

TEAC



SERVICE MANUAL

TR-D2000

AM/FM Stereo Double Tuner

1 SPECIFICATIONS

NOTES

- PC boards shown are viewed from parts side.
- The parts with no reference number or no parts number in the exploded views are not supplied.
- As regards the resistors and capacitors, refer to the circuit diagrams contained in this manual.
- \triangle Parts marked with this sign are safety critical components. They must be replaced with identical components - refer to the appropriate parts list and ensure exact replacement.

FM Tuner Section (Without notes 98.1 MHz, 65 dBf)

Tuning Range 87.5 MHz – 107.9 MHz (200 kHz steps)
Usable Sensitivity (IHF) Mono: 15 dBf
50 dB Quieting Sensitivity Mono: 21 dBf, Stereo: 41 dBf
Total Harmonic Distortion (1 kHz) Mono: 0.3%, Stereo: 0.4%
Frequency Response 30 Hz – 15 kHz, \pm 1.5 dB
Stereo Separation (1 kHz) 40 dB
Signal-to-Noise Ratio Mono: 67 dB, Stereo: 63 dB

AM Tuner Section

Tuning Range 530 kHz – 1,710 kHz (10 kHz steps)
Usable Sensitivity 64 dB/m
Total Harmonic Distortion 1% at 85 dB/m
Signal-to-Noise Ratio 40 dB at 85 dB/m

General

Power Requirements 120 V AC, 60 Hz
Power Consumption 12 W
Dimensions (W x H x D) 435 x 95 x 270 mm
(17-1/8" x 3-3/4" x 10-5/8")
Weight (net) 4 kg (8-13/16 lbs)
Standard Accessories Remote Control Unit x 1
Battery (AAA, R03, UM-4) x 2
AM Loop Antenna x 1
FM adapter x 1
RCA Cord x 2
Owner's Manual x 1

- Improvements may result in specifications and features changing without notice.

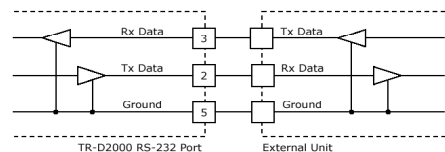
2 RS-232 COMMANDS

General Information:

Data Rate: 19,200 baud
Parity: None
Word length: 8 data bits, 1 stop bit
Handshake: No RTS/CTS handshaking
Connections: simple 3 wire (Rx, Tx, Gnd) interface

RS-232 Pin Assignment & Protocol Specification:

Connector: Female DB9 Data Transmission Speed: 19,200 bps
 Pin 3: Rx Data Command Spacing: >25msec
 Pin 2: Tx Data Character Length: 8 bit
 Pin 5: Ground Parity Bit: None
 Stop Bit: 1 bit
 Transfer Bit: LSBit Fast



Data Entry Protocol:

The serial buss should follow a standard serial communications protocol using Line oriented ASCII data stream. The command line must be followed with a carriage return for the unit to respond. The unit should not echo characters received back to the host.

Command Codes:

Character	Range	Function	Example
X:	0,1	Power Off / On	X1 = Power On, X0 = Power Off
T:	1,2	Tuner #	T1 = Tuner 1, T2 = Tuner 2
B:	1,2	Band #	B1 = AM, Band 2 = FM
P:	00 - 30	Preset #	P01 = Preset 1, P30 = Preset 30, P00 (just for status) = No Preset Selected
F:	4 numbers	Frequency Setting	F0890 = 890 AM, F1045 = 104.5 FM
A:	0,1	Seek Up / Down	A0 = Seek Down, A1 = Seek Up
M:	0,1	Step Up / Down	M0 = Step Down 1 step, M1 = Step Up 1 step
S:	Signal Lock / Stereo Presence	1 = locked, 0 = not 1 = stereo, 0 = mono	S00 (just for status) = no signal, no stereo, S01 = invalid S10 = signal lock (mono), S11 = signal lock (stereo)
Q:	Query status of tuner	ask for tuner status	Q1 = Status of Tuner 1, Q2 = Status of Tuner 2 Q3 = Status of both tuners, 1 then 2
N:	0,1	Preset Step Up / Down	N0 = Step Down 1 Preset, N1 = Step Up 1 Preset
L:	01 - 30	Set Preset	L01 = Set Station as Preset #1

Command Examples:

T1B2P01<cr> would command tuner #1 to select band 2 (FM) and tune to FM preset #1

T2B1F1070L03<cr> would command tuner #2 to set AM frequency 1070 kHz as AM preset #3
 This command however, would not change the current station tuned on Tuner #2

To select a station to be tuned and THEN set that station as a preset, would require two commands:

T2B1F1070<cr> would command tuner #2 to select band 1 (AM) and tune to frequency 1070 kHz.

T2L03<cr> would command tuner 2 to set the currently tuned station (in this example AM 1070) as AM preset #3

Query Example:

Q1<cr> would solicit the following response:

Feedback as to the status of tuner #1, which would include band select, station preset, frequency tuned, signal lock and stereo presence. The response string would look like this:**T1B2P00F1011S11**

T1 (tuner 1) **B2** (FM), **P00** (no preset selected), **F1011** (frequency 101.1 MHz), **S11** (signal lock & stereo)

Shortcut Commands:

Note: examples below are assuming Tuner 1 is in FM stereo mode and tuned to a station

Command	Response/Action
T1N1<cr>	Tuner 1 would step up to the next higher preset number
T1L01<cr>	Tuner 1 would set the currently tuned station as FM preset #1
T1S10<cr>	Tuner 1 would switch the FM mode to mono
T1M1<cr>	Tuner 1 would step up the frequency 0.2 MHz
T1A0<cr>	Tuner 1 would go into "seek down" mode
T1B1<cr>	Tuner 1 would go to AM mode and tune to the last previously tuned AM station

EXPLODED VIEW LIST

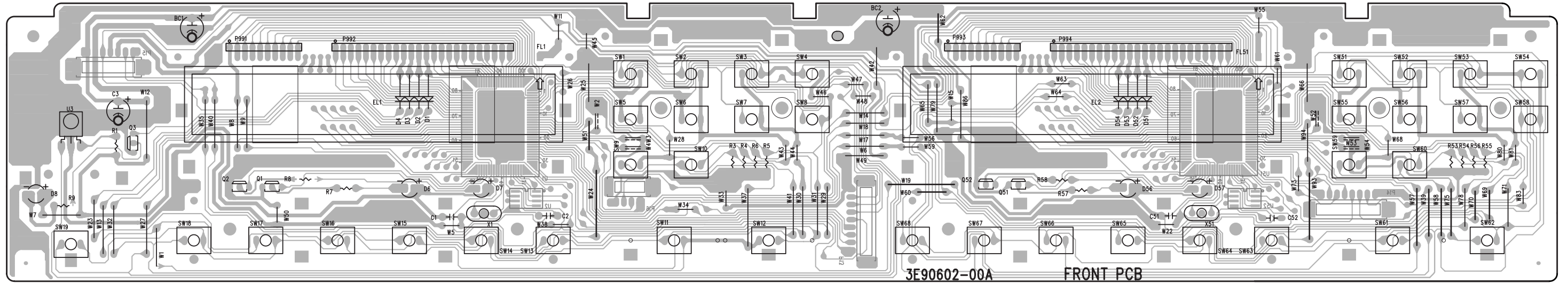
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
1	3M0150900A	BONNET	
2	△ 3E009230	POWER CORD	
3	△ 3M000880	BUSHING, #2271	
4	3M0151100A	REAR PANEL	
5	3E9560300A	POWER PCB ASSY	
6	△ 3E0211800A	POWER TRANSFORMER	
7	3E9560200A	FRONT PCB ASSY	
8	3M0150700A	FRONT PANEL BKT L	
9	3M0152200A	CUSHION, 25X2.7X6	
10	3M0150000A	FRONT PANEL	
11	M01405201A	NAMEPLATE, TEAC(S-BLK)	
12	3M0149700A	SIDE PANEL L	
13	3M0149600A	PCB HOOK	
14	3M0093600A	FILTER, SENSOR	
15	3M0150600A	POWER BUTTON ESC	
16	3M0150500A	POWER BUTTON	
17	3M0150200A	KEY BUTTON A	
18	3M0150400A	KEY BUTTON ESC	
19	3M0150300A	KEY BUTTON B	
20	3M0150100A	FL COVER	
21	3M0149800A	SIDE PANEL R	
22	3M0150800A	FRONT PANEL BKT R	
23	3E0212800A	COAXIAL CABLE, FM	
24	3E0212600A	FLAT CABLE, TUNER	
25	3E9560100A	MAIN PCB ASSY	
26	3M0149900A	TUNER BRACKET	
27	3E021380	AM/FM TUNER, TFCE1U101A	
28	3M0151000A	MAIN CHASSIS	
29	3M0118200A	FOOT	
30	3M0118300A	CUSHION FOOT	
41	3B0001806A	SCREW, J, S M3X6 (BLK)	
42	3B0003808A	SCREW, VPC M3X8 (BLK)	
43	3B0004406A	SCREW, BPS M3X6 (BLK)	
44	3B0004408A	SCREW, BPS M3X8 (BLK)	
45	3B0005708A	SCREW, BPB M3X8 (BLK)	
46	3B0005206A	SCREW, BPB M2.6X6	
47	3B0005706A	SCREW, BPB M3X6 (BLK)	
48	3B0001306A	SCREW, J, S M3X6	
49	3B0005208A	SCREW, BPB M2.6X8	
50	3B0005100A	SCREW, DIFFERENCE 3X6.9 (BLK)	
51	3B0013000A	SCREW, D-SUB 003-HEX (1INCH)	

INCLUDED ACCESSORIES

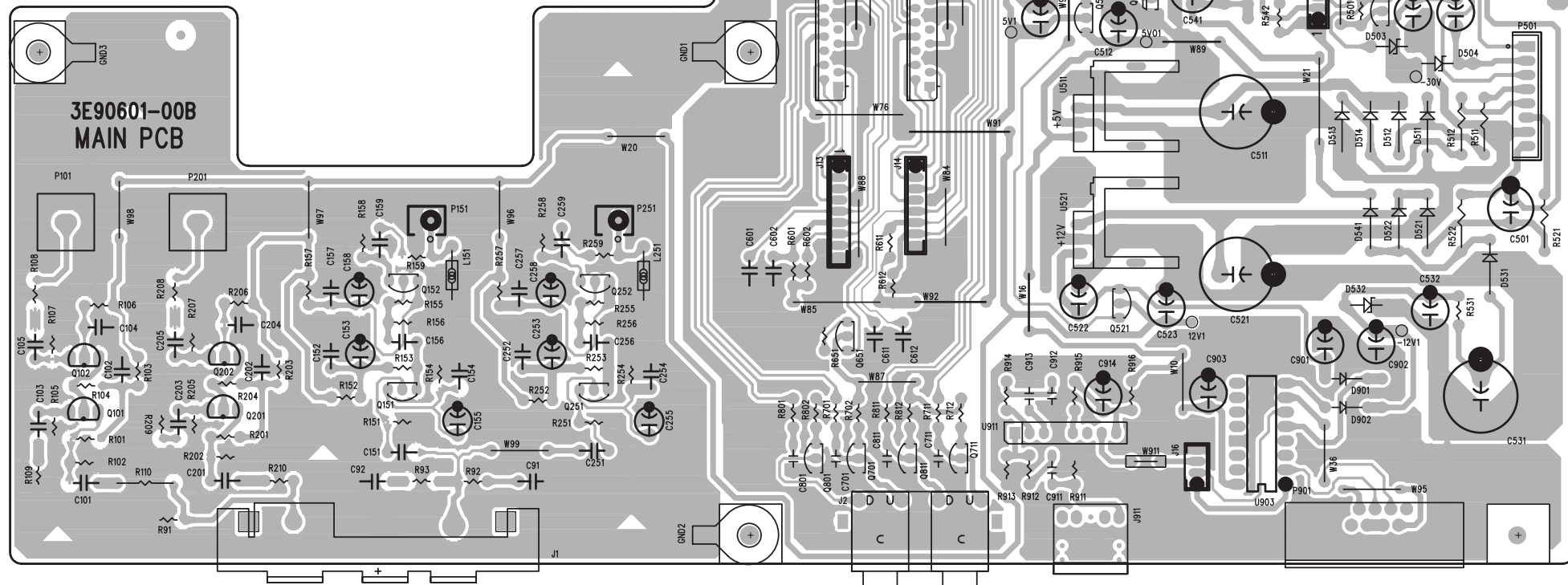
REF. NO.	PARTS NO.	DESCRIPTION	REMARKS
	3D0058700A	OWNER'S MANUAL, E/F	
	3D0058900A	QUICK START GUIDE	
	3E0214000A	REMOTE CONTROL UNIT, RC-902	
	3E003660	BATTERY, UM-3 (2PXED)	
	3E000380	PIN CORD	
	3M0152100A	AM LOOP ANT	
	3E029300	FM ADAPTER	

4 PC BOARDS AND PARTS LIST

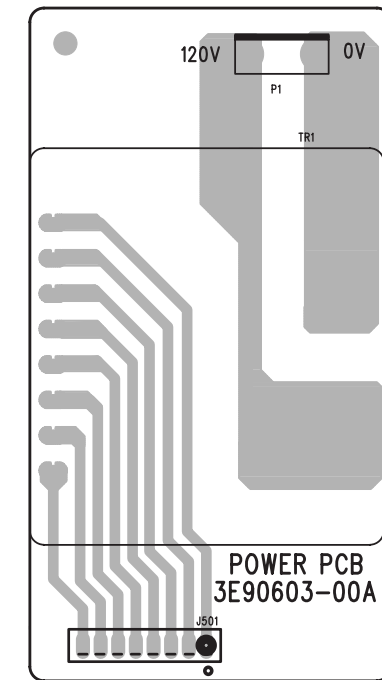
FRONT PCB



MAIN PCB



POWER PCB



MAIN PCB ASSY Part of GATHER A PCB ASSY (3E9560000A)

REF. NO.	PARTS NO.	DESCRIPTION
	3E9560100A	MAIN PCB ASSY
	3E9060100A	MAIN PCB
C501	△ 3C000712	CE, 50V 100UF M
C502	△ 3C000772	CE, 25V 220UF M
C511	△ 3C001082	CE, 25V 1000UF M
C521	△ 3C001082	CE, 25V 1000UF M
C531	△ 3C001082	CE, 25V 1000UF M
C541	△ 3C000772	CE, 25V 220UF M
D501, D502	△ 3S000031	DIODE, 1N4003-TR
D503	3S003591	ZDI, MTZJ30B
D504	3S000671	ZDI, MTZJ4. 3B
D511-D514	△ 3S000031	DIODE, 1N4003-TR
D521, D522	△ 3S000031	DIODE, 1N4003-TR
D531	△ 3S000031	DIODE, 1N4003-TR
D532	3S003201	ZDI, MTZJ12B
D541	△ 3S000031	DIODE, 1N4003-TR
D542	3S000241	DIODE, 1SS133
D901, D902	3S000241	DIODE, 1SS133
J1	3E021230	JACK, RF AJ-2031-040
J2	9144525700	RCA JACK, WSP-244V1-01
J13	3E010410	CONNECT PULG, B 9B-PH-K-S
J14	3E010400	CONNECT PLUG, B 8B-PH-K-S
J15	3E010390	CONNECT PLUG, B 7B-PH-K-S
J16	3E010360	CONNECT PLUG, B 4B-PH-K-S
J911	3E018350	JACK, JY-3524L-01-020
L151, L251	3E021241	COIL, 18UH EC24-180K
P11, P12	3E021250	CONNECTOR, 15FE-BT-VK-N
P101	3E001140	CONNECT PLUG 2P, B2B-EH-A
P102	3E021370	CONNECT PLUG 2P, B2B-EH (RED)
P151	3E010340	CONNECT PLUG, B 2B-PH-K-S
P152	3E003810	CONNECT PLUG, B2B-PH (RED)
P501	3E001200	CONNECT PLUG 8P, B8B-EH-A
P901	3E019520	D-SUB, 5504F1-09S-02-03
Q101, Q201	3S007042	TR, 2SC4043S
Q102, Q202	3S007042	TR, 2SC4043S
Q151, Q251	3S005590	FET, 2SK117YGR
Q152, Q252	3S005590	FET, 2SK117YGR
Q501	△ 3S000022	TR, 2SA1015GR
Q511, Q521	3S000701	TR, 2SA854R
Q512, Q522	3S000291	TR, DTC124ES
Q601	3S000002	TR, 2SC1815GR
Q611	3S000002	TR, 2SC1815GR
Q651	3S000022	TR, 2SA1015GR
Q701, Q801	3S001542	TR, 2SC2878B
Q711, Q811	3S001542	TR, 2SC2878B
Q911	3S000291	TR, DTC124ES
U511	△ 3S000650	IC, NJM7805FA
U521	△ 3S002170	IC, NJM7812FA
U903	3S005930	IC, NJU6402B
U911	3S003820	IC, CXA1511L

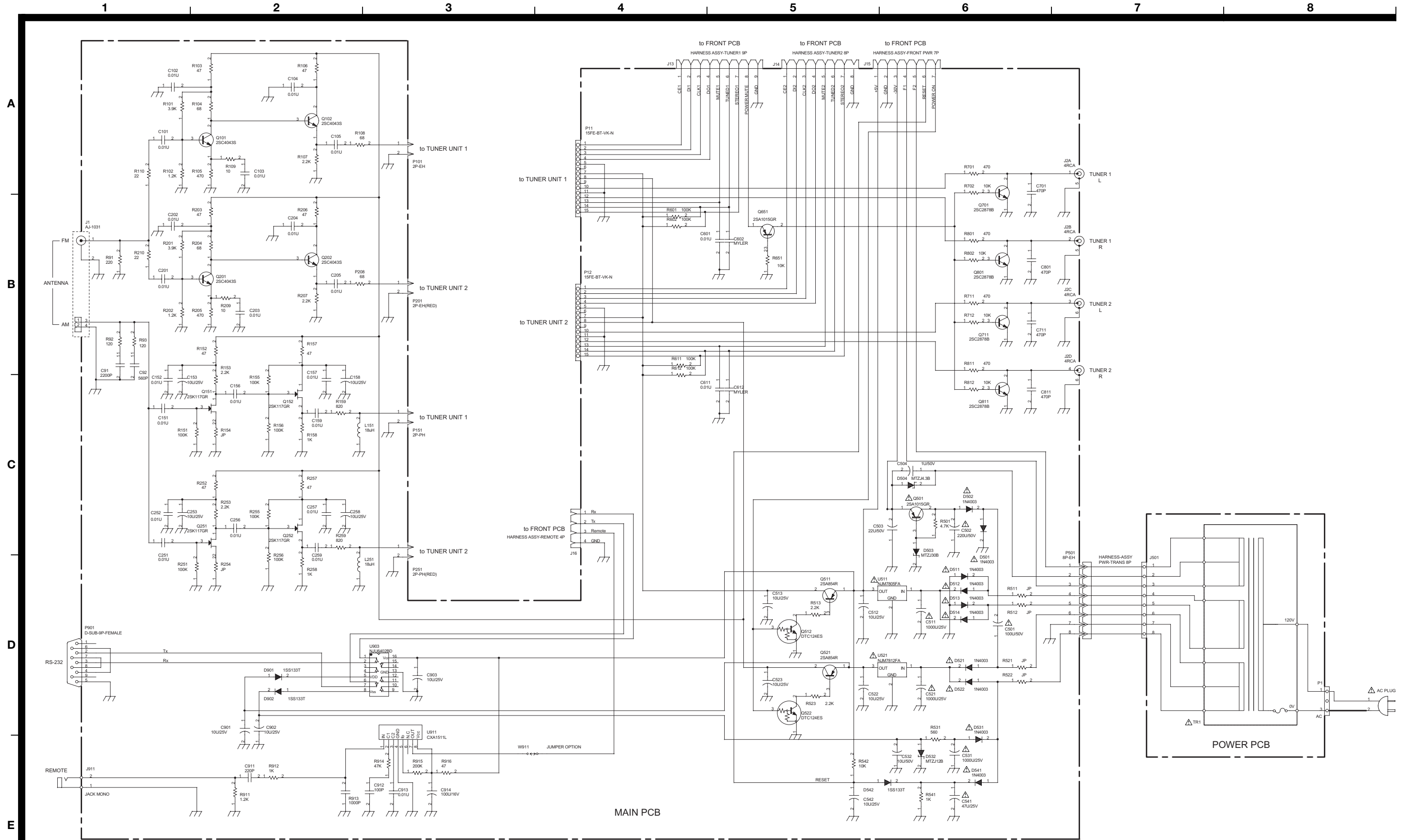
FRONT PCB ASSY Part of GATHER A PCB ASSY (3E9560000A)

REF. NO.	PARTS NO.	DESCRIPTION
	3E9560200A	FRONT PCB ASSY
	3E9060200A	FRONT PCB
D1-D4	3S000241	DIODE, 1SS133
D6-D8	3E016350	LED, SLR-342DU-3F-M (AMBE)
D6-D8	3M0151600A	LED HOLDER, LEDS-16
D51-D54	3S000241	DIODE, 1SS133
D56, D57	3E016350	LED, SLR-342DU-3F-M (AMBE)
D56, D57	3M0151600A	LED HOLDER, LEDS-16
FL1, FL51	3E021210	FL DISPLAY, 25U39167TAN
FL1, FL51	3M0151500A	LCD HOLDER
P13	3E007910	CONNECTOR, B 9B-PH-SM3-TB
P14	3E007900	CONNECTOR, B 8B-PH-SM3-TB
P15	3E007890	CONNECTOR, B 7B-PH-SM3-TB
P16	3E007860	CONNECTOR, B 4B-PH-SM3-TB
P991	3E021420	PLUG, HEADER 10P (SINGLE)
P992	3E021430	PLUG, HEADER 24P (SINGLE)
P993	3E021420	PLUG, HEADER 10P (SINGLE)
P994	3E021430	PLUG, HEADER 24P (SINGLE)
Q1-Q3	3S000291	TR, DTC124ES
Q51, Q52	3S000291	TR, DTC124ES
SW1-SW19	3E002950	SW, TACT SKHVBE3520
SW51-SW68	3E002950	SW, TACT SKHVBE3520
U1, U51	3S007060	IC, CXP82060
U2, U52	3S007054	IC, BR93L46 RF-W
U3	E0062220	RMCN RCVR, RPM6938-V4
U3	3M0152300A	CUSHION, 8X8X7
X1, X51	3E021220	RESONATOR, CST10. OMTW

POWER PCB ASSY Part of GATHER A PCB ASSY (3E9560000A)

REF. NO.	PARTS NO.	DESCRIPTION
	3E9560300A	POWER PCB ASSY
	3E9060300A	POWER PCB
P1	3E002170	PIN, TERMINAL LAPPING 2P

TEAC SCHEMATIC DIAGRAM TR-D2000 MAIN PCB, POWER PCB



INSTRUCTIONS FOR SERVICE PERSONNEL
BEFORE RETURNING APPLIANCE TO THE CUSTOMER, MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT.

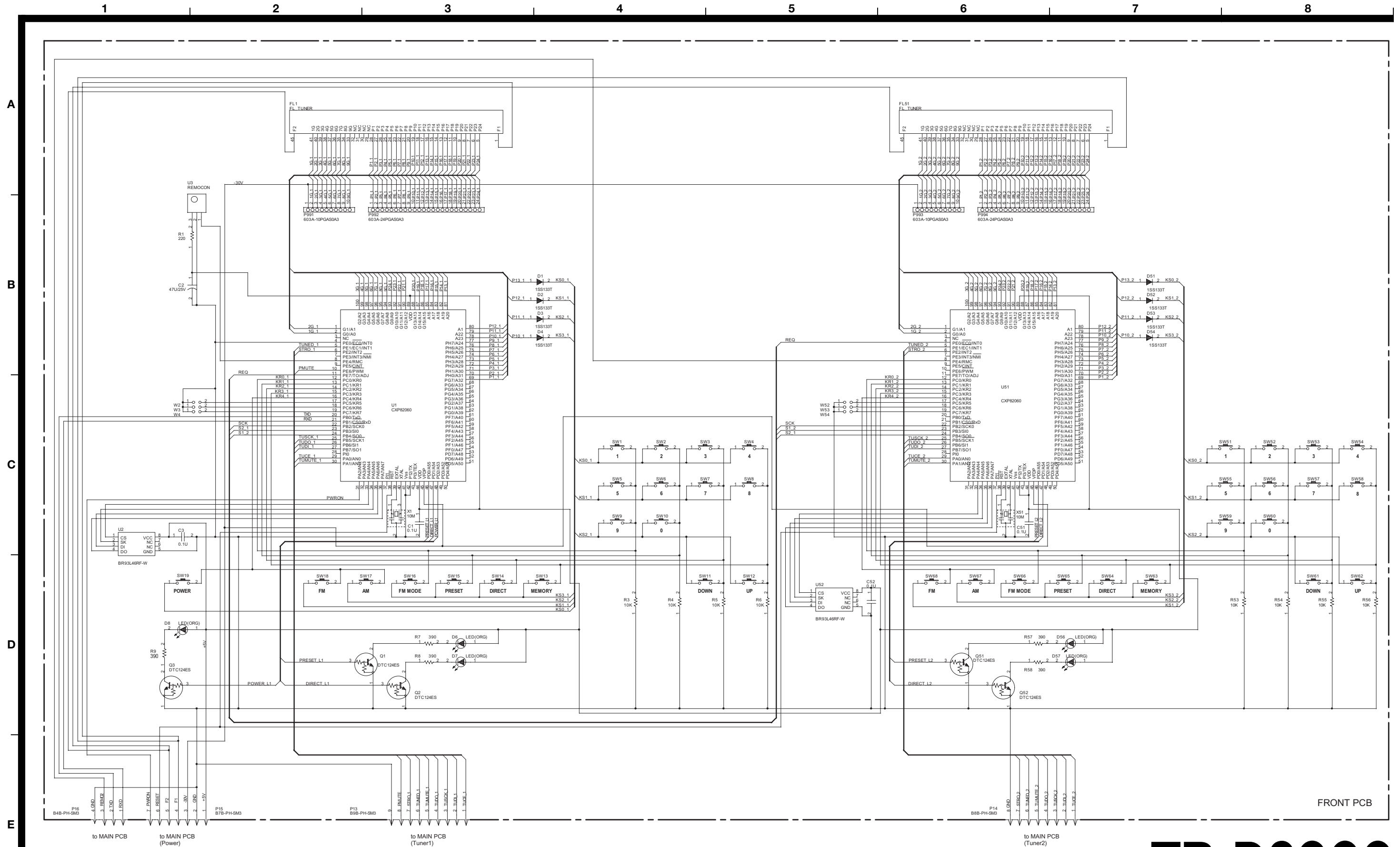
NOTES:
 1. Resistor values are in ohms (K=kilo-ohms, M=megohms).
 2. Capacitor values are in farads (P=picofarads, U=microfarads).
 3. Δ Parts marked with this sign are safety critical components. They must always be replaced with identical components-refer to the appropriate parts list and ensure exact replacement.

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1st Issue; July 2003

TEAC SCHEMATIC DIAGRAM TR-D2000 FRONT PCB



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