– Engines with constant depression carburettor

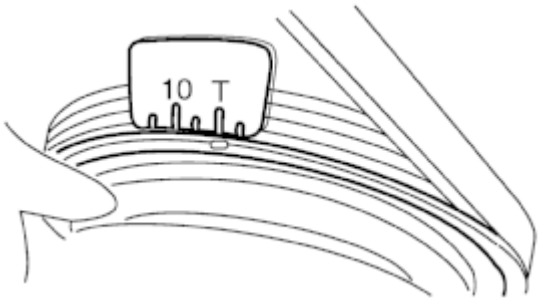
Ignition

This is a transistor ignition with conventional vacuum and centrifugal advance.

technical specifications	
spark plugs; make and model	4G16: NGK BPR6ES; ND W20EPR other versions: NGK BPR5ES; ND W16EPR
spark plug gap	0,7 - 0,8 mm
coil resistance, primary	approx. 1,0 Ω
coil resistance, secondary	20000 - 30000 Ω
ballast resistor	1,2 - 1,5 Ω
HT-leads resistance	no data

Adjustments

Ignition timing



timing markings

ignition timing	
engine speed 700 - 900/min	4G13: 3° ±2°BTDC 4G15: 2° ±2°BTDC

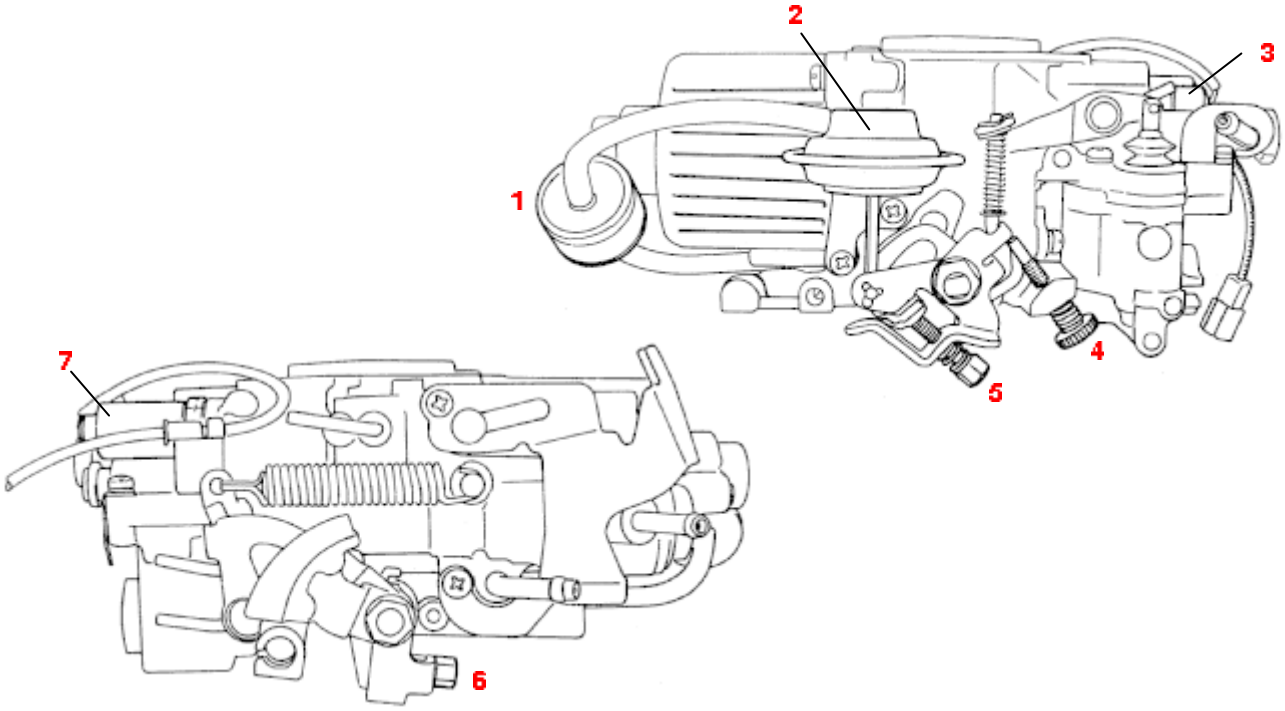
Run the engine to operating temperature. Switch off all electrical consumers. Place automatic transmission in "N" or "P". Check the ignition timing with a rev. counter and a timing light. Set the ignition timing by turning the distributor.

Advance

Disconnect the distributor hose(s). Blank off to prevent air leaks Connect a rev. counter and timing light. Check the centrifugal advance by raising the engine speed.

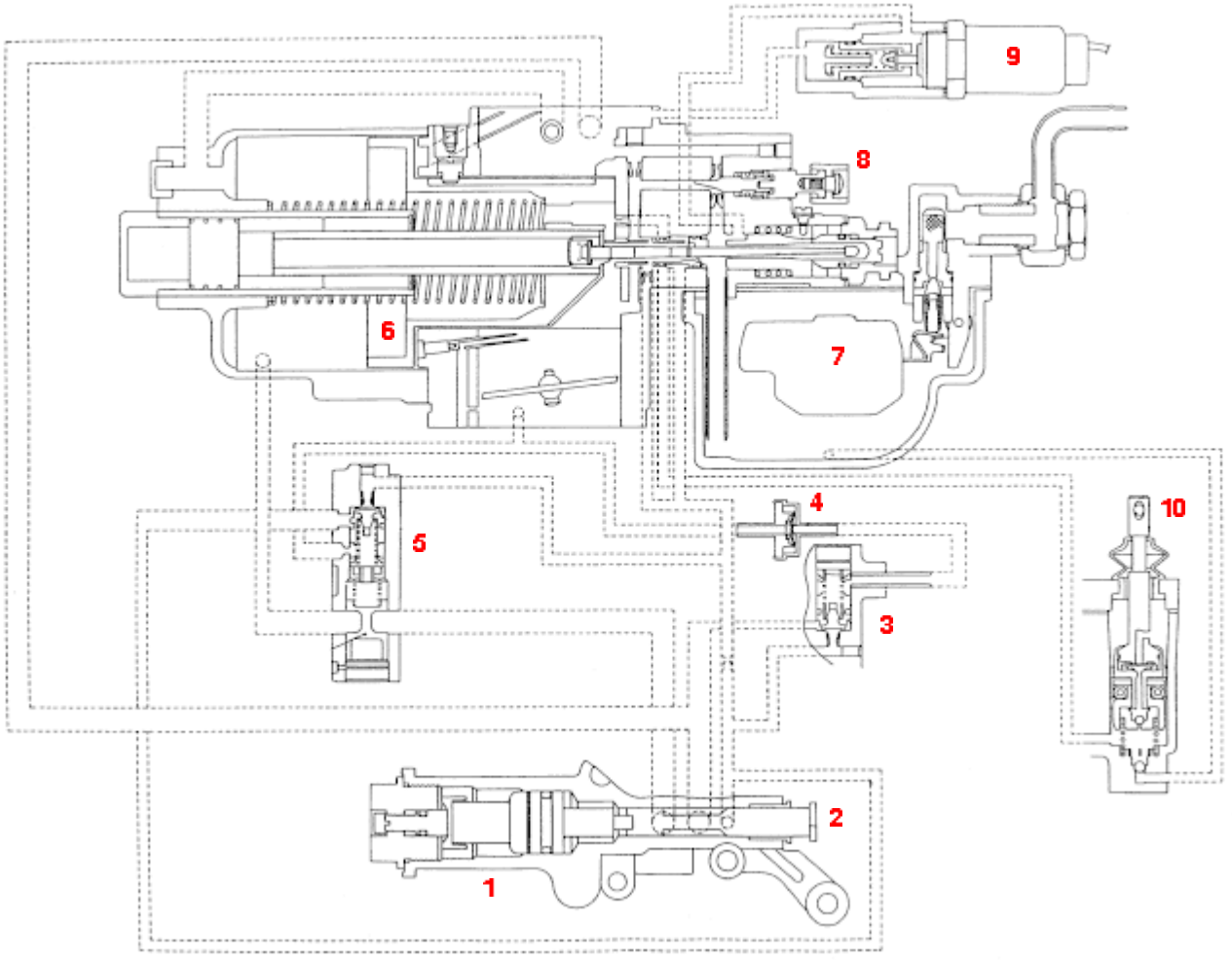
Check the vacuum advance at idle speed. Connect a timing light. Disconnect the vacuum hose(s) from the distributor. Blank off. Use a vacuum pump to apply vacuum to the vacuum diaphragm. Check that the ignition timing is advanced. On versions met two vacuum diaphragms: both vacuum advances can be tested similarly.

Carburettor



1. dashpot delay valve
2. dashpot
3. CO-percentage adjustment screw
4. idle speed adjustment screw
5. dashpot touch speed adjustment screw
6. fast idle speed adjustment screw
7. fuel cut-off valve

constant depression carburettor



1. mixture regulator
2. mixture regulator plunger
3. air control valve 2
4. thermo valve
5. air control valve 1
6. carburettor piston
7. float
8. CO-percentage adjustment screw
9. fuel cut-off valve
10. acceleration pump

constant depression carburettor

This is a constant depression carburettor with mixture regulator, dashpot system (not on versions with manual gearbox), anti run-on shut-off valve and EGR-system.

The adjustment of the mixture according to the operating conditions is controlled by the mixture regulator and two air control valves. The mixture regulator consists of a plunger

internally connected to the thermo wax element, and externally with the throttle valve arm. Depending upon the temperature, the plunger slides to a position allowing more or less air to the main jet. In this way the mixture is enriched at cold start and driving under heavy load. The plunger is connected with the throttle valve arm so that the engine runs at fast idle speed with cold engine.

The two air control valves are vacuum controlled. They open the air bores depending upon the inlet manifold vacuum.

The carburettor has a number of anti-pollution systems. These are described here, briefly.

EGR-system

Versions with automatic transmission have an EGR system. With coolant temperatures below 70 °C, the thermo/vacuum valve is open. The EGR valve is not activated. With engine at idle speed and at full load: the vacuum is too low to operate the EGR valve.

Dashpot system

All versions have a dashpot system. It's function is to reduce the emission of carbon monoxide and hydro carbons during deceleration.

Air compensation system

The air filter has a thermo valve that opens at temperatures above approx. 60 °C. The engine induces a small amount of air to the inlet system. The result is a leaner mixture.

technical specifications	
carburettor code	
versions with manual gearbox	4G13: 31A 4G15: 51A
versions with automatic transmission	4G13: 35D 4G15: 51B
venturi diameter	42 mm
start slide opening	at least 8 mm
fuel pump pressure	0,19 - 0,26 bar

Adjustments

Note: The main jet adjustment is factory set and must not be altered.

To set the idle speed and CO-percentage; run the engine to operating temperature. Switch off all electrical consumers. Place automatic transmission in "N" or "P". On versions with power steering: place the wheels straight ahead. The ignition timing setting must be correct.

Idle speed and CO-percentage

idle speed	
versions with manual gearbox	800 ± 50 /min
versions with automatic transmission	850 ± 50 /min
CO-percentage; at idle speed	1,0 ± 0,5%

Set the idle speed and CO-percentage by adjusting the screws in turn.

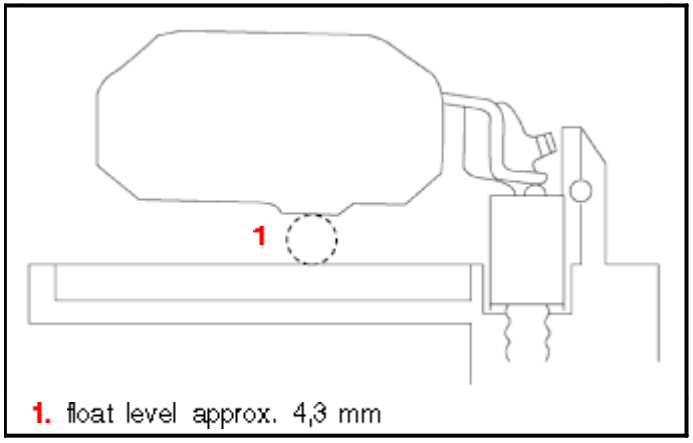
Fast idle speed

fast idle speed	2700 ± 200/min

Check the fast idle speed with engine at operating temperature. With engine off: turn the throttle lever until the roller rests against the tab. Start the engine. Check the fast idle speed. With any deviation: adjust with the adjustment screw.

Components

Float



1. float level approx. 4,3 mm

Check the float level with reference to the illustration. If necessary: adjust the height by bending the mounting brace. Measure the gap with the float resting on the float needle valve under its own weight.

Fuel cut-off valve

Take the connector off the cut-off valve. Supply 12 V to the connector terminal. The valve must click. Run the engine at idle speed. Take the connector off of the cut-off valve. If the valve is in good condition: the engine will stall.

Piston position

The piston will adjust so that the vacuum on the needle remains almost constant depending upon engine load.

With engine stationary, check that the piston closes the venturi fully. Move the piston backwards and forwards to check that it moves in the carburettor body without friction. Run the engine at idle speed. Check the piston opening. This should be approx. 2 mm. Apply throttle a few times. The piston must react smoothly to the throttle movement.

Check the piston opening with engine off, and throttle valve fully open. The opening must be at least 8 mm.

Dashpot system

Dashpot touch speed adjustment

Before setting the dashpot touch speed run the engine to operating temperature. Switch off all current consumers. Place automatic transmission in "N" or "P". On versions with power steering: place the wheels straight ahead. The ignition timing setting must be correct.

Disconnect the vacuum hose from the dashpot. Blank off. Open the throttle valve so that the engine runs at approx. 3500/min. Slowly close the throttle valve until the lever touches the dashpot pin. Measure the engine speed.

dashpot touch speed	
versions with manual gearbox	1300 - 1700/min
versions with automatic transmission	1000 - 1400/min

Re-connect the hose to the dashpot. Run the engine at 3500/min. Release the throttle valve. Measure the time required for normal engine idle speed to be achieved.

dashpot time	2 - 4 sec.

With any deviation: set the dashpot time with the dashpot touch speed inside the correct value. Adjust with the adjustment screw.