

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 arrangements of straps in Relay Unit Q 524 see Dgms. Q 503 and 561.

CIRCUIT OPERATION

INDEX

- 1.0 OUTGOING CALL ON TIE-LINE (PRIVATE CIRCUIT)
- 1.1 DISTANT END ANSWERS
- 2.0 INCOMING CALL ON TIE-LINE (PRIVATE CIRCUIT)
- 2.1 TRANSFER OF CALL
- 2.2 RECALL OF MAIN
- 2.3 CLEARING
- 3.0 EXCHANGE CALLS

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. Contact FR4 connects relay LA 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

Replacement of earth loop with battery loop at distant end releases relay LA. Contact LA1 operates relay RO. Conversation can now take place.

2.0 INCOMING CALL ON TIE-LINE (PRIVATE CIRCUIT)

Battery loop from distant end operates relay LB. Contact LB1 operates relay RR. Contact RR2 lights calling 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 F1 operates relay FR. Contact FR2 releases relay RR. Contact FR4 disconnects relay LB from line circuit and connects relay LA. Relay LB releases. Contact FR5 disconnects terminating impedance. Contacts RR2 and RR3 disconnect call lamp and buzzer in Control Unit Q 537. 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 FR3, ELR5, EL2 and F1. 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.

P.O. TELECOMMS HQRS. PAPER-W CIRC'LTH: GENERAL	ISSUE			
		✓	<i>20/11</i>	<i>24.4.68</i>
		<i>20/11</i>	<i>24.4.68</i>	<i>TD1.4</i>

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 RC 4 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. Replacement of battery loop with earth loop at distant end operates relay LA. Contact LA1 releases relay RO. When handset at multiple station is replaced, relay F releases. Contact F1 releases relay FR. Contact FR4 disconnects relay LA from line circuit and connects relay LB. Relay LA releases. Contact FR5 reconnects terminating impedance. Circuit now normal.

(b) Multiple station clears first. Replacing of handset releases relay F. Contact F1 releases relay FR. Contact FR4 disconnects relay LA from line circuit and connects relay LB. Relay LB operates. Relay RO holds via contacts RC3, LB2, FR1 and RO5. When distant end clears, replacement of battery loop with earth loop releases relay LB. Contact LB2 releases relay RO. Circuit now normal.

NON-MULTIPLE EXTENSION CALL

(c) Distant end clears first. Replacement of battery loop with earth loop at distant end operates relay LA. Contact LA1 releases relay RO. Contact RO4 operates relay RR to earth on S wire from 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 FR and RO will release. Contact FR4 disconnects relay LA from line circuit and connects relay LB. Relay LA will release. Contact FR5 connects terminating impedance. 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. Contact FR4 disconnects relay LA from line circuit and connects relay LB. Relay LB will operate. Contact FR5 connects terminating impedance. Relay RO holds via contacts RC3, LB2, FR1 and RO5. When distant end clears, replacement of battery loop with earth loop releases relay LB. Contact LB2 releases relay RO. Circuit now normal.

3.0 EXCHANGE CALLS (Notes 3 & 4)

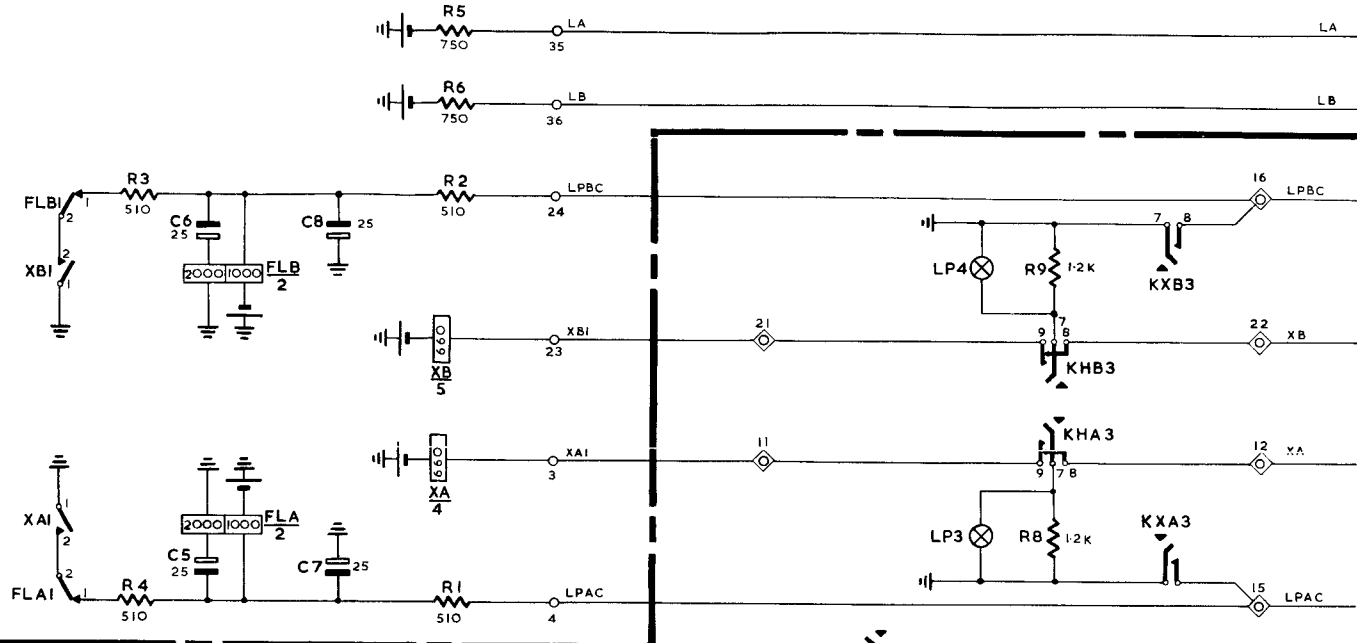
Exchange calls may be extended to tie-line from (a) exchange line 1, or (b) exchange line 2. Distant end is first called as in paras. 1.0 and 1.1.

(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. Contacts ELR1 and ELR2 switch speech path to exchange line, 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. 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 operates relay LA. Contact LA1 releases relay RO. Contact RO1 releases exchange call, RO3 releases relay EL, RO5 releases relay EA. Contact EL1 releases relay ELR, EL2 releases relay FR. Contacts EL4 and EL5 remove earths from XA and LPAC multiple leads. Contact FR4 disconnects relay LA from line circuit, and connects relay LB. Relay LA releases. Contact FR5 reconnects terminating impedance. Circuit now normal.

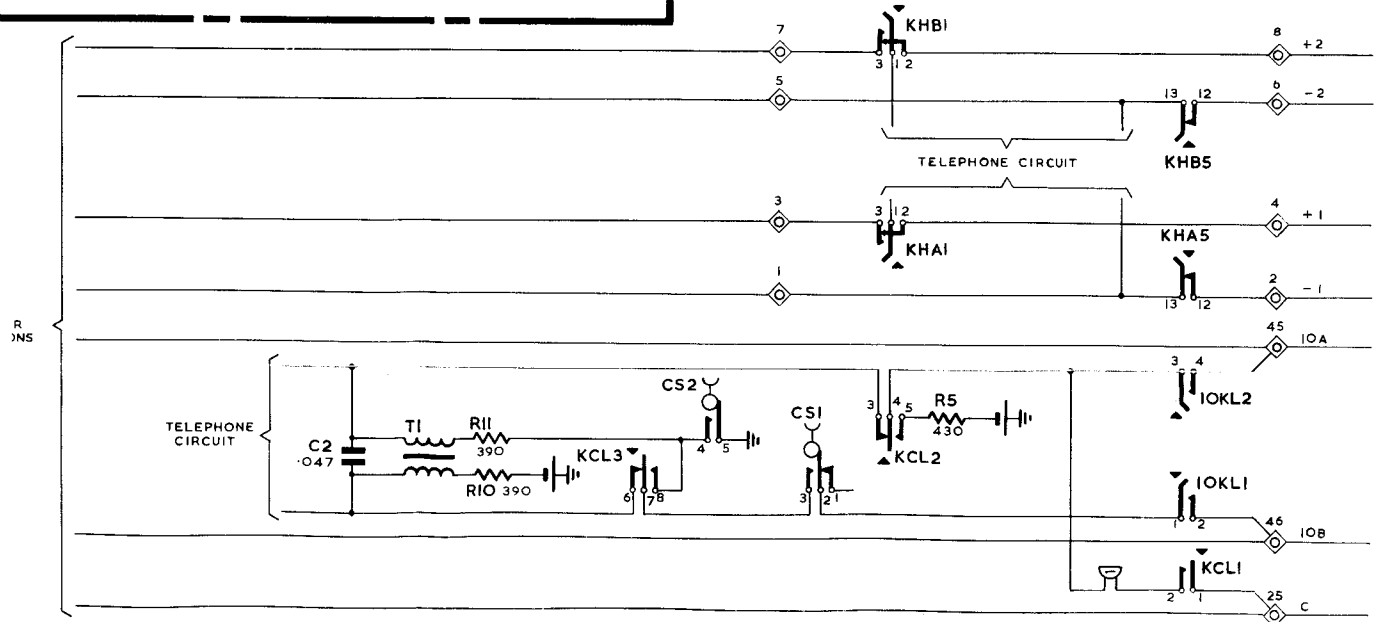
(b) Exchange Line 2. CONNECT and TEST key is operated on Control Unit Q 537 followed by operation of TRANSFER 2 key. Earth via 10X2 lead operates relay EB. Contact EB7 operates relay EL, via LB lead, to resistance battery in Relay Unit Q 516. Contact EL1 operates relay ELR. Contact EL4 earths XB lead, 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. 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 call. Clearing of the distant end operates relay LA. Contact LA1 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. Contact FR4 disconnects relay LA from line circuit, and connects relay LB. Relay LA releases. Contact FR5 connects terminating impedance. Circuit now normal.

SPARE

RELAY UNIT Q516
(DGM. Q516)



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



RELAY UNIT Q 524
(DGM. Q 524)

CONTROL UNIT Q 537
(DGM. Q 537)

