

FENDER STUDIO LEAD AMPLIFIER (223200)

PARTS LIST

019363 Cabinet w/hdw
 019538 Grill frame w/hdw
 019630 Upper cabinet back
 019631 Lower cabinet back
 019170 Handle w/insert
 019279 Handle cap
 019276 Glide
 019275 Glide cushion insert
 024695 Corner, two-screw
 024752 Chassis strap
 020708 Power transformer
 020910 12" speaker
 019585 Tolex, black
 018252 Grill cloth
 020489 Reverb pan
 031849 Reverb pan bag
 020903 17" reverb cable
 020901 30" reverb cable

CAPACITORS

060962 .001 mfd 10%
 014700 .047 mfd 125v
 004026 .0000222 mfd 10% 1000v
 015126 100 mfd 16v
 016847 1 uf 16v
 017497 .1 uf 63v
 017518 560 pf 1kv
 019742 1 uf NP
 019744 10 uf NP
 019959 .01 met poly 10%
 019961 .015 met poly
 019969 .047 uf met poly 10%
 019971 .068 met poly
 019972 .082 met poly
 019973 .10 met poly
 019977 .15 met poly
 019979 .22 met poly
 020486 4700 uf 50v
 020538 680 uf 35v
 020867 .00033 mfd 10% 1kv
 020875 .003 mfd 10% 1kv
 020883 .00001 mfd 1kv
 020925 120 pf 10% 1kv
 023257 .002 10% 25F
 069724 .0001 mfd 10% 1kv
 017620 1500 pf 1kv
 019963 .022 uf met poly
 065862 .0012 mfd 10%
 019985 .47 met poly

RESISTORS

006468 .5 ohm 10% 5w
 015582 10k 1/4w
 015583 46.4k 1/4w 1%
 015585 100k 1/4w
 015718 1k 1/4w 1%
 016201 2.2 meg 1/4w 5%
 016896 10 ohm 1/4w 1%
 016929 46.4 ohm 1/4w 1%
 016930 56.2 ohm 1/4w 1%
 016934 100 ohm 1/4w 1%
 016943 464 ohm 1/4w 1%
 016944 562 ohm 1/4w 1%
 016946 825 ohm 1/4w 1%
 016953 1.78k 1/4w 1%
 016955 2.15k 1/4w 1%
 016958 3.32k 1/4w 1%
 016960 5.62k 1/4w 10%
 016961 6.81k 1/4w 10%
 016967 17.8k 1/4w 1%
 016971 33.2k 1/4w
 016973 38.3k 1/4w 1%
 016979 215k 1/4w
 016984 464k 1/4w
 020740 .22 ohm 5w
 021170 100 ohm 10% 1/2w

021196 820 ohm 10% 1/2w
 021246 3.3k ohm 10% 1/2w
 023166 150 ohm 1w 10%
 035590 2.2 ohm 1/2w 10%
 061218 4.7 ohm 10% 1/2w
 069823 5.6k 1/2w 10%
 016957 2.74k 1/4w
 016968 21.5k 1/4w 1%
 070128 680 ohm 10% 1/2w

TRANSISTORS

013569 RCA29B NPN
 013686 2N6254
 013568 RCA30B PNP
 014409 MPS A18
 014689 N CH FET
 016739 NPN TO 92

DIODES

014754 LED (Channel 2)
 006260 Low leakage
 009165 IN4744 15v
 015003 IN5234B
 018030 1.5A 200v
 020534 3A 200v
 020591 LED (power on)

CONTROLS

025674 1.5KL, trim
 019712 50KRA (2 channel treble & bass)
 019734 10KRA (gain)
 019736 50KL (1 channel treble, master, reverb, middle)
 019995 250KL, trim
 020596 50KA (2 channel volume)
 019710 50KA (1 channel volume & bass)
 019716 2KA (1 channel middle)

SCREWS

011231 Back mounting
 019277 Speaker mounting
 022103 Corner mounting
 022160 Glide mounting
 022244 Handle mounting
 022152 Logo mounting
 014170 Transistor cover mounting
 014172 Channel select switch mounting
 022236 Chassis mounting
 030858 Cable clamp mounting
 030866 Chassis mounting (back lip)

WASHERS

016436 Lock, internal (input jacks)
 016469 Lock, internal (fuse holders, ground switch, on & off switch)
 020884 Lock, internal (controls)
 020885 Flat (controls)
 022293 Finish (on & off switch)
 022384 Lock, internal (footswitch, pre-amp, power-amp jacks)
 031153 Finish (jacks)
 043760 Neoprene (fuse holder)
 074211 Mica (TO-3 transistor)

NUTS

021972 Handle mounting
 016352 Jack mounting
 020886 Control mounting
 022012 Switch mounting
 031666 Fuse holder mounting
 092494 Speaker mounting

CONNECTORS

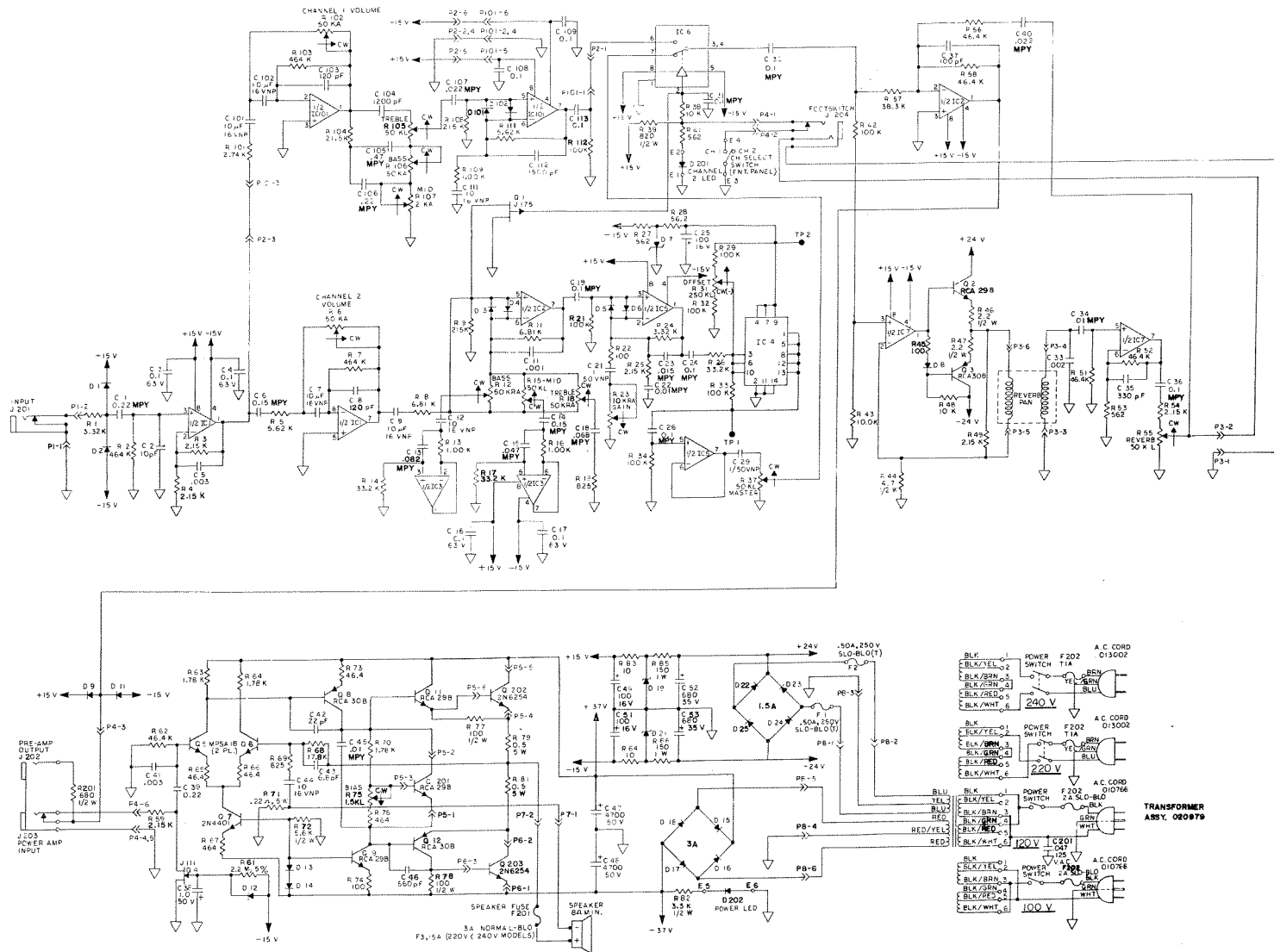
013541 6-pin (PCB-female)
 013539 6-pin (PCB-male)
 013534 3-pin (PCB-female)
 013533 3-pin (PCB-male)
 020496 3-pin (female)
 013531 2-pin (PCB-female)
 013529 2-pin (PCB-male)
 021157 6 pos (rhythm channel input-female)
 021158 6 pos. (rhythm channel input-male)

MISCELLANEOUS

019798 Knob (channel 1 — volume, treble, middle, bass)
 019886 Knob (channel 2 — all)
 007565 Bushing, strain relief (line cord)
 018015 Bushing, strain relief (speaker cable)
 022491 Cable clamp (linecord & reverb cables)
 014715 Jack (power-amp input)
 014987 Jack (input)
 014988 Jack (footswitch pedal)
 020772 Jack (reverb in & out)
 035897 Jack (pre-amp output)
 010036 Fuse 1/2A 250v (slo-blo)
 021584 Fuse 2A slo-blo (line)
 077982 Fuse 3A (speaker)
 021527 Fuse holder
 019213 Slide switch (channel select)
 037960 Toggle switch (on & off)
 020580 Line cord
 013528 Dual op amp
 019944 1C, CMOS
 016652 P-MOS analog switch (TL 604)
 014414 1C socket
 027102 Transistor socket
 017037 Fuse clip
 020536 Mini heatsink
 020656 Heatsink
 020556 Transistor cover
 020698 Control panel
 020703 Back panel (chassis)

EXPORT MODELS ONLY

(223240-240v & 223250 — S/220v)
 020730 Back panel, chassis (S/220v & 240v)
 061663 Toggle switch on & off (S/220v & 240v)
 013005 Fuse holder (S/220v & 240v)
 013002 Line cord (S/220v & 240v)
 010401 Bushing, strain relief, line cord (S/220v & 240v)
 013112 Fuse, 1A, line (S/220v & 240v)
 020796 Fuse 3A, speaker (S/220v & 240v)
 013261 Fuse, 15A, secondary (S/220v)
 016573 Fuseholder, clip type (S/220v)
 016546 Insulation plate, fuseholder (S/220v)
 013014 Clamp, strain relief (S/220v)
 015701 Screw, clamp mounting (S/220v)
 097360 Nut, clamp & fuse clip mounting (S/220v)
 034769 Screw, fuse clip mounting (S/220v)
 021564 Shield, fuseholder (S/220v)
 021565 Shield, on & off switch (S/220v)
 021124 240v label (240v)



FENDER STUDIO LEAD AMPLIFIER (223200)

FENDER STUDIO LEAD AMPLIFIER PC BOARD ASSEMBLY (020245-000) PARTS LIST

CAPACITORS

| | | |
|--------|-----------------------|-------------------------|
| 016405 | 6.8 pf 10% | C43 |
| 020883 | 10 pf 10% | C2 |
| 004026 | 22 pf 10% | C42 |
| 069724 | 100 pf 10% | C37 |
| 020925 | 120 pf 10% | C8 |
| 020867 | 330 pf 10% | C35 |
| 017518 | 560 pf 10% | C46 |
| 060962 | .001 uf 10% | C11 |
| 023257 | .002 uf 10% | C33 |
| 020875 | .003 uf 10% | C41 |
| 019952 | .0033 uf 10% met poly | C5 |
| 019959 | .01 uf 10% met poly | C22, 34, 45 |
| 019961 | .015 uf 10% met poly | C23 |
| 019963 | .022 uf 10% met poly | C40 |
| 019969 | .047 uf 10% met poly | C15 |
| 019971 | .068 uf 10% met poly | C18 |
| 019972 | .082 uf 10% met poly | C13 |
| 019973 | .10 uf 10% met poly | C19, 24, 26, 31, 32, 36 |
| 019977 | .15 uf 10% met poly | C6, 14 |
| 019979 | .22 uf 10% met poly | C1, 39 |
| 017497 | .1 uf 63v | C3, 4, 16, 17 |
| 019742 | 1 uf 50v | C21, 29 |
| 019744 | 10 uf 16v | C7, 9, 12, 44 |
| 016847 | 1 uf 16v | C38 |
| 015126 | 100 uf 16v | C25, 49, 51 |
| 020538 | 680 uf 35 v | C52, 53 |
| 020486 | 4700 uf 50v | C47, 48 |

RESISTORS

| | | |
|--------|------------------|-------------------------|
| 016896 | 10 ohm 1% 1/4w | R83, 84 |
| 016929 | 46.4 ohm 1% 1/4w | R65, 66, 73 |
| 016930 | 56.2 ohm 1% 1/4w | R28 |
| 016934 | 100 ohm 1% 1/4w | R22, 45, 74 |
| 016943 | 464 ohm 1% 1/4w | R67, 76 |
| 016944 | 562 ohm 1% 1/4w | R27, 41, 53 |
| 016946 | 825 ohm 1% 1/4w | R19, 69 |
| 015718 | 1K 1% 1/4w | R13, 16 |
| 016951 | 1.21k 1% 1/4w | R70 |
| 016953 | 1.78k 1% 1/4w | R63, 64 |
| 016955 | 2.15k 1% 1/4w | R3, 4, 25, 49, 54, 59 |
| 016958 | 3.32k 1% 1/4w | R1, 24 |
| 016960 | 5.62k 1% 1/4w | R5 |
| 016961 | 6.81k 1% 1/4w | R8, 11 |
| 015582 | 10K 1% 1/4w | R38, 43, 48 |
| 016967 | 17.8k 1% 1/4w | R68 |
| 016971 | 33.2k 1% 1/4w | R14, 17, 26 |
| 016973 | 38.3k 1% 1/4w | R57 |
| 015583 | 46.4k 1% 1/4w | R51, 52, 56, 58, 62 |
| 015585 | 100k 1% 1/4w | R21, 29, 32, 33, 34, 42 |
| 016979 | 215k 1% 1/4w | R9 |

| | | |
|--------|------------------|---------|
| 016984 | 464k 1% 1/4w | R2, 7 |
| 016201 | 2.2 meg 5% 1/4w | R61 |
| 035590 | 2.2 ohm 10% 1/2w | R46, 47 |
| 061218 | 4.7 ohm 10% 1/2w | R44 |
| 021170 | 100 ohm 10% 1/2w | R77, 78 |
| 021196 | 820 ohm 10% 1/2w | R39 |
| 021246 | 3.3k 10% 1/2w | R82 |
| 069823 | 5.6k 10% 1/2w | R72 |
| 023166 | 150 ohm 10% 1w | R85, 86 |
| 020740 | .22 ohm 10% 5w | R71 |
| 006468 | .50 ohm 10% 5w | R79, 81 |

TRANSISTORS

| | | |
|--------|----------|-----------|
| 014689 | FET J111 | Q4 |
| 016739 | 2N4401 | Q7 |
| 014409 | MPSA18 | Q5, 6 |
| 013569 | RCA 29B | Q2, 9, 11 |
| 013568 | RCA 30B | Q3, 8, 12 |

DIODES

| | | |
|--------|---------|--|
| 006260 | IN4448 | D1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14 |
| | | D7 |
| 015003 | IN5234B | D19, 21 |
| 009165 | IN4744 | D22, 23, 24, 25 |
| 018030 | IN5393 | D15, 16, 17, 18 |
| 020534 | IN5402 | |

CONTROLS

| | | |
|--------|-------|-------------|
| 025674 | 1.5KL | R75 |
| 019995 | 250KL | R31 |
| 019734 | 10KRA | R23 |
| 020596 | 50KA | R6 |
| 019736 | 50KL | R15, 37, 55 |
| 019712 | 50KRA | R12, 18 |

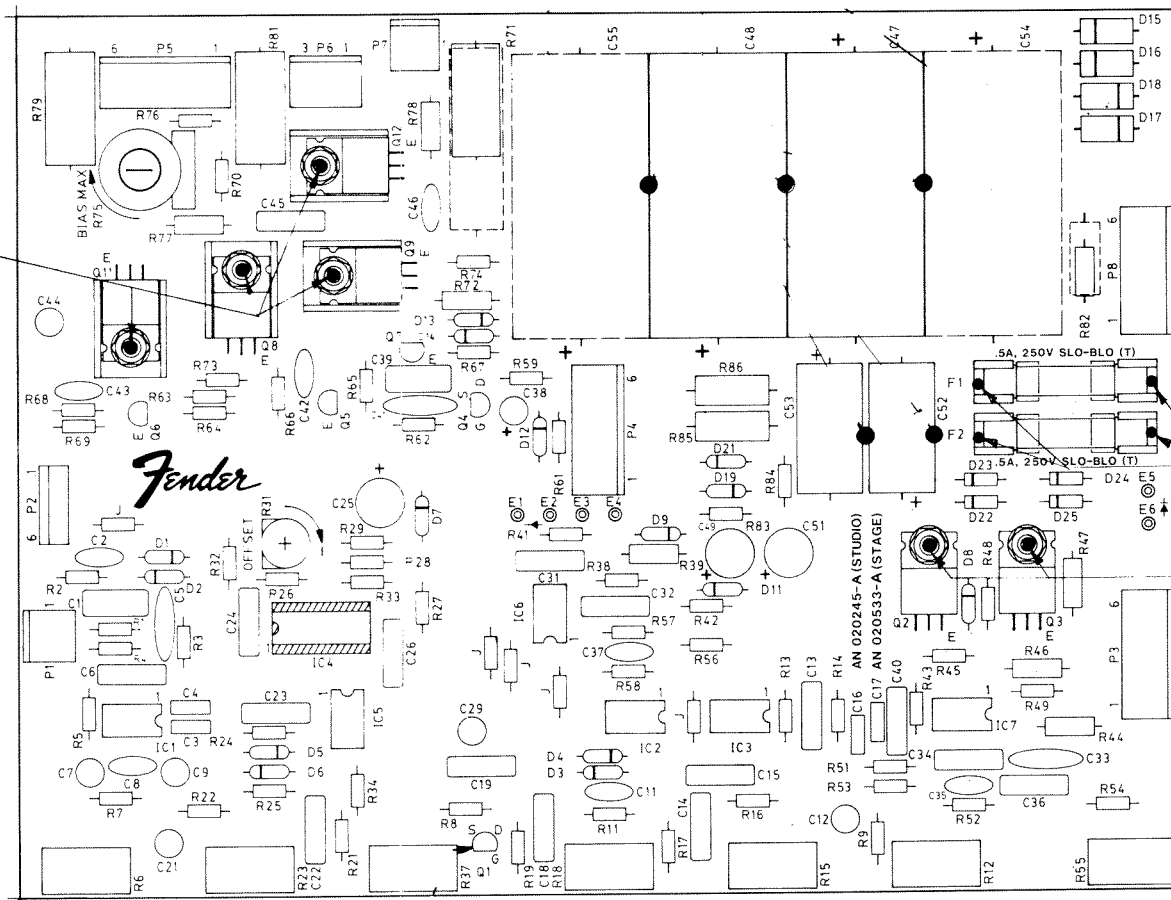
CONNECTORS

| | | |
|--------|--------------|-------------------|
| 014737 | Pin type | E1, 2, 3, 4, 5, 6 |
| 021158 | 6 pos. | P2 |
| 013529 | 2-pin (male) | P1, 7 |
| 013533 | 3-pin (male) | P6 |
| 013539 | 6-pin (male) | P3, 4, 5, 8 |

MISCELLANEOUS

| | | |
|--------|-----------------------------|-------------------------|
| 013528 | Dual Op-amp RCA4558 | IC1, 2, 3, 5, 7 |
| 016652 | Analog switch | IC6 |
| 019944 | CMOS | IC4 |
| 010036 | Fuse, 1/2A 250v, slo-blo | F1, 2 |
| 017037 | Clip fuseholder | Flag 9 |
| 022178 | Screw | Flag 124 |
| 097360 | Lock nut | Flag 123 |
| 020536 | Heatsink | Flag 121, Q11, 12, 8, 9 |

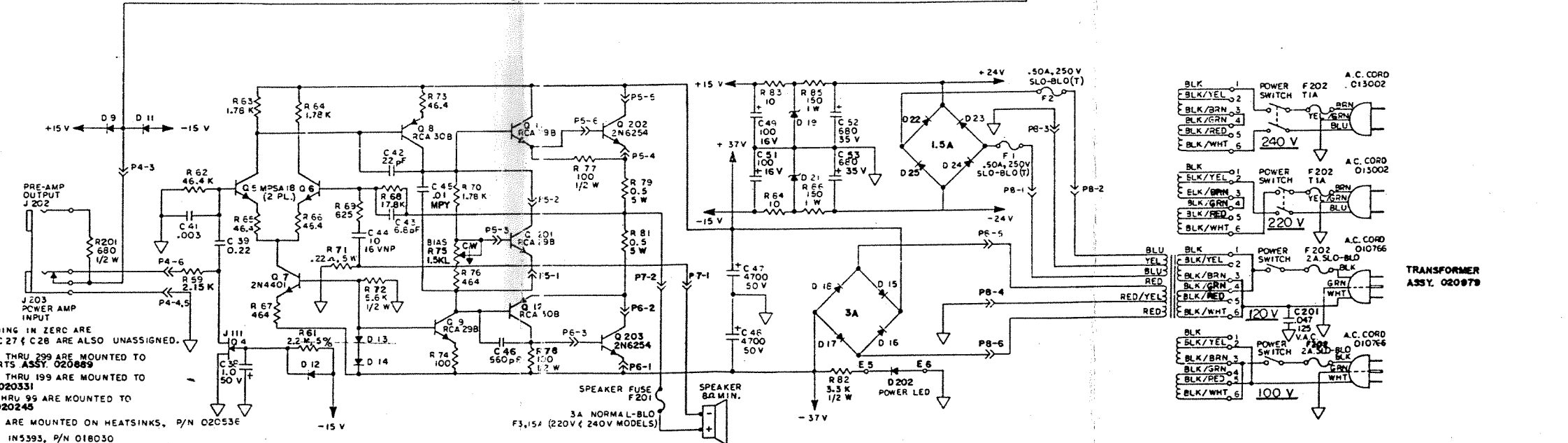
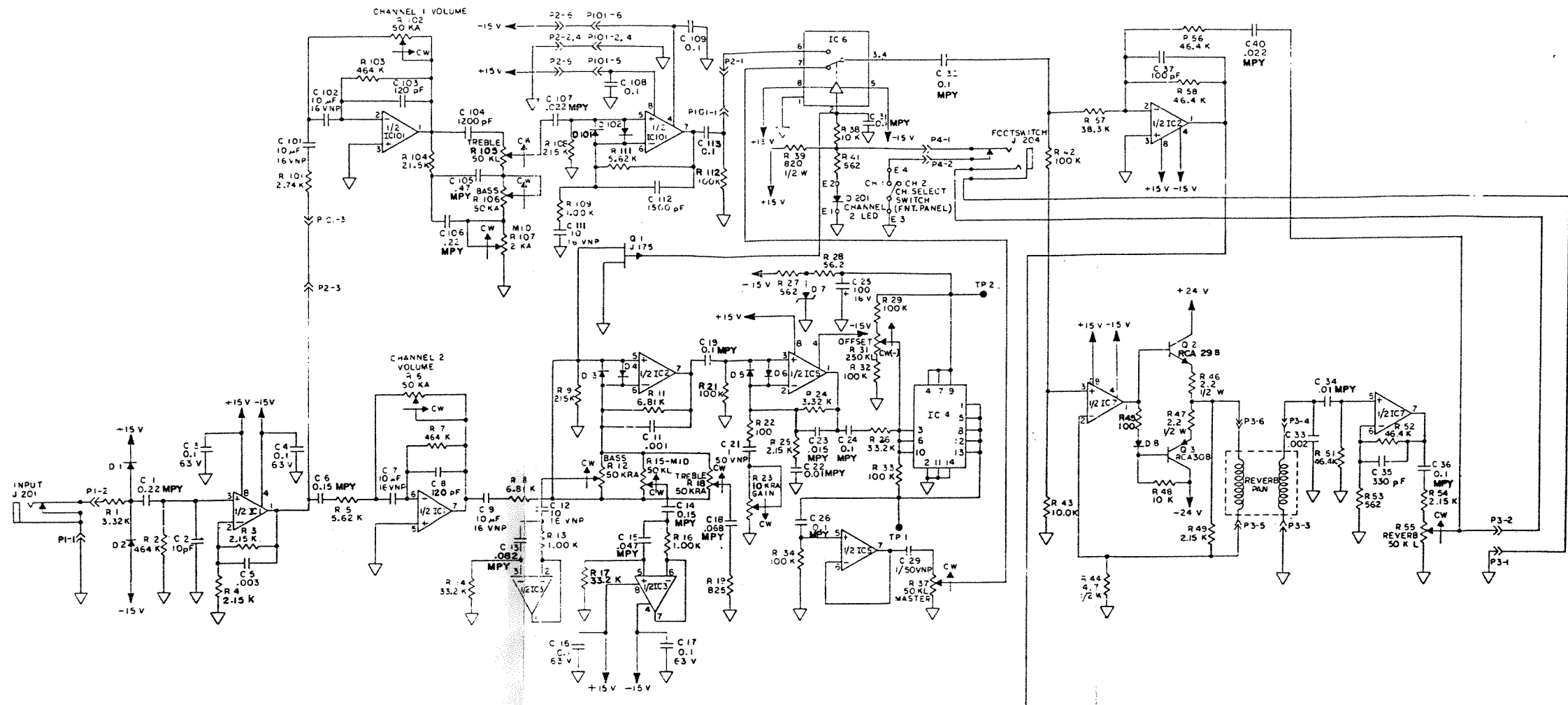
121 (4) 123 (4) 124 (4)



9 (4)

123 (2) 124 (2)

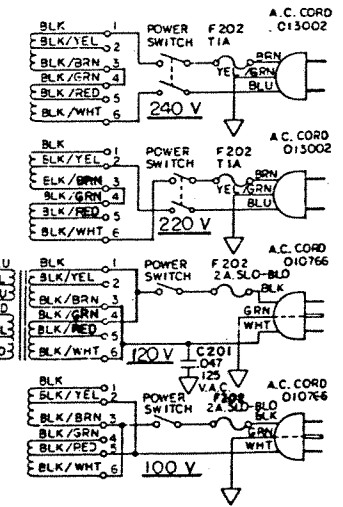
FENDER STUDIO LEAD AMPLIFIER PC BOARD ASSEMBLY (020245-000)



17. EXCEPT FOR R70 & C40, COMPONENT NUMBERS ENDING IN ZERO ARE UNASSIGNED. R35, R36, C27 & C28 ARE ALSO UNASSIGNED.
16. COMPONENT NUMBERS 201 THRU 299 ARE MOUNTED TO CHASSIS ASSOCIATED PARTS ASSY. 020889
15. COMPONENT NUMBERS 101 THRU 199 ARE MOUNTED TO RHYTHM CHANNEL PWBA 020331
14. COMPONENT NUMBERS 1 THRU 99 ARE MOUNTED TO MAIN AMPLIFIER PWBA 020245
13. TRANSISTORS Q6, 9, 11 & 12 ARE MOUNTED ON HEATSINKS, P/N 020536
12. DIODES 22, 23, 24 & 25 ARE IN5393, P/N 018030
11. DIODES D15, 16, 17 & 18 ARE IN5402, P/N 020534
10. DIODES D19 & 21 ARE IN4744, P/N 009165
9. DIODE D7 IS IN5234B, P/N 015003
8. DIODES D1, 2, 3, 4, 5, 6, 8, 9, 11, 12, 13, 14, 101 & 102 ARE IN4446, P/N 006260
7. IC 6 IS TL604, P/N 016652
6. IC 4 IS CD4007UB P/N 019944 AND IS MOUNTED IN A 14 PIN DIP SOCKET, P/N 014414
5. IC'S 1, 2, 3, 5, 7, & 101 ARE RC4558, P/N 013528
4. DIODE D202 IS LED ASS'Y., P/N 020591
3. DIODE D201 IS LED ASS'Y., P/N 014754
2. ALL CAPACITOR VALUES ARE IN MICROFARADS
1. ALL RESISTOR VALUES ARE IN OHMS, 1/4 W, ±1 %

NOTES: UNLESS OTHERWISE SPECIFIED

23. TRANSISTORS Q202, 203 ARE 2N6251 P/N 013466
 22. TRANSISTOR Q7 IS 2N4401 P/N 017139
 21. TRANSISTORS Q5, 6 ARE MPS A18 P/N 044409
 20. TRANSISTOR Q4 IS J111 P/N 044683
 19. TRANSISTORS Q3, 8, 12 ARE RCA 308 P/N 013568
 18. TRANSISTORS Q2, 9, 201 ARE RCA 298 P/N 013569
24. UNLESS OTHERWISE SPECIFIED, ALL CAPS. ARE DISC/CERAMIC:
 MPY = METALLIZED POLYESTER
 LE = POLARIZED ELECTROLYTIC
 NP = NON-POLARIZED ELECTROLYTIC



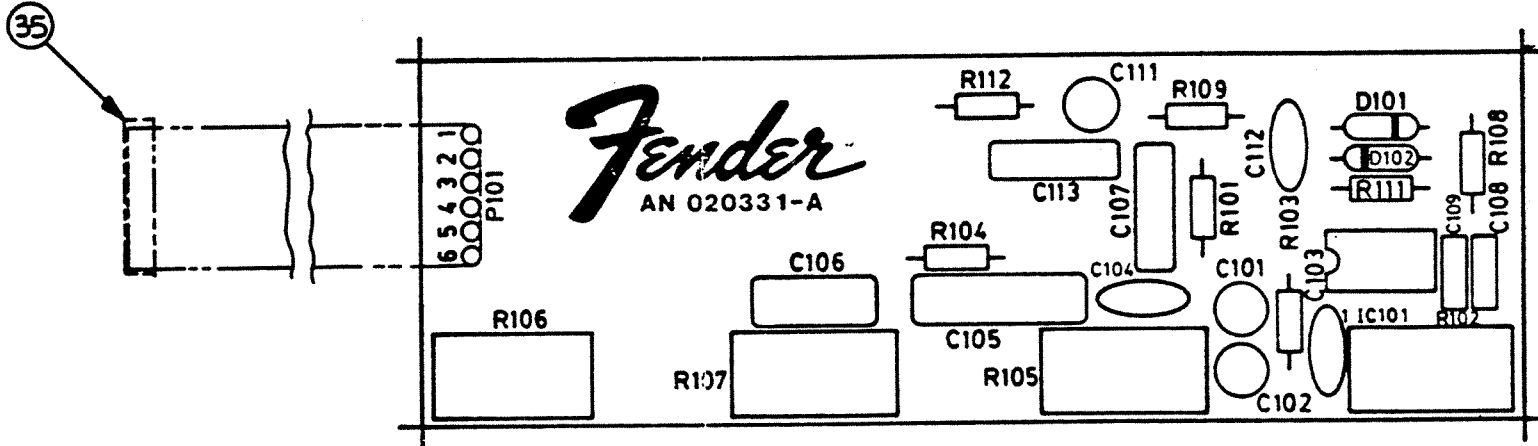
Fender/Ross/Rhodes

SCHEMATIC
STUDIO LEAD

Part # 021045

FENDER STUDIO LEAD & STAGE LEAD AMPLIFIER, RHYTHM CHANNEL P.C. BOARD ASSEMBLY (020331-000)

PARTS LIST



CAPACITORS

| | |
|--------|------------------|
| 019744 | 10 uf 16v |
| 019985 | .47 uf Met poly |
| 019979 | .22 uf met poly |
| 019973 | .10 uf met poly |
| 019963 | .022 uf met poly |
| 017497 | .1 uf 63v |
| 017620 | 1500 pf |
| 065862 | 1200 pf |
| 020925 | 120 pf |

RESISTORS

| | |
|--------|---------------------|
| 015718 | 1K \pm 1% 1/4w |
| 016957 | 2.74K \pm 1% 1/4w |
| 016960 | 5.62K \pm 1% 1/4w |
| 016968 | 21.5K \pm 1% 1/4w |
| 015585 | 100K \pm 1% 1/4w |
| 016979 | 215K \pm 1% 1/4w |
| 016984 | 464K \pm 1% 1/4w |

| |
|----------------|
| C101, 102, 111 |
| C105 |
| C106 |
| C113 |
| C107 |
| C108, 109 |
| C112 |
| C104 |
| C103 |

DIODES

| | |
|--------|--------|
| 006260 | IN4448 |
|--------|--------|

CONTROLS

| | | |
|--------|------|-----------|
| 019716 | 2KA | R107 |
| 019736 | 50KL | R105 |
| 019710 | 50KA | R102, 106 |

MISCELLANEOUS

| | | |
|--------|---------------------|-------|
| 013528 | Dual op-amp RCA4558 | IC101 |
| 020877 | Connector cable | P101 |

| |
|------|
| R109 |
| R101 |
| R111 |
| R104 |
| R112 |
| R108 |
| R103 |