
Service Manual

Model

X-34

multitracker

FOSTEX[®]



CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,

DO NOT REMOVE COVER (OR BACK).

NO USER-SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION:

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SOLT, FULLY INSERT.

ATTENTION:

POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU' AU FOND.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

"WARNING"

"TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE."

SAFETY INSTRUCTIONS

1. Read instructions - All the safety and operating instructions should be read before the appliance is operated.
2. Retain instructions - The safety and operating instructions should be retained for future reference.
3. Heed warnings - All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow instructions - All operating and use instructions should be followed.
5. Water and Moisture - The appliance should not be used near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, and the like.
6. Carts and Stands - The appliance should be used only with a cart or stand that is recommended by the manufacturer.
7. Wall or Ceiling Mounting - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. Ventilation - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. Grounding or Polarization - The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated.
12. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Cleaning - The appliance should be cleaned only as recommended by the manufacturer.
14. Nonuse Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
16. Damage requiring Service - The appliance should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the enclosure damaged.
17. Servicing - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.



An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

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NOTES

* Adjusting Procedures, Parts List and circuit diagrams are given in this manual to assist the service technician in maintaining the Model X-34.

* The following accessories are supplied with X-34 as the standard accessories.

Owner's manual	: 8288427000 (for export & domestic model)
△ AC adaptor AD-12C	: 8270846003 (for USA/CND)
	: 8270846006 (for EUR)
	: 8270846007 (for UK)
	: 8270846010 (for JPN)

* Following is the packing material for the Model X-34.

Carton, inner, X-34	: 8228723000
Packing, L, X-34	: 8228448000
Packing, R, X-34	: 8228449000

CAUTION

△ Parts marked with this sign are safety critical components. They must always be replaced with identical components. Refer to the Fostex Parts List and ensure exact replacement.

1. SPECIFICATIONS

DEFINITION

Specification Unit	0 dBV = 1 Vrms
Normal Fader Position	
Input fader	At 70 ~ 90 % position
Condition	LINE IN / INSERT: -10 dBV / 1 kHz Recorder: Input Monitor mode (REC - PAUSE) Adjust input fader for -10 dBV at TAPE OUT.
Master fader	At 70 ~ 90 % position
Condition	LINE IN / INSERT: -10 dBV / 1 kHz Recorder: Input Monitor mode (STOP) Adjust master fader for -10 dBV at LINE OUT. PAN: L (R)

MIXER SECTION

Standard Input

MIC IN

Connector	Phone (unbalanced) / XLR-3 (balanced)
Input level	-50 ~ -10 dBV
Impedance	10 k Ω or more

LINE IN / INSERT (RTN)

Connector	Stereo phone (tip)
Input level	-10 dBV
Impedance	10 k Ω or more

AUX RTN L (MONO) / R

Connector	Phone
Input level	-20 dBV
Impedance	7 k Ω or more

Standard Output

TAPE OUT 1 ~ 4 / LINE OUT L, R

Connector	RCA pin
Output level	-10 dBV
Load impedance	10 k Ω or more

MONITOR OUT L, R

Connector	Phone
Output level	-10 dBV
Load impedance	10 k Ω or more

INSERT (SEND)

Connector	Stereo phone (ring)
Output level	-10 dBV
Load impedance	10 k Ω or more

Phones Max. Output Level

20 mW or more (1 kHz, 16 Ω load)

Level Indication

5-dot LED meter X 6 (0 dB is indicated by 5-dot LED bargraph meter when input / output level is -10 dBV with the above standard input / master fader position settings.)

Mic Gain

40 \pm 2 dB

Distortion

(With 400 Hz HPF & 30 kHz LPF)

0.05 % or less (Input: 1 kHz / 0 dBV signal, MIC GAIN: LINE, LINE OUT: 0 dBV.)

0.2 % or less (Input: 1 kHz / 0 dBV signal, MIC GAIN: LINE, PHONES: 3 mW / 16 Ω .)

MIXER SECTION (continued)**Frequency Response**

MIC IN (Input Level: -50 dBV, Mic Gain: MIC)

40 ~ 20 kHz \pm 3 dB at LINE OUT

MIC IN (Input Level: -10 dBV, Mic Gain: LINE)

20 ~ 20 kHz \pm 3 dB at LINE OUT (Mic Gain: LINE)

MIC IN (Input Level: -10 dBV, Mic Gain: LINE)

50 ~ 10 kHz \pm 2 dB at PHONES (10 mW / 16 Ω) (Mic Gain: LINE)

S / N (shorted by 150 Ω resistor)

MIC IN (Mic Gain: MIC)

66 dB or more at LINE OUT (DIN AUDIO)

68 dB or more at LINE OUT (IHF A)

MIC IN (Mic Gain: LINE)

73 dB or more at LINE OUT (DIN AUDIO)

75 dB or more at LINE OUT (IHF A)

EQ Variable Range (HI: 10 kHz, LO: 100 Hz)

Boost

+12 \pm 3 dB

Cut

-12 \pm 3 dB

Fader Attenuation

70 dB or more at 1 kHz (from standard fader position)

Crosstalk

60 dB or more at 1 kHz (Input: MIC IN, Mic Gain: LINE, Output: SEND OUT. Measure level at non-input channel.)

PAN Crosstalk

42 dB or more at 1 kHz (Input: MIC IN, Mic Gain: LINE, Output: LINE OUT. Measure level at non-input channel.)

Click Noise

Power on / off

-20 dBV_{p-p} or less at LINE OUT / MONITOR OUT / AUX SEND

Other switching

-30 dBV_{p-p} or less at LINE OUT / MONITOR OUT / AUX SEND

Shock Noise

-30 dBV_{p-p} or less (Measure noise level when one side of appliance is dropped 3 times from 5 cm height.)

RECORDER SECTION**Tape Speed**

NORMAL FIX SW: OFF

9.5 cm/s \pm 1.5 % (3000 Hz \pm 45 Hz, TCW-211 test tape)

NORMAL FIX SW: ON

4.75 cm/s \pm 1.5 % (3000 Hz \pm 45 Hz, TCW-111 test tape)

Wow & Flutter

PLAY

0.25 % or less (TCW-211 test tape, ANSI WTD.)

REC & PLAY

0.30 % or less (AC-514 test tape, ANSI WTD.)

Pitch Control

MIN (PITCH VR: Fully CCW)

-45 % or less (TCW-211 test tape)

MAX (PITCH VR: Fully CW)

+12 % or more (TCW-211 test tape)

Fast Winding Time (FF / RWD)

150 \pm 20 sec. (TAPE: C-60)

Tape Counter Deviation

0 \pm 7 (FF from BOT to EOT and then RWD to BOT again.)

Standard Level

PLAY (NR: OUT)

-10 \pm 1 dB (TCW-231 test tape)

REC & PLAY (NR: OUT)

-10 \pm 1 dBV (AC-514 test tape)

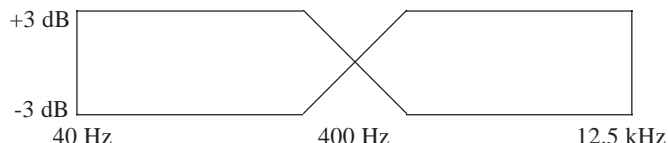
Level difference between channels

1 dB or less

Frequency response

PLAY

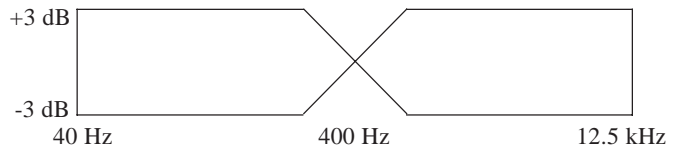
Test tape: SCW-977 / TCW-284F (NR: OUT)



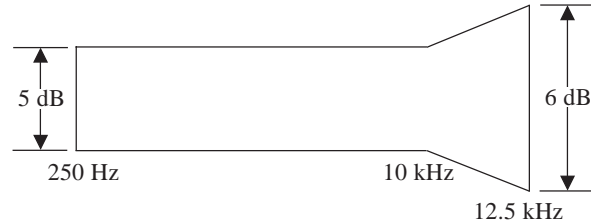
RECORDER SECTION (continued)

REC & PLAY

Test tape: AC-514 (NR: OUT, recording level: 0 dB)



Test tape: AC-514 (NR: IN, recording level: -25dB)



Level Deviation at Ref. Output Level

PLAY

1 dB or less at 400 Hz (NR: OUT, TCW-231 test tape)
 3 dB or less at 40 Hz ~ 12.5 kHz (NR: OUT, SCW-977 / TCW-284F test tape)

REC & PLAY

1 dB or less at 400 Hz (NR: OUT, AC-514 test tape)
 2 dB or less at 100 Hz ~ 10 kHz (NR: OUT, AC-514 test tape)

S/N

PLAY

47 dB or more (NR: OUT, DIN AUDIO)

55 dB or more (NR: OUT, IHF-A)

REC & PLAY

45 dB or more (NR: OUT, DIN AUDIO)

48 dB or more (NR: OUT, IHF-A)

48 dB or more (NR: IN, DIN AUDIO)

55 dB or more (NR: IN, IHF-A)

Distortion (with 400 Hz HPF & 30 kHz LPF)

(REC & PLAY)

2 % or less (Input signal: 1 kHz / standard level, standard fader position, REC SEL: All track)

Erase Ratio

67 dB or more at 1 kHz (Input signal: 1 kHz / 0 dBV, standard fader position, with 1 kHz BPF)

Cross Erasure

1 dB or less (Input signal: 10 kHz / -10 dBV, standard fader position. Measure level difference when adjacent track is put into REC mode.)

Channel Separation

50 dB or more (Input signal: 1 kHz / -10 dBV, standard fader position, with 1 kHz BPF. Measure leakage level when adjacent track is put into REC mode.)

Sync Crosstalk

-25 dBV or less (Input signal: 1 kHz / -10 dBV)

-10 dBV or less (Input signal: peak frequency / -10 dBV)

(Measure leakage level when adjacent track is put into REC mode.)

Bias Leakage

-35 dBV or less (No LED meter should not be lit. Standard fader position.

Measure leakage level at TAPE OUT when unit is put into REC mode.)

Click Noise

PLAY → STOP

-30 dBV_{p-p} or less (No tape is loaded.)

REC → STOP

Monitor

-20 dBV_{p-p} or less (AC-514 test tape)

PLAY

-20 dBV_{p-p} or less (AC-514 test tape)

Punch In / Out

-30 dBV_{p-p} or less at PLAY (AC-514 test tape)

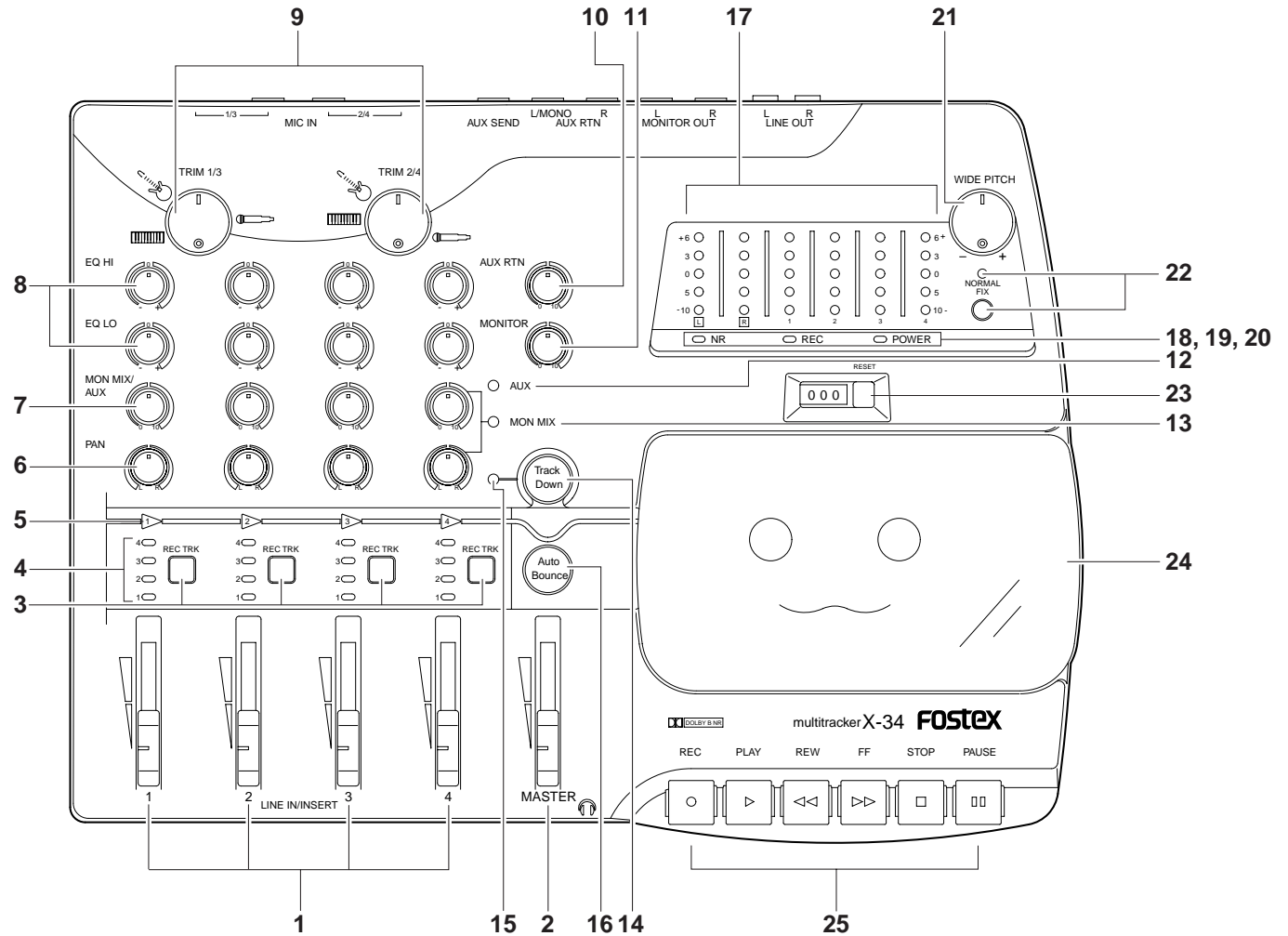
Shock Noise

-30 dBV_{p-p} or less (Measure playback noise level when one side of appliance is dropped 3 times from 5 cm height.)

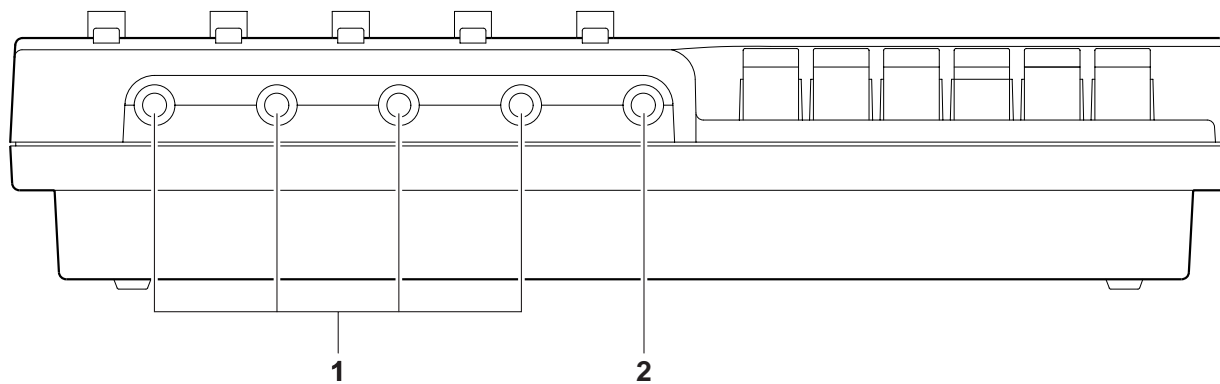
* Specifications and appearance are subject to change without notice for product improvement.

2. CONTROLS, INDICATORS & CONNECTORS

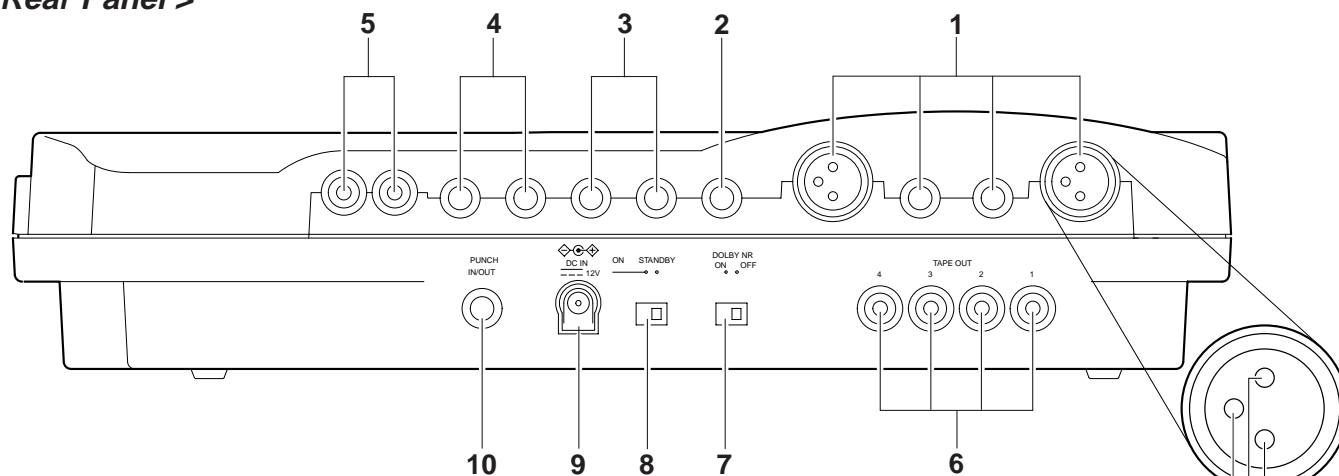
< Top Panel >



- | | |
|--|--|
| <ol style="list-style-type: none"> 1. Input/playback level control faders 2. Master fader [MASTER] 3. Record track select switches [REC TRK] 4. Record track indicators 5. Auto Bounce indicators 6. Pan pot knobs [PAN] 7. Monitor / AUX send level control knobs [MON MIX/AUX] 8. Equalizer control knobs [EQ HI, EQ LO] 9. Trim knobs 10. AUX return knob [AUX RTN] 11. Monitor master knob [MONITOR] 12. AUX indicator [AUX] 13. MON MIX indicator [MON MIX] 14. Track down on / off button [Track Down] 15. Track down indicator | <ol style="list-style-type: none"> 16. Auto bounce select button [Auto Bounce] 17. Level meters 18. Dolby B noise reduction indicator [NR] 19. Record indicator [REC] 20. Power indicator [POWER] 21. Pitch control knob [WIDE PITCH] 22. Tape speed control / knob [NORMAL FIX] 23. Tape counter / reset button [RESET] 24. Cassette lid / Cassette tray 25. Transport control buttons <ul style="list-style-type: none"> Play button [PLAY] Stop button [STOP] Fast forward button [FF] Rewind button [REW] Recording button [REC] Pause button [PAUSE] |
|--|--|

< Front Panel >

1. Line in / insert jacks [LINE IN/INSERT 1, 2, 3, 4]
2. Headphone jack [PHONES]

< Rear Panel >

1. Mic inut jacks [MIC IN 1/3, 2/4]
 2. AUX send jack [AUX SEND]
 3. AUX return jacks [AUX RTN (L/MONO, R)]
 4. Monitor out jacks [MONITOR OUT (L, R)]
 5. Line out jacks [LINE OUT L, R]
 6. Tape out jacks [TAPE OUT 1, 2, 3, 4]
 7. Dolby B noise reduction on / off switch [DOLBY NR ON/OFF]
 8. Power switch [ON-STANDBY]
 9. DC IN connector [DC IN 12V]
 10. Pinch in / out jack [PUNCH IN/OUT]
- 3 (COLD)
2 (HOT) — 1 (GND)

3. ADJUSTING PROCEDURES**3-1. Routine Maintenance****3-1-1. Cleaning****1) Head**

With constant use, the head surface becomes soiled with magnetic particles from the tape, dirt and dust. Under such conditions, the tape will not always be in smooth contact with the head and thus result in poor performance. Less output in the high region and dropout (some parts of sound not reproduced) are typical symptoms. It is therefore recommended to clean the heads periodically before recording and playback to avoid such troubles.

2) Capstan and pinch roller

Buildup of magnetic particles and dust on these parts will cause increase in wow, flutter and wrapping of tape on the capstan. Thus, these parts must always be kept clean. Cleaning is done with cotton buds moistened with fluids prescribed or recommended for tape recorders and especially the heads. Never use lacquer thinner, acetone or other organic solvents.

3-1-2. Demagnetizing

The REC/PLAY head becomes magnetized by extended use or when the head is touched with a magnetized object. As a result, frequency response especially in the high region will deteriorate, noise level increases, and in some cases may transfer noise to valuable prerecorded tapes. For this reason, do not touch the head with magnetized screwdriver and scissors or allow DC current to flow through the head winding such as when testing continuity with a circuit tester. Should the head becomes magnetized, demagnetize it with a head demagnetizer designed for this purpose.

Demagnetizing Procedures

- 1) After turning off the power of Model X-34, open the cassette lid and if a cassette tape is loaded, remove and place it far away from the deck.
- 2) Switch on the head demagnetizer while holding it about one meter away from the Model X-34. Then, slowly move the head demagnetizer tip to the head and wave the tip up and down several times close to the head surface.
- 3) On completing the above procedures, slowly draw the demagnetizer away from the head and switch it off when it is more than one meter away from the head. As demagnetism in the head cannot be seen, unlike the soiled head, routine demagnetizing is necessary. It is recommended to do so at the same time the head is cleaned.

3-2. Test Equipment and Adjusting Tools

The following tools and equipment are required for adjusting the Model X-34.

- | | |
|---|--|
| 1) Head height and tape contact adjusting jig | Model 9001 (P/N: 8286001000) |
| 2) Torque meter | |
| Cassette torque meter | TW-2231 (P/N: 8286008000): 0 ~ 200 g-cm (0 ~ 2.8 Oz-In) |
| Cassette torque meter | TW-2111A (P/N: 8286009000): 0 ~ 100 g-cm (0 ~ 1.4 Oz-In) |
| 3) Mirror tape cassette | TCC-902 (P/N: 8286002000) |
| 4) Test tape | |
| Speed / Flutter (3 kHz) | Model 9152 (P/N: 82660022000) |
| | Also 3150 Hz test tape for Wow & Flutter measurement is recommended. |
| Reference playback level | TCW-231 (P/N: 8266002000) |
| Playback frequency response | TCW-284F (P/N: 8266003000) |
| 5) Blank tape | C-90 or shorter tape, TYPE II / HIGH position |
| 6) Audio oscillator | General type |
| 7) Frequency counter | General type |
| 8) Bandpass filter | General type |
| 9) AC voltmeter | Stereo type is recommended. |
| 10) Oscilloscope | General type |
| 11) Wow & Flutter meter | General type |
| 12) Distortion meter | General type |
| 13) Frequency counter | General type |

3-3. Tape Transport Mechanical Data

3-3-1. Reel torque

- | | |
|--------------------------|--|
| 1) PLAY mode (TW-2111A) | Supply: 1.5 ~ 6 g-cm
Takeup: 20 ~ 70 g-cm |
| 2) FF/REW mode (TW-2231) | FF /REW: 60 ~ 120 g-cm |

3-3-2. Pinch roller pressure

Pull force	300 ~ 500 g
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3-4. Tape Travel Check and Adjustment

Using the mirror type cassette, check to see that the tape is running stable between the ERASE and REC/PLAY heads tape guides without weaving. If the tape is not running stable between the guides, erasure and frequency response will be affected or the tape will be damaged by curling. It then becomes necessary to check the guide height, perpendicularity of the head surface, and alignment of the pinch roller in relation to the capstan. In addition to the mirror type cassette, the Head Height and Tape Contact Jig is required. To check the head guide height, the cassette tape is removed and the above jig is placed on the head mount base plate. While firmly seating the jig on the base plate surface, slide the jig past each head guide to see that it goes through without hitting them. Also check perpendicularity of each head surface, using the rear check bar of the jig. If the guide is low, insert the required amount of 0.1 mm or 0.2 mm thick washers under the head mounting legs, or vice versa, if it is high.

NOTE: Always adjust the head azimuth and phase when the head height is adjusted.

3-5. Volume & SW setting

Input fader	At 8 ± 1 position
Master fader	At 8 ± 1 position
Pan	Fully CCW (L) or CW (R) position
Track Down on / off button	At OFF position
Record track select switch	INPUT 1→TRACK 1, INPUT 2→TRACK 2, INPUT 3→TRACK 3, INPUT 4→TRACK 4

3-6. Check and Adjusting of Head Azimuth

- 1) Switch off the DOLBY SW.
- 2) Connect an AC volt meter to the TAPE OUT and playback the 12.5 kHz section on the TC-284W test tape.
- 3) Rotate the REC/PLAY head azimuth adjusting screw to obtain a maximum output level.

3-7. Tape Speed Check and Adjustment

- 1) Confirm that the Pitch control knob is at center position.
- 2) Connect a frequency counter or wow & flutter meter with frequency counter to the TAPE OUT.
- 3) First, adjust the tape speed at LOW. Press the NORMAL FIX button to change the tape speed at LOW and playback the Model 9152 test tape.
- 4) Adjust the tape speed by R49 (470 Ω) on the R/P AMP PCB so that the frequency counter reading is within 1500 Hz \pm 30 Hz.
- 5) Press the NORMAL FIX button to change the tape speed at HIGH and playback the Model 9152 test tape.
- 6) Adjust the tape speed by R48 (3.3 k Ω) on the R/P AMP PCB so that the frequency counter reading is within 3000 Hz \pm 30 Hz.

Check the tape speed and wow & flutter if they satisfy the following specifications.

Tape Speed:	3000 Hz \pm 30 Hz at both BOT (beginning of tape) and EOT (end of tape) positions
Wow & Flutter:	0.25 % (CCIR WTD) at both BOT and EOT positions

- 7) If the tape speed is not within the above specification, adjust R43 (3.3 k Ω) on the R/P AMP PCB assy.
- 8) Next, check if the tape speed variable range satisfies the specifications below.

Maximum tape speed:	+12 % or more (3360 Hz or more)
Minimum tape speed:	-45 % or less (1650 Hz or less)

3-8. Playback Level Calibration

- 1) Set the controls as follows.
 - Record track select switch: OFF
 - Dolby B noise reduction on/off switch: OFF
- 2) Connect an AC volt meter to the TAPE OUT 1 through 4 pin jacks.
- 3) Playback the TCW-231 test tape and check the output level if it is -10 dBV (0.3 V) \pm 1 dB reading.
- 4) If the reading is not within the above range, adjust R103 ~ R403 on the R/P AMP PCB assy.

3-9. Playback Frequency Response Calibration

- 1) Set the controls as follows.
 - Record track select switch: OFF
 - Dolby B noise reduction on/off switch: OFF
- 2) Connect an AC volt meter to the TAPE OUT 1 through 4 pin jacks respectively.
- 3) Playback the TCW-284F test tape and adjust R105 ~ R405 so that the output level at 6.3 kHz is 0.5 dB lower than the 400 Hz output level.
- 4) Confirm that the output level at 12.5 kHz is within ± 1 dB of the 400 Hz output level.

3-10. Erase Current Adjustment

At adjusting the erase current, put a blank cassette tape to the transport and the track to be adjusted is put in REC mode. Assuming the track 1 to be adjusted, the AC volt meter is connected to the test point TP103 on the R/P PCB assy and rotate and fix the core T101 for minimum voltage point. Then, confirm that the voltage at TP102 is more than 55 mV.

NOTE: If the voltage at TP106 is adjusted at minimum, the erase current flowing the erase head is set to the maximum.

Adjust the remaining tracks in the same way.

Track 2: Adjust T201 for minimum voltage at TP203. Then, confirm that the voltage at TP202 is more than 55 mV.

Track 3: Adjust T301 for minimum voltage at TP303. Then, confirm that the voltage at TP302 is more than 55 mV.

Track 4: Adjust T401 for minimum voltage at TP403. Then, confirm that the voltage at TP402 is more than 55 mV.

3-11. Coarse Bias Adjustment

At coarsely adjusting the bias current, put a blank cassette tape to the transport and the track to be adjusted is put in REC mode. Assuming the track 1 to be adjusted, the oscilloscope probe is connected to the test point TP101 on the R/P PCB assy and rotate and fix the pot R132 (220 k Ω) at 60 mV.

Adjust the remaining tracks in the same way.

Track 2: Adjust R232 so that the voltage at TP201 is 60 mV.

Track 3: Adjust R332 so that the voltage at TP301 is 60 mV.

Track 4: Adjust R432 so that the voltage at TP401 is 60 mV.

3-12. Record Level Calibration

* The procedures up to 3-10 must be completed before proceeding to this adjustment.

- 1) Put a blank cassette tape to the transport and apply a 400 Hz, -10 dBV (0.3 V) sine wave signal to the MIC/LINE IN 1/3 and 2/4 phone jacks. (In the case the signal is input from XLR jack, the terminal No.3 (COLD) and No. 1 (GND) must be shortened.)
- 2) Set the controls as follows.
 - Record track select switch: Set as mentioned in 3-5. Volume & SW setting
 - Trim knob 1/3 & 2/4: At minimum
 - Dolby B noise reduction on/off switch: OFF
- 3) Connect an AC volt meter to the TAPE OUT 1 ~ 4 pin jacks.
- 4) The X-34 is in the Input Monitor mode. Adjust the Input Fader so that the level at TAPE OUT 1 ~ 4 is -10 dBV (0.3 V).
- 5) Press the REC and PLAY buttons to start recording the signal.
- 6) After recording a certain length, rewind the tape to the start point of recording section. Then, playback the tape and check the level at TAPE OUT 1 ~ 4. If the AC volt meter reading is not within -10 dBV (0.3 V) ± 0.5 dB, adjust the pot R121 ~ 421 (22 k Ω) on the R/P PCB assy.

NOTE: When the record track switch is assigned to one of four recording tracks and the Track Down button is turned off, the X-34 is automatically put into the Input Monitor mode unless the X-34 is playing back the signal.

3-13. Overall Frequency Response Adjustment

- 1) Set the controls under the same condition as 3.12 except the DOLBY switch. (The switch should be turned on.)
- 2) Apply a 400 Hz, -35 dBV (18 mV) signal to the MIC/LINE IN 1/3 and 2/4 phone jacks.
- 3) Record the signal, rewind and playback the recorded section of the tape and memorize the output level at TAPE OUT 1 ~ 4.
- 4) Next, apply 6 kHz & 12 kHz, -35 dBV (18 mV) signals to the MIC/LINE IN 1/3 and 2/4 phone jacks.
- 5) Record the signal, rewind and playback the recorded section of the tape.
- 6) Check if the 6 kHz / 12 kHz output level at TAPE OUT 1 ~ 4 is within ± 2 dB comparing to the 400 Hz output level. If the AC volt meter reading is not within the above specification, adjust the pot R132 ~ 432 (220 k Ω) on the R/P AMP PCB Assy so that the recording level at 6 kHz will be within the specification.

3-14. T.H.D. Measurement

- 1) Connect a distortion meter, 400 Hz HPF and 30 kHz LPF to TAPE OUT 1 ~ 4 and set the controls under the same condition as 3-12.
- 2) Record a 1 kHz, -10 dBV (0.3 V) sine wave signal.
- 3) Playback the recorded part and check if the distortion level is less than 2 %.

3-15. Erasure Measurement

- 1) Connect a 1 kHz bandpass filter and AC volt meter to TAPE OUT 1 ~ 4 and set the controls under the same condition as 3-12.
- 2) Record a 1 kHz, 0 dBV (1 V) sine wave signal which is 10 dB higher than the reference recording level on a blank tape.
- 3) Rewind the tape to the start point of recording and advance it by a short length. Then, record again without applying the signal on the remaining part.
- 4) Rewind the tape to the start point again and play it back. Check if the level ratio between the playback level and no-signal section (erased part) is 67 dB or more.

3-16. Cross Erasure Measurement

- 1) Set the controls as follow.
 - Trim knob: At minimum
 - Input fader: Standard position (At 8 ± 1)
 - Dolby B noise reduction on/off switch: OFF
- 2) Input a 10 kHz, -10 dBV signal to the MIC/LINE IN 1/3 and 2/4 phone jacks and record the signal on all tracks.
- 3) Rewind the tape to the start point of recording. Then, erase the 10 kHz signal on the track and check if the level difference at the corresponding track indicated below is within 1 dB.

Tracks to be measured	Track (s) to be erased
1	2
2	1 and 3
3	2 and 4
4	3
- 4) If the level goes down by more than 1 dB, check the tape running path again.

3-17. Sync crosstalk measurement

Sync crosstalk is a relative figure against the reference level, on how much of the recording signal from a track in recording mode is leaking into the track being reproduced. When sync crosstalk is excessively high, playback output during overdubbing will sound muddy by effect of the recording signal leakage or cause oscillation at pingpong recording (where the playback output is transferred to another track).

- 1) Set the controls as follow and put a blank tape to the transport.
 - Trim knob: At minimum
 - Input fader: Standard position (At 8 ± 1)
 - Dolby B noise reduction on/off switch: OFF
- 2) Apply a signal whose level is -10 dBV (0.3 V).
- 3) Put one track into REC mode and check if the level at TAPE OUT on an adjacent track is within the specifications listed below when sweeping the oscillator frequency.
 - At 1 kHz: -25 dBV or less
 - 1 ~ 20 kHz: -10 dBV or less

3-18. S/N Measurement

3-18-1. Reproduce

- 1) Set the control as follow.
 - Dolby B noise reduction on/off switch: OFF
- 2) Connect an AC volt meter and put the transport into PLAY mode without loading a tape.
- 3) Check if the AC volt meter reading is within the following specifications.
 - DIN AUDIO: 47 dB
 - IHF-A: 55 dB

3-18-2. Record and reproduce (Overall)

- 1) Set the control as follow.
 - Dolby B noise reduction on/off switch: OFF
- 2) Put a blank cassette tape and start recording without applying a signal.
- 3) Rewind the tape to the start point and play it back.
- 4) Check if the AC volt meter reading is within the following specifications.
 - DIN AUDIO: 45 dB
 - IHF-A: 48 dB
- 5) Next, turn the Dolby switch on and repeat the above procedures 2) ~ 4).
- 6) Check if the AC volt meter reading is within the following specifications.
 - DIN AUDIO: 48 dB
 - IHF-A: 55 dB

3-19. Click Noise Measurement

3-19-1. Dolby switch on/off

- 1) Check if the click noise level at TAPE OUT when turning on/off the Dolby switch is less than -30 dBVp.

3-19-2. REC/STOP (monitor)

- 1) Check if the click noise level at MONIKTOR OUT when punching out by pressing the STOP button is less than -20 dBVp.

3-19-3. REC/STOP (on tape)

- 1) Turn off the Dolby switch, turn on all the 1 ~ 4 record track switches and put a blank cassette tape in the transport.
- 2) Plug the foot switch (e.g. Model 8051) in the Punch in/out jack and press the REC & PLAY buttons.
- 3) Press the foot switch repeatedly and check if the click level at TAPE OUT 1 ~ 4 is less than -20 dBVp.

3-20. Table of Adjusting Items

Adjusting Item	Measuring Point	Adjusting Point	Ref. Clause (page)
Tape speed (NORMAL)	TAPE OUT	R49 (R/P)	3-7 (P10)
Tape speed (HIGH)	TAPE OUT	R48 (R/P)	3-7 (P10)
Playback level calibration	TAPE OUT 1 ~ 4	R106 ~ R406 (R/P)	3-8 (P10 ~ 11)
Playback frequency response calibration	TAPE OUT 1 ~ 4	R103 ~ R403 (R/P)	3-9 (P11)
Erase current adjustment	TP103 ~ TP403	T101 ~ 401 (R/P)	3-10 (P11)
	TP102 ~ TP402		
Coarse bias adjustment	TP101 ~ 401	R132 ~ 432	3-11 (P11)
Record level calibration	TAPE OUT 1 ~ 4	R121 ~ 421	3-12 (P11)
Overall frequency response adjustment	TAPE OUT 1 ~ 4	R132 ~ 432	3-13 (P12)

4. EXPLODED VIEW, PCB ASSEMBLY AND PARTS LIST

● X-34 OVERALL EXPLODED VIEW & PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	8212 6550 00	Case, bottom, X-34	20	8274 1770 00	PCB assy, Meter, X-34
△ 2	8274 1610 00	PCB assy, R/P AMP, X-34	21	8274 1780 00	PCB assy, TRK Selector, X-34
3	8216 6910 00	Shield, bottom, X-34	22	8216 6930 00	Sheet, insulate, X-34
4	8204 0820 00	Plate, mounting, B	23	8226 1590 04	Knob, fader, N7, GR
5	8270 8240 00	Transport assy, X-24/34	24	8226 1590 05	Knob, fader, N7, R
6	8216 6900 00	Shield, center, X-34	25	8226 2070 01	Knob, pitch, N7
7	8212 6540 00	Case, top, X-34	26	8216 6870 00	Sheet, meter, X-34
8	8212 5931 00	Cover, cassette, X-34	27	8216 6880 00	Sheet, track, select, X-34
9	8226 2360 02	Knob, bounce, X-34	28	8216 4230 00	Reflector, cassette
10	8226 2360 02	Knob, track down, X-34	29	8216 6490 00	Cushion, cover, X-14/24/34
11	8216 6890 00	Shield, top, X-34	△ 30	8270 8460 03	AC adaptor, AD-12C, USA/CND
12	8204 0370 01	Ring, CSTW-2		8270 8460 06	AC adaptor, AD-12C, EUR
13	8214 2110 00	Spring, cassette, X-18/14/24/34		8270 8460 07	AC adaptor, AD-12C, UK
14	8274 1760 00	PCB assy, Mixer, X-34		8270 8460 10	AC adaptor, AD-12C, JPN
15	8221 2670 00	Bracket, jack, X-34	31	8226 2131 01	Knob, cassette, REC, X-14/24/34
16	8226 1620 05	Knob, VR, N7, Y	32	8226 2101 01	Knob, cassette, PLAY, X-14/24/34
17	8226 1620 06	Knob, VR, N7, G	33	8226 2091 01	Knob, cassette, REW, X-14/24/34
18	8226 1620 07	Knob, VR, N7, N	34	8226 2081 01	Knob, cassette, FF, X-14/24/34
19	8207 0040 00	PC support, 5090	35	8226 2111 01	Knob, cassette, STOP, X-14/24/34
			36	8226 2121 01	Knob, cassette, PAUSE, X-14/24/34

● X-34 TRANSPORT EXPLODED VIEW & PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	8259 0500 00	Head, erase, X-14/24	13	8223 2770 00	Shaft, button
2	8259 0520 00	Head, R/P, 4T, N-LR44RS07, X-34	14	8216 5310 00	Belt, main
3	8260 4620 00	Pinch roller assy	15	8216 5320 00	Belt, sub
4	8260 4630 00	Idler arm assy	16	8216 5330 00	Belt, counter
5	8260 4640 00	Fly wheel assy	17	8221 1970 00	Bracket, button
6	8260 4650 00	Motor assy	18	8256 1690 00	Counter
7	8260 4660 00	F.R. arm assy	19	8214 3550 00	Spring, pinch arm
8	8212 4930 00	Lever, REC safety	20	8214 3560 00	Spring, FR torsion
9	8212 4910 00	Gear, arm	21	8214 3570 00	Spring, stop/pause
10	8212 4920 00	Gear, FF	22	8214 3580 00	Spring, safety sensor
11	8253 4280 00	SW, leaf, MSW-1541XACV	23	8214 3590 00	Spring, rec lever
12	8253 4290 00	SW, leaf, MSW-1716CV	24	8214 3600 00	Spring, play lever

● X-34 OVERALL EXPLODED VIEW

Letter Size X 2

● X-34 TRANSPORT EXPLODED VIEW

Letter Size X 2

- X-34 PCB PATTERN DRAWING
- MIXER / METER / TERMINAL PCBs

Letter Size X 2

- R/P / PITCH / TRK SELECTOR PCBs

Letter Size X 2

● X-34 Parts List

• MIXER PCB

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	8274 1760 00	PCB Assy, Mixer, X-34	R090	8230 5001 23	ST, carbon, 1/10W, 12kΩ, 5%
B001	8251 9751 01	Plain PCB, Mixer, X-34	R091	8230 1381 23	HT, carbon, 1/4W, 12kΩ, 5%
			R092	8230 5001 23	ST, carbon, 1/10W, 12kΩ, 5%
			R093	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
			R094	8230 5001 02	ST, carbon, 1/10W, 1kΩ, 5%
			R101, 201	8230 1381 23	HT, carbon, 1/4W, 12kΩ, 5%
			R102, 202	8230 1381 23	HT, carbon, 1/4W, 12kΩ, 5%
			R103, 203	8230 1381 02	HT, carbon, 1/4W, 1kΩ, 5%
			R104, 204	8230 1381 02	HT, carbon, 1/4W, 1kΩ, 5%
			R105, 205	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
			R106, 206	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
			R107, 207	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
			R108~408	8230 1384 32	HT, carbon, 1/4W, 4.3kΩ, 5%
			R109~409	8230 5004 73	ST, carbon, 1/10W, 47kΩ, 5%
			R110~410	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
			R111~411	8230 1381 04	HT, carbon, 1/4W, 100kΩ, 5%
			R112~412	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
			R113~413	8230 1383 32	HT, carbon, 1/4W, 3.3kΩ, 5%
			R114~414	8230 1381 53	HT, carbon, 1/4W, 15kΩ, 5%
			R115~415	8230 1383 32	HT, carbon, 1/4W, 3.3kΩ, 5%
			R116~416	8230 1381 53	HT, carbon, 1/4W, 15kΩ, 5%
			R117~417	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
			R118~418		N/A
			R119~419		N/A
			R120~420	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
			R121~421	8230 1382 43	HT, carbon, 1/4W, 24kΩ, 5%
			R122~422	8230 1382 43	HT, carbon, 1/4W, 24kΩ, 5%
			R123~423	8230 1383 03	HT, carbon, 1/4W, 30kΩ, 5%
			R124~424	8230 1383 03	HT, carbon, 1/4W, 30kΩ, 5%
			R125~425	8230 1381 23	HT, carbon, 1/4W, 12kΩ, 5%
			R126~426	8230 5002 23	ST, carbon, 1/10W, 22kΩ, 5%
			R127~427	8230 5001 23	ST, carbon, 1/10W, 12kΩ, 5%
			R140, 240	8240 2880 01	Pot, PI, RT12, 100kΩCC, XV012, L20
			R141~441	8240 2740 03	Pot, PI, SL30, 20kΩA, RS30H111
			R142~442	8240 2870 02	Pot, PI, RT9, 50kΩB, CC, XV092, L30
			R143~443	8240 2870 02	Pot, PI, RT9, 50kΩB, CC, XV092, L30
			R144~444	8240 2870 03	Pot, PI, RT9, 20kΩA, XV092, L30
			R145~445	8240 2870 02	Pot, PI, RT9, 50kΩB, CC, XV092, L30
			R146	8240 2740 04	Pot, PI, SL30, 20kΩA, RS30H121
			R147	8240 2870 07	Pot, PI, RT12, 50kΩAA, XV012, L30
			R148	8240 2880 02	Pot, PI, RT12, 10kΩAA, XV012, L30
			R150, 250	8230 5006 83	ST, carbon, 1/10W, 68kΩ, 5%
			R151, 250	8230 1381 23	HT, carbon, 1/4W, 12kΩ, 5%
			R152, 252	8230 1382 73	HT, carbon, 1/4W, 27kΩ, 5%
			R153, 253	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
			R154, 254	8230 1381 02	HT, carbon, 1/10W, 1kΩ, 5%
			R161, 261	8230 5001 23	ST, carbon, 1/10W, 12kΩ, 5%

ICs		
Ref. No.	Part No.	Description
U001	8236 5405 00	ST, AN, NJM2068M (TEI)
U002~009	8236 5412 00	ST, AN, NJM4565M
U011	8236 7205 00	ST, AN, op amp, NJM4556MB-TI
U012, 013	8236 5412 00	ST, AN, NJM4565M
U014	8236 5702 01	ST, DG, driver, DTC314TK
U020	8236 0854 01	QFP, DG, CPU, X-34, TMP87C800
U021~037	8236 5707 01	ST, DG, driver, DTA144EK
U038	8236 5706 01	ST, DG, driver, DTC144EK
U039	8236 5707 01	ST, DG, driver, DTA144EK
U040	8236 5706 01	ST, DG, driver, DTC144EK
U041	8236 5707 01	ST, DG, driver, DTA144EK
U042	8236 5706 01	ST, DG, driver, DTC144EK
U043	8236 5707 01	ST, DG, driver, DTA144EK
U044	8236 5706 01	ST, DG, driver, DTC144EK
U045	8236 5707 01	ST, DG, driver, DTA144EK
U046	8236 5706 01	ST, DG, driver, DTC144EK
U047~051	8236 5707 01	ST, DG, driver, DTA144EK
U101~401	8236 5000 00	ST, DG, CMOS, 4066BF
U102~402	8236 5000 00	ST, DG, CMOS, 4066BF
U103, 203	8236 5702 01	ST, DG, driver, DTC314TK
U104, 204	8236 5702 01	ST, DG, driver, DTC314TK

DIODES		
Ref. No.	Part No.	Description
D001~009	8234 1046 02	HT, 1SS136
D013, 014	8234 1045 00	Opt., V, LED, RED, SLR-342VR3F

RESISTORS		
Ref. No.	Part No.	Description
R001~024	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
R002~012	8230 5004 73	ST, carbon, 1/10W, 47kΩ, 5%
R013~024	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
R027	8230 5007 51	ST, carbon, 1/10W, 750Ω, 5%
R028, 029	8230 1387 51	HT, carbon, 1/4W, 750Ω, 5%
R030~032	8230 1381 01	HT, carbon, 1/4W, 100Ω, 5%
R034, 035	8230 5004 73	ST, carbon, 1/10W, 47kΩ, 5%
R041, 042	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%
R048, 049	8230 5004 73	ST, carbon, 1/10W, 47kΩ, 5%
R055	8230 5000 00	ST, carbon, 1/10W, 0Ω, 5%
R080	8230 1381 23	HT, carbon, 1/4W, 12kΩ, 5%
R081~083	8230 5001 23	ST, carbon, 1/10W, 12kΩ, 5%
R084	8230 1384 73	HT, carbon, 1/4W, 47kΩ, 5%

Ref. No.	Part No.	Description
R162, 262	8230 5001 04	ST, carbon, 1/10W, 100k Ω , 5%
R163, 263	8230 5004 73	ST, carbon, 1/4W, 47k Ω , 5%
R164, 264	8230 1381 02	HT, carbon, 1/10W, 1k Ω , 5%
R165, 265	8230 1384 73	HT, carbon, 1/4W, 47k Ω , 5%
R166, 266	8230 1381 60	HT, carbon, 1/4W, 160 Ω , 5%

CAPACITORS

ALU = Electrolytic type

CER = Ceramic type

Ref. No.	Part No.	Description
C001~006	8232 1444 76	VT, ALU, 25V, 47 μ F, 20%, SME-VB
C010	8233 5021 04	ST, CER, 50V, 0.1 μ F, 5%, CC20F
C012, 013	8232 8031 03	ST, CER, 50V, 0.01 μ F, 5%, CC20F
C020	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C021	8233 5002 20	ST, CER, 50V, 22pF, 5%, CC20SL
C022		N/A
C023	8233 5002 20	ST, CER, 50V, 22pF, 5%, CC20SL
C024		N/A
C025	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C030	8233 5002 20	ST, CER, 50V, 22pF, 5%, CC20SL
C031, 032		N/A
C033	8233 5002 20	ST, CER, 50V, 22pF, 5%, CC20SL
C034		N/A
C035	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C036	8233 5041 03	ST, CER, 25V, 0.01 μ F, 10%, CC20R
C101, 201		N/A
C102, 202		N/A
C103, 203	8232 1421 07	VT, ALU, 10V, 100 μ F, 20%, SME-VB
C104, 204	8232 1421 07	VT, ALU, 10V, 100 μ F, 20%, SME-VB
C105, 205	8232 8011 00	VT, CER, 50V, 10pF, 5%, SL
C106, 206	8232 8011 00	VT, CER, 50V, 10pF, 5%, SL
C107, 207	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C108~408	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C109~409	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C110~410		N/A
C111~411	8233 5002 20	ST, CER, 50V, 22pF, 5%, CC20SL
C112~412		N/A
C113~413	8232 1424 76	VT, ALU, 10V, 47 μ F, 20%, SME-VB
C114~414	8233 5002 20	ST, CER, 50V, 22pF, 5%, CC20SL
C115~415	8232 9013 92	VT, PES, 50V, 0.0039 μ F, 5%, AMZV
C116~416	8232 9013 92	VT, PES, 50V, 0.0039 μ F, 5%, AMZV
C117~417	8232 9011 53	VT, PES, 50V, 0.015 μ F, 5%, AMZV
C118~418		N/A
C119~419	8232 1424 76	VT, ALU, 10V, 47 μ F, 20%, SME-VB
C120~420	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C121~421		N/A
C122~422		N/A
C123~423	8232 8012 21	VT, CER, 50V, 220pF, 5%, SL
C124~424	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C125, 225	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB

Ref. No.	Part No.	Description
C150, 250	8233 5002 20	ST, CER, 50V, 22pF, 5%, CC20SL
C151, 251		N/A
C152, 252	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C153, 253	8233 5002 20	ST, CER, 50V, 22pF, 5%, CC20SL
C154, 254		N/A
C155, 255	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C162, 262	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C163, 263	8233 5001 00	ST, CER, 50V, 10pF, 5%, CC20SL
C164, 264		N/A
C165, 265	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
C166, 266	8232 1424 77	VT, ALU, 10V, 470 μ F, 20%, SME-VB

MISCELLANEOUS

Ref. No.	Part No.	Description
E001		Wire, jumper, IPS-1041-2, F5
E002		Wire, jumper, IPS-1041-3, F7.5
E003		Wire, jumper, IPS-1041-4, F10
E004		Wire, jumper, IPS-1041-5, F12.5
E005		Wire, jumper, IPS-1041-6, F15
E011	8207 0122 05	Holder, cable, 5P, 51048
E012	8207 0122 08	Holder, cable, 8P, 51048
E013	8207 0122 09	Holder, cable, 9P, 51048
E014	8207 0122 14	Holder, cable, 14P, 51048
J001	8245 2120 01	Connector, PL, jack, RCA, 2P, BLK
J002, 003	8245 3390 04	Connector, PL, jack, phone, YKB21-5074
J004	8245 3081 07	Connector, PL, jack, 7P, SBRK7R-4
J006	8245 5280 01	Connector, PI, jack, 1P, RT-01T-1.0B
J101, 201	8245 3390 09	Connector, PL, jack, phone, YKB21-5006
J102, 202	8245 2680 04	Connector, PL, jack, XLR31, 3P, NC3FAHR10
J103, 203	8245 3390 04	Connector, PL, jack, phone, YKB21-5074
J104, 204	8245 3390 04	Connector, PL, jack, phone, YKB21-5074
J105, 205	8245 3390 04	Connector, PL, jack, phone, YKB21-5074
L001~004	8242 1860 13	Filter, T, EMI, LFW7B-M3R2T
L005	8242 1860 13	Filter, T, EMI, LFW7B-M3R2T
L007	8242 1860 13	Filter, T, EMI, LFW7B-M3R2T
L009	8242 1860 13	Filter, T, EMI, LFW7B-M3R2T
L011	8242 1860 13	Filter, T, EMI, LFW7B-M3R2T
L013, 014	8242 1860 13	Filter, T, EMI, LFW7B-M3R2T
L022	8242 1962 23	Coil, PVT, 22 μ H, 5%, LF5.0S
S006, 007	8253 1350 02	Switch, PIT, tact, SOR-112HS
Y005	8207 0122 09	Holder, cable, 9P, 51048
Y006	8207 0122 13	Holder, cable, 13P, 51048
Y007	8207 0122 08	Holder, cable, 8P, 51048
Y008	8207 0122 06	Holder, cable, 6P, 51048

Ref. No.	Part No.	Description
W001	8276 9089 20	Cable, flat, 9P, L200
W002	8276 9088 20	Cable, flat, 8P, L200
W003	8276 9087 20	Cable, flat, 7P, L200 X 2
W004	8277 0230 15	Cable assy, 7P, 9073/BL-9073/BS, L150
W006	8276 9085 20	Cable, flat, 5P, L200
X001	8256 1820 01	Resonator, S, CER, 8MHz, EFOMC

• METER PCB

Ref. No.	Part No.	Description
	8274 1770 00	PCB assy, Meter, X-34
B001	8251 9750 02	Plain PCB, Meter, X-34

ICs

Ref. No.	Part No.	Description
U105~405	8236 0855 00	SIP, AN, LED driver, BA6137
U106, 206	8236 0855 00	SIP, AN, LED driver, BA6137

DIODES

Ref. No.	Part No.	Description
D010	8234 1046 00	Opt., VT, LED, red, SLR-332VC-TB7
D011, 012	8234 1046 04	Opt., VT, LED, gm, SLR-332MC-TB7
D040~057	8234 1047 00	Opt., VT, LED, yel, SLR-332YC-TB7
D058~069	8234 1046 00	Opt., VT, LED, red, SLR-332VC-TB7
D070	8234 1046 04	Opt., VT, LED, gm, SLR-332MC-TB7

RESISTORS

Ref. No.	Part No.	Description
R130~430	8230 1384 73	HT, carbon, 1/4W, 47k Ω , 5%
R131~431	8230 1385 12	HT, carbon, 1/4W, 5.1k Ω , 5%
R132~432	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R133, 233	8230 1381 23	HT, carbon, 1/4W, 12k Ω , 5%
R134, 234	8230 1385 12	HT, carbon, 1/4W, 5.1k Ω , 5%
R135, 235	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R236	8230 1387 51	HT, carbon, 1/4W, 750 Ω , 5%
R025, 026	8230 1387 51	HT, carbon, 1/4W, 750 Ω , 5%

CAPACITORS

ALU = Electrolytic type

CER = Ceramic type

Ref. No.	Part No.	Description
C011	8232 8031 03	VT, CER, 50V, 0.01 μ F, YF
C130~430	8232 2181 06	VT, ALU, 16V, 10 μ F, 20%, SRE
R131~431	8232 2181 06	VT, ALU, 16V, 10 μ F, 20%, SRE
C132, 232	8232 2181 06	VT, ALU, 16V, 10 μ F, 20%, SRE
C133, 233	8232 2181 06	VT, ALU, 16V, 10 μ F, 20%, SRE
C010	8232 2194 75	VT, ALU, 25V, 4.7 μ F, 20%, SRE

MISCELLANEOUS

Ref. No.	Part No.	Description
E001		Wire, jumper, IPS-1041-2, F5
E002		Wire, jumper, IPS-1041-3, F7.5
E003		Wire, jumper, IPS-1041-4, F10
S001	8253 1350 02	Switch, PIT, tact, SOR-112HS

• TRK SELECTOR PCB

Ref. No.	Part No.	Description
	8274 1780 00	PCB assy, Trk Selector, X-34
B001	8251 9711 03	Plain PCB, Trk Selector, X-34

ICs

Ref. No.	Part No.	Description
U052~072	8236 5707 01	ST, DG, driver, DTA144EK
U073~076	8236 5601 37	ST, DG, 74HC137

DIODES

Ref. No.	Part No.	Description
D015~030	8234 1046 00	Opt., VT, LED, red, SLR-332VC-TB7
D031~034	8234 1046 04	Opt., VT, LED, gm, SLR-332MC-TB7
D035	8234 1044 00	Opt., VT, LED, gm, SLR-342MG3F

RESISTORS

Ref. No.	Part No.	Description
R036~039	8230 1384 73	HT, carbon, 1/4W, 47k Ω , 5%
R043~046	8230 1384 73	HT, carbon, 1/4W, 47k Ω , 5%
R050~053	8230 1384 73	HT, carbon, 1/4W, 47k Ω , 5%
R054~079	8230 1387 51	HT, carbon, 1/4W, 750 Ω , 5%
R134, 234	8230 1385 12	HT, carbon, 1/4W, 5.1k Ω , 5%
R135, 235	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R236	8230 1387 51	HT, carbon, 1/4W, 750 Ω , 5%
R025, 026	8230 1387 51	HT, carbon, 1/4W, 750 Ω , 5%

CAPACITORS

CER = Ceramic type

Ref. No.	Part No.	Description
C014~017	8232 8031 03	VT, CER, 50V, 0.01 μ F, YF

MISCELLANEOUS

Ref. No.	Part No.	Description
E001		Wire, jumper, IPS-1041-2, F5
E201	8207 0122 07	Holder, cable, 7P, 51048
S002~005	8253 1350 02	Switch, PIT, tact, SOR-112HS
W004	8276 9087 25	Cable, flat, 7P, L250
W005	8276 9087 10	Cable, flat, 7P, L100

• R/P PCB

Ref. No.	Part No.	Description
	8274 1610 00	PCB assy, R/P, X-34
B001	8251 9711 01	Plain PCB, R/P, X-34

ICs

Ref. No.	Part No.	Description
U001	8236 0449 10	220, AN, regulator, μ PC2410HF
U002	8236 0352 03	SIP, AN, op amp, NJM4556AL
U003	8236 0782 06	ST, digital, driver, DTA143TS
U004	8236 0854 01	QFP, DG, CPU, X-34, TMP87C800
U005	8236 5701 03	ST, digital, driver, DTC114TK
U006~034	8236 5707 01	ST, digital, driver, DTA144EK
U035	8236 5010 81	ST, DG, CMOS, 4081F
U101~401	8236 5405 00	SOP, AN, op amp, NJM2068MD
U102~402		N/A
U103~403	8236 0457 00	SOP, AN, DOLBY, HA12135AF
U104~404		N/A
U105~405	8236 4190 00	SIP, AN, Head SW, BA7755A
U106~406	8236 5702 01	ST, digital, driver, DTC314TK
U107~407	8236 5701 03	ST, digital, driver, DTC114TK
U108~408	8236 5701 03	ST, digital, driver, DTC114TK
U109~409		N/A
U110~410	8236 5707 01	ST, digital, driver, DTA144EK
U111~411	8236 5701 03	ST, digital, driver, DTC114TK
U112~412	8236 5701 03	ST, digital, driver, DTC114TK
U113~413	8236 5701 03	ST, digital, driver, DTC114TK
U114~414	8236 5701 03	ST, digital, driver, DTC114TK
U120~420		N/A
U121~421	8256 0990 00	Module, MPX, XR-5
U122~422	8256 0660 00	Module, trap, 80kHz

TRANSISTORS

Ref. No.	Part No.	Description
Q001	8234 1430 00	V, NPN, 2SC3071
Q002, 003	8234 5043 03	VT, NPN, 2SC1740S
Q004, 005	8234 1006 01	VT, PNP, 2SA1015GR
Q101~401	8234 5043 03	VT, NPN, 2SC1740S, S
Q102~402	8234 5043 03	VT, NPN, 2SC1740S, S

DIODES

Ref. No.	Part No.	Description
D001, 002	8234 0196 02	VT, DSK10C
D003~006	8234 5007 00	HT, 1SS136
D007, 008		N/A
D101~401	8234 5007 00	HT, 1SS136
D102~402	8234 5007 00	HT, 1SS136
D103~403	8234 5007 00	HT, 1SS136
D104~404	8234 5007 00	HT, 1SS136
D105~405	8234 5007 00	HT, 1SS136

RESISTORS

Ref. No.	Part No.	Description
R001	8230 1387 51	HT, carbon, 1/4W, 750 Ω , 5%
R002	8230 1383 94	HT, carbon, 1/4W, 390k Ω , 5%
R003	8230 1387 51	HT, carbon, 1/4W, 750 Ω , 5%
R004	8230 1381 01	HT, carbon, 1/4W, 100 Ω , 5%
R005	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%
R006, 007	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R008	8230 1382 20	HT, carbon, 1/4W, 22 Ω , 5%
R010	8230 0510 06	V, array, 1/8W, 47k Ω -47k Ω x 5, 5%, RKC-E
R020	8230 1383 33	HT, carbon, 1/4W, 33k Ω , 5%
R021, 022	8230 1384 72	HT, carbon, 1/4W, 4.7k Ω , 5%
R023	8230 1384 70	HT, carbon, 1/4W, 47 Ω , 5%
R024		N/A
R025	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R026		N/A
R030~034	8230 1381 01	HT, carbon, 1/4W, 100 Ω , 5%
R035		N/A
R036~043	8230 1384 73	HT, carbon, 1/4W, 47k Ω , 5%
R044	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R045	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%
R046	8230 1383 32	HT, carbon, 1/4W, 3.3k Ω , 5%
R047	8230 1382 41	HT, carbon, 1/4W, 240 Ω , 5%
R048	8230 1383 32	HT, carbon, 1/4W, 3.3k Ω , 5%
R049	8230 1384 71	HT, carbon, 1/4W, 470 Ω , 5%
R051~066	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%
R067~074	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R075	8230 1384 73	HT, carbon, 1/4W, 47k Ω , 5%
R076	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R077	8230 1384 73	HT, carbon, 1/4W, 47k Ω , 5%
R080~082	8230 1384 73	HT, carbon, 1/4W, 47k Ω , 5%
R083, 084	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%
R085	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%
R086	8230 1382 20	HT, carbon, 1/4W, 22 Ω , 5%
R101~401	8230 1382 43	HT, carbon, 1/4W, 24k Ω , 5%
R102~402	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%
R103~403	8231 5034 71	R-TRIM, PIT, carbon, 470 Ω , 637T
R104~404	8230 1383 94	HT, carbon, 1/4W, 390k Ω , 5%
R105~405	8231 5032 23	R-TRIM, PIT, carbon, 22k Ω , 637T
R106~406	8230 1382 22	HT, carbon, 1/4W, 2.2k Ω , 5%
R107~407		N/A
R108~408	8230 1383 63	HT, carbon, 1/4W, 36k Ω , 5%
R109~409	8230 1383 63	HT, carbon, 1/4W, 36k Ω , 5%
R110~410	8230 1383 63	HT, carbon, 1/4W, 36k Ω , 5%
R111~411	8230 1383 63	HT, carbon, 1/4W, 36k Ω , 5%
R112~412	8230 1383 32	HT, carbon, 1/4W, 3.3k Ω , 5%
R113~413	8230 1383 32	HT, carbon, 1/4W, 3.3k Ω , 5%
R114~414	8230 1381 83	HT, carbon, 1/4W, 18k Ω , 5%
R115~415	8230 1382 03	HT, carbon, 1/4W, 20k Ω , 5%

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
R116~416	8230 1382 03	HT, carbon, 1/4W, 20k Ω , 5%	C101~401	8232 8016 81	VT, CER, 50V, 680pF, 5%, SL
R117~417	8230 1382 02	HT, carbon, 1/4W, 2k Ω , 5%	C102~402	8232 1461 05	VT, ALU, 50V, 1 μ F, 20%, SME-VB
R118~418	8230 1382 02	HT, carbon, 1/4W, 2k Ω , 5%	C103~403	8232 8011 01	VT, CER, 50V, 100pF, 5%, SL
R119~419	8230 1384 72	HT, carbon, 1/4W, 4.7k Ω , 5%	C104~404	8232 1424 76	VT, ALU, 10V, 47 μ F, 20%, SME-VB
R120~420	8230 1386 22	HT, carbon, 1/4W, 6.2k Ω , 5%	C105~405	8232 9018 22	VT, PES, 50V, 0.0082 μ F, 5%, AMZ
R121~421	8231 5032 23	R-TRIM, PIT, carbon, 22k Ω , 637T	C106~406	8232 8012 21	VT, CER, 50V, 220pF, 5%, SL
R122~422	8230 1382 41	HT, carbon, 1/4W, 240 Ω , 5%	C107~407	8232 1462 25	VT, ALU, 50V, 2.2 μ F, 20%, SME-VB
R123~423	8230 1382 02	HT, carbon, 1/4W, 2k Ω , 5%	C108~408	8232 9013 92	VT, PES, 50V, 0.0039 μ F, 5%, AMZ
R124~424	8230 1381 04	HT, carbon, 1/4W, 100k Ω , 5%	C109~409	8232 1461 05	VT, ALU, 50V, 1 μ F, 20%, SME-VB
R125~425		N/A	C110~410	8232 1461 05	VT, ALU, 50V, 1 μ F, 20%, SME-VB
R126~426	8230 1381 53	HT, carbon, 1/4W, 15k Ω , 5%	C111~411		N/A
R127~427	8230 1381 53	HT, carbon, 1/4W, 15k Ω , 5%	C112~412		N/A
R128~428	8230 1383 63	HT, carbon, 1/4W, 36k Ω , 5%	C113~413		N/A
R129~429	8230 1385 62	HT, carbon, 1/4W, 5.6k Ω , 5%	C114~414	8232 1462 24	VT, ALU, 50V, 0.22 μ F, 20%, SME-VB
R130~430	8230 1381 01	HT, carbon, 1/4W, 100 Ω , 5%	C115~415	8232 1464 75	VT, ALU, 50V, 4.7 μ F, 20%, SME-VB
R131~431	8230 1381 09	HT, carbon, 1/4W, 1 Ω , 5%	C116~416	8232 1424 76	VT, ALU, 10V, 47 μ F, 20%, SME-VB
R132~432	8231 5032 24	R-TRIM, PIT, carbon, 220k Ω , 637T	C117~417	8232 1424 76	VT, ALU, 10V, 47 μ F, 20%, SME-VB
R133~433	8230 1382 22	HT, carbon, 1/4W, 2.2k Ω , 5%	C118~418	8232 1424 76	VT, ALU, 10V, 47 μ F, 20%, SME-VB
R134~434	8230 1382 22	HT, carbon, 1/4W, 2.2k Ω , 5%	C119~419	8232 1424 76	VT, ALU, 10V, 47 μ F, 20%, SME-VB
R135~435	8230 1382 22	HT, carbon, 1/4W, 2.2k Ω , 5%	C120~420	8232 9012 73	VT, PES, 50V, 0.027 μ F, 5%, AMZ
R136~436	8230 1382 03	HT, carbon, 1/4W, 20k Ω , 5%	C121~421		N/A
R137~437	8230 1381 00	HT, carbon, 1/4W, 10 Ω , 5%	C122~422		N/A
R138~438	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%	C123~423	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
R139~439	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%	C124~424		N/A
R140~440	8230 1381 03	HT, carbon, 1/4W, 10k Ω , 5%	C125~425	8232 8011 01	VT, CER, 50V, 100pF, 5%, SL
R141~441	8230 1388 22	HT, carbon, 1/4W, 8.2k Ω , 5%	C126~426	8232 9011 82	VT, PES, 50V, 0.0018 μ F, 5%, AMZ
R142~442	8230 1388 22	HT, carbon, 1/4W, 8.2k Ω , 5%	C127~427	8232 8011 81	VT, CER, 50V, 180pF, 5%, SL
R143~443	8230 1388 22	HT, carbon, 1/4W, 8.2k Ω , 5%	C128~428	8232 1461 04	VT, ALU, 50V, 0.1 μ F, 20%, SME-VB
R144~444	8230 1388 22	HT, carbon, 1/4W, 8.2k Ω , 5%	C129~429	8232 1462 25	VT, ALU, 50V, 2.2 μ F, 20%, SME-VB
			C130~430	8232 8012 21	VT, CER, 50V, 220pF, 5%, SL
			C131~431	8233 0481 52	VT, PPR, 100V, 0.0015 μ F, 5%, APS
			C132~432	8232 9011 03	VT, PES, 50V, 0.01 μ F, 5%, AMZ
			C133~433	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB
			C134~434	8232 1462 25	VT, ALU, 50V, 2.2 μ F, 20%, SME-VB

CAPACITORS

ALU = Electrolytic type

CER = Ceramic type

PES = Mylar type

PPR = Polypropylene type

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
C001	8232 1444 77	VT, ALU, 25V, 470 μ F, 20%, SME-VB	E001		Wire, jumper, IPS-1041-2, F5
C002	8232 1441 07	VT, ALU, 25V, 100 μ F, 20%, SME-VB	E002		Wire, jumper, IPS-1041-3, F7.5
C003	8232 1432 26	VT, ALU, 16V, 22 μ F, 20%, SME-VB	E003		Wire, jumper, IPS-1041-4, F10
C004		N/A	E004		Wire, jumper, IPS-1041-5, F12.5
C005	8232 1432 26	VT, ALU, 16V, 22 μ F, 20%, SME-VB	E1601	8207 0015 00	Heat sink, OSH-1625-SP
C006	8232 1441 07	VT, ALU, 25V, 100 μ F, 20%, SME-VB	E1801	8207 0122 03	Holder, cable, 3P, 51048
C007, 008	8232 1422 27	VT, ALU, 10V, 220 μ F, 20%, SME-VB	J001	8245 5410 00	Connector, PL, jack, DC-inlet, YKB21-0012
C009, 010	8232 1422 27	VT, ALU, 10V, 220 μ F, 20%, SME-VB	J002	8245 3390 10	Connector, PL, jack, phone, YKB21-5078
C020	8232 1431 06	VT, ALU, 16V, 10 μ F, 20%, SME-VB	J003		N/A
C021, 022	8232 9014 72	VT, PES, 50V, 0.0047 μ F, 5%, AMZ	J004	8245 3080 09	Connector, PI, jack, SBRK9S-4
C023	8232 9012 23	VT, PES, 50V, 0.022 μ F, 5%, AMZ	J005	8245 5470 09	Connector, PI, jack, PH, 9P, WHT
C024	8232 1462 22	VT, ALU, 50V, 0.22 μ F, 20%, SME-VB			
C030	8232 1424 76	VT, ALU, 10V, 47 μ F, 20%, SME-VB			
C031~034	8232 8031 03	VT, CER, 50V, 0.01 μ F, YF			

Ref. No.	Part No.	Description
J006	8245 3080 05	Connector, PI, jack, 5P, SBRK5S-4
J010	8245 2260 01	Connector, PL, jack, RCA, 4P, BLK
J011	8245 3080 08	Connector, PI, jack, 8P, SBRK8S-4
J020, 021	8245 5280 01	Connector, PI, jack, 1P, RT-01T-1.0B
J101	8245 5470 05	Connector, PI, jack, PH, 5P, WHT
J201	8245 5471 05	Connector, PI, jack, PH, 5P, RED

• TERMINAL PCB

Ref. No.	Part No.	Description
	8274 1950 00	PCB assy, Terminal, X-34
B001	8251 9750 04	Plain PCB, Terminal, X-34

Ref. No.	Part No.	Description
E101	8207 0122 14	Holder, cable, 14P, 51048
J001	8245 3080 07	Connector, PI, jack, 7P, SBRK7S-4
J002	8245 1711 14	Connector, PI, jack, 8283, 14P, WHT

• PITCH PCB

Ref. No.	Part No.	Description
	8274 1640 00	PCB assy, Pitch, X-34
B001	8251 9711 02	Plain PCB, Pich, X-34

Ref. No.	Part No.	Description
R050	8240 2870 01	Pot., PI, RT9, 10kΩB, CC, VX092
E101	8207 0122 03	Holder, cable, 3P, 51048
W014	8276 9083 15	Cable, flat, 3P, L150

● Abbreviation

ST:	Small Outline Package
SIP:	Single In-line Package
220:	TO-220 type
QFP:	Quad Flat Package
SDI:	Shrink DIP (dual in-line)
SOP:	Small Outline Package
HT:	Horizontal mount taping device
V:	Vertical mount
VT:	Vertical mount Taping device
PI:	Penetrate mount I form (straight)
PL:	Penetrate mount L form (right angle)
PT:	Penetrate mount Taping device
PIT:	Penetrate mount I form Taping device
AN:	Analgo
DG:	Digital

5. CIRCUIT & BLOCK DIAGRAMS

● MIXER, X-34

Letter Size X 2

● R/P, X-34

Letter Size X 2

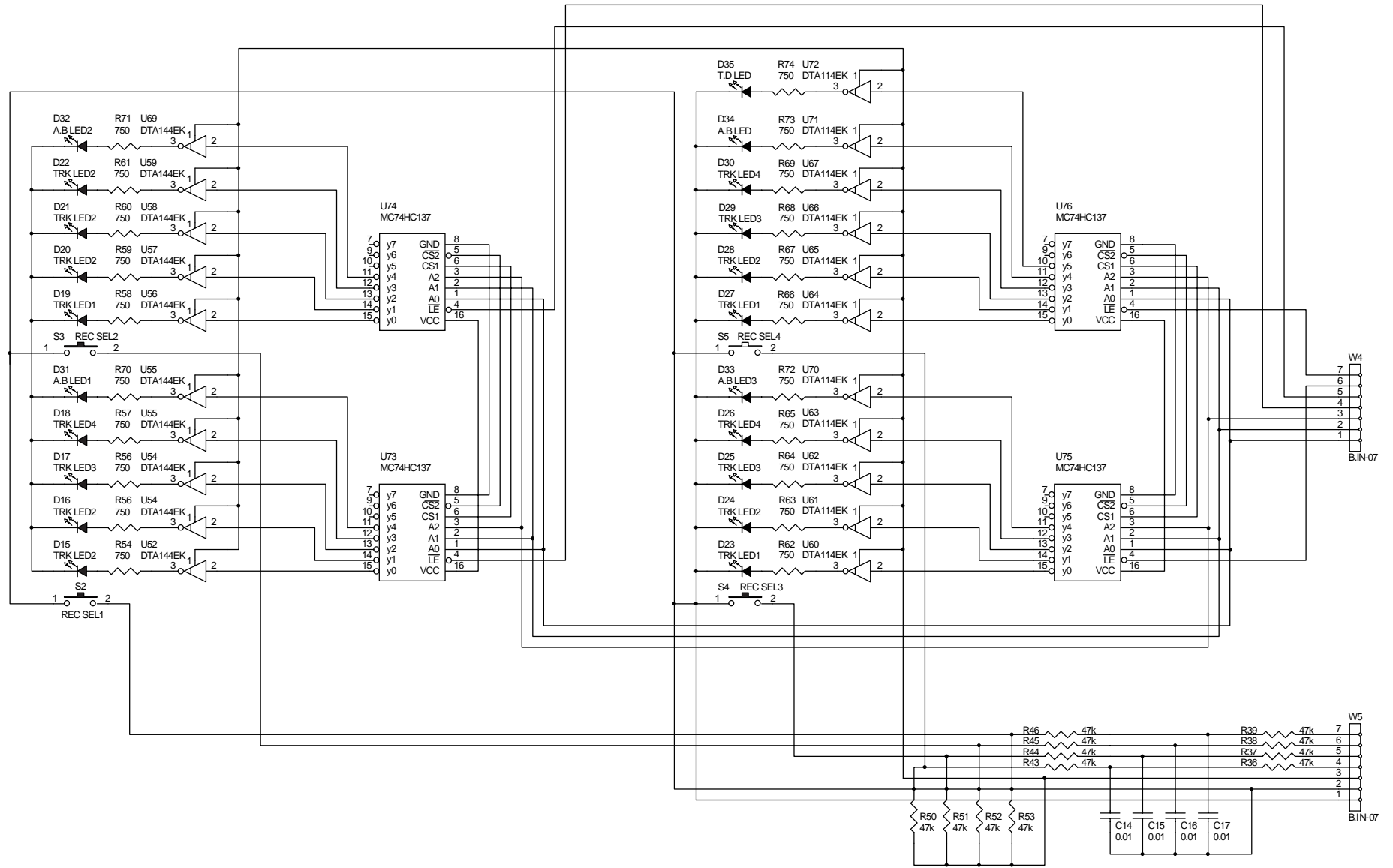
● R/P CONTROL, X-34

Letter Size X 2

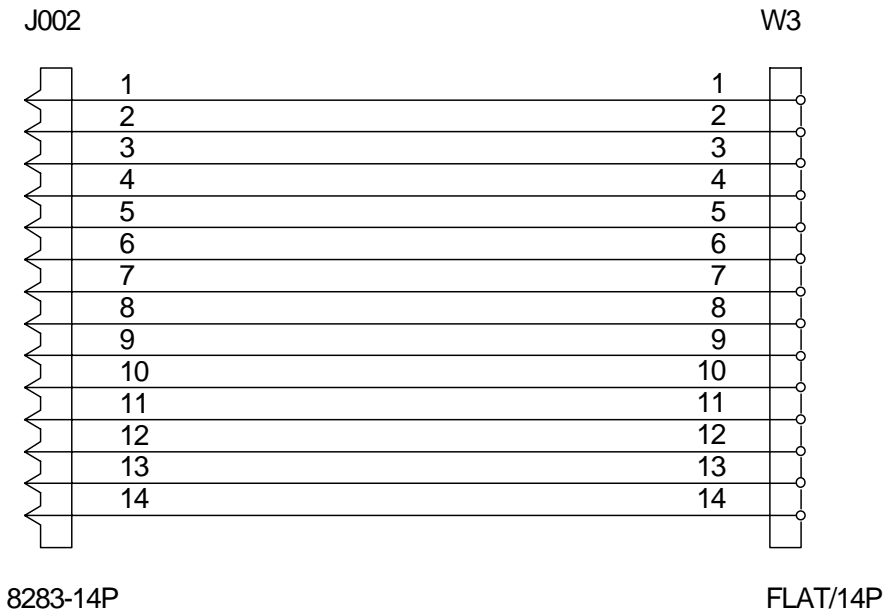
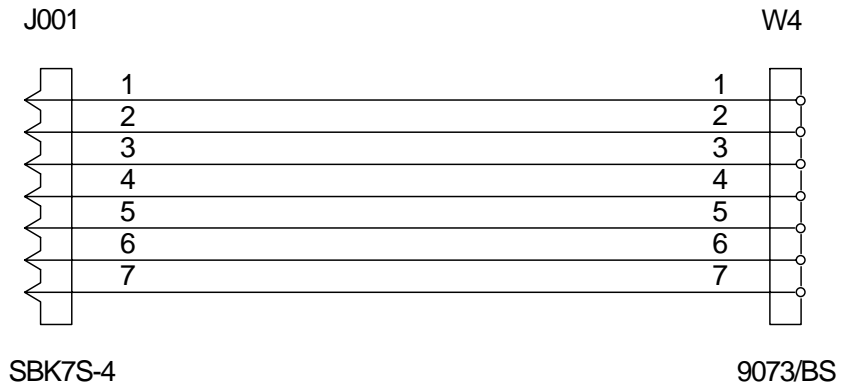
● CPU, MIX / BARGRAPH METER, X-34

Letter Size X 2

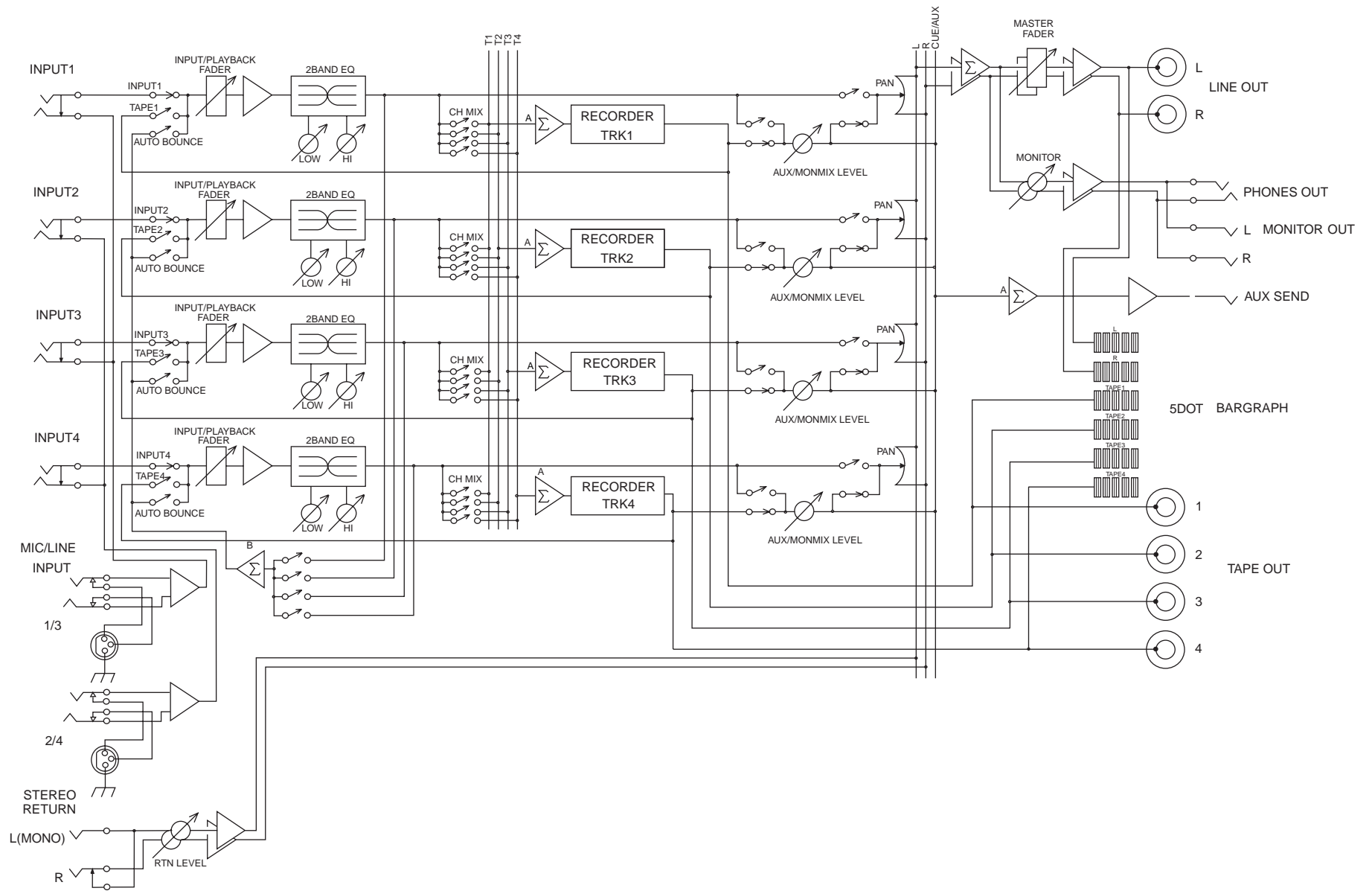
● REC SEL, X-34



● TERMINAL, X-34



● BLOCK DIAGRAM



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