

Ammeter.

The ammeter is an instrument with a central zero and 30-ampere range, a needle deflection indicating Charge or Discharge.

As already explained under "Output Regulator", the charge rate varies in accordance with the state of the battery. Consequently, no alarm need be felt if the charge indicated on the ammeter is quite small, especially after a considerable period of running with no extra consuming apparatus, such as lamps, in use.

This will probably indicate that the battery is well charged. Under these circumstances, switching on the headlamps may cause a discharge reading to be shown, but this will only occur for a short time, as the dynamo will quickly respond to the slightest drop in battery voltage, due to the discharge, and re-adjust the output accordingly.

An unnoticed reversal of the ammeter connections causes the charge and discharge indications to be reversed.

Battery.

The battery recommended and specified for this car is as follows:—

Battery Maker's Type Designation.		Voltage.	Normal Charging Current.
P. & R. Dagenite.	Exide.		
6 HZP9-S	6 MXP9-R	12	5 amperes.

The full title should be given when ordering a replacement battery or spare parts.

First Charge.

If the battery is received in a dry condition, it will be necessary to fill the cells with acid solution of the correct specific gravity and charge the battery, before it is put into use.

In such cases, it is strongly recommended that the necessary charging should be undertaken by a properly equipped service station, as unless the initial charge is correct the battery will never give satisfactory service.

Topping-Up.

In the majority of cases, however, the battery will have already been charged and the cells filled with acid solution. Under normal operating conditions the level of the solution will gradually fall in each cell, mainly owing to evaporation losses. A regular inspection should be made, as directed on page 32, to see that the level of the acid solution has not fallen to such an extent that the tops of the separators and plates are exposed.

In this case, the battery should be "topped-up", by removing the vent plug in the centre of each cell lid and adding distilled water to each cell, until the level of the solution is approximately $\frac{3}{8}$ " above the tops of the separators.

It is difficult to lay down a hard and fast rule as to how frequently "topping-up" will be required, because this varies so much, according to the use to which the car is put, and also the temperature in which it operates. It must be remembered that "topping-up" will be necessary more frequently in hot weather than in cold.

Normally it should never be necessary to add sulphuric acid to the cells, unless it is definitely known that some of the acid has been lost owing to slopping or spilling. The addition of acid to the battery should only be done by an experienced battery man, who at the same time will carry out any adjustments to the acid gravity.

Specific Gravity of Electrolyte.

Various acid specific gravity figures are given for reference in the following table, and they apply to both makes of batteries.

Acid gravity figures are taken by means of an hydrometer.

Climate.	Specific Gravity of Sulphuric Acid Solution. (Corrected to 70° F.).	
	Filling in for First Charge.	Fully Charged.
	6 HZP ₉ -S 6 MXP ₉ -R	
Temperate	1.260	1.280 (1.270-1.285)
Tropical (i.e. where the temperature is frequently 90° F. or over).	1.190	1.210 (1.200-1.215)

Charging.

The output of the dynamo on the car is controlled so as to vary with the state of charge of the battery. Overcharging the battery is thus automatically avoided. The dynamo will, under ordinary running conditions, provide enough current to ensure re-charging of the battery, but in special cases, e.g., when the car is frequently standing with the lights on and daylight running is of short duration, it may be necessary to take the battery off the car from time to time for a bench re-charge. This re-charge can be done by any well-equipped service station.

Charging Battery from an outside source.

It is possible to charge the battery from a trickle charger, whilst in position on the car, making use of a flexible lead and the special two-pin plug supplied, which fits the charging plug socket on the fascia board arranged just above the steering column.

Be certain that the direction of current is correct, the socket holes are marked + and — respectively, and, in addition, are made of different sizes in order to clearly distinguish them.

Maintenance.

The battery must be well secured in its box so that it cannot move.

The cable terminals should be well coated with lanolin or pure vaseline (not grease), before putting the battery into service.

The top of the battery should always be kept clean, and as far as possible, dry; attention should be given immediately to the least sign of corrosion occurring on the terminals.

Keep the terminals and connectors well covered with lanolin or pure vaseline, all contact surfaces clean and firmly screwed up, but do not use abrasives for cleaning. To remove corrosion, use a solution of ammonium carbonate, applying with a rag.

Do not inspect the battery with the aid of a naked light, and on no account disconnect any of the battery terminals or connections when a charge or discharge current is passing, for such a course incurs risk of explosion and involves personal risk.

The battery must never be allowed to remain in a discharged condition. A battery not in service should be kept in condition by fully charging it and then giving it a freshening charge at least once every two months. It should be given a thorough charge before being put back into service.

Care should be taken to avoid an inadvertent discharge of the battery. Such a discharge may occur if there is an earth in the wiring system, instruments or fittings, or if the ignition switch be left on in error, and the engine happens to come to rest with the low-tension contacts in engagement. Provision is made for the latter contingency by the red warning lamp, which will remain illuminated until the ignition switch is turned off.

It should be made a practice, when leaving the car, always to observe that the warning lamp is not illuminated, and no switches are left on, and that no discharge is shown on the ammeter.

Ignition.

The battery ignition contact breaker and distributor are shown in Fig. 43, an internal view of the contact breaker being given in Fig. 44.

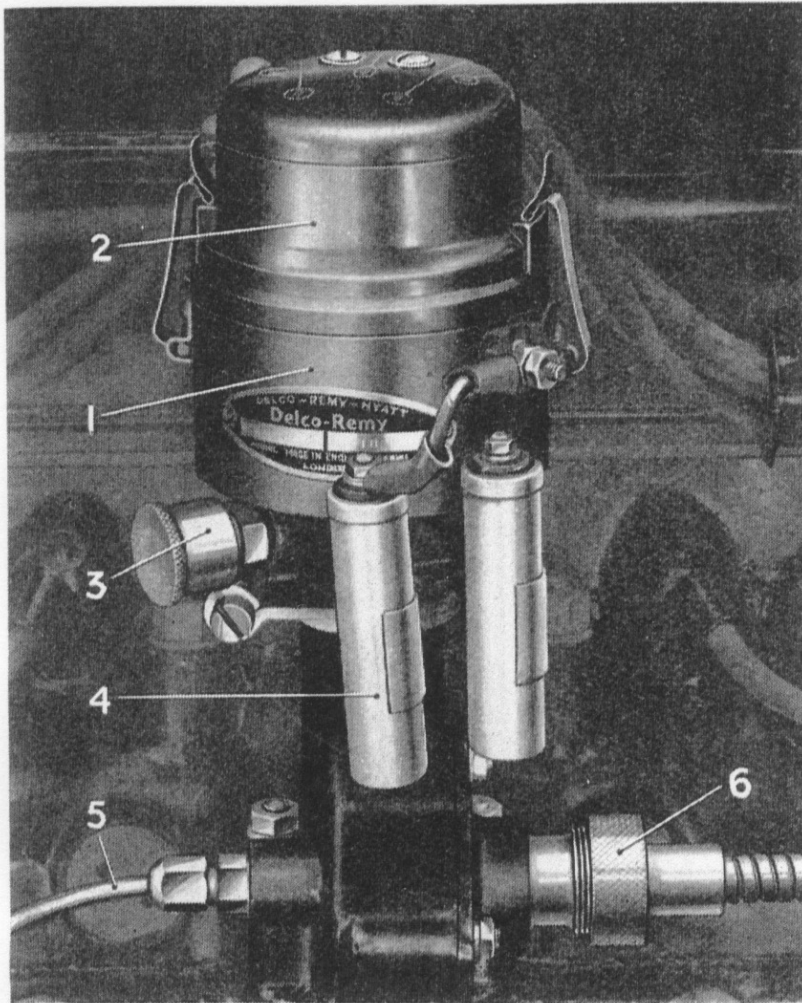


Fig. 43.—CONTACT BREAKER AND DISTRIBUTOR.

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|---------------------|-----------------------------|
| 1. Contact breaker. | 4. Condenser. |
| 2. Distributor. | 5. Lubrication pipe. |
| 3. Lubricator. | 6. Rev. counter connection. |

A condenser (4, Fig. 43) is connected across the contact points. In setting the points, the gap opening should be .019" (.483 m/m.) to .021" (.533 m/m.), adjustment being effected by loosening the locking screws (3 and 4, Fig. 44) and turning the adjusting screws (5 and 6) to obtain the correct gaps, measured with a feeler gauge. Make sure that the locking screws are correctly tightened after adjustment.

The screws (7 and 8) *must not be disturbed*, as this would upset the synchronism

of the two contact breaker arms.

Every 5,000 miles, as directed on page 33, the rocker arm pivot pins (9 and 10) should be lubricated with one or two drops of oil "A"; at the same time apply one or two drops of oil "B" to the cam lubricator pad. Also remove the rotor and apply a few drops of oil "A" to the felt wick (12), to lubricate the automatic timing control.

The lubricator (3, Fig. 43) should be given a turn every 1,000 miles, and when empty, refilled with the correct grease, as specified on page 30.

The high-tension distributor requires no attention beyond an occasional wiping of the interior and exterior with a clean, dry rag.

Ignition Coil.

The high-tension ignition coil is mounted on the front of the engine as illustrated in Fig. 45. Connected to the terminal marked S.W. (switch wire) is a 1 mfd. condenser to reduce electrical interference to

the radio from the ignition system. Care must be taken that in the event of a replacement coil being fitted, that the condenser is correctly

connected to the terminal marked S.W. and **not** to the output (C.B.) terminal of the coil.

The outside of the coil casing should be kept clean; misfiring is occasionally caused by an accumulation of dirt around the terminals.

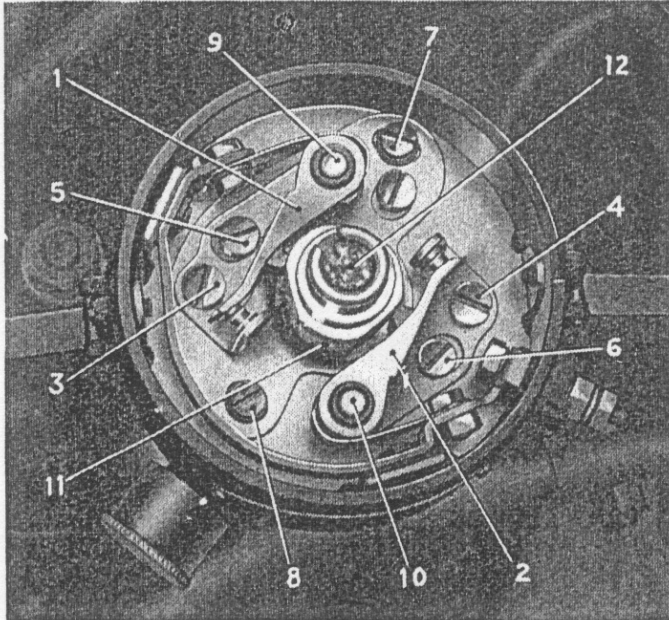


Fig. 44.—INTERIOR OF CONTACT BREAKER.

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|-----------|---------------------------|
| 1 and 2. | Rocker arms. |
| 3 and 4. | Locking screws. |
| 5 and 6. | Adjusting screws. |
| 7 and 8. | Synchronising adjustment. |
| 9 and 10. | Pivot pins. |
| 11. | Cam |
| 12. | Felt wick. |

Ignition Timing.

If the ignition timing has been de-ranged, it can be reset by reference to the markings on the engine flywheel.

To carry out this operation, the crankshaft should be rotated until the mark "**IGN. TDC.**" on the flywheel

registers with the small pointer attached to the lower bell-housing cover, when No. 1 piston is at the top of its firing stroke.

The car should be run up on a ramp or over a pit. Examination of the lower bell-housing cover (3, Fig. 22) will show the small inspection hole on the side.

The preferable method is to note the position of the pointer and then to remove the cover. Operate the starter motor to approximately line up the flywheel marking; replace the cover for a temporary check. Remove the cover and prise the flywheel round into correct position, then permanently replace the cover.

Another method is to use the starting handle to turn the engine, which obviates the need for removing the bell-housing cover. It must be remembered that the starting handle operates through the friction damped spring drive unit, and therefore allowance must be made for the wind-up of the spring drive unit. If it is decided to use this method, the timing should be set .300" early of the **IGN. TDC.** mark on the periphery of the flywheel.

The contact breaker should now be adjusted by rotating in an anti-clockwise direction, so that the cam is just on the point of causing the contact break when revolving in the normal direction, while at the same time the high-tension rotor is opposite No. 1 distributor