FIAT DINO

Roadster - Coupe

SPECIFICATIONS AND FEATURES
SERVICING INSTRUCTIONS

SERVICE DEPARTMENT - TURIN

This booklet gives data and main features, as well as general overhaul instructions of FIAT-Dino Model, « Roadster » Version. Differing parts which apply to the « Coupe » Version are outlined on page 93.

ROADSTER

SPECIFICATIONS

IDENTIFICATION DATA

Chassis type	135 AS
Engine type	135 B.000

ENGINE

Position	in front compartment
Cycle	four-stroke
No. of cylinders	6, 65° V
Bore	3.39″ (86 mm)
Stroke	2.24 (57 mm)
Capacity	119.26 cu.in (1,987 cc)
Compression ratio	9 to 1
Max. horsepower, DIN rating	160
Max. horsepower, SAE rating	166
Corresponding speed	7,200 r.p.m.
Max. torque, DIN rating	126.6 ft.lbs (17.5 kgm)
Max. torque, SAE rating	128.7 ft.lbs (17.8 kgm)
Corresponding speed	6,000 r.p.m.
Taxable horsepower (Italy)	23
Cooling	permanent circuit mixture

CLUTCH

Single plate, dry clutch.
Spring- cushioned hub and damper rings.
Diaphragm-type pressure spring.
Hydraulic de-clutching.

TRANSMISSION

Gear ratios:

— first, synchro	3.095 to 1
— second, synchro	1.825 to 1
— third, synchro	1.351 to 1
— fourth, synchro	1 to 1
— fifth, synchro	0.871 to 1
— reverse	2.889 to 1

All synchronizers are of the spring-ring type.
The gearshift lever is situated on floor tunnel.
Oil is pressure-circulated through a gear pump.

PROPELLER SHAFT

Dual, with center pillow block and universal joints; the front section is fitted with a flexible joint at the transmission end.

REAR AXLE

Of the semi-floating type.
Hypoid final drive with spiral bevel gears.
Gear ratio: 4.875 to 1 (8/39).
Differential with spin resistant device.

STEERING

Worm and roller gear with hydraulic damper at idler arm support.
Mid section of steering shaft fitted with two universal joints.

Gear ratio	16.4 to 1
Turning circle	35 ft 1 in (10.7 m)

FRONT SUSPENSION

Independent wheel.
Control arms assisted by coil springs, hydraulic shock absorbers and sway eliminator; reaction struts for lower control arms

Front wheel toe-in (*)	.0787″ to .1575″ (2 to 4 mm)
Camber (*):	
— angle	1° 30′ ± 20′
— at wheel rim	.315″ to .492″ (8 to 12.5 mm)
Caster (*)	3° ± 20′

(*) At load: means two persons plus 44 lbs (20 kg) luggage.

REAR SUSPENSION

Solid axle anchored to body by single-leaf semi-elliptic springs.
Longitudinal reaction struts.
Springs and struts are connected to axle and body by means of resilient bushings.
Two hydraulic telescopic double-acting shock absorbers at each wheel.

BRAKES

Disc brakes on four wheels with two independent circuits acting at front and rear.

Front		
— Disc diameter		10.630″ (270 mm)
— Bore of caliper cylinders	outer	1 1/2″ (38.195 mm)
	inner	2 1/8″ (54 mm)
Rear		
— Disc diameter		10.000″ (254 mm)
— Bore of caliper cylinders	outer	1 3/16″ (30.251 mm)
	inner	1 11/16″ (42.874 mm)
Bore of dual master cylinder		7/8″ (22.225 mm)

Air-hydraulic **brake booster** (Master Vac).
Brake pressure regulator on rear wheel circuit.
Parking brake acting on rear brake discs through a linkage.

ELECTRIC SYSTEM

Voltage	12
Battery (at 20 hrs. discharge rate) capacity	60 A/h
Alternator	A 12 M - 124/12/47
Voltage regulator	RC 1/12 B
Starting motor	FIAT E 100-1,5/12 Var. 4
Dual-breaker distributor	S 125 A

WHEELS AND TIRES

Wheels	14 x 6 1/2"	Tire pressure:	
Tires Michelin X AS with radial carcass		— front	24.2 psi (1.7 kg/cm²)
	185 x 14"	— rear	25.6 psi (1.8 kg/cm²)

WEIGHTS

Curb weight of vehicle (with water, oil, fuel, spare wheel, tools and accessories)	2,535 lbs (1,150 kg)	Gross weight, fully loaded	3,064 lbs (1,390 kg)
No. of seats	2 plus 1 plus 66 lbs (30 kg)	Distribution of gross weight on axles:	
Carrying capacity, max.	529 lbs (240 kg)	— front	1,521 lbs (690 kg)
		— rear	1,543 lbs (700 kg)

PERFORMANCES

Maximum **speed** fully loaded on level road in good condition, engine run-in:

first gear	37 mph (60 kph)
second gear	65 » (105 »)
third gear	90 » (145 »)
fourth gear	121 » (195 »)
fifth gear, abt	130 » (210 »)

Steepest **gradients** climbable with full load, on a road in good condition, engine run-in:

first gear	45 %
second gear	26 %
third gear	17 %
fourth gear	12 %
fifth gear	8.5 %

UNIT IDENTIFICATION DATA

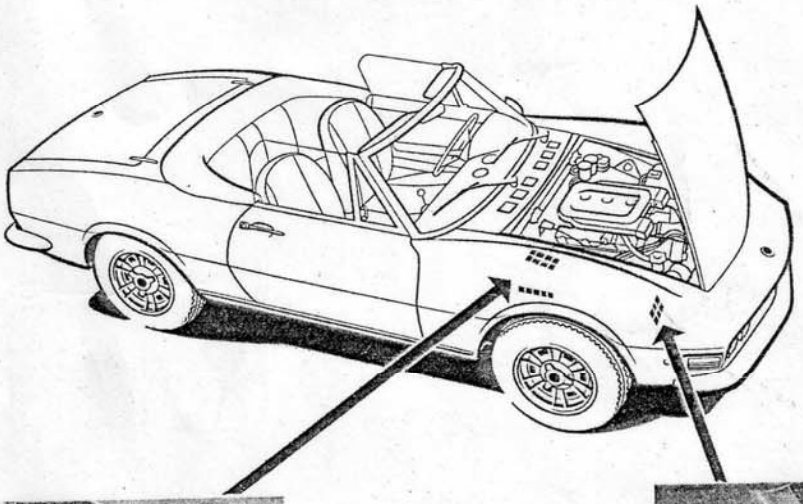
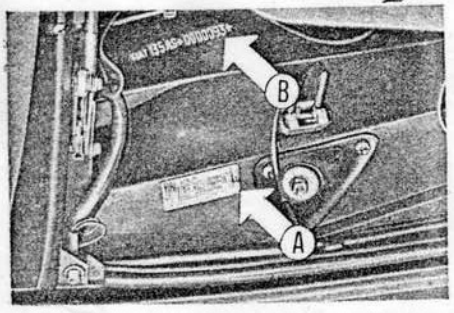
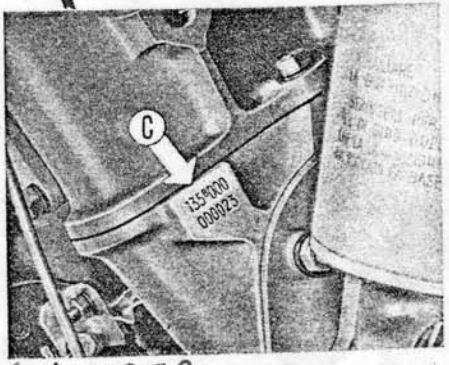


Fig. 1.
Positions of identification data.





A. Unit identification plate: type and serial number of chassis, type of engine and number for ordering spares.

B. Type (135 AS) and serial number of chassis.

C. Type (135 B.000) and serial number of engine.

(B) 135 AC 0003601

PARTS NO. 0003562

(C) 135B000 0005054

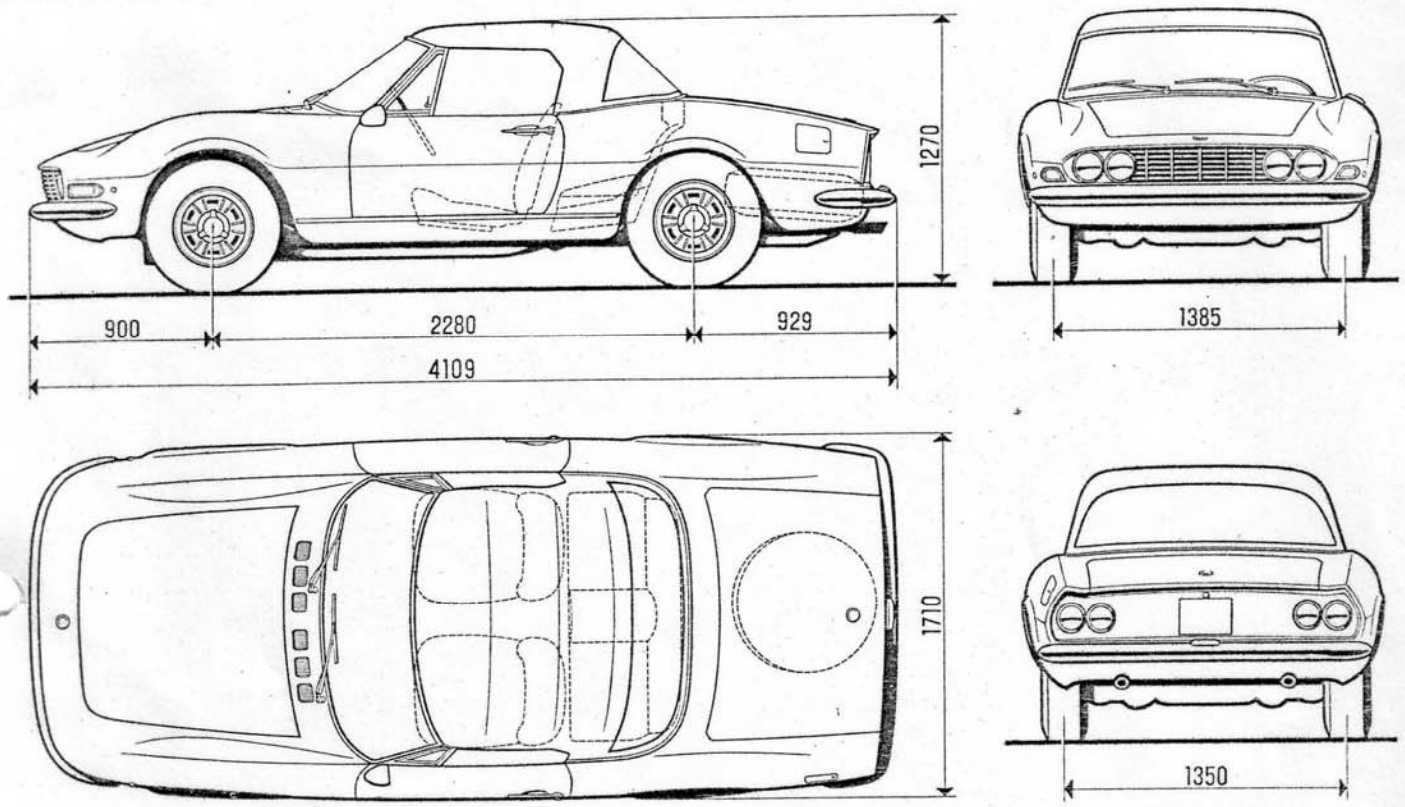


Fig. 2. - Leading dimensions of car (overall height applies to an unloaded vehicle).
For cars equipped with stud-locked wheels the wheelbase is: front 1,371 mm, rear 1,362 mm.

CAPACITIES

UNIT	QUANTITY				REFILL
	lt	kg	Imp. Gals	U.S. Gals	
Fuel tank	66	—	14-4 pts	17-3 pts	Premium gasoline
including a reserve supply of	6 to 9	—	1-3 pts to 2	1-5 pts to 2-3 pts	
Radiator, engine and heating system	11.5	—	2-4 pts	3	Mixture of water and FIAT « Paraflu » 11 fluid (50 % by volume) (2)
			Imp. pts	U.S. pts	
Oil sump and filter (1)	6.75	6	12	14 1/4	FIAT oil (4)
Transmission	2.30	2.10	4	4-14 ozs	FIAT W 90/M oil (SAE 90 EP)
Steering gear	0.275	0.255	0- 9 1/2 ozs	0- 9 1/4 ozs	
Rear axle	3.30	3	5-16 ozs	7	FIAT W 90/DA oil (SAE 90 EP)
Hydraulic brake circuit, front	0.30	0.30	0-10 1/2 ozs	0-10 ozs	CG brake fluid (special)
Hydraulic brake circuit, rear	0.28	0.28	0-10 ozs	0- 9 1/2 ozs	
Clutch hydraulic circuit	0.245	0.245	0- 8 1/2 ozs	0- 8 1/4 ozs	
Front shock absorbers (each)	0.140	0.126	0- 5 ozs	0- 4 3/4 ozs	FIAT S.A.I. fluid
Rear shock absorbers (each)	0.220	0.198	0- 7 3/4 ozs	0- 7 1/2 ozs	
Windshield washer bag	1	—	1-15 ozs	2- 2 ozs	Water and FIAT DP 1 fluid mixture (concentrated solution)

(1) The total capacity of sump, filter and pipings is 13 3/4 Imp. pts - 16 1/2 U.S. pts (7 kg - 7.8 lt). The quantity shown in the table applies to routine changes of oil and filter, which **should be made every 3,000 miles (5,000 km).**
(2) The mixture is anti-oxide, anti-corrosion, anti-foam, anti-scale and does not freeze down to — 31° F (— 35° C).
(3) In summer, pour a 30 c.c. dose to each liter of water; in winter, use a double dose. For temperatures below 23° F (— 5° C), use exclusively FIAT DP1 fluid, without added water.
(4) Use the following oil grades:
Outdoor temperature below 32° F (0° C) . . . . . **FIAT VS 30 oil (SAE 30)**
Outdoor temperature above 32° F (0° C) . . . . . **FIAT VS 40 oil (SAE 40)**

WARNING - Do not top up with oils of different make or grade; when first using detergent oils on engines other than new, carry out an **accurate flushing** of the lubrication system.

FIAT - DINO ROADSTER

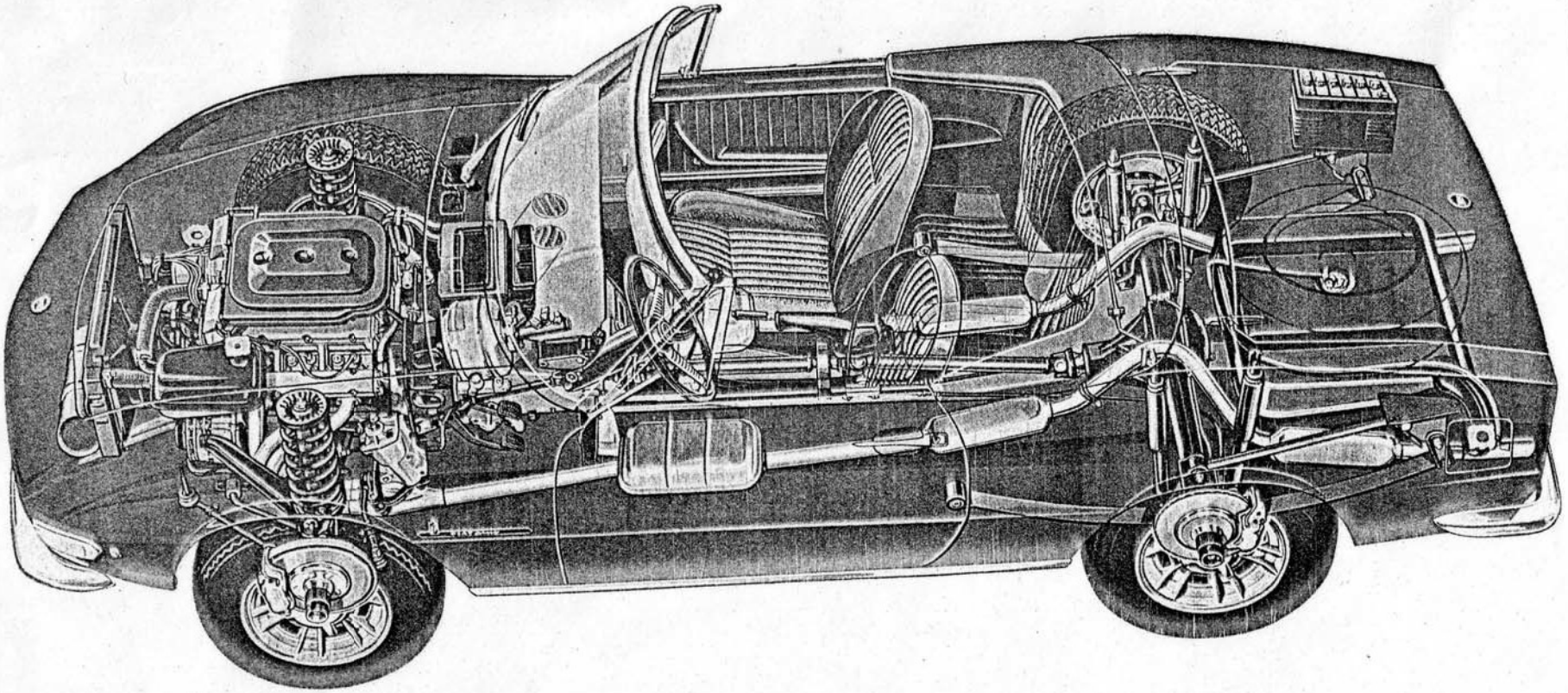


Fig. 3. - Arrangement of running gear units.

LEADING FEATURES

Engine

The four-stroke, gasoline engine is located in front compartment.

The main specifications of this engine are tabulated on foot of page.

Light alloy **cylinder block** in one casting with the crankcase, with « wet » liner inserts.

On the rear bearing are fitted four half-thrust washers for crankshaft.

Twin **cylinder heads** with valve seat inserts.

The four-journal **crankshaft** is supported on babbitt -coated thin-wall type main bearings.

Connecting rod bearings are of the babbitt-coated thin-wall type.

The aluminum-alloy **pistons** are equipped with three **rings**: a compression ring, an oil-wiper ring and an oil-wiper ring with slots.

The **piston pin** is loosely fitted both to the small end and piston bosses.

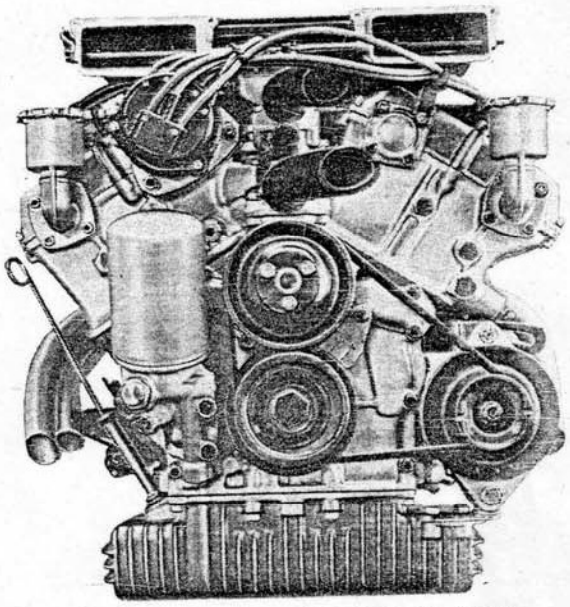


Fig. 4. - Front view of engine assembly.

ENGINE SPECIFICATIONS

Type	135 B.000
Cycle	four-stroke
No. of cylinders, 65° V	6
Bore	3.386″ (86 mm)
Stroke	2.244″ (57 mm)
Displacement	121.26 cu.in (1,987 c.c.)
Compression ratio	9 - 1
Maximum horsepower, DIN rating	160
at	7,200 rpm
Maximum horsepower, SAE rating	166
at	7,200 rpm
Maximum torque, DIN rating	126.6 ft.lbs (17.5 kgm)
at	6,000 rpm
Maximum torque, SAE rating	128.7 ft.lbs (17.8 kgm)
at	6,000 rpm
Taxable horsepower (Italy)	23
N° of carburetors, downdraft, dual-barrel	3
Type of carburetors	WEBER 40 DCN 14

ENGINE ASSEMBLY TYPE 135 B.000

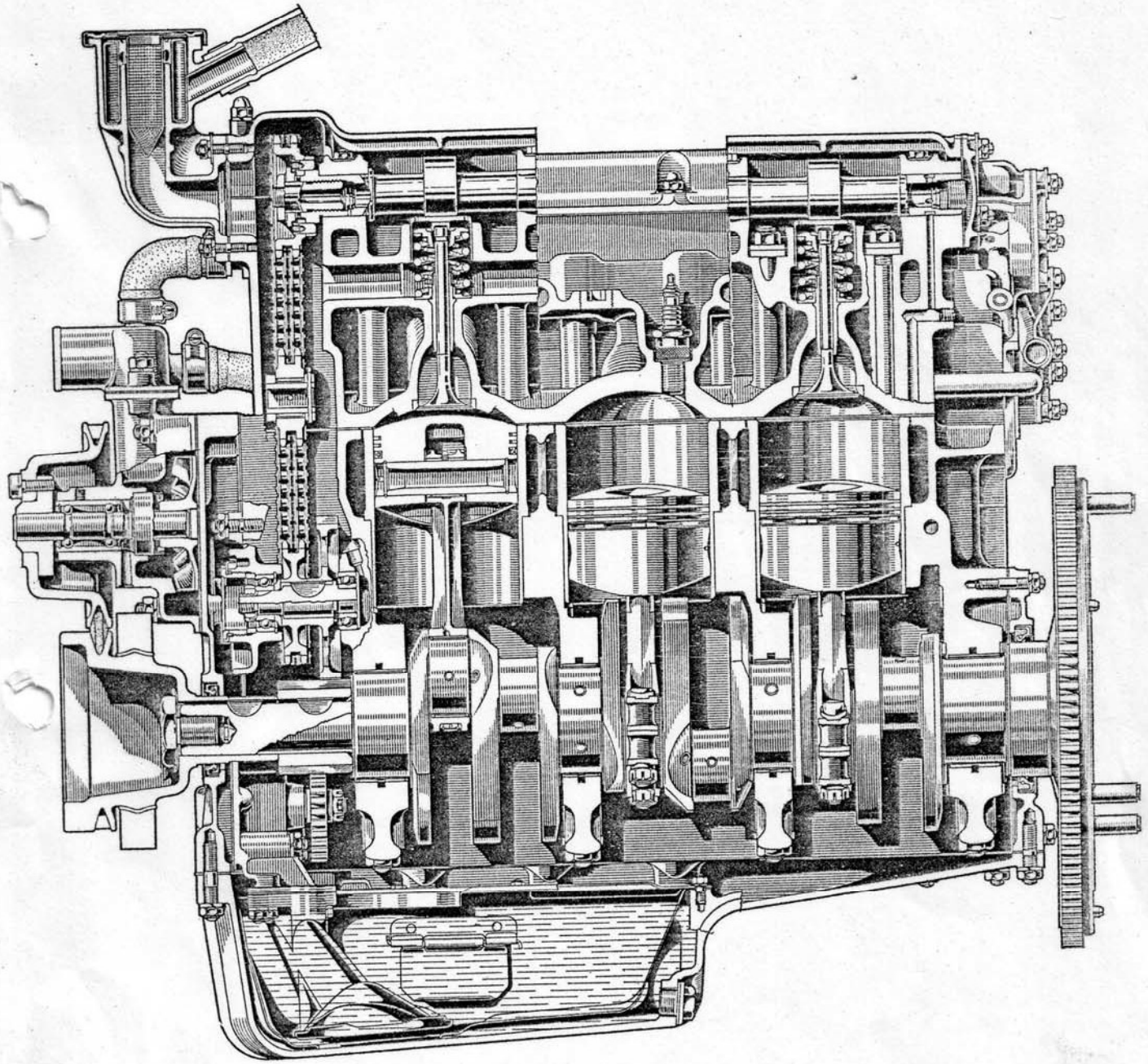


Fig. 5. - Side sectional view of engine through cylinders and one head (intake and exhaust valve), L. H. side.

VALVE TIMING

Timing mechanism: overhead valves operated by four overhead camshafts.

The camshafts are driven by two double chains off the crankshaft, via an idler gear train.

Tappet clearance, **with engine cold:**

— intake . . . . . .006″ to .008″ (0.15 to 0.20 mm)
— exhaust . . . . . .016″ to .018″ (0.40 to 0.45 mm)

Intake	opens B.T.D.C.	40°
	closes A.B.D.C.	52°
Exhaust	opens B.B.D.C.	53°
	closes A.T.D.C.	31°

LUBRICATION

Engine lubrication is of the forced feed type through gear pump driven by the crankshaft.

Full-flow oil filter with pleated paper cartridge.

Oil pressure relief valve in the delivery circuit.

Standard oil pressure at rated speed: 85.3 psi (6 kg/cm²).

NOTE - During routine oil changes (every 3,000 miles - 5,000 km), renew also the oil filter.

FUEL SYSTEM

Three downdraft, dual-barrel carburetors of the Weber type 40 DCN 14.

The fuel is fed through an electric pump (fig. 6) arranged under the rear floor.

Fuel filter with pressure valves.

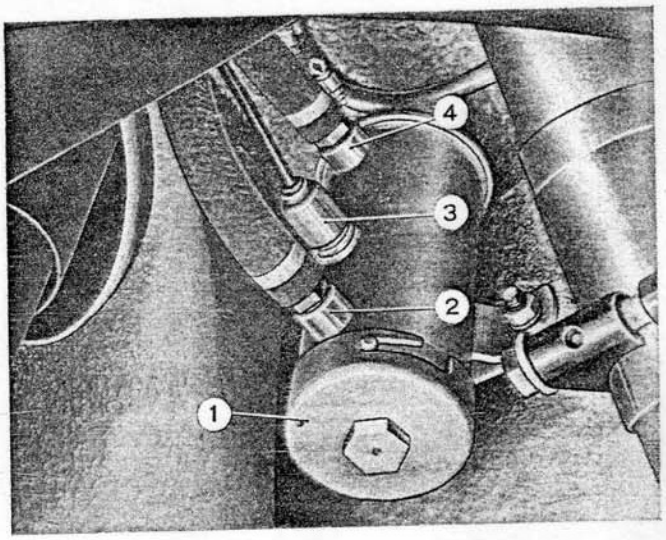


Fig. 6. Electric fuel pump fitted to the car.
1. Fuel pump - 2. Fuel inlet connector - 3. Electric junction - 4. Fuel outlet connector.

A switch fitted on the R.H. side of crankcase cuts off the fuel pump in case of drop in oil pressure.

The fuel pump is operated regularly during the cold starting of engine, though there is no oil pressure, through the ignition switch.

STARTING

By a starting motor. The pinion is driven through a solenoid operated from the ignition switch which is located to the right of the steering column.

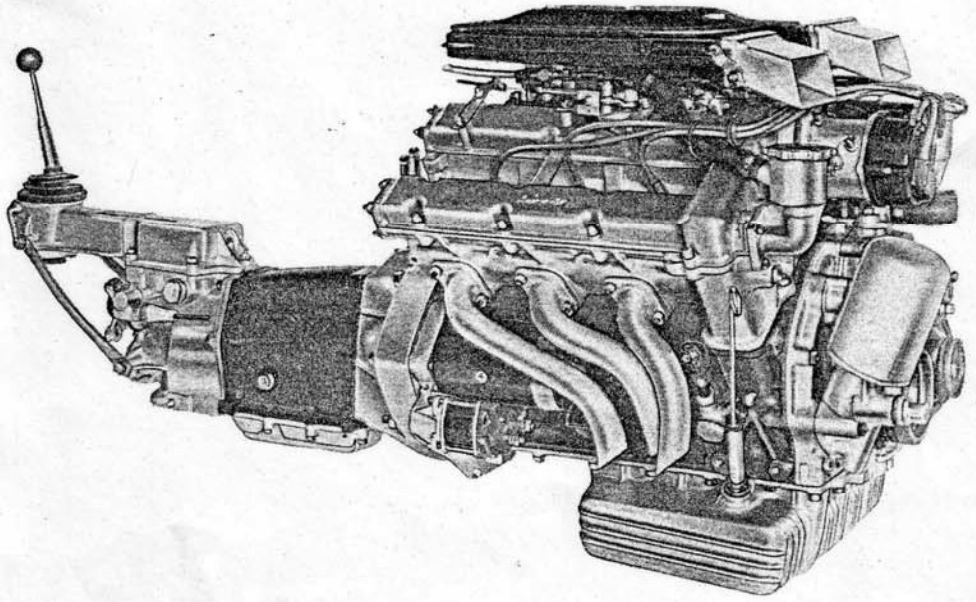


Fig. 7. - Right-side view of power plant unit.

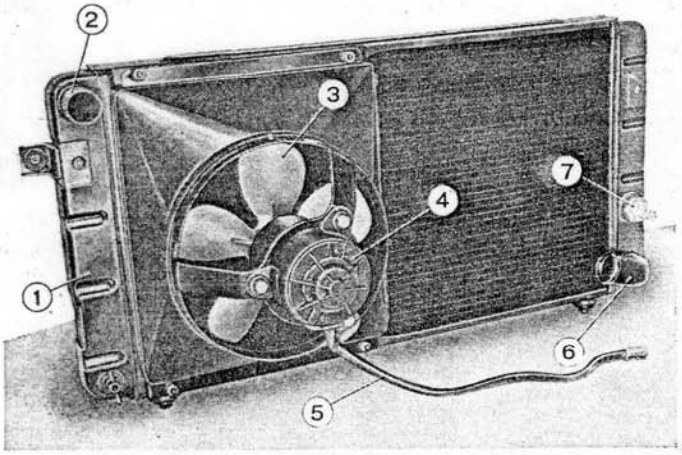


Fig. 8. - Radiator and electro-fan.

1. Radiator - 2. Radiator neck to expansion tank - 3. Fan - 4. Electro-fan motor - 5. Motor cable to thermal switch - 6. Radiator inlet neck - 7. Fan-clutch thermal switch.

IGNITION

Battery ignition, with distributor driven by a joint off the camshaft to which it is attached through a flange.

The distributor has two breakers set at 180°.

Firing order	1-4-2-5-3-6
Static advance	10°
Automatic advance	30° ± 2°
Breaker point gap	.0126" to .0150" (0.32 to 0.38 mm)

Spark plugs:

— Champion	N 60 Y
Gap	.020" to .024" (0.5 to 0.6 mm)

COOLING

The coolant mixture is circulated by means of a centrifugal pump situated at front of the cylinder block; the pump is V-belt driven from the crankshaft.

The two cylinder blocks are cooled independently to each other.

A thermostat in the engine outlet duct controls the coolant temperature.

Vertical row tube, single-core type radiator in front of engine.

Sheet metal coolant expansion tank.

Automatic fan-clutch actuated by an electro-magnet off a thermal switch in radiator, dipped in coolant.

Two temperature gauge sending units, one on each cylinder head, are wired with the gauge in instrument panel.

The temperature gauge always shows the more intense heat irrespective of the block from which it is emanated.

The two sending units have been designed: one to gradually move the temperature gauge pointer; the other to shift the pointer straight to the red end of the scale in case the coolant temperature reaches a dangerous level.

ENGINE MOUNTINGS

The power plant (engine-clutch-transmission unit) is supported on a pair of resilient pads being placed laterally to the crankcase, and on a cushioned cross member which is attached to the transmission extension.

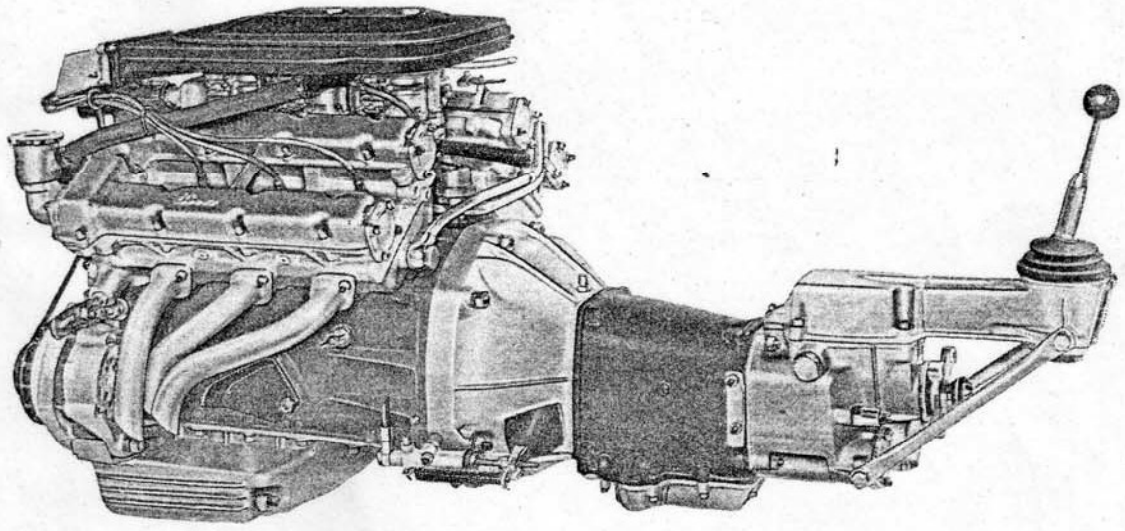


Fig. 9. - L. H. side view of power plant unit.

Chassis

CLUTCH

The clutch is of the single plate, dry type with spring-cushioned hub and diaphragm pressure spring.

The clutch control is hydraulic.

— Driven plate diameter . . . . . 8.464″ (215 mm)
— Pedal free travel . . . . . 1″ (25 mm)

TRANSMISSION

The transmission provides five forward gears (all synchromesh) and one reverse. Back-up light switch.

The helical teeth of five forward gears are constant meshed.

The gear synchronizers are of the spring-ring type.

The rear end of the countershaft drives a gear oil pump which has been designed to promote pressure lubrication of 1st, 2nd, 3rd and 5th gears of mainshaft.

Gear ratios are as follows:

— first	3.095-1
— second	1.825-1
— third	1.351-1
— fourth	1-1
— fifth	0.871-1
— reverse	2.889-1

PROPELLER SHAFT

The power drive to the rear axle is by a propeller shaft in two sections.

The front section is connected to the transmission by means of a flexible joint and to the rear section through a universal joint.

The front length of shaft has, at the rear end, a pillow with ball bearing attached to a body-fastened cross rail.

REAR AXLE

The rear axle is of the semi-floating type.
Axle housing of pressed steel sheet.
Cast differential carrier case.
Hypoid final drive gear ratio: 4.875 to 1 (8/39).
The differential is fitted with a **spin resistant device.**

FRAME

The frame is one unit with the body (integral construction).

FRONT SUSPENSION

Independent wheel front suspension, consisting of control arms, upper and lower, coil springs and hydraulic double-acting telescope shock absorbers.

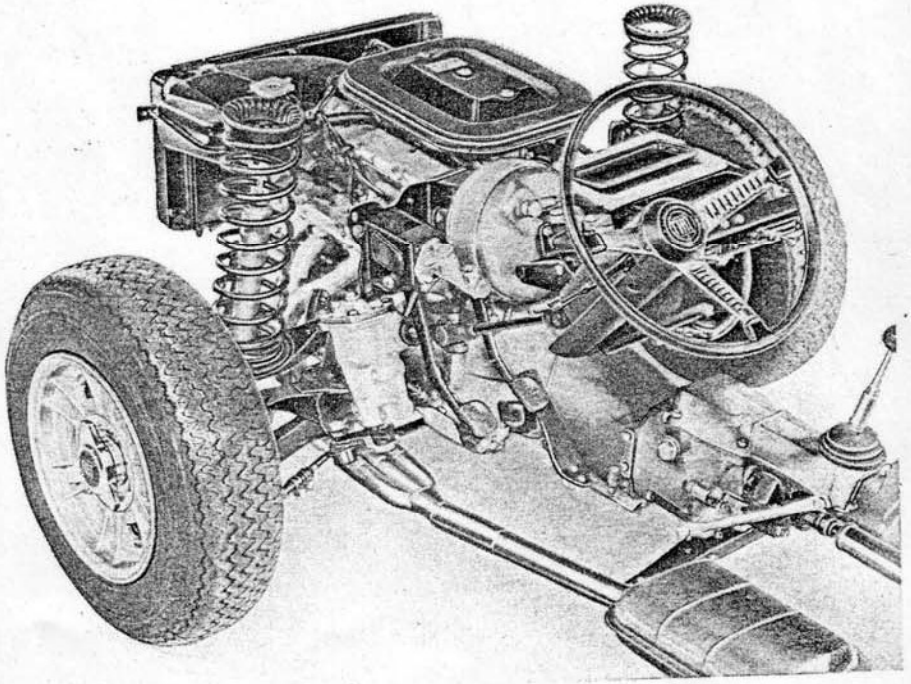


Fig. 10. - Detail of front running gear showing also heater, air-hydraulic brake booster and clutch master cylinder.