KNOW YOUR SINGER (Nine & Ten)

FAULT-FINDING CHART

● If engine will not start and starter will not crank engine, check for:
(a) Run-down battery
(b) Cable corroded or disconnected
(c) Faulty starter switch
(d) Dirty starter-drive assembly
(e) Defective starter-motor

● If the starter cranks the engine slowly, but the engine will not start, check for:
(a) Heavy engine oil
(b) Loose terminals
(c) Poor battery connections
(d) Partially discharged battery
(e) Faulty starter-motor or drive
(f) Faulty battery

● If the engine will not start, and there is no spark at the plug gaps, check for oiled-up plugs or cracked porcelain.

● If there is no spark at the distributor plug leads, check for:
(a) Cracked rotor
(b) Loose low-tension wire
(c) Faulty cap
(d) Worn or dirty breaker points
(e) Faulty carbon-brush contact
(f) Defective condenser or connections

● If ignition system is in order, check the fuel system; if no fuel in carburettor, test for:
(a) Air leaks in the petrol line
(b) Blocked vent in petrol-tank cap
(c) Choked filters in carburettor or fuel pump
(d) Blockage in the fuel pipe
(e) Faulty fuel pump

● If petrol is present, but the trouble still seems to be due to a fuel fault, check for:
(a) Choked jets
(b) Defective starting control (choke)
(c) Air leak in manifold
(d) Water or dirt in the fuel

● If the engine misfires or runs imperfectly, it may be due to ignition defects as follows:
(a) High-tension leads shorting
(b) Distributor points not properly adjusted
(c) Defective or damp distributor cap
(d) Ignition timing incorrect
(e) Faulty condenser
(f) Cracked spark-plug porcelain; dirty or improperly gapped spark plugs
(g) Loose battery connection
(h) Weak coil

● If ignition is not the cause of misfiring, check fuel system for:
(a) Partly blocked fuel line or pump filter
(b) Float needle valve dirty or faulty
(c) Water in the carburettor
(d) Dirt in the carburettor
(e) Low pump pressure
(f) Carburettor flooding
(g) Weak mixture
(h) Blocked vent in petrol-tank cap

● Some mechanical factors that can cause misfiring or faulty running are:
(a) Excessive carbon deposit
(b) Sticking, burnt, or broken valves
(c) Broken or weak valve springs
(d) Improper valve clearances
(e) Valves timed early
(f) Leaky manifold gaskets
(g) Leaky cylinder-head gasket
(h) Poor compression, owing to cylinder, piston, or ring condition

● If the engine starts and stops, check for:
(a) Loose connections in the low-tension circuit
(b) Faulty contact in the ignition switch
(c) Dirty contact points
(d) Defective condenser

● If this trouble is not due to faulty ignition, check for:
(a) Blocked fuel line
(b) Water or dirt in the fuel
(c) Lack of petrol
(d) Faulty fuel pump
(e) Air leaks in manifold system
(f) Sticking needle valve

● If the engine will not give full power, check for:
(a) Valves burnt or not seating properly
(b) Ignition retarded
(c) Distributor points incorrectly set
(d) Automatic advance defective
(e) Defective high-tension leads or spark plugs
(f) Faulty distributor cap
(g) Valve springs weak or broken
(h) Leaky cylinder-head gasket
(i) Piston rings broken
(j) Insufficient fuel supply
(k) Dirt or water in carby.
(l) Air cleaner dirty
(m) Air leaks in manifold system
(n) Jets partly blocked
(o) Brakes dragging

Seventeenth article of a series on the care and maintenance of popular car models

THE post-war Singer Nine is the successor to a long line of pre-war models which were joined in 1938 by the Singer 10. The post-war 10 differs from the previous models in appearance and has a redesigned gearbox.

On the engine side the only engineering change worth noting is the introduction of thin-shell bearings for the big ends, beginning at engine No. B4539. Both the 10 and the Nine have the same engine, except for bore diameter and compression ratio.

The rear axle is also identical except for track measurements and lugs for the brake linkage.

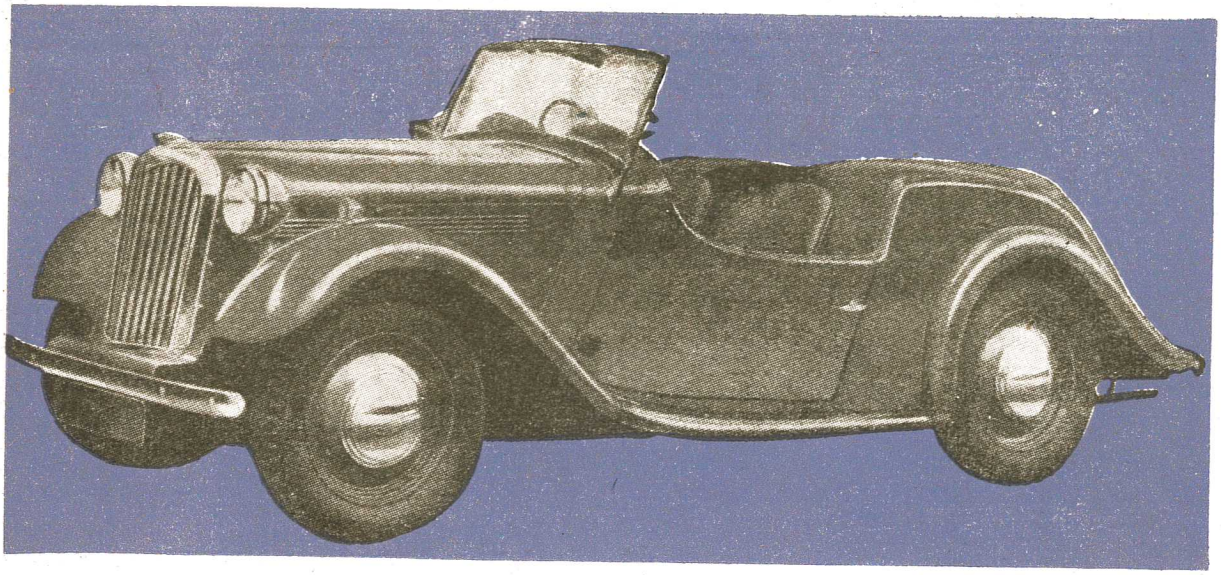
Chassis numbers are stamped on a plate fixed to the offside of the scuttle, under the bonnet and on top of the chassis frame. The engine number is stamped on top of the fly-wheel housing on the driver's side and the engine and chassis numbers are identical. The prefix A denotes the 9 h.p. model and B the 10 h.p. version.

In 1950 the roadster was fitted with a four-speed box and the 10 h.p. engine, which previously was used only on the saloon. The following year independent front springing was introduced and the model was designated AB.

Engine Removal

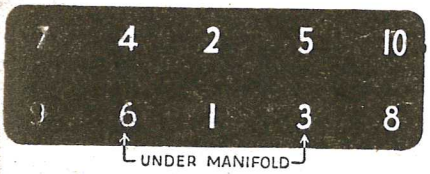
The engine and gearbox are removed as one unit. First step is to remove the radiator, which is easily done if the fan is detached after disconnecting the radiator stay rods and hoses. Three bolts on each side of the radiator shell, which hold it to the wing valances, can be easily reached if the fan and rods are off.

Disconnect all necessary pipes, wires and controls, also the air-cleaner. Unscrew the front mounting setscrews from the frame brackets, then remove the carpets, gearbox cowl and floorboards. Disconnect the speedo drive cable and the front end of the propeller shaft. Take off



the gearbox top cover and lever and detach the rear mounting strap on the nut below the crossmember. Place slings below the timing cover and between the sump and flywheel cover, so that they meet above the centre of the engine. The unit can now be lifted forward, upwards and out.

When reassembling, after the engine is in place, fit the radiator shell, bolting it up finger-tight only; then fit the stay rods and temporarily assemble the bonnet. This allows the shell to be moved until the bonnet fits snugly around the edges. The bonnet is then removed, the shell tightened down and the core reassembled.



TIGHTENING order of head nuts.

Details of Engine

The three-main-bearing crankshaft has white metal-lined shells located in the bearing webs by dowels. The latter are also used in the front and rear caps. This means that the bearings can't be replaced without removing the shaft. Sufficient allowance is made on replacement bearings to provide for line boring.

Four setscrews and two dowels are used to position the flywheel to the crankshaft rear flange. If the starter ring-gear teeth are worn there is no reason why the flywheel could not be turned half a turn; or, if four dowels are used (as in some cases), a quarter-turn could be given to bring unworn teeth into mesh.

Don't forget to mark the 1/4 timing mark in the new position if the flywheel is moved.

The sump fits over the rear main bearing cap, which is provided with a cork sealing strip. The front end of the sump is bolted to the timing-cover. No hand-fitting is permissible on connecting rods, which use the removable slipper-type bearings. Gudgeon pins should be a light push fit in the bronze bush in the small end of the rod.

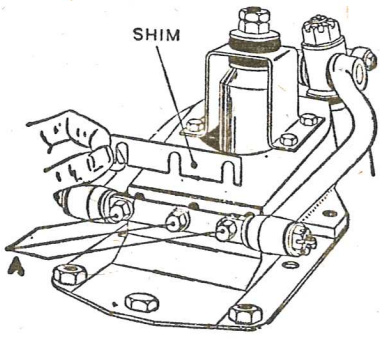
The three main bearings are the same size ($1\frac{3}{4}$ x $1\frac{1}{2}$in.) and the crankpin is $1\frac{5}{8}$ x $1\frac{1}{8}$in. End float of the bearings should be: mains, .002 to .003in; big ends, .002 to .0025in.

Pistons are of split-skirt design and should be assembled with the split to the near side. The pistons and rods can be withdrawn past the crankshaft without removing the cylinder head.

Camshaft Drive

The chain drive for the camshaft is of the two-stage type; and an intermediate shaft on the offside drives the distributor and oil pump through skew gears.

The camshaft proper has a spring-loaded jockey sprocket to act as a chain-tensioner. A stop-screw and locknut on the offside of the cylinder head form a positive lock. This screw should only be turned with the fingers, otherwise it will be too tight. A flat piece of clock spring placed in a slotted stud inside the timing case acts as a tensioner for the lower chain.



CAMBER is adjusted with shims.

The intermediate shaft is bushed at the front end, but the other end runs in the cylinder-block casting. Camshaft end-float is controlled by the bush, which is trapped between the back of the timing sprocket and a shoulder on the shaft. A tapered setscrew accessible from the outside holds the bush in position.

Valves, Timing

Although the inlet and exhaust valves differ in head diameter, the rockers are identical and are bushed on a hollow shaft located in the front and rear pillars by setscrews. A thick washer is placed between each pair of rockers, and a thick washer and short-distance piece between the centre rockers and the centre pillar

Oil for the end camshaft bearings passes through the rocker shaft, which is fed from the centre pillar, the feed coming down from the front end inside the timing case. The pressure relief valve is located on the offside of the crankcase at rear and is adjustable. A bypass oil filter is fitted.

Timing can be checked before dismantling. The correct setting is when No. 1 inlet valve opens at 20deg. before t.d.c., equal to 1 23/32in.

To extract the distributor drive shaft, remove the distributor and drive housing and petrol pump, which is driven by pushrod from an eccentric just above the skew gear on the pump drive shaft. The pushrod, which slides in a bush in the crankcase, can be left undisturbed. Turn

the engine to t.d.c., No. 1 firing, before picking shaft out. In this position the largest sector of the driving dog should be towards the engine. Set contact points to break at t.d.c. (¼ mark on flywheel, visible through a hole on the offside of the bell housing).

If the distributor is fitted with automatic centrifugal advance, the following figures will give correct operation: range is 32deg., commencing at 700 crankshaft r.p.m. and reaching its maximum at 2800 r.p.m. Firing point is 5deg. before t.d.c.

Clutch, Gearbox, Rear Axle

The 7¼-inch A6G Borg and Beck single-plate clutch is fitted with a carbon thrust release bearing and the only adjustments are on the pull-rod (to give ¾-inch free pedal) and on the stop-screw. The pedal must contact the stop-screw before touching the floorboard. The clutch assembly can be removed, if necessary, by detaching the gearbox, leaving the engine in position.

Follow the same steps on the transmission as in full engine and gearbox removal, then detach the bell-housing lower cover and jack up the rear of the engine slightly so that the gearbox clears the rear crossmember. Take out the setscrews around the bell-housing flange and draw off gearbox and bell-housing.

On the 10 the gearbox is held to the housing by four setscrews outside, and on earlier models by a fifth setscrew inside the housing and accessible through the bottom opening. The gearbox can be removed if desired, leaving the housing still bolted to the engine.

The rear axle is fitted with semi-floating shafts carried on ball-races retained against a shoulder of the race by a ring nut which screws on the inside of the bearing. The outer part of the bearing is carried in a separate housing and fits on a spigot machined on the end of the banjo main housing. The brake backplate bolts to the race housing and a rubber seal is fitted inside the axle tube.

On the 10 the brake-drum must be removed and shoes dismantled, so that the handbrake cable can be disconnected, before the shaft can be withdrawn.

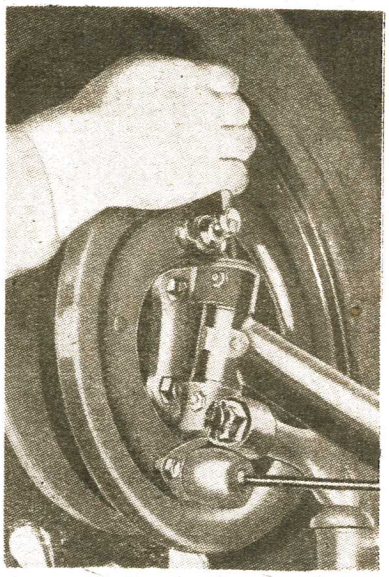
The bevel pinion is carried in a double-row ball-race at the outer end of a roller-bearing on the inner end. The inner races of these bearings have a distance piece between them and are retained on the inner shaft by a driving flange and nut. Tighten this nut to 65/75 ft./lb. torque. There is no adjustment for these bearings, but the depth of pinion mesh into the crown-wheel teeth can be adjusted by shims behind the flange on the bearing housing. Both bearing and side adjustment of the crown wheel is done by moving the nuts carried in the split housing.

The bearing should have a pre-load drag of 4 in./lb. (taken on the crown wheel) and the mesh should be adjusted for .006 to .008in. backlash.

Brakes and Steering

Hydraulic brakes are used on some models, mechanical on others. On the Lockheed hydraulics a snail cam is used for shoe adjustment. Turn each adjusting nut away from the centre of the backplate until the shoe binds on the drum, then back off until just free. Handbrake adjustment is made by a turnbuckle at the lower end of the lever cable.

Jack up the rear wheels and adjust the turnbuckle until the brakes are just rubbing. The brakes should be full on at the fourth notch and quite free when the lever is off. With the Girling mechanical type the handbrake also operates on the rear wheels. Compensation between front and rear wheels is made at the base of the pedal. Adjustment of shoes is made by turning square-end adjusters on the backplates. Jacking the car up is not necessary with this type—simply turn the adjuster until resistance is felt, then back off two notches.



ADJUSTING the mechanical brakes.

It is interesting to note that the kingpin can be driven out either way when the backplate is removed. The hubs run on ball-bearings, with distance pieces between the inner races. The hub is of two-piece construction. The inner ball-race is recessed in the inner flange, to which the wheel-studs are screwed and riveted. A felt washer and a retainer are fitted behind the bearing.

The outer part of the hub carrying the outer bearing is flanged and spigoted on the inner bearing, fitting over the wheel studs. The brake drum fits on the outside of the outer flange. Countersunk screws hold the two halves of the hubs together.

Two types of steering rods are used. One type is the sealed side plug; it is not adjustable, but is replaced as an assembly. The other is a spring-loaded type, and slackness in the joint can be taken up by increasing spring pressures. The joint should work fairly stiffly.

Adjustment to camber, which should be one degree with a passenger in each front seat, on the independent front-suspension models, is made by placing shims or removing them from behind the upper wishbone control arm.

Some models use the Armstrong double-acting shock absorbers, which are not adjustable, but can be topped up with fluid to within 3/8in. of the top while in place. • • •

TUNING DATA

	10 h.p.	9 h.p.
Firing order:	1, 3, 4, 2	1, 3, 4, 2
Comp. Pressure:	118	122 p.s.i.
Bore:	63¼ mm.	60 mm.
Stroke:	95 mm.	
Capacity:	1193 c.c.	1074 c.c.
Output:	36.7	36 b.h.p.
Torque:	51.6	45.6 ft./lb.
Comp Ratio:	6.5	6.9:1
Oil pressure:	30/45 lb.	
Plugs:	.025 in.	
Points:	.012 in.	
Fuel pump pressure:	1½ to 2½lb.	
Valves:		
Tappets (hot):	.005 (inlet) .007 (exhaust)	
Inlet opens 20 deg. b.t.d.c.		
Angle of face:	Both 45 deg.	
Seat width:	3/32 in.	
Springs, full length:	2 7/16 in.	
Test length:	1 7/16 at 44.4 lb.	
Carburettor:	(S.U. to 1949, Solex after 1949).	
S.U. needle:	07	AH2
Clutch:		
Free pedal:	¾ in.	
Spring free length:	2.22 in.	
Test:	1.41 in. at 115 lb.	
Alignment:		
Castor:	4½ deg.	2 deg.
Camber:	3 deg.	
Toe-in.:	1/8 to 3/16 in.	
Kingpin incl:	7 deg.	

Price of Customline

In last month's road test of the new Ford Customline there was an error in the price of the car. Correct price is £1700, including sales tax.