TERMINATION OF PRIVATE AND SWITCHBOARD CIRCUITS USING RELAY UNIT Q 524.
SIGNALLING GROUP A (ii)a. G/AC IN: A/WE OUT

NOTES

1. This diagram with circuit operation notes is of a typical installation with one private circuit and one or more non-multiple extensions. The private circuit is numbered extension 10.

2. Relay Unit Q 524 must be fitted beyond the last multiple station, see Dgms. Q 502 and 503.

3. Only when the extension of exchange calls over the private circuit is authorized on the Advice Note should straps between terminals 74-84 and 75-85 be provided.

4. NIGHT SERVICE extension of exchange calls is not available using this method of signalling.

5. For arrangement of straps in Relay Unit Q 524 see Dgms. Q 503 and 561.

CIRCUIT OPERATION

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CIRCUIT OPERATION

1.0 OUTGOING CALL ON TIE-LINE (PRIVATE CIRCUIT)

Lifting the handset and fully operating to overpress the local key at a multiple station connects earth to B wire, resistance battery to A wire, of multiple pair to Relay Unit Q 524. Relay RC, via diode D1, and relay F operate. Contact F1 operates relay FR. Contacts FR4 and FR5 disconnect relay AC, connect relays LA and LB, to line circuit. Relay LA operates. Release of overpress of local key at multiple station connects normal conditions, earth A wire, battery B wire, telephone circuit between wires, to multiple pair of Relay Unit Q 524. Relay RC releases.

1.1 DISTANT END ANSWERS

Earth on B wire from distant end operates relay LB. Contact LB2 operates relay RO. Conversation can now take place.

2.0 INCOMING CALL ON TIE-LINE (PRIVATE CIRCUIT)

Incoming ringing current operates relay AC. Contact AC1 operates relay RR. Contact AC2 holds relay AC operated when ringing current is disconnected. Contact RR2 lights call lamp, RR3 operates buzzer, in Control Unit Q 537. Main station answers by lifting handset and operating local key which connects earth A wire, battery B wire, telephone circuit between wires, to multiple pair of Relay Unit Q 524. Relay F operates. Contact F5 releases relay AC. Contact AC1 releases relay RR. Contacts RR2 and RR3 disconnect calling lamp and buzzer in Control Unit Q 537. Contact RR1 operates relay FR. Contacts FR4 and FR5 disconnect relay AC, connect relays LA and LB, to line circuit. Relays LA and LB will operate. Contact LB2 operates relay RO. Conversation can now take place.

2.1 TRANSFER OF CALL TO(a) MULTIPLE STATION, OR (b) NON-MULTIPLE EXTENSION

(a) CONNECT and TEST key is operated on Control Unit Q 537. Relay F releases when main station calls the wanted station. Relay FR holds to earth on S wire from Control Unit Q 537 via contacts F1, EL2, ELR5 and FR2. Relay F will re-operate when station seizes circuit. CONNECT and TEST key is restored.

(b) As in (a) CONNECT and TEST key is operated and relay F will release whilst non-multiple extension is being called. When extension answers, its CONNECT and TEST key is operated to complete speech path.

2.2 RECALL OF MAIN STATION BY MULTIPLE STATION

Overpress of local key at multiple station connects earth to B wire, resistance battery to A wire, of multiple pair, holding relay F and operating relay RC. Contact RC4 operates relay RR. Contacts RR2 and RR3 light call lamp and operate buzzer in Control Unit Q 537

Release of overpress restores normal conditions to multiple pair, releasing relay RC. Contact RC4 releases relay RR, contacts RR2 and RR3 disconnect call lamp and buzzer.

2.3 CLEARING

MULTIPLE STATION CALL

(a) Distant end clears first. Removal of earth from B wire of line circuit from distant end releases relay LB. Contact LB2 releases relay RO. When handset at multiple station is replaced, relay F releases. Contact F1 releases relay FR. Contacts FR4 and FR5 disconnect LA and LB relays, and connect relay AC to line circuit. Relay LA releases. Circuit is now normal.

(b) Multiple station clears first. Replacing of handset releases relay F. Contact F1 releases relay FR. Contacts FR4 and FR5 disconnect LA and LB relays, and connect relay AC to line circuit. Relays LA and LB release. Contact LB2 releases relay RO. Circuit now normal.

NON-MULTIPLE EXTENSION CALL

(c) Distant end clears first. Removal of earth from B wire of line circuit from distant end releases relay LB. Contact LB2 releases relay RO. Contact RO4 operates relay RR via CONNECT and TEST key in Control Unit Q 537. Contacts RR2 and RR3 light call lamp and operate buzzer in Control Unit Q 537. When the CONNECT and TEST key is restored, relays RR and FR release. Contacts RR2 and RR3 disconnect call lamp and buzzer. Contacts FR4 and FR5 disconnect LA and LB relays, and connect relay AC to the line circuit. Relay LA releases. Circuit now normal.

(d) Non- multiple extension clears first. Clear from extension will cause main station to restore CONNECT and TEST key on Control Unit Q 537. Relay FR will release. Contacts FR4 and FR5 disconnect LA and LB relays, and connect relay AC to the line circuit. Relays LA and LB release. Contact LB2 releases relay RO. Circuit now normal.

3.0 EXCHANGE CALLS (NOTES 3 & 4)

Exchange calls may be extended to tie-line from (a) exchange line 1, or (b) exchange line 2.

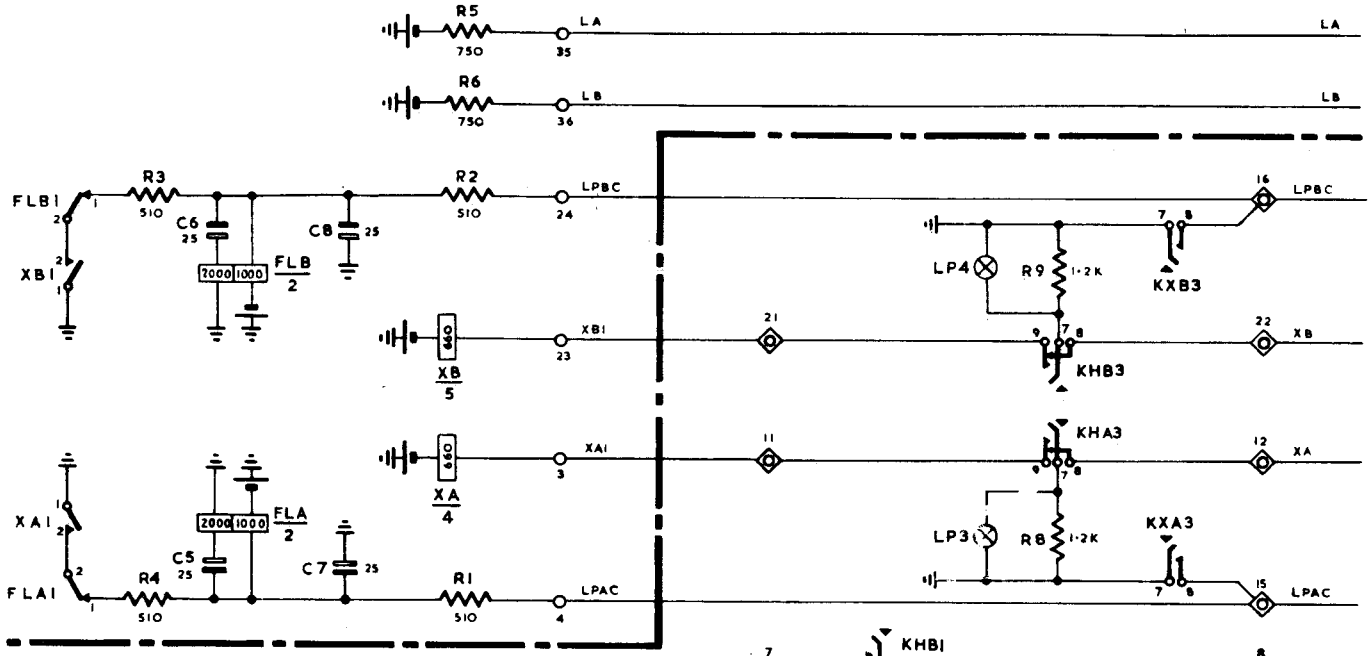
Distant end is first called as in paras. 1 and 2.

(a) Exchange Line 1. CONNECT and TEST key is operated on the Control Unit Q 537, followed by operation of TRANSFER 1 key. Earth via 10X1 lead operates relay EA. Contact EA6 operates relay EL to resistance battery on LA lead from Relay Unit Q 516. Contact EL1 operates relay ELR. Contact EL4 earths XA multiple lead, EL5 earths LPAC multiple lead. Contacts ELR1 and ELR2 switch speech path to exchange line, ELR3 and ELR4 disconnect intercom, release relay F, apply busy condition. Contact ELR5 operates relay RR to earth via CONNECT and TEST key. Contacts RR2 and RR3 light call lamp and operate the buzzer in Control Unit Q 537. TRANSFER 1 and CONNECT and TEST keys are restored, relay RR releases. Contacts RR2 and RR3 disconnect call lamp and buzzer. When handset is replaced, or release button operated, on multiple station, exchange line is connected to circuit. Distant end now holds exchange line. Clearing of the distant end releases relay LB. Contact LB2 releases relay RO. Contact RO1 releases exchange line, RO3 releases relay EL, RO5 releases relay EA. Contact EL1 releases relay ELR, EL2 releases relay FR. Contacts EL4 and EL5 remove earth from XA and LPAC multiple leads. Contacts FR4 and FR5 disconnect LA and LB relays, and connect AC relay to line circuit. Relay LA releases. Circuit now normal.

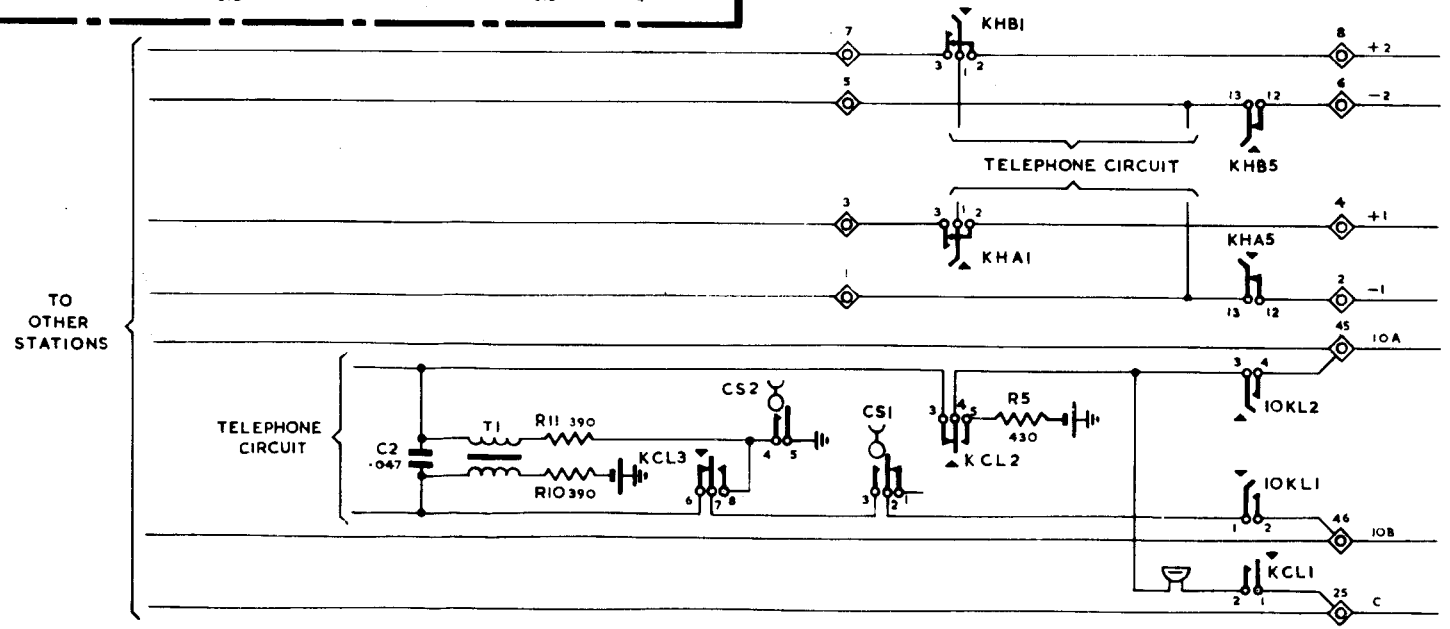
(b) Exchange Line 2. CONNECT and TEST key is operated on Control Unit Q 537 followed by operation of TRANSFER 2 key. Earth via 10X2 lead operates relay EB. Contact EB7 operates relay EL, via LB lead, to resistance battery in Relay Unit Q 516. Contact EL1 operates relay ELR. Contact EL4 earths XB lead, EL5 earths LPBC lead, in multiple cable. Contacts ELR1 and ELR2 switch speech circuit to exchange line, contacts ELR3 and ELR4 disconnect intercom, release relay F and apply busy condition. Contact ELR5 operates relay RR to earth via CONNECT and TEST key. Contacts RR2 and RR3 light call lamp and operate buzzer in Control Unit Q 537. TRANSFER 2 and CONNECT and TEST keys are restored, relay RR releases. Contacts RR2 and RR3 disconnect call lamp and buzzer. When handset is replaced, or release button operated, on multiple station, exchange line is connected to circuit. Distant end now holds exchange line. Clearing of the distant end releases relay LB. Contact LB2 releases relay RO. Contact RO1 releases exchange line, RO3 releases relay EL, RO5 releases relay EB. Contact EL1 releases relay ELR, EL2 releases relay FR. Contacts EB1 and EB2 remove earths from XB and LPBC multiple leads. Contacts FR4 and FR5 disconnect LA and LB relays, and connect AC relay to line circuit. Relay LA releases. Circuit now normal.

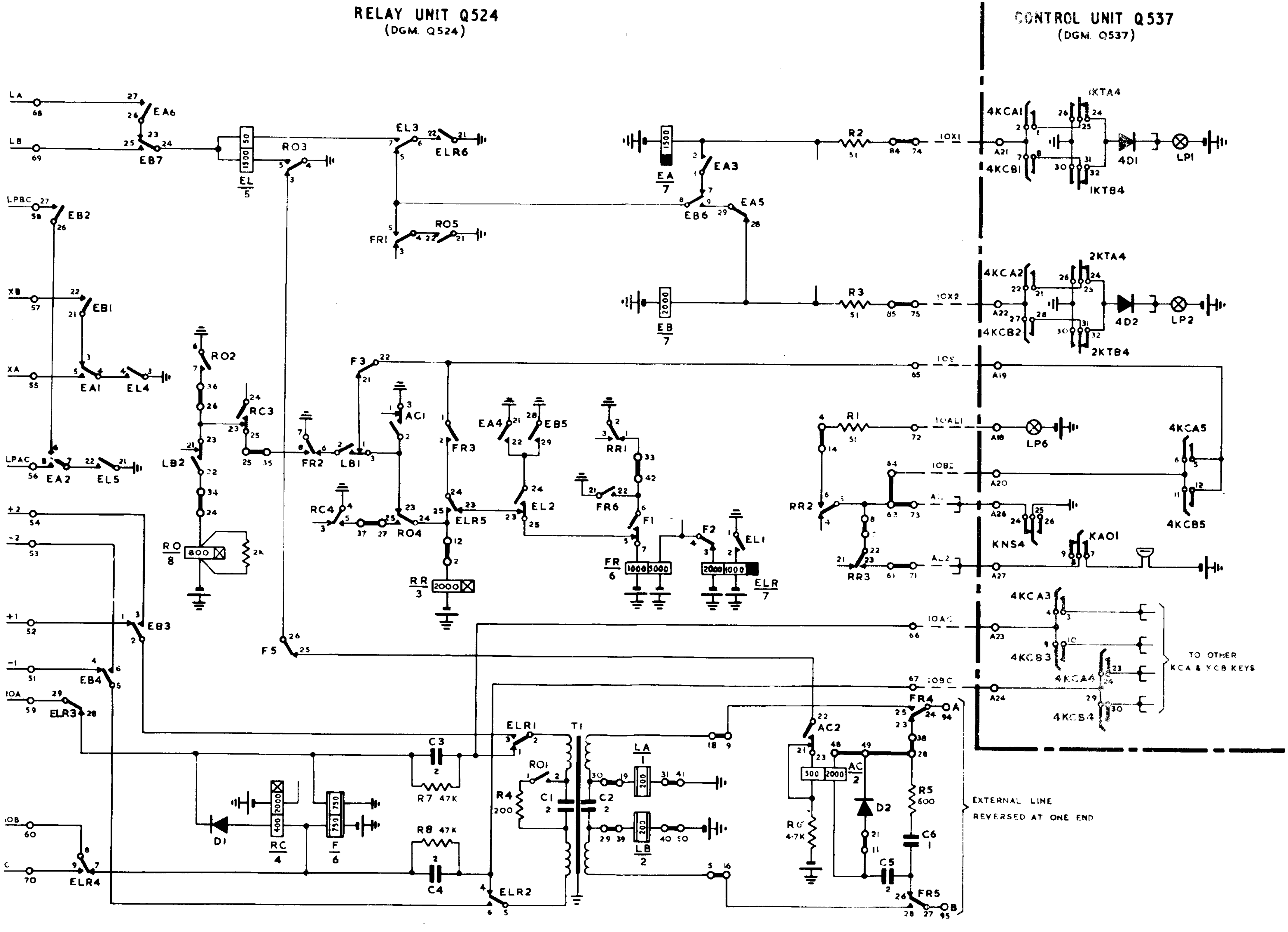
SPARE

RELAY UNIT Q516
(DGM Q516)



TELEPHONE, INTERCOM No. 4/1...
(DGM. Q540)




RELAY UNIT Q524
(DGM. Q524)
CONTROL UNIT Q537
(DGM. Q537)
LA
LB
LPBC
XB
XA
LPAC
+2
-2
+1
-1
10A
10B
C
EA6
EB7
EB2
EB1
EA1
EL4
EA2
EL5
EB3
EB4
ELR3
ELR4
RO2
RC3
LB2
RO
8
800
2K
EL
5
RO3
F5
EL3
ELR6
RO5
FR1
AC1
FR2
LB1
RC4
RO4
RR
3
2000
FR3
ELR5
EA4
EB5
EL2
RR1
FR6
F1
F2
EL1
FR
6
1000
5000
ELR
7
EA
7
1500
EA3
EB6
EA5
EB
7
2000
R2
R3
R1
RR2
RR3
C3
R7 47K
R8 47K
C4
D1
RC
4
F
6
ELR1
ELR2
RO1
R4
200
C1
C2
T1
LA
1
LB
2
AC2
AC
2
500
2000
R6
4·7K
D2
R5
600
C6
C5
FR4
FR5
A
B
EXTERNAL LINE
REVERSED AT ONE END
4KCA1
4KCB1
1KTA4
1KTB4
4D1
LP1
4KCA2
4KCB2
2KTA4
2KTB4
4D2
LP2
LP6
4KCA5
4KCB5
KNS4
KAO1
4KCA3
4KCB3
4KCA4
4KCB4
TO OTHER
KCA & XCB KEYS
10X1
10X2
10S
10AL
10BL
10AC
10BC