

CIRCULATION	GENERAL
	SUFFIX
AMENDT	
	PAPER W

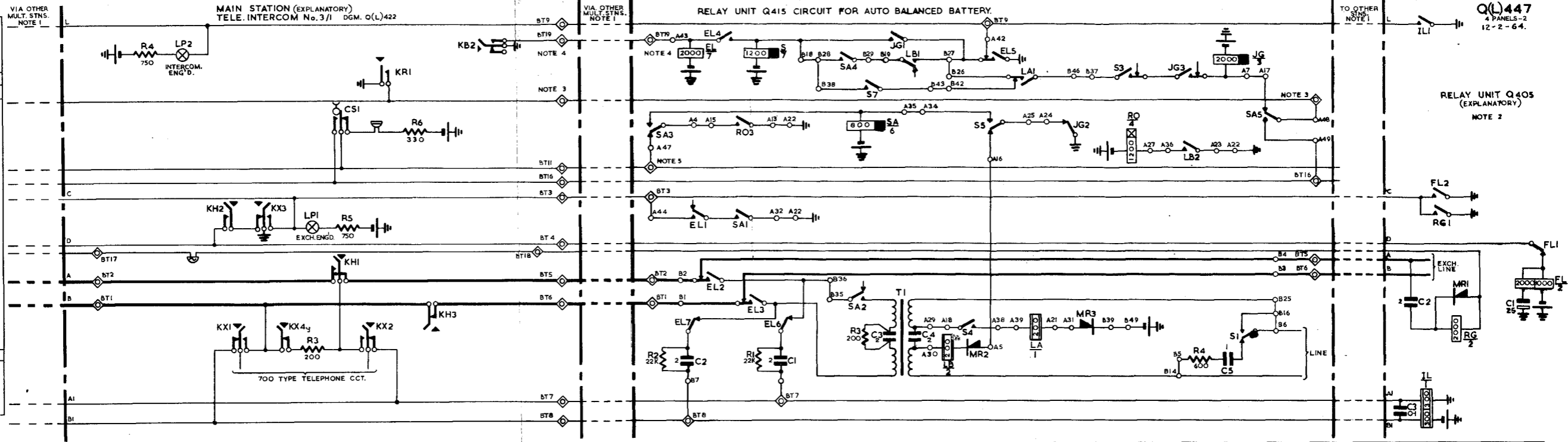
**H.E.S. No.3 (KEYMASTER)
TERMINATION OF PRIVATE AND INTERSWITCHBOARD
CIRCUITS USING RELAY UNIT Q415
SIGNALLING GROUP AUTO BALANCED BATTERY.**

Q(L)447
4 PANELS-1
12-2-64.

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. FOR ARRANGEMENT OF STRAPS IN RELAY UNIT Q415 SEE DGM. Q(L)441.

CIRCULATION	GENERAL
SUFFIX	
AMENDT.	
PAPER	W



RELAY UNIT Q415 CONNECTED FOR AUTO. BAL. BATT. B/W

Q(L)447

CIRCUIT OPERATIONS

4 Panels-3

12-2-64.

1. OUTGOING CALL

Lifting handset at calling station operates relay IL. IL1 connects earth to intercom engaged wire. Pressing calling button (KR) extends earth via SA5 to operate relay JG. Relay S operates via JG1 and EL5 to earth on intercom engaged wire. JG2 and S5 disconnect relay LB from line. S4 connects relay LA to line. Relay LA operates. Relay JG holds via JG3, S3, LA1 and EL5 to earth on intercom engaged wire. Relay S holds via JG1 and EL5 to same earth.

2. ANSWERING CONDITION

When distant end answers relay LA releases. LA1 releases relay JG. Relay S now holds via S7, LA1, and EL5. Earth via JG2 and S5 operates relay SA. SA2 completes speech path. SA5 provides station engaged condition.

3. INCOMING CALL

When distant end calls, battery on line operates relay LB. LB2 operates relay R0. R03 extends earth to operate main station buzzer. When main station handset is lifted relay IL operates. IL1 connects earth to intercom engaged wire and relay S operates via SA4, LB1 and EL5. Relay S holds via S7, LA1 and EL5. S4 connects relay LA to line. S5 releases relay LB and operates relay SA. Relay LA does not operate. SA2 completes speech path.

4. CLEARING

When multiple station clears first, relay IL releases and IL1 removes earth from intercom engaged wire so releasing relay S. S4 disconnects relay LA from line. S5 releases relay SA and restores relay LB to line. Relay LB may operate

Q(L)447

CIRCUIT OPERATIONS (CONTD.)

4. Panels-4

until distant end releases. Should LB relay operate LB2 operates relay R0 and relay SA will remain held via R03 and SA3 until relay LB releases.

When distant end clears first, relay LA operates. LA1 releases relay S. S4 disconnects relay LA. S5 restores relay LB to line and releases relay SA.

5. EXCHANGE CALLS (see note 4)

Exchange calls received at a multiple station may be forwarded to the tie line. The tie line is first called as described in paras. 1 and 2. When an answer is received the control button (KB) is pressed. This connects an earth to operate relay EL. Relay EL via EL4 with relay S held via S7 and LA1 to earth at EL5. EL2, 3, 6 and 7 switch the tie line to the exchange line. SA1 and EL1 provide exchange line engaged condition. SA5 provides station engaged condition.

When distant end clears relay LA operates. LA1 releases relays EL and S. S5 releases relay SA. S4 releases relay LA, and circuit is restored to normal.