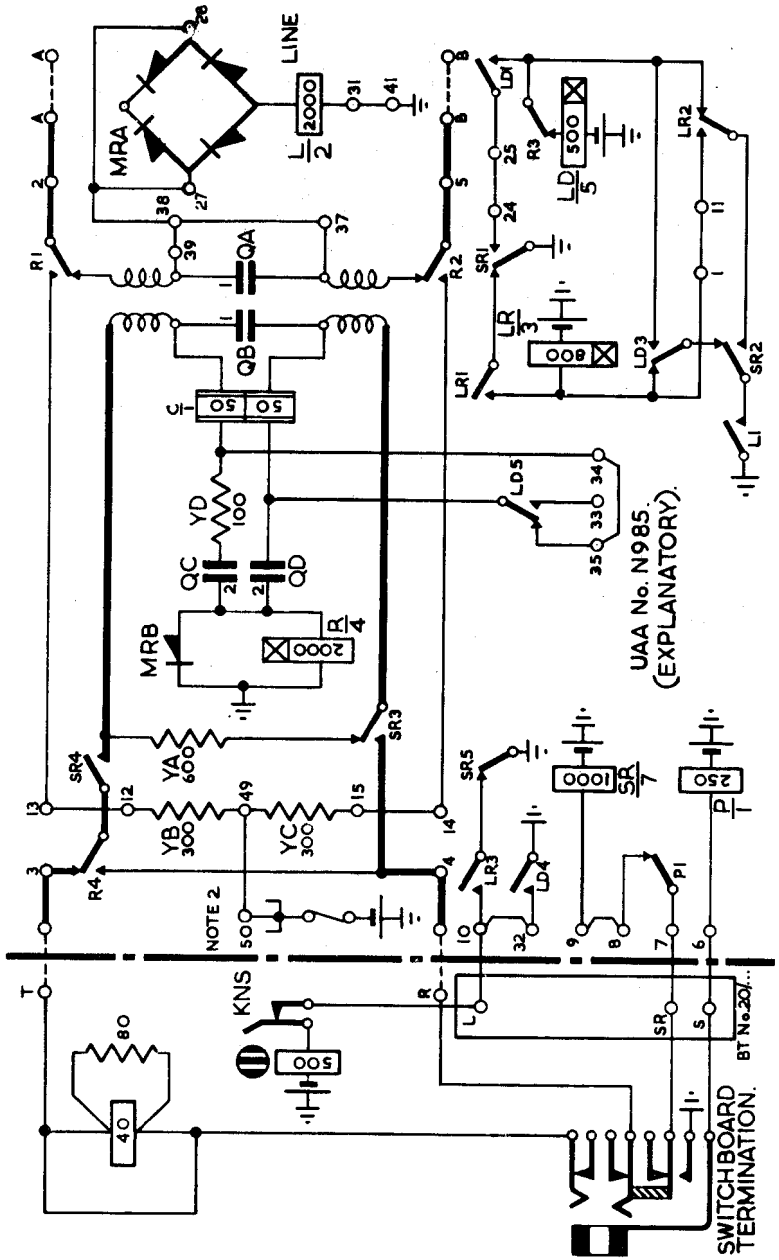
TERMINATION OF INTERSWITCHBOARD PRIVATE CIRCUIT.

SWITCHBOARD CB873.

SIGNALLING GROUP E. BALANCED BATTERY (G/DC) B/W



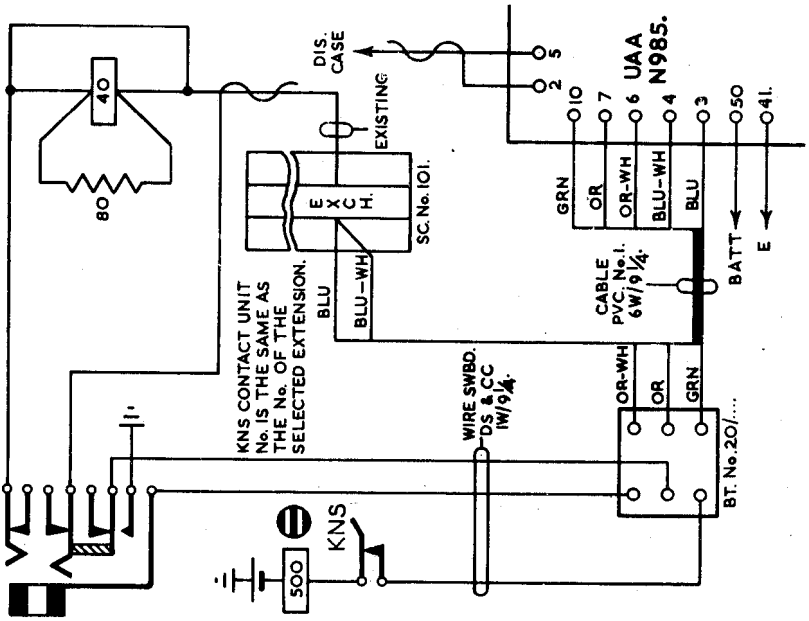
P.O.E.D.
S.BCH.

PAPER :- Y

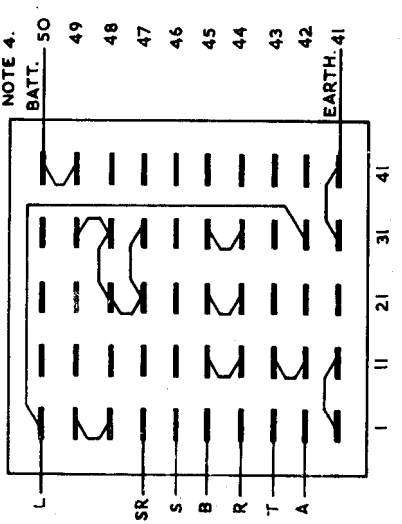
CIRCULATION :-

GENERAL

ISSUES		
B	NEW FORMAT. PANELS 4-8 REDRAWN. MADE PAGES 5 & 6 F.K.R.	23.11.66
A	WAS 3 PANELS. PANEL 1-3 MADE YELLOW. SUPERSESSION NOTE ADDED	24-2-64
/	P.A. MARCHANT S3/2	7-4-55



CONNEXIONS ON STRIP CONNEXION No. 121A IN UAA N985.



RECOVER	SHIFT	PROVIDE
WIRES FROM AUX SPRINGS 7 AND 8. WIRE TO KNS BREAK SPRING. WIRES FROM S.C. No. 101. IN SWBD. TO DIS. CASE ON SELECTED EXTN.	WIRES FROM INNER SPRING 4 TO AUX SPRING 8.	S/C ACROSS "A" RELAY COIL. WIRE FROM BREAK SPRING ON KNS CONTACT UNIT TO BT. No. 20/... MOUNTED ADJACENT TO SC. No. 101. CABLE FROM S.C. AND B.T. AS SHOWN. CABLE TERMINALS 2 AND 5 TO DIS CASE. CABLE TERMINAL 41 TO EARTH AND 50 TO BATTERY. EARTH TERMINAL 1 OF HAND GENERATOR.

NOTES :—

1. WHERE POWER RINGING IS PROVIDED THE RING RETURN SHOULD BE CONNECTED TO THE "TIP" SIDE OF KR AND KDR (N930. FIG. 8.).
2. ONE FUSE No. 35/1. PER FOUR CIRCUITS.
3. SEE N705 TABLE 3 FOR SIGNALLING RESISTANCE LIMITS WITH VARIOUS VOLTAGES.
4. WHERE NECESSARY ADDITIONAL CELLS COMMON TO ALL UNITS IN SERIES BETWEEN NORMAL BATTERY-SUPPLY & TAG 49 MAY BE FITTED.
5. WHEN REQUIRED, BATTERY SUPPLY TO TAG 50 ON UNIT N985. MAY BE TAKEN VIA. NIGHT SERVICE KEY CONTACT.

TERMINATION OF INTER-P.B.X PRIVATE CIRCUIT

SWITCHBOARD C B 873.
SIGNALLING GROUP E: G/BB B/W. (GEN/BAL. BATT. B/W).

INSTALLATION NOTES:-

1. THE EARTHED LEAD FROM THE RINGING SOURCE MUST BE CONNECTED TO THE 'TIP' SIDE OF KR AND KDR (N930 FIG. 8). THE HAND GENERATOR SHOULD BE EARTHED ACCORDINGLY.
2. RECOVERED WIRES TO BE INSULATED AND TIED BACK.
3. BATTERY SUPPLY TO UAA TO BE MADE VIA A FUSE No. 36/1 FITTED ON A FUSE MOUNTING No. 136A. SCREWED TO THE WOOD-WORK ABOVE EXISTING FUSE MOUNTING. FUSE TO SUPPLY 1 TO 4 UAA'S.
4. SEE N705 TABLE 3 FOR SIGNALLING RESISTANCE LIMITS WITH VARIOUS VOLTAGES.
5. WHERE NECESSARY ADDITIONAL CELLS (SERVING 1 TO 4 UNITS WITH COMMON FUSE, SEE NOTE 3) MAY BE CONNECTED IN PLACE OF STRAP BETWEEN UAA TAGS 49 TO 50.
6. KNS CONTACT UNIT No. HAS SAME No. AS SELECTED EXTENSION.
7. THE WIRE FROM RI TO TAG 27 OF S.C.121 (SHOWN IN FIG. 2) IS NOT REQUIRED FOR CIRCUITS WIRED TO FIG. 3.
8. RESISTOR YD HAS VALUE OF 15KΩ FOR CIRCUITS WITH PROHIBITION. WHERE OMISSION OF PROHIBITION HAS BEEN AUTHORISED. OMIT YD STRAP 34 TO 35 AND OMIT CONNEXION JKB (3) TO B.T. No. 30 (4).
9. A LABEL WHITE No. 398A MARKED "UAA, MODIFIED TO DGM. N717." TO BE FIRMLY AFFIXED.

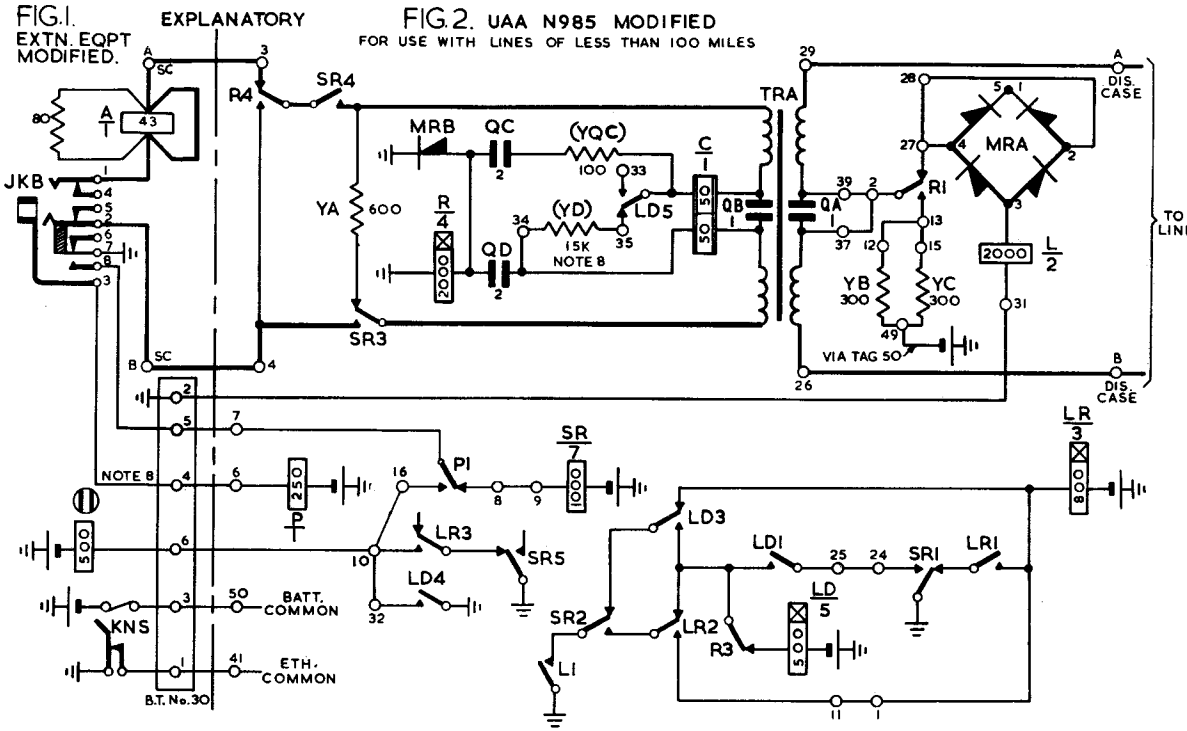
APPARATUS SCHEDULE	
WHERE WIRED TO FIGS. 1 & 2	
UAA. N985.	
FUSE No. 36/1.	SEE NOTE 3.
FUSE MOUNTING No. 136A	
B.T. No. 30...	
RESISTOR CARBON No. 15 GD — 15KΩ. SEE NOTE 8.	

WIRING SCHEDULE

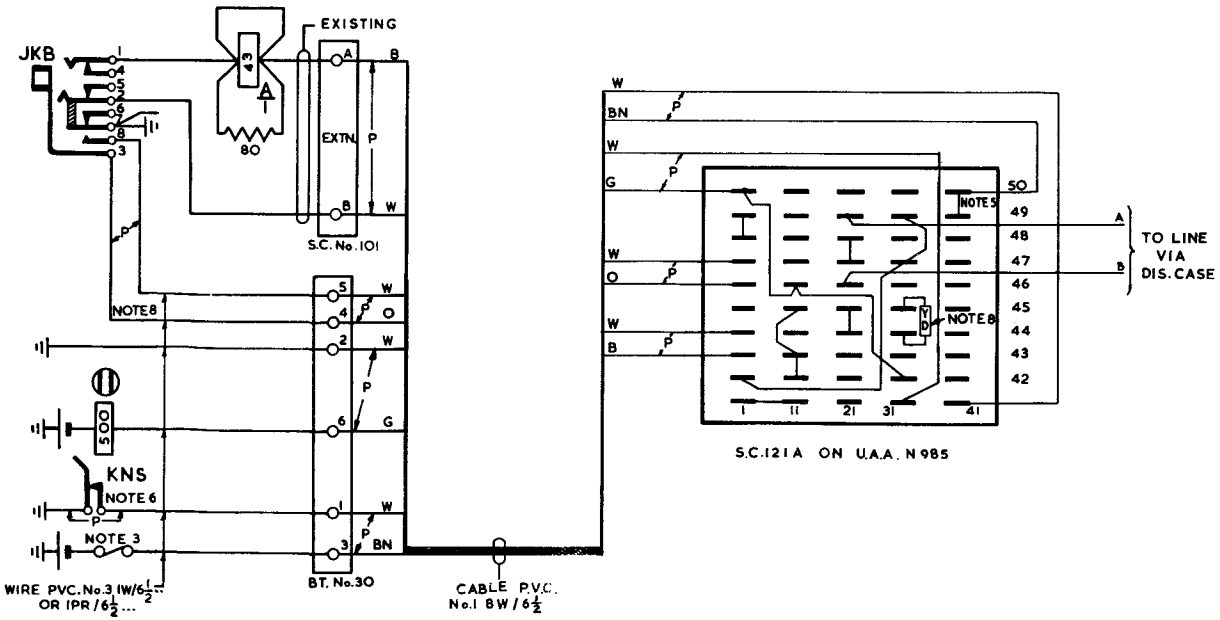
RECOVER (NOTE 2)	SHIFT	PROVIDE
STRAP JKB (2) & (6)	WIRES FROM JKB (4) TO (7)	B.T. No. 30... ADJACENT TO SC No. 101. IN SWBD. FUSE MTG. No. 136A (SEE NOTE 2).
WIRES FROM JKB (7) & (8)		WIRES FROM MAIN BATT. CONNEXION ON EXISTING FUSE MTG. TO FUSE MTG. No. 136A.
WIRES FROM KNS CONTACTS.		WIRE SHORT CIRCUIT ACROSS A RELAY.
WIRE FROM INDICATOR COIL TAG.		WIRES FROM B.T. No. 30 TERMINALS AS FOLLOWS :- TERML. (1) TO KNS BREAK SPRING (2) TO EARTH BUS BAR SPARE TERML. (3) TO FUSE MTG. No. 136A (4) TO JKB (3) (5) TO JKB (8) (6) TO INDICATOR
WIRE IN UAA FROM RI TO TRA (4) AT BOTH ENDS.		WIRE KNS TRAVELLER SPRING TO EARTH BUS BAR SPARE TERML.
		CABLE FROM SC & BT. TO UAA. AS SHOWN.
		WIRE IN UAA. FROM RI TO TAG 27 OF S.C.121 (NOTE 7), RESISTOR YD BETWEEN TAGS 34 & 35 OF S.C.121 (NOTE 8).

FIG. 1. EXTN. EQPT MODIFIED. EXPLANATORY

FIG. 2. UAA N985 MODIFIED
FOR USE WITH LINES OF LESS THAN 100 MILES



WIRING DETAILS



P.O.E.D.
S BCH.

PAPER :- W

CIRCULATION:-
GENERAL

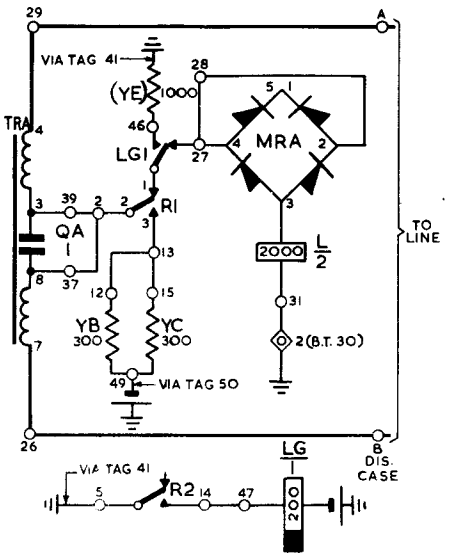
APPARATUS SCHEDULE

ADDITIONAL ITEMS FOR FIG. 3
RELAY No. 4460.
RESISTOR No. 15 GD – 1K Ω.

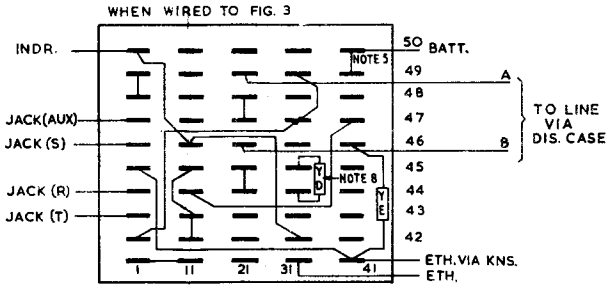
WIRING SCHEDULE

RECOVER (NOTE 2)	SHIFT	PROVIDE
WIRE FROM R4 TO TRA (7) WIRE FROM RI TO TAG 27 OF SC 121. (NOTE 7).	—	RELAY LG (RELAY No. 4460). IN SPACE FOR LL RELAY (CENTRE MTG. SPACE AT LEFT END), AND CONNECT BY EXISTING WIRING TO TAGS 46, 47 AND BATTERY COMMON, AS SHOWN. WIRE FROM RI TO LG2. WIRE FROM LGI TO TAG 27 YE BETWEEN TAGS 41 AND 46 OF SC. 121.

FIG. 3. RELEVANT PART OF FIG. 2 SHOWING AMENDMENTS REQUIRED FOR USE WITH LINES OF 100 MILES OR MORE IN LENGTH. EXPLANATORY.



CONNEXIONS ON STRIP CONNEXION IN UAA.



CIRCUIT OPERATION NOTES

FOR DESCRIPTION OF GROUP E SIGNALLING SEE E I's TELE'S. P.B.X's. B3101 & B3102.

INCOMING CALL. L OPERATES TO BALANCED BATTERY WHICH IS RECEIVED WHILST DISTANT OPERATOR IS RINGING. LI OPS. LR WHICH HOLDS TO LRI. LR3 OPS. INDICATOR. SR OPS. WHEN LOCAL OPERATOR INSERTS CORD CIRCUIT PLUG INTO JACK. SRI RELEASES LR. SR3 & 4 COMPLETE SPEECH PATH.

OUTGOING CALL SR OPS. WHEN LOCAL OPERATOR INSERTS PLUG. SR3 & 4 CONNECT R RELAY TO THE CORD CIRCUIT. OPERATOR APPLIES RINGING AND RINGING CURRENT FLOWS FROM EARTHED GENERATOR OVER RING WIRE OF CORD CIRCUIT AND JACK TO OPERATE R RELAY VIA SR3. (AT THIS STAGE A SHUNT PATH TO EARTH VIA SR4, R4 AND CORD CIRCUIT RINGING RETURN REDUCES GENERATOR OUTPUT AVAILABLE FOR OPERATION OF RELAY R). WHEN R OPS. THE SHUNT PATH IS DISCONNECTED AND AN ADDITIONAL HOLD PATH FOR R IS ESTABLISHED BY R4. RI APPLIES SIGNALLING BATTERY TO BOTH WIRES VIA THE TRANSFORMER. AN ANSWER SIGNAL IS NOT RECEIVED.

CLEARDOWN FROM ESTABLISHED CONNEXIONS (RELAY SR OPERATED DURING A CALL).

LOCAL P.B.X. CLEARS FIRST.

UPON RECEIVING A CLEAR SIGNAL FROM LOCAL EXTN. AND HAVING CHALLENGED ON THE CIRCUIT, OPERATOR GIVES BURST OF RINGING TO SIGNAL A CLEAR TO DISTANT END. R OPS. AND SENDS BALANCED BATTERY TO LINE. OPERATOR THEN REMOVES PLUG. SR RELEASES.

DISTANT P.B.X. CLEARS FIRST. L OPS. TO BALANCED BATTERY ON LINE WHILST DISTANT OPERATOR SENDS A RING-OFF SIGNAL. LI OPS. LD, WHICH HOLDS TO LDI. LD4 OPS. INDICATOR. LOCAL OPERATOR CHALLENGES ON CIRCUIT THEN REMOVES PLUG. SR RELEASES. SRI RELEASES LD.

CALLING IN WHEN LOCAL OPERATOR WISHES TO CALL-IN DISTANT OPERATOR DURING AN ESTABLISHED CONNEXION, A SIGNAL IS SENT AS WHEN RINGING-OFF. IT IS IMPORTANT THEREFORE THAT THE OPERATOR SHOULD CHALLENGE ON CIRCUIT, BEFORE REMOVING PLUG, WHENEVER A CLEAR IS RECEIVED.

RECALL. THE LOCAL OPERATOR UPON RECEIVING A CLEAR SIGNAL FROM DISTANT OPERATOR, MAY WISH TO RECALL THE DISTANT P.B.X. THIS MAY BE ACHIEVED WITHOUT REMOVAL AND RE-INSERTION OF THE PLUG, BY APPLICATION OF ANOTHER RINGING SIGNAL. R OPS. AND SENDS BALANCED BATTERY TO LINE AT RI. R3 RELEASES LD. LD4 RELEASES INDICATOR. THE CIRCUIT IS THUS RESTORED TO CONDITION DESCRIBED UNDER "OUTGOING CALL."

PROHIBITION. IF AN EXCHANGE LINE IS CONNECTED TO INTER-SWITCHBOARD PRIVATE CIRCUIT JACK, P OPS. TO EARTH ON EXCH. LINE JACK. PI RELEASES SR. AND OPERATES " INDICATOR. SR3 & 4 DISCONNECT SPEECH PATH

CONTACT WETTING. RESISTOR YD IS PROVIDED SO THAT A CURRENT OF APPROX 1mA FLOWS FROM CORD CIRCUIT DURING A CALL, THROUGH CONTACTS R4, SR4, LD5 & SR3 TO PREVENT TRANSMISSION LOSSES WHICH WOULD OTHERWISE OCCUR IF NO D.C. WERE FLOWING. WHERE OMISSION OF EXCHANGE PROHIBITION HAS BEEN AUTHORISED, THIS RESISTOR IS REPLACED BY A STRAP IN ORDER TO PROVIDE A HOLDING LOOP TO THE EXCH..

GUARD CIRCUITS. IF LOCAL OPERATOR INSERTS (OR REMOVES) THE PLUG DURING RECEIPT OF A CALL (OR A CLEAR) SIGNAL, A GUARD CIRCUIT PREVENTS RELEASE OF LR (OR LD) RELAY UNTIL THE END OF THE SIGNAL, THUS:- THE EARTH FROM LI HOLDS LR VIA SR2 OPERATED, LR2 OPERATED, (OR LI HOLDS LD VIA SR2 NORMAL, LD3 OPERATED), THE RELAY HAVING SUFFICIENT RELEASE LAG TO REMAIN OPERATED DURING THE TRANSITION TIMES OF SRI & 2 CONTACTS. WHERE THE LINE LENGTH IS OVER 100 MILES, THERE IS A POSSIBILITY THAT L RELAY WILL OPERATE TO THE DISCHARGE OF LINE CAPACITANCE, AFTER A SIGNAL HAS BEEN SENT, i.e. UPON RELEASE OF R RELAY. THE SLOW RELEASE OF LG RELAY IS USED (SEE FIG. 3) TO PREVENT THIS, BY DISCHARGING THE LINE CAPACITANCE THROUGH RESISTOR YE.