

PRODUCTION TEST PROCEDURE

FOR

PM-2, PP-3990/RFC-93,  
PP-4151/RFC-93, & 516F-2

AC POWER SUPPLIES

COLLINS RADIO COMPANY

CEDAR RAPIDS, IOWA

TM-1193

| DATE    | REV. NO. | REVISED BY      | APPROVED BY                | REVISED PAGE NUMBERS                   |
|---------|----------|-----------------|----------------------------|--|
| 6-10-71 | 10/C     | <i>E. Keuse</i> | <i>C. Gill</i>             | 1+5                                    |
| 3/20/73 | 11       | <i>C.E.F.</i>   | <i>J. P. [unclear]</i>     | 1, 2, 3, 4 added TM number             |
| 9-9-74  | 12       | C.E. F.         | <i>[Signature]</i> 4-22-74 | 2, 3, 4, added toggle sw to test panel |
|         |          |                 |                            |  |
|         |          |                 |                            |  |
|         |          |                 |                            |  |

## 1.0 SCOPE:

This Production Test Procedure applies to the Collins types PM-2, PP-3990/FRC-93, PP-4151/FRC-93, & 516F-2 AC Power Supplies, Part Nos. 522-2639-004, 522-2639-015, 522-1170-013/014, & 522-1170-000, respectively.

See TM-3951 for 522-1170-015 (230V input).

## 2.0 REFERENCE INFORMATION:

### 2.1 Specifications:

PM-2 Equipment Specification, part no. 568-1555-00.  
516F-2 Equipment Specification, part no. 568-1956-00.  
PM-2 Production Test Requirements, part no. 569-2028-00.  
516F-2 Production Test Requirements, part no. 569-2491-00.

### 2.2 Publications:

PM-2 Instruction Sheet, part no. 523-0074-000.  
516F-2 Instruction Sheet, part no. 523-0756-605.

### 2.3 Drawings:

PM-2 Schematic Diagram, part no. 548-0246-003.  
516F-2 Schematic Diagram, part no. 544-2859-003.

## 3.0 TEST EQUIPMENT REQUIREMENTS:

The following equipment or their equivalents are required to perform the specified tests:

1. AF Generator, Hewlett Packard 204B (PM-2 & PP-3990 only).
2. AC VTVM, Hewlett Packard 400F.
3. AC Line Safety Tester.
4. Amateur Power Supply Tester, part no. 029-6396-00.
5. Meter & Load Panel, part no. 029-8121-00.
6. PM-2 Adapter Cable, Part No. 029-8121-041.
7. 516F-2 Adapter Cable, Part No. 029-8121-041.
8. Tapping Tool, 3/16" Dia. by 6" Long with cork tip (516F-2 only).

## 4.0 TEST CONDITIONS:

Unless otherwise specified, all tests shall be performed under the following conditions:

### 4.1 Power Supply Voltage, Frequency, & Phase:

115V 60Hz single-phase.

### 4.2 Ambient Temperature, Humidity, & Atmospheric Pressure:

Prevailing factory ambient.

### 4.3 Warmup Period:

30 seconds.

**5.0 PRELIMINARY TESTS:**

**5.1 Visual Inspection:**

1. Check for shorts, wiring errors, & damaged or missing parts.

**5.2 Line Cord Wiring:**

1. Connect the unit's line cord to the AC Line Safety Tester socket & connect the ground wire to the unit's chassis.
2. Set the tester power switch to ON & note only the green lamp lights.
3. Momentarily press the BULB CHECK switch & note all panel lamps light.
4. Set the tester power switch to OFF & disconnect the unit.

**6.0 INITIAL ADJUSTMENTS:**

**6.1 Setup:**

1. Set the controls as follows:

| <u>UNIT</u>     | <u>CONTROL</u>            | <u>POSITION</u> |
|-----------------|---------------------------|-----------------|
| PM-2 & PP-3990  | LINE VOLT SELECTOR SWITCH | 115V            |
| Unit under test | BIAS                      | midrange        |
| Tester          | AC/DC                     | AC              |
| Tester          | breaker                   | OFF             |
| Tester          | NORMAL/REVERSE            | NORMAL          |
| Tester          | 115V 60Hz                 | off             |
| Load Panel      | XMIT/REC                  | REC             |
| Load Panel      | 516E LV                   | off             |
| Load Panel      | 516E HV                   | off             |
| Load Panel      | AC                        | ON              |
| Load Panel      | MP                        | OFF             |
| Load Panel      | KWM-2/S-LINE              | KWM-2           |
| Load Panel      | 6.3VAC/RIPPLE             | 6.3VAC          |

2. Install V1 (5R4), part no. 257-0142-00, & V2 (5U4), part no. 257-0109-00, in the PP-4151 or 516F-2.
3. Connect the adapter cable to the output plug & the AC VTVM to the RIPPLE jacks.
4. Connect the power cord to the tester & set the 115V 60Hz switch to ON.
5. Adjust the variac in the tester for 115vac.

## 7.0 TEST REQUIREMENTS:

### 7.1 Preliminary Tests:

As outlined in Section 5.

### 7.2 Initial Adjustments:

As outlined in Section 6.

### 7.3 Voltage Output:

1. Adjust the REC LV control for a 170mA LV MA meter indication & the REC HV control for a 55mA HV MA meter indication.
2. Set the LOAD CURRENT selector to the 300V & 1500V positions & record the panel meter voltage reading at each.
3. Momentarily set Line Volt Selector Switch on the PM-2 & PP-3990 chassis to 230V. and note that the panel meter voltage readings drop to approximately half of the values obtained in the 115V. position.
4. Set the 115V 60Hz switch off, set the XMIT/REC switch to XMIT, & return the 115V 60Hz switch to ON.
5. Adjust the XMIT LV control for a 210mA LV MA meter reading & the XMIT HV control for a 230mA HV MA meter indication.
6. Repeat 7.3.2 then set the LOAD CURRENT selector to 150V.
7. Rotate the BIAS Pot from end to end & record the panel meter voltage readings at each end.
8. Adjust the BIAS pot for a -65Vdc panel meter voltage reading.
9. Set the LOAD CURRENT selector to 15V & record the filament voltage reading of the HP 400F AC VTVM.

### 7.4 Output Voltage Ripple:

1. Set the load panel toggle switch to Ripple.
2. Rotate the LOAD CURRENT selector to the 150V, 300V, & 1500V positions & record the AC VTVM readings at each.

### 7.5 Loudspeaker Check (PM-2 & PP-3990 Only):

1. Connect the audio generator to P3 & vary the output frequency from 300 to 3500Hz at a comfortable listening level.
2. Note the speaker does not distort or rattle, etc.
3. Set the 115V 60Hz switch off & disconnect the unit.

### 7.6 Near-Short Check (516F-2 Only):

1. Set AC line to 126.5 volts.
2. Wait 15 seconds, then tap each rectifier 3 times from one direction and 3 times from direction 90° from first direction. Use cork tipped tapping tool and look for arcs during tapping.
3. If tubes are OK, return AC line to 115 volts. If not OK, return AC line to 115 volts, set the 115V 60Hz switch to OFF, replace the defective tube, and repeat steps 7.3.1 through 7.6.3.

Ser. No. \_\_\_\_\_

FOR

Date \_\_\_\_\_

PM-2

PP-3990/FRC-93

Tech. \_\_\_\_\_

PP-4151/FRC-93

516F-2

AC POWER SUPPLIES

8.0 DATA SHEET REQUIREMENTS:

8.1 Preliminary Tests:

LIMITS:

Visual Inspection \_\_\_\_\_ check  
Line Cord Wiring \_\_\_\_\_ check

OK  
OK

8.2 Initial Adjustments:

Setup \_\_\_\_\_ check

OK

8.3 Voltage Output:

Rec. LV, 170mA load \_\_\_\_\_ Vdc  
Rec. HV, 55mA load \_\_\_\_\_ Vdc  
230V. Line switch operation \_\_\_\_\_ Check  
Xmit LV, 210mA load \_\_\_\_\_ Vdc  
Xmit HV, 230mA load \_\_\_\_\_ Vdc  
Bias voltage, minimum (PM-2 & PP-3990 only) \_\_\_\_\_ Vdc  
Bias voltage, minimum (PP-4151 & 516F-2 only) \_\_\_\_\_ Vdc  
Bias voltage, maximum \_\_\_\_\_ Vdc  
BIAS pot set to -65 Vdc \_\_\_\_\_ check  
Filament voltage \_\_\_\_\_ Vac

NMT 310 Vdc  
NMT 970 Vdc  
OK  
NLT 250 Vdc  
NLT 690 Vdc  
-40 to -55 Vdc  
-40 to -60 Vdc  
-75 to -105 Vdc  
OK  
6.3 + 0.3 Va

8.4 Output Voltage Ripple:

Xmit LV \_\_\_\_\_ Vac  
Xmit HV \_\_\_\_\_ Vac  
Xmit Bias \_\_\_\_\_ Vac

NMT 0.35 Vac  
NMT 20 Vac  
NMT 0.35 Vac

8.5 Loudspeaker Check (PM-2 & PP-3990 Only):

Good Fidelity, 300 to 3500Hz \_\_\_\_\_ check

OK

8.6 Near-Short Check (516F-2 Only):

Rectifiers do not arc \_\_\_\_\_ check

OK

|                     |                    |
|---------------------|--------------------|
| DEPT 14 SECTION 355 |                    |
| UUT CPN _____       |                    |
| TECH STAMP          | PROC REF <u>12</u> |
|                     | FISCAL YK _____    |