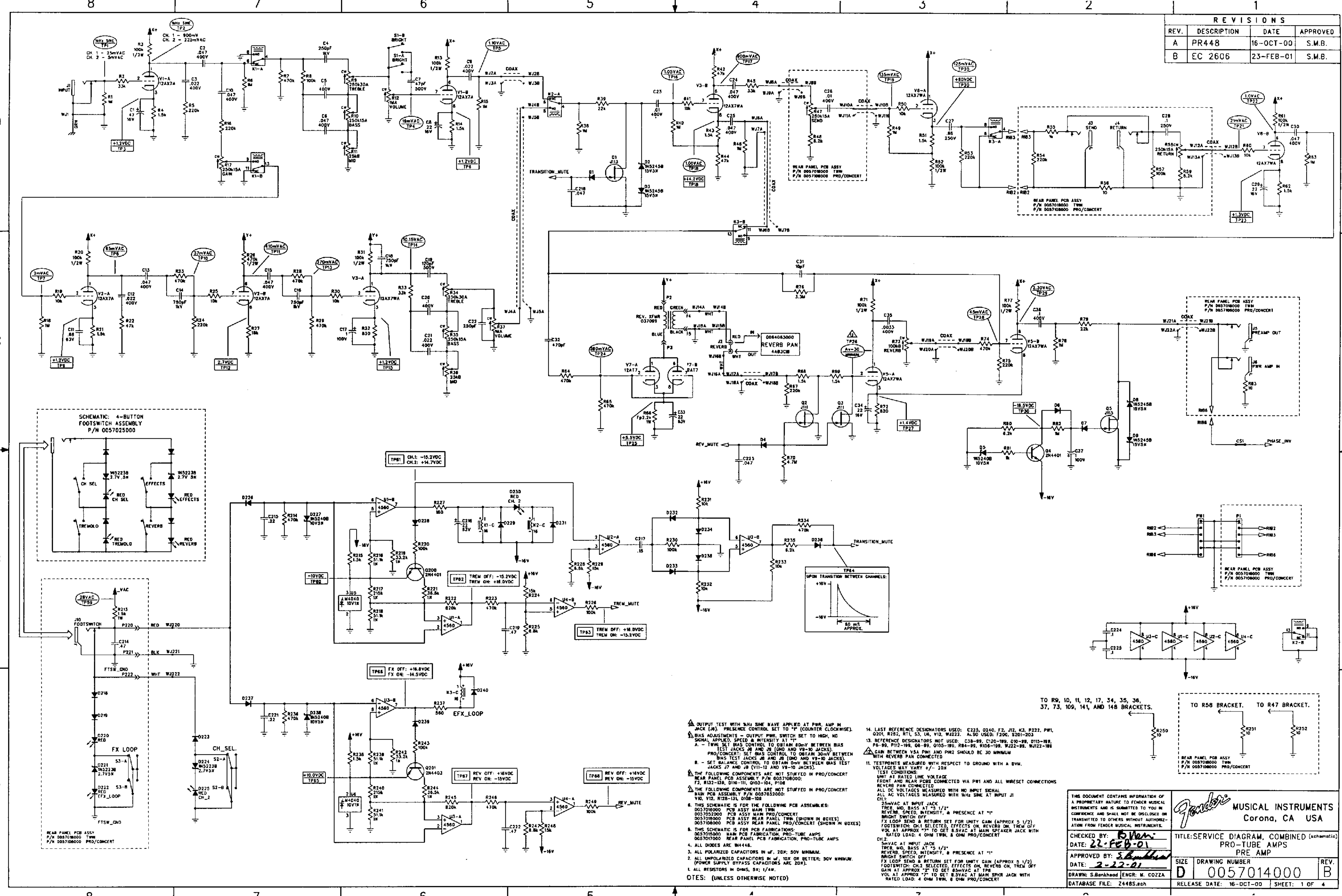


REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR448	16-OCT-00	S.M.B.
B	EC 2606	23-FEB-01	S.M.B.



1. OUTPUT TEST WITH 1kHz SINE WAVE APPLIED AT PHR. AMP IN JACK (J8). PRESENCE CONTROL SET TO "P" (COUNTER CLOCKWISE).
2. BIAS ADJUSTMENTS - OUTPUT PHR. SWITCH SET TO HIGH, NO SIGNAL APPLIED. SPEED & INTENSITY AT "1".
3. TEST JACKS J8 AND J9 (ONO AND V8-10 JACKS).
4. TEST JACKS J7 AND J8 (ONO AND V8-10 JACKS).
5. TEST JACKS J6 AND J7 (ONO AND V7-9 JACKS).
6. SET BALANCE CONTROL TO OBTAIN DOWN BETWEEN BIAS TEST JACKS J7 AND J8 (V7-9 JACKS).
7. SET BALANCE CONTROL TO OBTAIN DOWN BETWEEN BIAS TEST JACKS J7 AND J8 (V7-9 JACKS).
8. TEST JACKS J5 AND J6 (ONO AND V5-7 JACKS).
9. TEST JACKS J4 AND J5 (ONO AND V4-6 JACKS).
10. TEST JACKS J3 AND J4 (ONO AND V3-5 JACKS).
11. TEST POINTS MEASURED WITH RESPECT TO GROUND WITH A DVM. VOLTAGES MAY VARY +/- 10%.
12. TEST CONDITIONS:
 UNIT AT RATED LINE VOLTAGE
 FRONT AND REAR PCB'S CONNECTED VIA PH1 AND ALL WIRESET CONNECTIONS
 REVERB PAN CONNECTED
 ALL DC VOLTAGES MEASURED WITH NO INPUT SIGNAL
 ALL AC VOLTAGES MEASURED WITH 1kHz SINE AT INPUT J1
 CH1.
13. 25mVAC AT INPUT JACK
 TREB. MD. BASS AT "5 1/2"
 REVERB. SPEED, INTENSITY, & PRESENCE AT "1"
 BRIGHT SWITCH OFF
 FOOTSWITCH: CH1 RETURN SET FOR UNITY GAIN (APPROX 5 1/2)
 FX LOOP SEND & RETURN SET FOR UNITY GAIN (APPROX 5 1/2)
 GAIN AT APPROX "7" TO GET 8mVAC AT PHR
 VOL AT APPROX "7" TO GET 8mVAC AT MAIN SPEAKER JACK WITH RATED LOAD: 4 OHM TWM, 8 OHM PRO/CONCERT
14. LAST REFERENCE DESIGNATORS USED: C225, Q240, F2, J12, K3, R222, PH1, Q201, R152, R171, S3, U6, V12, W2223. A300 USED: F204, S201-203
15. REFERENCE DESIGNATORS NOT USED: C18-89, C120-189, Q10-89, Q115-189, P8-89, P112-189, Q4-89, Q105-189, R84-89, R105-189, W222-89, W1221-189
16. GAIN BETWEEN V5A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
17. GAIN BETWEEN V3A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
18. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
19. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
20. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
21. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
22. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
23. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
24. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
25. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
26. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
27. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
28. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
29. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
30. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
31. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
32. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
33. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
34. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
35. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
36. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
37. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
38. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
39. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
40. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
41. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
42. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
43. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
44. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
45. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
46. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
47. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
48. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
49. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
50. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
51. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
52. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
53. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
54. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
55. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
56. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
57. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
58. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
59. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
60. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
61. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
62. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
63. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
64. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
65. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
66. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
67. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
68. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
69. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
70. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
71. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
72. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
73. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
74. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
75. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
76. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
77. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
78. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
79. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
80. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
81. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
82. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
83. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
84. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
85. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
86. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
87. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
88. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
89. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
90. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
91. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
92. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
93. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
94. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
95. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
96. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
97. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
98. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
99. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED
100. GAIN BETWEEN V1A PH1 AND PH2 SHOULD BE 30 MINIMUM WITH REVERB PAN CONNECTED

THIS DOCUMENT CONTAINS INFORMATION OF A PROPRIETARY NATURE TO FENDER MUSICAL INSTRUMENTS AND IS SUBMITTED TO YOU IN CONFIDENCE AND SHALL NOT BE DISCLOSED OR TRANSMITTED TO OTHERS WITHOUT AUTHORIZATION FROM FENDER MUSICAL INSTRUMENTS.

Fender MUSICAL INSTRUMENTS
Corona, CA USA

CHECKED BY: *S. Bankhead*
DATE: 2-27-01

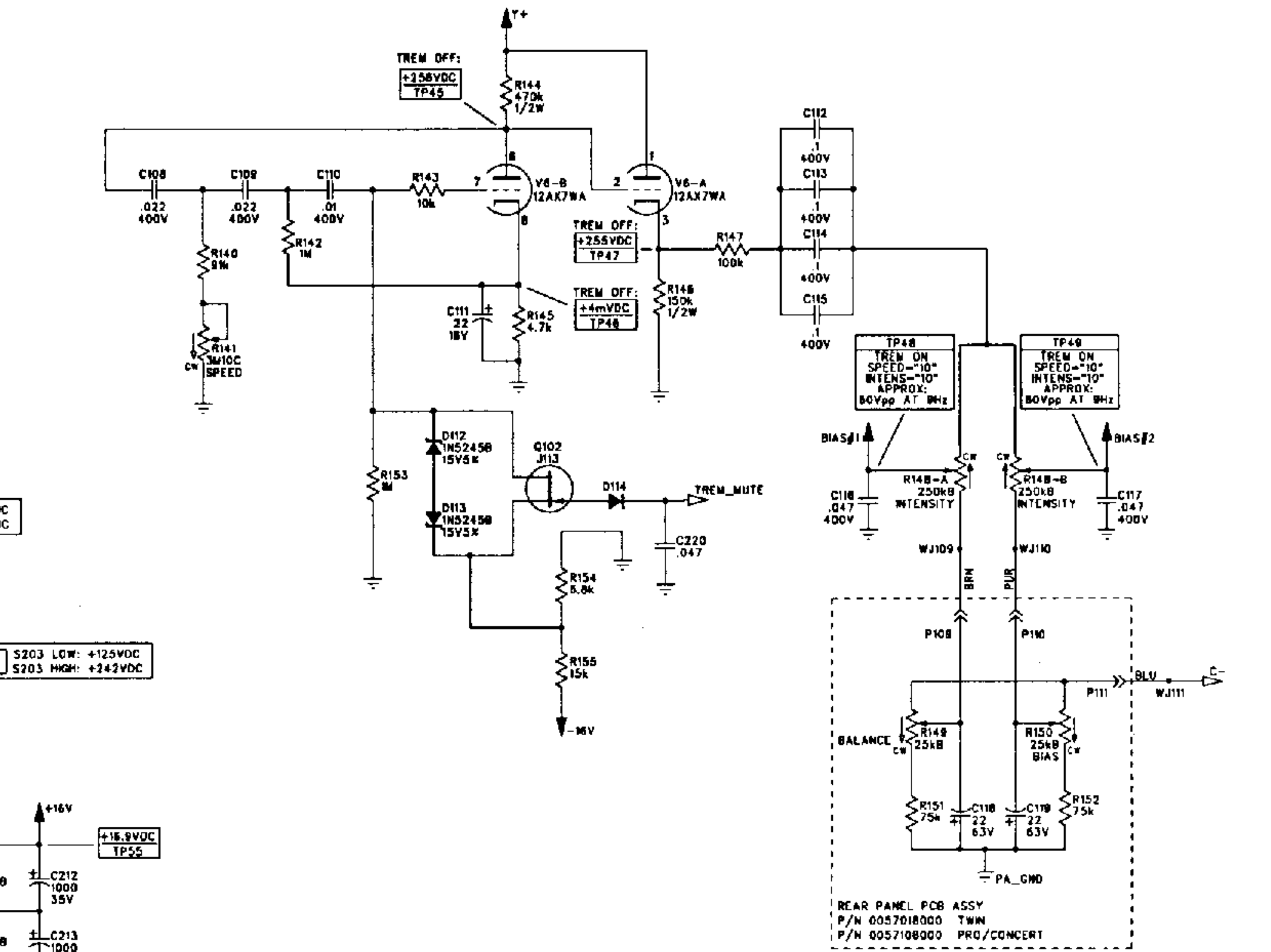
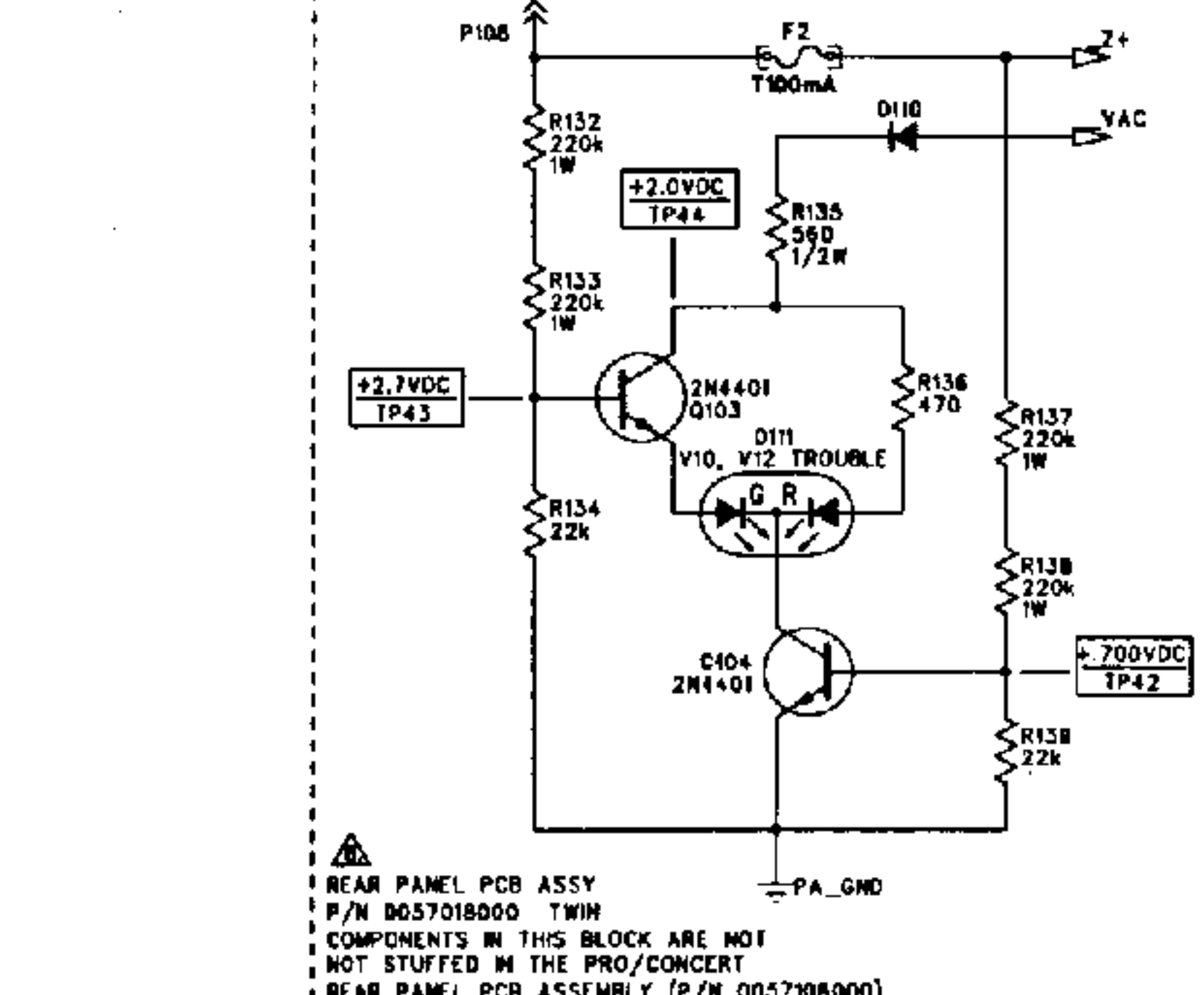
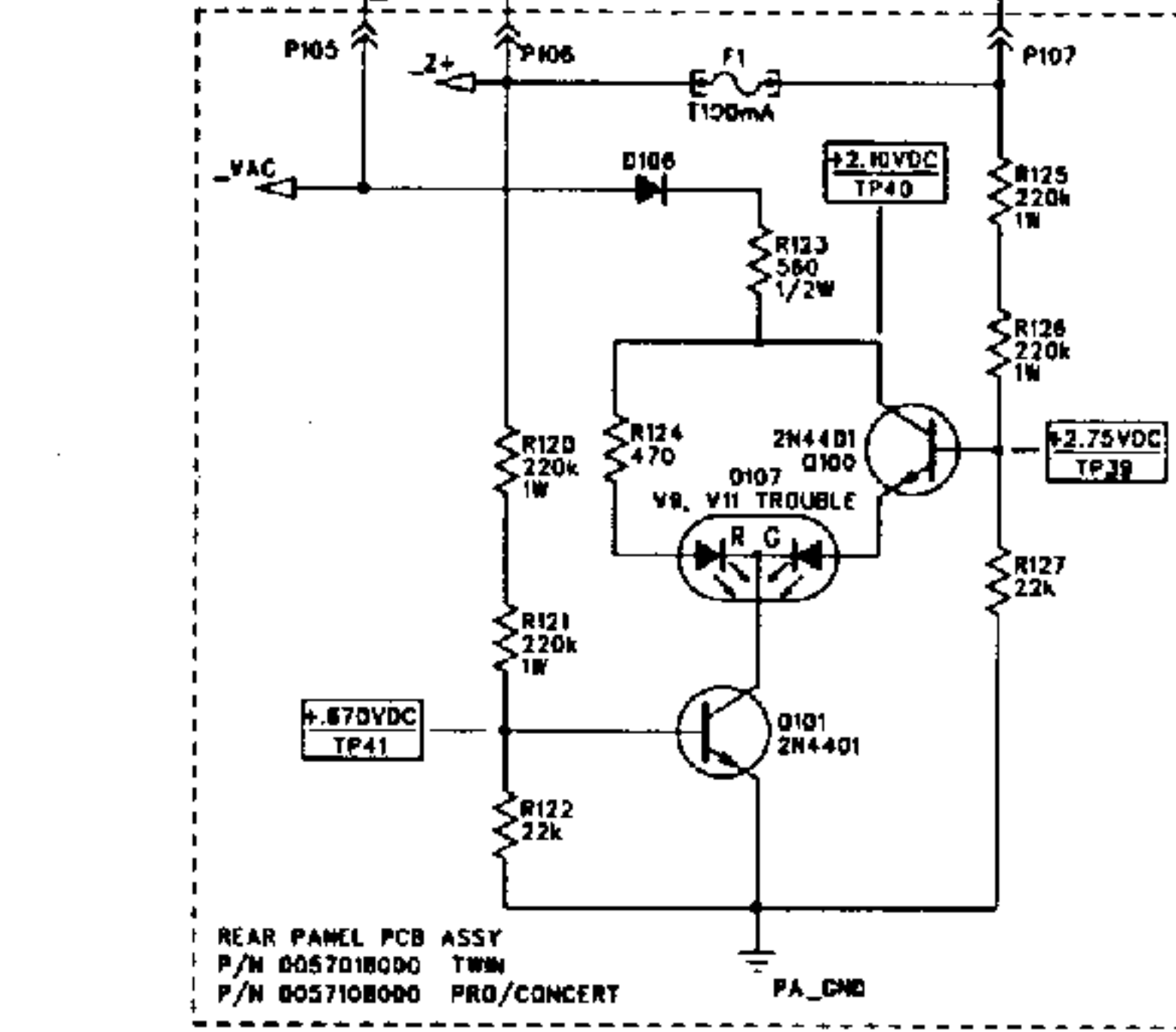
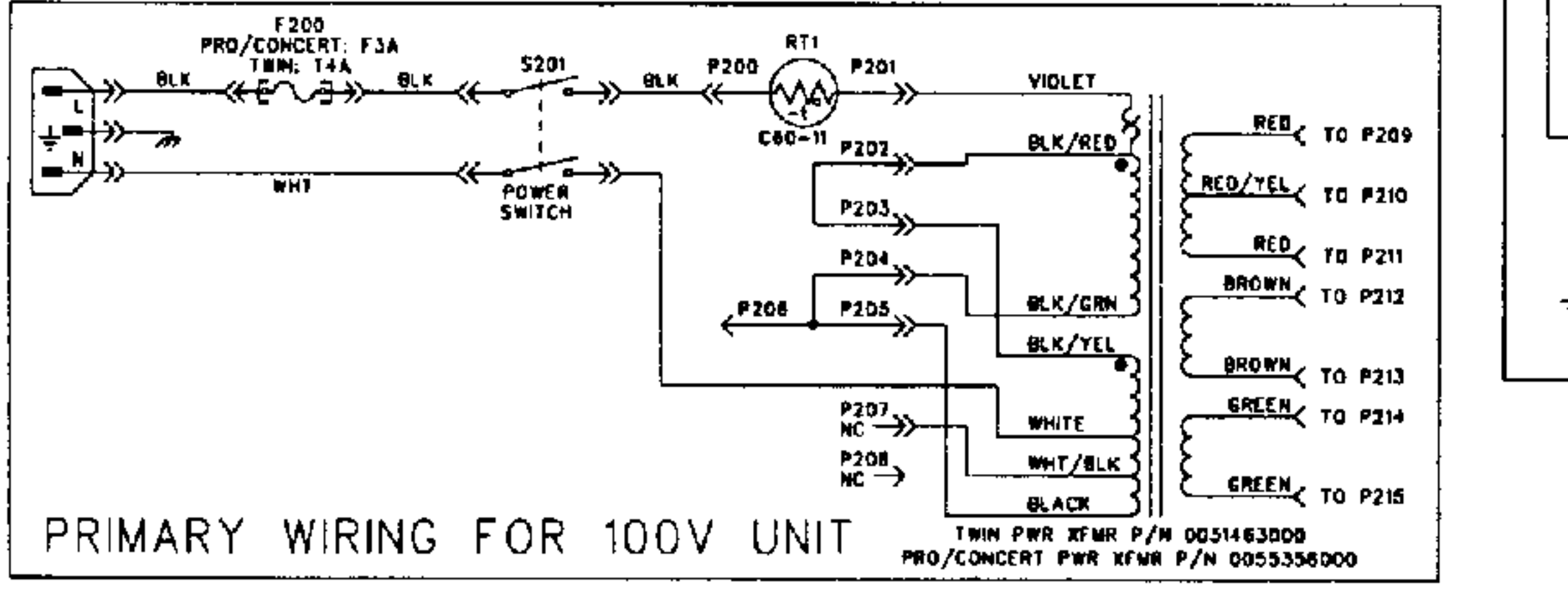
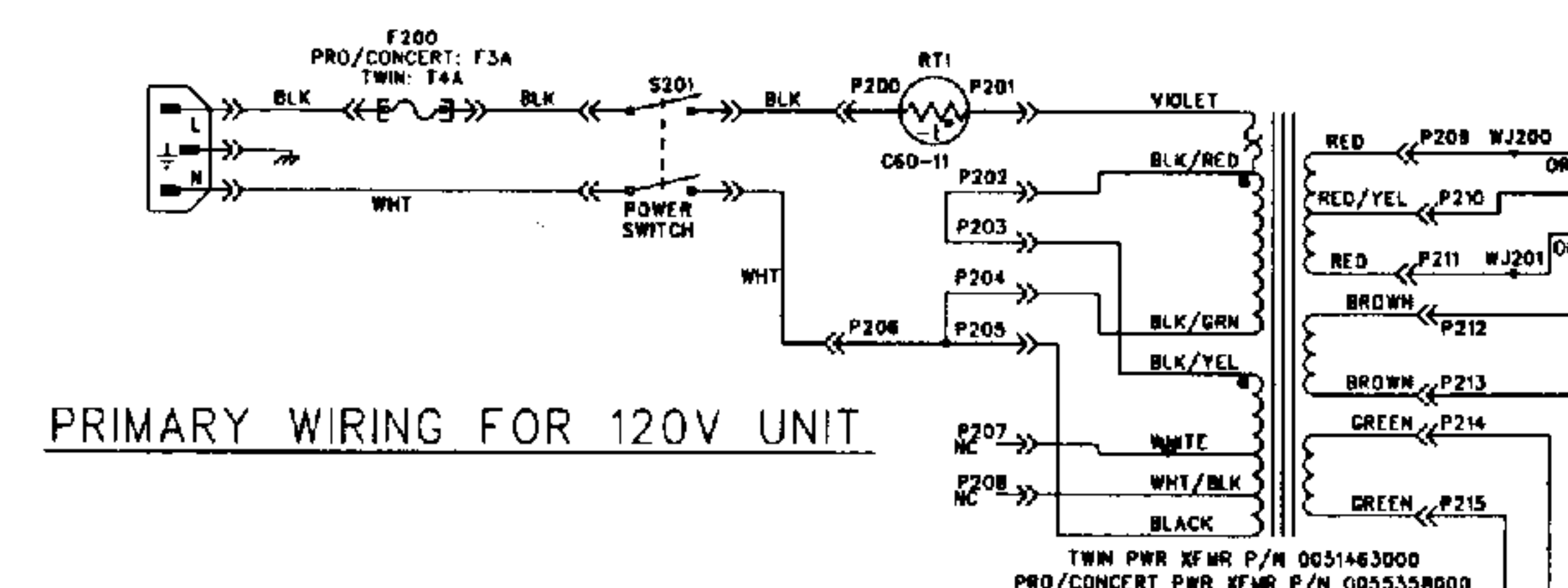
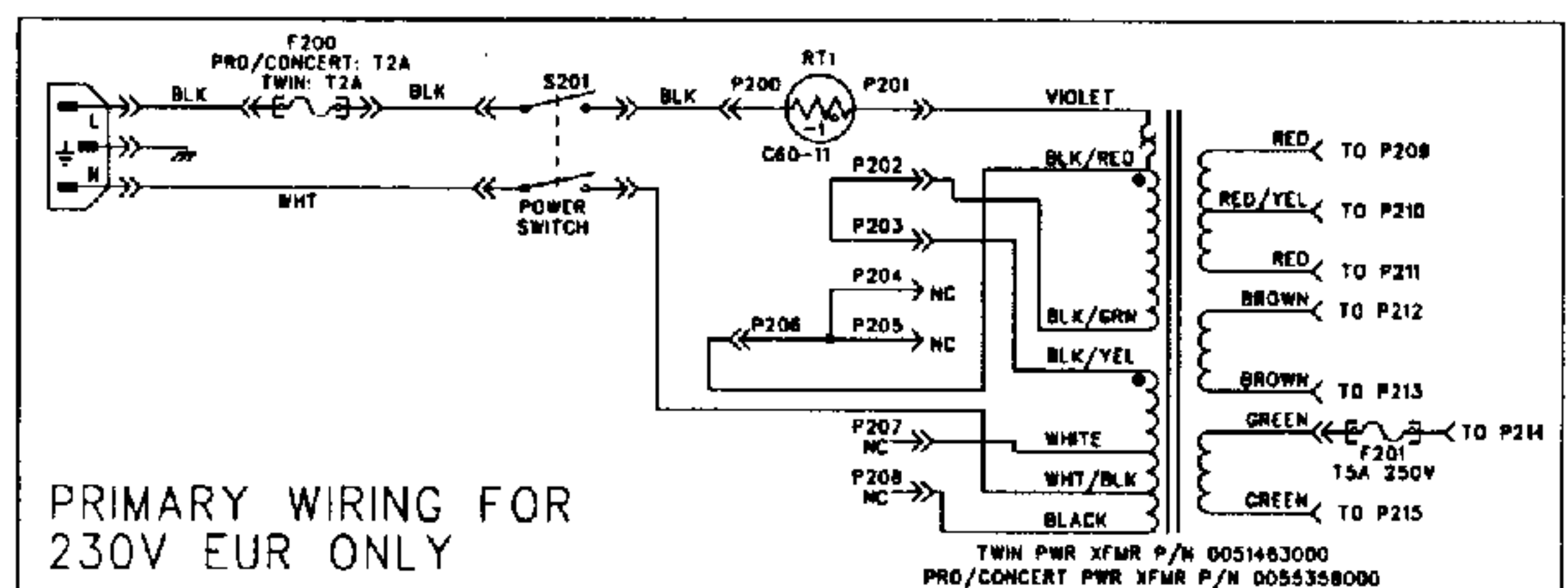
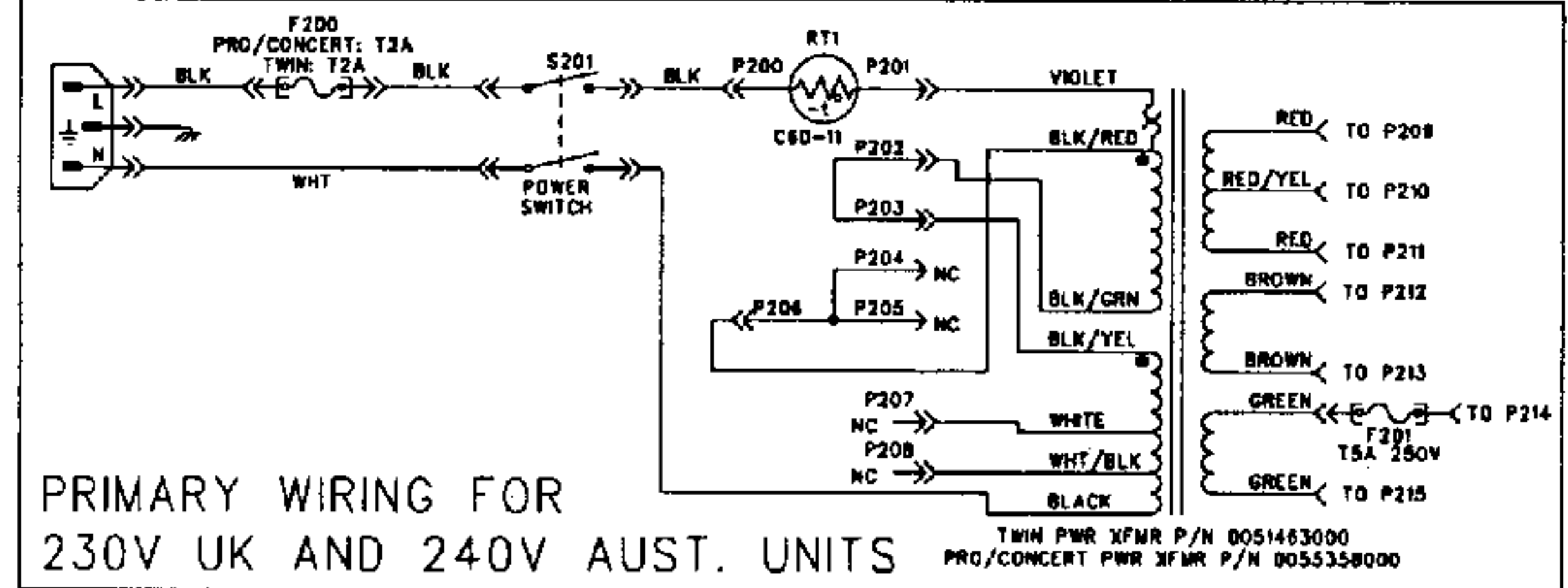
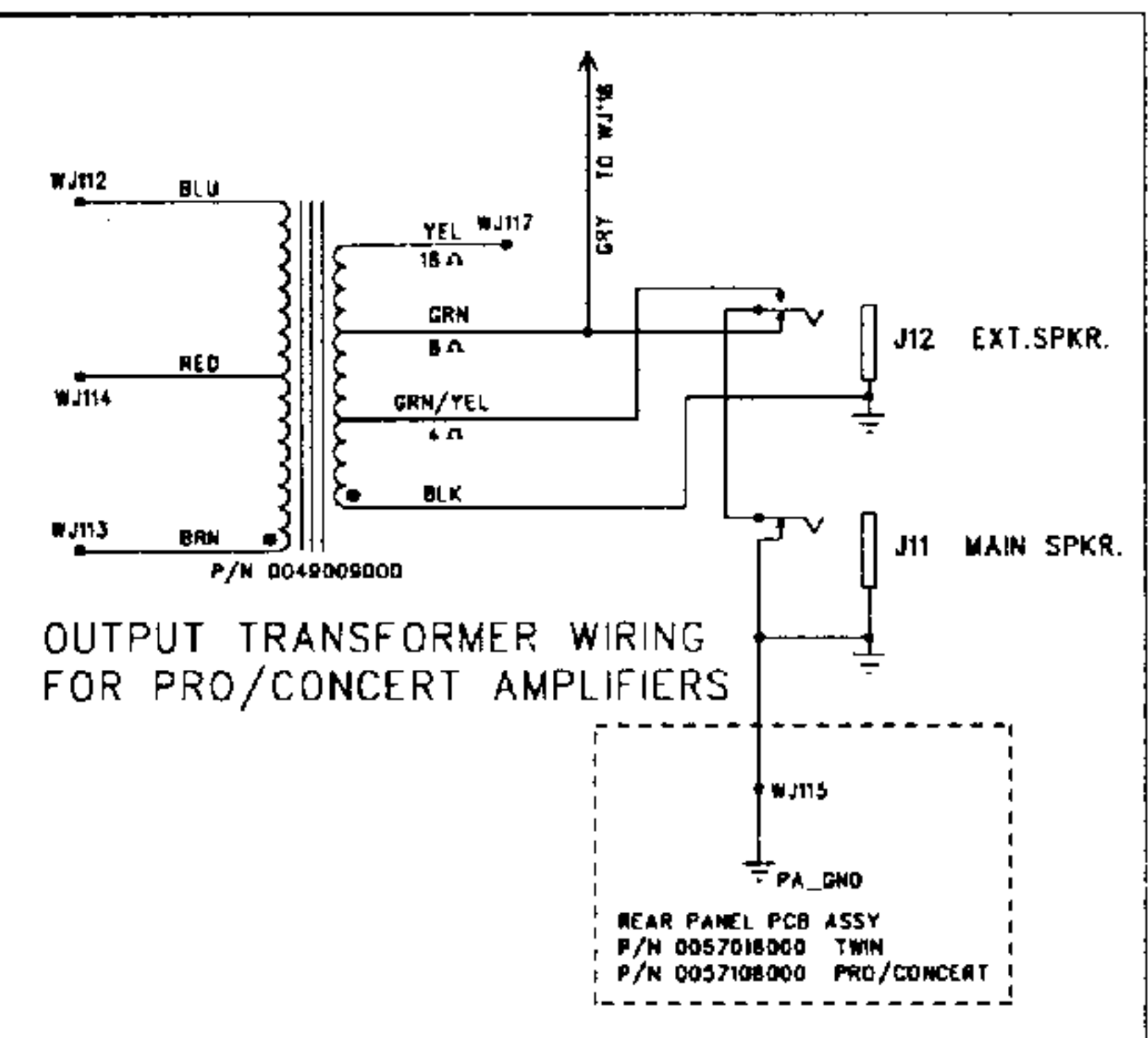
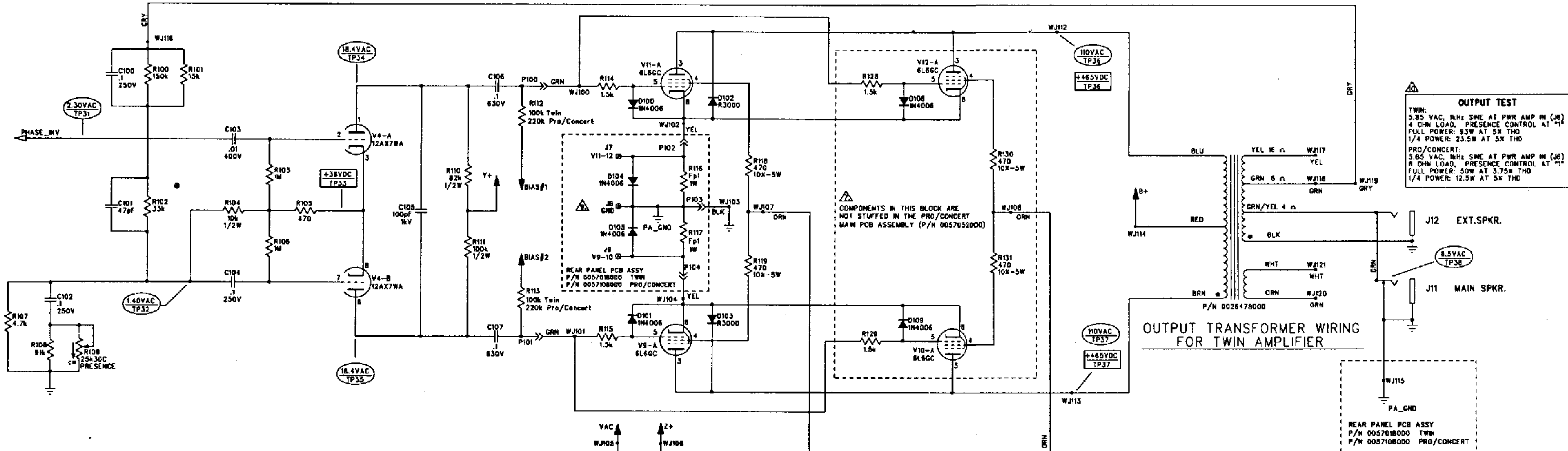
APPROVED BY: *S. Bankhead*
DATE: 2-27-01

DRAWN: S. Bankhead ENGR: M. COZZA
DATABASE FILE: 24485.rch

TITLE: SERVICE DIAGRAM, COMBINED (schematic)
PRO-TUBE AMPS
PRE AMP

SIZE: D
DRAWING NUMBER: 0057014000
RELEASE DATE: 16-OCT-00 SHEET: 1 OF 4

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR448	16-OCT-00	S.M.B.
B	EC 2606	23-FEB-01	S.M.B.



THIS DOCUMENT CONTAINS INFORMATION OF A PROPRIETARY NATURE TO FENDER MUSICAL INSTRUMENTS AND IS SUBMITTED TO YOU IN CONFIDENCE AND SHALL NOT BE DISCLOSED OR TRANSMITTED TO OTHERS WITHOUT AUTHORIZATION FROM FENDER MUSICAL INSTRUMENTS.

Fender MUSICAL INSTRUMENTS
Corona, CA USA

CHECKED BY: *[Signature]*
DATE: 22-FEB-01

APPROVED BY: *[Signature]*
DATE: 2-22-01

DRAWN: S.Bankhead ENGR: M. COZZA
DATABASE FILE: 24485.rch

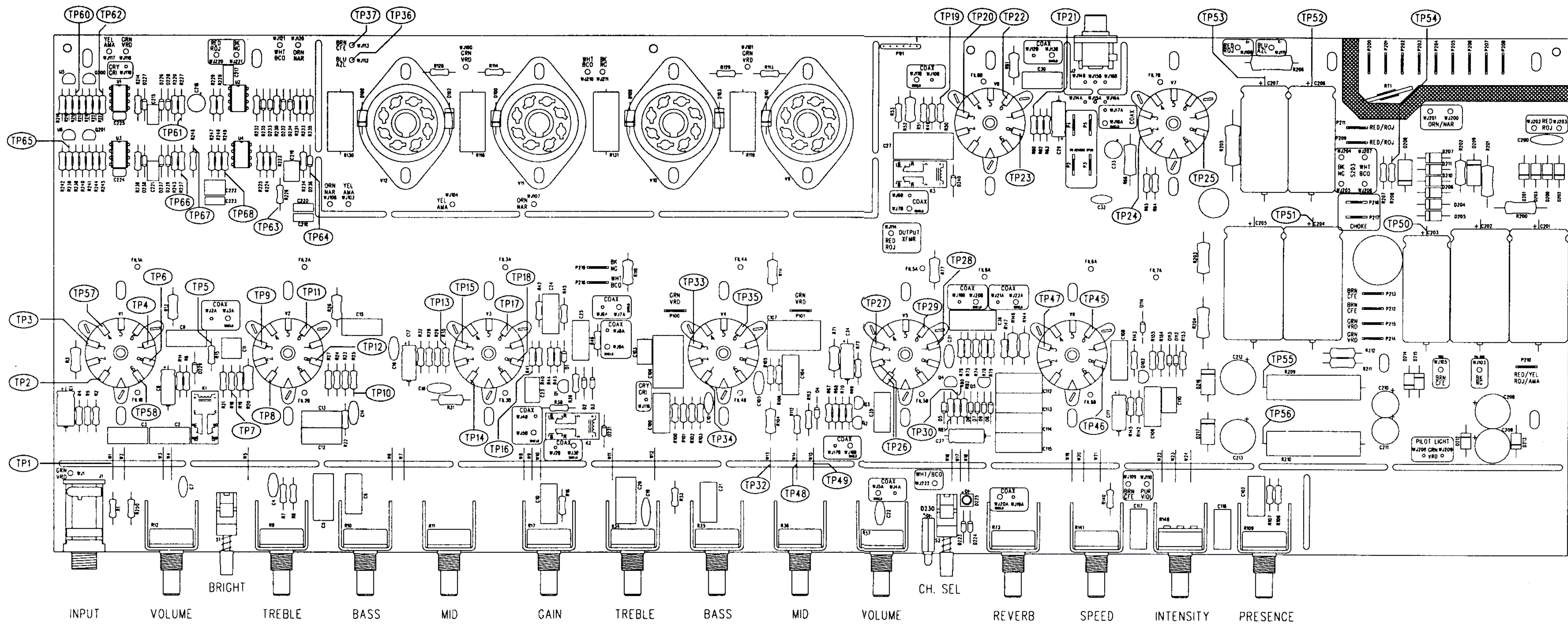
TITLE: SERVICE DIAGRAM, COMBINED (schematic)
PRO-TUBE AMPS
POWER AMP

SIZE: D
DRAWING NUMBER: 0057014000
RELEASE DATE: 16-OCT-00

REV. B
SHEET: 2 OF 4

SEE PAGE 1
NOTES: (UNLESS OTHERWISE NOTED)

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR448	16-OCT-00	S.M.B.
B	EC 2606	23-FEB-01	S.M.B.



FILM/DWG: SERVICE DIAGRAM
 DATABASE: Z448P1PCB DATE: 23-FEB-01

- 5. TP31, TP39-44, TP59 SHOWN ON SHEET 4
- 4. TP38 NOT SHOWN. TP38 AT MAIN OUTPUT JACK J11
- 3. SEE PAGE 1 FOR NOTES AND TEST CONDITIONS
- 2. WIRES NOT SHOWN FOR CLARITY
- 1. PCB SHOWN BEFORE POWER AMP BREAKAWAY IS INSTALLED IN CHASSIS

NOTES: (UNLESS OTHERWISE NOTED)

THIS DOCUMENT CONTAINS INFORMATION OF A PROPRIETARY NATURE TO FENDER MUSICAL INSTRUMENTS AND IS SUBMITTED TO YOU IN CONFIDENCE AND SHALL NOT BE DISCLOSED OR TRANSMITTED TO OTHERS WITHOUT AUTHORIZATION FROM FENDER MUSICAL INSTRUMENTS.

CHECKED BY: *Bill*
 DATE: 22-02-01
 APPROVED BY: *S. Bamford*
 DATE: 2-22-01
 DRAWN: S.Bamford ENGR: S.Bamford
 DATABASE FILE: Z448P1PCB

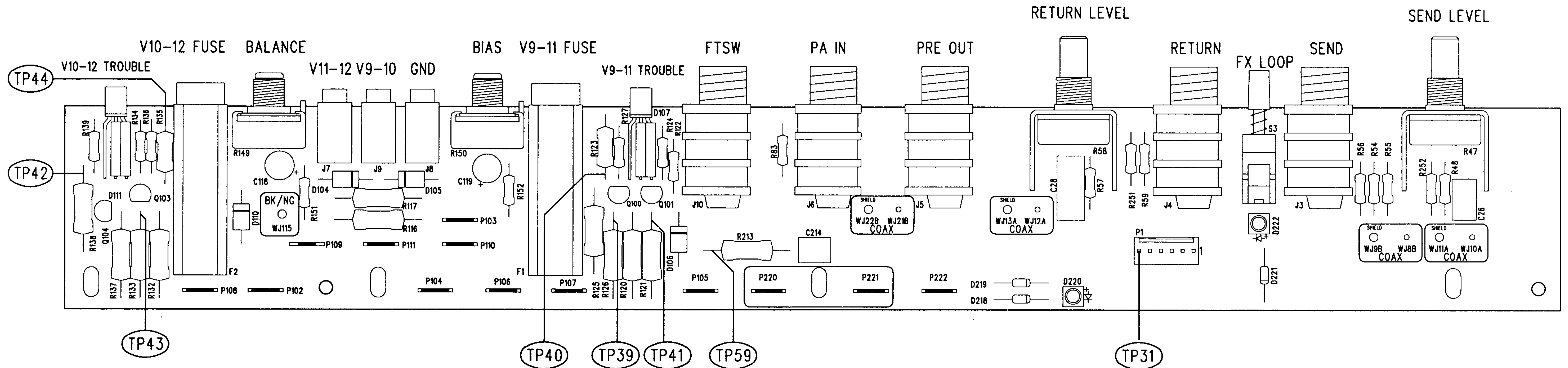
Fender MUSICAL INSTRUMENTS
 Corona, CA USA

TITLE: SERVICE DIAGRAM, COMBINED (PCB assy)
 PRO-TUBE AMPS
 MAIN PCB

SIZE: D DRAWING NUMBER: 0057014000
 REV: B

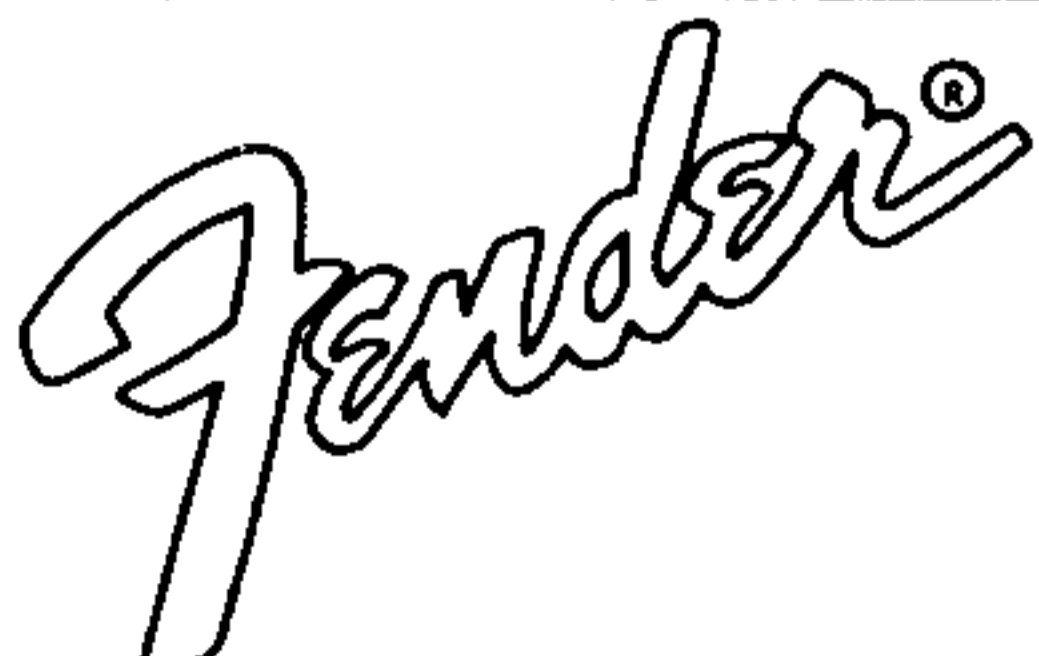
RELEASE DATE: 16-OCT-00 SHEET 3 OF 4

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
A	PR 448	16-OCT-00	S.M.B.
B	EC 2606	23-FEB-01	S.M.B.



FILM/DWG: SERVICE DIAGRAM
 DATABASE: Z448P2.PCB DATE: 16-OCT-00

2. SEE PAGE 1 FOR NOTES AND TEST CONDITIONS
 1. WIRES NOT SHOWN FOR CLARITY
 NOTES: (UNLESS OTHERWISE NOTED)

THIS DOCUMENT CONTAINS INFORMATION OF A PROPRIETARY NATURE TO FENDER MUSICAL INSTRUMENTS AND IS SUBMITTED TO YOU IN CONFIDENCE AND SHALL NOT BE DISCLOSED OR TRANSMITTED TO OTHERS WITHOUT AUTHORIZATION FROM FENDER MUSICAL INSTRUMENTS.		 MUSICAL INSTRUMENTS Corona, CA U.S.A.	
CHECKED BY: <u><i>Porter</i></u> DATE: <u>22-FEB-01</u>		TITLE: SERVICE DIAGRAM, COMBINED (PCB assy) PRO-TUBE AMPS REAR PANEL PCB	
APPROVED BY: <u><i>S. Bankhead</i></u> DATE: <u>2-22-01</u>		SIZE B	DRAWING NUMBER 0057014000
DRAWN: S.Bankhead ENGR: S.Bankhead		REV. B	REV. B
DATABASE FILE: Z448P2.PCB		RELEASE DATE: 16-OCT-00	SHEET 4 OF 4