CIRCULATION: GENERAL

SUFFIX

AMEND'T

PAPER: W

H.E.S. No.3 (KEYMASTER)
TERMINATION OF PRIVATE AND INTERSWITCHBOARD CIRCUITS USING RELAY UNIT Q415

Q(L)444
5 PANELS-1
12-2-64.

SIGNALLING GROUP A (i) - A/WE IN G/AC OUT; B LOOP IN G/AC OUT.

NOTES :-

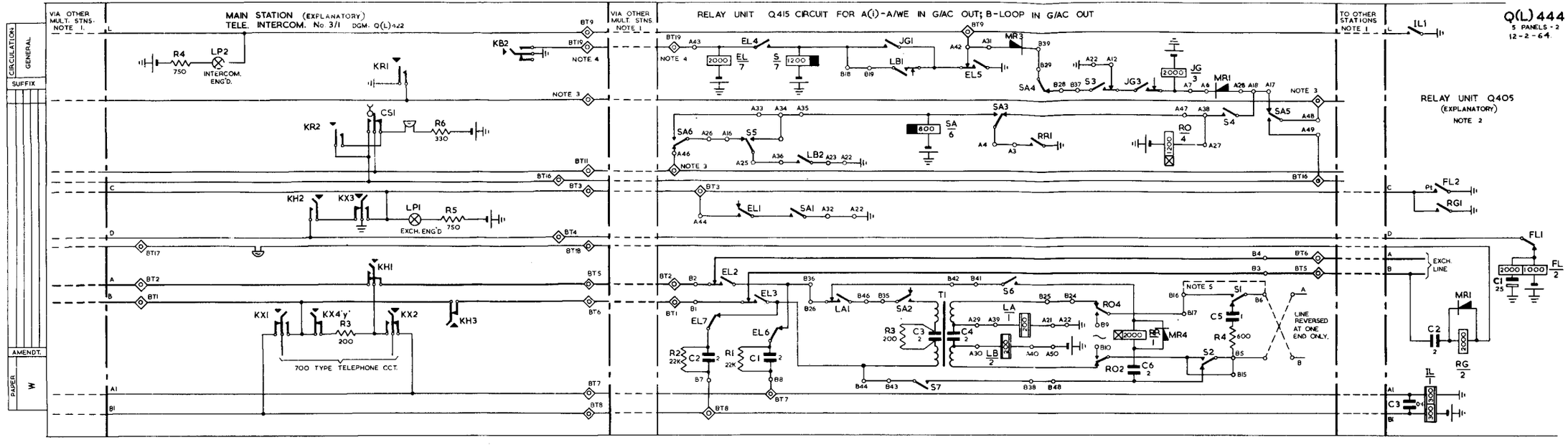
1. RELAY UNIT Q415 REPLACES THE LAST MULTIPLE STATION, BUT MUST BE CONNECTED BEFORE THE NON-MULTIPLE EXTENSION IF FITTED. MORE THAN ONE RELAY UNIT Q415 MAY BE FITTED.

2. RELAY UNIT Q405, OR Q410 WHEN FITTED, MUST BE CONNECTED AFTER THE LAST STATION. SEE DGMS. Q(L)403 & 404. IN THIS DGM. TYPICAL CONNEXIONS FOR RELAY UNIT Q405 ARE SHOWN.

3. THESE CONNEXIONS WILL DEPEND ON THE NUMBER OF THE STATION REPLACED BY THE RELAY UNIT Q415, AND ALSO THE NUMBER OF THE MAIN STATION, SEE DGM.Q(L)441 NOTES 3 & 4.

4. THIS CONNEXION IS PROVIDED AT THE MAIN STATION ONLY IF THE EXTENSION OF EXCHANGE CALLS OVER THE PRIVATE CIRCUIT IS AUTHORISED ON THE ADVICE NOTE.

5. THIS STRAP INSERTED ONLY FOR GROUP B - LOOP IN G/AC OUT, FOR ARRANGEMENT OF STRAPS IN RELAY UNIT Q 415 SEE DGM. Q(L) 441.


MAIN STATION (EXPLANATORY)
TELE. INTERCOM. No 3/1 DGM. Q(L)422
RELAY UNIT Q415 CIRCUIT FOR A(i)-A/WE IN G/AC OUT; B-LOOP IN G/AC OUT
VIA OTHER MULT. STNS. NOTE 1
TO OTHER STATIONS NOTE 1
RELAY UNIT Q405 (EXPLANATORY) NOTE 2
Q(L)444 5 PANELS - 2 12-2-64
CIRCULATION GENERAL
SUFFIX
AMEND'T.
PAPER W
INTERCOM. ENG'D.
EXCH. ENG'D
700 TYPE TELEPHONE CCT.
LINE REVERSED AT ONE END ONLY.
EXCH. LINE

RELAY UNIT Q415 CONNECTED FOR LOOP IN - G/AC OUT OR A/WE IN - G/AC OUT

Q(L)444
5 Panels—3
12-2-64.

CIRCUIT OPERATIONS

1. OUTGOING CALL

Lifting the handset at a multiple station operates relay IL. IL1 extends earth to the intercom engaged wire, and pressing calling button (KR) extends earth to operate relay JG via SA5 and MR1. Relay S operates via JG1 to earth on intercom engaged wire. Relay JG holds via JG3 and S3. S4 extends calling earth to relay RO which operates while calling button is pressed. RO2 and 4 send 25 c/s ringing to line.

2. ANSWERING CONDITION

When distant end answers relays LA and LB operate. LB1 holds relay S. LB2 operates relay SA. LA1 and SA2 complete speech path. SA5 provides station engaged condition and disconnects JG and RO relays.

3. INCOMING CALL

(a) A/WE incoming. Earth on A wire from distant end operates relay LB. LB2 extends earth via S5 and SA6 to call main station. When main station answers relay IL operates. IL1 extends earth via LB1 to operate relay S. S1 connects relay LA to line. Relay LA operates to distant end battery. S5 disconnects calling signal and operates relay SA. SA5 provides station engaged condition. LA1 and SA2 complete speech path.

(b) Loop incoming. Loop from distant end operates relays LA and LB. LB2 extends earth via S5 and SA6 to call main station. When main station answers relay IL operates. IL1 extends earth to intercom engaged wire and relay S operates via LB1. S5 operates relay SA to earth at LB2. SA2 and LA1 complete

CIRCUIT OPERATIONS (CONT'D.)

speech path. SA5 provides station engaged condition.

4. CLEARING

When multiple station clears first, replacing handset releases relay IL. IL1 removes earth from intercom engaged wire and relay S releases. S1 and 2 release relays LA and LB. LB2 releases relay SA.

When distant end clears first relays LA and LB release. LB1 releases relay S. LB2 releases relay SA.

5. EXCHANGE CALLS (see note 4)

Exchange calls received on multiple stations may be extended to the tie line. The tie line is called as in paras. 1 and 2. When answer is received the control button (KB) is pressed at the main station. This extends earth to operate relay EL. EL2, 3, 6 and 7 switch the tie line to the exchange line. Relay EL via EL4 holds with relay S via LB1 to earth at EL5. SA1 and EL1 extend earth to light exch. engaged lamps at multiple stations. Clearing is controlled by distant end of the tie line. When tie line is cleared relays LA and LB release. LB1 releases relays S and EL. LB2 releases relay SA. SA1 and EL1 remove earth from exch. line engaged wire. SA5 removes station engaged condition.

6. NIGHT SERVICE

Operation and locking of KB button extends earth to operate relay EL. EL4 operates relay S. EL2, 3, 6 and 7 switch tie line to exchange line. S6 and 7 connect relay RR to exchange line. Incoming exchange ringing operates relay RR. RR1 via SA3 operates relay RO. RO2 and RO4 connect local 25 c/s to tie line. When distant end answers relays LA and LB operate. LA1 disconnects relay RR. LB2 via S5 operates relay SA. SA2 completes speech path and loop to exchange to trip ringing.

When distant end clears relays LA and LB release. LB_2 releases relay SA. LA_1 restores relay RR to exch. line and with SA_2 removes exchange hold loop. Relays EL and S remain held to earth from main station KB button.