"TRADER" SERVICE DATA No. 185

Articles in this series are written by the Technical Staff of "Motor Trader" and checked by the vehicle manufacturers or importers.

Next article—
BEDFORD MODEL S

Jaguar

XK 120

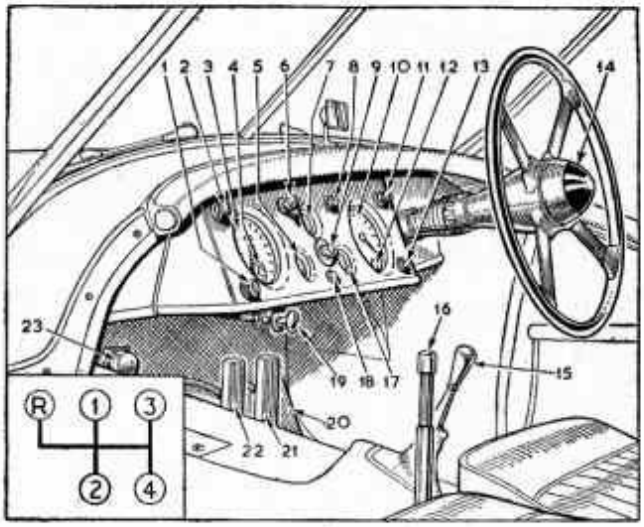
Super Sports Two-seater, 1949-51

Manufacturers: Jaguar Cars, Ltd., Coventry.

AFTER making its first appearance at the 1948 Earls Court Motor Show, the XK 120 was put into production during 1949. Since then it has been outstandingly successful in competition work, and has been sold in comparatively large numbers overseas, particularly in North America. The success has been largely due to the design of the 3½-litre, double overhead camshaft, six-cylinder engine, and the torsion bar independent front suspension. Transmission and chassis are entirely orthodox. Such engineering changes as affect service are listed here. During 1951 a fixed head coupe was introduced, differing only in bodywork and minor chassis modifications.

Instruments and controls:

1. Cigar lighter
2. Panel light switch
3. Revolution counter
4. Clock
5. Petrol/oil gauge and level warning light
6. Ignition switch
7. Oil pressure and water temperature gauges
8. Starter switch
9. Lighting switch
10. Speedometer
11. Screenwiper switch
12. Headlamp main beam warning light
13. Petrol/oil level change-over switch
14. Horn push
15. Gear lever
16. Handbrake
17. Ammeter
18. Ignition warning light
19. Bonnet lock
20. Accelerator
21. Brake pedal
22. Clutch pedal
23. Dipper switch



ENGINEERING CHANGES	Chassis No.
Drop arm and relay lever joints on track rod centre section—Nuts on threaded pins changed from castellated to plain with tabwasher.	660015 670025
Drop arm and relay lever joints on track rod centre section changed from threaded bearings to rubber bushes. Joint and socket assemblies interchangeable with previous type.	Many chassis modified retrospectively
Front suspension lower link outer ball joints—Ball seats changed from bronze to Ferobestos. Grease nipples deleted.	
Camshaft oil feed banjos and plugs—Grooves in plugs deleted, grooves added inside banjos. *New plugs must not be used with old banjos.*	
Steering castor angle changed from 5 deg to 3 deg.	660126 670439
Brake linings changed from Mintex M15 to M14.	660551 671097
Horn relay changed from three-terminal to four-terminal type (SB40 to SB40-1).	660785 671098
Rear axle—Differential changed from four-star with split cage to two-star with single piece cage. New axle shafts shorter.	See Text
Rear brake shoes—Beehive springs added to cure rattle. (Earlier cars can be modified.	660826 671303

Chassis numbers are six-figure serial numbers starting as follows:—

XK 120 Super Sports R.H.D. 660001; L.H.D. 670001.

XM 120 fixed head coupe R.H.D. 669001; L.H.D. 679001.

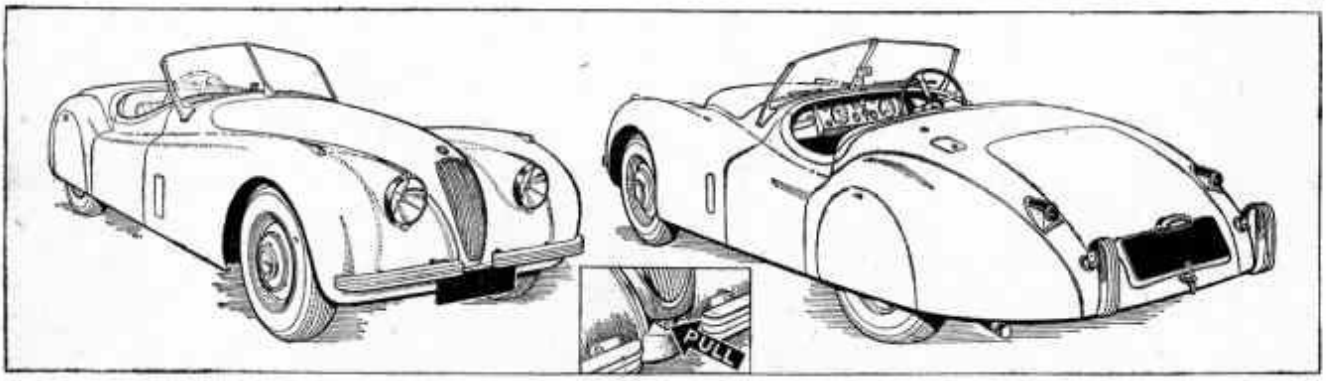
They are stamped on top of the chassis frame side member opposite the flywheel housing on the driver's side, and on the front cross-member under the radiator.

Engine numbers started at W 1001, and are suffixed /7 or /8 to indicate compression ratio. The numbers are stamped on the oil filter boss on the off side of the engine, and on the rear face of the camshaft drive housing on the cylinder head of recent engines.

Both chassis and engine numbers are stamped on a plate fixed on the near side of the scuttle.

No special tools are needed, except for a template for timing the camshafts. This is supplied in the car tool kit. Threads are in process of being changed from B.S.F. to S.A.E., but until the change is complete there will be a mixture of S.A.E. and Whitworth hexagons.

NUT TIGHTENING TORQUE DATA	Bolt size	lb/ft
Cylinder head	½in	54
Main bearings	½in	83
Big end caps	⅜in	38
Camshaft bearing caps ...	⅜in	15
Flywheel	⅞in	66



DISTINGUISHING FEATURES—No outward changes have taken place. Inset: bonnet safety catch

ENGINE DATA	
Type	XK 120
No. of cylinders	6
Bore x stroke : mm	83×106
in	3.268×4.173
Capacity : c.c.	3442
cu. in	210
R.A.C. rated h.p.	25.6
Max. b.h.p. at r.p.m. (8 : 1 C/R)	160 at 5200
Max. torque (lb/ft) at r.p.m.	195 at 2500
Compression ratio :	
standard	7 : 1
optional	8 : 1
Compression pressure at cranking speed	125—130 lb/sq. in*
* At 70° C water outlet temp.	All sparkin ; plugs out

ENGINE

MOUNTING

At front, bonded rubber blocks bolted to chassis frame brackets and to plate bolted to front of timing cover. On R.H.D. cars only, two packing pieces fitted under offside mounting to give clearance between carburettor and steering column.

At rear, bonded rubber blocks bolted to bottom of gearbox rear cover and to chassis frame cross-member. Stabilizer mounting on side opposite to steering consists of rubber block bolted to chassis frame and attached to arm on front of flywheel housing by setscrew and distance-piece. Tighten all bolts fully.

REMOVAL

Engine and gearbox can be removed together, or gearbox can be removed from engine. Easiest to remove together.

Detach bonnet from hinges. Disconnect radiator hoses. Remove nuts from radiator tie-rods and holding down rods, and lift out radiator core. Disconnect all pipes, wires and controls, and remove nuts from front mountings and setscrew from stabilizer.

Remove seats, carpets, floorboards, gearbox cowl and propeller shaft tunnel. Disconnect front end of propeller shaft, speedo drive, reversing lamp switch wire and clutch pedal linkage. Remove cotter-clamp bolt from base of clutch pedal, and detach pedal cross-shaft ball housing from bell-housing (two setscrews). Push pedal cross-shaft outwards and wedge outer end outside chassis frame. Take out four bolts holding rear mounting to gearbox.

Place single sling under sump towards front, passing it round behind dynamo and water outlet elbow. Engine and gearbox unit can then be lifted out forwards.

CRANKSHAFT

Seven main bearings. Thin wall, steel-backed, white metal-lined shells located by tabs. End float controlled by half thrust washers located in either side of centre bearing cap. No hand fitting permissible. Bearing shells Nos. 1, 4 and 7 are interchangeable, as are Nos. 2, 3, 5 and 6. It is possible to change all main bearing shells without removal of crankshaft, but this should be done only in direst emergency. Thrust half-washers can be changed by removal of centre cap.

Flywheel, with integral starter ring gear, spigoted on rear flange of crankshaft, retained by 10 setscrews (six setscrews on earlier engines) and located by two dowels. Flywheel can be refitted 180 deg. from original setting, but should be fitted with T.D.C. mark set correctly. Oil impregnated bronze spigot bearing bush floating fit in end of crankshaft.

Oil pump and distributor drive gear (longer boss to rear), timing sprocket (either way), oil thrower, distance-piece and split tapered collet carrying fan pulley hub are keyed on front end of crankshaft with three Woodruff keys, and retained by starter dog setscrew and large washer which bears on pulley hub, to which bonded rubber torsional vibration damper is riveted. Hub is keyed on tapered collet with Woodruff key. Pulley spigoted and bolted to hub.

Asbestos oil seal, half in timing cover and half in sump, bears on distance-piece behind pulley. Split oil collector housing fits round oil return thread on rear end of crankshaft. Lower half, on which cork strip sealing rear of sump fits, bolted to upper half by two Allen head setscrews with hollow dowels. Upper half dowelled and bolted to crankcase.

CRANKSHAFT AND CONNECTING ROD DATA					
	Main Bearing Journals				Crankpins
	No. 1	Nos. 2, 3, 5 & 6	No. 4	No. 7	
Diameter	2⅛in	2⅛in	2⅛in	2⅛in	2.088in
Length	1 11/16in	1 3/16in	1⅛in	1⅛in	1 7/16in
Running clearance : main bearings	.002-.003in				
big ends	.0015-.0025in				
End float : main bearings	.004-.006in				
big ends	.006-.008in				
Undersizes	.020, .030, .040in				
No. of teeth on starter ring gear/pinion	132/10				
Con. rod centres	7.75in				

CONNECTING RODS

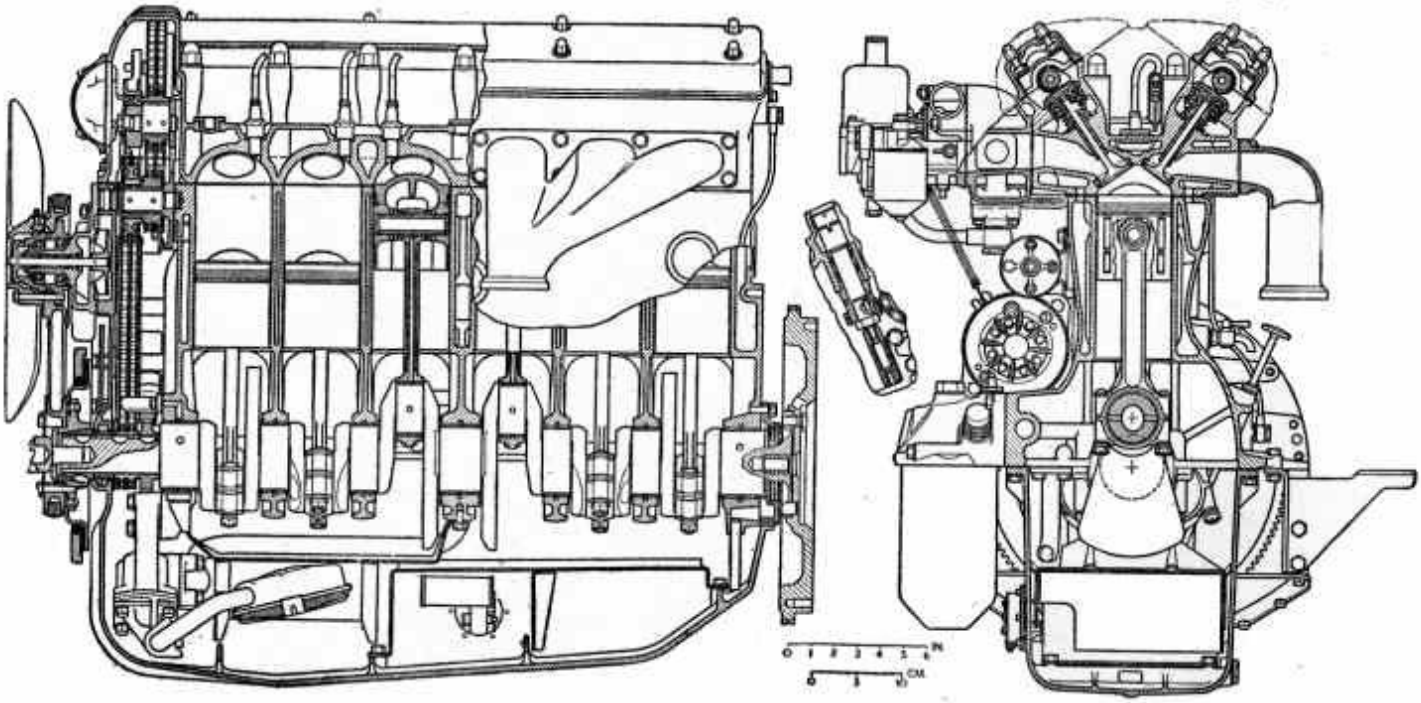
Big ends thin wall, steel-backed, white metal-lined shells located by tabs. No hand fitting permissible.

Small ends bronze bushed for floating gudgeon pins.

Rods are symmetrical, but should be fitted with numbers on big end and cap to near side.

Three different types of rod have been used, identified by part numbers stamped on rods.

Longitudinal and transverse engine sections. Scrap section shows drive to distributor and oil pump



PISTON DATA			
Clearance (skirt): Aerolite ...	.002-.003in		
Brico ...	.001-.0017in		
Oversizes	.005, .010, .015, .020, .030, .040in		
Weight with rings and pin : 7 : 1 C/R ...	1 lb 3 oz 15 dr		
8 : 1 C/R ...	1 lb 4 oz 12 dr		
Gudgeon pin : diameter	⅞in		
fit in piston	Palm push at 68°F		
fit in rod	Thumb push at 68°F		
Compression height : 7 : 1 C/R	1.695in*		
8 : 1 C/R	2.168in†		
	Compression	Oil Control	
No. of rings	2	1	
Gap	.015-.020in	.011-.016in	
Side clearance in grooves	.001-.003in	.001-.003in	
Width of rings ...	1/16in	1/8in	

* 7 : 1 compression ratio pistons have flat top
† 8 : 1 compression ratio pistons measured to top of domed crown.

PISTONS

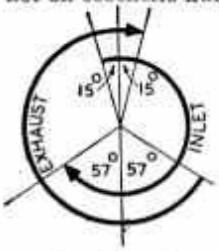
Aerolite solid skirt or Brico split skirt aluminium alloy. Gudgeon pins located by spring rings. Compression rings chromium plated. Pistons should be fitted with cylinder bore number stamped on crown towards rear (Brico pistons with split to near side). *Note that Jaguar practice is to number cylinders from rear to front. Where reference is made in this article to cylinder numbers, our usual practice of numbering from front to rear is maintained.*

Con-rods will pass through bores, but bolts may have to be extracted. Remove and assemble through top.

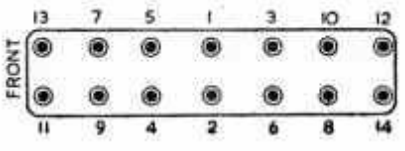
CAMSHAFT DATA		
	No. 1	Nos. 2, 3, 4
Bearing journal : diameter ...	1in	1in
length ...	1½in	1 7/16in
Bearing clearance	.0005-.002in	
End float	.0045-.008in	
Timing chain : pitch	⅜in	
no. of pitches : upper ...	100	
lower ...	82	

CAMSHAFTS

Duplex roller endless chain drive in two stages. First stage drives double idler sprocket, and has flat spring tensioner on off side, fibre rubbing block on near side. Second stage passes round idler sprocket, both camshaft sprockets and below small tensioner sprocket on eccentric hub.



Left : Valve timing diagram. Below: Diagram showing order of tightening of cylinder head nuts



Larger idler sprocket pressed and keyed on hub of smaller sprocket, which is bushed and runs on spindle. Tensioner sprocket is bushed and runs on eccentric spindle, which carries large serrated D-washer at front, retained by nut and located by spring-loaded plungers engaging in serrations. Both sprocket spindles are carried in bracket assembly comprising front and rear sections bolted together by four studs at top, and bolted to cylinder block by four setscrews below. Lower spindle retained by spring ring in rear section only, locates at front in timing cover. Front section of bracket has lugs at top for location of camshaft sprockets while cylinder head is removed.

Complete assembly of timing chains, sprockets and brackets can be removed after removal of timing cover.

To adjust tension of upper chain detach breather housing from front of head, and slacken locknut (tabwasher) on spindle. Press in plunger and turn serrated washer anti-clockwise to tighten until tension of chain can just be felt. When refitting baffle plate in breather housing, note that oil drain aperture is at bottom.

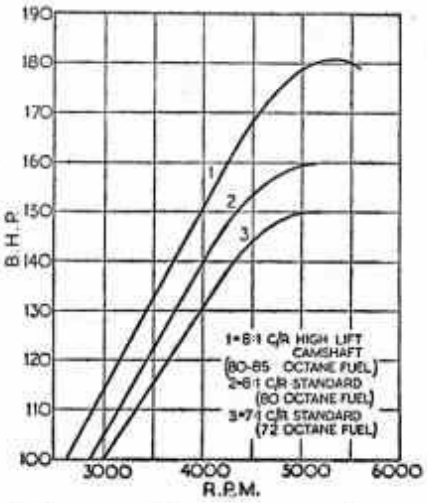
Each camshaft runs in four split steel-backed, white metal-lined shells located by dowels. Oil fed through drillings in head to rear bearings, and through hollow shafts to other bearings. End float controlled by front bearing between sprocket and flange on shaft.

Each camshaft sprocket spigoted on flange of shaft and retained by two setscrews with retaining plate and serrated adjusting plate. Plates are retained in sprocket by spring ring, so that fine timing adjustment need not be upset when sprocket is removed. Retaining plate carries stud, retained by spring ring, which projects through slotted lug in bracket.

When removing head for top overhaul first slacken chain tensioner, then detach each sprocket and slide it inwards along slot, securing it with nut on stud (7/16in A/F nuts holding exhaust pipes to manifold will fit studs). If sprockets are marked in relation to camshafts they can be refitted as found.

Before refitting cylinder head, turn crankshaft to T.D.C. No. 1 firing (mark on flywheel visible through aperture to near side of bell-housing). Turn both camshafts until keyways in flanges behind front bearings are vertical to camshaft housing faces, and

VALVE DATA		
	Inlet	Exhaust
Head diameter	1¾in	1 7/16in
Stem diameter	7/16in	7/16in
Face angle	30 deg.	45 deg.
Tappet clearance (cold) ...	.006in	.006in
	Inner	Outer
Spring length : free	1¼in	1 5/16in
fitted	1 3/16in	1 7/16in
at load ...	20 lb	38 lb



locate accurately with gauge in tool kit. Head can then be lowered into place without risk of valves fouling pistons.

To remove exhaust (nearside) camshaft, first disconnect rev. counter drive and detach housing from rear of head with internal lipped oil seal, and rubber sealing ring round spigot.

VALVES AND TAPPETS

Overhead, set at 70 deg. included angle. Not interchangeable, inlet larger than exhaust. Split cone cotter fixing, double springs with seats between springs and head.

Valve guides plain, no shoulder, interchangeable. Press in until outer end projects 5/8in from spring seat.

Valve seat inserts for inlet and exhaust shrunk into light alloy head.

Plain cylindrical tappets fit over valves and slide in guides shrunk into head. Adjust clearance between cam and tappet by pad on top of valve stem. Pads are available in thicknesses ranging from .085in to .105in in .001in steps. Pads are identified by etched letters A to S, A being thinnest. Camshaft must be removed for tappet adjustment.

For renewal of valve seat inserts or tappet guides, light alloy head must be heated in oil to 450-480 deg F, when new parts should press in easily.

LUBRICATION

Gear pump in sump, bolted to front of No. 1 main bearing cap and driven from skew gear by loose quill. To remove pump, disconnect delivery pipe at flange joint.

Skew drive gear retained on shaft (Woodruff key) by nut. Shaft runs in bronze bush pressed into housing on front of crankcase and retained by setscrew. Upper end of shaft has offset slot for distributor drive.

When refitting skew gear, shaft and bush assembly, turn crankshaft to T.D.C. 1/6, and push in assembly so that, when skew gear meshes with crankshaft gear, slot is parallel to crankshaft centreline, with larger segment towards engine.

To dismantle pump detach bottom cover with intake strainer (note gasket)

and tip out driving and driven gears. Driving gear runs directly in pump body and cover. Driven gear runs on spindle pressed into pump body.

Oil drawn through floating gauze intake strainer and delivered through pipe and drillings in crankcase to external full flow filter on off side (Tecalemit type FA 2045, with renewable element type FG 2383.

Adjustable spring-loaded plunger relief valve in body screwed into front of filter body on off side. To adjust, remove cap nut. Normal pressure 40 lb at 2,500-3,000 r.p.m., 5 lb idling.

IGNITION DATA

	7 : 1 C/R	8 : 1 C/R
Advance range : centrifugal (crank deg.)	32-36°	26-30°
vacuum (crank deg.)	22-26°	22-26°
Advance starts (crank r.p.m.)	260-600	860-1140
Max. advance (crank r.p.m.)	2800	3200
Cam angle (closed period)	38±2°	38±2°
Contact spring tension	20-24 oz	20-24 oz
Condenser capacity	.2 mf	.2 mf
Firing point	5° B.T.D.C.	5° B.T.D.C.
Firing order	1 5 3 6 2 4	1 5 3 6 2 4
Contact breaker gap	.012in	.012in
Plugs : make	Champion	Champion
type	L 10 S	NA 8
size	14 mm	14 mm
gap	.022in	.022in

IGNITION

Anti-clockwise distributor, with centrifugal and vacuum control, spigoted in crankcase on offside front, and retained by clamp plate.

When removing distributor, slacken clamp, leaving clamp plate on crankcase, as setscrew is inaccessible.

Set contact points to break 5 deg before T.D.C. (set a little in advance of T.D.C. mark on flywheel) and make final adjustment by micrometer on road test.

COOLING SYSTEM

Pump and fan. Non-adjustable bellows thermostat in housing bolted to radiator header tank. Pump impeller shaft is independent of pulley bearings, and has lipped rubber water seal.

To remove pump, which is attached by three studs to timing cover and six long setscrews into cylinder block, remove radiator (tie rods and holding-down rods).

To dismantle pump remove fan and pulley. Extract spring ring round hub and driving dog, and drive taper pin out of dog. Draw out shaft and impeller through long bronze bush and lipped seal in body (lip towards impeller). Impeller is pinned on shaft.

To remove pulley hub from body, extract spring ring retaining front bearing, and press body out of hub. Drift out rear ball bearing from front with felt seal and retainer. Extract spring ring retaining front ball bearing in hub, and press out to rear. When reassembling, note that felt washer fits in recess in front of hub, with dished retainer between washer and front bearing. Distance-piece fits on body between front bearing and spring ring.

Adjust fan belt by swinging dynamo until there is about ½in movement either way on vertical run of belt.

FUEL SYSTEM DATA

Carburettor : make	S.U. twin
type	H6 1¼in
Settings : needle : standard	RF
weak	RG
Jet size	.100in
Air cleaner : make	AC dry
type : R.H.D. : front	1579565
rear	1579577
L.H.D. (both)	1579565
Fuel pump : make	S.U. electric
type	PP 31/LCS*
pressure	2 lb

* Fuel pump mounted at centre of chassis, behind centre cross-member and below level of tank. If pump is to be disconnected, disconnect pipe line at tank end first.

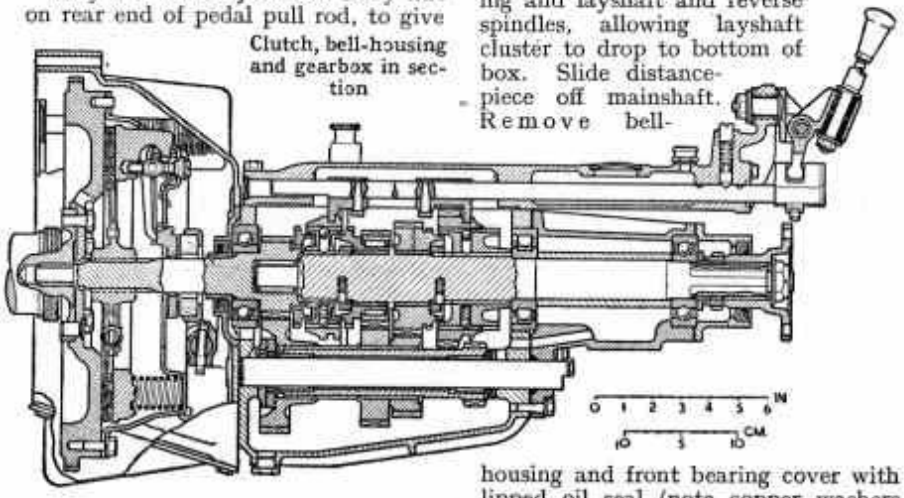
TRANSMISSION

CLUTCH

Borg & Beck single dry plate, graphite thrust release bearing.

Only external adjustment is by nut on rear end of pedal pull rod, to give ½in free movement at pedal pad.

Access to clutch for service after removal of gearbox and bell-housing.



Clutch, bell-housing and gearbox in section

GEARBOX

Four-speed, synchromesh on 2nd, 3rd and top gears. Single helical gears.

To remove gearbox take up carpet, seats, floorboards, gearbox cowl and propeller shaft tunnel. Disconnect front end of propeller shaft, reversing light switch wire, speedo drive and clutch pedal linkage. Remove cotter-clamp bolt from base of clutch pedal, and detach pedal cross-shaft ball housing from bell-housing. Push pedal cross-shaft outwards, and wedge outer end outside chassis frame. Take out four bolts holding rear mounting to gearbox, and setscrew from stabilizer mounting. Jack up engine under rear of sump, detach bell-housing bottom cover and take out bell-housing setscrews. Gearbox can then be drawn back and lifted out.

To dismantle gearbox remove top cover with remote control assembly, selector rods and forks. Engage top and 1st gears to lock box, and undo driving flange nut. Draw off flange, extract speedo drive pinion and detach rear cover with lipped oil seal. Draw off speedo drive gear and thick washer.

Using bridge extractor bolted to rear extension housing and acting against end of mainshaft, draw off rear extension housing with rear ball bearing and layshaft and reverse spindles, allowing layshaft cluster to drop to bottom of box. Slide distance-piece off mainshaft. Remove bell-housing and front bearing cover with lipped oil seal (note copper washers under setscrew heads). Turn primary shaft so that cut-away on top gear dogs clears layshaft constant mesh gear. Tap mainshaft forward to drive out primary shaft and ball bearing, with caged roller spigot bearing. Tap mainshaft back until outer race of roller bearing is free. Mainshaft assembly, with rollers and inner race of bearing, can then be lifted out through top. Lift out layshaft cluster with needle roller bearings and thrust washers, and bushed reverse idler.

Primary shaft ball bearing retained on shaft with chip shield by left-hand threaded sleeve nut.

To dismantle mainshaft assembly slide off top/3rd synchro assembly, noting interlocking plunger and ball (in later gearboxes only) in drilling through synchro hub. Press down plunger in shaft, locking 3rd gear splined thrust washer, releasing washer. Slide off 3rd gear with 41 needle rollers. Draw off inner race of roller bearing and remove 2nd gear

TRANSMISSION DATA

CLUTCH : Make	Borg & Beck	
Type	10 AG—G	
Springs : No.	12	
colour	Yellow	
free length	2.668in	
Centre springs : colour	Red	
Linings : thickness	5/32in	
dia. ext.	9½in	
dia. int.	6½in	
GEARBOX : No. of speeds	4	
	Standard	High
Final ratios : 1st	12.29	11.04
2nd	7.22	6.48
3rd	4.98	4.47
Top	3.64	3.27
Rev.	12.29	11.04
Crown wheel/bevel pinion teeth	51/14	59/18

and synchro assembly (same as top/3rd gear, with interlocking plunger and ball). When reassembling note that interlocking plunger and ball in top/3rd and 2nd synchro hubs must be opposite cutaway splines on mainshaft and in synchro sleeves.

Layshaft cluster is built up, with integral 1st gear. To dismantle, extract spring ring behind constant mesh gear and press gear back until split ring recessed in front is released. Second spring ring retains 3rd and 2nd gears against shoulder on shaft.

Reverse idler spindle should not be separated from rear extension housing, as rubber sealing ring recessed in spindle cannot be replaced without special thimble.

When reassembling box insert small retaining rings in layshaft needle roller recesses, and insert 29 needle rollers in each end, sticking them in with thick grease. Insert outer retaining ring in front end of shaft with large bronze thrust washer. Stick on steel thrust washer (pegged to box). Insert stepped steel washer at rear (pegged to shaft) and small bronze thrust washer. Lower cluster into box and insert thin rod to support it.

Remove reverse rocking lever from box, feed in mainshaft and primary shaft assemblies, and drive in roller bearing outer race. Lift layshaft cluster with rod and insert dummy spindle .980in in diameter, with generous chamfer on end, into layshaft so as not to disturb needle rollers. Assemble long distance-piece on mainshaft, and offer up rear extension housing with layshaft spindle, and reverse idler in place on spindle (fork grove to front). Insert layshaft spindle, pushing out dummy spindle to front. When extension housing is in place, assemble reverse rocking lever and fork, and complete assembly of box.

To dismantle top cover remove lever and pivot jaw assembly (nut on front of pivot housing). Detach sealing plate from rear of cover and unscrew plugs retaining selector springs and plungers. Unscrew taper-ended screws from selector forks, and draw out rods to rear one at a time, catching interlock balls as they are released from cross-drilling in rear of cover.

PROPELLER SHAFT

Hardy Spicer needle roller bearing universal joints, series 1300. Nipples for lubrication of joints.

To remove shaft, remove seats and tunnel.

REAR AXLE

E.N.V. hypoid bevel drive. Semi-floating shafts. Final drive housing bolted, rear cover welded to banjo casing.

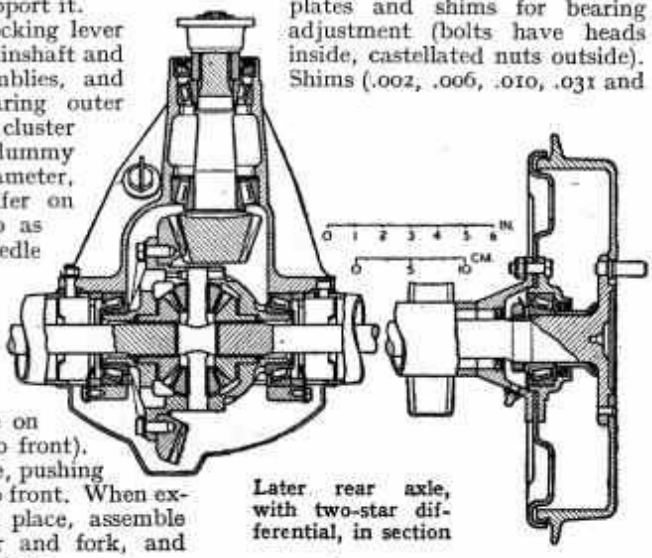
Early cars had four-star differential and split cage, later changed to two-star and one-piece cage. Only difference affecting service is that half-shafts are not interchangeable, as on later axles they are shorter and butt on thrust block at inner ends.

Note.—Axles Nos. JHS 1-JHS 1602 are fitted with wedges between springs and axle pads. Subsequent axles have no wedges. Change to two-star differential took place at JHS 1840. Axle numbers stamped on final drive housing.

To remove axle from car, disconnect shock absorbers, brake cables, check straps, brake fluid pipe and rear end of propeller shaft. Remove silencer and tail pipe, and drop rear ends of springs. Axle assembly can then be removed to rear.

Half-shafts upset at outer ends to form hub flanges, splined in differential bevel gears at inner ends, which have hardened steel buttons on four-star differential type, but are plain on two-star type.

Hubs carried in taper roller bearings in housings spigoted and flange-bolted to axle casing with brake backplates and shims for bearing adjustment (bolts have heads inside, castellated nuts outside). Shims (.002, .006, .010, .031 and .062in thick) located between bearing housing and backplate, to give .002-.004in end float. Inner race of bearing retained on each shaft by nut and tabwasher, with flared distance-sleeve between race and flange of shaft. Rubber oil sealing ring inside flare of sleeve. Lipped oil seal (lip inwards) in bearing housing bears on sleeve. Second lipped seal (lip inwards) in end of axle tube.



Later rear axle, with two-star differential, in section

To remove half-shaft, remove wheel and brake drum, and disconnect brake fluid pipe and cable. Undo six flange bolts, and draw out shaft and bearing housing assembly carefully through inner oil seal, noting shims behind housing flange.

Bevel pinion shaft carried in taper roller bearings. Outer races pressed into final drive housing. Distance-piece and shims (.004, .006, .010in thick) between inner race of outer bearing and shoulder on shaft for bearing adjustment, to give 8-10 lb/in preload. Oil seal (lip inwards) pressed into final drive housing bears on driving flange hub.

Shims (.004, .006, .010in thick) behind outer race of inner bearing for bevel pinion mesh adjustment.

Crown wheel spigoted on one-piece differential cage (earlier split cage) and retained by 10 setscrews. Differential side bevel gears run directly in cage with flat thrust washers behind. Planet bevel pinions have spherical thrust washers behind.

Differential assembly carried in taper roller bearings in split housings, with ring-nut adjustment. Tighten ring-nuts until there is no play and no drag, then tighten 1-1½ castellations to give slight preload. Turn both ring-nuts equally to give .006-.008in backlash.

CHASSIS

BRAKES

Lockheed hydraulic. Two leading shoe front brakes with separate cylinder for each shoe. Rear brakes have single floating cylinder incorporating bell-crank for handbrake operation through cable from equalizer below central handbrake.

Micram adjuster on each wheel cylinder, with slotted head reached through hole in brake drum *after removal of wheel*. Apply brakes hard to position shoes in drums, jack up car, remove wheel, turn adjuster clockwise until shoe touches drum and back off until free (one notch). Note *two* adjusters for each front wheel.

Slack in handbrake cable can be taken up on equalizer bolt. Shoe adjusters must be tightened fully first, and readjusted afterwards.

BRAKE DATA	
	Front and rear
Drum diameter	12in
Lining: length	11¼in
width	2½in
thickness ...	3/16in
No. of rivets per shoe ...	14*

*On later front brakes 16 rivets, with extra floating rivet to identify M14 linings. Fit shoes with floating rivet on side away from back plate.

REAR SPRINGS

Semi-elliptic. Silentbloc or Metalastik rubber bushes for spring eyes and shackles. Loose rubber shackle bushes on earlier cars. Tighten fully with weight of car on springs. Centrebolts offset. Fit springs with shorter section to front.

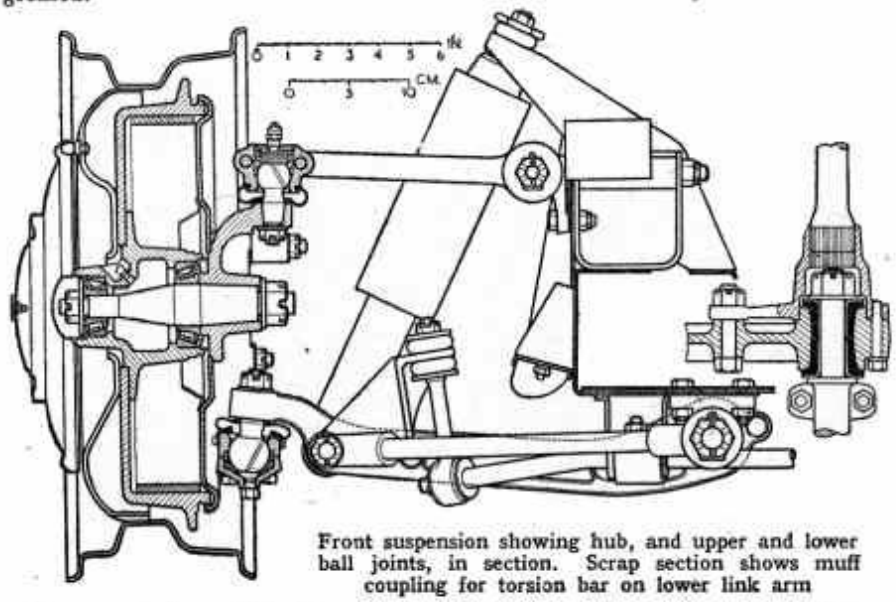
REAR SPRING DATA	
Length (eye centres, flat) ...	44in*
Width	1¾in
No. of leaves	7
Free camber	5½in
Loaded camber	¾in
At load	585 lb

*Centrebolt offset 2in to front. 20in front to centre.

FRONT SUSPENSION

Independent, torsion bars. Inner ends of upper and lower links pivoted in loose rubber bushes bonded to inner sleeves. Ball joints at outer ends. Upper link outer ball socket bolted between arms of link, with shims for castor adjustment. Ball pin tapered and fitted in top of stub axle carrier member. Ball joint is sealed and serviced only as assembly.

Lower link outer ball pin tapered and fitted in end of lower link main arm. Lower ball seat carried in cap bolted to stub axle carrier, which forms upper ball seat, with spigot ring and shims (.004in thick) in joint to give .010in float in ball joint. *These shims must not be taken out to take up wear in ball joint.* On early cars lower ball seat was bronze, with nipple for lubrication. Later, Ferobestos seat introduced to cure low speed wobble. If Ferobestos seat is used to replace bronze, nipple hole must be plugged, and all parts thoroughly degreased.



Front suspension showing hub, and upper and lower ball joints, in section. Scrap section shows muff coupling for torsion bar on lower link arm

Upper and lower link inner pivot brackets are bolted to frame and can be removed without disturbing rubber bushes. Upper link brackets have shims for camber adjustment. If bushes are dismantled, nuts must be tightened fully when weight of car is on springs.

To remove torsion bar (necessary for removal of lower link), jack up car to "no torsion" position and take out setscrew locating adjusting lever at rear end of bar, and cotter-clamp bolt in lever. Detach muff coupling on front end of bar from lower link arm (one bolt, one setscrew) and slide back, when bar can be lowered and drawn out forwards.

To check torsion bar setting, car must be on level ground. Place two 100-lb weights in car, one in front of each seat. Bounce front of car to ensure freedom from stickiness, then **depress front and allow it to rise** *slowly*. If setting is right, measurement from ground to lower face of foremost parallel section of chassis frame will be 7⅛in.

To correct setting, turn brass adjusting nut on rear adjusting lever clockwise to raise car, after slackening locking setscrew (car must be jacked up). If setscrew is near end of slot in chassis frame, bar must be repositioned. Detach muff coupling at front end, slide back free of serrations and re-engage after slackening off adjusting nut fully.

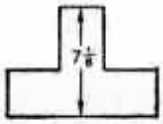
Hubs run on taper roller bearings. Felt seal in retainer behind inner bearing. Adjust by castellated nut to give .005in end float (tighten nut and back off ⅓-turn.

Three-piece track rod. Centre section supported by drop arm and relay arm on opposite side. Relay arm retained on tapered end of shaft by castellated nut and split pin. Shaft has threaded end which screws into upper part of housing, lower part having long bronze bush and lipped oil seal. If arm is removed from shaft, when reassembling screw shaft into housing as far as it will go, and back off ¾-turn. Fit arm on taper, making sure that full movement is available.

Outer sections of track rod have sealed ball joints, shanks threaded right- and left-hand and clamped in tubes. Centre section connected to drop arm and relay arm by rubber bushed joints. Screwed pin joints used on earlier cars should be replaced if possible by later type. Rubber bushed joints are renewable only as assemblies. When fitting these joints, turn drop arm and relay arm to straight ahead position before tightening taper pin nuts.

Adjust track on centre section (screwed right- and left-hand and clamped). Normal length of outer sections 9in between ball centres. Set locking clamps with bolts at rear to avoid fouling balance weights on wheel rims on full lock. Adjust lock stops against drop arm and relay arm to give ¼in clearance between wheels and chassis frame on full lock.

To check castor and camber, place four 7⅛in test gauges between chassis frame and ground at front and rear ends of parallel section of frame. Gauges can be made up of stout steel plate capable of bearing weight of car (see sketch). Jack up rear of car, remove wheels and lower chassis on to gauges. Load front of car until chassis rests on front gauges. For both castor and camber, ⅛in shim thickness will alter angle about ½ deg. Note that on chassis before Nos. 660126 and 670439, castor angle is 5 deg. On and after these numbers, 3 deg. *Earlier castor angle still holds for earlier cars.*



Wheel balance, both static and dynamic, is regarded as important.

STEERING GEAR

Burman F-type worm and nut, with recirculating balls.

To remove gear from car, remove radiator core and disconnect horn push wire from relay. Slacken two grubscrews in steering wheel hub and remove horn push and wire. Extract spring ring and draw off wheel. Detach cover board below facia panel, column support bracket and scuttle dust cover. Remove front wheel on steering side, detach brake fluid reservoir and wing valance. Disconnect drop arm from track rod. Remove upper front suspension bolt, releasing gear, which can then be drawn out below front of wings if gear is turned with drop arm outwards. Screenwiper motor bracket may have to be detached to give clearance for column.

Steering column and nut carried in cup-and-cone ball bearings at lower end (14 loose balls in each bearing), adjusted by shims under lower end plate. Column tube detachable from box. Nut has 14 loose recirculating balls.

End play in rocker shaft adjusted by grubscrew and locknut in top cover. Test for .005in end float on each lock by lever under drop arm. Rocker shaft turns in bushes in box (not serviced separately). Upper end of column supported in composition bush.

STEERING DATA	
Castor	3 deg.*
Camber	1½-2 deg.
King pin inclination ...	5 deg.
Toe-in	⅛-¼in
No. of turns lock to lock ...	3

*Castor 5 deg before chassis Nos. 660126, 670439

SHOCK ABSORBERS

Front: Newton telescopic hydraulic. No provision for topping-up, but if replenishment is needed, remove shock absorber and dismantle. Mount

upright with lower eye gripped in vice, and pull out piston rod, exposing gland nut (⅞in B.S.F.). Undo nut and remove inner assembly by pulling piston rod up sharply. Wash and blow out with compressed air. Reassemble inner cylinder and foot valve. Pour in 130 c.c. of fresh fluid, assemble piston, tighten gland nut and work piston rod up and down through full stroke until uniform resistance is felt.

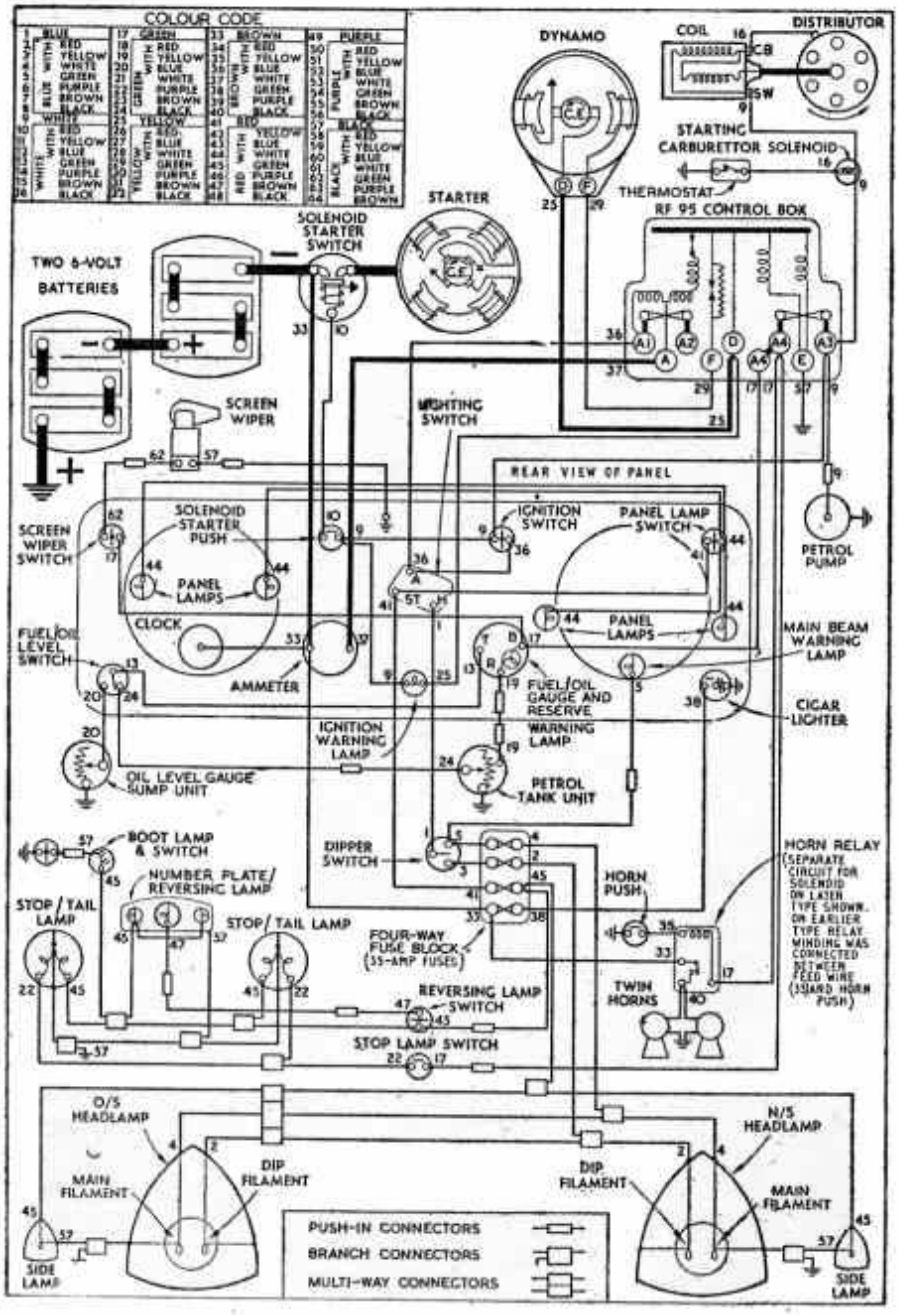
Rear: Girling PV7 piston type. To top up, disconnect linkage and work arm up and down to expel air.

BODY

Body and front wings can be removed as unit. Mounting points at front of wings, wing valances, scuttle (just behind bell-housing), two brackets on each side, with aluminium packing pieces, and three on each side of boot floor. Packing pieces on side brackets should be used to line up body so that doors close properly. Usual number of packings is four on front brackets, five on rear. Straight sections of chassis frame side members at front and rear, and cross-member behind gearbox, covered with black felt, stuck with Bostik.

Rear wings are detachable, bolted to body. If front wing is damaged it can be replaced. Attached to body by pop-riveting along scuttle fold and round hinge post, to which it is pinned by spot-welding. Wings are welded together at forward extremity. All visible joints are filled with body solder.

JAGUAR XK 120 WIRING DIAGRAM



GENERAL DATA	
Wheelbase	8ft 6in
Track : front	4ft 3in
rear	4ft 2in
Turning circle	31ft 0in
Ground clearance	7¼in
Weight (dry) : Super Sports	24¼ cwt
Coupe	25¼ cwt
Tyre size	6.00—16
Overall length	14ft 5½in
Overall width	5ft 2in
Overall height :	
Super Sports	4ft 4¼in
Coupe	4ft 6in

Access to instrument wiring by removal of cover board below facia panel, and small strip below instrument panel (drive screws). Instrument panel can be detached. Undo two ¼in nuts each side behind panel, and lower assembly. Detach combined oil pressure and water temperature gauge from back of panel and leave on pipes. Disconnect rev. counter and speedo drives, when panel can be manœuvred for easy access to wiring.

Petrol tank mounted in spare wheel tray. To remove, take up floor of boot, disconnect fuel gauge wire, filler and air vent hoses, and fuel pipe line (offside front). Take out five bolts holding rear edge of spare wheel tray, and four long bolts at front. Tank and tray can then be dropped out.

TRAILER ATTACHMENT

No provision made. No towing capacity quoted.

ELECTRICAL DATA
Lucas Equipment

	Model	Service No.
Dynamo	C45PVS	22429E
Starter : early	M45G	26042E
later	M45G	26062A
Starter solenoid switch	ST950	70411D
Lighting switch	S37	31056A
Ignition switch	S45L	312151
Control box	RF95/2	37078D
Fuse box	SF4	37110A
Battery	STXW11E	—
Distributor : 7 : 1 C/R	DVXH6A	40198A
8 : 1 C/R	DVXH6A	40199A
Coil	B12/L	45012A
Headlamps	PF770	50778A
Side lamps (interior)	480	52150A
Stop/tail lamps	488	53178
Number plate/reversing lamp	469	53159A
Screenwiper	CR4	072700
Horns : High note	WT29U	69033
Low note	WT29U	69032
Horn relay : early	SB40	33116A
later	SB40-1	—

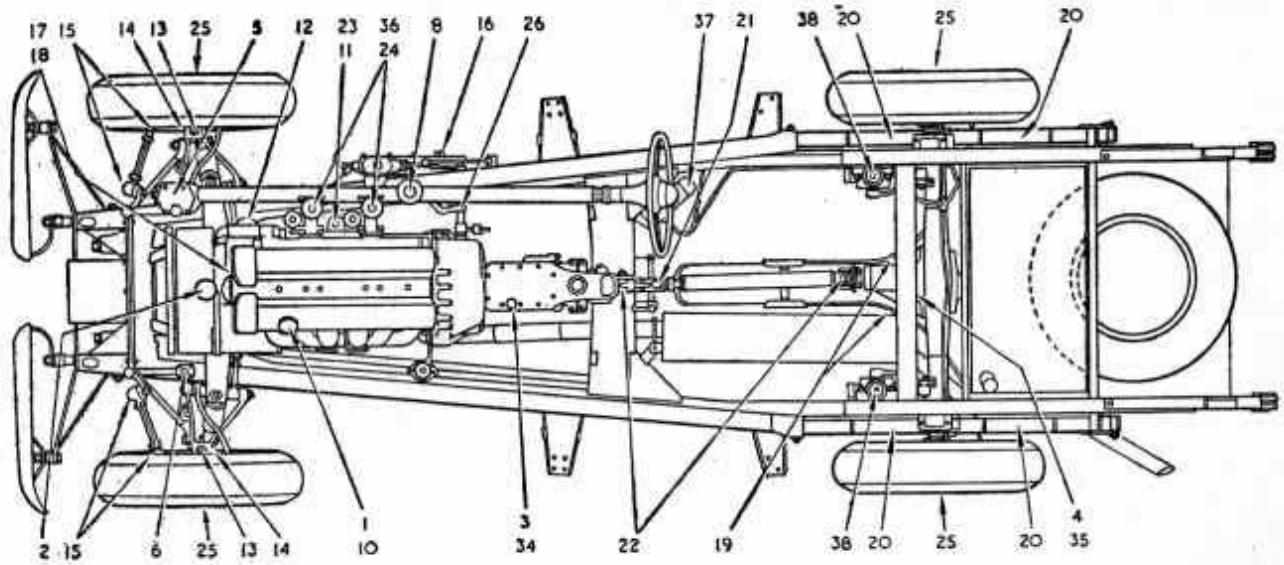
BULBS

	Voltage	Wattage	Lucas No.
Headlamps :			
N/S, home	12	48	185
R.H.D. export	12	48/48	302
L.H.D. export	12	48/48	303
Side and number plate lamps	12	6	989
Stop/tail lamps	12	6/18	381
Reversing lamp	12	24	199
Warning lamps	12	2.2	987
Boot and interior lamps (festoon)	12	3	256
Panel lamps	12	6	207

FUSES

Accessories	35 amperes

JAGUAR XK 120 MAINTENANCE DIAGRAM



KEY TO MAINTENANCE DIAGRAM

DAILY

1. **Engine sump** } Top up
2. **Radiator** }

MONTHLY OR EVERY 2,500 MILES

3. **Gearbox**
4. **Rear axle**
5. **Steering box**
6. **Steering relay lever pivot housing**
7. **Carburettor dashpots**
8. **Brake fluid reservoir**
9. **Battery**

} Top up

10. **Engine sump**—Drain and refill
11. **Engine oil filter**—Clean element
12. **Distributor**—Oil shaft bearings, auto advance and contact breaker pivot. Grease cam
13. **Front suspension upper link ball joints (2)**
14. **Front suspension lower link ball joints (2)** *(on early cars only)*
15. **Steering ball joints (4)**
16. **Brake pedal pivot (1)**
17. **Fan bearings (1)**
18. **Water pump bearings (1)**
19. **Handbrake cables (2)**
20. **Rear spring gaiters (4)**
21. **Propeller shaft splines (1)**

} Grease gun

22. **Propeller shaft universal joints (2)**—Oil gun

EVERY 5,000 MILES

23. **Engine oil filter**—Renew element
24. **Carburettor filters**—Clean
25. **Wheel hubs (4)**—Grease gun (roller bearing grease)

26. **Clutch pedal shaft**
27. **Accelerator linkage**
28. **Handbrake ratchet**
29. **Front seat runners**
30. **Screenwiper arm pivots**
31. **Door, boot and bonnet hinges and locks**
32. **Petrol filler cap lock and hinges**
33. **Rear wing valance catches**

} Oil can

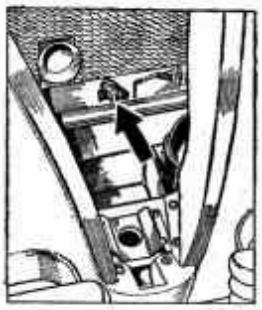
EVERY 10,000 MILES

34. **Gearbox** } Drain and refill
35. **Rear axle** }
36. **Air cleaners**—Wash in petrol
37. **Fuel pump**—Clean filter
38. **Rear shock absorbers**—Top up

FILL-UP DATA

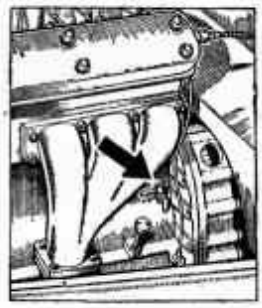
		Litres
Engine sump	24 pints*	13.5
extra for filter and oilways	5 pints	3.1
Gearbox	2½ pints	1.4
Rear axle	3½ pints	2
Cooling system	25½ pints	14.5
Fuel tank	15 gallons	68
	Normal	**Fast driving**
Tyre pressures (front and rear)	25 lb	35 lb

* Capacity of sump with step below rear, fitted to some later engines, 21 pints.



DRAINING POINTS

Left : Radiator drain tap on nearside front of bottom tank. Right : Cylinder block drain tap at nearside rear of engine. Note that with both taps opened, the heater unit (if fitted) is *not* drained



RECOMMENDED LUBRICANTS

		S.A.E. No.	Vacuum	Wakefield	Shell	Esso	Price's
Engine	Above 90° F.	40	Mobiloil BB	Castrol XXL	Triple Shell	Essolube 40	Energol S.A.E. 40
	32° to 90° F.	30	Mobiloil A	Castrol XL	Double Shell	Essolube 30	Energol S.A.E. 30
	Below 32° F.	20	Mobiloil Arctic	Castrolite	Single Shell	Essolube 20	Energol S.A.E. 20
Gearbox, Carburettor dashpots, Distributor, Oil can		30	Mobiloil A	Castrol XL	Double Shell	Essolube 30	Energol S.A.E. 30
Rear axle		90	Mobilube GX90	Castrol Hypoy	Spirax 90 EP	Expee Compound 90	Energol EP S.A.E. 90
Steering box, Steering relay lever pivot, Propeller shaft needle roller bearings		140	Mobilube G	Castrol D	Spirax 140 EP	Gear Oil 140	Energol S.A.E. 140
Wheel hubs, Chassis nipples (except propeller shaft needle roller bearings)		—	Mobilgrease No. 5	Castrolease WB	Retinax A	Esso High Temp. Grease	Belmoline H.M.P.
Upper cylinder lubricant		—	Mobil Upperlube	Castrollo	Donax U	Essomix	Energol U.C.L.
Front shock absorbers		—	Mobil Shock Absorber Oil Light	Castrol Shockol	Donax A1	Esso Shock Absorber Oil	Energol S.A. Light
Rear shock absorbers		—	Girling Piston Type Thin Oil				
Brake fluid reservoir		—	Lockheed Orange Brake Fluid				

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JAGUAR XK 120 WIRING DIAGRAM