JAGUAR

MARK VII AND XK 120 MODELS

Notes on the Jaguar XK Type Engine

Proof of the high efficiency of the XK engine was first proved on the 30th May, 1949, when an entirely standard production 3½-litre model running on pump petrol obtained a speed of 132.6 m.p.h. under the official observation of the Royal Automobile Club of Belgium. Subsequently on the 30th of September, 1952 this speed was raised by a Jaguar XK 120 "C" to a 144.4 m.p.h. the highest ever recorded by a standard production car. Since then, Jaguar cars have gained victory after victory in the classic competition events of the world, including Le Mans, the T.T., the Alpine Trial, the Jersey Road Race, and in the series of production car races at Silverstone, Goodwood and Boreham as well as in the Continental rallies and American road races. Outstanding amongst Jaguar's many achievements was its capturing of no less than Nine World and International Class Records at Montlhery where, in August 1952, it gained the distinction of being the only car in the world ever to exceed 100 m.p.h. for 7 days.

The following notes describe the salient features of the famous Jaguar XK120 engine.

(1) CYLINDER HEAD. Hemispherical head of high strength aluminium alloy with large diameter valves set 70°; the sparking plugs are disposed on the engine centre line in the path of the incoming gases. This ensures complete and rapid burning of the mixture, and ensures regular firing at slow speed pulling or maximum r.p.m.

(2) VALVE SEATINGS. These are of special high expansion cast-iron in which the coefficient of expansion approximates to that of the alloy cylinder head. This construction ensures a rapid flow of heat from the valve seat, eliminating local over-heating and giving an exceptional life to both valves and seatings.

(3) INDUCTION SYSTEM. The valve ports and induction system have been designed in collaboration with Mr. Harry Weslake (generally accepted as the foremost expert in this science) and combine large induction passages, which offer a minimum restriction to flow, with specially contoured ports which ensure a controlled degree of turbulence in the combustion chamber.

(4) TWIN OVERHEAD CAMSHAFTS. Twin overhead camshafts driven by two-stage chains, act directly on the valves through floating tappets. This reduces to a minimum the unsprung weight of the valve parts and enables extremely light valve springs to operate satisfactorily up to the high maximum r.p.m. In addition, the absence of rockers and push rods eliminate the main source of wear and noise often associated with overhead valve mechanisms. The camshaft and tappet face are submerged in an oil bath formed in the cylinder head casting, which forms an oil cushion between the two working surfaces.

(5) OILING SYSTEM. Large capacity oil pump is driven by skew gears on the front of the crankshaft and picks up oil from the sump through a floating strainer, which avoids cavitation, whilst the strainer ensures that no particles of dirt can enter the oiling system. On the delivery side of the pump all the oil is passed through a full-flow pressure filter and from there into a large diameter gallery, which runs the full length of the engine and from which distribution throughout the engine is taken.

(6) COOLING SYSTEM. Water circulation is supplied by high pressure centrifugal pump on the input side of the engine. This avoids any chance of steam pocketing, which can occur when the pump is used as an extractor. The water is fed from the pump down a separate gallery on the nearside of the cylinder block, and jets are directed on to the exhaust valve seatings and so across the head, around the sparking plugs, past the inlet valves, and passing out to the radiator through a gallery cast integral with the induction pipe. The block is cooled by a restricted circulation which gives a quick warm-up and maintains an efficient operating temperature under running conditions. The radiator block is of a film enterspacer type and is fitted with a thermostat control with a by-pass which controls the engine temperature.

(7) CRANKSHAFT. High tensile alloy steel forging with balance weights forged integral with the webs. The seven main bearings on the six-cylinder engines are of 2⅜" diameter. The exceptionally large diameter of these bearings, and the resulting crank rigidity are responsible to a large degree for the extreme smoothness with which these engines deliver their power, even up to the high maximum r.p.m. of which they are capable.

(8) BEARINGS. The bearings are the Vandervell thin steel shell white metal lined type for crankshaft, connecting rods and camshaft bearings, and although these are precision made and completely interchangeable without fitting, they have proved to give practically unlimited life under most exacting test conditions.

(9) PISTONS. High strength aluminium alloy fitted with two narrow compression rings, the top ring being chromium plated to eliminate corrosion and consequent wear and, in addition, a slotted oil control ring is also fitted.

(10) CONNECTING RODS. Steel " H " section forging drilled up the centre web to provide oil feed to small end. The big end and cap are well ribbed to give rigidity and maintain true circular form under working stresses.

INTRODUCTION

All that is best in the long tradition of British Craftsmanship and engineering design has been incorporated in the Jaguar models described and illustrated in this brochure. The magnificently proportioned Mark VII Saloon with its spacious interior, its extraordinary large luggage boot and its effortless 100 m.p.h. performance has won for it the highest place amongst the elite of fine cars. The famous XK 120 Sports 2-seater, victor of innumerable races, trials, rallies and records remains the unchallenged fastest production sports car in the world. The 2-seater Coupe, famous for its world record breaking performance at Montlhery represents the most perfect example of speed and elegance to be found anywhere in the world today. All Jaguar models are powered by the famous XK 120 3½ litre twin overhead camshaft engine.

MARK VII

Specification

SALOON

ENGINE DIMENSIONS. Six cylinder 3½ litre Jaguar engine; 70° twin overhead camshafts driven by a two-stage duplex roller chain; 83 mm. bore × 106 mm. stroke; 3,442 c.c. developing 160 b.h.p. at 5,000 r.p.m.; large directly operated valves and austenetic cast iron seats; compression ratio 7 or 8:1; high grade chrome iron cylinder block, cooling by pump circulation with by-pass thermostat control; cylinder head of high tensile aluminium alloy with spherical combustion chambers; aluminium alloy pistons; steel connecting rods; forced lubrication throughout by submerged pump with full flow filter and floating gauze intake; twin S.U. horizontal carburetters with electrically controlled automatic choke; 2¾ in. diameter counterweighted crankshaft carried in seven large steel backed precision bearings.

FRAME. Straight plane steel box section frame of immense strength, torsional rigidity ensured by large box section cross members.

TRANSMISSION. Four-speed single helical synchromesh gear-box, synchromesh on 2nd, 3rd and top. Borg & Beck single 10 in. dry plate clutch.

SUSPENSION. Independent front suspension incorporating transverse wish-bones and long torsion bars with shock absorbers. Rear suspension by long silico-manganese steel half elliptic springs controlled by shock absorbers.

BRAKES. Girling Dewandre, vacuum servo-assisted, self-adjusting hydraulic; handbrake lever flush between front seats.

STEERING. Burman re-circulating ball type steering with 18 in. diameter adjustable steering wheel. Left or right-hand steering optional.

WHEELS AND TYRES. Pressed steel bolt-on disc wheels and Dunlop 6.70 × 16 in. super-comfort low pressure tyres.

FUEL SUPPLY. Twin S.U. electric fuel pump; fuel capacity, 17 imperial gallons in two separate tanks of nine and eight gallons capacity respectively with turn-over control switch on instrument panel.

ELECTRICAL EQUIPMENT AND INSTRUMENTS. Lucas 12 volt 64 amp. capacity battery with constant voltage controlled ventilated dynamo, 10 hour discharge, flush fitting head lamps and wing lamp, stop light, reverse light, twin rear lights, panel light automatic and manually controlled interior lights, twin blended note horns, twin speed screen wiper, cigar lighter, starter motor, vacuum and centrifugal automatic ignition advance.

INSTRUMENTS. 5 in. diameter 120 m.p.h. speedometer, 5 in. diameter revolution counter, ammeter, oil pressure gauge, water thermometer gauge, fuel gauge, electric clock, self-cancelling trafficators with warning light.

HEATER AND AIR CONDITIONING. Built-in heater with controlled warm air flow and incorporating windscreen de-froster. Large scuttle vents for additional cooling in hot weather.

BODY. All steel full five-seater (six-seater optional) with sliding roof; four doors; special security locks to rear doors for child safety; upholstered in finest quality Vaumol leather over foam rubber; polished walnut instrument panel and interior garnishings; two glove compartments with locks; three ashtrays; padded armrests; deep pile carpets over thick felt underlay.

LUGGAGE ACCOMMODATION. The extraordinarily capacious luggage locker enables four large suitcases, four sets of golf clubs, also rugs, holdalls and other travelling sundries to be carried in its totally enclosed interior.

SPARE WHEEL. Fitted with tyre and tube and carried in luggage compartment.

TOOLS. A complete set of hand tools and small replacement items are carried in special flush fitting compartments concealed in the front doors.

EASY JACKING. Exterior jack slots, conveniently placed, enable the car to be lifted with minimum effort.

PRINCIPAL DIMENSIONS. Wheelbase, 10 ft. 0 ins.; track front, 4 ft. 8 ins.; track rear, 4 ft. 9½ ins.; overall length, 16 ft. 4½ ins.; overall width, 6 ft. 1 in.; overall height, 5 ft. 3 ins.; ground clearance, 7½ ins.; turning circle, 36 ft. 0 in.; dry weight, 33 cwts.

3½ LITRE XK 120 *Specification* SUPER SPORTS

ENGINE. Six cylinder 3½ litre Jaguar engine 70° twin overhead camshafts driven by a two-stage duplex roller chain; 83 mm. bore × 106 mm. stroke; 3,442 c.c. developing 160 b.h.p. at 5,000 r.p.m.; large directly operated valves and austenetic cast iron seats; compression ratio 7 or 8:1; high grade chrome iron cylinder block, cooling by pump circulation with by-pass thermostat control; cylinder head of high tensile aluminium alloy with spherical combustion chambers; aluminium alloy pistons; steel connecting rods; forced lubrication throughout by submerged pump with full flow filter and floating gauze intake; twin S.U. horizontal carburetters with electrically controlled automatic choke, 2¼ ins. diameter counterweighted crankshaft carried in seven large steel backed precision bearings.

FRAME. Straight plane steel box section frame of immense strength, torsional rigidity ensured by large box section cross members.

TRANSMISSION. Four-speed single helical synchromesh gearbox, ground teeth gears running on needle bearings, Hardy Spicer propeller shaft in needle roller bearings, Borg & Beck 10 ins. diameter single dry plate clutch, central gear lever with remote control.

SUSPENSION. Independent front suspension incorporating transverse wish-bones and long torsion bars with Newton telescopic type hydraulic shock absorbers. Rear suspension by long silico-manganese steel half elliptic springs controlled by Girling PV.7 hydraulic shock absorbers.

BRAKES. Lockheed full hydraulic two-leading-shoe front and 12 ins. drums, friction lining area 208 square inches. Front drums fitted with cooling ducts, central fly-off handbrake operating on the rear wheels only.

STEERING. Burman re-circulating ball type steering, 17 ins. Bluemel adjustable wheel. Left or right-hand steering optional.

WHEELS AND TYRES. Pressed steel bolt-on disc wheels with Dunlop 6.00 × 16 ins. road speed tyres.

FUEL SUPPLY. By a new large delivery S.U. electric pump from a 15 gallon rear tank with petrol level warning light.

ELECTRICAL EQUIPMENT. Lucas de luxe throughout, 12 volt 64 amp. capacity, twin batteries with constant voltage controlled ventilated dynamo, 10 hour discharge, flush fitting head lamps and wing lamps, stop light, reverse light, twin rear lights, panel light, twin blended-note horns, twin-blade screen wiper, cigar lighter, starter motor, vacuum and centrifugal automatic ignition advance.

INSTRUMENTS. 5 ins. diameter 140 m.p.h. speedometer, 5 ins. diameter revolution counter, ammeter, oil pressure gauge, water thermometer gauge, petrol gauge with warning light, electric clock.

CAR HEATER. A built in car heater is fitted as standard to all cars upwards of chassis serial numbers 671493 for Left-Hand Drive and 660911 for Right-Hand Drive.

SEATING. Divided seat and squab, folding forward for access to hood and batteries, seats adjustable for reach. A tonneau cover is provided.

SPARE WHEEL AND TOOLS. The spare wheel is carried beneath the boot floor in a separate compartment and is readily accessible. The tools are carried in a special container fitted to the side of the luggage compartment.

LUGGAGE ACCOMMODATION. Ample accommodation is provided in a capacious rear locker, provided with an automatic light.

EASY JACKING. A central jack on each side of the car raises both wheels simultaneously with the minimum of effort.

PRINCIPAL DIMENSIONS. Wheel base, 8 ft. 6 ins.; track front, 4 ft. 3 ins.; track rear, 4 ft. 2 ins.; overall length (over bumpers), 14 ft. 5 ins. approximately; overall width, 5 ft. 1½ ins.; overall height (over hood), 4 ft. 4½ ins.; (over windscreen), 4 ft. 1½ ins.; ground clearance, 7⅛ ins.; unladen turning circle, 31 ft. 0 ins.; dry weight, 24 cwts.

3½ LITRE XK 120 *Specification* FIXED HEAD COUPE

ENGINE. Six cylinder 3½ litre Jaguar engine 70° twin overhead camshafts driven by a two-stage duplex roller chain; 83 mm. bore × 106 mm. stroke; 3,442 c.c. developing 160 b.h.p. at 5,200 r.p.m.; large directly operated valves and austenetic cast iron seats; compression ratio 7 or 8:1 ; high grade chrome iron cylinder block, cooling by pump circulation with by-pass thermostat control; cylinder head of high tensile aluminium alloy with spherical combustion chambers; aluminium alloy pistons; steel connecting rods; forced lubrication throughout by submerged pump with full flow filter and floating gauze intake; twin S.U. horizontal carburetters with electrically controlled automatic choke, counterweighted crankshaft carried in seven large steel backed precision bearings, 2¾ ins. diameter.

FRAME. Straight plane steel box section frame of immense strength, torsional rigidity ensured by large box section cross members.

TRANSMISSION. Four-speed single helical synchromesh gearbox, synchromesh on 2nd, 3rd and top. Hardy Spicer propeller shaft with needle roller bearings, Borg & Beck 10 ins. diameter single dry plate clutch, central gear lever with remote control.

SUSPENSION. Independent front suspension incorporating transverse wish-bones and long torsion bars with Newton telescopic type hydraulic shock absorbers. Rear suspension by long silico-manganese steel half elliptic springs controlled by Girling PV.7 hydraulic shock absorbers.

BRAKES. Lockheed full hydraulic, two-leading-shoe front. 12 ins. drums. Front drums fitted with cooling ducts, central fly-off handbrake operating on the rear wheels only.

STEERING. Burman re-circulating ball type steering, 17 ins. Bluemel adjustable wheel. Left or right hand steering optional.

WHEELS AND TYRES. Pressed steel bolt-on disc wheels with Dunlop 6.00 × 16 ins. " Road Speed " tyres.

FUEL SUPPLY. By a new large delivery S.U. electric pump from a 15 gallon rear tank with reserve supply and warning light.

ELECTRICAL EQUIPMENT. Lucas de luxe throughout, 12 volt 64 amp. capacity, twin batteries with constant voltage controlled ventilated dynamo, 10 hour discharge, flush fitting head lamps and wing lamps, stop light, reverse light, twin rear lights, panel light, interior light, twin blended-note horns, twin-blade screen wiper, cigar lighter, starter motor, vacuum and centrifugal automatic ignition advance.

INSTRUMENTS. 5 ins. diameter 140 m.p.h. speedometer, 5 ins. diameter revolution counter, ammeter, oil pressure gauge, water thermometer gauge, petrol gauge with warning light, electric clock.

CAR HEATER. Built-in interior car heater incorporating defroster and de-mister.

BODY. Two-seater fixed head coupe. Seating upholstered in finest quality leather on Dunlopillo. Safety glass all round. Four ventilating windows. Adjustable air vents.

SEATING. Divided seat and squab, independently adjustable for reach.

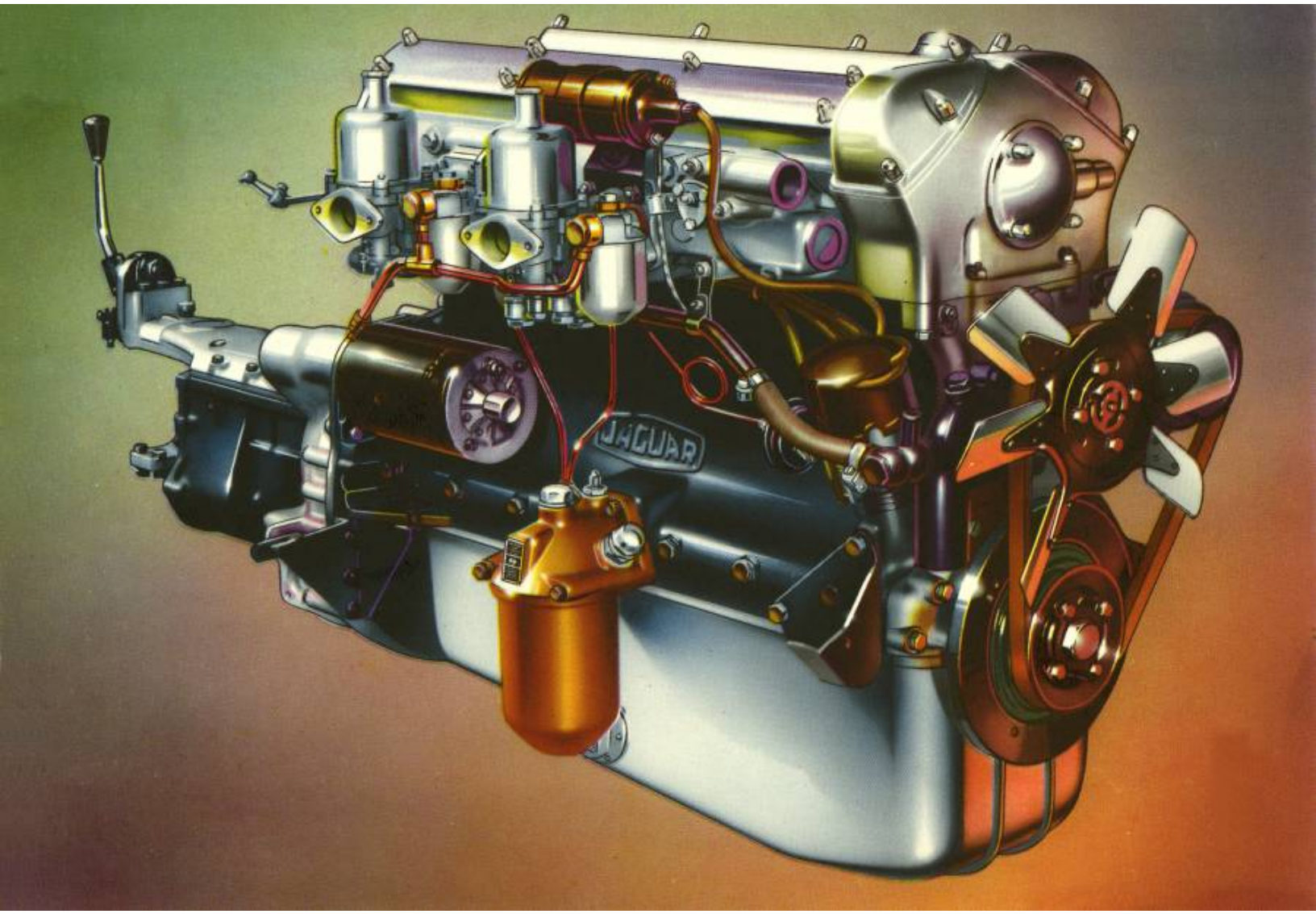
INTERIOR APPOINTMENTS. Instrument panel and garnish rails finished in finest quality figured walnut. Cubby hole, glove drawer and ashtray.

SPARE WHEEL AND TOOLS. The spare wheel is carried beneath the boot floor in a separate compartment and is readily accessible. The tools are carried in a special container fitted to the side of the luggage compartment.

LUGGAGE ACCOMMODATION. Ample accommodation is provided in a capacious rear locker, provided with an automatic light. There is also provision for parcels behind seats.

EASY JACKING. A central jack on each side of the car raises both wheels simultaneously with the minimum of effort.

PRINCIPAL DIMENSIONS. Wheel base, 8 ft. 6 ins.; track front, 4 ft. 3 ins.; track rear, 4 ft. 2 ins.; overall length (over bumpers), 14 ft. 5 ins. approximately; overall width, 5 ft. 2 ins.; overall height, 4 ft. 5½ ins.; ground clearance, 7⅛ ins.; unladen turning circle, 31 ft. 0 ins.; dry weight 25½ cwts.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