SECTION K—6
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LUCAS

Quality

EQUIPMENT

WORKSHOP INSTRUCTIONS

ELECTRIC WINDTONE HORNS

MODEL 9H

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ELECTRIC WINDTONE HORNS

MODEL 9H

1. GENERAL

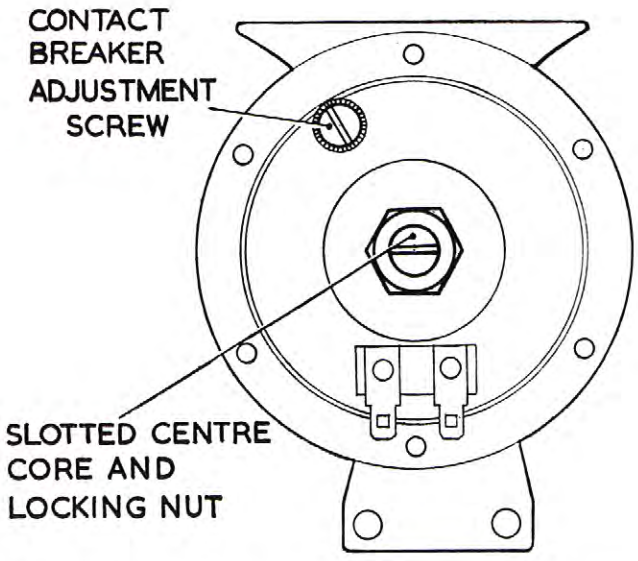
Lucas windtone horns, model 9H, operate on the well-known principle of a resonating air column vibrated by means of a diaphragm actuated electro-magnetically by a self-interruptory circuit. The horns are intended to be sounded in pairs, each pair consisting of a high note and a low note horn—the notes differing by a definite musical interval.

The weight of a single horn is approximately $1\frac{3}{4}$ lb. (0.8 kg.).

2. MAINTENANCE

(a) LOCATING SOURCE OF TROUBLE

Before being passed out of the Works, every horn is adjusted to give its best performance. It should require no further attention until it has given a long period of service.



Points of adjustment for contact breaker and armature air gap

If a horn fails to sound or its performance becomes uncertain, the fault will not necessarily be in the horn. First see that the trouble is not due to such defects as a loose or broken connection in the wiring of the horn circuit or to a discharged battery. A short circuit in the horn wiring will cause the fuse (when fitted) to blow. In this event, examine the wiring for the fault and rectify accordingly, before renewing the fuse with the spare provided. Poor performance can also be caused by loosening of the fixing bolts. Check and tighten as necessary.

If examination shows the above points to be in order, the contact breaker may need adjustment but this should not be necessary unless the horns have been a long time in service.

(b) CONTACT BREAKER ADJUSTMENT

If two horns are fitted, disconnect one whilst adjusting the other, taking care to ensure that the supply cable removed does not come into contact with any part of the vehicle metalwork. Adjustment of the contact breaker does not alter the pitch of the note but merely takes up wear of moving parts. While adjusting, short out the fuse (if fitted), otherwise it may blow. If a horn does not sound after making an adjustment, release instantly the horn push or ring. A small serrated adjustment screw is provided on that side of the horn at which the cables terminate. Turn this screw anti-clockwise until the horn just fails to sound, then turn it back for about one quarter of a turn.

Warning : It is essential that the slotted centre core and its locking nut are not disturbed when carrying out the above adjustment.

3. DESIGN DATA

	6-volt units	*12-volt units*
(a) Resistance of operating coil:	0.08—0.09 ohms	0.52—0.56 ohms*
(b) Current consumption at nominal voltage:	7.5—8.5 amp.	3.0—3.5 amp. *
(c) Movement excitation frequency (6 and 12-volt units):	High Note horns:	490—500 c.p.s.
	Low Note horns:	390—400 c.p.s.

(d) Tightening torque for centre core locknut (6 and 12-volt units): 80—100 lb.-in.

(e) Tightening torque for mounting bracket securing bolt (6 and 12-volt units): 100—120 lb.-in.

*The resistance of the operating coil fitted in certain 12-volt units until March 1961 was 0.37—0.39 ohm, giving a current consumption of 3.5—4.5 amperes. These units can be identified by the suffix letter 'A' which follows the Part Numbers concerned, namely, 69112–13–22–23–24–25 & 26.

4. SERVICING

These horns are riveted assemblies and cannot normally be dismantled for subsequent assembly.
In the event of the armature air gap having been disturbed, the horn movement can be reset as described below.

(a) SETTING THE HORN MOVEMENT

(i) The method of setting the horn movement is, first, to make coarse adjustments to both the armature air gap and the contact breaker and, secondly, and in the same order, to make critical or fine adjustments of these parts.

(ii) The equipment required when setting includes :

For 6-volt units:

0—10 volt moving coil first-grade voltmeter.
0—15 ampere moving coil first-grade ammeter.
Battery and potentiometer, to provide a pure direct current supply over the voltage range 5–6–7 volts. Rectified A.C. is unsuitable.

For 12-volt units:

0—20 volt moving coil first-grade voltmeter.
0—10 ampere moving coil first-grade ammeter.
Battery and potentiometer, to provide a pure direct current supply over the voltage range 10–12–14 volts. Rectified A.C. is unsuitable.

(iii) Slacken the centre core locking nut and lightly rotate the centre core clockwise until it just touches the armature—when opposition to further rotation will be felt.

(iv) Rotate the centre core anti-clockwise for one-and-a-half turns and lightly tighten the locking nut.

(v) Connect the horn in series with an ammeter and horn push and apply the appropriate nominal voltage to the circuit.

(vi) Depress the horn push and note the operating current indicated by the ammeter. If necessary, turn the contact breaker adjustment screw until the correct current is obtained—turning the screw clockwise to increase the current, or anti-clockwise to decrease it. Release the horn push.

This completes the coarse adjustments. It is now necessary to carry out the critical or fine adjustments.

(vii) Set the circuit voltage to the appropriate upper limit, i.e. to 7 volts for 6-volt units or 14 volts for 12-volt units.

(viii) Depress the horn push and turn the centre core clockwise until the armature just impacts against the core—this condition being indicated by the harsh note emitted.

(ix) Turn the centre core anti-clockwise (1/8 to 1/4 of a turn) until a good clear note of adequate volume is emitted. Release the horn push.

(x) Tighten the centre core locking nut.

(xi) Depress the horn push and observe the ammeter pointer and, if necessary, turn the contact breaker adjustment screw until the correct current is obtained.

The horn should now give a good clear note over the appropriate voltage range, i.e. from 5 to 7 volts for 6-volt units or from 10 to 14 volts for 12-volt units.

(xii) Release the horn push and restore connections.