MOTOR REPAIR

1964—1966 Models

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JENSEN CV8 Mk. III

INDEX TO REPAIR OPERATIONS

BODYWORK

GENERAL.—The bonnet lid is hinged at the back, and has a locking mechanism designed to make it impossible for it to fly open accidentally. There are three separate operations required to open the bonnet. The small square panel at the front of the shroud must be unlocked using the ignition key. When this panel is raised, the bonnet release lever will be seen in the recess. This must be turned upwards to a vertical position to release the main securing pins.

A safety catch is to be found in the air intake, immediately to the right of the car centre-line (to the left when facing the car). This should be pulled forward, and the bonnet then lifted with both hands. It will stay open automatically when in the fully open position. There is a small light mounted on the underside of the bonnet. This is illuminated automatically when opened, provided that sidelights are on.

The boot lid is spring-loaded to the open position. Whenever it is opened a light in the forward left-hand corner is switched on. Both front seats are fully adjustable for both fore and aft movement as well as for rake. Seat adjustment is made by a lever at the front of each outer seat runner. This lever should be moved outwards, and the seat moved forwards or backwards as required. Rake adjustment of the back rests is effected by turning a knob at the front. For entry into the rear of the car, a pedal release is mounted at rear outer side of the seat. When this is depressed the squab is released and can be pushed forward.

Safety belts of the single diagonal type are fitted as standard to the C-V8. The belts are fastened at their lower ends to substantial eye-bolts on the car chassis, and at their upper ends to the reinforced grab handles.

HEATING SYSTEM.—A powerful and comprehensive heating system of 4½ Kw. output is fitted, and this allows any combination of temperature and air flow to be selected and maintained. The car interior is heated by fresh air drawn from outside the car and passed over a radiator matrix supplied with hot water from the engine. Therefore the heater will not be fully effective until the engine has reached its normal operating temperature.

There are three main heater controls.

Air Cut-off Control.—This is mounted on the scuttle below the steering wheel and controls the air passing into the heater. This valve is opened by moving the knob down.

Distribution Control.—This is on the left-hand side of the central facia, flanking the grille. Its position determines whether air from the heater is directed towards the windscreen, or into the car interior.

Temperature Control.—This is on the right-hand side of the facia, opposite the distribution control. Once the desired temperature is set, it is maintained by a thermostatic valve in the water system, regardless of engine coolant temperature, or car speed.

The flow of air from the heater can be supplemented by a two-speed fan; with switch half way down, slow speed is selected; fully down increases the fan speed.

VENTILATION SYSTEM.—Two completely independent ventilation systems are built into the car.

Footwell Ventilation.—Small sliding panels on the outside of each footwell are connected to intakes below the headlights. Opening these panels provides a flow of air dependent on the speed of the car.

Face-level Ventilation.—Two spherical air vents are mounted in the facia, which provide fresh air from the scuttle intake. These are opened by pulling out the nozzles. A booster fan is fitted to supplement fresh air output and is controlled by the switch marked 'Air' on the facia.

BRAKES

A Dunlop hydraulic disc braking split system is used on all four wheels, operated by a pedal in conjunction with a vacuum servo unit. The tandem master cylinder ensures that, should a failure occur in any part of the system, braking would still be available on two wheels. The handbrake, separate from the pedal braking system, operates through a mechanical linkage to the self-adjusting parking brake on the rear discs. The brakes normally require no attention, as both foot and handbrake are self-compensating for wear.

Reservoirs for the brake master cylinders are located above the servo unit in the engine compartment and require checking monthly, or every 2,000 miles, whichever is the shorter period. If required, Dunlop disc brake fluid should be added to a level half an inch below the top of the reservoir. The reservoirs contain a rubber dust seal which should be removed before topping up.

There is one grease nipple on the handbrake compensating linkage which requires attention every 4,000 miles. A multi-purpose grease should be used.

If any item of the hydraulic system has been replaced or if air has entered the system, it must be bled to restore proper working. It should be noted that Dunlop disc brake fluid was formerly known as Wakefield Crimson.

Servo Brakes.—The great braking power of the C-V8 stems partly from the fact that one of the chassis tubes is used as a vacuum reservoir. It is therefore imperative that these are not drilled, otherwise serious loss of braking power would result.

COOLING SYSTEM

The reservoir has a capacity of 32 pints (Imp.). The coolant is circulated by a centrifugal pump driven off the engine, by the same belt as the alternator. A thermostat is fitted immediately above the water pump, to assist in rapid warming up of the engine. The system is pressurised to 9 p.s.i. and operates at a higher temperature than normal. All checks should therefore be made when the engine is cool or cold. The radiator should not be over-filled, as the pressurised system requires room for expansion.

There are three draining points; one at the bottom of the radiator, and one at each side of the crankcase, at the base of each cylinder block. It is essential that all three be opened when draining the engine. The radiator drain tap may become clogged with sediment, and should therefore be cleaned occasionally with a piece of stiff wire.

The thermostat restricts flow between the cylinder block and radiator to assist rapid warming up. It is of the copper-impregnated wax type, and should start to open at approximately 57°C. It should be fully open at approximately 75°C. Failure of the thermostat is indicated by slow warming up, and poor heater performance.

There is no engine-driven cooling fan, but in its place two electric fans which operate only when required to maintain optimum engine operating temperature. These fans are mounted on the cross tube behind the radiator and are controlled by a thermostatic switch in the bottom of the radiator. They are not wired through the ignition circuit and will therefore continue running, if necessary, even after the engine has been switched off. This is because the water temperature rises during the last few seconds of a journey. The fans will only run for a very short time, and they will then switch themselves off. They are protected by a fuse in the relay box, at the rear of the engine compartment.

ELECTRICAL SYSTEM

All electrical equipment is of Lucas manufacture, with the exception of the ignition, starting and charging systems, which are of Chrysler origin. The electrical system is of the 12-volt negative earth type. Many British and Continental cars employ a positive earth system, and the difference must be observed—as incorrect polarity will cause serious damage to the rectifiers in the alternator.

The alternator takes the place of the usual dynamo. It is an alternating current generator, with six built-in silicone rectifiers converting the alternating current into direct current. The alternator provides a high charging rate at low engine speed, and this means that the battery can be kept fully charged all the time.

The belt which drives the alternator and water pump has to be correctly tensioned. This can be checked by pressing down on it, midway between the water pump and alternator. The deflection should be $\frac{1}{4}$ in., except where a new belt has just been fitted, when it should be $\frac{1}{8}$ in.

Six fuses are used to protect the electrical equipment. The radio, the Selectaride rear dampers, and the electric cooling fans are individually fused; the interior light and the bootlight share a low independent rating fuse, while all other circuits are carried by the two main fuses. The main fuse box is mounted beneath the facia, near to the steering column. The top fuse is of 50 amp.

rating, and protects all circuits which operate independently of the ignition. The lower one, of 35 amp. rating, protects all circuits controlled by the ignition. Two spare fuses, one 50 amp. and one 35 amp., are provided.

The fuse protecting the interior light and the bootlight is housed in a white nylon in-line fuse holder adjacent to the main fuse box. This is a 10 amp. fuse. A black nylon in-line fuse holder will be found above the white one. This holds the 15 amp. fuse which protects the Selectaride rear dampers.

The 5 amp. fuse for the radio is mounted below the radio itself. Access to it is gained by removing the central instrument panel. The engine cooling fans are protected by a fuse in the relay box on the bulkhead in the engine compartment. This is mounted in a white nylon in-line fuse holder.

ENGINE

GENERAL.—The revolution counter has a red sector from 5,100 r.p.m. to 6,000 r.p.m. and engine speeds in this sector should not be sustained. Maximum engine power is developed at 4,600 r.p.m., so no advantage will be gained by over-revving the engine.

The engine lubrication system comprises an externally mounted rotor-type pump, a full-flow oil filter connected to the pump by flexible pipes, engine sump, and various lubrication passages. Oil is drawn from the sump through a fine-mesh gauze strainer, and delivered to the bearings, via the oil filter, under pressure from the pump. Uniform pressure is maintained by a relief valve in the pump. The valve gear is lubricated by oil-ways through the camshaft, while the gudgeon-pins are splash lubricated.

The engine oil filter should be changed with the engine oil at every second change. The filter is mounted high up on the left-hand side of the engine, and is connected to the pump by two flexible pipes in the conventional manner to avoid the effect of vibration.

The element is changed by undoing the hexagonal nut on top of the filter housing. This will allow the top of the housing to be removed, and the filter element withdrawn.

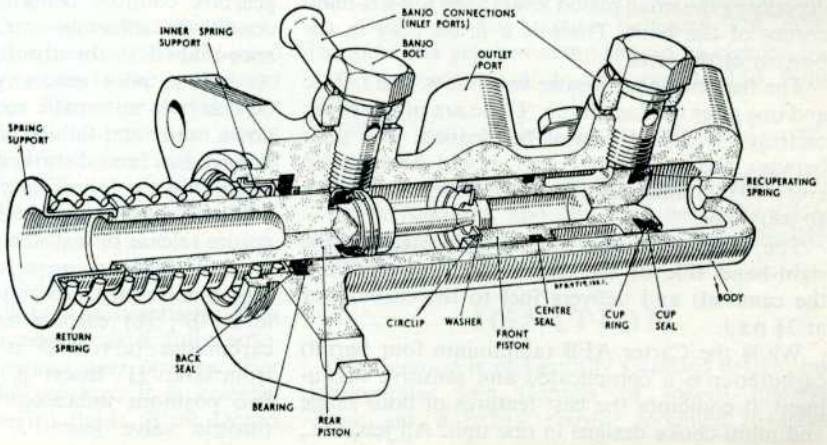
ENGINE DATA

Cylinders—numbered as follows:	
R.H. bank, front to rear	2-4-6-8
L.H. bank, front to rear	1-3-5-7
Bore	108 mm. (4·25 in.)
Stroke	86 mm. (3·375 in.)
Cubic capacity	6,276 c.c. (383 cu. in.)
B.H.P.	330 at 4,600 r.p.m.
Compression ratio	10 : 1
Firing order	1-8-4-3-6-5-7-2
Coolant capacity, including heater	32 pints (Imp.)
Oil sump capacity	8½ pints (Imp.), including filter
Engine oil pressure at 40/50 m.p.h.	45/65 p.s.i.
Gearbox capacity: Automatic	17 pints (Imp.)
Manual	6 pints (Imp.)
Rear axle capacity	3 pints (Imp.)
Fuel tank capacity	16 gals. (Imp.), 19 galls (U.S.) (72 litres)
Overall gear ratios	
Automatic: 1st	7·5 : 1
2nd	4·44 : 1
3rd	3·07 : 1
Reverse	6·74 : 1
Manual: 1st	8·16 : 1
2nd	5·86 : 1
3rd	4·26 : 1
Top	3·07 : 1
Reverse	7·92 : 1
Valve clearances	Zerolash. No adjustment required

FRONT END AND FRONT SUSPENSION

This is of the wishbone type, the coil springs being held in compression between the chassis frame and the lower wishbone, while the upper wishbone operates the piston type dampers. An

TANDEM MASTER CYLINDER



anti-roll bar connects the two lower wishbones. Hydraulic dampers should be topped up with Armstrong Fluid.

Alignment of the front wheels is an important factor in tyre economy and ease of steering. The front wheels should have 'toe in' of $\frac{1}{16}$ in. If adjustment is necessary, it is made at the tie-rods.

Front hub bearings may need periodical adjustment. The following procedure should be adopted.

1. The car should be jacked up and the nave plate removed.
2. The hub cap should be removed by turning anti-clockwise.
3. The cotter pin should be removed.
4. The wheel bearing nuts should be tightened with a torque wrench to 90 lb/ft., while the wheel is rotated.
5. The nut should be backed off until a slot in the nut coincides with the cotter pin hole, and a new cotter pin fitted.

FRONT END DATA

Toe-in (static laden weight)	$\frac{1}{16}$ in. (1·5875 mm.)
Camber (static laden weight)	1° pos.
Castor angle (static laden weight)	2° pos.
King-pin inclination	6° 30′

FUEL SUPPLY SYSTEM

The fuel system consists of the fuel tank, line and filters, mechanical pump, carburetter and air cleaner. The fuel tank is located below the floor of the boot and has a capacity of 16 gallons Imp., 19 gallons (U.S.) or 72 litres. The low fuel warning light in the face of the rev. counter burns continuously when 3 gallons or less remain in the tank.

The fuel tank filler pipe is covered by a flap on the left-hand rear wing, which can be opened automatically from the driver's seat. The re-fuel switch on the facia controls a solenoid which, when energised, allows the flap to fly open. Alternatively, the flap can be opened manually by depressing the small plated lever in the top left-hand corner of the boot. There is a drain plug in the bottom of the tank.

The fuel line incorporates two filters, one before and one after the fuel pump. These are of the paper cartridge type and cannot be cleaned. The filter between the tank and pump should be replaced every 20,000 miles and the after-pump filter every 80,000 miles.

The mechanical fuel pump is located on the right-hand side of the engine. It is driven from the camshaft and delivers fuel to the carburetter at $3\frac{1}{2}$ p.s.i.

While the Carter AFB (aluminium four barrel) carburetter is a complicated and sensitive instrument, it combines the best features of both single and multi-choke designs in one unit. All jets, etc., are correctly set before installation, so the only adjustment normally necessary will be to the idling-speed settings.

IDLE SPEED ADJUSTMENT.—To effect this, the engine must be thoroughly warmed up. A much more reliable idle adjustment can be obtained if the car has been driven a minimum of five miles. For the best results, it is recommended that the tachometer be used in this adjustment.

Before making the idle speed adjustment, observe the following precautions: On cars equipped with the automatic transmission, disconnect the carburetter to bell-crank rod so that the stop in the transmission will not interfere with the free movement of the carburetter throttle lever.

To make the idle-speed adjustment, turn the idle-speed screw in or out to obtain 500 r.p.m. Be sure the choke valve is fully open and that the fast idle adjustment screw is not contacting the fast-idle cam. Turn each idle-mixture screw to obtain the highest r.p.m. While making the adjustment, carefully watch the tachometer and notice that the speed can be decreased by turning the screws in either direction from the setting that gave the highest r.p.m. reading. Next readjust to 500 r.p.m. with the idle-speed screw.

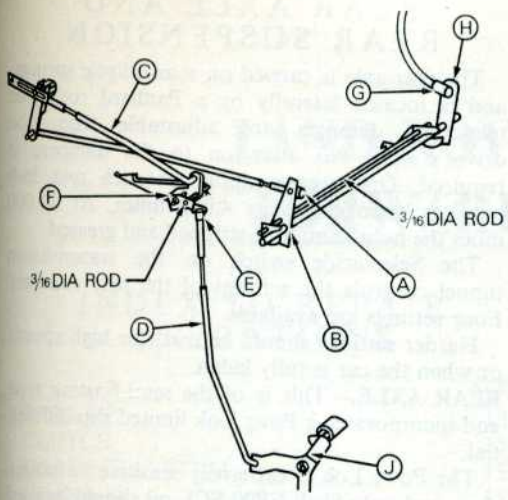
Turn each idle-mixture adjusting screw in the clockwise direction (leaner) until there is a slight drop in r.p.m. Now, turn each screw out, counter-clockwise (richer), just enough to regain the lost r.p.m. This procedure will assure that the idle has been set to the leanest possible mixture for smooth idle.

Since the correct speed was originally set using the speed screw, the speed obtained after finding the leanest smooth idle setting will probably be too fast. Readjust the speed screw to obtain correct idle speed.

After the proper idle speed has been obtained, check transmission setting as described under throttle linkage, for the correct setting cannot be over-emphasised.

Throttle Linkage.—The throttle and automatic gearbox controls being inter-connected, various conditions affecting car performance can be encountered if the throttle is not set correctly. As well as poor general performance, there may be delays in automatic gear-changes, both up and down, and total failure of the 'kick-down'. If the linkage has been disturbed for any reason, it must be reset in the following manner.

Block choke valve in fully open position and ensure release of fast idle cam. (These precautions are not necessary on a fully warmed-up engine.) Disconnect: (a) Carburetter rod 'A' at cross-shaft lever 'B'; (b) carburetter bell-crank rod 'C' at carburetter; (c) rod 'D' at upper end; (d) cable 'G' from lever 'H'. Insert $\frac{3}{16}$ in. diameter rods in the two positions indicated. Using rod 'D' to hold throttle valve lever 'J' against forward stop,



THROTTLE LINKAGE SYSTEM

adjust rod end until it clips on to ball end stud 'E'. Remove $\frac{3}{16}$ in. diameter rod from bell-crank 'F' and, still loading system against throttle valve lever stop, adjust rod 'C' till slotted hole just slips over carburetter lever stud. Then adjust rod end out three full turns and replace washer and pin.

Adjust carburetter rod 'A' until ball joint stud locates in lever 'B' on cross-shaft and fix with nut and spring washer. Adjust cable end ball joint, while applying a light load against cable stop, until it locates in hole in accelerator cross-shaft lever 'H' and fix with nut and spring washer. Remove $\frac{3}{16}$ in. diameter rod from cross-shaft, and blocks from carburetter choke valve, and test that full throttle opening is being obtained in carburetter when the pedal is depressed fully against floor stop. If necessary, adjust floor stop.

The air cleaner is held on top of the carburetter by one wing nut. Every 32,000 miles, or more often under dusty conditions, a new element should be fitted. At any time if there should be an oil mark on two-thirds of the circumference, a new element should be fitted.

In the closed crankcase vent system, the crankcase ventilator valve is located on the right-hand rocker cover and is connected to the carburetter body by a rubber tube. The valve serves as a vent for the crankcase, and also provides upper cylinder lubrication by introducing oily vapour into the inlet manifold. The valve should be checked for correct operation every 8,000 miles.

GEARBOX

The Chrysler Torqueflite-8 automatic gearbox combines a torque-converter with a fully automatic three-speed planetary gear system. For correct operation of the gearbox, it is *essential* that only the recommended fluids (Shell Donax T6; BP-AFT-Type A; Esso Auto-trans fluid; Castrol TQ; Mobilfluid 200) are used, and that the fluid level is checked and replenished as necessary. To prevent overheating of the transmission, the fluid is circulated through an oil cooler in the bottom tank of the main cooling radiator.

If the fluid level is low, and none of the recommended fluids are available, in an emergency SAE 10 engine oil may be added. However, the gearbox should be drained and refilled with the correct fluid as soon as possible.

When checking the fluid level, the engine and transmission should be idling and at normal operating temperature. To circulate the transmission fluid the handbrake should be firmly applied, and, with the engine idling, each gear position selected in turn, Neutral 'N' being finally held.

The dipstick and oil filler pipe are located behind the right-hand bank of cylinders. The fluid level should be between the 'Full' and 'Add One Pint' marks, but never above the 'Full' mark, when checked in this way. If necessary, fluid should be added via the oil filler pipe. If it is necessary to check the level when cold the level should be at, or just below, the 'Add One Pint' mark.

Under normal driving conditions, it should not be necessary to change fluid or filter, but if a great deal of towing (or traffic work in hot weather) is done, the following procedure should be adopted, after, e.g. 32,000 miles.

As no direct drain plug is fitted, a large container should be placed under the gearbox sump and the sump bolts removed. With the sump dropped, the access plate in front of the convertor housing should be removed, revealing the drain plug for the torque convertor. This should be removed, allowing the oil to drain out. The convertor plug should then be replaced (14 lb/in. torque) and the access plate bolted back. The oil filter should be removed by undoing the three screws which hold it in position. The filter should be replaced with a new one. A new gasket should be used, and the screws tightened (28 lb/in. torque). The gearbox sump should be cleaned out and replaced, using a new gasket (150 lb/in. torque).

Fifteen pints of clean transmission fluid should be added.

The procedure for checking the level should then be followed, and any fluid necessary added to bring the level to the full mark (approximately 2 pints).

IGNITION

The ignition is of basically standard design, but incorporates two features of special interest. These are, a ballast resistor mounted in series

with the coil, and twin-contact breakers fitted to the distributor.

The ballast resistor is a variable resistance in the ignition primary circuit. During low-speed operation, when the current flow through the primary circuit is high, the temperature of the ballast resistor rises, increasing its resistance. This reduces the current flow, thus prolonging the life of the contact breakers. At high engine speeds, when the current flow in the primary circuit drops off, the ballast resistor cools down, thus allowing more current to flow, and more efficient high-speed operation. As an aid to easier starting, the ballast resistor is by-passed when the starter is in operation, thus allowing full battery-voltage to the ignition primary circuit.

The twin-contact breakers are fitted to reduce spark erosion at high speeds (on an 8-cylinder engine). The gaps should be set as if for a single unit, in fact the engine will run with only one set. When setting the gap on one, the other should be blocked with a thin strip of insulating material, such as mica.

Some 5–10 drops of oil should be added to the oil cup and 2–3 drops of oil to the rotor wick every 8,000 miles. The cam and bumper block should also be thinly coated with grease at approximately the same mileage.

IGNITION DATA

Timing	10° b.t.d.c. at 500 r.p.m.
Contact breaker gap	0·014–0·019 in.
Spark plugs	Champion J10Y—gap 0·035 in.

PROPELLER SHAFT AND UNIVERSAL JOINTS

This one-piece unit has a constant velocity joint at the forward end and a universal joint at the rear end. The sliding spline at the forward end allows the axle some fore and aft movement. The rear propeller shaft joint is of the normal cross and roller type.

Both joints are packed with lubricant and sealed. They should be inspected every 8,000 miles (or 6 months) for external leakage, otherwise it is not necessary to relubricate at all. If the car has been used under severe conditions then the universal joints should be cleaned and repacked at 32,000 miles.

If it should be necessary to remove the propeller shaft, the clamps holding the universal joint to the yoke on the pinion nose should be undone. The shaft should be supported, and not allowed to hang loose. The sliding spline on the front of the forward universal joint should be disengaged from the transmission unit.

When re-assembling, the following torque rating should be used: Clamp bolts on rear universal joint—170 lb/in.

REAR AXLE AND REAR SUSPENSION

The rear axle is carried on semi-elliptic springs, and is located laterally by a Panhard rod. The telescopic dampers are adjustable from the driver's seat. No attention to the dampers is required. One grease nipple on each rear hub requires attention every 4,000 miles. At 32,000 miles the hubs should be stripped and greased.

The Selectaride switch on the transmission tunnel controls the settings of the rear dampers. Four settings are available.

Harder settings should be used for high speeds, or when the car is fully laden.

REAR AXLE.—This is of the semi-floating type, and incorporates a Powr Lok limited slip differential.

The Powr Lok is extremely sensitive to lubrication, and only Shell EP90 SCL oil should be used.

If this oil is not available, in an emergency, any 90 E.P. oil may be used for a short period. However, the axle should be drained and refilled with the correct oil as soon as possible.

The hydraulic clutch needs no adjustment.

STEERING

The steering is of the rack and pinion type which provides light and sensitive steering at the cost of some kick-back on poor roads. Dampers are incorporated in the rack housing to control this. There is one grease nipple on the rack which requires attention every 4,000 miles with a general purpose grease. The dampers should be inspected and topped up with Shell Tellus 15 at the same time. The ball joints require no attention.

The 17 in. steering wheel is adjustable on its shaft, to suit individual requirements. Adjustment is effected by the black sleeve immediately below the wheel. The sleeve is loosened by turning in a clockwise direction. When loose, the steering wheel can be moved up or down to the desired position, and relocked by turning the sleeve anti-clockwise. There are four holes toward the lower end of the sleeve, and a $\frac{3}{16}$ in. tommy bar may be used in these if necessary.

WHEELS AND TYRES

Ventilated steel disc wheels are secured by five nuts. All nuts have right-hand threads. Tyres are 6·70 × 15 Dunlop Road Speed (RS 5). These are tubed tyres having a nylon carcase, and suitable for sustained speeds of up to 110 m.p.h., at standard pressures.

Recommended tyre pressures are:

Front: 24 p.s.i. (1·7 kg/sq. cm.)

Rear: 24 p.s.i. (22 p.s.i. for town use only)

For sustained speeds in excess of 110 m.p.h., pressures, front and rear, should be increased to 30 p.s.i. (2·1 kg/sq. cm.).