1. GENERAL

1.01 This section outlines the procedure for testing the revertive pulse interrupter of the No. 5 crossbar office revertive pulse incoming and central B (terminating office part) registers, and No. 5 crossbar office revertive pulse incoming register for tandem operation, under maximum and minimum loop conditions.

1.02 This section is reissued to bring it in conformity with other material in the Plant Series. In this process marginal arrows have been omitted.

1.03 The "pulse speed" and the "per cent break" requirements are specified on the circuit requirement table for the register.

1.04 Method A: This test applies where the 35-type test set, per cent break meter, and impulse counter are available.

1.05 Method B: This test applies where the pulse checking test set, J941723 (SD-96362-01), is available. With the lever type key in the PCB (per cent break) position, the pulsed circuit is connected to the meter in series with a suitable network to read "per cent break." With the lever type key in the PPS (pulses per second) position, the pulsed circuit is connected to an auxiliary relay which charges a precision condenser resistance network and then discharges the network through the meter, as each pulse is received, resulting in a direct reading of pulse speed in pulses per second.

1.06 Lettered Steps: The letters a, b, c, etc., are added to a step number to indicate that the steps cover an action which may or may not be required, depending on local conditions. The conditions under which a lettered step or series of steps should be made are given in the ACTION column, and all steps governed by the same condition are designated by the same letter. Where a condition does not apply, the associated steps should be omitted.

2. APPARATUS

Method A: Using 35-Type Test Set, Per Cent Break Meter, and Impulse Counter

2.01 35-Type Test Set.

2.02 KS-7361 Per Cent Break Meter.

2.03 KS-7608 Impulse Counter (or No. F-789 Cenco Impulse Counter).

2.04 KS-3008 Stop Watch or equivalent.

2.05 Four No. 364 Tools (Spade Terminals).

2.06 One P2P Cord, 10 feet long, equipped with one No. 309 Plug and one No. 310 Plug (2P10A).
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2.07 Two W2W Cords, 6 feet long, equipped with one No. 310 Plug and one No. 360B Tool and one No. 360C Tool (ZW17A) and two No. 364 Tools.

2.08 Two P3F Cords, 6 feet long, equipped with one No. 309 Plug and one No. 310 Plug (3P12E).

Method B: Using Pulse Checking Test Set

2.09 35-Type Test Set.

2.10 Pulse Checking Test Set J94723 (SD-96362-01).

2.11 One P3K Cord, 6 feet long, equipped with two No. 310 Plugs (3P15A).

2.12 One W2W Cord, 6 feet long, equipped with one No. 310 Plug and one No. 360B Tool and one No. 360C Tool (ZW17A).

2.13 One W3M Cord, 6 feet long, equipped with one No. 310 Plug and one No. 360A Tool, one No. 360B Tool, one No. 360C Tool (3WHA).

2.14 Three No. LL1 Cord Tips.

2.15 One No. 364 Tool (Spade Terminal).

3. PREPARATION

<table>
<thead>
<tr>
<th>STEP</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>At register - Check GR relay.</td>
</tr>
<tr>
<td>2</td>
<td>Using the 35-type test set - Check the STP or STA, and L relays.</td>
</tr>
<tr>
<td>3a</td>
<td>In register equipped with S-type L relay - While test set is still connected to L relay - Open circuit through test set.</td>
</tr>
<tr>
<td>4a</td>
<td>Remove block from LL or LA relay.</td>
</tr>
</tbody>
</table>

Note: Block had been placed in accordance with circuit requirement table instructions.

5a Close circuit through test set - Adjust current to value shown in following table:

- No. 5 Crossbar RP Incoming Register 2hOma
- No. 5 Crossbar Central B Register 2hOma
- No. 5 Crossbar RP Incoming Register for Tandem Operation 295ma

6a Operate LL or LA relay manually. 

Current flow drops to approximately 210 ma.

Note: This is a check that the shunt normally present is removed after the LL or LA relay is operated.

VERIFICATION

Relay meets contact make requirements shown in Section 040-518-701.

Relays meet electrical requirements shown on circuit requirement tables.

L relay released.
Method A: Using 35-Type Test Set, Per Cent Break Meter, and Impulse Counter

7 Restore switches and keys of test set to normal and move resistance sliders to extreme right.

8 Connect TEST BATT and GRD jack of test set to battery and ground supply A jack, or the 1/8V jack, using P2P cord with the No. 309 plug connected to test set.

9 Connect 3R jack of test set to per cent break meter, using W2W cord equipped with No. 364 tools, with white (tip) conductor to positive (+) terminal and black (ring) conductor to negative (-) terminal.

Note: To insure proper accuracy of per cent break meter, it should be approximately level and should not be located closer than 12 inches to magnetic material.

10 Connect 1/8W jack of test set to impulse counter, using W2W cord equipped with No. 364 tools, with white (tip) conductor to left terminal of counter and black (ring) conductor to right terminal.

11 Connect TEST T&R jack of test set to MX jack in register frame panel, using P3F cord.

12 Connect TEST S jack of test set to T jack of register, using P3F cord.

13 Block and insulate register relays as specified for the pulsing requirements on the circuit requirement tables.

14 Block CR relay operated.

15 Close key No. 3 on test set — Adjust resistance sliders so that the current, through the per cent break meter, is 12 milliamperes.

Caution: Exercise extreme care to see that the current is not allowed to exceed this value while adjusting the resistance sliders.

16 Open key No. 3 on test set.

17 Operate key on impulse counter.

Needle of per cent break meter deflects to left and coincides with the 0 line on meter scale.
<table>
<thead>
<tr>
<th>STEP</th>
<th>ACTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Close key No. 4 on test set and adjust resistance sliders so that the current through the impulse counter is as follows:</td>
</tr>
<tr>
<td></td>
<td><strong>Impulse Counter</strong></td>
</tr>
<tr>
<td></td>
<td>KS-7608</td>
</tr>
<tr>
<td></td>
<td>Cenco No. F-789 with serial numbers from 1 to 400, inclusive</td>
</tr>
<tr>
<td></td>
<td>Cenco No. F-789 with serial numbers 401 and above</td>
</tr>
<tr>
<td>19</td>
<td>Open key No. 4 on test set.</td>
</tr>
<tr>
<td>20</td>
<td>Remove block from GR relay.</td>
</tr>
<tr>
<td>21</td>
<td>Restore the SCALE key, if operated, to normal (O) position.</td>
</tr>
<tr>
<td>22</td>
<td>Turn the potentiometer knob CAL (calibrate) in a counterclockwise direction to the limit of its travel in order to prevent the needle from moving off scale when battery and ground are connected to the test set.</td>
</tr>
<tr>
<td>23</td>
<td>Connect BAT G jack of test set to battery and ground supply A jack, or the 135V jack, using the P3K cord, as shown in Fig. 1.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> To insure proper accuracy of the pulse checking test set, it should be set in a level position.</td>
</tr>
<tr>
<td>24</td>
<td>With the lever type key normal, adjust the CAL potentiometer in a clockwise direction as required to bring the meter to zero percent break.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> With this test set, it is not necessary to block the interrupter and adjust the current flow as indicated in the circuit requirement table; this adjustment having been made with the CAL potentiometer.</td>
</tr>
<tr>
<td>25</td>
<td>Connect the W3W cord to the register T jack and the W2W cord to the MX jack in the register frame jack panel. Connect tip to tip and ring to ring of the two cords, and the sleeve of the W3W cord by means of No. 833 cord to the test set F binding post, using three 141 cord tips and the No. 364 tool as shown in Fig. 1.</td>
</tr>
</tbody>
</table>
Fig. 1 - Pulse Checking Test Set Connections

4. METHOD

STEP ACTION VERIFICATION

Method A: Using 25-Type Test Set, Per Cent Break Meter, and Impulse Counter

26 Block and insulate the register relays in accordance with circuit requirement table instructions to start the interrupter. Needle on per cent break meter deflects to right and stabilizes.

27 Close key No. 3 on test set. Impulse counter counts number of pulse cycles.

28 Observe reading on per cent break meter. Impulse counter stops counting pulse cycles.

29 Open key No. 3 on test set.

30 Close key No. 4 on test set - Start timing simultaneously with starting of impulse counter.

31 At the end of one minute - Open key No. 4 on test set.
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32 Observe number of pulses recorded on impulse counter -
Divide by 60 to obtain number of pulses per second.

33 Consult the pulsing requirement chart on
the circuit requirement tables -
Find the line corresponding to the pulse
speed in pulses per second, and note the
extent of allowable per cent break.

Note: When the pulsing requirement chart
is not provided, the per cent break and
pulse speed requirements are shown in
tabular form on the circuit requirement
tables.

34 Repeat Steps 27 through 33, using the MN
instead of the MX jack.

Method B: Using Pulse Checking Test Set

35 Block and insulate the register relays
in accordance with circuit requirement
table instructions to start the inter-
rupter.

36 Operate PCB key of the pulse checking test
set.

37 Estimate midpoint of range of oscillations
of meter needle and record reading.

38 Restore PCB key to normal.

39 Operate PPS key of pulse checking test set.

40 Record reading of pulse speed on 40-0
scale.

41b If the indicated pulse speed is less than
20 pulses per second -
Rotate SCALE key to 20 position.

42b Record reading of pulse speed on 20-0
scale.

43 Restore PPS key to normal.

The measured per cent break, noted in
Step 28, falls within the allowable limits.
The measured pulses per second, noted in
Step 32, falls within the allowable limits.
Consult the pulsing requirement chart on the circuit requirement tables - find the line corresponding to the pulse speed in pulses per second and note the extent of allowable per cent break.

Note: When the pulsing requirement chart is not provided, the per cent break and pulse speed requirements are shown in tabular form on the circuit requirement tables.

Repeat Steps 36 through 44 using the MN instead of the MX jack.

The measured per cent break, noted in Step 37, falls within the allowable limits. The measured pulses per second, noted in Step 40 or in Step 42E, falls within the allowable limits.