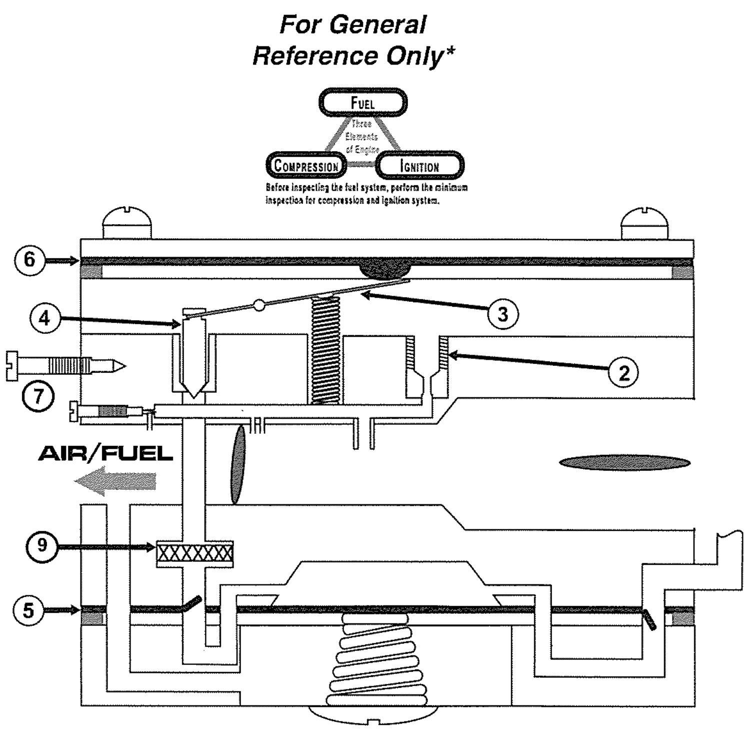
- With the throttle valve in the idle position, vacuum is strongest on the idle port where the majority of the fuel flows from.
- When the throttle is opened slightly, the transition ports are exposed to venturi vacuum and fuel begins to flow from them and the idle port.
- With the throttle valve fully open, the main nozzle is now exposed to venturi vacuum and fuel begins to flow from it as well as the transition and idle ports.



CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS

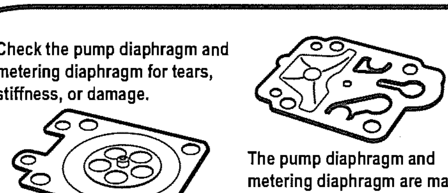
The information in this chapter applies to the carburetor and fuel system only. Use the Troubleshooting Chapter of the appropriate shop manual to confirm that the fuel system is the cause of the problem before using the table below.





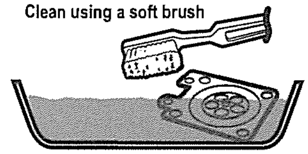
	1 Fuel filter	2 Main jet	3 Metering lever	4 Inlet needle valve	5 Pump diaphragm	6 Metering diaphragm	7 Throttle stop screw	8 Insulator	9 Inlet screen
Inspection points	Fuel filter is supplied by the OEM.	0.5 mm Clean the main jet passage	PUMP BODY +0.25 mm (+0.010 in) -0.13 mm (-0.005 in) METERING LEVER Check the metering lever and spring	Valve Valve seat Replace OK Check for valve and valve seat wear.	Check for damage	Check for damage	Adjust idle speed 1,850 ± 100 rpm	Check for cracks	Check for debris or damage
Hard to prime with bulb	○		○		○	○			○
Engine does not start	○	○	○	○	○	○	○		○
Unstable idle speed	○	○	○	○	○	○	○	○	○
Unstable high speed	○	○	○	○	○	○			○
Poor acceleration	○	○	○	○	○	○		○	○
Fuel overflow			○	○		○			

Check the pump diaphragm and metering diaphragm for tears, stiffness, or damage.

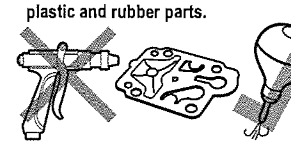


The pump diaphragm and metering diaphragm are made of rubber and will deteriorate over time.

Clean using a soft brush

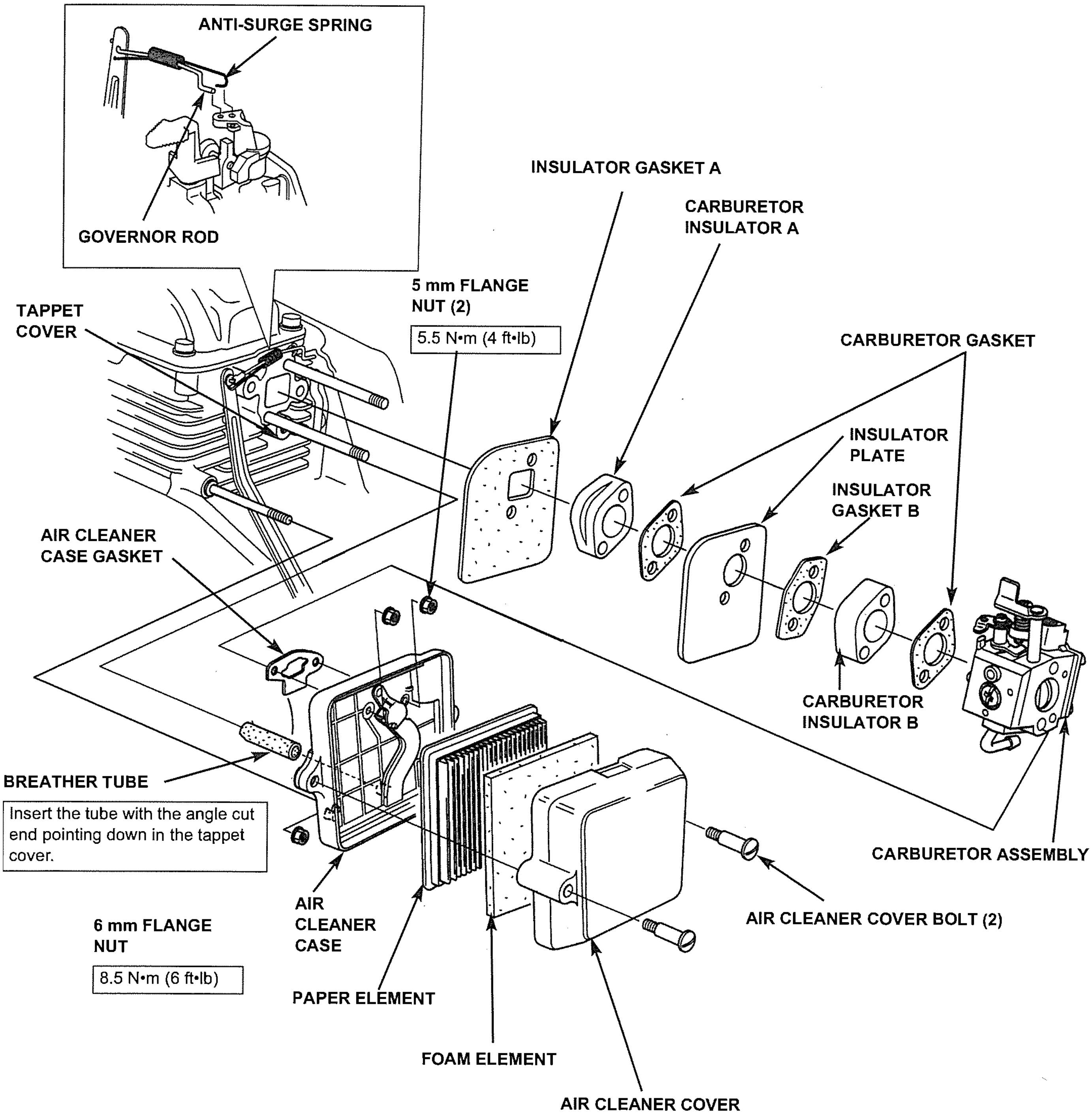


Do not apply high pressure air to plastic and rubber parts.



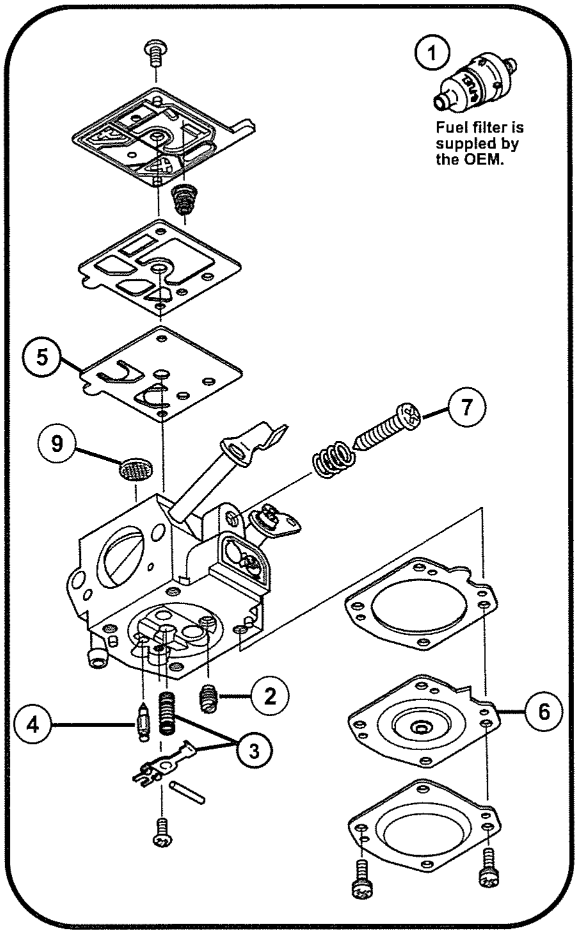
CARBURETOR REMOVAL

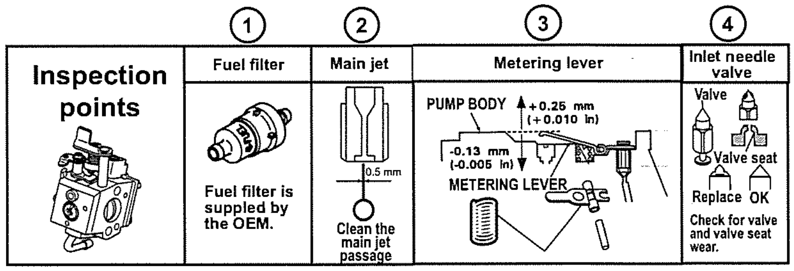
Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.

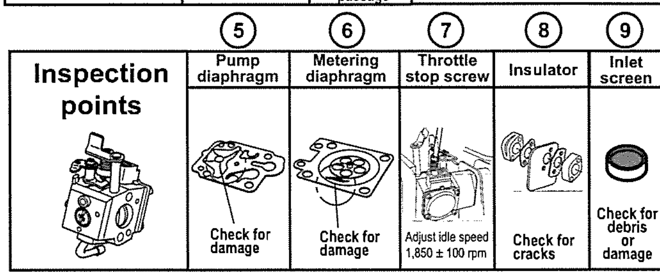


DISASSEMBLY/INSPECTION

1. Drain all the float chamber fuel into an approved container.
2. Clean the outside of the carburetor before disassembly.
3. Disassemble and inspect the carburetor as indicated below. Use a 6 mm (1/4 in) flat cabinet screwdriver to remove the main jet.

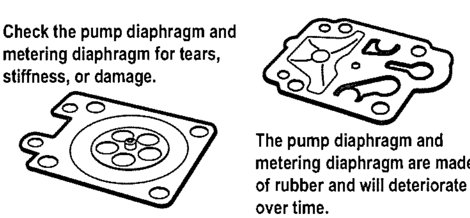






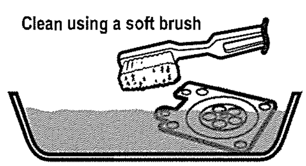
Special Attention

Check the pump diaphragm and metering diaphragm for tears, stiffness, or damage.

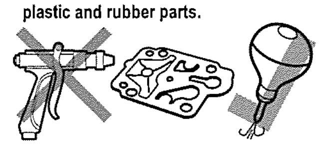


The pump diaphragm and metering diaphragm are made of rubber and will deteriorate over time.

Clean using a soft brush



Do not apply high pressure air to plastic and rubber parts.



1. Assemble the carburetor using new gaskets and diaphragms.
2. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
3. Proceed to the *Adjustment* section (next page).

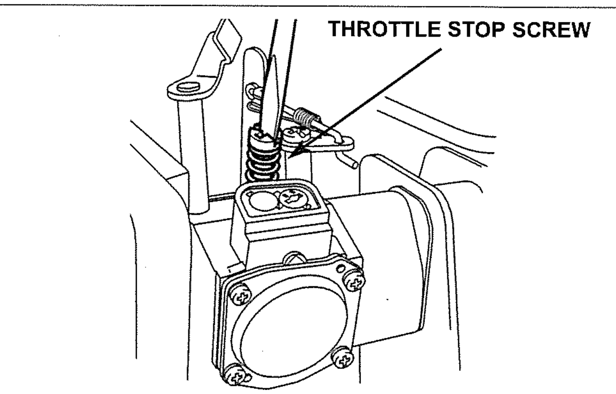
ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

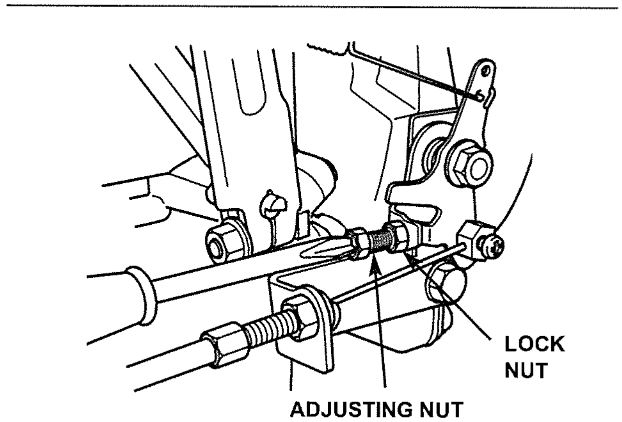
1. Start the engine and allow it to warm up to normal operating temperature.
2. Adjust the idle speed by turning the throttle stop screw right or left.



Maximum Engine Speed Adjustment

1. Verify the throttle trigger operates smoothly and the throttle cable is undamaged.

   If there is visible damage, or if the throttle trigger does not operate smoothly, replace the throttle cable.
2. Check the free play at the end of the throttle cable (refer to the appropriate shop manual for the correct specification).
3. Loosen the lock nut with a 10 mm wrench, and turn the adjusting nut in or out as required.
4. Tighten the lock nut and recheck cable free play.



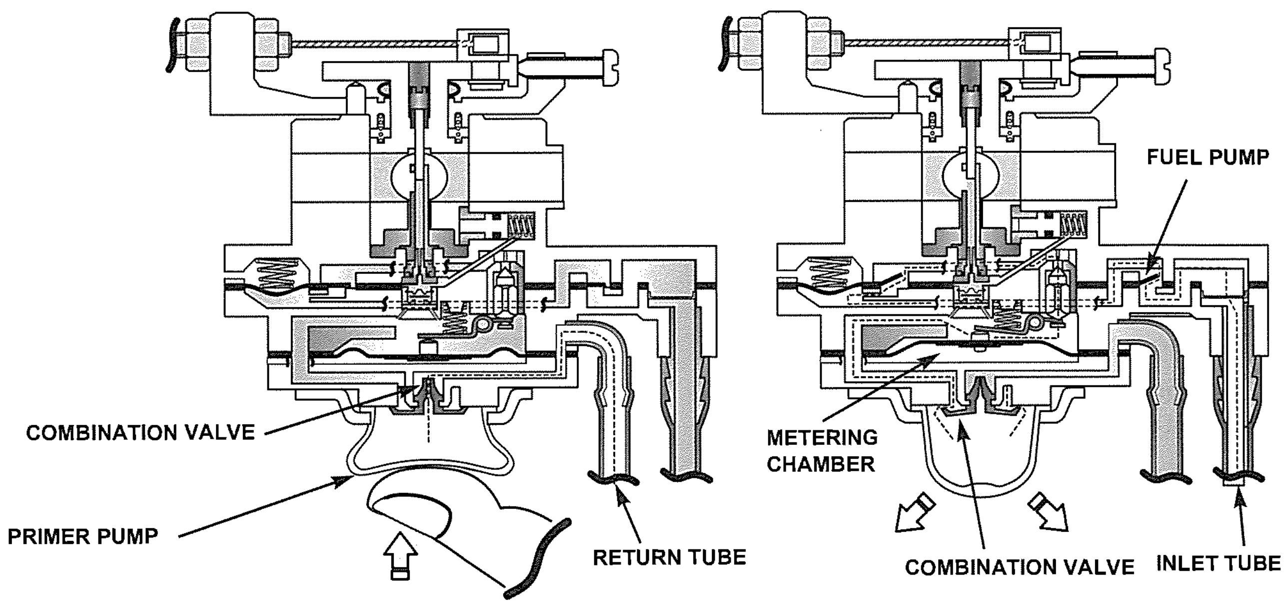
WYB-TYPE

GX25 • GX35

• Priming Circuit

By depressing the primer pump, air is forced through the combination valve. This air passes through the pump body and out the return tube.

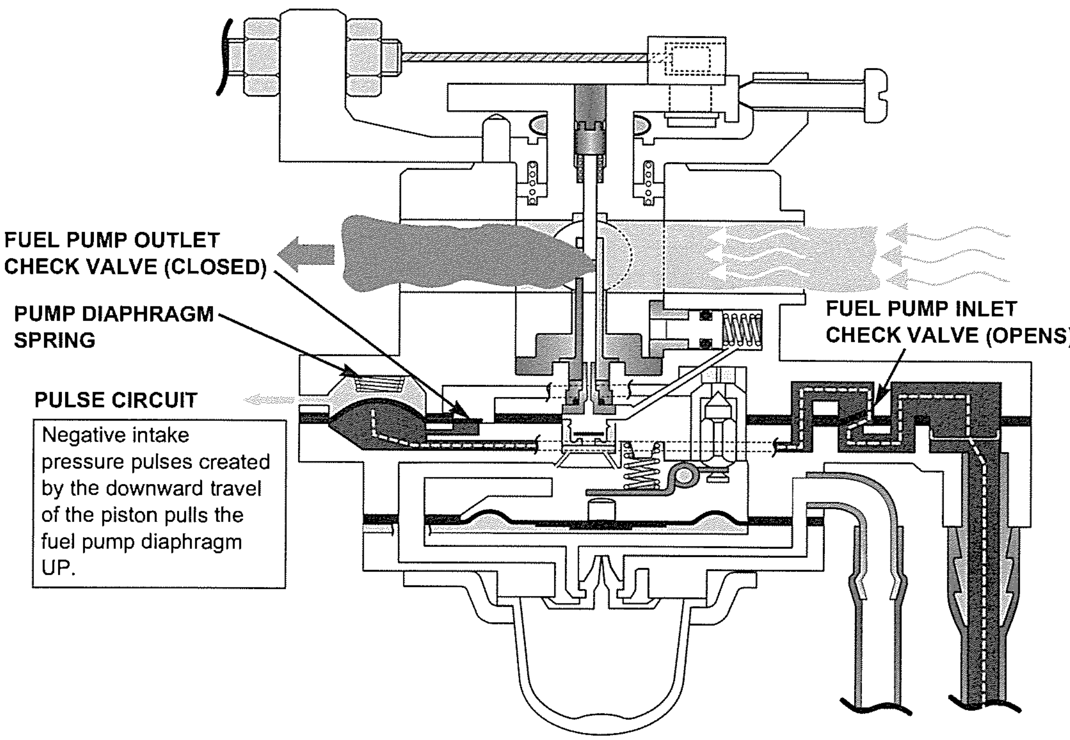
When the primer pump is released, the combination valve is drawn closed. A vacuum is created in the primer pump, which draws fuel in the inlet tube, across the fuel pump check valves, into the metering chamber, and through the combination valve into the primer bulb.



• Fuel Pump Circuit

When the intake valve opens and the piston moves down, a negative pressure pulse is created in the intake port, which is transmitted to the fuel pump diaphragm and pulls up on the pump diaphragm.

This creates a negative pressure on the opposite side of the pump diaphragm, and fuel is drawn from the fuel tank, through the fuel pump inlet check valve, and into the fuel pump chamber.



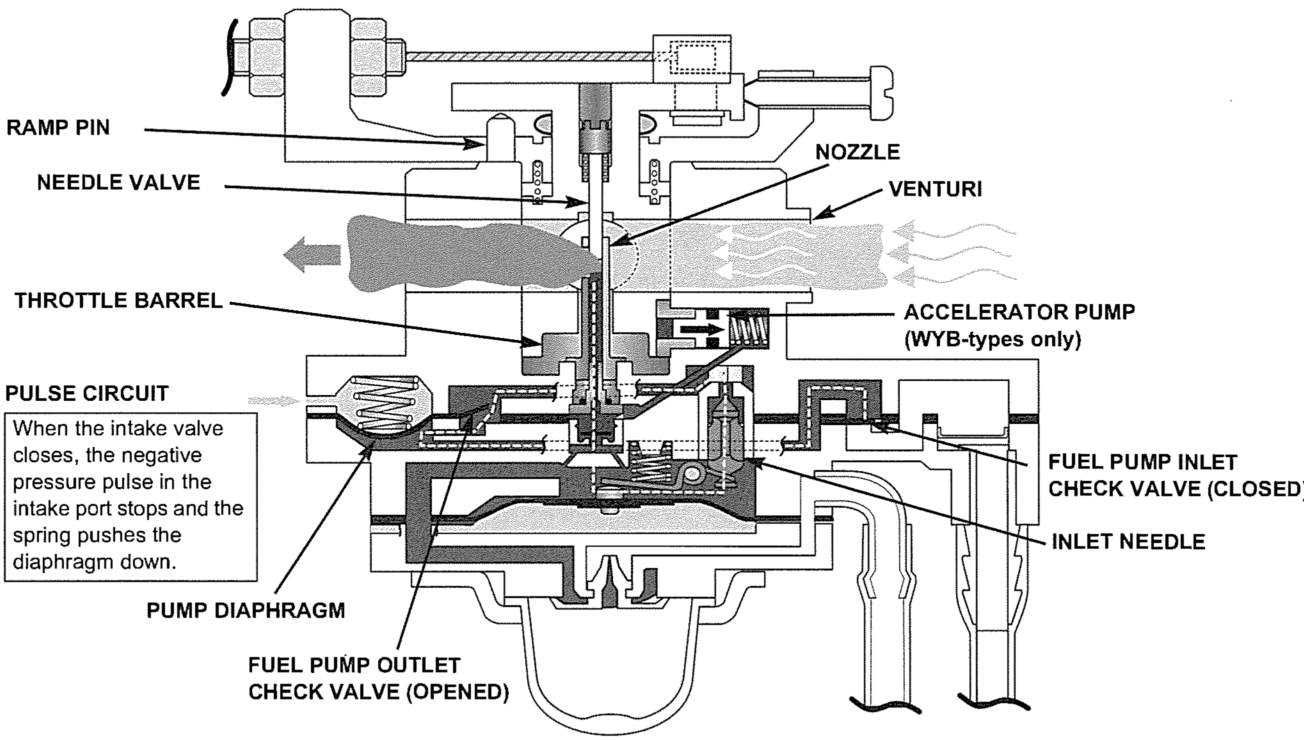
• Metering Circuit

As the intake valve closes, the negative intake pressure pulse stops and the fuel pump diaphragm is pushed down by the spring.

This forces the fuel pump inlet check valve closed and the fuel pump outlet valve open, allowing the fuel to travel to the inlet needle valve.

As air moves through the venturi with the downward movement of the piston on the intake stroke, a vacuum is created and the metering diaphragm is raised up. This unseats the inlet needle valve and fuel is allowed to enter the metering chamber.

The fuel is pulled through the main jet where it enters the main air stream and is mixed with the air before entering the combustion chamber.



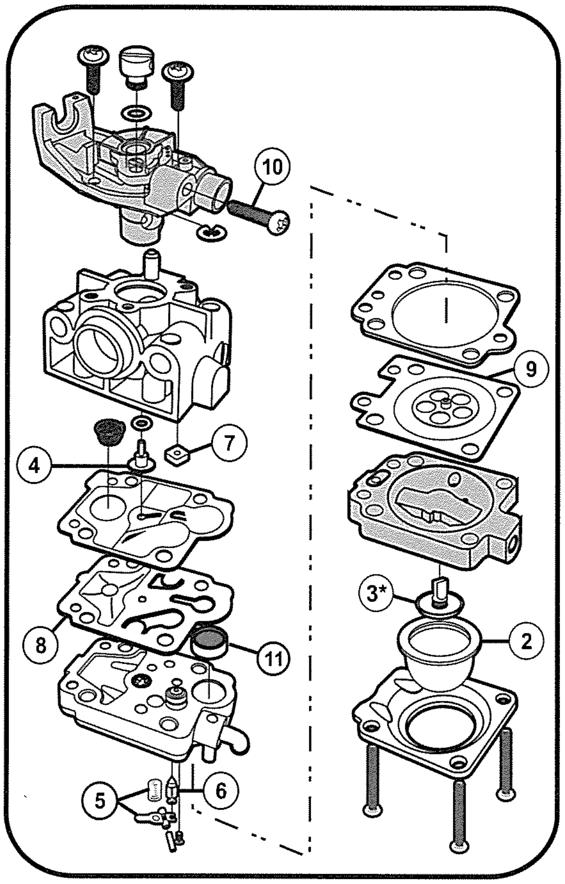
• Accelerating

As the throttle is opened, the barrel valve rotates. As it rotates, the barrel is raised upward by the ramp pin, and the needle valve (attached to the barrel) is pulled from the nozzle opening, allowing more fuel to enter the air stream.

WYB-types only:

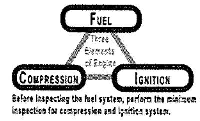
At the same time that the throttle is opened, a portion of the throttle barrel pushes on the accelerator pump. This gives an additional shot of fuel into the air stream and provides more rapid engine acceleration.

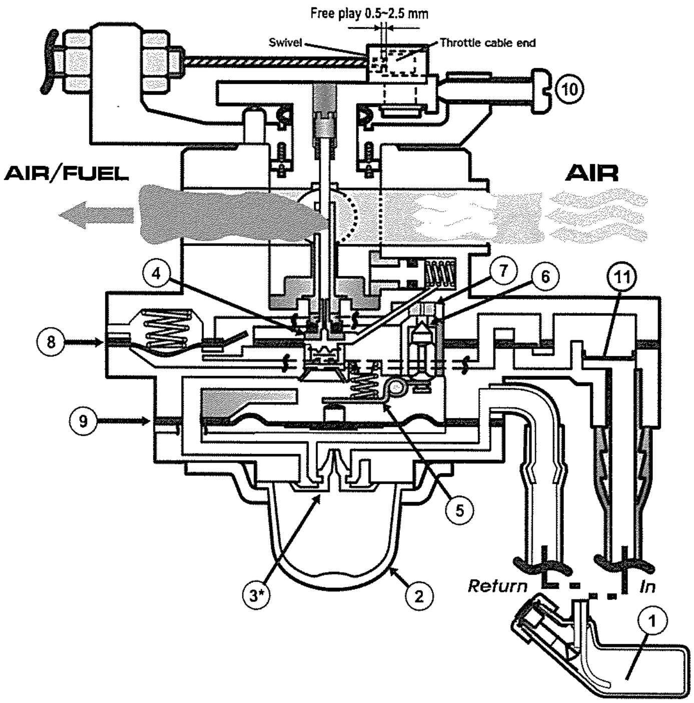
CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS



*Combination valve is part of the air purge body assy.

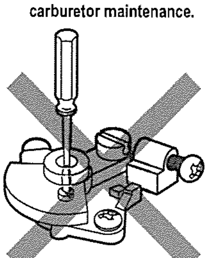
*For General Reference Only**



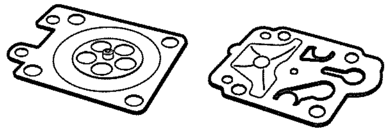


	①	②	③*	④	⑤	⑥	⑦	⑧	⑨	⑩		⑪
	Fuel filter	Primer pump	Combination valve	Main jet	Metering lever	Inlet needle valve	Fuel inlet filter	Pump diaphragm	Metering diaphragm	Throttle stop screw	Insulator	Inlet screen
Inspection points	Fuel filter Solvent	Check for cracks	Check for cracks	0.3 mm Clean the main jet passage	1.18 ~ 1.50 mm (0.046 ~ 0.059 in) METERING LEVER PUMP BODY Check the metering lever and spring	Valve Valve seat Replace OK Check for valve and valve seat wear.	Clean or replace	Check for damage	Check for damage	Throttle stop screw Adjust idle speed 3,100 ± 200 rpm	Check for cracks	Check for debris or damage
Hard to prime with bulb	○	○	○		○			○	○			○
Engine does not start	○	○	○	○	○	○	○	○	○	○		○
Unstable idle speed	○			○	○	○	○	○	○	○	○	○
Unstable high speed	○			○	○	○	○	○	○			○
Poor acceleration	○			○	○	○	○	○	○		○	○
Fuel overflow					○	○			○			

Do not adjust the idle needle pin during carburetor maintenance.

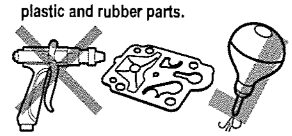


Check the pump diaphragm and metering diaphragm for tears, stiffness, or damage.

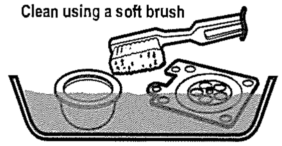


The pump diaphragm and metering diaphragm are made of rubber and will deteriorate over time.

Do not apply high pressure air to plastic and rubber parts.

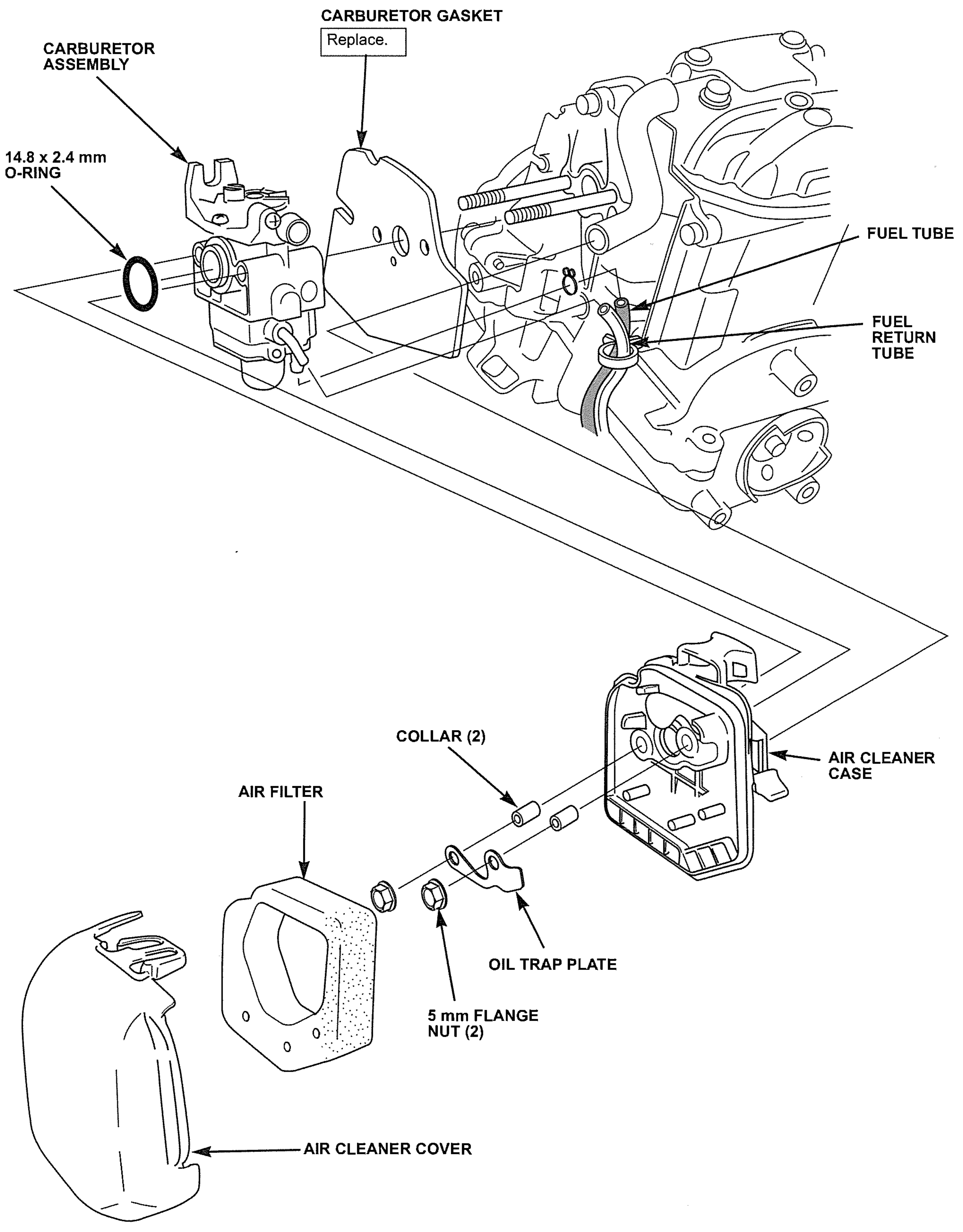


Clean using a soft brush

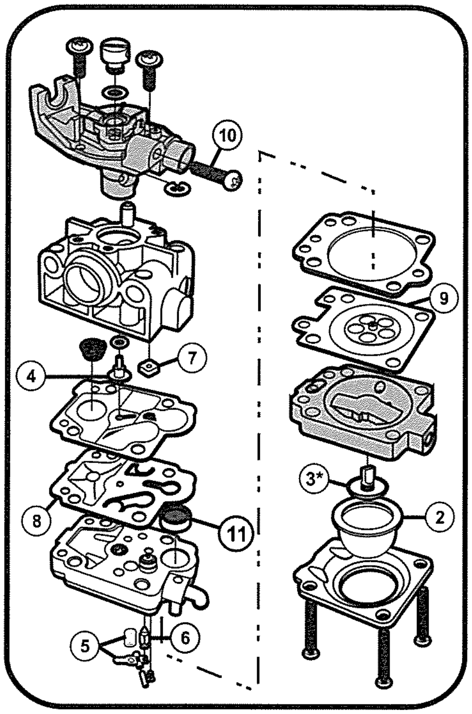


CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.



CARBURETOR CLEANING



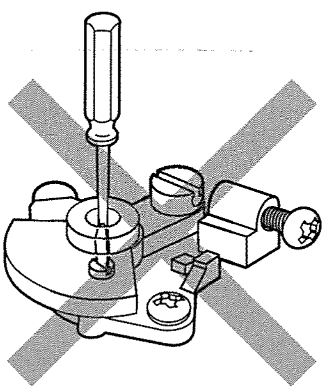
*Combination valve is part of the air purge body assy.

Inspection points	① Fuel filter	② Primer pump	③* Combination valve	④ Main jet	⑤ Metering lever
	Fuel filter Solvent	Check for cracks	Check for cracks	0.3 mm Clean the main jet passage	PUMP BODY 1.18 ~ 1.50 mm (0.046 ~ 0.059 in) Check the metering lever and spring

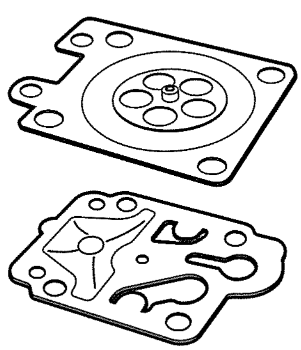
Inspection points	⑥ Inlet needle valve	⑦ Fuel inlet filter	⑧ Pump diaphragm	⑨ Metering diaphragm	⑩ Throttle stop screw	Insulator	⑪ Inlet screen
	Valve Valve seat Replace OK Check for valve and valve seat wear.	Clean or replace	Check for damage	Check for damage	Throttle stop screw Adjust idle speed 3,100 ± 200 rpm	Check for cracks	Check for debris or damage

Special Attention

Do not adjust the idle needle pin during carburetor maintenance.

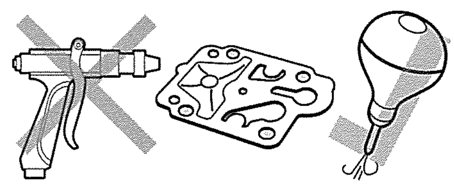


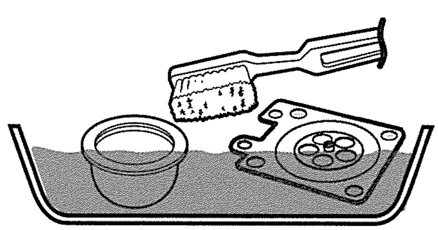
Check the pump diaphragm and metering diaphragm for tears, stiffness, or damage.



The pump diaphragm and metering diaphragm are made of rubber and will deteriorate over time.

Do not apply high pressure air to plastic and rubber parts.





Clean using a soft brush

1. Assemble the carburetor using new gaskets and diaphragms.
2. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
3. Proceed to the *Adjustment* section (next page).

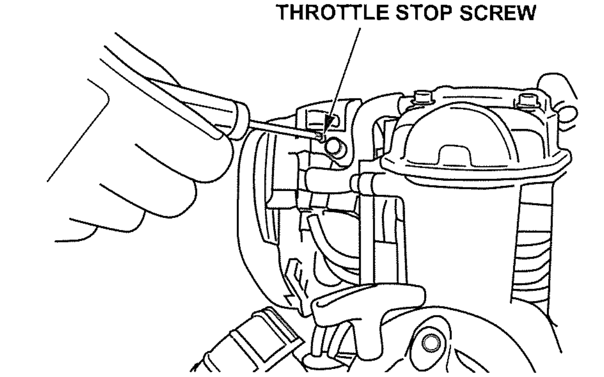
ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

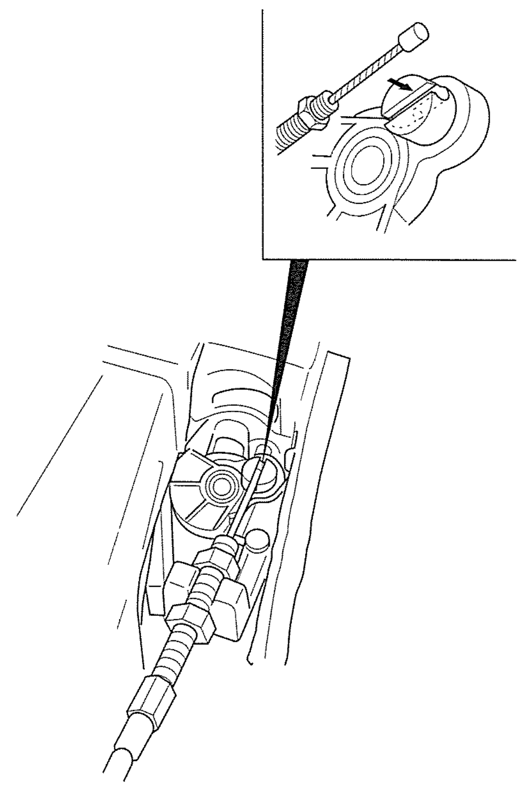
1. Start the engine and allow it to warm up to normal operating temperature.
2. Then adjust the idle speed by turning the throttle stop screw right or left.



Maximum Engine Speed Adjustment

1. Verify the throttle trigger operates smoothly and the throttle cable is undamaged.

   If there is visible damage, or if the throttle trigger does not operate smoothly, replace the throttle cable.
2. Check the free play at the end of the throttle cable (refer to the appropriate shop manual for the correct specification). If adjustment is needed, use the following cable adjustment procedure.
3. Loosen the lock nut with a 10 mm wrench, and turn the adjusting nut in or out as required.
4. Tighten the lock nut and recheck cable free play.



NOTES

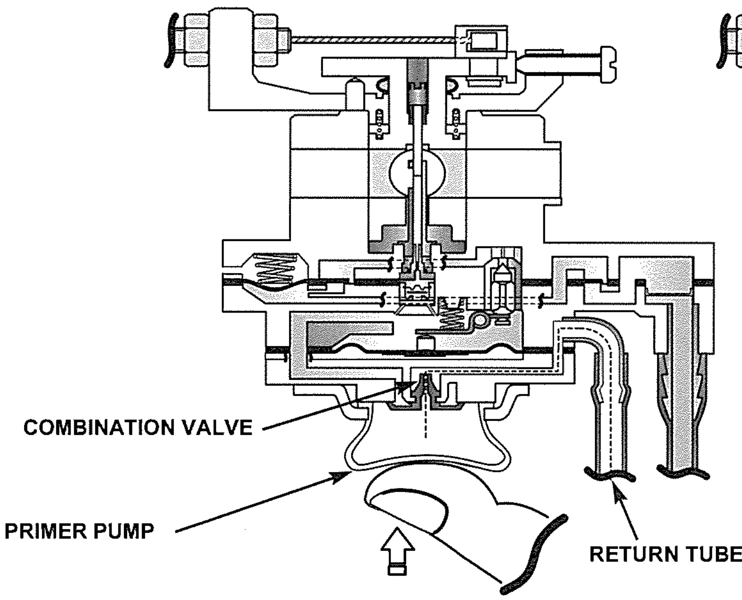
WYL-TYPE

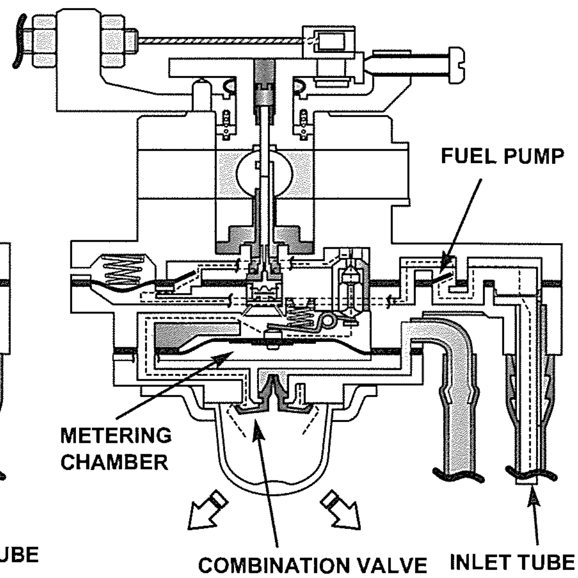
GX22 • GX31

• Priming Circuit

By depressing the primer pump, air is forced through the combination valve. This air passes through the pump body and out the return tube.

When the primer pump is released, the combination valve is drawn closed. A vacuum is created in the primer pump, which draws fuel in the inlet tube, across the fuel pump check valves, into the metering chamber, and through the combination valve into the primer bulb.

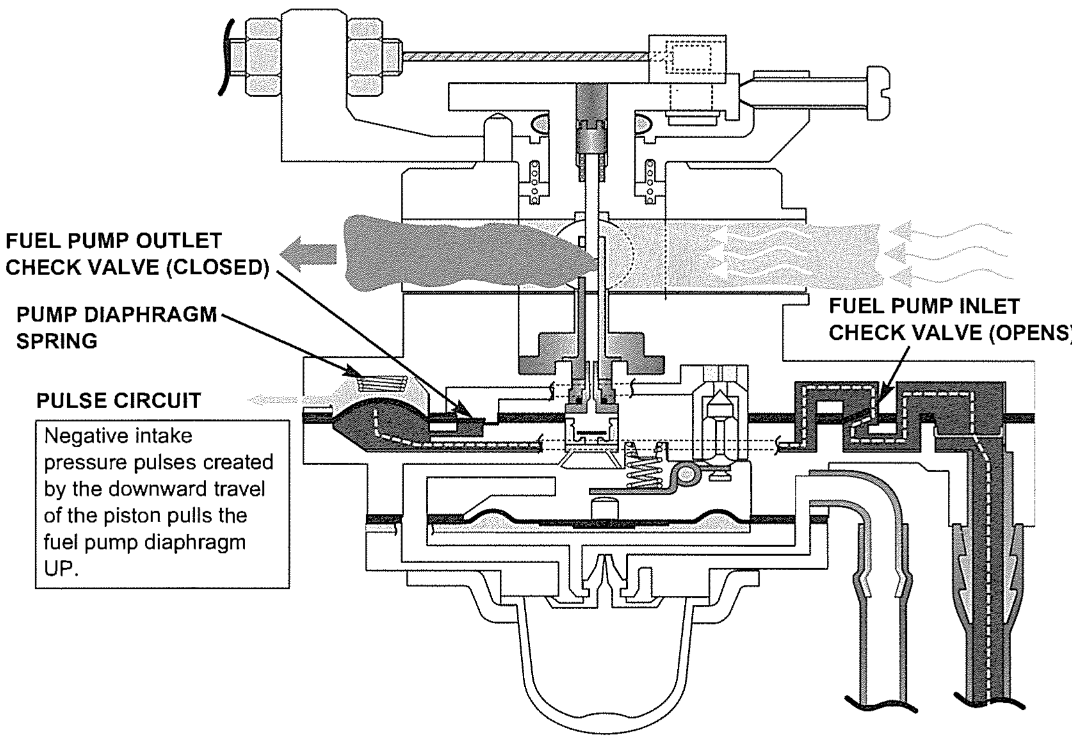




• Fuel Pump Circuit

When the intake valve opens and the piston moves down, a negative pressure pulse is created in the intake port, which is transmitted to the fuel pump diaphragm and pulls up on the pump diaphragm.

This creates a negative pressure on the opposite side of the pump diaphragm, and fuel is drawn from the fuel tank, through the fuel pump inlet check valve, and into the fuel pump chamber.



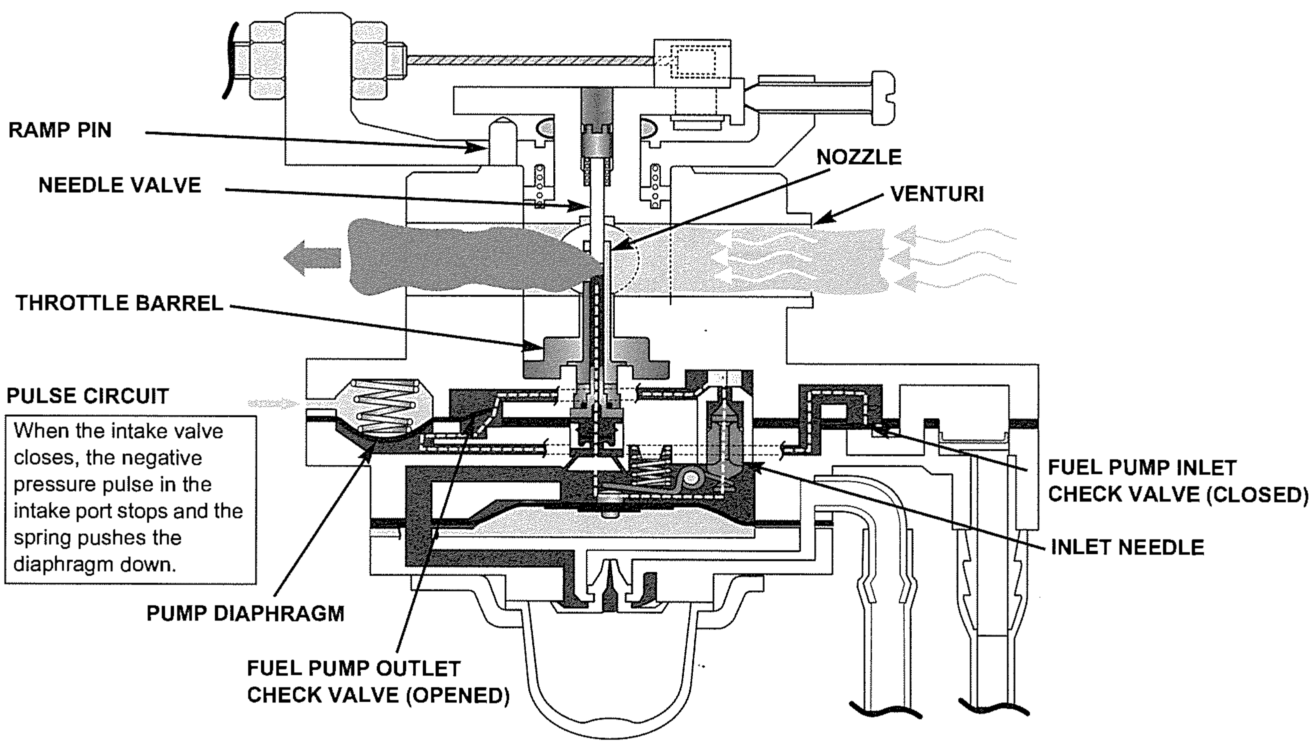
• Metering Circuit

As the intake valve closes, the negative intake pressure pulse stops and the fuel pump diaphragm is pushed down by the spring.

This forces the fuel pump inlet check valve closed and the fuel pump outlet valve open, allowing the fuel to travel to the inlet needle valve.

As air moves through the venturi with the downward movement of the piston on the intake stroke, a vacuum is created and the metering diaphragm is raised up. This unseats the inlet needle valve and fuel is allowed to enter the metering chamber.

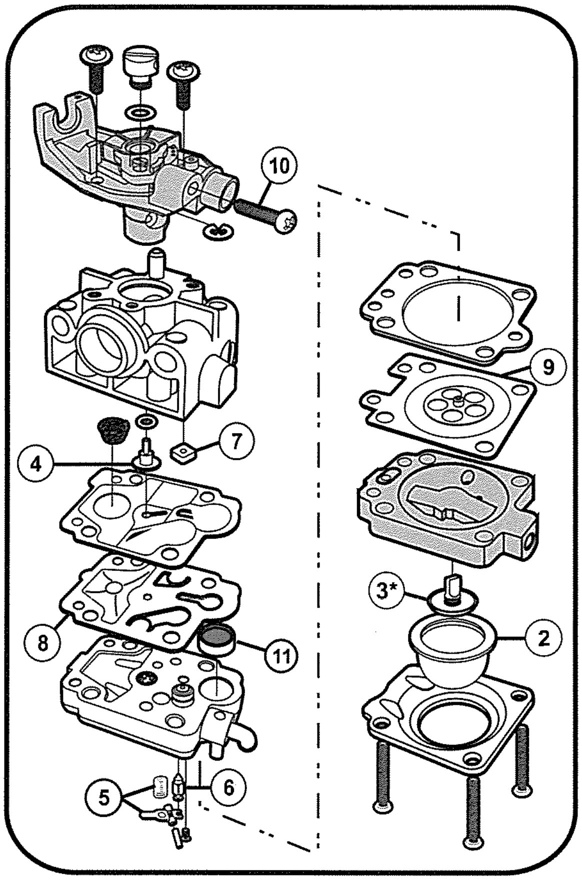
The fuel is pulled through the main jet where it enters the main air stream and is mixed with the air before entering the combustion chamber.



• Accelerating

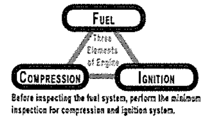
As the throttle is opened, the barrel valve rotates. As it rotates, the barrel is raised upward by the ramp pin, and the needle valve (attached to the barrel) is pulled from the nozzle opening, allowing more fuel to enter the air stream.

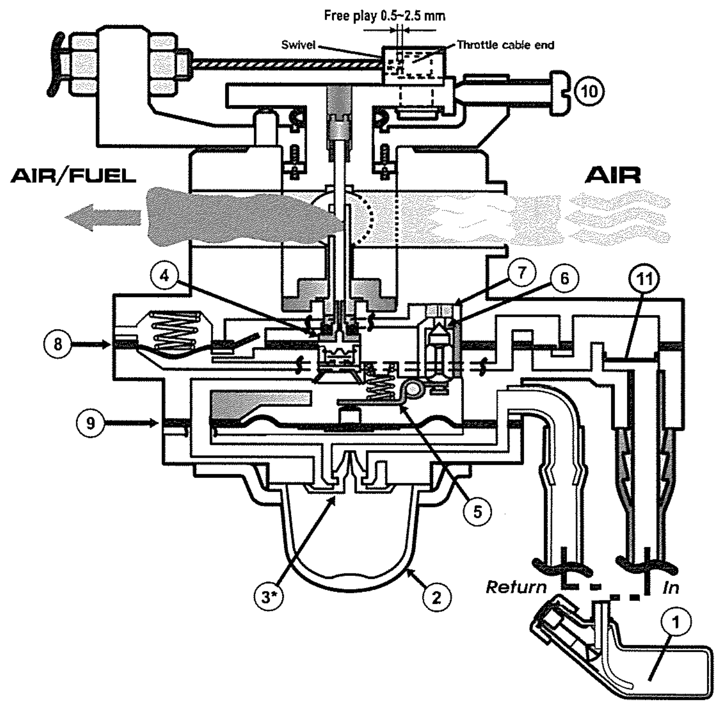
CARBURETOR TROUBLESHOOTING AND INSPECTION POINTS



*Combination valve is part of the air purge body assy.

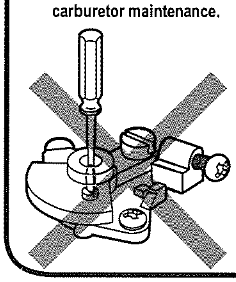
*For General Reference Only**



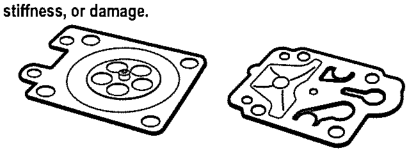


	① Fuel filter	② Primer pump	③* Combination valve	④ Main jet	⑤ Metering lever	⑥ Inlet needle valve	⑦ Fuel inlet filter	⑧ Pump diaphragm	⑨ Metering diaphragm	⑩ Throttle stop screw	Insulator	⑪ Inlet screen
Inspection points	Fuel filter, Solvent	Check for cracks	Check for cracks	0.3 mm; Clean the main jet passage	1.18 ~ 1.50 mm (0.046 ~ 0.059 in); METERING LEVER; PUMP BODY; Check the metering lever and spring	Valve; Valve seat; Replace; OK; Check for valve and valve seat wear.	Clean or replace	Check for damage	Check for damage	Throttle stop screw; Adjust idle speed 3,100 ± 200 rpm	Check for cracks	Check for debris or damage
Hard to prime with bulb	○	○	○		○			○	○			○
Engine does not start	○	○	○	○	○	○	○	○	○	○		○
Unstable idle speed	○			○	○	○	○	○	○	○	○	○
Unstable high speed	○			○	○	○	○	○	○			○
Poor acceleration	○			○	○	○	○	○	○		○	○
Fuel overflow					○	○			○			

Do not adjust the idle needle pin during carburetor maintenance.



Check the pump diaphragm and metering diaphragm for tears, stiffness, or damage.



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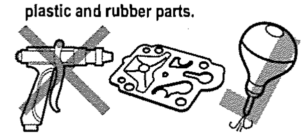
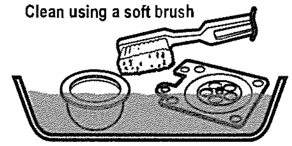
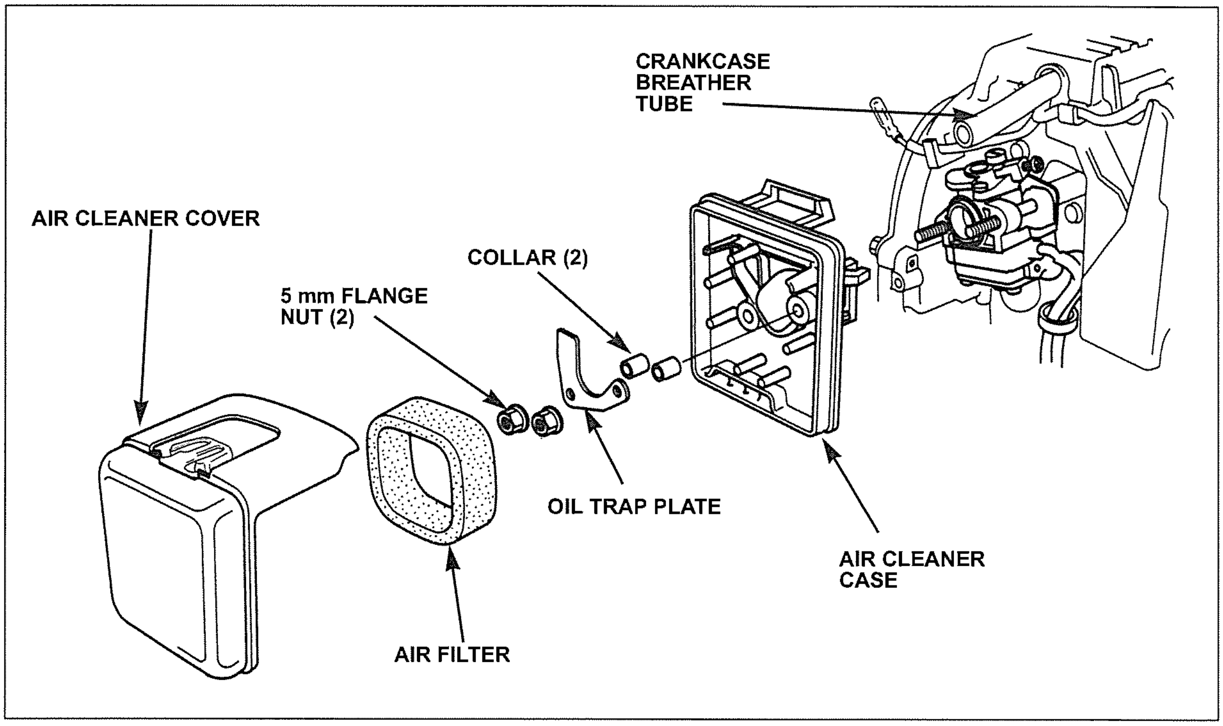


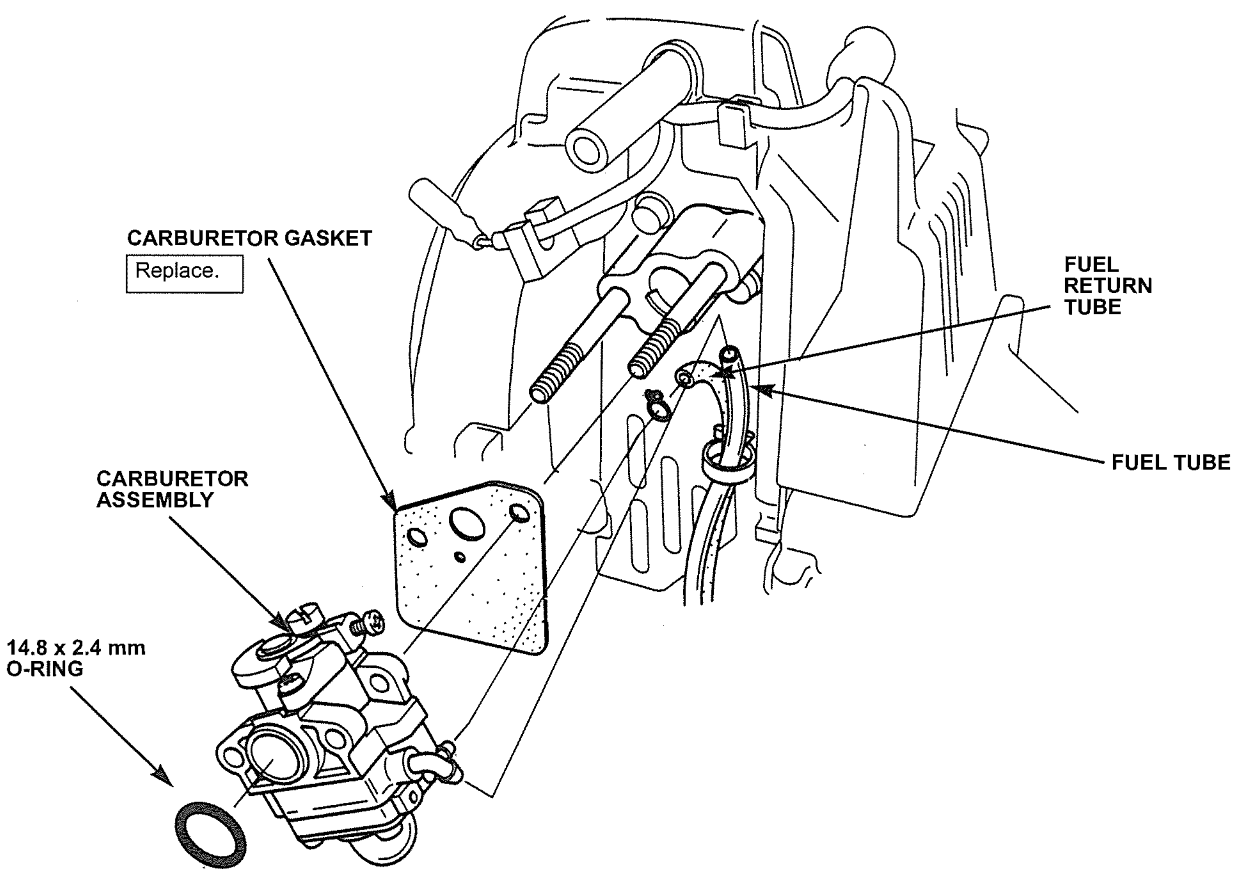
Clean using a soft brush



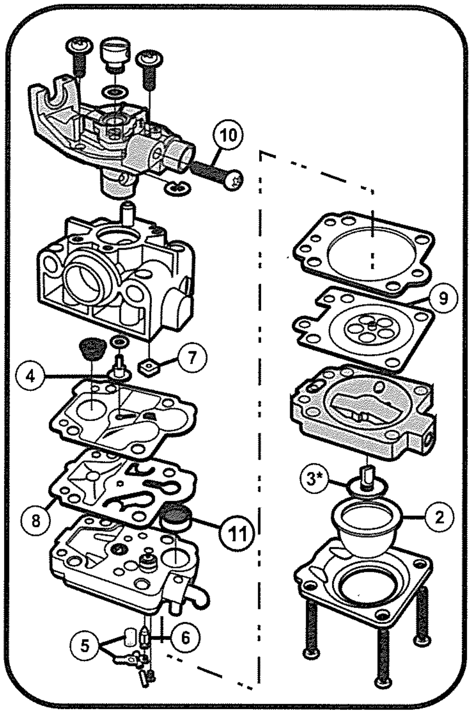
CARBURETOR REMOVAL

Your type may be different. Refer to the appropriate shop manual for carburetor removal and installation.





CARBURETOR CLEANING



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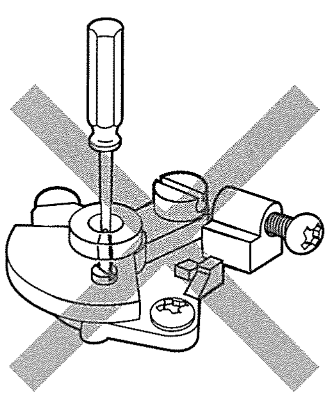
	Fuel filter Solvent	Check for cracks	Check for cracks	0.3 mm Clean the main jet passage	PUMP BODY 1.18 ~ 1.50 mm (0.046 ~ 0.059 in) Check the metering lever and spring

Inspection points	⑥ Inlet needle valve	⑦ Fuel inlet filter	⑧ Pump diaphragm	⑨ Metering diaphragm	⑩ Throttle stop screw	Insulator	⑪ Inlet screen
	Valve Valve seat Replace OK Check for valve and valve seat wear.	Clean or replace	Check for damage	Check for damage	Throttle stop screw Adjust idle speed 3,100 ± 200 rpm	Check for cracks	Check for debris or damage

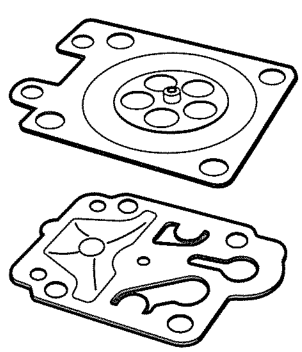
*Combination valve is part of the air purge body assy.

Special Attention

Do not adjust the idle needle pin during carburetor maintenance.

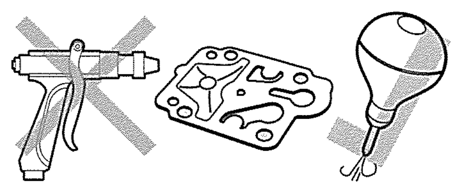


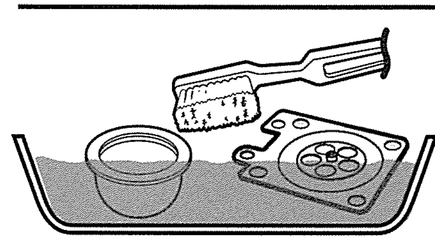
Check the pump diaphragm and metering diaphragm for tears, stiffness, or damage.



The pump diaphragm and metering diaphragm are made of rubber and will deteriorate over time.

Do not apply high pressure air to plastic and rubber parts.





Clean using a soft brush

1. Assemble the carburetor using new gaskets and diaphragms.
2. Install the carburetor in reverse order of its removal using new gaskets where appropriate.
3. Proceed to the *Adjustment* section (next page).

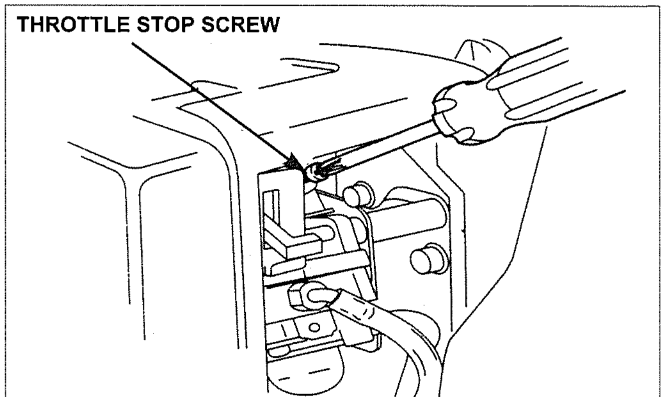
ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

Idle Speed Adjustment

1. Start the engine and allow it to warm up to normal operating temperature.
2. Then adjust the idle speed by turning the throttle stop screw right or left.



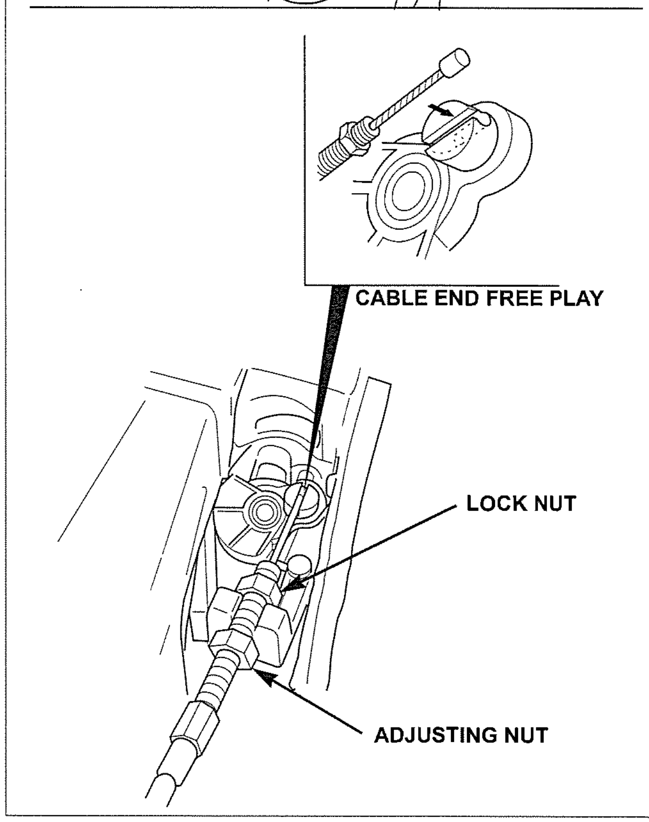
Maximum Engine Speed Adjustment

1. Verify the throttle trigger operates smoothly and the throttle cable is undamaged.

   If there is visible damage, or if the throttle trigger does not operate smoothly, replace the throttle cable.
2. Check the free play at the end of the throttle cable.

Free play	1.0 - 3.0 mm (1/16 - 1/8 in)

   If adjustment is needed, use the following cable adjustment procedure.
3. Loosen the lock nut with a 10 mm wrench, and turn the adjusting nut in or out as required.
4. Tighten the lock nut and recheck cable free play.



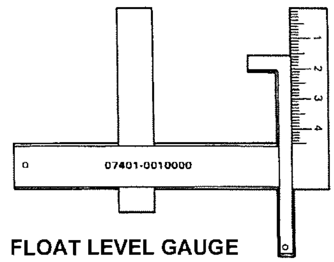
TOOLS 4

SPECIAL TOOLS

See the last page of this section for tool ordering information.

- **Float Level Gauge**

  The Honda Float Level Gauge makes it possible to easily and accurately inspect carburetor float level.



FLOAT LEVEL GAUGE
P/N 07401-0010000

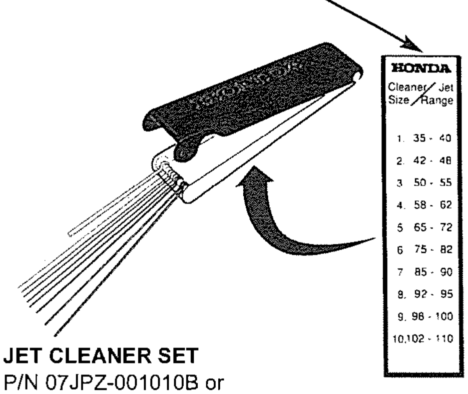
- **Jet Cleaner Set**

  The Honda Jet Cleaner Set consists of 10 cleaning needles. Each needle is sized to fit a specific jet range. A chart on the back of the needle holder shows which needle should be used for each range.

  The Jet Cleaner Set is also useful for cleaning carburetor air and fuel passages.

  NOTICE
  Using a cleaning needle that is too large may damage the carburetor. Never force the needle and never use a needle that is bent or damaged.

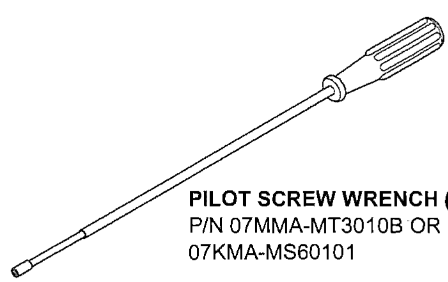
JET RANGE CHART



JET CLEANER SET
P/N 07JPZ-001010B or
P/N 07JPZ-001010A

- **Pilot screw wrench (D)**
  07MMA-MT3010B or
  07KMA-MS60101

  The pilot screw wrench has a special "D" end to adjust the pilot screw on the GX/GXV630/660/690 V-twin engines.



PILOT SCREW WRENCH (D)
P/N 07MMA-MT3010B OR
07KMA-MS60101

COMMERCIALLY AVAILABLE TOOLS

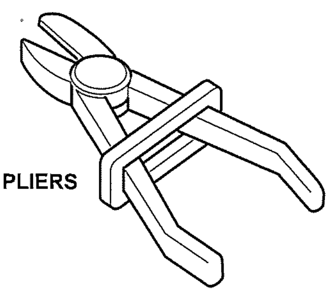
- **Ultrasonic Parts Washer**

  This tool may become your best friend for its ease of cleaning all of your carbureted fuel system components. Internal passages and jets are cleaned without major disassembly. Ultrasonic cleaners are the only way to quickly and efficiently clean the entire carburetor without harming the carburetor or your skin. To learn more about ultrasonic cleaning, call Equipment Solutions at their toll-free number, 1-888-424-6857.

ULTRASONIC PARTS WASHER
CAE-GMJ-1812

- **Hose pinching pliers**
  SUN-HCP6

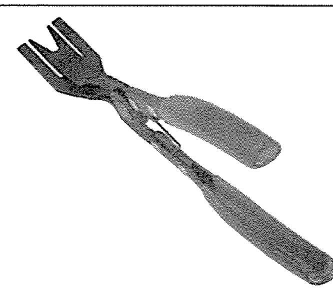
  Use the pinching pliers to stop the fuel flow to carburetors without damaging the fuel line.



HOSE PINCHING PLIERS
SUN-HCP6

- **Fuel tube removal pliers**

  Clip removal pliers (AmPro part number T70609, Snap-On YA331) can be purchased at most auto supply stores. They are commonly used to remove door clips on automobiles.



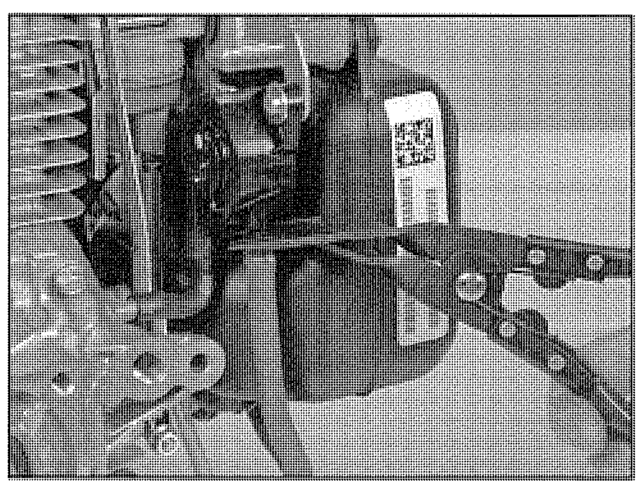
Example of usage:

1. Slide the clip removal pliers between the fuel tube and the fuel pump assembly.
2. Squeeze the pliers together to separate the fuel tube from the fuel pump assembly.

   The clamp may move, but this tool should remove both the clamp and the fuel tube in one operation.

   You might have to loosen the pliers slightly to get past the ridge on the fuel pump inlet.

   Use light pressure when pressing against the fuel pump assembly or it might break. Damage to the fuel tube, fuel pump, or fuel tank may cause fuel leaks.



TOOL ORDERING INFORMATION

This service bulletin shows the following two types of tools:

- Special Tools:
  These tools are distinguished by the S. TOOL special tool box icon and normally start with a "07" tool number. They are available through the American Honda Parts Department and ordered by using normal American Honda Parts ordering procedures.
- Commercially Available Tools:
  There are two convenient ways to order: online or by toll-free phone.
  - To order online, go to the iN: SERVICE>Tools>Tool and Equipment Program>Online Catalog, and then search by model number.
  - To order by phone, call 1-888-424-6857.
    Customer service representatives are available from 7:30 AM until 7:00 PM CT, Monday through Friday.

HIGH ELEVATION OPERATION 5

HIGH ELEVATION OPERATION

At higher elevations, the carburetor air-fuel mixture will be too rich. Performance will decrease, and fuel consumption will increase. If an engine/product will be used regularly at elevations above 5,000 feet (1,500 meters), change the carburetor main jet to improve engine performance and exhaust emissions. This manual provides instructions for accurate main jet changes that do not require calculations and will keep emission-controlled engines within the regulatory guidelines.

The parts information lists two optional main jets for each engine. Use the first smaller jet size for operation between 5,000 to 8,000 feet (1,500 to 2,438 meters) elevations. Use the second smaller jet size for operation above 8,000 feet (2,438 meters) elevations.

Even with carburetor modifications, engine horsepower will decrease about 3.5% for each 1,000-foot (300-meter) increase in elevation. Without carburetor modifications, there will be a larger decrease in horsepower. When the carburetor is modified for high elevation operation, the air-fuel mixture will be too lean for low elevation use. Operation at elevations below 5,000 feet (1,500 meters) with a modified carburetor may cause the engine to overheat, and result in serious engine damage.

If the engine has been in service, check the valve clearance, air filter, and spark plug.

If the engine is not emission regulated (no idle mixture screw limiter cap), you may adjust the mixture screw for best idle performance.

If the engine is emission regulated, you can turn the idle mixture screw limiter cap clockwise to its stop; but, do not remove the limiter cap. This will produce the leanest mixture and the best high elevation performance. Limiter cap removal and/or changing the idle mixture screw opening beyond the specification shown in the shop manual is considered tampering.

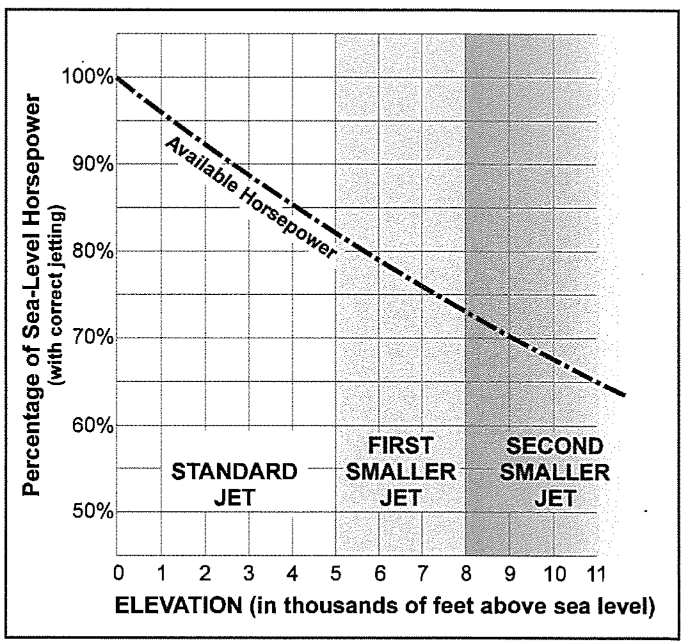
EXAMPLE:

The GC160 engine uses a 0.65 mm standard main jet. The two optional main jets listed are a 0.62 mm and 0.60 mm. The customer wants to operate the GC160 engine at 7,200 feet for an extended period.

On the chart's bottom elevation scale, select 7,200 feet (between 7 and 8). You can see that elevation falls in the "FIRST SMALLER JET" light gray band. Consequently, the correct jet size is 0.62 mm.

The rest of the chart is just for approximating what percentage of sea-level horsepower will be produced by a correctly-jetted engine at higher elevations. At 7,200 feet, an engine will produce about 75% of its rated horsepower.

For use at low elevations, return the carburetor to original factory specifications.



CHOKE SYSTEMS 6

ACS (AUTO CHOKE SYSTEM)

Certain GCV160/190 engine types use Honda's fully Automatic Choke System or ACS. Most engines are equipped with a manual choke system that requires the operator to set it before starting the engine and release it after the engine starts. The ACS does it all for you.

Principle Of Operation

The system opens and closes the choke using a small cup filled with temperature sensitive wax.

The choke control assembly senses the engine block temperature.

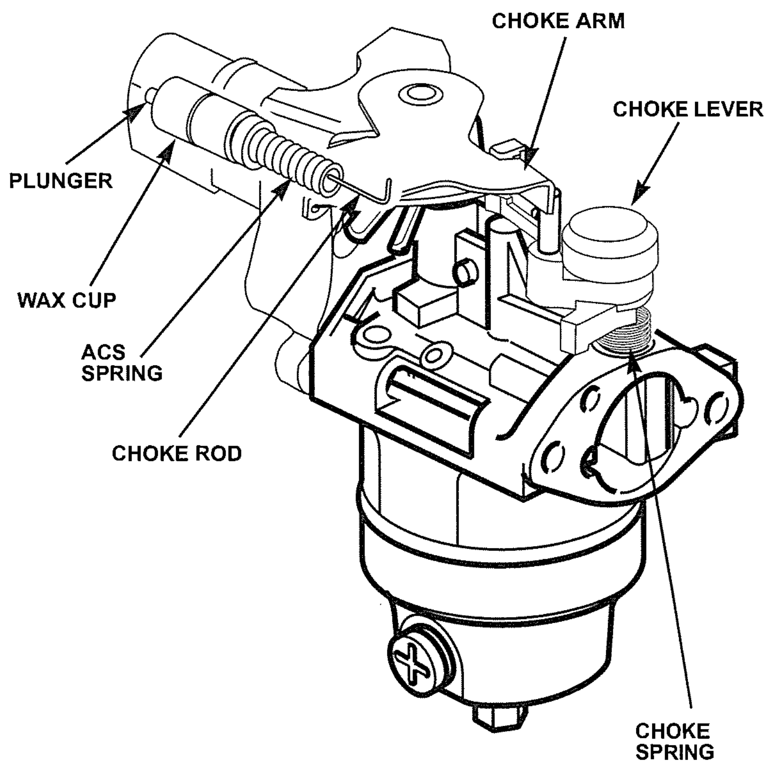
When the engine is cold, the wax is a condensed solid and the choke spring pulls the choke closed.

When the engine is started and begins to warm up, the wax begins to melt and expand, forcing the plunger out. As the plunger moves out, the choke rod is moved in the same direction, turning the choke arm. The choke arm rotates the choke lever, opening the carburetor choke valve.

At 104°F, the wax in the choke control assembly is fully expanded, and the choke is completely open.

After you turn off the engine, the wax condenses and solidifies, and the ACS spring pushes the plunger into the wax cup, closing the choke for the next cold start.

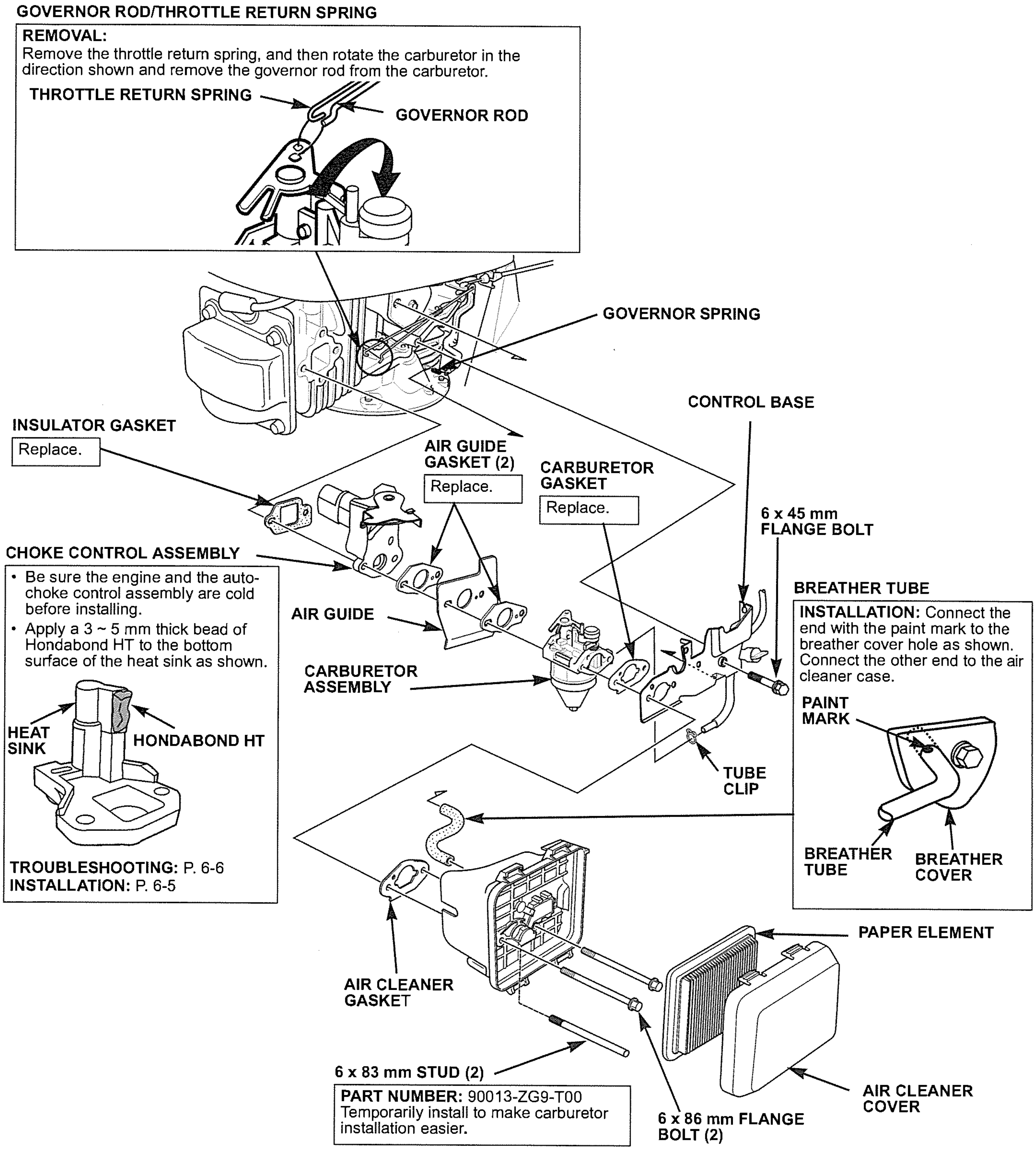
The choke spring allows the choke valve to "flutter" while the engine is warming up. This allows the engine to be operated before the choke is fully open and prevents an over-rich running condition during warm up.



REMOVAL/INSTALLATION

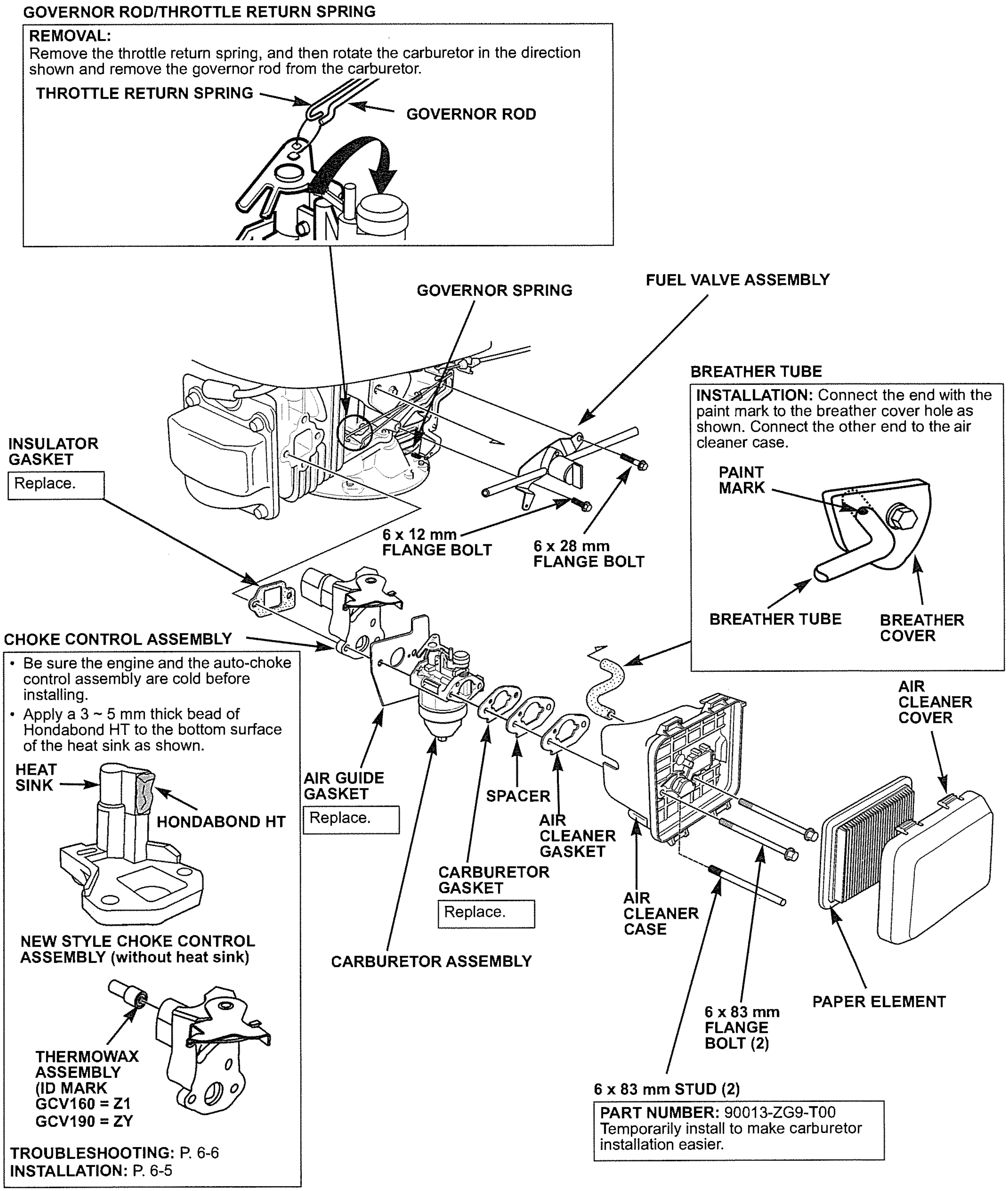
• With Control Base Type

The control base is the mechanism to which the throttle cable attaches to adjust the throttle or set the choke. Units with ACS (Auto Choke System) do not need a choke control. This type of engine typically does not use a throttle cable since the engine is designed to run at a single speed. The control base for these engines is only used to support the fuel valve assembly



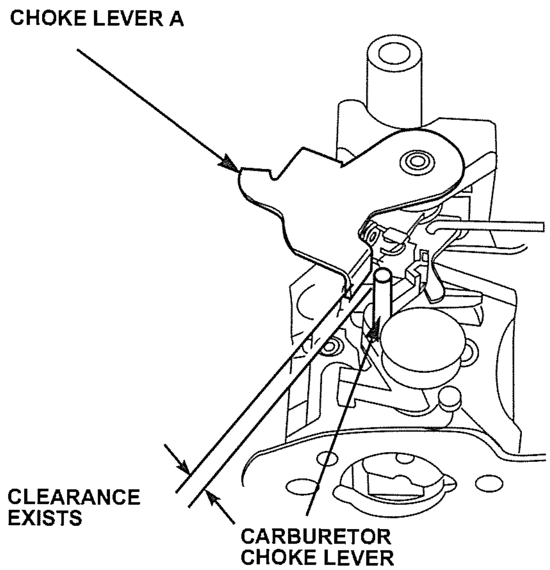
• Without Control Base Type

Units without a control base have a spacer in its place, the fuel valve has its own bracket, and the metal air guide with a gasket on each side has been replaced by the air guide gasket.



CHOKE CONTROL ASSEMBLY INSTALLATION

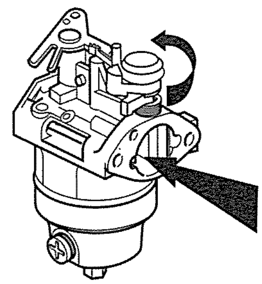
1. Install the choke assembly when the temperature is less than 40°C (104°F).
2. Verify that the carburetor choke lever is in the fully closed position.
3. Install the carburetor and choke assembly (P. 6-3).
4. After installation, verify that there is clearance between choke lever A and the carburetor choke lever.



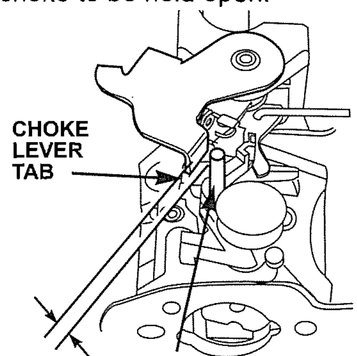
TROUBLESHOOTING ACS

With the engine cold, remove the paper element and check the choke valve.

→ Partially or totally open → Remove the carburetor. Turn and hold the choke arm in the choke CLOSED position. Push the choke valve open, and let it go. Check that the choke valve snaps back to the choke CLOSED position.



→ Not normal → Check that the ACS control is installed correctly. The choke lever tab may be on the wrong side of the carburetor choke lever post, which will cause the choke to be held open.



If the ACS is installed correctly, replace the carburetor assembly (P. 6-3).

→ Normal → Replace the choke control assembly

→ Closed → Start the engine and check to see that the choke flutters and opens as the engine warms up.

→ Does not flutter → Check the choke valve for freedom of movement.

→ Hard to move → Replace the carburetor assembly (P. 6-3).

→ Moves freely → System operates normally.

Replace the choke control assembly (P. 6-3).

→ Flutters → See if the choke valve opens after 5-8 minutes (opening time will vary based on load and ambient temperature).

→ Does not open, or opens slowly →

Does not open:
Replace the auto choke control or the thermowax assembly (P. 6-4).
Opens too slowly:
- Apply Hondabond HT to heat sink and push heat sink against cylinder barrel to ensure good heat transfer (P. 6-3).
- For models without heat sink, replace the thermowax (P. 6-4).
- Be sure a BPR5ES spark plug is installed and not the cooler BPR6ES plug. The BPR5ES is less susceptible to fouling on ACS equipped engines.

→ Choke fully opens → System operates normally.

ARCS (AUTO RETURN CHOKE SYSTEM)

Certain GCV160/190 engine types use Honda's Automatic Return Choke System or ARCS.

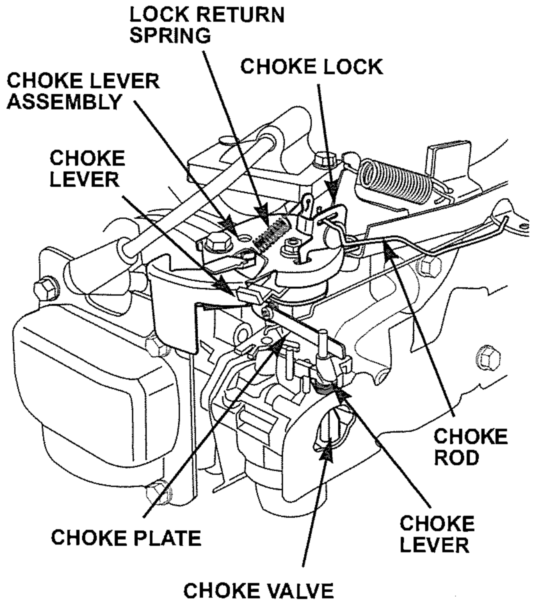
Principle Of Operation

The operator closes the choke, and the system opens the choke using a small gear case (located in the choke base) filled with temperature sensitive grease.

The gear case senses the engine block temperature as well as the ambient air temperature. The grease gets thicker or thinner depending on the temperature. As the grease gets thicker (colder), the time the choke stays engaged is increased. As the grease gets thinner (hotter), the choke engagement time is reduced.

When you move the choke lever to the choke ON position, the lock return spring forces the choke lock to hold the choke lever in the choke ON position until the flywheel brake lever is engaged. The choke lever assembly moves the choke plate to engage the choke lever on the carburetor, closing the choke valve.

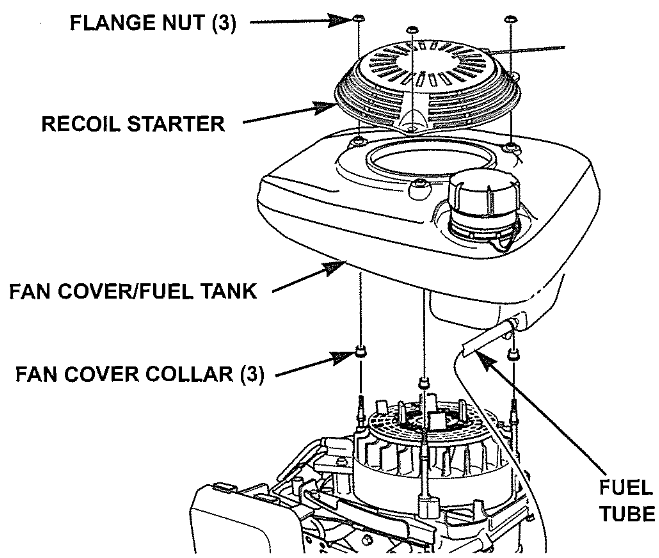
Once the flywheel brake lever on the product is engaged, the choke rod pulls the choke lock to release the choke lever assembly moves the choke plate to engage the choke lever on the carburetor, and the choke slowly returns to the open position.



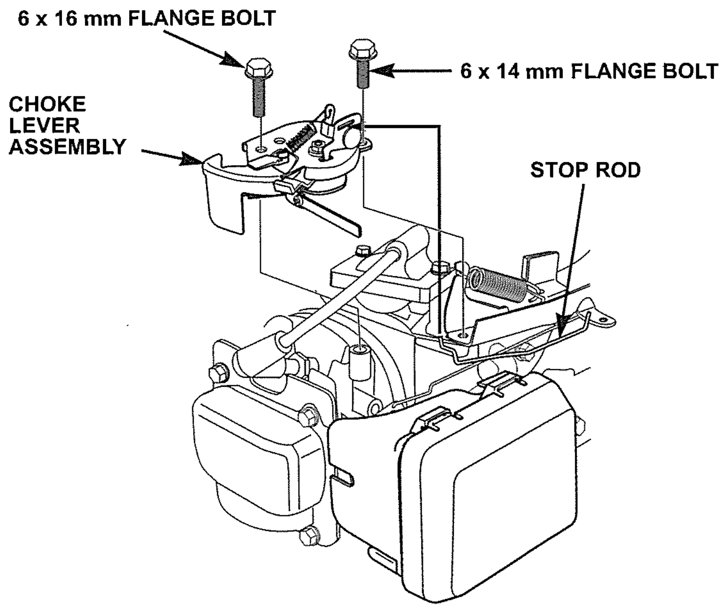
REMOVAL

1. Remove the recoil starter and the fan cover/fuel tank.

   Set the fan cover/fuel tank aside. It is not necessary to detach the fuel tube.



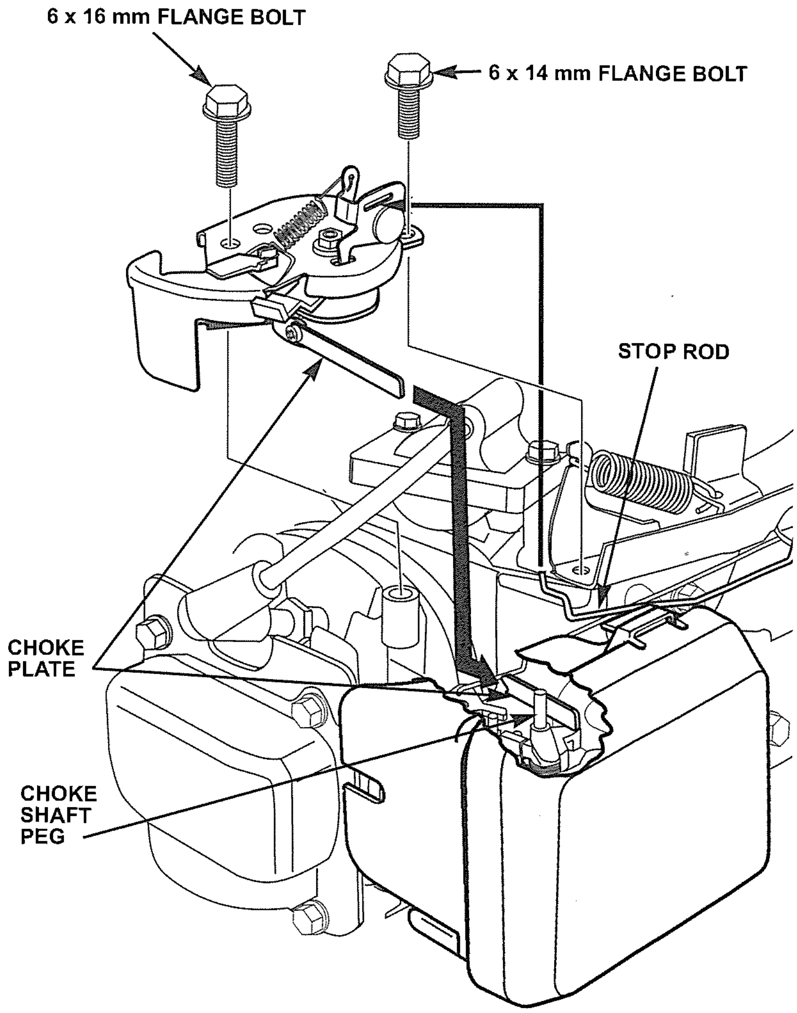
2. Remove the 6 x 14 and 6 x 16 mm flange bolts, and remove the choke lever assembly while disconnecting the stop rod.



INSTALLATION

1. Insert the stop rod into the ARCS assembly.
2. Install the ARCS assembly and secure it with the 6 x 14 and 6 x 16 mm flange bolts.

   Verify that the choke plate is to the right of the choke shaft peg to ensure proper choke operation.
3. Test the ARCS system for proper operation.
4. Install the fan cover/fuel tank and the recoil starter.
5. Start the engine and verify that the system operates normally.



TROUBLESHOOTING ARCS (AUTOMATIC RETURN CHOKE SYSTEM)

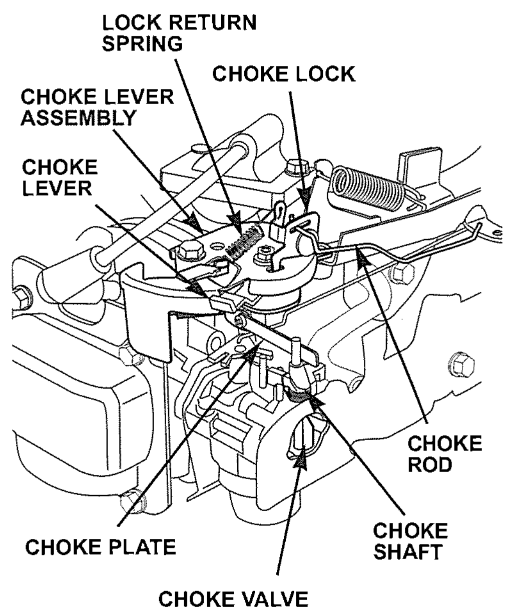
After setting the choke lever to the choke ON position and operating the blade control lever:

- Engine will not start.

1. Does the choke lever remain in choke position once set?	NO → 2. Check that the choke rod is not bent, holding the choke lever open.	OK → 3. Is the choke lock stuck in the unlocked position?	OK → 4. Is the choke lock return spring unattached or broken?	OK → Go to step 5.
YES ↓ (to step 5)	NG ↓ Replace the choke rod.	NG ↓ Free the choke lock or replace the choke lever assembly.	NG ↓ Reattach or replace the spring.	
5. Does the choke plate move the choke valve completely closed.	NO → 6. Confirm the choke plate is positioned on the right side of the plastic choke shaft peg.	OK → 7. Check the choke plate or choke lever for being bent or deformed.	OK → 8. Check the choke shaft for binding or debris preventing its movement.	OK → 9. Go to step 10.
YES ↓ (to step 10)	NG ↓ Remove the choke base and reposition it correctly.	NG ↓ Replace the choke lever assembly.	NG ↓ Repair or replace the carburetor as necessary.	

10. With the choke in the ON position, operate the blade control lever and record the time it takes for the choke valve to completely open.

* 8 seconds or less	* 9 –13 seconds (normal)	* 14 seconds or more
Replace the choke base.	Troubleshoot other engine problem(s).	Check the air cleaner case for possible interference with the choke lever. If OK, replace the choke lever assembly.



* The choke base contains the damper device that controls the opening speed of the choke valve. The damper is ambient temperature sensitive. Times were calculated at 70°F. Your time may vary slightly, based on the ambient temperature. The colder the ambient temperature, the longer it will take for the choke to fully open.

After setting the choke lever to the CHOKE position and the engine starts:

- The engine runs poorly in all throttle positions.

Perform the following with the engine running.

1. Does the choke lock move to release the choke arm when the blade control lever is engaged?
   - NO → 2.
   - YES → 5.

2. Insufficient brake cable stroke.
   - OK → 3.
   - NG → Inspect the blade control lever/cable for malfunction or adjustment.

3. Check that the choke rod is not bent or deformed, not allowing the choke lock to release. Make sure the linkage is not contacting the air cleaner case.
   - OK → 4.
   - NG → Replace the choke rod.

4. Is the choke lock stuck in the locked position?
   - OK → Go to step 5.
   - NG → Free the choke lock or replace the choke base.

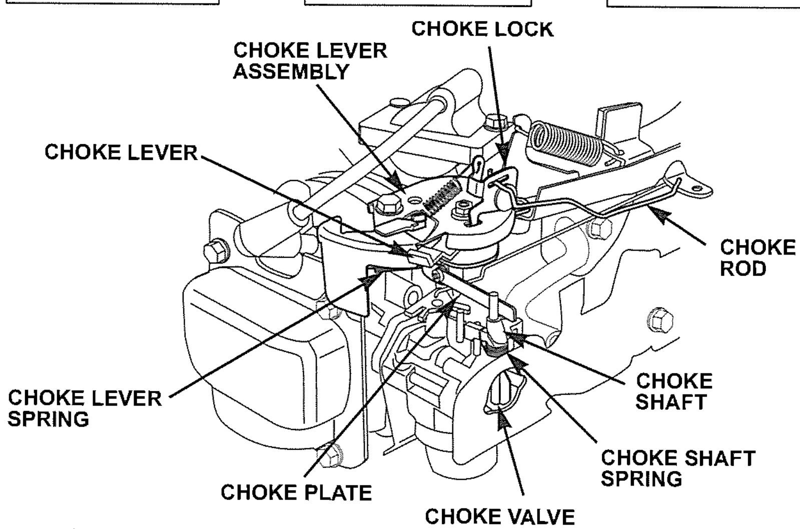
5. Does the choke plate move to allow the choke valve to open completely.
   - NO → 6.
   - YES → 9.

6. Check the choke lever for being stuck, or the the choke plate for being stuck, bent, or deformed.
   - OK → 7.
   - NG → Replace the choke lever assembly.

7. Check that the choke lever spring is unattached or broken.
   - OK → 8.
   - NG → Attach or replace the spring.

8. Check the choke shaft spring for being broken, not allowing the choke valve to open. Check the choke shaft for binding.
   - OK → Go to step 9.
   - NG → Repair or replace the carburetor as necessary.

9. Troubleshoot other engine problem(s).



NOTES

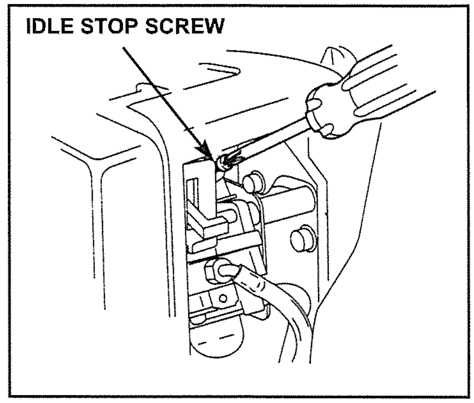
ADJUSTMENT

Before making any adjustments:

- Verify that the governor is properly adjusted before starting the engine. Refer to the appropriate shop manual.
- Check that the throttle and choke controls operate properly before starting the engine.
- Check that there are no fuel leaks before starting the engine.
- Start the engine and allow it to warm up to normal operating temperature. Be sure that all engine components are within specifications and there are no air leaks into the intake path.

1. Idle slow speed adjustment under no load

Use the throttle stop screw to adjust the idle slow speed.



Throttle stop screw:

- Turn clockwise .... rpm increases
- Turn counterclockwise .... rpm decreases

IDLE ADJUSTMENT

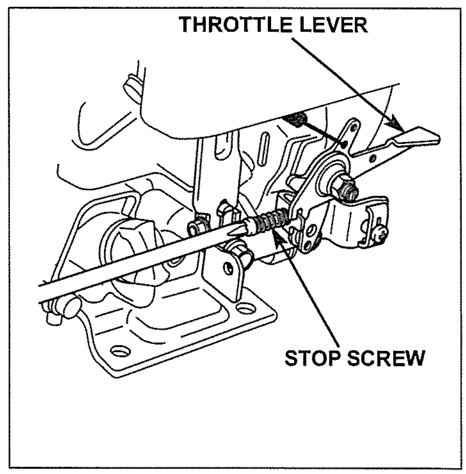
(1) With the engine off, turn the throttle stop screw clockwise until it contacts the throttle lever, and then make 3 more turns to open the throttle plate. Be sure the throttle lever is touching the end of the screw.

(2) Start the engine, and let it warm up to normal operating temperature.

(3) Adjust the throttle stop screw to obtain the standard idle speed.

2. Maximum speed adjustment under no load

Set the throttle lever to the maximum speed position.



MAXIMUM SPEED ADJUSTMENT

(1) Start the engine, and let it warm up to normal operating temperature. When the engine is warm, turn the control lever adjusting screw until the engine is running at the specified maximum speed at full throttle.

(2) Close the throttle, and then slowly open it again.