FOREWORD

This repair manual describes the construction, operation and repair method of a device for Liquefied Petroleum Gas (LPG) mounted on the Toyota forklift of 5FG10~30, 6FG10~30, 6FGF15~30, 6FGU15~30, 7FG10~J35, 7FGF15~J35, 7FGU15~32, 6FG(E)33~45, 5FG50·60, 5FGC10~30, 6FGCU15~30, 7FGCU15~32 series and 7FG35~45, 7FGU35~80, 7FGCU35~70 series.

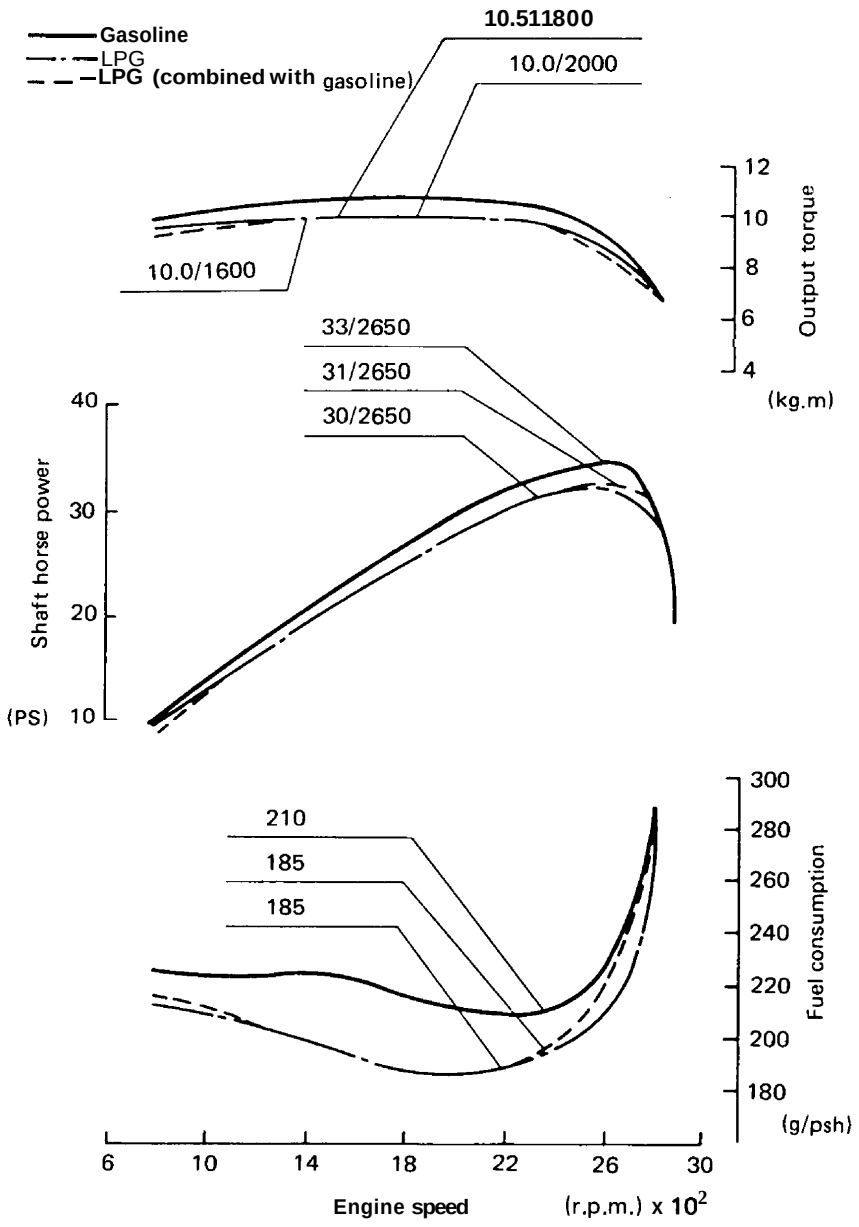
This Manual has been compiled to provide you with useful information on the proper maintenance of Toyota's forklift to maintain its high performance and excellent durability sufficiently for a long time.

TOYOTA Material Handling Company
A Division of TOYOTA INDUSTRIES CORPORATION

ENGINE PERFORMANCE CURVES

Note:
Refer to the repair manual for each **model.**

4P ENGINE



ENGINE SPECIFICATIONS

Note:
Refer to the repair manual for each model.

5FG 10 ~ 30 series, 5FG 33 ~ 45 series

		Pneumatic models								
		5K			4Y			3F (Until August 1994)		
		5FG10~25 series			5FG10--30 series			5FG33~45 series		
		A	B	C	A	B	C	A	B	C
Maximum horse power	PS/rpm	38/2800	36/2800	38/2800	54/2400	48/2400	50/2400	72/2100	65/2100	68/2100
	SAE NET HP/rpm	36/2800	34/2800	36'2800	52/2400	46/2400	48/2400	69/2100	62/2100	65/2100
Maximum torque	kg m/rpm	11 5/2000	10 8/2000	10 9/2200	16 5/1800	15/1600	16/1800	26/1200	24 5/1400	25/1200
	SAE NET ft-lb/rpm	81/2000	76/2000	176/2200	115/1800	105/1600	110/1800	182/1200	171/1400	175/1200
Maximum fuel consumption	gr/PS.h	210	175	180	195	190	185	200	200	185
Idle speed	rpm	650 750 (D)	←	750	700 750 (E)	←	750	←	←	850
No-load maximum governed speed	rpm	3050	←	←	1 ~ 2.5 ton 2650 3 t 2800	←	←	2350	←	←
Ignition timing BTDC	°/rpm	5°/650	10°/650	10°/750	7°/650	←	7°/750	7°/750	*1:9°/750 *2:7°/750	18°/850

*1: 1988. 6 ~ 1990. 1 *2: 1990. 1 ~

6FG 10 ~ 30 series, 6FGF15 ~ 30 series, 5FG33 ~ 45 series

		Pneumatic models												
		5K			4Y						1FZ {From September 19941			GM
		6FG10 ~ 25 series			6FG10 - 25 series 6FGF15 - 25 series			6FG28, 30 series 6FGF30			5FG33 - 45 series			6FGU 20-30 series
		A	B	C	A	B	C	A	B	C	A	B	C	B
Maximum horse power	PS/rpm	3812800	3612800	3812800	5412400	4812400	5012400	5812600	5212600	5412600	8512100	7812100	7812100	5512400
	SAE NET HP/rpm	3712800	3512800	3712800	5312400	4712400	4912400	5712600	5112600	5312600	8112100	7412100	7412100	54
Maximum torque	kg m/rpm	11 512000	10 812000	10 912200	16 511800	15 011600	16 011800	16 511800	15 011800	16 011800	3011200	28 511400	28 511400	1811200
	SAE NET ft lb/rpm	8312000	7812000	7912200	11911800	10811600	11611800	11911800	10811600	116/1800	20911200	19911400	199/1400	130
Maximum fuel consumption	gr/PS h	210	175	180	200	190	185	200	190	185	190	185	185	210
Idle speed	rpm	750	←	←	750	←	←	750	←	←	750	←	←	750^{+50}_{0}
No-load maximum governed speed	rpm	3050	←	←	2600	←	1 ton 2600 2 ~ 2.5 ton 2650	2800	←	2600	2350	←	←	2600±50
Ignition timing BTDC	°/rpm	5±2°/750	10±2°/750	←	7±2°/750	←	←	7±2°/750	←	←	3±2°/750	←	←	12±2°/750

PERIODIC MAINTENANCE

INSPECTION METHOD

I : Inspection. Repair or replacement if required.
C: Cleaning *1 : Soapy water *2 : Detector

Inspection Period / Item		Every 6 weeks	Every 3 months	Every 6 months	Every 12months
	Hours	250	500	1000	2000
Gas leak from piping and joint	I *1	O	←	←	←
Damage of piping and joint	I *2	○	←	←	←
Tar removal from regulator	C	○	←	←	←
Regulator adjustment status	I	○	←	←	←
Regulator function	I		○	←	←
Carburetor and adapter	I		○	←	←
Filter clogging	C		○	←	←
Loosened installation and functioning of solenoid valve	I		○	←	←
Gas cylinder	I	⊙	←	←	←
Looseness and damage of gas cylinder mounting	I	○	←	←	←

PERIODIC REPLACEMENT PARTS

Item	Replacement timing
O-ring for LPG cylinder valve	Every 24 months
LPG high and low-pressure rubber hoses	Every 24 months
LPG regulator diaphragm and O-ring	Every 24 months or 3000 hours
Fuel filter	Every 24 months or 3000 hours

STD conditions are the same as those of the STD and high performance filters.

OPERATION DESCRIPTION
(From September 1989)

1A

Note : See the **"1B"** section for models manufactured in and after October 1997.
Vehicle Models

6FG10~30 Series
6FGU/6FGCU15~30 Series (4Y Engine Model)
6FGF15~30 Series (LPG Only Model **W/TWC** System / LPG and Gasoline Model)
7FG10~J35 Series
7FGU/7FGCU15~32 Series
7FGF15~J35 Series
7FG35~45 Series
7FG(C)U35~80 Series

OPERATION DESCRIPTION
(From October 1997)

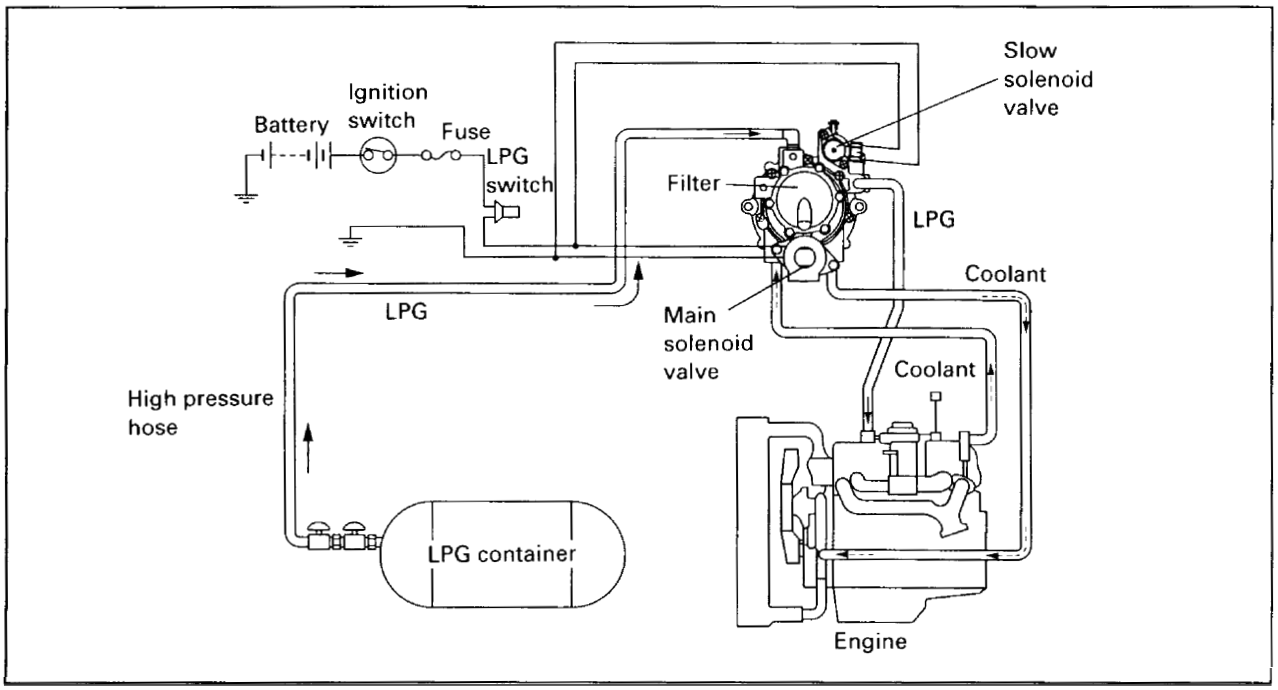
1B

Note :
Vehicle Models
- 6FG10~30 Series
- 6FGU/6FGCU15~30 Series (4Y Engine Model)
- 6FGF15~30 Series (LPG Only Model W/TWC System / LPG and Gasoline Model)
- 7FG10~J35 Series
- 7FGU/7FGCU15–32 Series
- 7FGF15~J35 Series
- 7FG35~45 Series
- 7FG(C)U35~80 Series

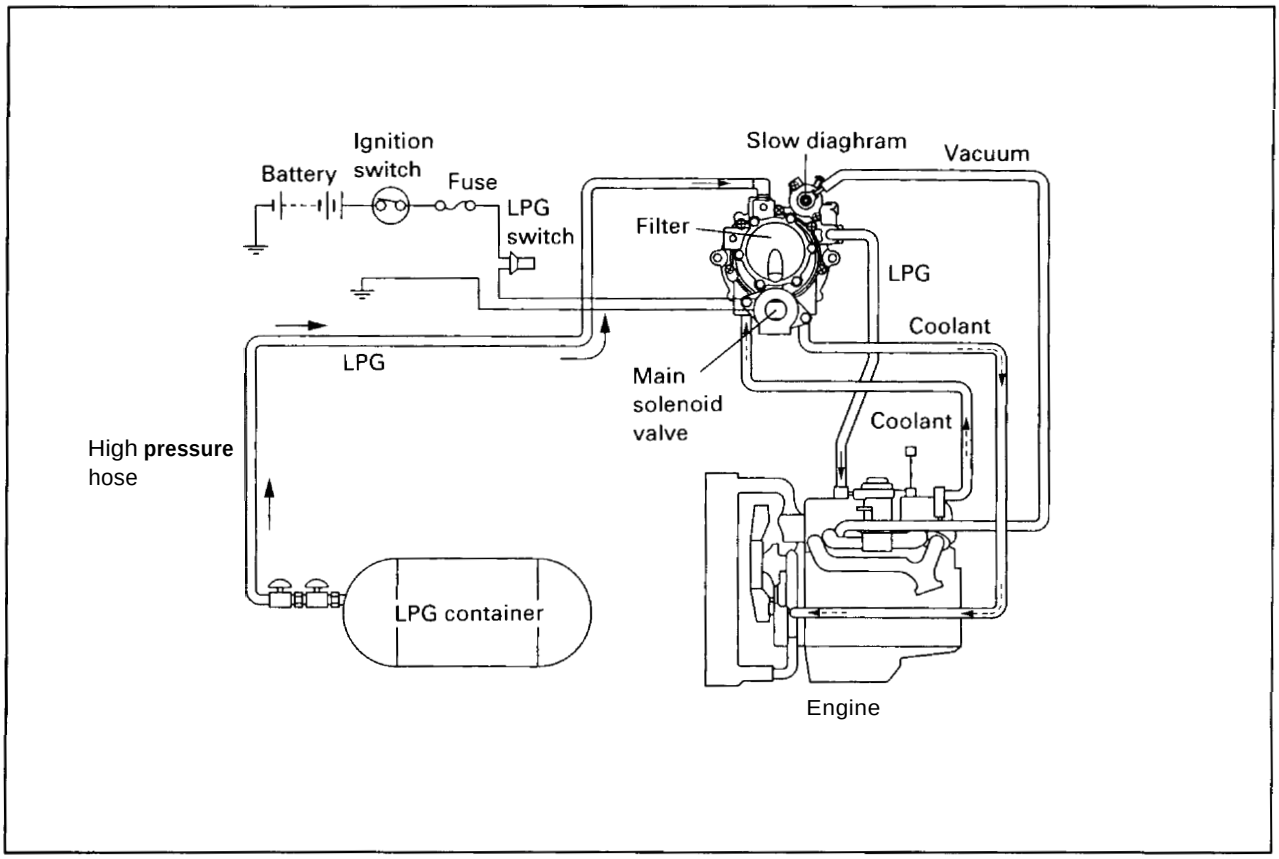
BASIC CONSTRUCTION AND OPERATION OF LPG DEVICE

The liquid LPG from the LPG cylinder is taken into the regulator for filtration of foreign matters by the built-in filter. The filtered LPG is then sent to the pressure reduction chamber, where it is vaporized into gas which is sucked into the engine through the carburetor. The engine cooling water is led to the regulator as the heat source for LPG vaporization.

6FG/6FGF/7FG10~30/7FGF series, 7FG35~45/7FG(C)U35~80 series



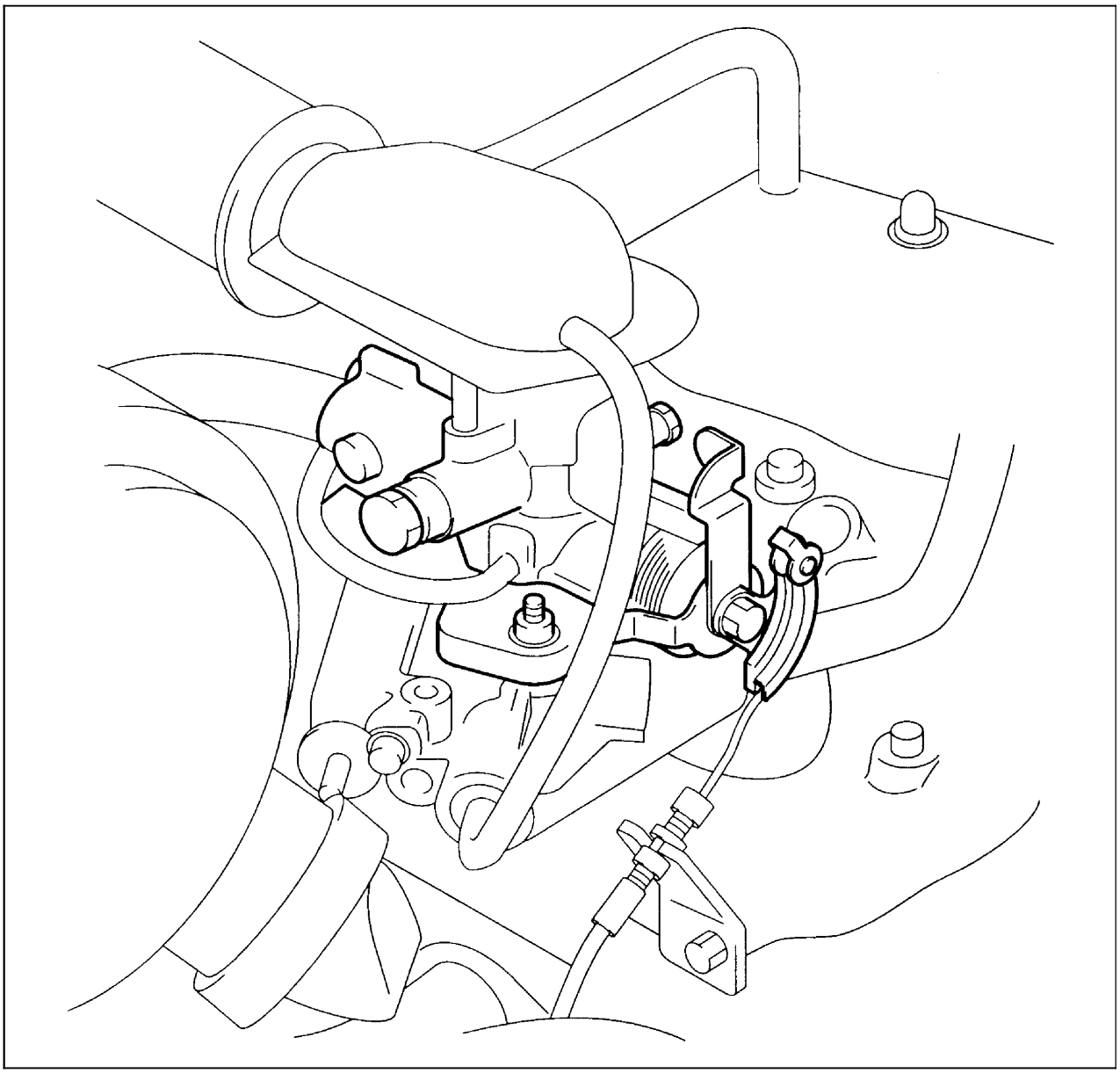
6FGU/6FGCU/7FG(C)U15~32 series



CARBURETOR FOR LPG

GENERAL

This carburetor functions to mix the LPG after pressure reduction in the regulator with the air at an appropriate ratio and lead the mixture into the cylinder. A negative pressure type power valve is built in to improve the performance in a heavily loaded state. The carburetor body is integrated with a venturi tube for structural simplification and the number of springs is increased from 2 to 3 for reliability improvement.



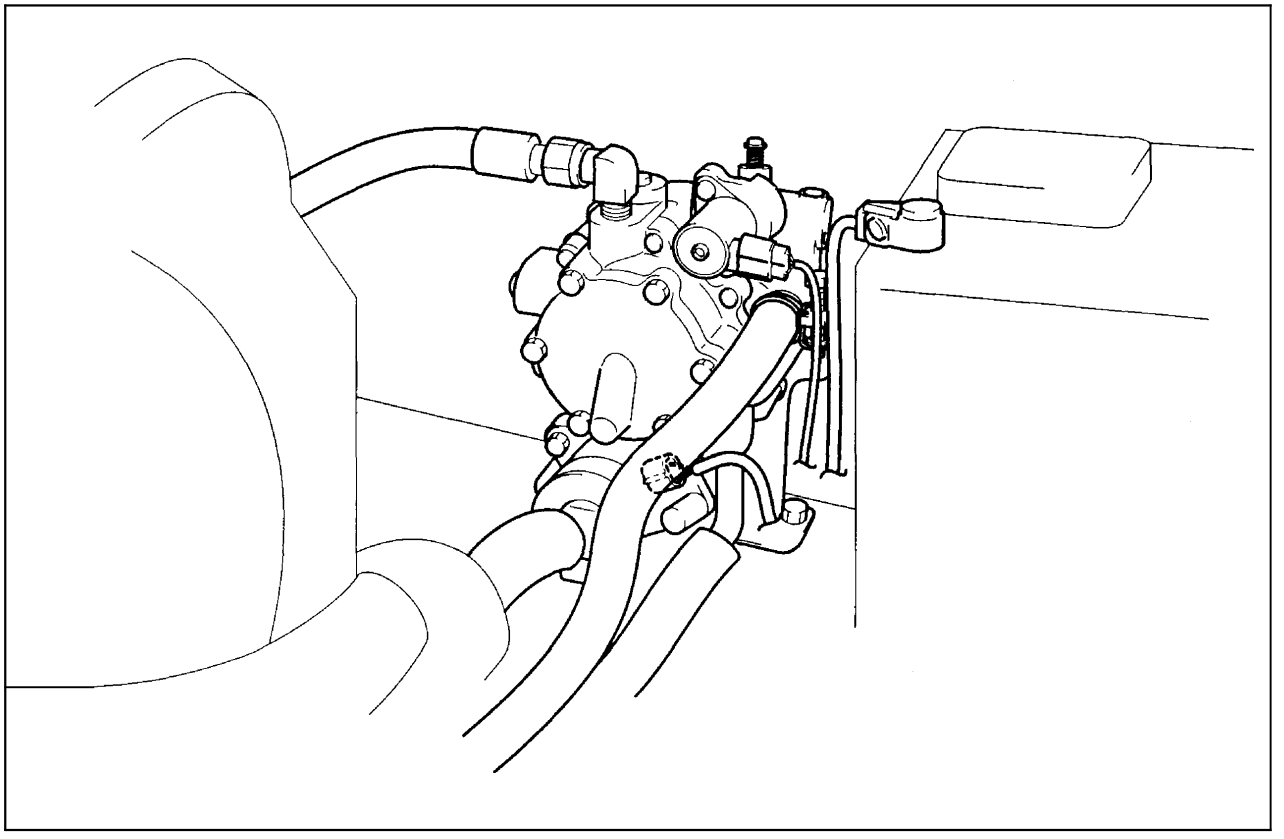
SPECIFICATION

Item \ Vehicle model	6FG/6FGF/7FG10~30/7FGF series				6FGU/6FGCU/ 7FG(C)U15~32 series	7FG35~45/ 7FG(C)U35~80 series
	Standard vehicle		Vehicle W/TWC system			
	5K	4Y	5K	4Y	4Y	GM6-262
Power valve operating pressure kPa{kgf/cm²}[psi]	-12.0~ -22.0 (-0.122~-0.224) [-1.74~ -3.19]					
Bore diameter mm(in)	35(1.38)	←	←	←	←	←
Venturi diameter mm(in)	24(0.94)	←	←	←	←	28(1.10)
Power jet diameter mm(in)	2.8(0.110)	3.0(0.118)	2.4(0.094)	3.0(0.118)	←	←

REGULATOR

GENERAL

The regulator for the gasoline engine corresponds to a part of the carburetor. It supplies the LPG fuel to the engine while maintaining the vaporized LPG after pressure reduction at a constant pressure level. The new regulator is made very compact since the filter and solenoid separated in the past are integrated with the regulator. The serviceability is improved by reduction of the portions requiring adjustment.



SPECIFICATIONS

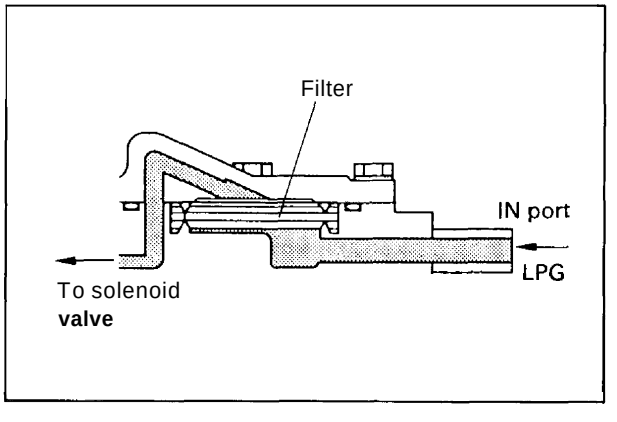
Item \ Model	6FG/6FGF/7FG10~30/7FGF series 7FG35~45/7FG(C)U35~80 series	6FGU/6FGCU/ 7FG(C)U15-32 series
Primary pressure kPa(kgf/cm²)[psi]	29(0.3) [4.26]	←
Primary seat inside diameter mm(in)	3.2(0.126)	←
Secondary seat inside diameter mm(in)	6.0(0.236)	←
Slow lock	Solenoid valve type	Diaphragm type

EXPLANATION ON OPERATION

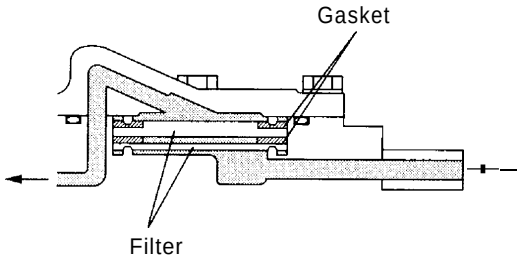
LPG Filter

6FG/6FGF/7FG10~45/7FGF series: ~2000,4
6FGU/6FGCU/7FG(C)U15-32 series: ~2002,2

The filter is built in the regulator. Insoluble substances in the LPG entering from the IN port of the regulator are filtered by the filter element, and the filtered LPG is sent to the solenoid valve.

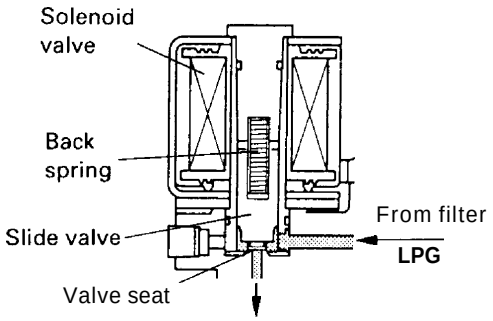


6FG/6FGF/7FG10~45/7FGF/7FG(C)U35~80 series: 2000,4~
6FGU/6FGCU/7FG(C)U15-32 series: 2002,2~
Two types of materials are used in the filter with rubber packing for sealing in-between.



Solenoid Valve

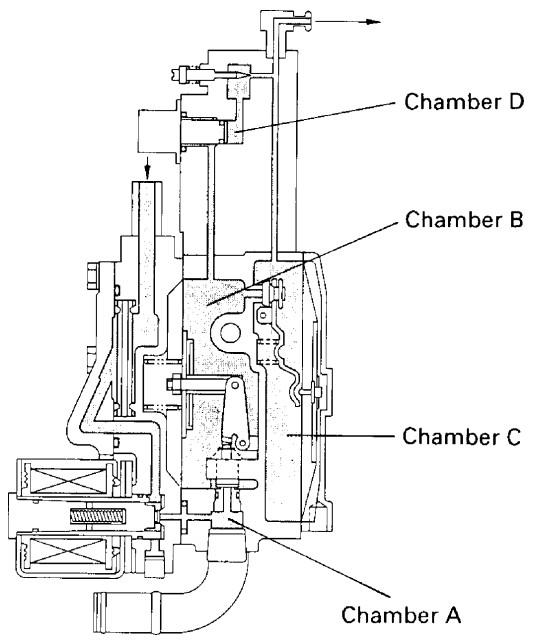
A solenoid valve integrated with the regulator is installed between the filter element and the primary pressure reduction chamber. The LPG switch installed on the instrument panel starts and stops the LPG supply. A slide valve is located inside the solenoid coil. The current flowing in the coil generates a magnetic force to attract the slide valve toward the solenoid against the spring force, opening a path between the filter and primary pressure reduction chamber. When no current flows, the spring forces the valve seat to close the path.



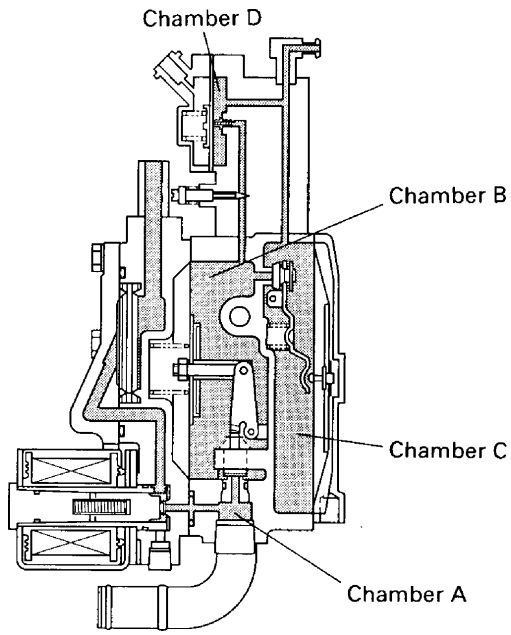
Regulator

The LPG in the liquid phase is vaporized by taking the heat of vaporization from the engine cooling water. The regulator consists of chamber A where the LPG starts to vaporize, chamber B for reducing the pressure of the vaporized LPG (primary pressure reduction chamber), chamber C (secondary pressure reduction chamber) where the pressure is further educed to near the atmospheric pressure to supply the fuel according to the negative pressure at the venturi in the carburetor, and chamber D that forcibly supplies fuel at the time of engine starting or idling.

6FG/6FGF/7FG10~45/7FGF/7FG(C)U35-80 series



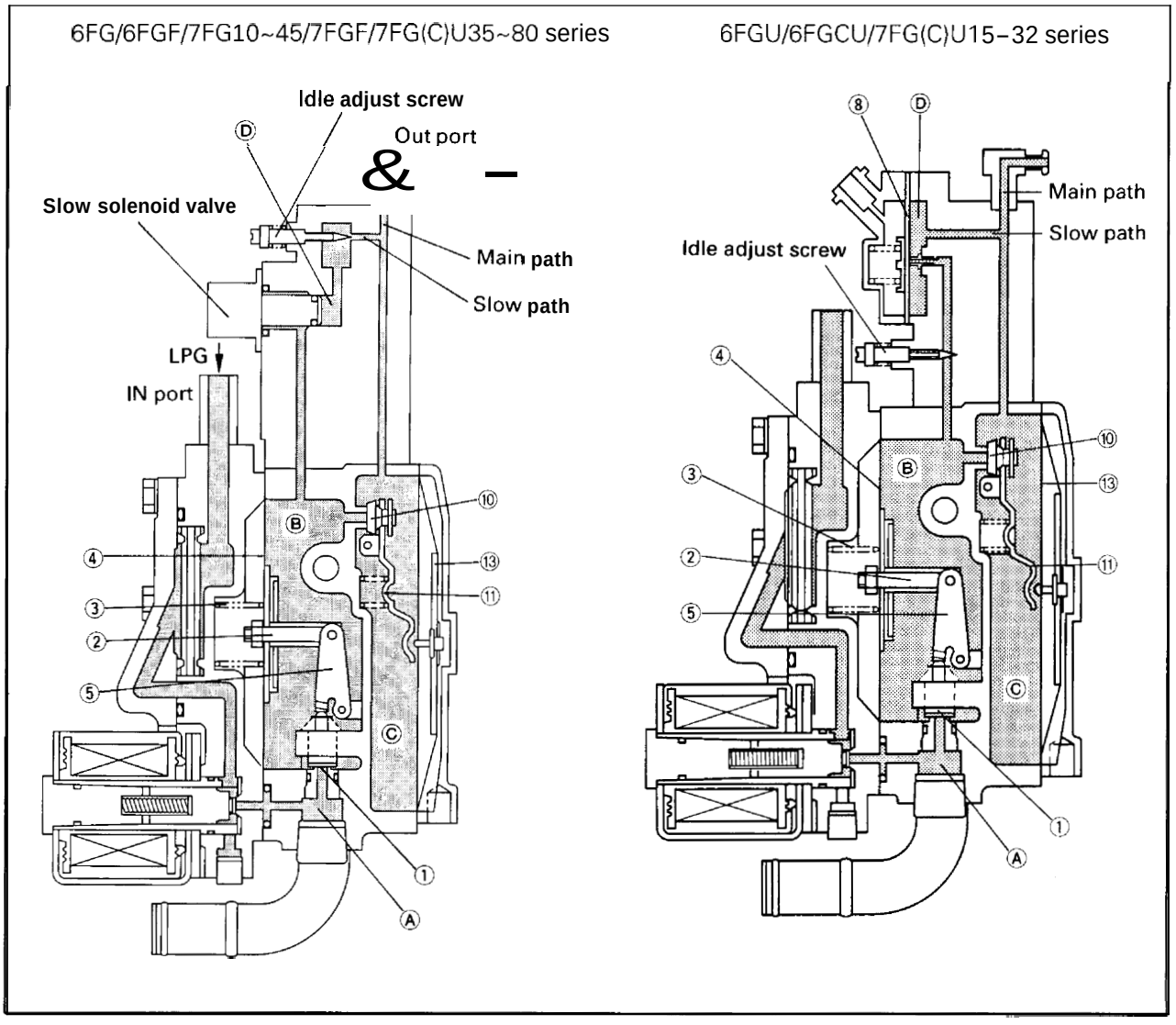
6FGU/6FGCU/7FG(C)U15-32 series



(1) When starting the engine:

When the ignition switch and LPG switch are both turned to ON, the LPG led from the IN port flows into chamber A through the filter and solenoid valve. Upon entering chamber A, the LPG pushes open the elastic face valve ① by its own vapor pressure, and enters the primary pressure reduction chamber (chamber B) for pressure reduction and vaporization. When the pressure in chamber B reaches 24.5 to 34.3 kPa (0.25 to 0.35 kgf/cm²), first diaphragm ④ pushes first regulator spring ③ to operate first valve lever ⑤ by means of first diaphragm hook ②. As a result, elastic face valve ① is closed and the pressure in the primary pressure reduction chamber (chamber B) at a constant level. When the starting motor runs, the current flowing in the coil of the slow solenoid valve*1 operates the valve to connect cambers B and D. Since the pressure in chamber D at 24.5 to 34.3 kPa (0.25 to 0.35 kgf/cm²) is higher than the atmospheric pressure, LPG flows into chamber D. The LPG entering chamber D flows through the slow path and main path into the carburetor, and is then supplied to the engine from the venturi nozzle to start initial explosion. When the throttle valve is opened slightly then, a negative pressure is generated in the venturi of the carburetor. The negative pressure acts on the secondary pressure reduction chamber (chamber C) via the main path in the carburetor. Second diaphragm ⑬ is operated to open elastic face valve ⑩ via second valve lever ⑪ to cause LPG to flow from the primary pressure reduction chamber (chamber B) to the secondary pressure reduction chamber (chamber C). As a result a large amount of LPG enters the carburetor for complete combustion.

(*1: In the 6FGU/6FGCU/7FG(C)U15~32 series, the negative pressure in the manifold pulls slow lock diaphragm ⑧ to connect chambers B and D.)



(2) During idling:

When the engine is cranked by turning the ignition switch*2, a current flows in the slow solenoid valve coil to operate the valve, resulting in opening of the closed path to connect chambers B and D. The flow rate of LPG entering chamber D is controlled by idle adjusting screw ⑭. The LPG entering chamber D is led to the carburetor through the slow path and OUT port, and then supplied to the engine through the venturi nozzle. Since the negative pressure at the carburetor venturi is very low during idling, elastic face valve is not opened and the fuel is supplied only through the slow path.

(*2: In the 6FGU/6FGCU/7FGU/7FGCU series, the negative pressure at the manifold is led to chamber E and the path closed by the seat of diaphragm ⑧ is opened by pulling of diaphragm ⑧.)

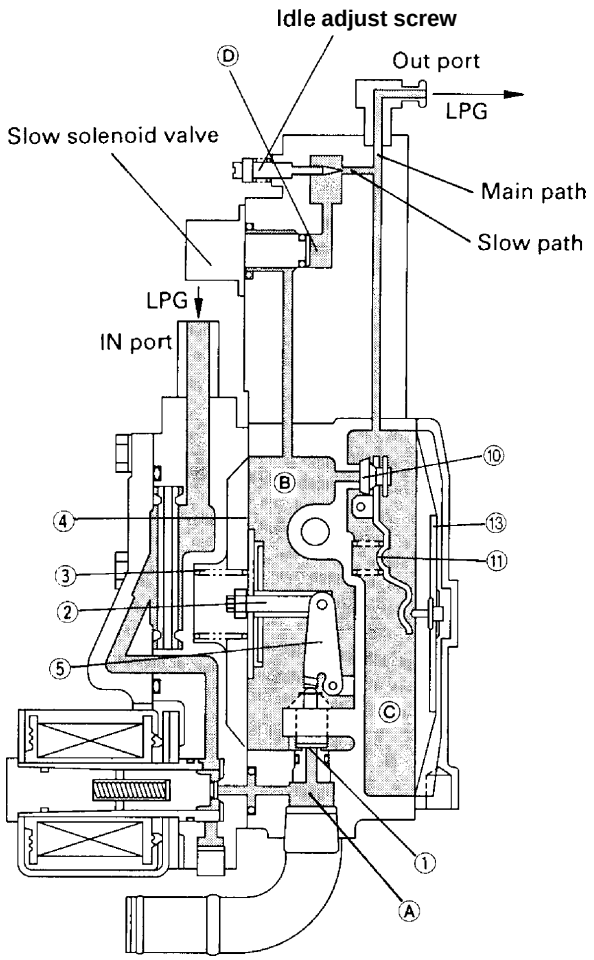
(3) During normal operation:

When the throttle valve is opened, a negative pressure arises at the carburetor venturi nozzle, which is applied to chamber C through the main path. This negative pressure pulls second diaphragm ⑬ to open elastic face valve ⑩. As a result, LPG flows from chamber B to chamber C, and enters the carburetor venturi nozzle through the main path.

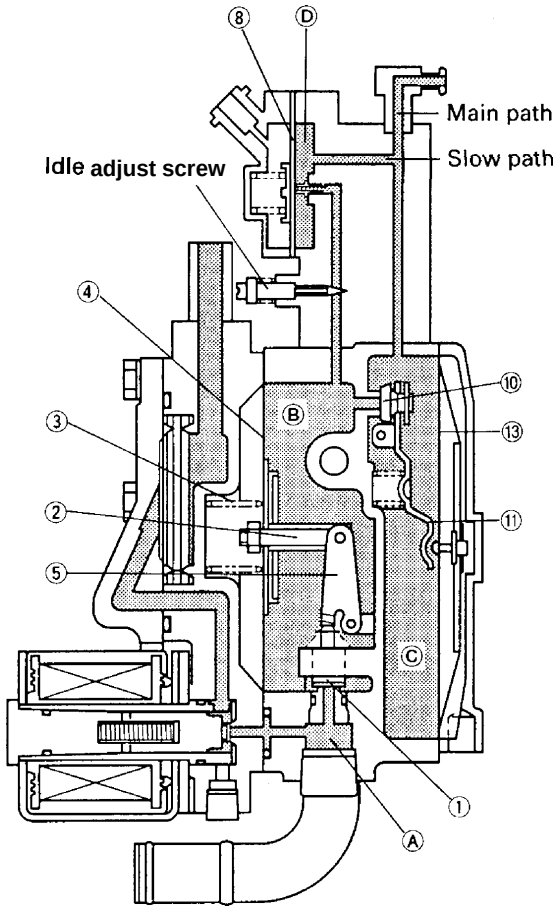
As a current also flows in the slow solenoid valve*3, LPG also flows from chamber B to chamber D, and through the slow path to the venturi nozzle.

(*3:In the 6FGU/6FGCU/7FG(C)U15–32 series, diaphragm ⑧ is pulled by the negative pressure at the manifold to connect chambers B and D.)

6FG/6FGF/7FG10~45/7FGF/7FG(C)U35~80 series



6FGU/6FGCU/7FG(C)U15–32 series



(4) When stopping the engine:
When the engine is stopped, the current to the slow solenoid valve*4 is cut off to close the path between chambers B and D, resulting in suspension of LPG supply through the slow path. Since the negative pressure at the carburetor venturi does not exist, LPG supply through the slow path also stops.
(*4: In the 6FGU/6FGCU/7FG(C)U15~32 series, the negative pressure at the manifold is eliminated to cause the diaphragm seat closes the path between chambers B and D since the diaphragm is pushed by slow lock spring ⑨.)

REGULATOR SYSTEM COMPONENTS

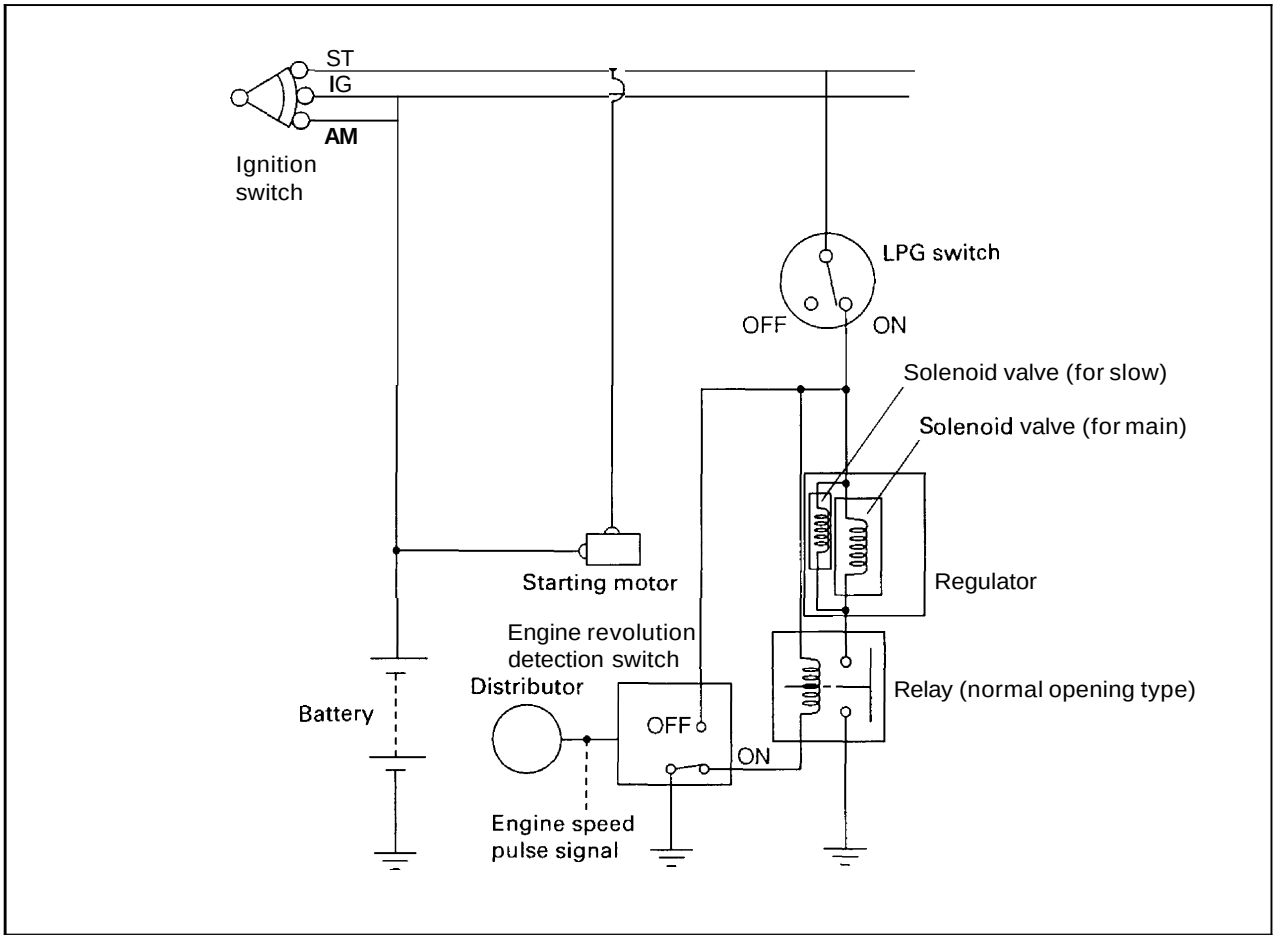
LPG CUTOFF DEVICE

<6FG/6FGF/7FG10~45/7FGF/7FG(C)U35~80 series>

The solenoid valves (main and slow) for LPG cutoff are integrated with the regulator. Each solenoid valve is opened and closed according to the engine speed detected by means of the distributor pulse signal. Even when the ignition switch is ON, the valve is closed to stop LPG supply from the carburetor to the intake manifold when the engine is stopped.

<6FGU/6FGCU/7FG(C)U15–32 series>

In the 6FGU/6FGCU/7FGU/7FGCU series, the slow solenoid valve is of the negative pressure type which is opened and closed by detecting the negative pressure in the intake manifold. Since the pressure in the intake manifold equals the atmospheric pressure upon stopping the engine, the valve is closed by the spring force. The main solenoid valve function is the same as that of the 6FG10 to 30.



REPAIR

2

Note: See section "2A" for the models manufactured in and after October 1997.

Vehicle Models

- 6FG10~30 Series
- 6FGU/6FGCU15~30 Series (4Y Engine Model)
- 6FGF15~30 Series (LPG Only Model W/TWC System / LPG and Gasoline Model)
- 7FG10~J35 Series
- 7FGU/7FGCU15~32 Series
- 7FGF15~J35 Series
- 7FG35~45 Series
- 7FG(C)U35~80 Series

REPAIR
(From October 1997)

2A

Note:
Vehicle Models
- 6FG10~30 Series
- 6FGU/6FGCU15~30 Series (4Y Engine Model)
- 6FGF15~30 Series (LPG Only Model W/TWC System / LPG and Gasoline Model)
- 7FG10~J35 Series
- 7FGU/7FGCU15~32 Series
- 7FGF15~J35 Series
- 7FG35~45 Series
- 7FG(C)U35~80 Series

LPG FILTER

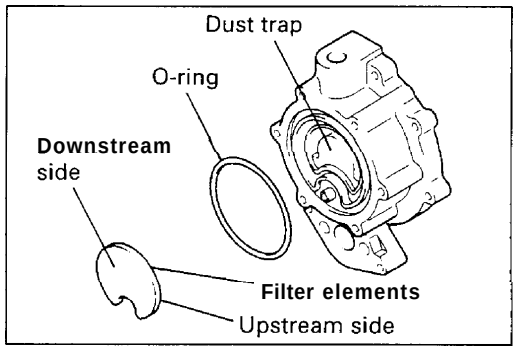
CLEANING AND INSPECTION PROCEDURES

Inspection Procedure

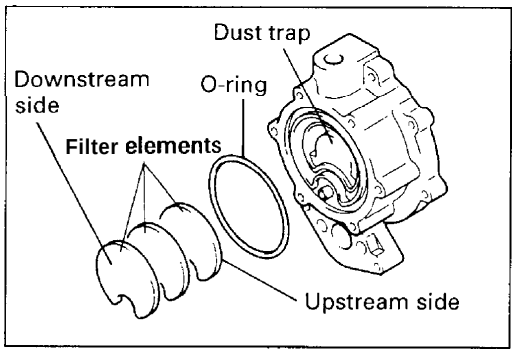
Each of the following defects in the LPG-fueled vehicles is considered to be caused by clogging of the filter for the LPG regulator. Remove the filter and clean it according to the cleaning procedure described below.

(1) Instability of engine idling speed
(2) Poor engine operation feel in response to accelerator pedal depression
(3) Knocking caused upon returning the accelerator pedal from the depressed state to the neutral position.
(4) Failure in attaining the specified engine torque

6FG/6FGF/7FG10~45/7FGF series

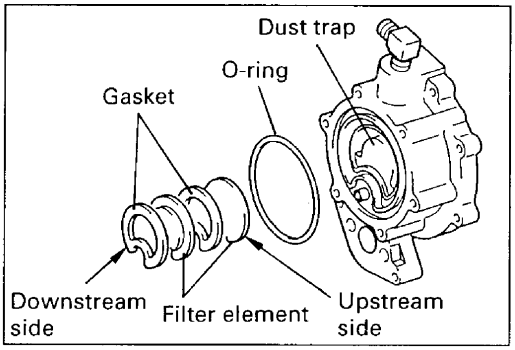


6FGU/6FGCU/7FG(C)U15~32 series



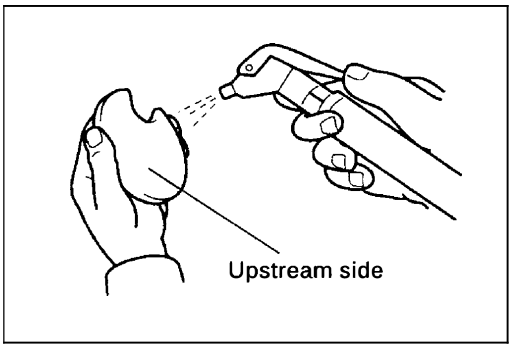
Notes:
6FG/6FGF/7FG10~45/7FGF series: ~2000,4
6FGU/6FGCU/7FG(C)U15-32 series: ~2000,2

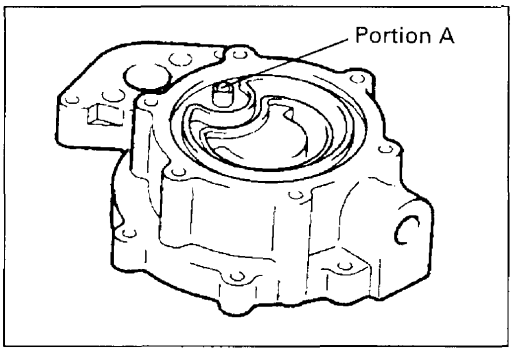
- In filter reassembly, install the elements in their original positions without reversing the upstream and downstream sides. Reassembly in an incorrect direction may cause the regulator to malfunction. (In case of a vehicle using three filter elements, only separate the one on the upstream side for cleaning.)
- When the filter elements are removed, remove the dust accumulated in the dust trap in the regulator by air blowing.
- At the time of reassembly, check to see no dust adhesion on the O ring. Otherwise, gas leakage may be caused.

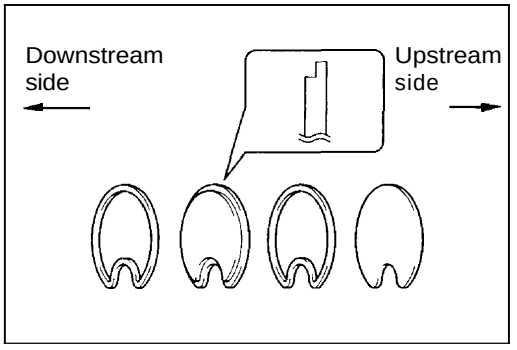


6FG/6FGF/7FG10~45/7FGF/7FG(C)U35~80 series: 2000,4~
6FGU/6FGCU/7FG(C)U15-32 series: 2000,2~

- In filter reassembly, install the elements in their original positions without reversing the upstream and downstream sides. Reassembly in an incorrect direction may cause the regulator to malfunction.
- When the filter elements are removed, remove the dust accumulated in the dust trap in the regulator by air blowing.
- At the time of reassembly, check to see no dust adhesion on the O ring. Otherwise, gas leakage may be caused.







Cleaning Procedure

6FG/6FGF/7FG10~45/7FGF series: ~2000,4
6FGU/6FGCU/7FG(C)U15~32 series: ~2000,2

If any dust accumulates on the upstream side element, remove the dust by air blowing. If dust adhesion on the downstream side element is found, replace the element.

Note:

If the element on the downstream side is dirty, do not use it again.

- The compressed air pressure for blowing shall be 245 kPa (2.5 kgf/cm^2)[35.6 psil or less.
- Never wash by splashing gasoline onto the filter elements.
- Carefully operate during cleaning to prevent dust entrance into the path (portion A).
- If dust adheres on the downstream side element during cleaning, do not use the element again but replace it.

6FG/6FGF/7FG10~45/7FGF/7FG(C)U35~80 series: 2000,4~
6FGU/6FGCU/7FG(C)U15~32 series: 2000,2~

The cotton filter on the upstream side shall be cleaned by air blowing from the upstream side. Replace the filter if any sticky substance exists or its downstream side is contaminated.

The steel filter on the downstream side shall be cleaned by air blowing from the downstream side. This filter can be cleaned with washing fluid. Replace it if any sticky material exists.

Note:

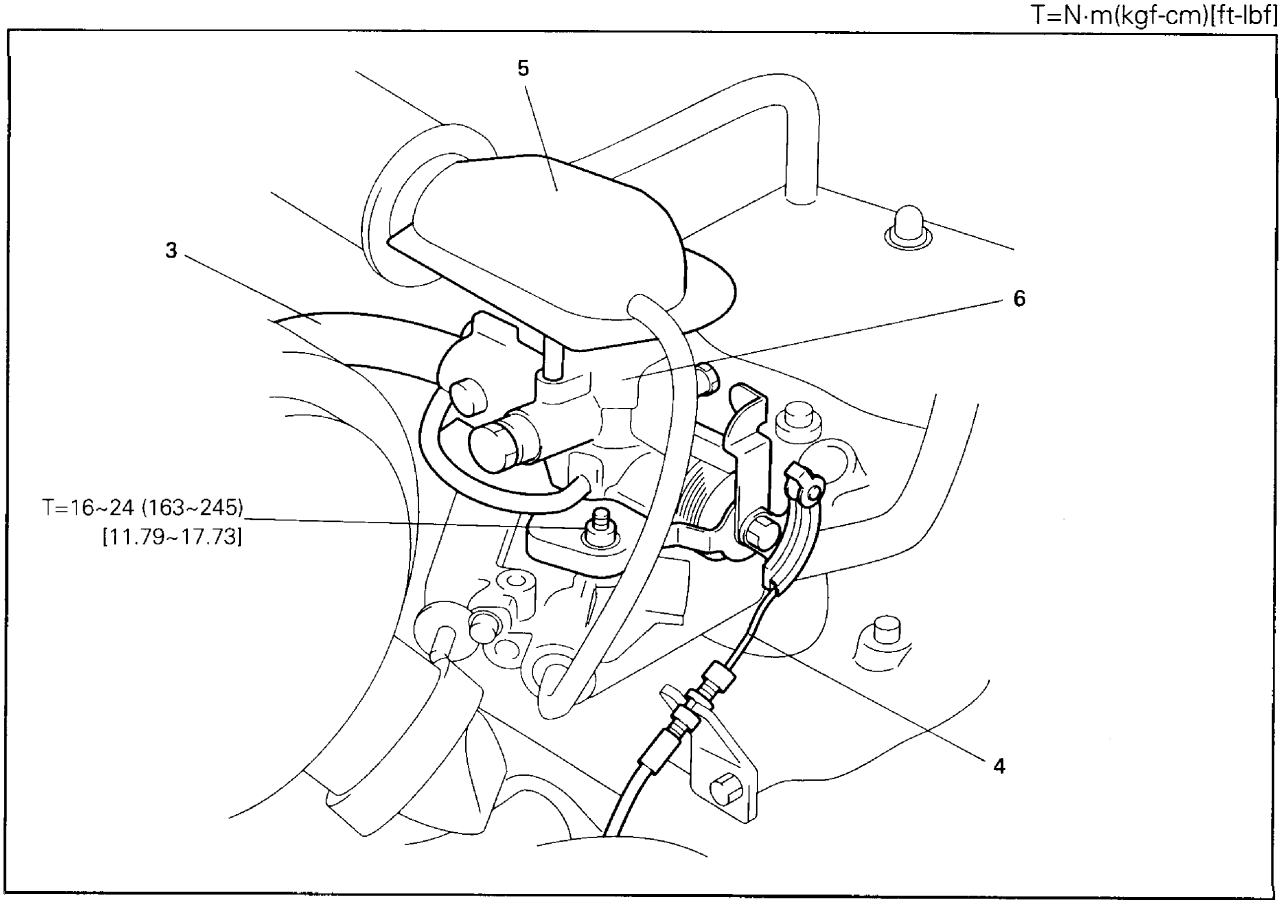
- The compressed air pressure for blowing shall be 245 kPa (2.5 kgf/cm^2)[35.6 psil or less.
- Never use washing fluid for the cotton filter.
- Carefully operate during cleaning to prevent dust entrance into the path (portion A). (See the illustration above.)
- If dirt stays on the downstream side of the cotton filter, do not use it again but replace it with a new one.

CARBURETOR ASSY

Removal-Installation

Note:
- Select a well-ventilated location for service jobs and never allow any fire source around the vehicle.
  Thoroughly discharge the LPG inside the piping before removal. (See page **2A-17.)**
- Disconnect the battery negative (-) terminal before handling the fuel system.

T=N·m(kgf-cm)[ft-lbf]



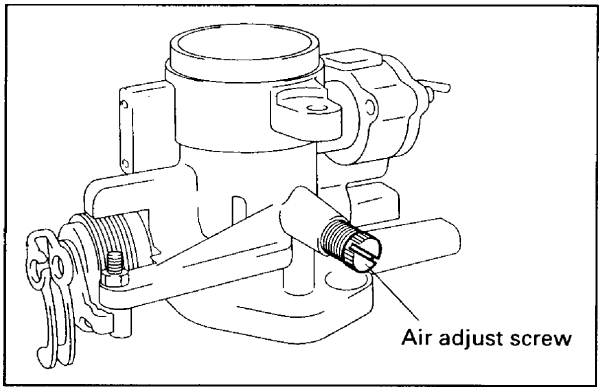
Removal Procedure

1 Discharge LPG from the piping. [Point 1]
2 Disconnect the battery negative terminal.
3 Disconnect the piping.
4 Disconnect the accelerator wire.
5 Remove the air cleaner connector set bolt and disconnect from the carburetor.
6 Remove the carburetor ASSY.

Installation Procedure

The installation procedure is the reverse of the removal procedure.

Note:
- After installation, check to see no LPG leakage from each piping before starting the engine.
- After installation, adjust the idling speed. (See page **2A-22.)**



Point Operations

[Point 1]

Reassembly: Adjust the idle adjusting screw tentatively.

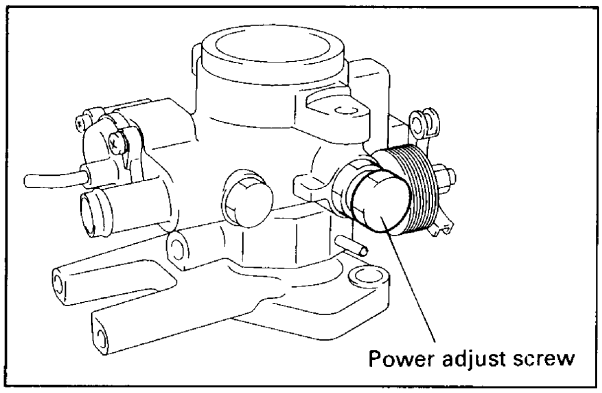
After tightening the idle adjusting screw until it comes into contact with the body, loosen it by the number of turns shown in the table below.

Do not tighten the adjusting screw hard. Always adjust the engine speed after installing the carburetor on the vehicle. (See **page 2A-22.)**

Engine model	5K				4Y			
Fuel	LPT-2		Propane		LPT-2		Propane	
Transmission	A	B	A	B	A	B	A	B
Number of loosening turns	2-1/4	1-1/4	2-1/4	1-1/4	2-5/8	1-5/8	2-5/8	1-5/8

A: Torque converter vehicle B: Clutch vehicle

Engine model	GM6-262			
Fuel	LPT-2		Propane	
Transmission	A	B	A	B
Number of loosening turns	5	4	5	4



[Point 21

Disassembly: Do not remove unless it is necessary.

Reassembly: Adjust the power adjusting screw. After tightening the adjusting screw until it comes into contact with the body, loosen it by the number of thrns shown in the table below.

Tighten the nut after the adjustment.

Engine model	5K		4Y	
Fuel	LPT-2	Propane	LPT-2	Propane
Transmission	A	B	A	B
Number of loosening turns	2-1/2	3-1/4	3	3-3/4

Engine model	GM6-262	
Fuel	LPT-2	Propane
Number of loosening turns	3	4-5/12

ADAPTER (LPG and Gasoline Model)

Adapter disassembly is limited to the power valve and power adjusting screw. Description is omitted. Only the method for power adjusting screw adjustment is described here.

Power Adjusting Screw Adjustment

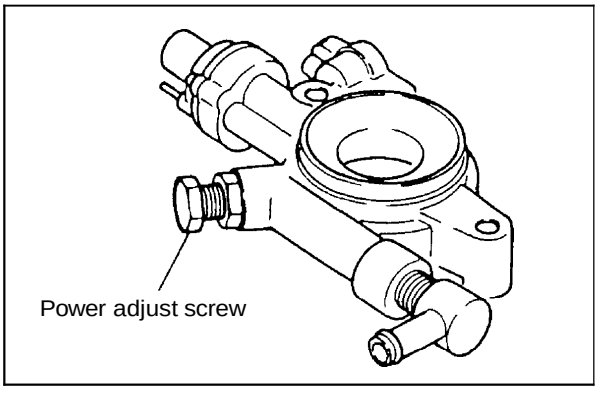
Note:

Adjust the power adjusting screw only when it is judged necessary.

. Careless adjustment may cause fuel supply defects.

1. Loosen the lock nut. After tightening the power adjusting screw until it comes into contact with the body, loosen it by the number of turns shown in the table below. Do not tighten the adjusting screw hard.
2. Tighten the lock nut after adjustment.

T=11.8~14.7N·m(120-150kgf-cm)[8.7~10.9ft-lbf]



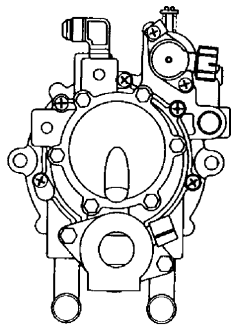
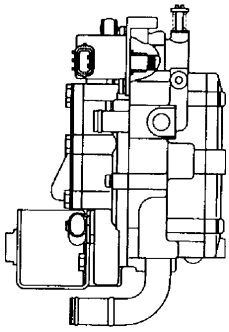
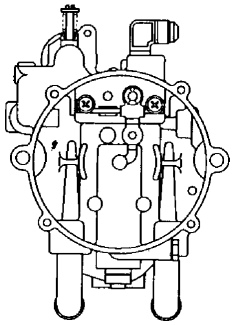
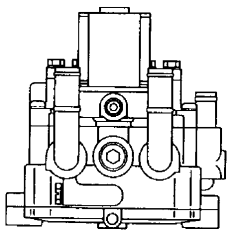
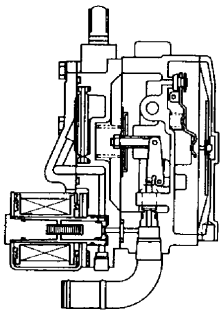
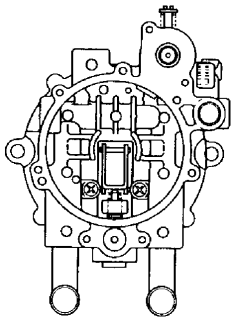
Engine model	5K		4Y	
Fuel	LPT-2	Propane	LPT-2	Propane
Number of loosening turns	3-1/4	3-1/4	3-2/3	4-2/3
Engine model	GM4-181			
Fuel	LPT-2	Propane		
Number of loosening turns	6-1/2	6-1/2		

Engine model	GM6-262 (7FG35~45 series)		GM6-262 (7FG(C)U35~80 series)		1FZ	
Fuel	LPT-2	Propane	LPT-2	Propane	LPT-2	Propane
Number of loosening turns	6-1/4	10-1/4	4-1/4	8-1/4	4-1/4	4-5/6

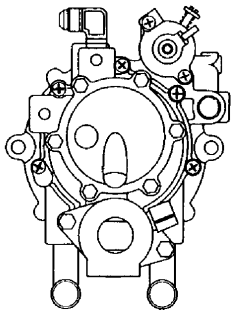
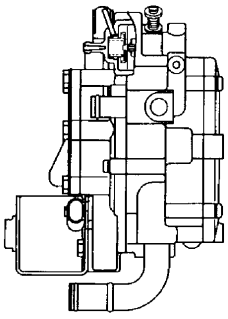
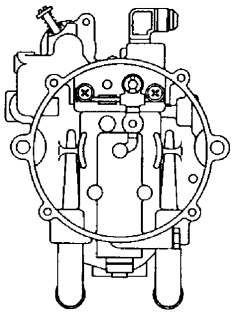
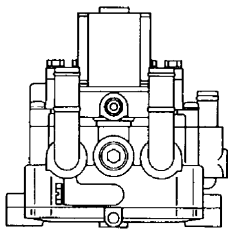
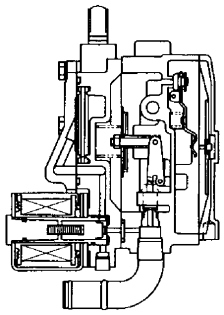
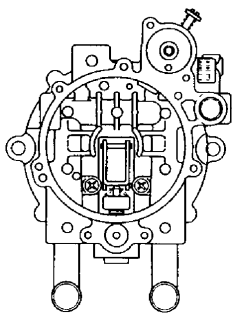
REGULATOR

GENERAL

6FG10~30/6FGF15~30/7FG10~45/7FGF15~J35/7FG(C)U35~80

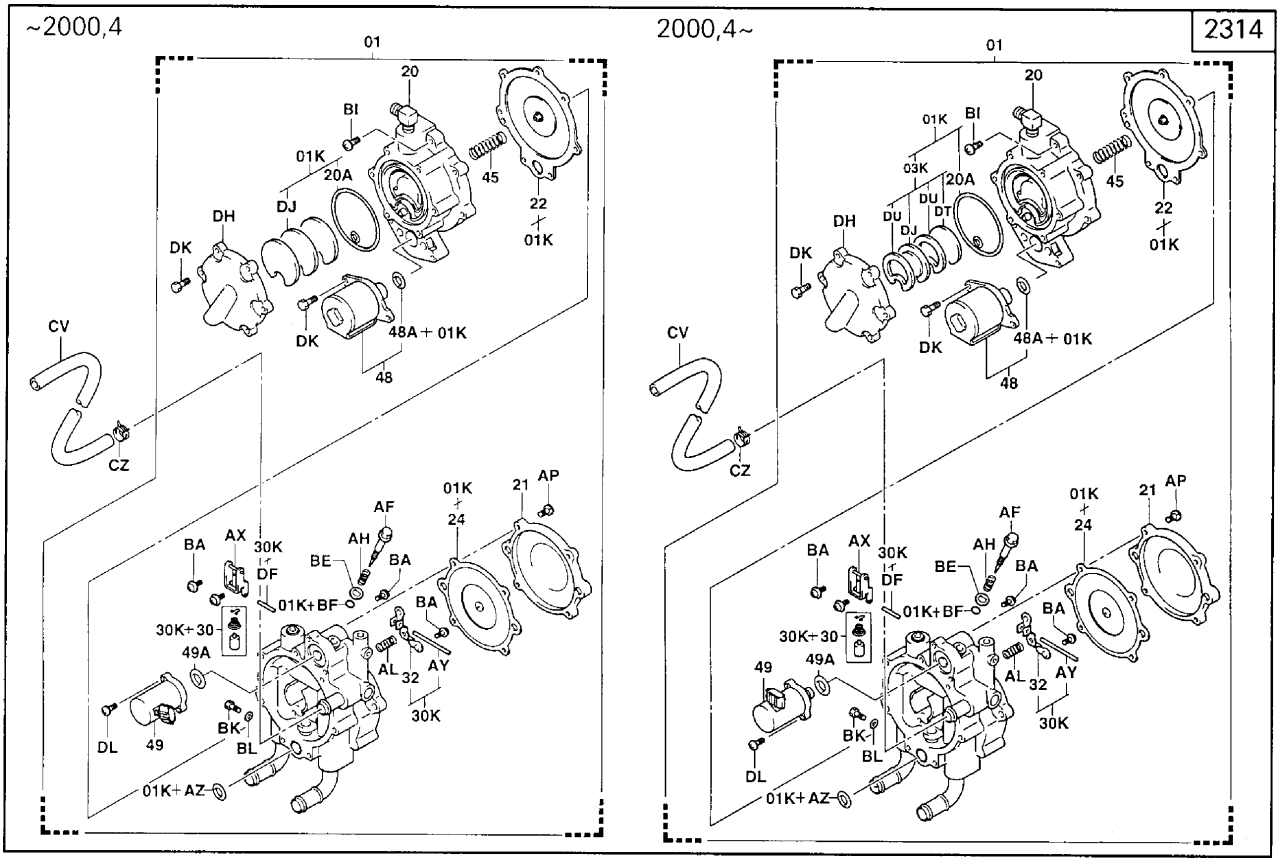







6FGU/6FGCU15~30/7FGU/7FGCU15~32

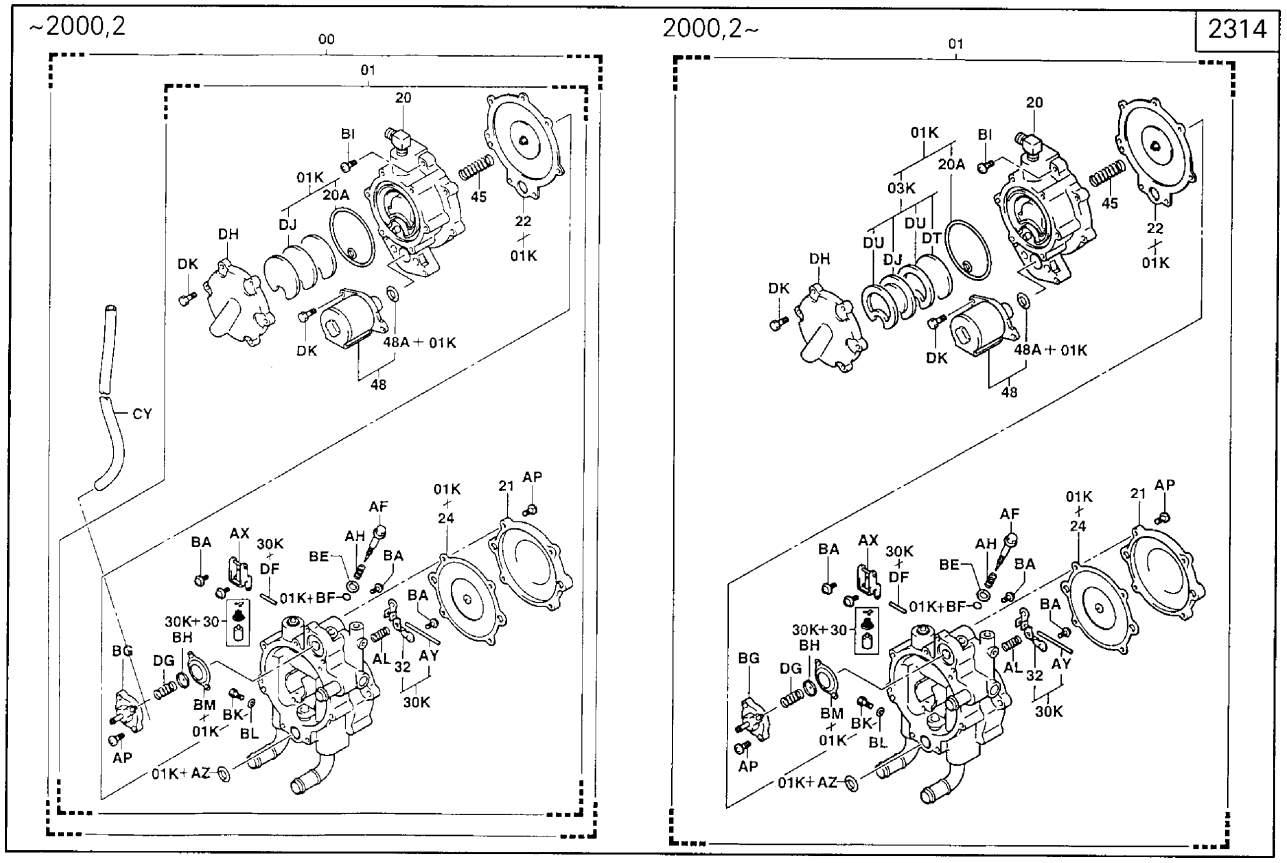







COMPONENTS

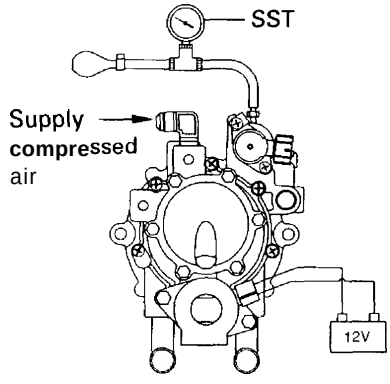
6FG10~30/6FGF15~30/7FG10~45/7FGF15~J35/7FG(C)U35~80



6FGU/6FGCU15~30/7FGU/7FGCU15~32



TROUBLESHOOTING
6FG/6FGF10~30, 7FG/7FGF10~J35, 7FG35~45, 7FG(C)U35~80



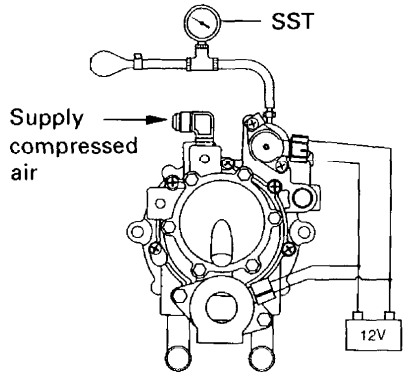
Inspection 1
1. Remove the idle adjusting screw and install the SST.
   SST **(Union) tightening torque**
   T=0.2~0.3N·m (2~3kgf-cm) [0.14~0.19ft-lbf]
2. Apply 12V to the main solenoid valve, and feed compressed air at 400kPa (4 kgf/cm²) [57psi] through the IN port.

Note:
Don't apply compressed air more than 780 kPa (8kgf/cm²) [110psi].

3. See that the SST gauge indicates 0.

0 → OK

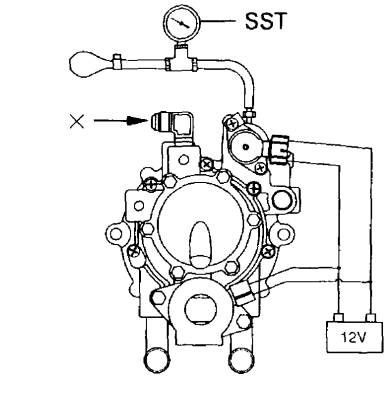
NG → More than 0 → Slow solenoid valve defect



Inspection 2
1. Apply 12V to the slow solenoid valve in state of Inspection 1.
2. See that the SST gauge indicates 24 to 34 kPa (0.25to 0.35kgf/cm²) [3.6~5.0psi].

24 to 34kPa (0.25 to 0.35kgf/cm²) [3.6 to 5.0psi]. → OK

NG → 0 → Slow solenoid valve defect



Inspection 3
1. Cut off the compressed air in state of Inspection 2.
2. Read the SST gauge.

The indicator stays at the position. → OK

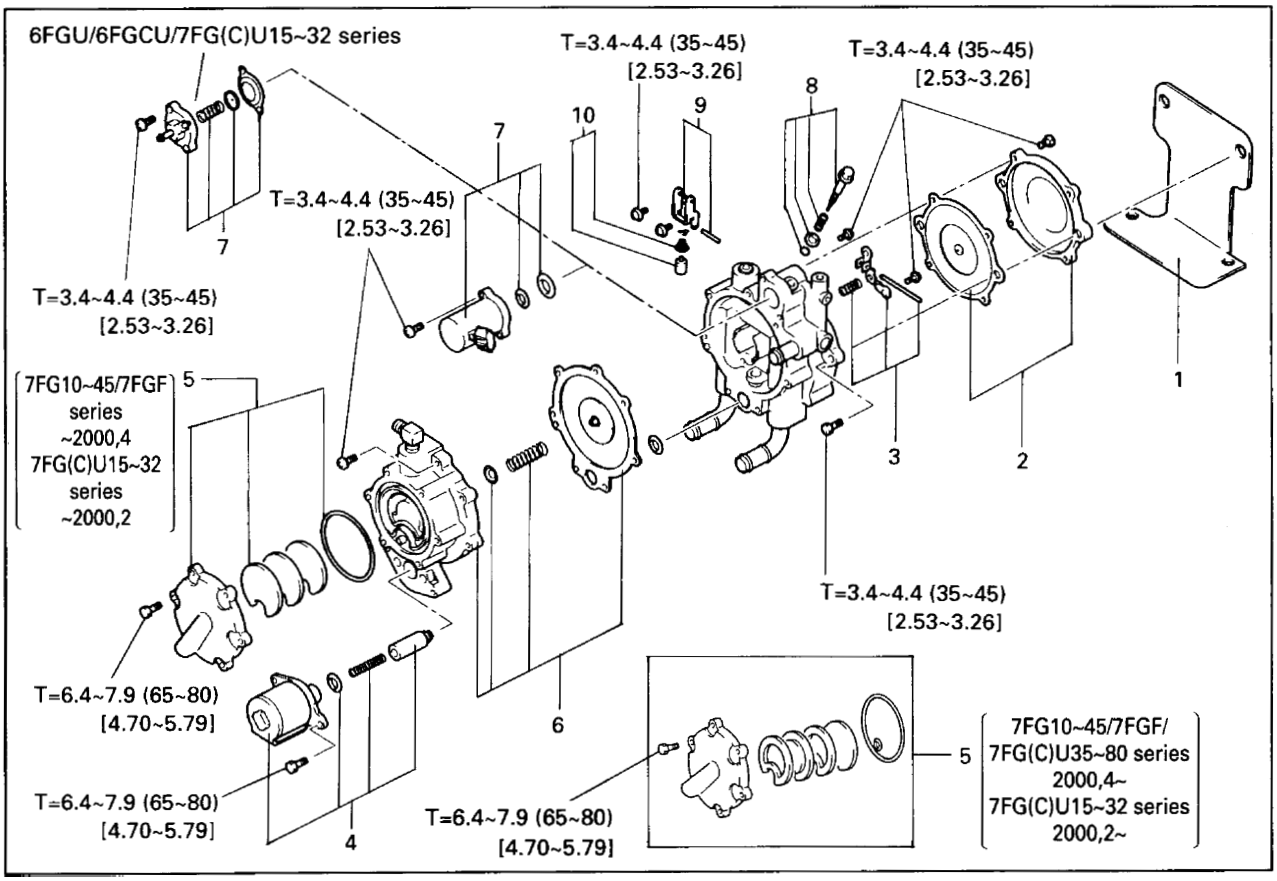
NG → The indicator defrect toward 0 position. → To flow (1)

Disassembly-Inspection-Reassembly

Note:

- Never allow any fire source around the vehicle during disassembly.
- Wash the outer surface of the regulator and keep the work bench clean.
- Disassemble the regulator only when its internal abnormality is judged by conducting inspection according to the troubleshooting procedure given in this manual after individually checking the filter for clogging and the solenoid valve for any abnormality. Careless disassembly may cause defects such as diaphragm and valve contact defects. (See page 2A-12.)

T=N·m(kgf-cm)[ft-lbf]

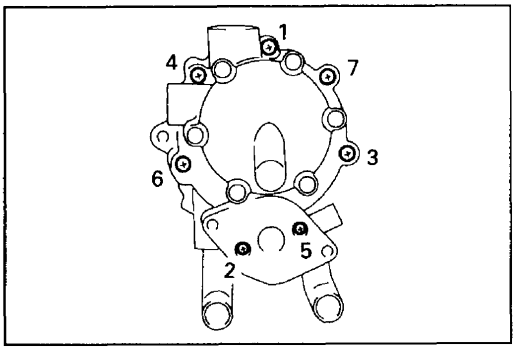


Disassembly Procedure

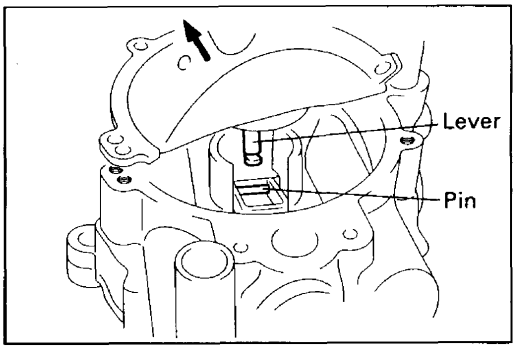
1 Remove the bracket.
2 Remove the regulator second cover and diaphragm. [Point 1]
3 Remove the second valve ASSY. [Point 2]
4 Remove the solenoid valve.
5 Remove the filter and O-ring. (See the "LPG FILTER INSPECTION AND CLEANING" section (on page 2A-3) for filter installation on a vehicle manufactured in or after April 2000.)
6 Remove the filter housing, first diaphragm and spring. [Point 3]
7 Remove the slow solenoid valve.(6FGU/6FGCU 15–30:Remove the slow diaphragm.)
8 Remove the idle adjusting screw and O-ring. [Point 4]
9 Remove the first valve lever.
10 Remove the first valve ASSY.

Reassembly Procedure

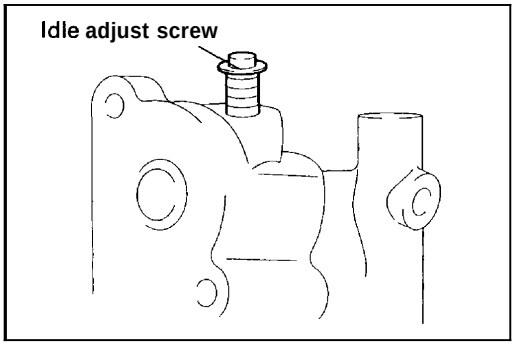
The reassembly procedure is the reverse of the disassembly procedure.



[Point 3]
Disassembly: Since the spring force is applied at each portion, do not try quick removal but loosen each bolt equally for removal.
Reassembly: Tighten each bolt equally step by step so as not to let springs be fallen. Tighten in the illustrated order for final tightening.

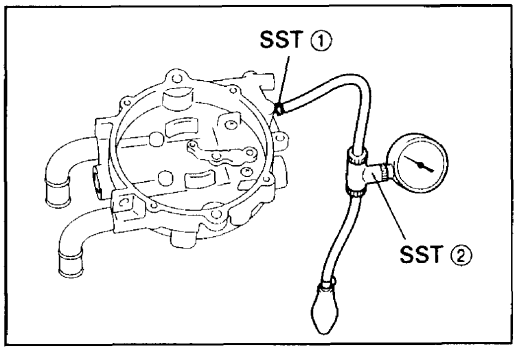


Reassembly: Since the diaphragm lever is engaged with the first valve lever pin, shift the diaphragm in the direction of the arrow in the illustration for removal.
Reassembly: Hook the diaphragm lever onto the first lever pin.



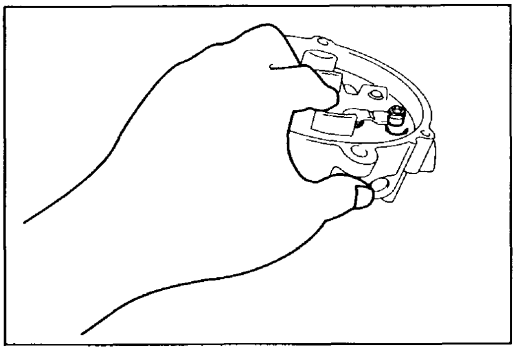
[Point 4]
Reassembly: Temporarily adjust the idle adjusting screw.
After tightening until the tip end of the adjusting screw come into contact with the body, loosen the bolt by the number of turns in the table below.
Do not tighten the adjusting screw hard.
After installing the regulator on the vehicle, always adjust the engine speed. (See page 2A-22.)

Number of loosening turns	3.0 turns



Second Valve Airtightness Check
1. Temporarily install the second valve ASSY.
2. Remove the idle adjusting screw and install the SSTs.
SST (union) tightening
T=0.2~0.3N·m (2~3kgf-cm) [0.14~0.19ft-lbf]
6FG/6FGF/7FG10~45/7FGF/7FG(C)U35~80 series:
Apply 12V to the slow solenoid valve.

SST 09817-23600-71 — ①
SST 09820-23600-71 — ②



3. Inject compressed air through the SSTs and make adjustment to ensure no air leakage by tilting the valve for example.

LPG LEAK INSPECTION

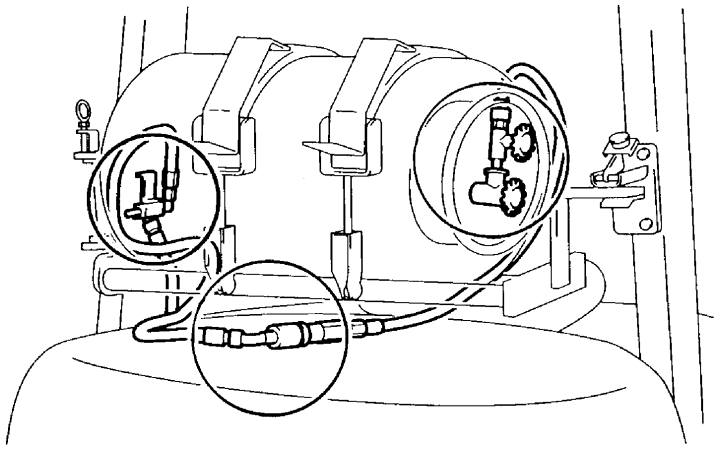
Caution:

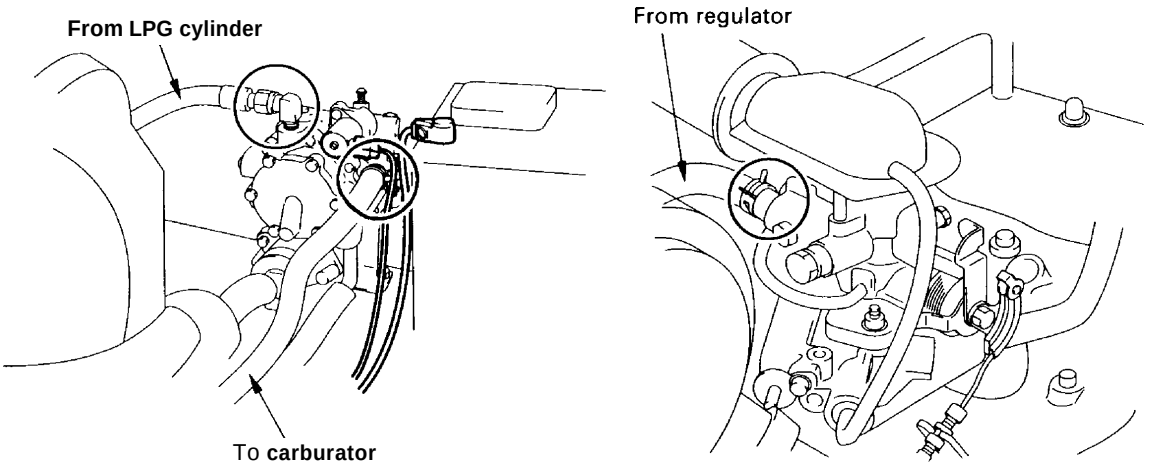
After repairing each part of the LPG system, use soapy water to check no LPG leakage from any part before starting the engine.

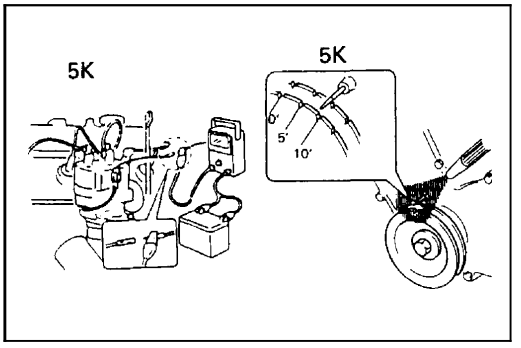
Never use fire for inspecting gas leakage.

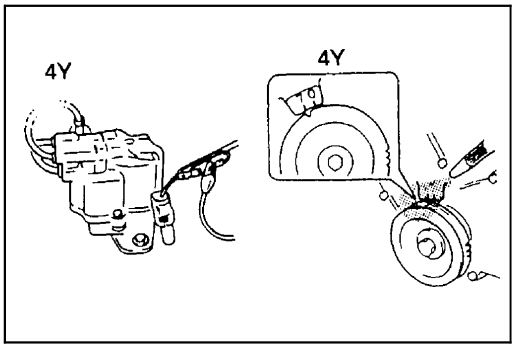
. Never use a match or lighter for illumination at the time of inspection at night.

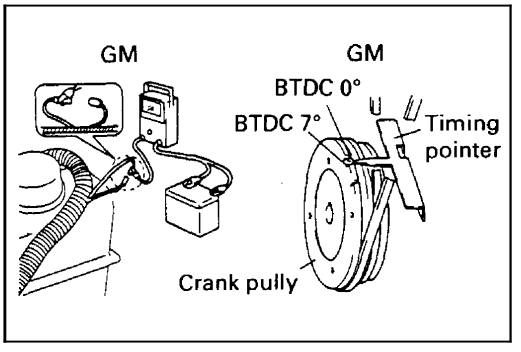
1. Open the valve between the LPG cylinder and hose. (The LPG is led to the regulator by this operation.)
2. Use soapy water or aqueous solution of a neutral detergent and check no gas leakage from each joint between the LPG cylinder and regulator. (Follow step 3 below after replacement or repair when any leakage is found.)
3. 6FG/6FGF/7FG10~45/7FGF/7FG(C)U35~80 series:
   Apply 12 V to the main and slow solenoid valves.
   6FGU/6FGCU/7FG(C)U15~32 series:
   Apply 12 V to the main solenoid valve and a negative pressure forcibly to the slow diaphragm. (LPG is led to the carburetor by this operation.)
4. Use soapy water or aqueous solution of a neutral detergent and check no gas leakage from each joint between the regulator and carburetor.
5. Always wipe the liquid off after the leak check.

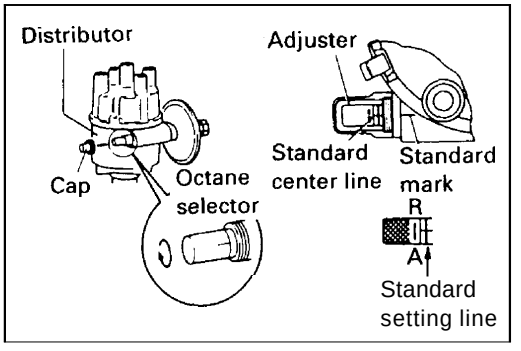












ENGINE ADJUSTMENT

Ignition Timing Inspection and Adjustment.

1. Warm the engine up.
Cooling water temperature: 80°C or above
Engine oil temperature: 70°C or above
Hydraulic oil temperature: 50°C or above
2. Install a tachometer and a timing light. Connect the tachometer measurement cord with the black wire after disconnecting the check connector.
3. Inspect the idling speed.
5K, 4Y or GM engine vehicle
1 to 3 ton model: 750±50 rpm

Note:
For 7 series, refer to Repair Manuals for each model.

4. Inspect and adjust the ignition timing.
(1) Disconnect the distributor vacuum hose.
(2) Use the timing light and inspect the ignition timing.

Standard:	5K engine:	10° BTDC/idle speed
	4Y engine:	7° BTDC/idle speed
	GM engine:	3° BTDC/idle speed
	GM6-262 engine:	8° BTDC/idle speed
	1FZ engine:	3° BTDC/idle speed

Note:
For GM6-262 engine and 1FZ engine, refer to Repair Manuals for each engine.

(3) If the standard is not satisfied, loosen the distributor clamp bolt and turn the distributor for adjustment.
Late ignition timing (delay): Turn it counterclockwise.
Early ignition timing (advance): Turn it clockwise.
(4) After adjustment, tighten the distributor clamp bolt and check the ignition timing again.

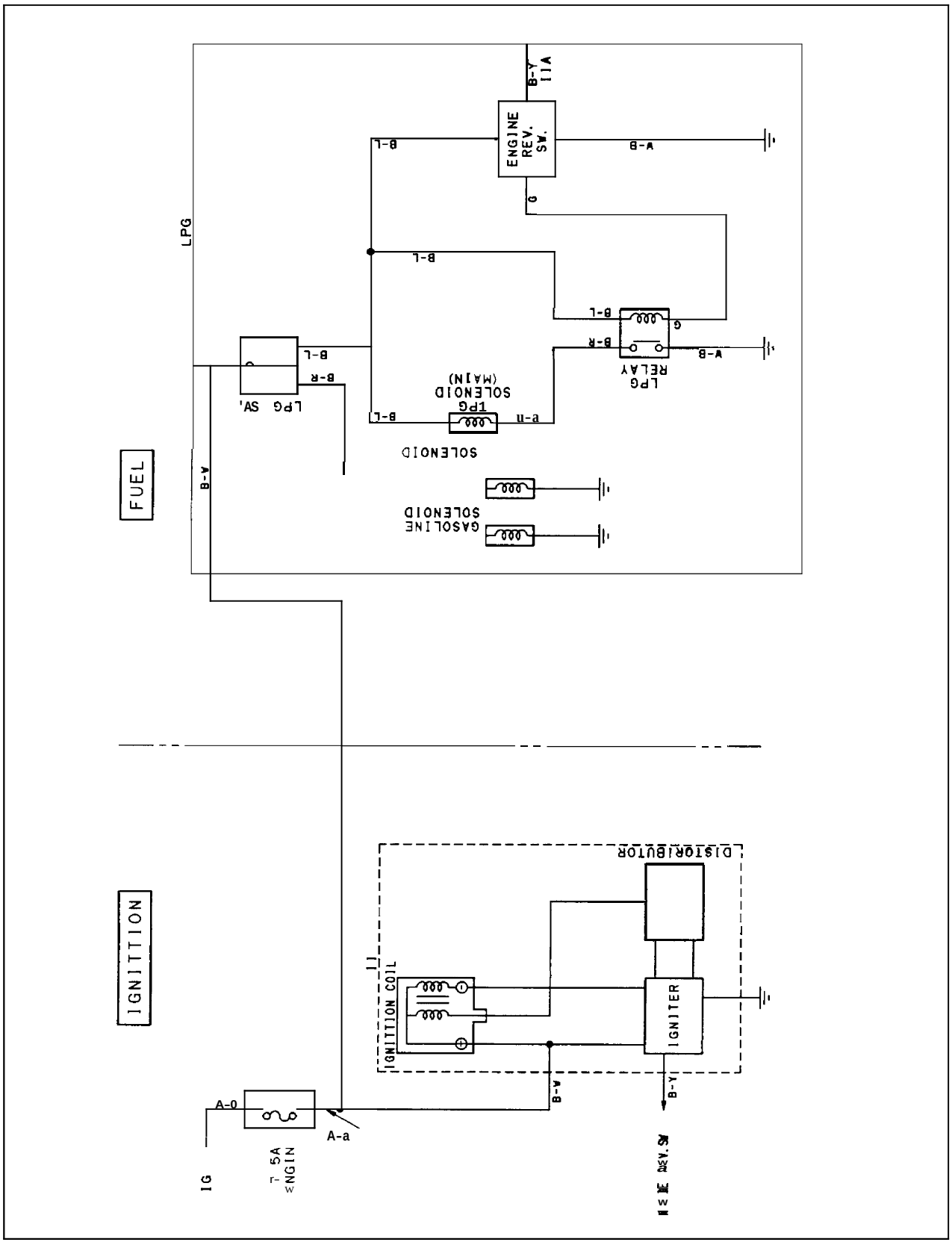
Note:
In LPG models only, the Octane selector of the distributor is not in the standard position. Adjust ignition timing as described above after returning the Octane selector to the standard position.

Reference:
Method for setting the octane selector to the standard position.
(1) Remove the octane selector cap.
(2) Turn the adjuster in the R or A direction until the standard setting line aligns with the end of the body thread.
(3) Align the reference center line with the reference mark.

WIRING DIAGRAM

6FG10~30series (See page on 2-48)
6FGF15~30series (See page on 2-50)
7FG35~45, 7FG(C)U35~80 series (Refer to the repair manual for each model.)

6FGU/6FGCU15~30series (From October 1997)



From October 1997
Vehicle Model: 6FG10-30 series
6FGU/6FGCU15~30 series (4Y Engine Model)
6FGF15~30 series LPG Only Model W/TWC System
[LPG and Gasoline Model
7FG10~J35 series
7FGU/7FGCU15~32 series
7FGF15~J35 series
7FG35~45 series
7FG(C)U35~80 series

CARBURETOR (for LPG only)	
Tightening Torque	T=N·m (kgf-cm) [ft-lbf]
Power diaphragm set screw	1.5–2.0 (15–20) [1.09~1.45]
Power adjust screw lock nut	11.8–14.7 (120–150) [8.68~10.85]
Accele wire rink set nut	8.8–11.8 (90–120) [6.51~8.68]
ADAPTOR (for LPG-gasoline model)	
Tightening Torque	T=N·m (kgf-cm) [ft-lbf]
Power adjust screw lock nut	11.8–14.7 (120–150) [8.68~10.85]
REGULATOR	
Tightening Torque	T=N·m (kgf-cm) [ft-lbf]
Filter cover set bolt	6.4–7.9 (65–80) [4.70~5.79]
Filter housing set bolt	3.4–4.4 (35–45) [2.53~3.26]
Solenoid valve set bolt (for slow)	↑
First valve set bolt	↑
Second cover set bolt	↑
Second valve set bolt	↑

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