



Service Manual

Engine

4G15

4G63

4G64

6G72

OPERATING INSTRUCTIONS FOR GASOLINE/LP-GAS LIFT TRUCKS

4. Switching fuel source

4.1 Switching from [LP-gas] to [gasoline]

- (1) Close the gas outlet valve (red) on the LP-gas tank.
- (2) After the engine stops by itself, set the gasoline/LPG selector switch to the [GASOLINE] position.

Note: If fuel has not reached the float chamber in the gasoline carburetor during the above step, it is necessary to continue cranking the engine.

4.2 Switching from [gasoline] to [LP-gas]

- (1) Set the gasoline/LPG selector switch to the [OFF] position, and wait until the engine stops by itself.

Note: If the float chamber of the gasoline carburetor still contains gasoline when the engine is started on LP-gas, excessive fuel (gasoline and LP-gas mixture) enters the engine, making it difficult to start the engine.

- (2) Open the gas outlet valve (red) on the LP-gas tank.
- (3) Set the gasoline/LPG selector switch to the LPG position, and restart the engine.

5. Parking and storing

- (1) If the vehicle is not operated for an extended period of time, close the gas outlet valve on the LP-gas tank.
- (2) Before stopping the engine to park or store, close the gas outlet valve on the LP-gas tank while the engine is running to use all gas in the line.

6. Caution for using lift truck in extremely cold weather

- (1) General caution items
 - (a) Make sure that the battery is properly charged. (Specific gravity: 1.26 or higher)
 - (b) Use coolant in the engine cooling water, and make sure that the freezing point of the cooling water is -20°C [-4°F] or lower.
 - (c) Use engine oil with lower viscosity than specified. (Oil viscosity becomes higher during use.)

- (2) Action to take in the event of converter freezing

If the converter freezes and becomes covered with white frost, the LP-gas mixture becomes too rich and causes the engine to stall. When this happens, start the engine on gasoline. After the engine warms up sufficiently, switch to [LP-gas].

An attempt to start the engine with a frozen converter or operating the vehicle when the cooling water temperature is low can cause freezing of the converter's internal parts and result in damage.

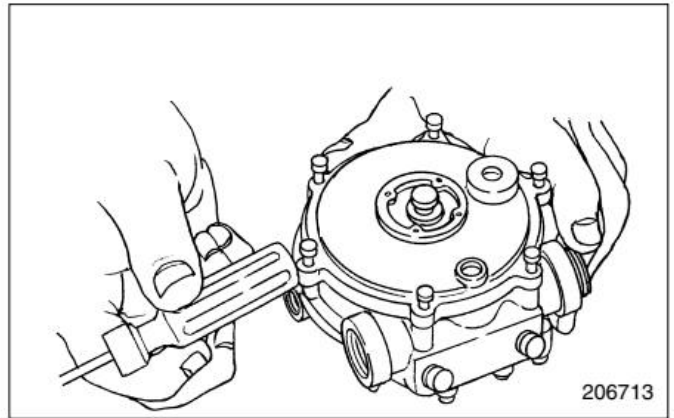
If the converter freezes or the converter temperature drops suddenly after the fuel is switched to [LP-gas], inspect the hot water circuit.

– CAUTION

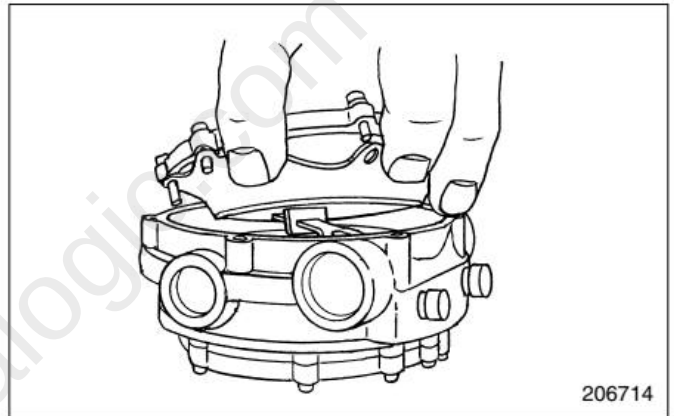
If the vehicle is not operated for an extended period of time, cover the LP-gas tank to protect it from direct sunlight, and ensure that the surface temperature of the tank does not exceed 40°C [104°F].

DISASSEMBLY AND REASSEMBLY

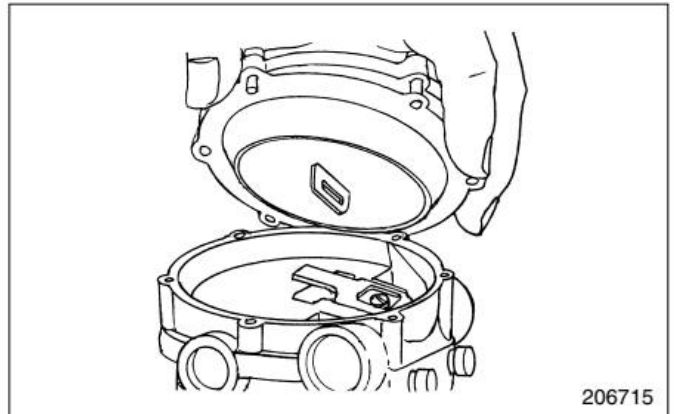
- (2) Start disassembly by removing secondary cover. Take out six screws, and tap the perimeter of the cover with the plastic handle of a screwdriver to loosen secondary cover from its mounting position.



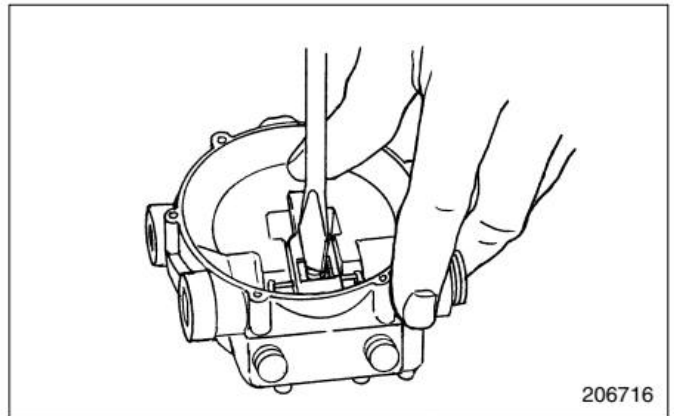
- (3) Remove secondary diaphragm. Slide secondary diaphragm toward gas inlet side to disengage diaphragm link from secondary seat lever.



- (4) At this stage, secondary seat lever is still positioned in link slot. Move secondary diaphragm to clear the slot.



- (5) Remove screw, and dismount secondary seat lever, secondary seat, secondary seat pin, fulcrum pin and spring from converter body.
- Note that locating tabs for spring are provided on both sides of lever. These tabs, together with the tab on the top of lever, retain the spring in proper position and prevent it from slipping out of place.



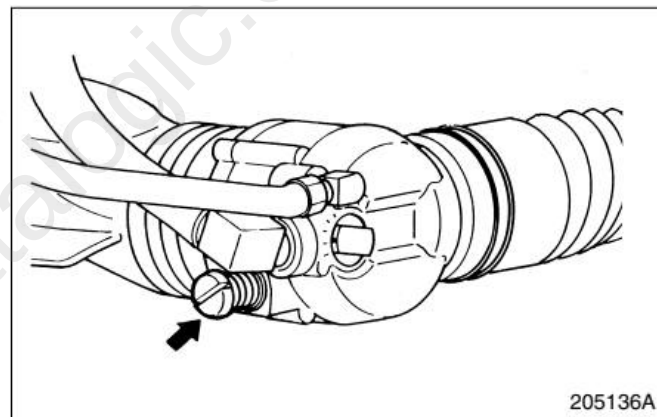
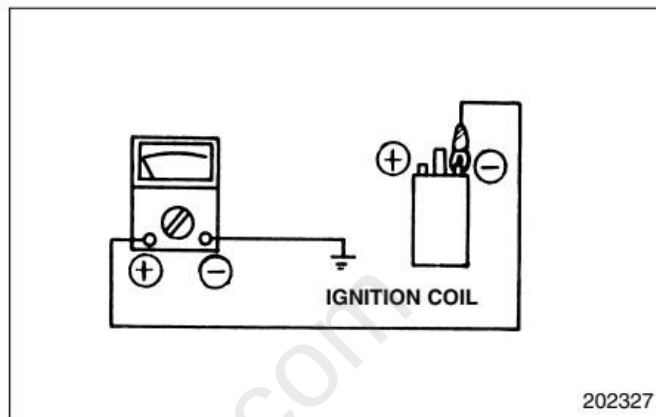
INSPECTION AND ADJUSTMENT

5. Idle speed adjustment

After sufficient engine warm-up operation, adjust the idle fuel mixture adjustment screw of the LP-gas carburetor so that the engine idles at 650 to 700 rpm.

- (1) Connect a tachometer.
Connect the positive (+) lead wire of the tachometer to the negative (-) terminal of the ignition coil, and the negative (-) lead wire to the vehicle chassis.
- (2) Let engine idle.
- (3) Set speed adjusting screw of the gasoline carburetor so that the engine runs at a speed of 600 to 650 rpm.
- (4) Turn the idle fuel mixture adjustment screw of the LP-gas carburetor to the right until the engine operation becomes most stable.

Idle fuel mixture adjustment screw	Fuel mixture condition	Engine condition
Open (turn to the left)	Lean	Unstable idling
Close (turn clockwise)	Rich	High fuel consumption (Increases CO discharge and LP-gas smell)

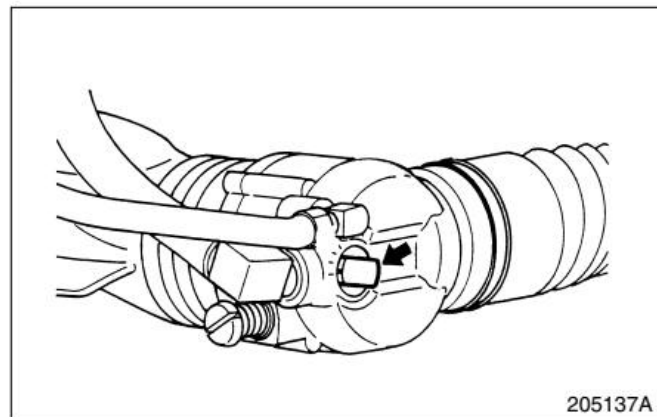


6. Output power adjustment

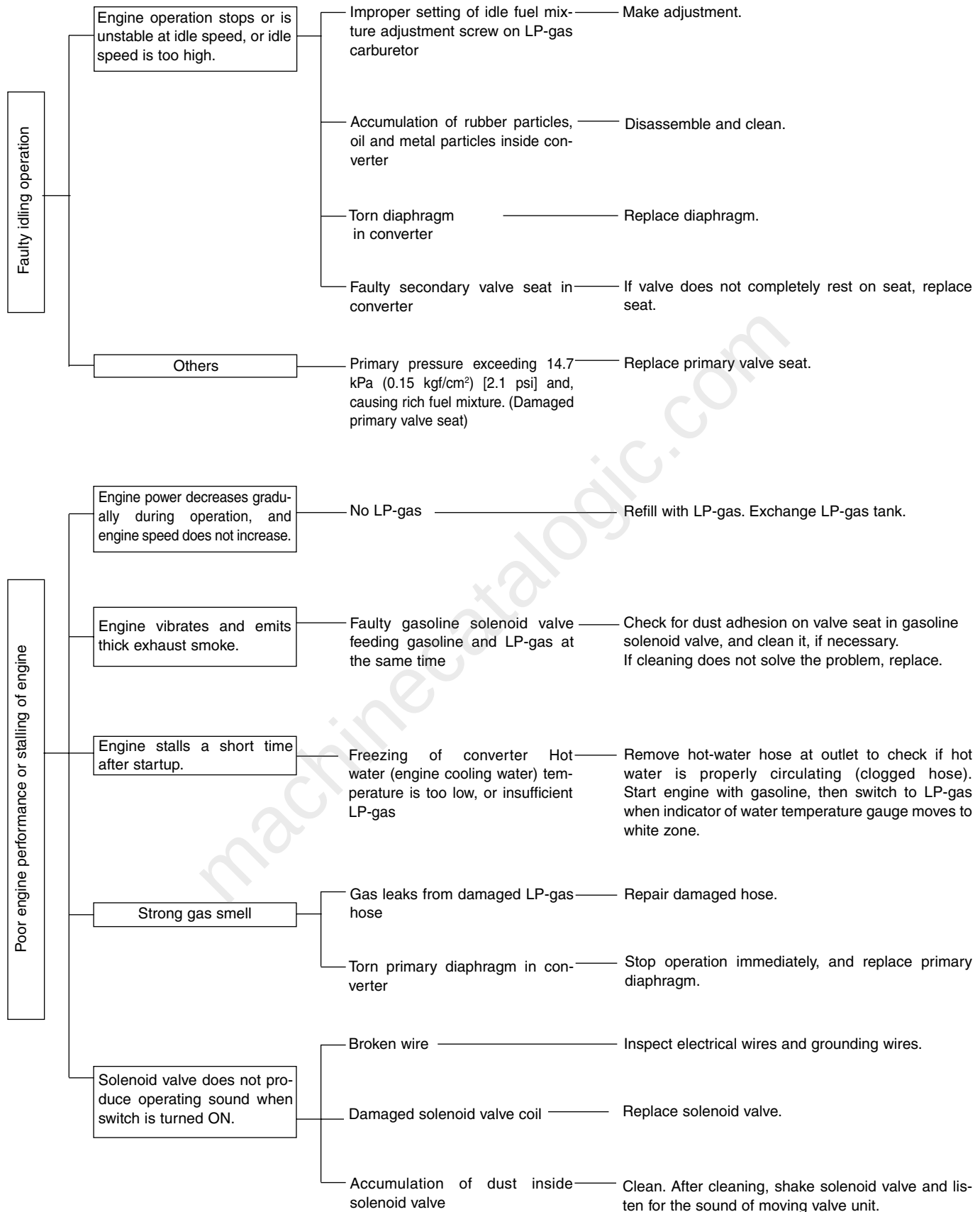
Adjust the power fuel mixture adjustment valve on the LP-gas carburetor by following the procedure below.

- (1) Turn the power fuel mixture adjustment valve toward the "L" side when the engine is operating under full load or working load.
- (2) Turn the power fuel mixture adjustment valve slowly toward the "R" side. From the position at which the engine speed increases, further turn the power fuel mixture adjustment valve by 1 mm (0.039 in.) towards the "R" side.

Power fuel mixture adjustment valve	LP-gas
Turn toward "L" side	Lean
Turn toward "R" side	Rich



TROUBLESHOOTING

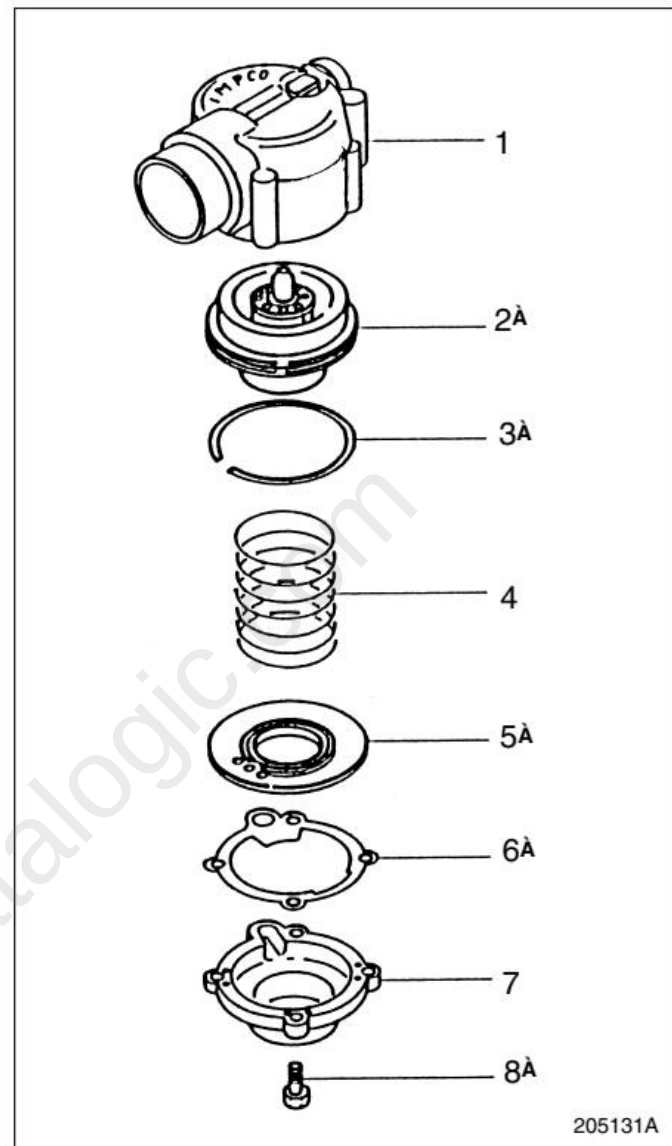


STRUCTURE AND FUNCTION

Carburetor

- 1 Air horn
- À 2 Air valve
- À 3 Air valve sealing
- 4 Air valve spring
- À 5 Check valve plate
- À 6 Gasket
- 7 Adapter
- À 8 Screw

À Components included in the Repair Kit.

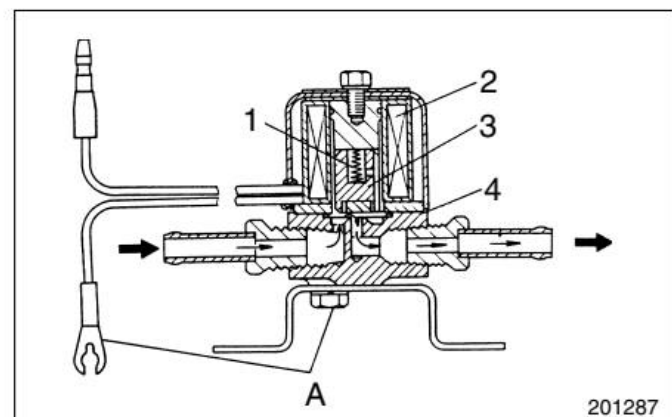


4.5 Solenoid valves (electromagnetic valves)

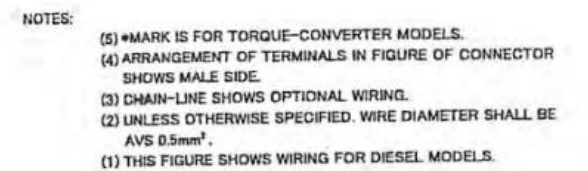
Solenoid valves are installed in the LP-gas and gasoline lines. These solenoid valves open and close the passages of fuel lines. They are operated by the selector switch. The valve opens when an electric current is supplied.

When an electric current flows to the coil in the solenoid valve, the generated electromagnetic force pushes up the plunger valve located inside the coil against the force of the return spring, opening the passage for the fuel to flow. When there is no electric current supplied, the force of the return spring pushes the plunger and presses it against the seat, thus closing the fuel passage.

The operating electric power is supplied from the starter switch for linked operation.



- | | |
|-----------------|-------------------|
| 1 Return spring | 4 Cylinder flange |
| 2 Coil | A Use bolt for |
| 3 Plunger valve | grounding cord |
| | connection |



B : BLACK
W : WHITE
R : RED
G : GREEN
Y : YELLOW
Br : BROWN
L : BLUE
Lg : LIGHT GREEN
V : VIOLET

CAT			
Schematic No.	Used for	Truck Model	Serial No.
ES019-31400	99719-31400	DP15	3BP-20058-up
		DP18	4BP-20004-up
		DP20	5BP-00384-up
		DP25	6BP-00754-up
		DP30	7BP-02087-up
		DP35	8BP-00020-up

Full Version Available

Caterpillar GP20 Forklift Service Manual (99719-34130)

Caterpillar GP20 Forklift service manual, covers hydraulics, drive unit, wiring, and engine service data. Instant PDF download.

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