

DIAGRAM NOTES (ISSUE 1)
CONCERNING
GBW 15630
TITLED
SELECTOR LEVEL RELAY SET TO REMOTE MANUAL BOARD
EMERGENCY SERVICE FOR U.A.X. N.Z. 13

1. GENERAL.

The diagram shows the circuit of a relay set used at an A.M.X. for Emergency Service calls from a U.A.X. N.Z. 13. The relay set is seized off a level of an incoming selector and routes the call via the associated junction and distance incoming selector to the manual board at the remote exchange.

2. FACILITIES.

Provision is made for:-

- (a) Access to the circuit from a level of an incoming selector.
- (b) Guarding the circuit after seizure until both parties have cleared.
- (c) Repeating impulses over the junction.
- (d) Reversing the feed on the incoming lines when the operator answers.
- (e) Holding the preceding equipment if the calling subscriber clears before the operator.
- (f) Guarding the circuit during release until the distant selectors have released.
- (g) Isolating the junction during routine testing of the relay set.

3. CIRCUIT DESCRIPTION.

When a calling loop is extended to the relay set, relay A operates.

Relay A operating
 A1 prepares to repeat impulses over the junction.
 A2 operates relays B and BA.

Relay B operating,
 B1 prepares to operate relay CD.
 B2 connects earth to the incoming P wire.
 B3 prepares a holding circuit for relay DD.
 B4 prepares the outgoing loop.

Relay BA operating,
 BA1 prepares the P wire release guard circuit.
 BA2 operates relay HA.

Relay HA operating,
 HA1) completes the outgoing loop
 HA2) to the junction.

The remaining digits of the emergency code are repeated over the junction to the distant selectors and a calling signal appears on the remote manual board.

During each digit relay CD is operated by A2 on the first release of relay A and holds through the train of pulses. It is made slow to release by the short-circuit on its winding via A 2 operated. Relay B holds similarly during impulsing, due to the short-circuit via A2 released. With relay CD operated, CD2 provides a short-circuit outgoing loop during impulsing.

Operator Answer

When the operator answers, the direction of current in the outgoing loop is reversed and relay D operates because rectifier MR1 no longer acts as a shunt on D.

Relay D operating,
D1 operates relay DD.

Relay DD operating,
DD1) reverse the feed to the
DD2) incoming +ve and -ve lines.

DD3)
DD4) see "Manual Hold"

DD5 holds relay DD after the release of D1, either during release of the circuit or under manual hold conditions.

Release of Relay Set

If the operator clears first, relay D releases, followed by relay DD. (For subscriber clearing first, see "Manual Hold".)

Relay DD releasing
DD1) restore the feed to the incoming +ve and
DD2) -ve lines to normal.

When the calling subscriber clears, relay A releases.

Relay A releasing,
A1 opens the outgoing loop.
A2 short-circuits relay B and operates relay CD.

Relay CD operating,
CD1 leaves the P wire dependent on earth via B2.

Relay B releasing slowly, due to the short-circuit.
B1 releases relays CD and BA, the latter releasing slowly.
B2 disconnects earth from the P wire, releasing the preceding selector or selectors.

Relay CD releasing,
CD1 re-guards the incoming P wire.

Relay BA releasing slowly,
BA1 disconnects earth from the P wire.
BA2 releases relay HA, which disconnects the junction.

The circuit is now normal and free for succeeding calls.

Manual Hold

When the calling subscriber clears, relay A releases.

Relay A releasing,
A1 opens the outgoing loop, releasing relay D.
A2 operates relay CD and short-circuits relay B.

Relay CD operating,
CD1 disconnects earth via BA1 from the P wire, leaving
the P wire dependent on B2 and DD4.
CD3 holds relay DD.

Relay B releasing slowly, due to the short circuit,
B1) are ineffective as relay DD is operated.
B2)
B3 disconnects earth from relay DD.
B4 operates relay MH to battery on the junction +ve wire.

Relay MH operating,
MH1 holds relay DD. (Relay DD is slow to release and is
still operated after the release of B3.)

Relay DD holding,
DD1) maintain a reversal on the junction to
DD2) the U.A.X. to hold the connection.
DD3 holds relays CD and BA.
DD4 maintains earth on the P wire.

If the calling subscriber re-loops the line, relay A re-operates, operating relay B. Relay MH is released when B4 operates but, with A1 and B4 operated, relay D operates and prevents relay DD from releasing when MH1 opens.

Subsequently, when the operator clears, the circuit is released as described under "Release of Relay Set".

Routine Testing

When testing is being carried out on the relay set, TJ1 and 2 and TJ9 and 10 will be short-circuited. This busies the relay set against incoming calls and short-circuits relay HA to prevent its operation. With relay HA normal, the junction is isolated and the distant equipment not seized.

END