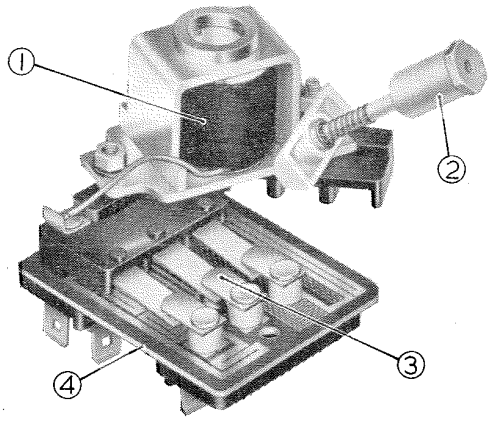
TWO-LEVEL SIGNALLING RELAY MODEL 11RA

1. DESCRIPTION

The purpose of this relay is to connect resistors in series with the rear direction indicators and brake lights to reduce their illumination intensity at night. Relays having blue covers cause a reduction in light intensity of 2:1, while those with yellow covers give a 4:1 reduction. The relay employed depends on the optical design of the signalling lamps on the vehicle. If relay renewal becomes necessary in service, the appropriate replacement unit must be used to achieve the correct degree of dimming.



1 Solenoid
2 Plunger
3 Contact assemblies
4 Base plate (with printed circuit resistors)

Fig. 1 Relay dismantled to show construction

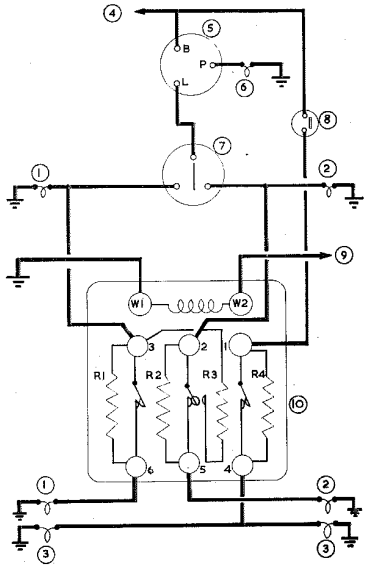
Fig. 1 illustrates the construction of the relay, while Fig. 2 shows its internal connexions, together with the complete circuit diagram of the two-level signalling system.

The relay is of triple pole design, having two sets of normally closed contacts and one set of changeover contacts. The resistors are in the form of a printed circuit (except in 24 volt units when R3 is a separate wire-wound component).

The operating coil is fed from the lighting switch, being energised at all times when side or head lamps are in use. Operation of the relay causes the normally closed contacts to open, connecting resistors R1, R2 and R4 into the circuits of the rear signalling lamps as shown. At the same time, resistor R3 is connected between relay terminals 2 and 3: when either pair of direction indicators are flashing, an additional current flowing through R3 and the filament of the non-operative lamps to earth compensates for the reduced current taken by the dimmed rear lamp, so maintaining the designed flashing rate.

2. ROUTINE MAINTENANCE

None required, apart from ensuring that terminal connexions are secure.



1 Direction-indicator lamps (L.H.)
2 Direction-indicator lamps (R.H.)
3 Brake lamps
4 To ignition switch
5 Flasher unit
6 Pilot warning lamp
7 Direction-indicator switch
8 Brake lamp switch
9 To side and tail lamp switch
10 Relay

Fig. 2 Internal connexions of 11RA relay and circuit diagram of two-level signalling system (External connexions shown in heavy line)

3. TECHNICAL DATA

Part No.	*33245*	*33248*	*33267*
(i) Nominal voltage	12	12	24
(ii) Colour of cover	Yellow	Blue	Blue
(iii) Nominal resistance of operating coil (ohms)	36	36	143
(iv) Nominal resistor values (ohms):			
R1, R2	2.75	1.35	4.9
R3	70	70	270
R4	1.6	0.42	1.45
(v) Cut-in voltage	5–10	5–10	10–20
(vi) Drop-off voltage	1 (min.)	1 (min.)	2 (min.)

4. SERVICING

Moulded covers are available as spares. Otherwise servicing is by replacement of the complete unit.

(a) Checking Cut-in and Drop-off Voltages

If the relay is removed from the vehicle, place it in its normal mounting position, i.e. with "TOP" on moulded cover uppermost.

Remove the moulded cover.

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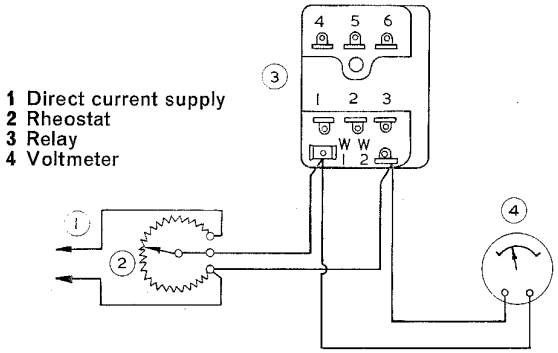

Fig. 3 Test circuit for checking cut-in and drop-off voltages

Connect a d.c. supply of appropriate nominal voltage, with rheostat control, to terminals W1 and W2, together with a first-grade moving coil voltmeter (Fig. 3).

Slowly increase voltage from zero, when relay should be seen to operate between the cut-in limits given in para 3(v).

Raise voltage to nominal working value.

Slowly decrease voltage until relay drops off. This should occur at a value exceeding the minimum given in para 3(vi).

If cut-in and drop-off voltages are not in accordance with those specified, a new relay must be fitted.

(b) Mechanical Setting

Adjustment of mechanical setting will not be necessary in normal service. The following instructions are given only to enable the original setting to be restored should it have been disturbed.

Remove the moulded cover.

Turn hexagonal end of relay plunger fully clockwise.

Energise operating coil with supply of appropriate nominal voltage.

Turn plunger anticlockwise until the lower normally-open contacts (i.e. those associated with R3) just close. This should be indicated electrically, using a continuity tester connected between relay terminal 2 and the rivet securing the lower fixed contact, accessible on the underside of the base.

Turn the plunger a further 90° in an anticlockwise direction, plus any further small rotation necessary to align the hexagon with the recess in the moulded cover, when fitted.

Remove the supply from the operating coil.

Finally, refit the moulded cover.