

**L MULTIPLEX TERMINALS**  
**LMX-1**  
**TRANSMITTING SUBMASTERGROUPS**  
**PATCHING PROCEDURES**

This section provides patching procedures whereby regular equipment (transmitting submastergroups) is removed from or restored to service. Because of the numerous configurations applicable to the equipment involved, only typical submastergroup configurations are depicted by these procedures. Each office must determine its own equipment configurations and establish applicable patching procedures.

To prevent service interruptions while patching submastergroup equipment, effective monitoring procedures should be used. Three types of signals are available for monitoring purposes: test tone, conversation, and pilot. The most effective signal is a 1-kHz tone on a voice channel; however, local policy must establish monitoring and verification procedures to keep service interruptions to a minimum.

Transmission requirements must be met for the equipment involved before proceeding.

This section is reissued to change the monitoring procedure to provide a continuity check of all patched submastergroups.

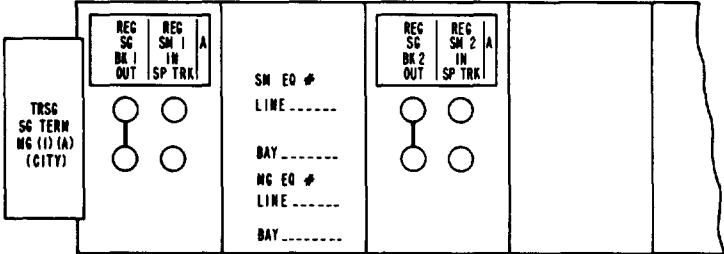
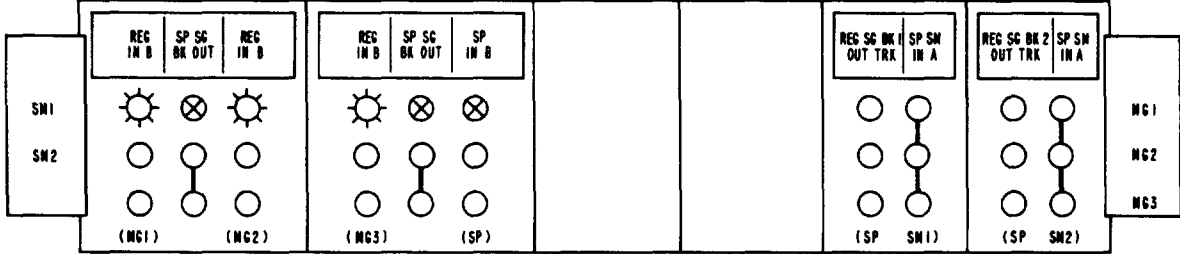
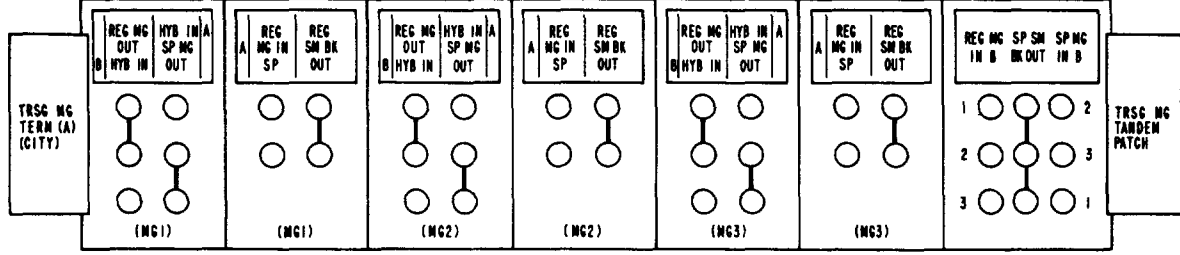
**APPARATUS**

*Receiving Test Equipment* (Section 356-010-500) capable of measuring the signals to be measured at the correct power

*Test Cords and Plugs* as required

| STEP | PROCEDURE   |
|------|---|
|      | <p><b>Caution:</b> <i>Since some patches may affect transmission levels, patching should be kept to a minimum. Before attempting any patches, read and understand the entire procedure.</i></p> <p><b>Note:</b> To prevent service interruptions due to patching errors, the craftsman must have a thorough understanding of the following:</p> <p>(a) Transmission circuits involved</p> |

| STEP | PROCEDURE   |
|------|---|
|      | <p>(b) Local equipment and jack designations</p> <p>(c) Local policy regarding minimum monitoring requirements.</p> <p><b>Monitoring</b></p>  |
| 1    | <p>Select two (2) voice-frequency channels, one working in submastergroup 1 (SM 1) and one working in submastergroup 2 (SM 2) of the submastergroup bank to be patched (see Fig. 1); verify that the selected channels are not in service.</p>  |
| 2    | <p>At the voice-frequency patch bay (VFPB), connect a 1-kHz test tone to each of the selected channels [patch (1), Fig. 1].</p>   |
| 3    | <p>Prepare the receiving test equipment (RTE) to measure the translated 1-kHz tone for channel selected in SM1 at the correct power for the monitoring point (Fig. 1).</p> <p><b>Note 1:</b> See Section 358-080-501 for frequency charts and level diagrams.</p> <p><b>Note 2:</b> Always monitor at a point in the circuit path beyond the final patch point.</p> |
| 4    | <p>At the HFPB, connect the RTE to the TRSG TERM OUT B jack [patch (2), Fig. 1]. Tune for the translated 1-kHz tone.</p> <p><b>Note:</b> It may be necessary to remove the 1-kHz tone at the MOD IN jack to verify that the correct tone is being monitored.</p> <p><b>Patching</b></p>   |
| 5    | <p>To remove regular equipment from service, proceed to Step 6. To restore regular equipment to service, proceed to Step 16.</p>  |
|      | <p><b>Fig. 1—Suggested Monitoring Method—Transmitting Submastergroup Bank</b></p>   |

| STEP              | PROCEDURE  |
|-------------------|--|
| <p>6</p> <p>7</p> | <p><b>Removing Regular Equipment From Service</b></p> <p>Locate the jacks (Fig. 2) associated with the regular and spare equipment to be patched.</p> <p>At the transmitting tandem patch panel (MG-HFPB), perform the following steps:</p> <p>(a) Remove the 358B plug (75-ohm termination) from the REG MG( ) IN B jack [patch (1), Fig. 3].</p> <div style="text-align: center;">  <p><b>SUBMASTERGROUP PATCHING JACKS (SG-HFPB)</b></p> </div> <div style="text-align: center;">  <p><b>PART OF TANDEM PATCH PANEL (SG-HFPB)</b></p> </div> <div style="text-align: center;">  <p><b>PART OF TANDEM PATCH PANEL (MG-HFPB)</b></p> </div> <p><b>Fig. 2—Transmitting Submastergroup Patching Jacks</b></p> |

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| STEP | PROCEDURE   |
|------|---|
|      | <p><b>Note:</b> Jack designations may vary between offices. The new designations (Table A) are used in this procedure.</p> <p>(b) Insert a 372A plug (through connection) into the REG MG( ) IN B and SP SM BK OUT jacks [patch (2), Fig. 3].</p> <p>(c) Insert a 372A plug into the SP SM1 IN A and REG SG BK1 OUT TRK jacks [patch (3), Fig. 3].</p> <p>(d) Insert a 372A plug into the SP SM2 IN A and REG SG BK2 OUT TRK jacks [patch (4), Fig. 3].</p> |
| 8    | <p>At the transmitting tandem patch panel (SG-HFPB),</p> <p>(a) Insert a 372A plug into the SP SM1 IN A TRK and multiple REG SG BK1 OUT jacks [patch (5), Fig. 3].</p> <p>(b) Insert a 372A plug into the SP SM2 IN A TRK and multiple REG SG BK2 OUT jacks [patch (6), Fig. 3].</p>  |
| 9    | <p>Observe the RTE indication.</p> <p><b>Requirement:</b> Approximately a 3-dB increase in power</p>  |
| 10   | <p>Repeat Steps 3, 4, and 9 using the translated 1-kHz tone for the channel selected in SM2.</p>  |
| 11   | <p>At the transmitting tandem patch panel (MG-HFPB),</p> <p>(a) Remove the 372A plug from the REG SM BK OUT and REG MG( ) IN A jacks [patch (7), Fig. 3].</p> <p>(b) Insert a 358B plug into the REG MG( ) IN A jack [patch (8), Fig. 3].</p>   |
| 12   | <p>Observe the RTE indication.</p> <p><b>Requirement:</b> Normal power indication for the monitoring point</p>  |
| 13   | <p>Repeat Steps 3, 4, and 12 using the translated 1-kHz tone for the channel selected in SM1.</p>   |
| 14   | <p>At the transmitting tandem patch panel (SG-HFPB),</p> <p>(a) Remove the 372A plug from the REG SM1 IN A and multiple REG SG BK1 OUT jacks [patch (9), Fig. 3].</p> <p>(b) Remove the 372A plug from the REG SM2 IN A and multiple REG SG BK2 OUT jacks [patch (10), Fig. 3].</p>   |
| 15   | <p>Disconnect the 1-kHz test tone and the RTE; where possible, identify all patches.</p>  |

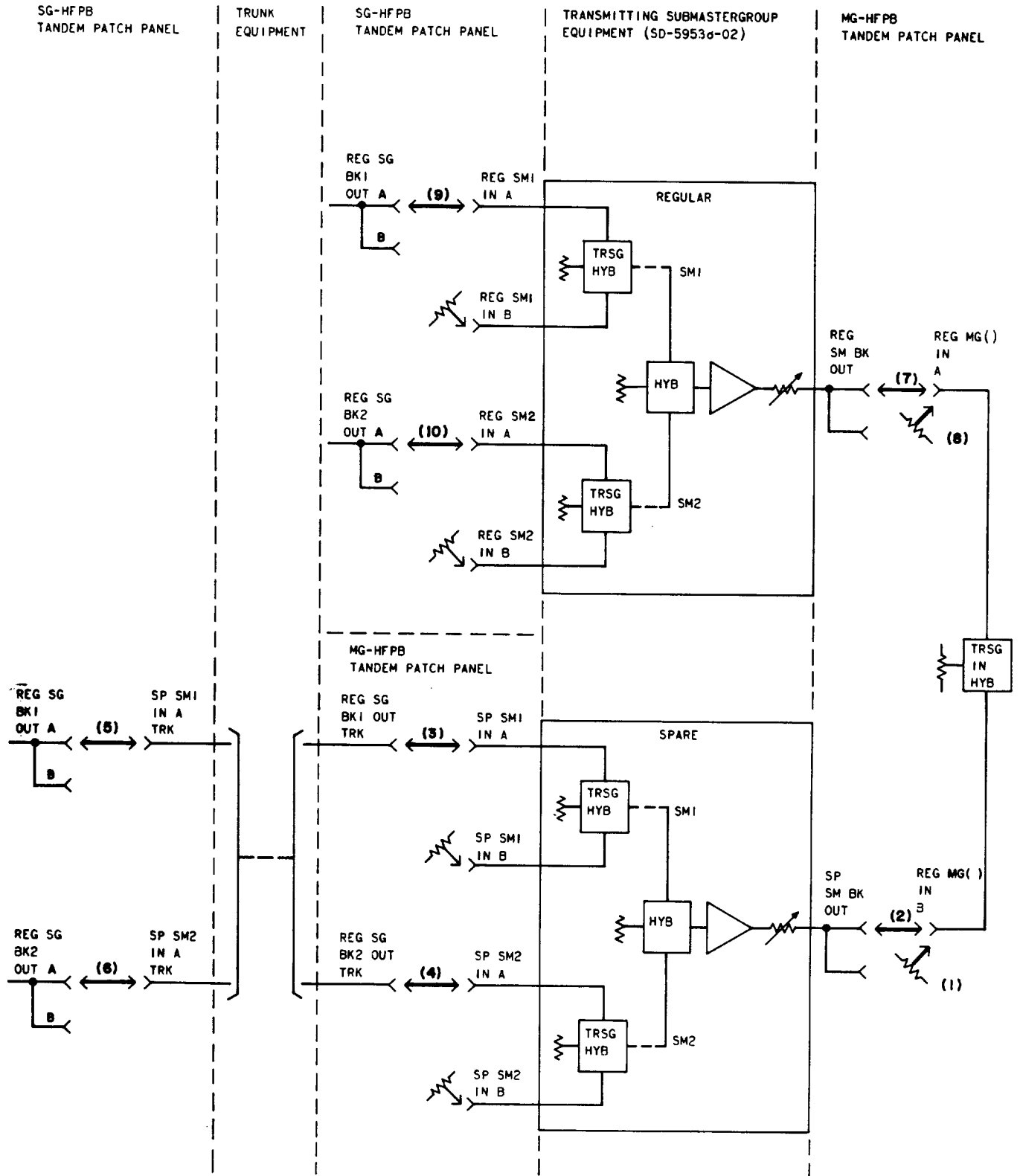


Fig. 3—Removing Regular Equipment From Service—Patching Procedure

| STEP                     | PROCEDURE   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
|--------------------------|---|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|------------------|---------------|------------------------|---------------------|------------|-------------------------|-----------------|--------------|------------------|---------------|------------------------|---------------------|------------|-------------------------|-----------------|-----------|----------------------|--------------------------|------------|---------------|-----------|--------------|--------------------------|-----------------------|--------------------------|-----------------------|
|                          | <p style="text-align: center;"><b>TABLE A</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th data-bbox="272 357 760 395">OLD DESIGNATION</th> <th data-bbox="760 357 1287 395">NEW DESIGNATION</th> </tr> </thead> <tbody> <tr> <td data-bbox="272 395 760 434">REG SG BK A OUT</td> <td data-bbox="760 395 1287 434">REG SG BK 1 OUT</td> </tr> <tr> <td data-bbox="272 434 760 472">REG SG BK B OUT</td> <td data-bbox="760 434 1287 472">REG SG BK 2 OUT</td> </tr> <tr> <td data-bbox="272 472 760 510">SP SM A IN LG A</td> <td data-bbox="760 472 1287 510">SP SM 1 IN A</td> </tr> <tr> <td data-bbox="272 510 760 549">REG SM A IN LG A</td> <td data-bbox="760 510 1287 549">REG SM 1 IN A</td> </tr> <tr> <td data-bbox="272 549 760 587">REG OR SP SM A IN LG B</td> <td data-bbox="760 549 1287 587">REG OR SP SM 1 IN B</td> </tr> <tr> <td data-bbox="272 587 760 625">TRSG HYB A</td> <td data-bbox="760 587 1287 625">REG OR SP SM 1 TRSG HYB</td> </tr> <tr> <td data-bbox="272 625 760 663">SP SM B IN LG A</td> <td data-bbox="760 625 1287 663">SP SM 2 IN A</td> </tr> <tr> <td data-bbox="272 663 760 702">REG SM B IN LG A</td> <td data-bbox="760 663 1287 702">REG SM 2 IN A</td> </tr> <tr> <td data-bbox="272 702 760 740">REG OR SP SM B IN LG B</td> <td data-bbox="760 702 1287 740">REG OR SP SM 2 IN B</td> </tr> <tr> <td data-bbox="272 740 760 778">TRSG HYB B</td> <td data-bbox="760 740 1287 778">REG OR SP SM 2 TRSG HYB</td> </tr> <tr> <td data-bbox="272 778 760 817">SP SM A OR B IN</td> <td data-bbox="760 778 1287 817">SP TRK IN</td> </tr> <tr> <td data-bbox="272 817 760 855">REG SG BK A OR B OUT</td> <td data-bbox="760 817 1287 855">REG SG BK 1 OR 2 OUT TRK</td> </tr> <tr> <td data-bbox="272 855 760 893">REG SM OUT</td> <td data-bbox="760 855 1287 893">REG SM BK OUT</td> </tr> <tr> <td data-bbox="272 893 760 932">SP SM OUT</td> <td data-bbox="760 893 1287 932">SP SM BK OUT</td> </tr> <tr> <td data-bbox="272 932 760 970">REG OR SP MG (1) IN LG A</td> <td data-bbox="760 932 1287 970">REG OR SP MG ( ) IN A</td> </tr> <tr> <td data-bbox="272 970 760 1008">REG OR SP MG (1) IN LG B</td> <td data-bbox="760 970 1287 1008">REG OR SP MG ( ) IN B</td> </tr> </tbody> </table> <p><b>Restoring Regular Equipment To Service</b></p> <p>16 Locate the jacks (Fig. 2) associated with the regular and spare equipment to be patched.</p> <p>17 At the transmitting tandem patch panel (MG-HFPB), perform the following steps:</p> <p>(a) Remove the 358B plug (75-ohm termination) from the REG MG( ) IN A jack [patch (1), Fig. 4].</p> <p><i>Note:</i> Jack designations may vary between offices. The new designations (Table A) are used in this procedure.</p> <p>(b) Insert a 372A plug (through connection) into the REG MG( ) IN A and REG SM BK OUT jacks [patch (2), Fig. 4].</p> <p>18 At the transmitting tandem patch panel (SG-HFPB),</p> <p>(a) Insert a 372A plug into the REG SM1 IN A and multiple REG SG BK1 OUT jacks [patch (3), Fig. 4].</p> <p>(b) Insert a 372A plug into the REG SM2 IN A and multiple REG SG BK2 OUT jacks [patch (4), Fig. 4].</p> | OLD DESIGNATION | NEW DESIGNATION | REG SG BK A OUT | REG SG BK 1 OUT | REG SG BK B OUT | REG SG BK 2 OUT | SP SM A IN LG A | SP SM 1 IN A | REG SM A IN LG A | REG SM 1 IN A | REG OR SP SM A IN LG B | REG OR SP SM 1 IN B | TRSG HYB A | REG OR SP SM 1 TRSG HYB | SP SM B IN LG A | SP SM 2 IN A | REG SM B IN LG A | REG SM 2 IN A | REG OR SP SM B IN LG B | REG OR SP SM 2 IN B | TRSG HYB B | REG OR SP SM 2 TRSG HYB | SP SM A OR B IN | SP TRK IN | REG SG BK A OR B OUT | REG SG BK 1 OR 2 OUT TRK | REG SM OUT | REG SM BK OUT | SP SM OUT | SP SM BK OUT | REG OR SP MG (1) IN LG A | REG OR SP MG ( ) IN A | REG OR SP MG (1) IN LG B | REG OR SP MG ( ) IN B |
| OLD DESIGNATION          | NEW DESIGNATION   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| REG SG BK A OUT          | REG SG BK 1 OUT   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| REG SG BK B OUT          | REG SG BK 2 OUT   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| SP SM A IN LG A          | SP SM 1 IN A  |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| REG SM A IN LG A         | REG SM 1 IN A   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| REG OR SP SM A IN LG B   | REG OR SP SM 1 IN B   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| TRSG HYB A               | REG OR SP SM 1 TRSG HYB   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| SP SM B IN LG A          | SP SM 2 IN A  |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| REG SM B IN LG A         | REG SM 2 IN A   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| REG OR SP SM B IN LG B   | REG OR SP SM 2 IN B   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| TRSG HYB B               | REG OR SP SM 2 TRSG HYB   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| SP SM A OR B IN          | SP TRK IN   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| REG SG BK A OR B OUT     | REG SG BK 1 OR 2 OUT TRK  |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| REG SM OUT               | REG SM BK OUT   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| SP SM OUT                | SP SM BK OUT  |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| REG OR SP MG (1) IN LG A | REG OR SP MG ( ) IN A   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |
| REG OR SP MG (1) IN LG B | REG OR SP MG ( ) IN B   |                 |                 |                 |                 |                 |                 |                 |              |                  |               |                        |                     |            |                         |                 |              |                  |               |                        |                     |            |                         |                 |           |                      |                          |            |               |           |              |                          |                       |                          |                       |

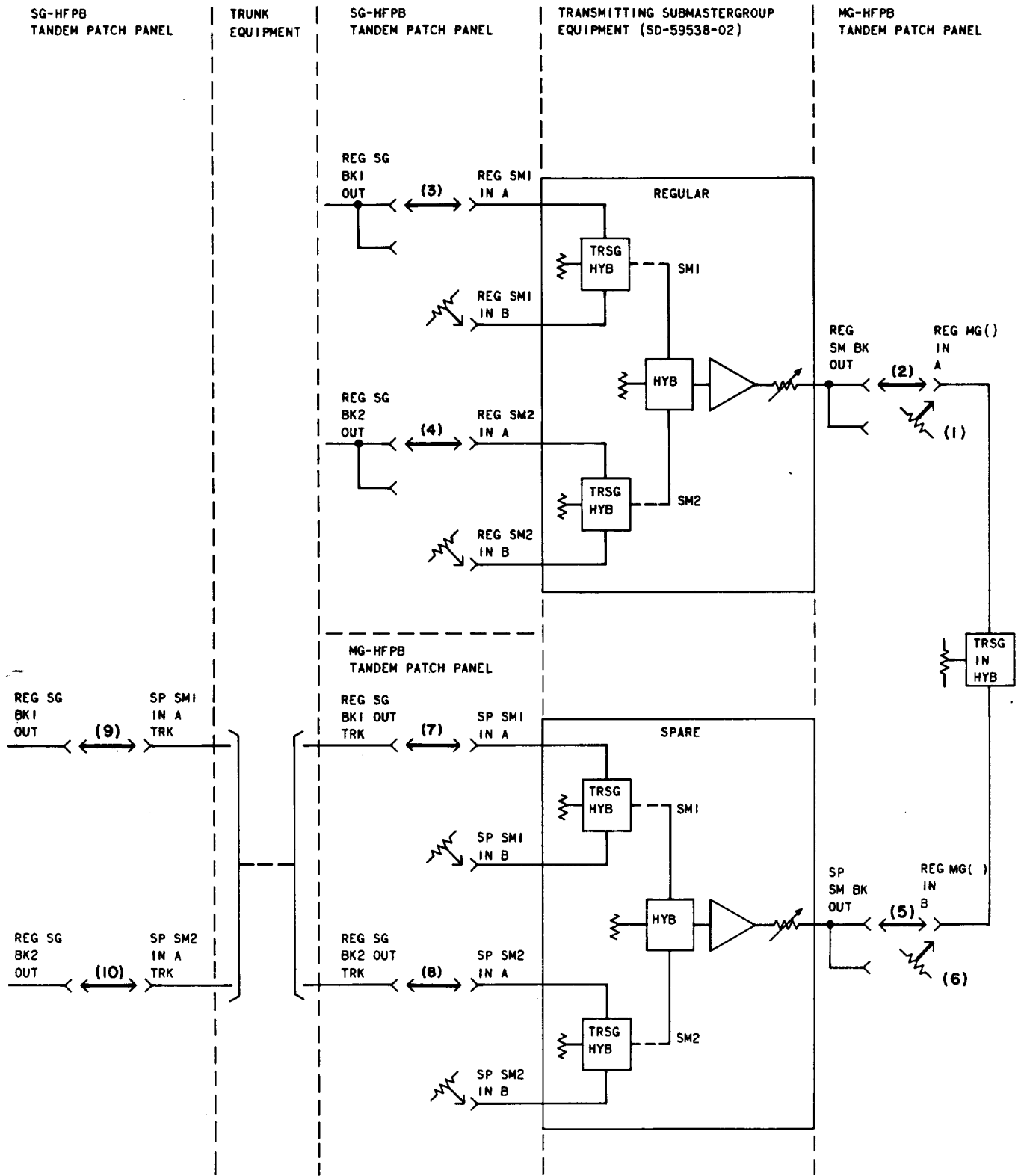


Fig. 4—Restoring Regular Equipment to Service—Patching Procedure

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| STEP | PROCEDURE   |
|------|---|
| 19   | <p>Observe the RTE indication.</p> <p><b>Requirement:</b> Approximately a 3-dB increase in power</p>  |
| 20   | <p>Repeat Steps 3, 4, and 19 using the translated 1-kHz tone for the channel selected in SM2.</p>   |
| 21   | <p>At the transmitting tandem patch panel (MG-HFPB),</p> <p>(a) Remove the 372A plug from the SP SM BK OUT and REG MG( ) IN B jacks [patch (5), Fig. 4].</p> <p>(b) Insert a 358B plug into the REG MG( ) IN B jack [patch (6), Fig. 4].</p>  |
| 22   | <p>Observe the RTE indication.</p> <p><b>Requirement:</b> Normal power indication for the monitoring point</p>  |
| 23   | <p>Repeat Steps 3, 4, and 22 using the translated 1-kHz tone for the channel selected in SM1.</p>   |
| 24   | <p>At the transmitting tandem patch panel (MG-HFPB),</p> <p>(a) Remove the 372A plug from the SP SM1 IN A and REG SG BK1 OUT TRK jacks [patch (7), Fig. 4].</p> <p>(b) Remove the 372A plug from the SP SM2 IN A and REG SG BK2 OUT TRK jacks [patch (8), Fig. 4].</p>                    |
| 25   | <p>At the transmitting tandem patch panel (SG-HFPB),</p> <p>(a) Remove the 372A plug from the SP SM1 IN A TRK and multiple REG SG BK1 OUT jacks [patch (9), Fig. 4].</p> <p>(b) Remove the 372A plug from the SP SM2 IN A TRK and multiple REG SG BK2 OUT jacks [patch (10), Fig. 4].</p> |
| 26   | <p>Disconnect the 1-kHz test tones and the RTE.</p>   |