CAPRI & CORTINA IMPROVED COMBUSTION SYSTEM

Cortina 1600 (1970)
Capri 1600 (1970-71)
Capri 2000 (1971)

NOTE — 1970 Cortina GT uses Thermactor (Air Injection) system.

DESCRIPTION

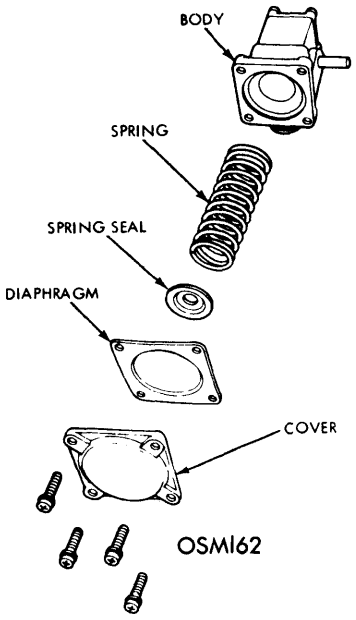
IMCO (Improved Combustion) system consists of a specially calibrated carburetor with revised jet sizes and a deceleration section, a double diaphragm distributor, a deceleration valve and a thermostatically controlled air cleaner.

OPERATION

Individual control devices operate as follows:

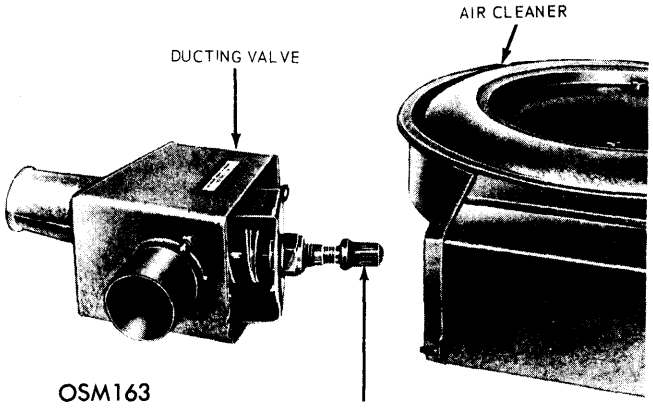
Double Diaphragm Distributor — 1600 cc models have a distributor with two seperate diaphragms, while 2000 cc models use a single diaphragm which is operated in both directions. Control of diaphragm(s) is accomplished by two vacuum take offs, one on carburetor and one on intake manifold. One diaphragm senses manifold vacuum and provides normal vacuum advance. Other diaphragm senses carburetor vacuum and retards ignition timing during idle and deceleration conditions.

Deceleration Valve – Valve assembly is connected to inlet manifold by a nut and tapered adaptor. Valve body contains a spring loaded diaphragm which is held in place by the bottom cover. Diaphragm is subjected to manifold vacuum on top side and atmospheric pressure on the underside by a bleed hole in the cover. During deceleration manifold vacuum is sufficient for the diaphragm to overcome the spring loading and lift deceleration valve off its seat. A pipe connects chamber under deceleration valve to deceleration section of carburetor. Deceleration valve requires no routine maintenance, but failure of diaphragm will allow air to pass from bleed hole in cover through diaphragm and straight into inlet manifold. Resulting weak mixture may give rise to persistant stalling and irregular idling. If condition present and carburetor and ignition settings are correct, check diaphragm by covering bleed hole. If idling is restored, replace deceleration valve diaphragm.



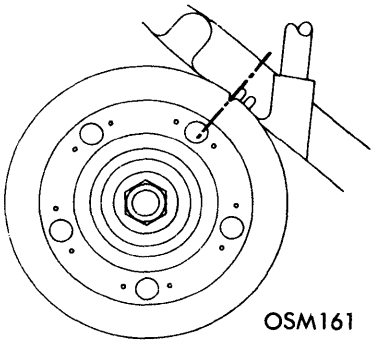
DECELERATION VALVE (DISASSEMBLED)

Thermostatically Controlled Air Cleaner – Provides carburetor with air at a temperature above 90°F during normal operating conditions. Air cleaner incorporates a metal box fed by two air inlets, one forming normal cold air intake horn, the other taking hot air from a separate heat stove around exhaust manifold. Enclosed in box is a spring loaded flap valve which pivots to control amount of hot and cold air entering engine. A thermostatic bulb is connected through a spring linkage to the flap valve, the bulb being exposed to incoming air. During engine warm up, air is drawn through hot air intake over thermostatic bulb and into air cleaner. When air temperature reaches approximately 85°F thermostatic bulb expands and begins to force flap valve down. This allows air from engine compartment to enter duct, mix with hot air and enter carburetor. If engine compartment air reaches 110°F, valve plate will move towards down position and completely shut off hot air intake.



THERMOSTATIC AIR INTAKE

Carburetor — 1600 cc models use an Autolite 1-Bbl. while 2000 cc models use a Weber 2-Bbl. carburetor. With deceleration valve open, high manifold vacuum is sensed by deceleration section of carburetor. Vacuum draws a metered amount of fuel and air from fuel pick up tube and air bleed, which flows from outlet tube through deceleration valve and into intake manifold. This extra quantity of fuel and air, coupled with other engine modifications provides improved combustion. Deceleration section of carburetor requires no maintenance but should fuel pick up tube be damaged, upper body casting must be replaced.



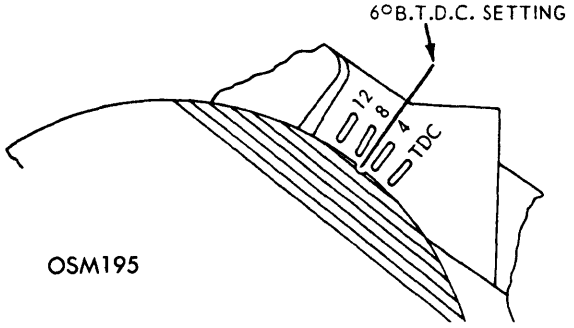
CORTINA IGNITION TIMING MARK

MAINTENANCE

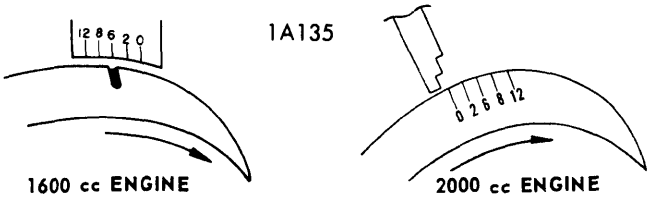
Initial Ignition Timing — Initial ignition timing is 6° BTDC on all engines except 1971 2000 cc California models with automatic transmission, which have a timing of 10° BTDC. Start engine and allow to idle at 850 RPM (1600 cc models) or

CAPRI & CORTINA IMPROVED COMBUSTION SYSTEM (Cont.)

600 RPM (2000 cc models). Make sure both vacuum lines are disconnected and plugged. Use a suitable timing light and rotate distributor to obtain correct timing.



1970 CAPRI 1600 IGNITION TIMING MARK



1971 CAPRI IGNITION TIMING MARKS

Testing Deceleration Valve – High idling speed (1200-1400 RPM) which cannot be cured by normal adjustment may be caused by a permanently open deceleration valve. Check this by removing bottom cover and diaphragm. *CAUTION – Cover is spring loaded.* If valve is stuck in open position, replace complete deceleration valve assembly.

NOTE – Do not attempt to free valve. On 1970 models do not alter setting of plastic screw in top cover. On 1971 models, valve may be adjusted as follows:

Adjusting Deceleration Valve (1971) – With engine at normal operating temperature, connect tachometer. Remove mixture hose from decel valve and connect a vacuum gauge using a tee fitting, so that valve remains operational. With manual transmission in "N" or automatic transmission in "P", increase engine speed to 3000 RPM for 2 seconds then release throttle suddenly. A vacuum reading should occur immediately. Record time required from when throttle was released until vacuum reads zero. If time interval is less than 3 seconds, back out adjusting screw; if time was more than 5 seconds, turn in adjusting screw. Turn screw 1/2 turn at a time and repeat until time is within specified limits. If time of operation cannot be adjusted to less than 5 seconds, replace valve.

Replacing Deceleration Valve – Disconnect inlet pipe to deceleration valve. Unscrew taper adaptor nut and remove deceleration valve. Undo retaining screws, remove cover and diaphragm slowly to release spring pressure. Replace diaphragm, locating it on end of valve stem. Replace cover and screws. Install deceleration valve on inlet manifold and reconnect inlet pipe.

Testing Thermostatically Controlled Air Cleaner – With temperature in engine compartment at 85°F or less, engine cold, flap valve should be in up position shutting off cold air intake. If valve is not in up position, check for possible wear or breakage of valve in duct. If worn or broken, replace valve and duct assembly as they are not serviced separately. Remove assembly from vehicle and immerse in water making sure thermostatic bulb is completely covered. Raise water temperature to 85°F, allow five minutes to stabilize, flap valve should be in up position. Increase water temperature to 110°F, allow five minutes to stabilize. Flap valve should now be in down position shutting off hot air intake. If valve does not meet these requirements, and no binding or damage is present, thermostatic valve should be replaced.

Replacing Thermostatic Bulb – Unscrew bulb from duct and valve assembly. Remove metal shims from old bulb and place them on new bulb. *NOTE – Do not alter size of shim pack. No bulb adjustment is provided and separate shims will not be serviced.* Coat new bulb threads with soft setting sealer and screw into duct and valve assembly. Check operation of duct and valve assembly as described above.

Slow Idle Adjustment (1600 cc) – With engine at normal operating temperature, A/C OFF, throttle solenoid energized (if equipped) and headlights ON, set throttle adjusting screw to obtain 850 RPM. Adjust idle control screw to give 1.5% CO or 13.5 air/fuel ratio. If suitable exhaust gas or CO analyzer is not available, following procedure may be used to make vehicle safe and mobile. Connect tachometer and set idle adjusting screw to obtain 820 RPM. Adjust idle mixture screw to obtain maximum RPM. *CAUTION – Idle mixture screw can only be screwed out a certain distance. No attempt must be made to withdraw screw further.* Screw mixture screw in until idle speed reduces 20-40 RPM. Reset engine idle speed (idle adjusting screw) to 870 RPM.

Slow Idle Adjustment (2000 cc) – With engine at normal operating temperature, manual transmission in "N" or automatic transmission in "D", adjust idle speed with idle adjustment screw to 730-780 RPM (Man. Trans.) or 630-680 RPM (Auto. Trans.) with air cleaner installed. Turn mixture adjustment screw inward to obtain smoothest idle possible within range of idle limiter.

Fast Idle Adjustment (1600 cc) – Hold choke in pulldown position and check that throttle lever fast idle tab is on first or high speed step of fast idle cam. If necessary, bend fast idle rod at its existing bend to achieve position. Make sure housing marks on choke control cover are aligned. With engine at normal operating temperature, install tachometer and position throttle lever fast idle tab on first step of cam and check engine speed. Adjust, by bending tab contacting fast idle cam, to obtain 1775 RPM.

Fast Idle Adjustment (2000 cc) – With engine at normal operating temperature and fast idle screw positioned to second step of fast idle cam against shoulder of first step, set fast idle speed to 1800 RPM by turning fast idle screw.