TASCAM

TEAC Professional Division

SERVICE MANUAL

238

SYNCASET

NOTES

As regards the resistors and capacitors, refer to the circuit diagrams and the PCB ass'y drawings contained in this manual.

* Parts marked with * require longer delivery time.
* Resistor values are in ohms (k = 1,000 ohms, M = 1,000,000 ohms).
* All capacitor values are in microfarads (p = picofarads).
* ⚠ Parts marked with this sign are safety critical components. They must always be replaced with identical components – refer to the TEAC Parts List and ensure exact replacement.
* 0 dB is referenced to 1V in this manual unless otherwise specified.
* PC boards shown viewed from foil side.
* Parts not shown in the parts lists or parts, through listed, having no parts numbers are not general "ready-to-supply" parts.

注意

標準の抵抗：コンデンサーは省略してあります。回路図及び基板図を参照してください。

1．プリント基板図はパターン面が示されています。
2．＊印の部品は納期が若干かかります。あらかじめご了承ください。
3．⚠印は安全規格重要部品です。交換するときは必ずティアック指定の部品を使用して下さい。
4．レベルは0dB＝1Vを基準にしています。
5．コンデンサの単位はμF.p＝pF（1μF＝1,000,000pF）
6．製品が改善されているために、製品と回路図が一部異っている場合があります。
7．リストされていない部品は原則としてサービス供給部品として取扱っていません。

Effective: MAY, 1988 Q-840190

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1. SPECIFICATIONS
仕様

MECHANICAL CHARACTERISTICS

Tape	Compact Cassette (C-30/60/90), Hi-bias, type II tape
Track Format	8-track, 8-channel, single directional record/play
Head Configuration	1 record/reproduce, tracks 1–4 and 5–8 staggered (sendust) 1 erase (ferrite)
Motor	1 FG servo DD capstan motor, 1 DC reel motor, 1 DC ancillary motor
Tape Speed	9.5 cm/sec (3-1/2 ips) ±0.5 %
Pitch Control	±12 %
Wow and Flutter	0.04 % WRMS (NAB weighted) ±0.08 % W.PEAK (DIN/CCIR/IEC/ANSI weighted)
Fast Winding Time	70 sec. (approx.) with C-60
Recording/Play Time	15 min. with C-60, pitch control off
Dimensions (W x H x D)	482 x 149 x 345 mm (19" x 5-7/8" x 13-9/16"), rack mount brackets, feet and other protruding parts included
Weight (net)	9.5 kg (20.94 lbs)

ELECTRICAL CHARACTERISTICS

Line Input (x 8), Unbalanced	
Input Impedance	30 kohms
Nominal Input Level	–10 dBV (0.3 V)
Line Output (x 8), Unbalanced	
Output Impedance	100 ohms
Nominal Output Level	–10 dBV (0.3 V)
Record Channel	8 (dbx switchable per two groups of channels 1-4/5-8)
Playback Channel	8 (dbx switchable per two groups of channels 1-4/5-8)
Bias/Erase Frequency	85 kHz ±5 kHz
Equalization	3,180 μs + 35 μs
Power Requirements	
USA/CANADA	120 V AC 60 Hz
U.K./AUSTRALIA	240 V AC 50 Hz
GENERAL EXPORT	120/220/240 V AC 50/60 Hz
EUROPE	220 V AC 50 Hz
Power Consumption	47 Watts

PERFORMANCE CHARACTERISTICS

Frequency Response (Overall)	30 Hz to 16 kHz ±3 dB
Signal-To-Noise Ratio (Overall)	93 dB (dbx* IN, IHF "A" weighted, 1 kHz)
(Ref. to 3 % THD)	90 dB (dbx IN, unweighted, 20 to 20,000 Hz) 58 dB (dbx OUT, IHF "A" weighted, 400 Hz) 54 dB (dbx OUT, unweighted, 20 to 20,000 Hz)
Distortion (THD)	Less than 0.8 % (400 Hz, 0 VU)
Crosstalk (Adjacent Channels)	70 dB (1 kHz, 0 VU, dbx IN)
Erasure	70 dB (1 kHz, +10 VU)

In these specifications, 0 dBV is referenced to 1.0 Volt. Actual voltage levels are also given in parenthesis. To calculate the 0 dB = 0.775 Volt reference level (i.e., 0 dBm in a 600-ohm circuit), add 2.2 dB to the listed dB value; i.e., –10 dB re: 1 V = –7.8 re: 0.775 V.

Changes in specifications and features may be made without notice or obligation.

* dbx is a registered trademark of dbx Incorporated.

● この仕様中の0dBVは1.0Vを基準としています．実際の電圧も（　　）で示しています．

● 仕様及び外観は改善のため予告なく変更することがあります．

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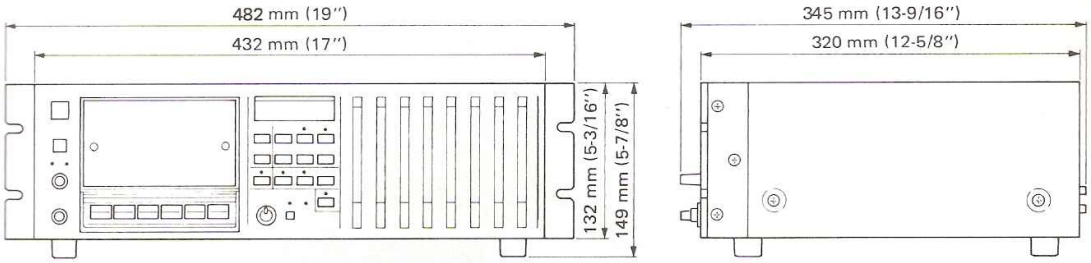

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2. REMOVAL OF EXTERNAL COMPONENTS
外装部品の外し方

Disassemble in number-order
番号順に外して下さい

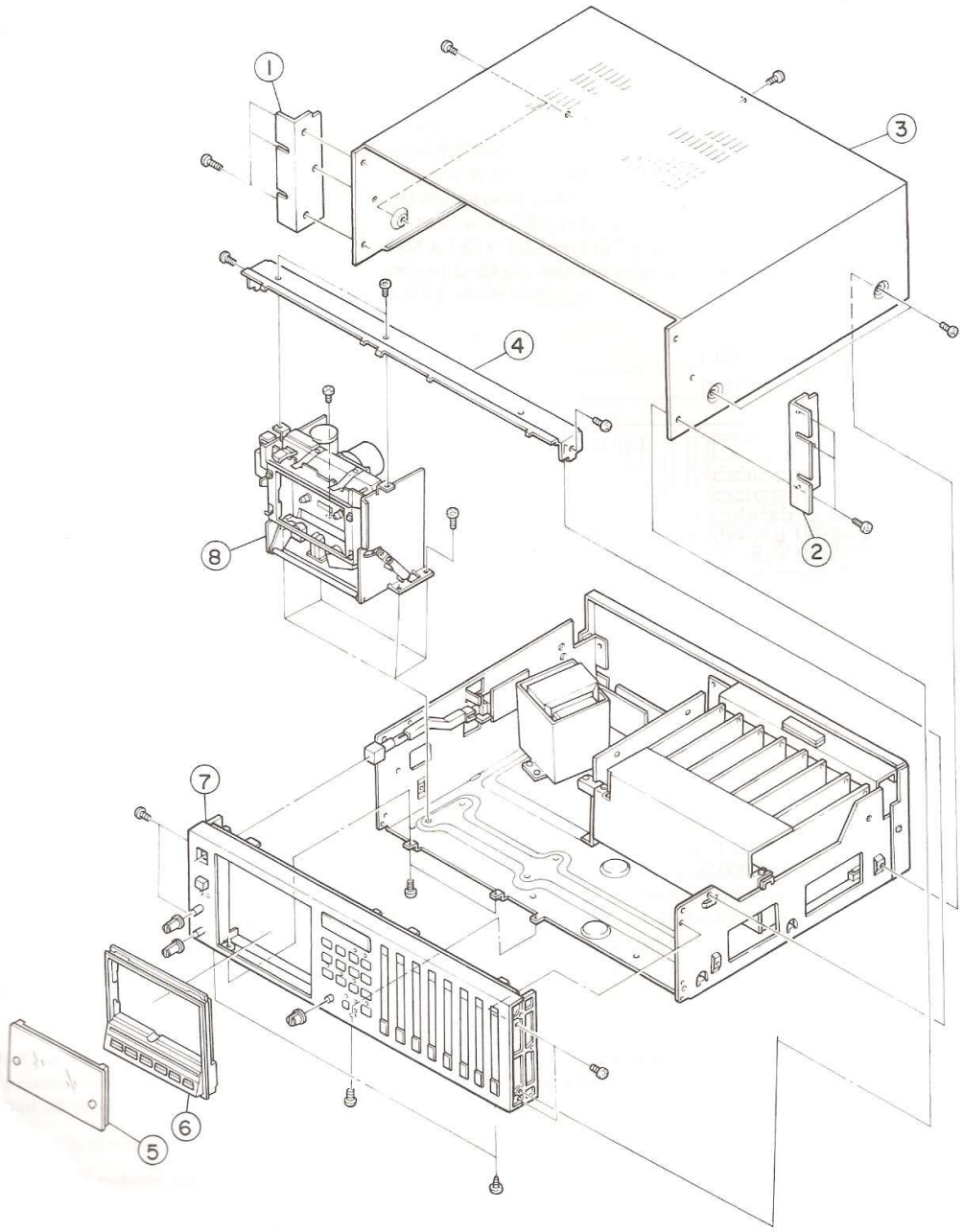

Fig. 2-1

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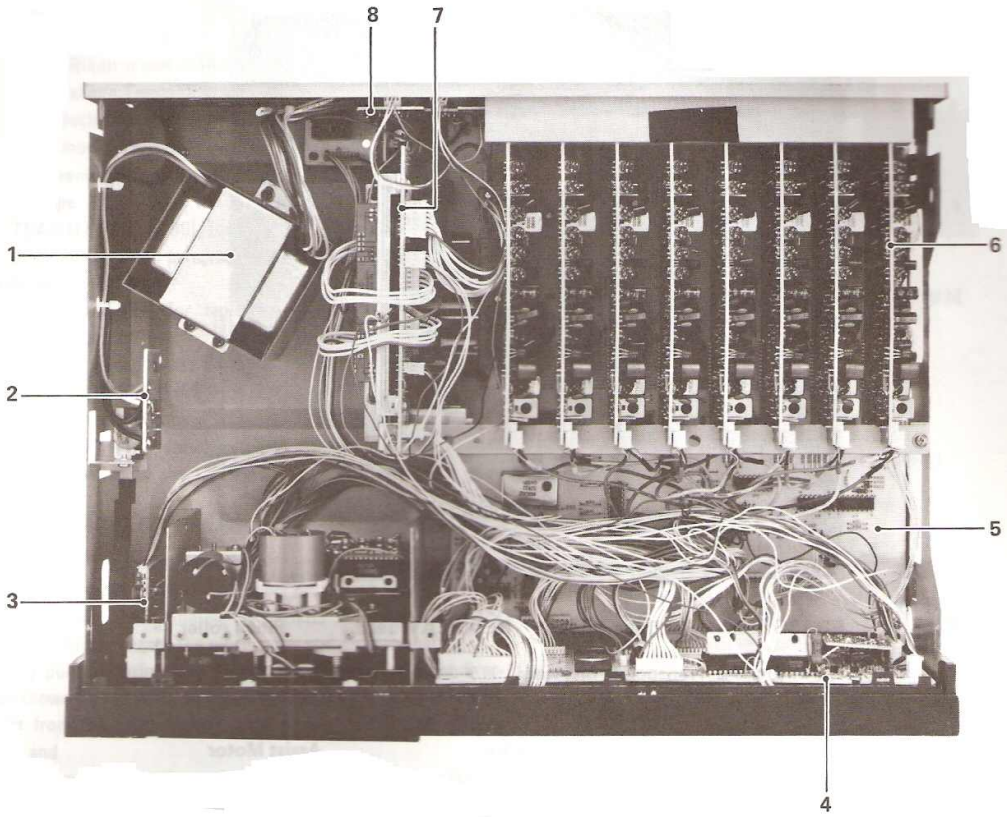
3. PARTS LOCATIONS
部品配置図



1	POWER TRANSFORMER
2	POWER SW. PCB
3	PITCH CONTROL PCB
4	CONTROL PCB
5	MOTHER PCB
6	R/P PCB
7	POWER SUPPLY PCB
8	DBX SW PCB

Fig. 3-1 Top view 上面図

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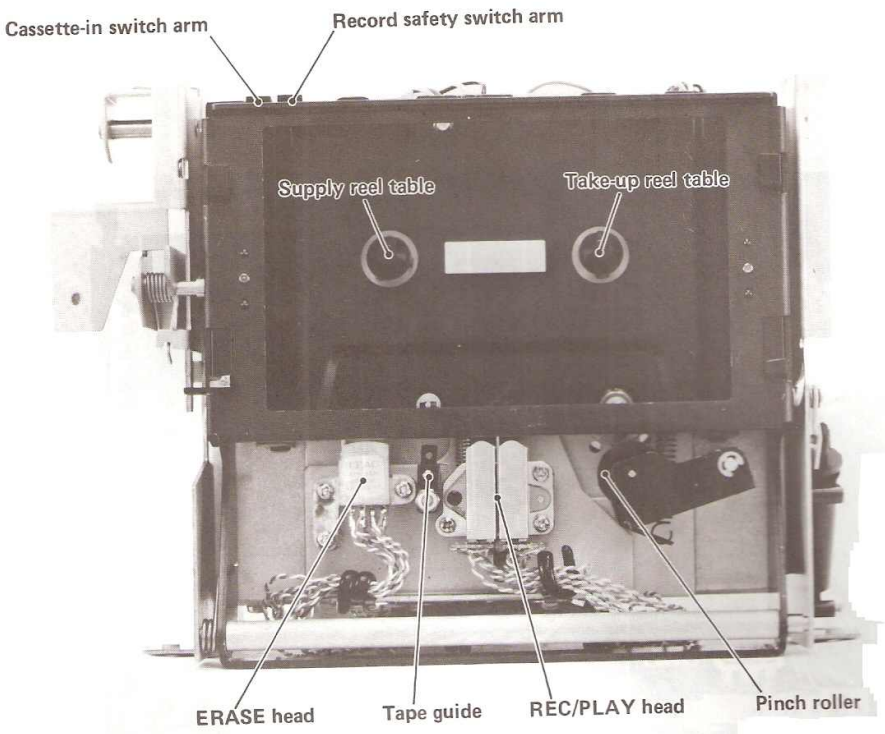

Fig. 3-2 Transport front view トランスポート前面図

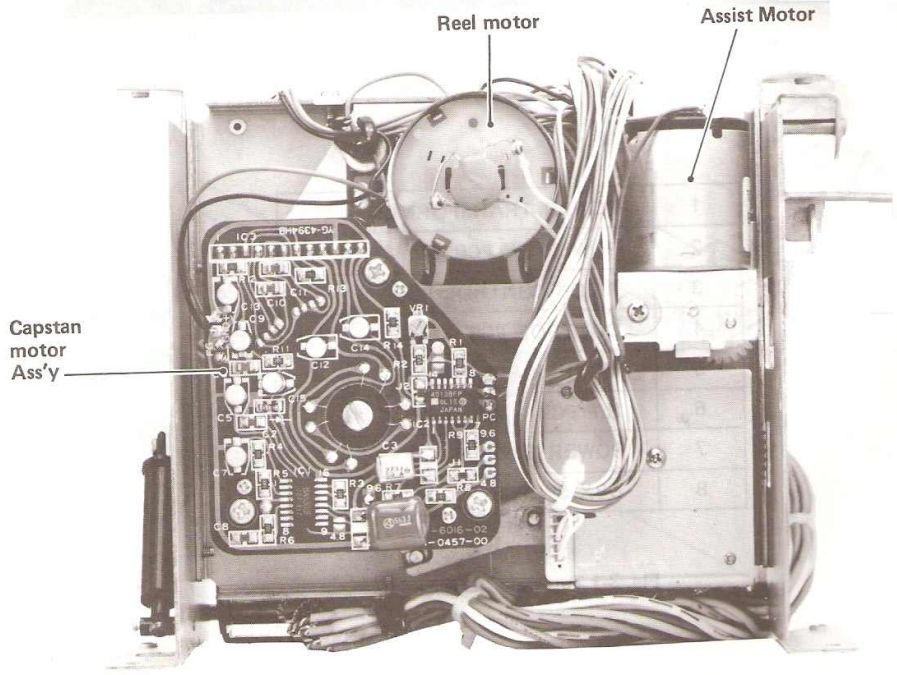

Fig. 3-3 Transport rear view トランスポート後面図

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4. MECHANICAL CHECKS AND ADJUSTMENTS
機構部の確認と調整

4-1. TEST MATERIAL

1. **Cassette torque meter**
   - Sansei Rikoh model SRK-CT-W100, for supply torque cheks
     T.T. (Takeup Tension): 0 – 120 g. cm
     B.T. (Back Tension): 0 – 14 g. cm
   - Sony model TW-2231, for fast winding torque checks
     Measurement range: 0 – 200 g. cm
2. **Mirror tape**
   - TEAC MTT-902 (C-90), for tape travel checks
     (See Caution #2 in paragraph 4-3, page 8.)
3. **Performance test tape**
   - TEAC MXT-111, for tape speed and wow/flutter checks ("repro method")
     Signal contained: 3000 Hz/0 dB
   - TEAC MTT-5561 (blank tape, chrome), for wow/flutter checks ("rec/repro method")
   - TEAC MXT-1161, for azimuth and head touch (tape pressure against the heads) checks

4-2. PINCH ROLLER PRESSURE

1. Attach a string to the pinch roller and a spring scale to the string.
2. Push up the cassette switch (transport protection lever) shown in Fig. 3-2, then while holding the cassette switch up, press the PLAY button to engage the pinch roller and capstan shaft.
3. Slowly pull the spring scale against the pinch roller in the direction shown by the arrow in Fig. 4-1, until the pinch roller is fully apart from the capstan shaft, then slowly let the pulling force loose and
4. Note the reading on the spring scale when the pinch roller engages again with the capstan shaft and this starts rotating.
   Specification: 380 to 500 g

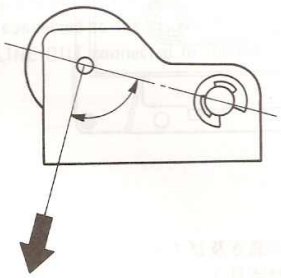

Fig. 4-1

4－1．テスト・テープ

1．カセット・トルク・メータ
- サンセイ理工製 SRK-CT-W100
  テイク・アップ，サプライ・トルク チェック用
  T.T.: 0 ～120g・cm
  B.T.: 0 ～ 14g・cm
- ソニー製 TW-2231
  F.FWD.REW トルク チェック用
  0 ～200g・cm

2．ミラー・テープ
- TEAC MTT-902 ※4-3 項（注意 2）参照
  テープ・パス チェック用
  C-90 タイプ

3．テスト・テープ
- TEAC MXT-111
  テープ・スピード チェック用
  ワウ・フラッタ（再生法）チェック用
  信号レベル：3000Hz/0dB
- TEAC MTT-5561
  ワウ・フラッタ（録再法）チェック用
  クロム・タイプ，ブランク・テープ
- TEAC MXT-1161
  アジマス，ヘッド・タッチ チェック用

4－2．ピンチ・ローラ圧着力

1．カセット・イン・スイッチ・アーム（図3-2）を上方に押して，プレイ・モードにする．測定中，スイッチ・アームは上方に押し続けること．
2．ピンチ・アームにバネ秤を掛ける．
3．ピンチ・ローラがキャプスタン・シャフトから完全に離れるように秤を矢印の方向（図4-1）に引張った後，ピンチ・ローラが再びキャプスタン・シャフトに接触するように徐々に戻す．
4．ピンチ・ローラが回り始めるときの値を読む．
   規格：380 ～500g

4-3. TAPE TRAVEL CHECKS AND ADJUSTMENTS

CAUTION 1: Upon replacement of the record/repro head and/or the erase head, loosely tigthen screws (A) – (G) (Fig. 4-2) then turn them one half back, before starting to perform the following steps. In addition, the procedures require the following materials:

Head adjustment jig "A" (Part no. 5736006600)
Head adjustment jig "B" (Part no. 5736006700)

4－3．テープ走行

注意．1.録・再ヘッド及び消去ヘッドを交換したときには図4-2 のネジ(A) ～(G) を軽く締め切って，その位置からそれぞれのネジを1.5 回転緩めた状態で調整を始めること．又，この調整を行う為には次の治具が必要です．

ヘッド調整治具 A (P/N : 5736006600)
ヘッド調整治具 B (P/N : 5736006700)

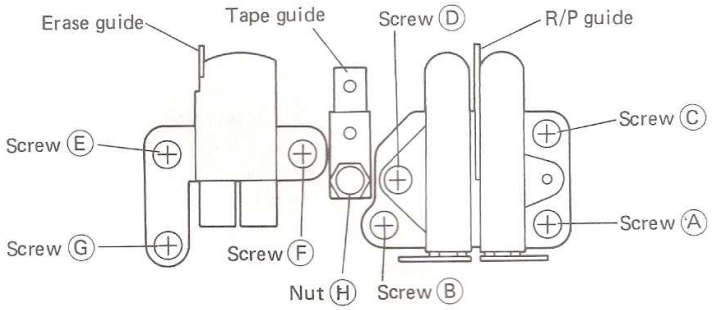

Fig. 4-2

CAUTION 2: The 238's 8-channel format head requires much more accuray in tape travel adjustments than any traditional heads. Be sure to use a new TEAC mirror tape which is more suitable to the 238 than the former type. Note that both share the same model name and part number though they differ in aspects as shown in Fig. 4-3.

2.本機の走行調整は 8トラック・ヘッドということで従来カセットに比べてより精度が必要です．そこで調整に必要なミラー・テープ TEAC MTT-902 に関しましては走行系をより精度アップした新タイプのものを必ず使用して下さい．
従来タイプと新タイプでは品番，品名が変わりませんので外観上の違いで区別して下さい．(図4-3 参照)

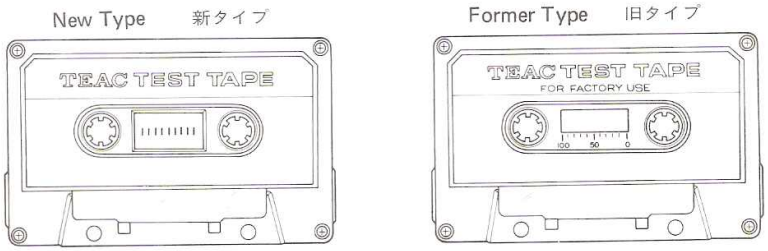

Fig. 4-3

1) Erase head height and tilt adjustments

1. Set jigs A and B as shown in Fig. 4-4, and put the deck into Play mode.
2. Adjust screw G until jig B touches the tape guide lower flange.
3. Apply jig B to the head as shown in Fig. 4-5, to check tilt. If necessary, adjust screws E and F *evenly* (until the head is flush with the jig). Rotational amount of both screws E and F should be the same and be limited within 1/8 turn.
4. Check again head height.
5. Repeat steps 2 to 4 until both height and tilt are correct at the same time.

1．消去ヘッドの高さ及びチルト調整

1)．ヘッド調整治具A，Bを図4-4 の様にセットしプレイ・モードにする．
2)．治具Bが消去ヘッドのテープ・ガイドの下側に当る様にネジGで高さを調整する．
3)．図4-5 の様に治具Bをヘッドに当てて，チルトを確認しヘッドが治具に対して垂直になる様に，ネジE，Fを同量(1/8回転以下) 回し調整する．
4)．再度，ヘッドの高さを確認する．
5)．高さ及びチルトが最適になるまで 2) ～4)項を繰り返す．

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2) Tape guide height adjustment

6. Adjust nut H until jig B touches the tape guide upper flange.

3) Record/repro head height and tilt adjustments

7. Turn in and out the height adjustment screw C (Fig. 4-2) until jig B touches the tape guide lower flange.
8. Apply jig B to the head as shown in Fig. 4-5, to check tilt. If necessary, adjust screws A and B *evenly* (until the head is flush with the jig). Rotational amount of both screws A and B should be the same and be limited within 1/4 turn.
9. Check again head height.
10. Repeat steps 7 to 9 until both height and tilt are correct at the same time.

2．テープ・ガイドの高さ調整

6)．治具Bがテープ・ガイドの上側に当る様にネジHを回して調整する．

3．録・再ヘッドの高さ及びチルト調整

7)．治具Bがテープ・ガイドの下側に当る様にネジCを回して高さを調整する．

8)．図4-5 の様に治具Bをヘッドに当てて，チルトを確認し，ヘッドが治具 Bに対して垂直になる様にネジA，Bを同量(1/4回転以下) 回し調整する．

9)．再度，ヘッドの高さを確認する．

10)．高さ及びチルトが最適になるまで，7)～9)項を繰り返す．

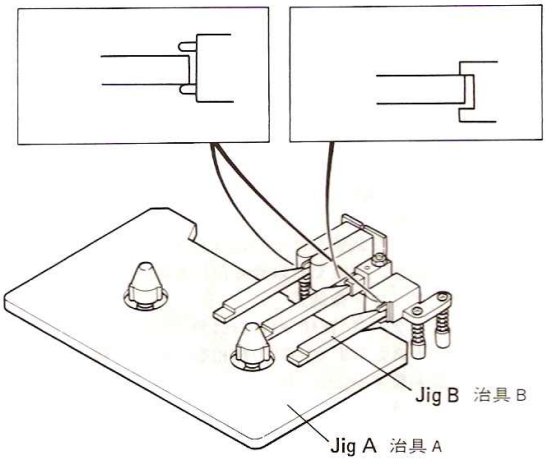


Fig. 4-4

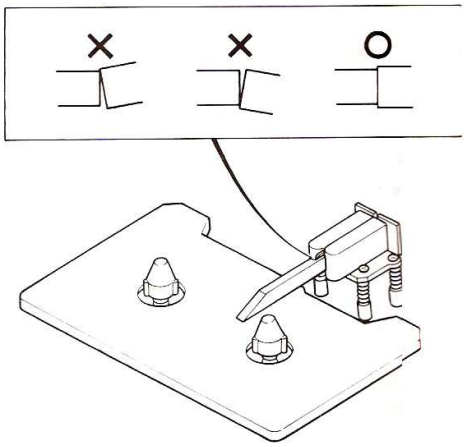


Fig. 4-5

4) Head azimuth adjustment

11. Refer to Fig. 4-6 and connect an oscilloscope with the channel 1 LINE OUT connected to the vertical input of the scope and the channel 4 LINE OUT connected to the horizontal input of the scope.

4．ヘッド・アジマス調整

11)．図4-6 の様に1CH のLINE OUTをオシロスコープのCH1 側に，4CH のLINE OUTをオシロスコープのCH2 側に接続する．

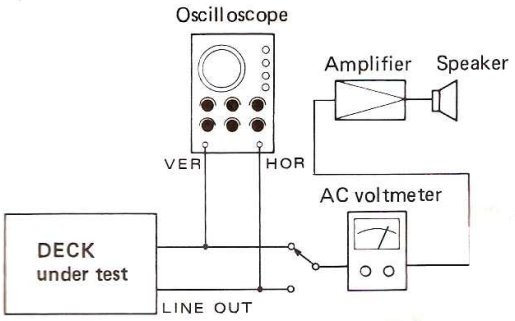


Figure shows measurements being performed on Ch-1 and Ch-4

Fig. 4-6 Test setup for azimuth check 位相測定治具

12. Load a test tape TEAC MXT-1161.
13. Play the 315-Hz signal on the tape then the 6.3-kHz signal, to check that the outputs from channels 1 and 4 are in phase as seen on the scope. If necessary, adjust screw B (Fig. 4-2).

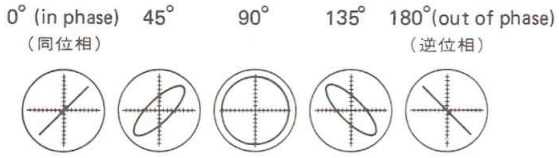


Fig. 4-7 Confirming phase relationship 位相

5) Tape travel check

14. Run a mirror tape TEAC MTT-902 and adjust screw C until the running tape rubs on the rec/repro head's tape guide lower flange. Also, check for erase head and tape parallelism (approximate). If necessary, adjust screw F.
When the F screw is adjusted, be sure to recheck for correct height and tilt of the erase head.

6) Head touch (tape pressure against the head)

15. Load a test tape TEAC MXT-1161.
16. Play the 10-kHz signal on the tape, and check that the output level from channels 1 and 8 does not vary beyond the limit of 0.2 dB when back tension is varied by repeatedly applying a slight finger pressure to the left reel.
17. If either of the output levels varies, turn both A and B screws by the same amount (within 1/4 turn), clockwise to remove level variation from the channel 1 output, and counterclockwise to remove level variation from the channel 8 output, then adjust screw C as in step 5.
18. Recheck for no level variation. Repeat steps 16 and 17 until there is no level variation.
19. Recheck azimuth, tape travel, and head touch (from step 11 on). (This is necessary only when serews A and B were moved in step 17.)

7) Head azimuth fine adjustment

20. Play the 315-Hz signal and 6.3 kHz signal on the TEAC MXT-1161 test tape, and adjust screw D until there is no phase difference between channels 5 and 8.

8) Tape travel final check

21. Run the mirror tape, TEAC MTT-902, and check that the tape is running as shown in Fig. 4-8, that is, touching (but without causing curling) the tape guide lower flange of both the erase and record/reproduce heads and the upper flange of the tape guide pin.
Check also to make sure that tape motion is not affected when the run and stop of tape is repeatedly operated.

12). テスト・テープ TEAC MXT-1161を装填する.
13). プレイ・モードにて 315Hzと 6.3kHz を再生したとき 1CH と 4CHの位相を合わせる様にネジBを回して調整する. (図4-7 参照)

5. 走行調整

14). ミラー・テープ TEAC MTT-902 を走行させ, 録・再ヘッドのテープ・ガイド下側にテープが当る様にネジCで調整する. 又, 消去ヘッドとテープがほぼ平行であることを確認し, 傾いている場合にはネジFを回して調整する. ネジFを調整した場合は, 高さ及びチルトを再調整する.

6. ヘッド・タッチ

15). テスト・テープ TEAC MXT-1161を装填し, プレイ・モードでテープを走行させる.
16). 10kHz を再生し, 左リールを軽く手で押さえたり, 離したりしてバック・テンションを変え1CH 及び8CH のレベルが変化しない (0.2dB 以下) ことを確認する.
17). もし, どちらか一方のCHのレベルが変動するようであればネジA, Bを同量(1/4回転以下) 回し(1CHがレベル変動する場合にはネジを締める様に.8CHがレベル変動する場合にはネジを緩める様に回す.). 5 項 (走行調整) の要領でネジCを調整する.
18). 再度レベル変動を確認し, レベル変動が無くなるまで 17) 項を繰り返す.
19). ネジA, Bを調整した場合には必ず, 4 項 (アジマス調整) に戻り, 再度それ以後の項目を繰り返す.

7. ヘッド・アジマス微調整

20). テスト・テープ TEAC MXT-1161の 315Hzと 6.3kHz を再生したとき, 5CH と 8CHの位相を合わせる様にネジDを回して調整する.

8. テープ走行確認

21). ミラー・テープ TEAC MTT-902 を走行させ, 図4-8 の様にテープが消去ヘッド及び録・再ヘッドのテープ・ガイド下側, テープ・ガイド上側に当り, かつテープのカールが無いことをストップ, プレイを繰返し確認する.

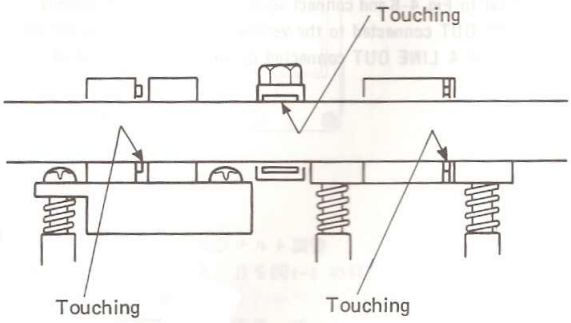


Fig. 4-8

4-4. REEL TORQUE

1) Takeup Torque and Back tension

1. Mount a cassette torque meter (SRK-CT-W100), put the deck into Play mode, and note the readings on the torque meter. If reading fluctuates, get the mean value. Readings (or mean values) should be as follows:
   Takeup torque (left reel table): 25 to 65 g. cm
   Back tension (right reel table): 12 to 16 g. cm
2. If back tension is not within the limits, adjust semi-fixed resistor R33 on the Control PCB (Fig. 4-9) until the torque meter reads 14 g ± 1 g.

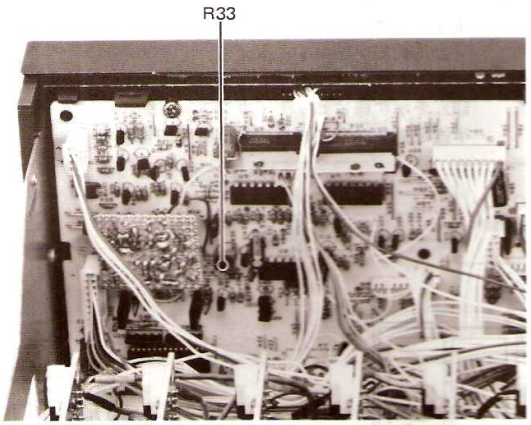


Fig. 4-9

2) Fast Winding Torque

3. Mount a cassette torque meter TW-2231 and check its reading while in F.FWD and REW. Readings should be as follows:
   Fast forwarding torque (right reel table): 80 to 180 g. cm
   Rewinding torque (left reel table): 80 to 180 g. cm

4-5. TAPE SPEED

CAUTION: After replacement of the castan motor assembly, be sure to short-circuit (by soldering) the points on the assembly shown by the arrow in Fig. 4-10. Otherwise, correct tape speed adjustments are not ensured.

1. Connect a frequency counter to LINE OUT of any channel.
2. Set the Pitch Control Switch to FIX.
3. Switch power on.
4. Load test tape TEAC MXT-111 and let it run in Play mode for at least 1 minute, to allow the capstan motor to warm up.
5. Play the middle portion of the test tape, and adjust semi-fixed resistor VR1 on the capstan motor assembly (Fig. 4-10) until the counter reads 3000 Hz ± 5 Hz.

4－4．リール・トルク

1．テイク・アップ・トルク　バック・テンション

1)．カセット・トルク・メータ(SRK-CT-W100) を装填し，プレイ・モードにしトルク・メータの値を読む．振れのある場合は中心値とする．規定値は次の通りです．
　テイク・アップ・トルク（右リール台）：25～65g.cm
　バック・テンション　（左リール台）：12～16g.cm

2)．もしバック・テンションが上記値より外れている場合には，バック・テンションの値が 14g±1gになる様に，コントロール PCBの半固定抵抗 R33 (図4-9)を回して調整する．

2．F．F　REW　トルク

カセット・トルク・メータ(TW-2231) を装填し，F.F.動作及びREW 動作の起動トルクをそれぞれ測定する．
規定値は次の通りです．
　F.F.トルク（右リール台）：80～180g.cm
　REW トルク（左リール台）：80～180g.cm

4－5．テープ速度

注意：キャプスタン・モータ ASS'Yを交換した場合は，キャプスタン・モータ ASS'Yの基板上，図4-10の矢印で示した場所を半田ショートして下さい．この場所がショートされていないと正常なテープ・スピードが得られません．

1．周波数カウンタを LINE OUT ジャックのいずれかに接続する．
2．ピッチ・コントロール・スイッチを FIXにする．
3．POWER スイッチをオンにする．
4．キャプスタン・モータを回転させウォーミング・アップする為に TEAC MXT-111 を装填し，少なくとも 1分間そのままにしておく．
5．テスト・テープの中間部を再生させて，テープ速度が 3000Hz±5Hz になるようにキャプスタン・モーターASSYの半固定抵抗 VR1 (図4-10) を調整する．

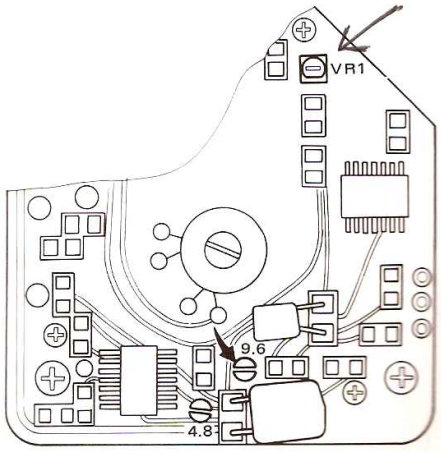


Fig. 4-10

6. After adjustment, check for the following values at both the beginning and end of tape.
   Deviation: 3000 Hz ± 5 Hz
   Accuracy: 10 Hz
7. Set the Pitch Control Switch to VARI.
8. Set the Pitch Control to its center position, play the middle portion of the test tape and adjust semi-fixed resistor R14 on the Pitch Control Switch Assembly (Fig. 4-11) until the frequency counter reads 3000 Hz ± 5 Hz.
9. Set the Pitch Control to minimum then to maximum, to check for the following values:
   Minimum speed (control fully turned counterclockwise): less than 2640 Hz
   Maximum speed (fully clockwise rotation): more than 3360 Hz
10. Set the Pitch Control Switch to EXT, and short-circuit between pins 13 and 14 of the rear panel ACCESSORY terminal (D-sub connector).
11. Play the test tape and adjust semi-fixed resistor R5 on the Pitch Control Switch Assembly (Fig. 4-11), until the counter reads 3000 Hz ± 5 Hz.

6．調整後，テープの巻き始めと巻き終わりにて下記の値が得られるか確認する．
   速度偏差：3000Hz±5Hz
   変動幅　：10Hz
7．ピッチ・コントロール・スイッチを VARI にする．
8．ピッチ・コントロールをセンターに合わせ，テスト・テープの中間部を再生し，周波数カウンタが 3000Hz ±5Hz を示すようにピッチ・コントロール・スイッチ PCBの半固定抵抗 R14（図4-11）を回して調整する．
9．ピッチ・コントロールを最少，最大に回して下記の値が得られるか確認する．
   最少：充分反時計方向にセットして 2640Hz 以下
   最大：充分時計方向にセットして 3360Hz 以上
10．ピッチ・コントロール・スイッチを EXTにし，リア・パネルのアクセサリー端子（D-SUB ・コネクタ）の 13 ピンと 14 ピンをショートする．
11．テスト・テープを再生し，周波数カウンタが 3000Hz ±5Hz を示す様にピッチ・コントロール・スイッチ PCBの半固定抵抗 R5(図4-11) を回して調整する．

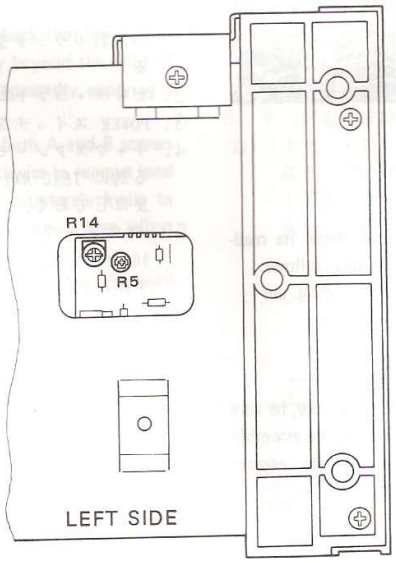


Fig. 4-11

Tascam_238_12.jpg

4-6. WOW/FLUTTER

CAUTION: Measurement need be repeated at three tape locations: (1) when the tape is playing its beginning (after tape pack on the right hub diminishes one mark on the scale on the cassette), (2) when the tape is playing its middle portion, and (3) when the tape nears its end (before tape pack on the left hub diminishes past the last, innermost mark on the cassette scale).

Repro method:

1. Connect a wow/flutter meter to the deck as shown in Fig. 4-12.

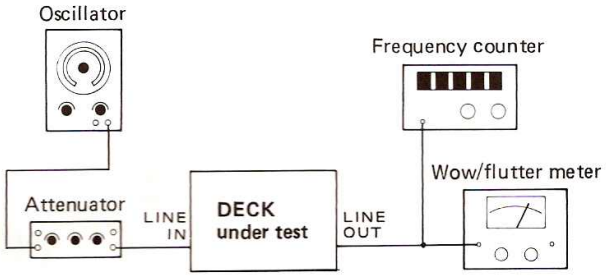


Fig. 4-12

2. Load a test tape TEAC MXT-111 or equivalent and run it in Play.
3. Note the reading on the meter.
   Specification: less than 0.08 % WRMS (weighted)

Record/repro method:

4. Load a blank test tape TEAC MTT-5561 or equivalent, and record a 3000 Hz signal on it.
5. Play the recording.
6. Note the reading on the meter.
   Specification: less than 0.3 % RMS (not weighted)

4－6．ワウ・フラッタ

注意：測定はテープの巻き始め，中間部，巻き終わりでそれぞれ行なってください．(但しハーフの巻き始めと巻き終わりの1 目盛りを除く．)

再生法．

1．図4-12の様にワウ・フラッタ・メータをデッキに接続する．

2．テスト・テープ TEAC MXT-111 または相当品を装填し再生する．

3．ワウ・フラッタ値を測定する．
   規格：0.08%WRMS 以下（聴感補正値）

録再法．

4．ブランク・テスト・テープ TEAC MTT-5561または相当品を装填し，3000Hzを録音する．

5．録音した部分を巻き戻して再生する．

6．ワウ・フラッタ値を測定する．
   規格：0.3%RMS 以下（非聴感補正値）

5. AMPLIFIER SECTION CHECKS AND ADJUSTMENTS
アンプ部の確認と調整

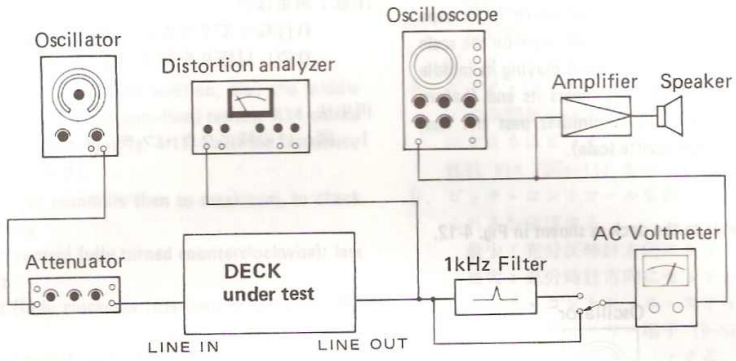


Fig. 5-1 Basic test setup　基本測定接続図

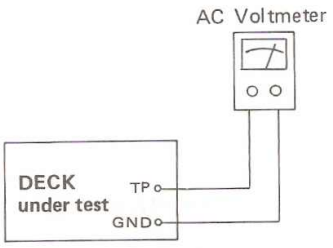


Fig. 5-2 Connections for steps 5-4-1 and 5-4-2
5-4-1及び5-4-2項の場合の接続

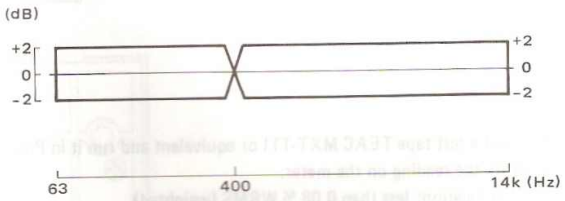


Fig. 5-4 Monitor frequency response
モニター周波数特性

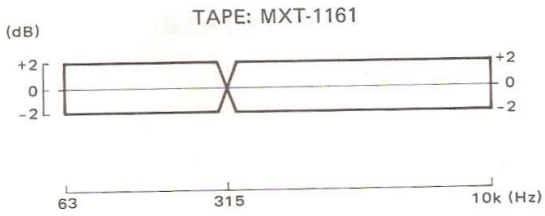


Fig. 5-3 Playback frequency response
再生周波数特性

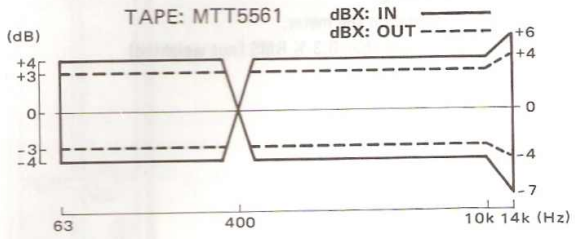
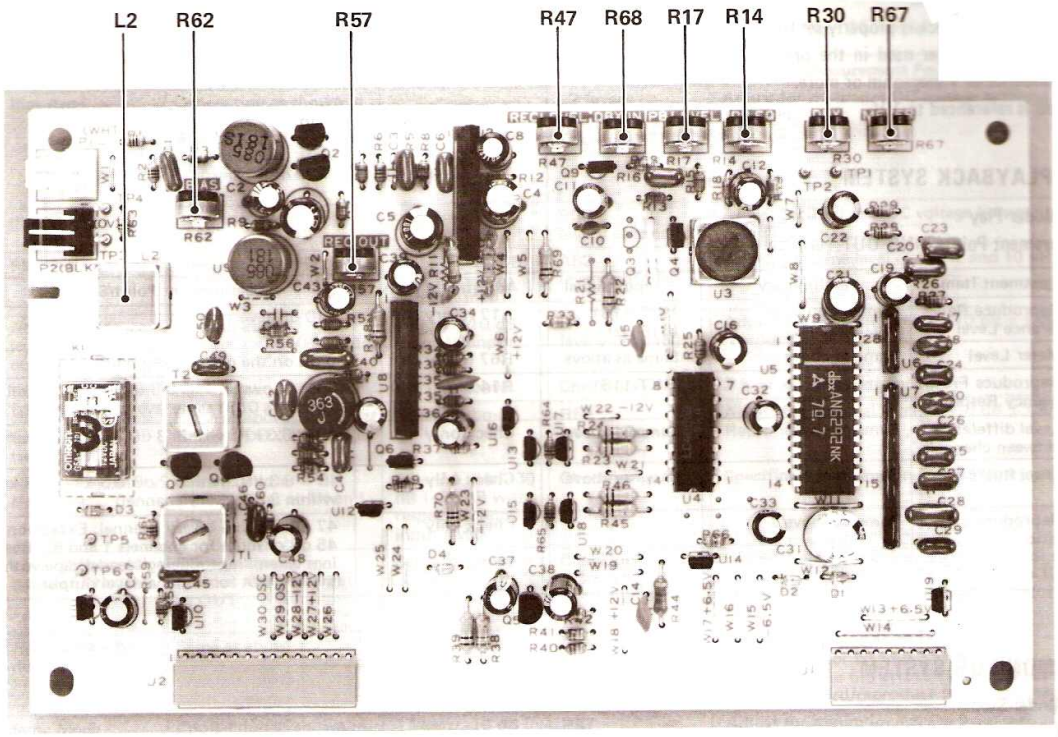


Fig. 5-5 Overall frequency response
録再周波数特性



R14	Playback equalizer	再生イコライザ
R17	Playback reference level	再生基準レベル
R30	DBX Timing	DBXタイミング
R47	Record Reference level (without DBX)	録音基準レベル(DBX OUT)
R57	Sync crosstalk	シンク・クロストーク
R62	Bias	バイアス
R67	Meter level	メータ・レベル
R68	Record reference level (with DBX)	録音基準レベル(DBX IN)
L2	Bias amp	バイアス・アンプ

Fig. 5-6 Adjustment and test point locations (R/P PCB)

Tascam_238_15.jpg

5-1. PRECAUTIONS

1. Before performing adjustments or checks, clean and demagnetize the entire tape path.
2. Make sure the deck is properly set for the voltage in your area.
3. The AC voltmeter used in the procedures must have an input impedance of 1 megaohm or more.
4. 0 dB is referenced to 1 V.

5-2. PLAYBACK SYSTEM

Test Mode: Play
Measurement Point: LINE OUT Terminal

Adjustment Item	Preliminary	Input Signal	Adjustment Point	Measurement Point/Spec.
1. Reproduce Reference Level	Connection as in Fig. 5-1	MXT-1161 (315 Hz)	R17 (every ch.)	-10 dB (every ch.)
2. Meter Level	Same as above	Same as above	R67 (every ch.)	0 dB on the meter (every channel)
3. Reproduce Frequency Response	Same as above	MXT-1161	R14 (every ch.)	Spec. shown in Fig. 5-3 (adjust until level at 10 kHz is 0dB: same level as at 315 kHz)
4. Level difference between channels	Same as above	Same as above	Check only	40 – 6.3 kHz within 3 dB (every channel)
5. Level fluctuation	Same as above	Same as above	Check only	40 – 6.3 kHz within 2 dB/6.3 k – 12.5 kHz within 3 dB (every channel)
6. Reproduce S/N ratio	Same as above	–	Check only	47 dB or more (every channel; Exception: 45 dB or more for channels 1 and 8): Readings when "reproducing" leader tape with the deck set for nominal level output.

5-3. MONITOR SYSTEM

Test Mode: Stop
Signal Connection Point: LINE IN Terminal
Measurement Point: LINE OUT Terminal

Adjustment Item	Preliminary	Input Signal	Adjustment Point	Measurement Point/Spec.	Others
1. Input level	Connection as in Fig. 5-1 RECORD FUNCTION SW. set to ON	400 Hz/–10 dB (nominal input) (every channel)	Check only	–10 dB ±1 dB (every channel)	Peak meter reading: 0 dB ± 1 dB
2. Monitor Frequency Response	Same as above	63 – 14 kHz/–10 dB (every ch.)	Check only	Spec. shown in Fig. 5-4.	
3. TAPE SYNC	Same as above Besides: TAPE SYNC Sw. set to IN	400 Hz/–10 dB (channel 8)	Check only	Check for variation of ∞ to –4 dB ± 1 dB in output level as the rear panel LEVEL pot is turned. Thereafter set the pot for –10 dB.	
4. Monitor S/N	Connection as in Fig. 5-1 RECORD FUNCTION Sw. set to ON	No sig. connected	Check only	60 dB or more (every ch.)	Reference –10 dB

Tascam_238_16.jpg

5-4. RECORD SYSTEM

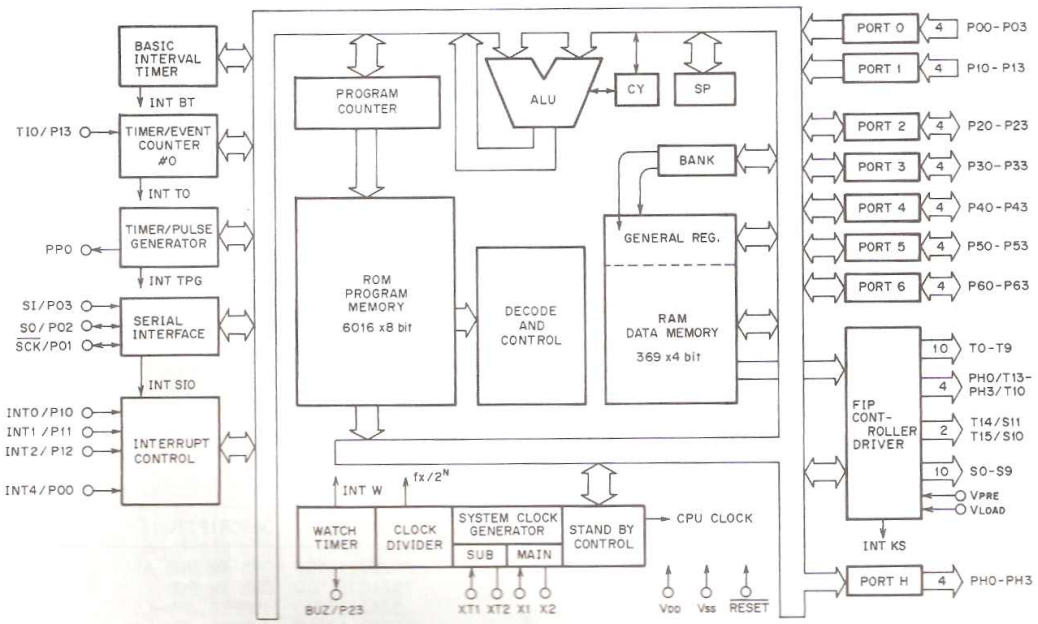
Note: if RECORD level is at MAX or near MAX DBX REC TRIM HAS NO EFFECT on level – PLAY Ø level is ≈ 185 nW/m – ie Ø level

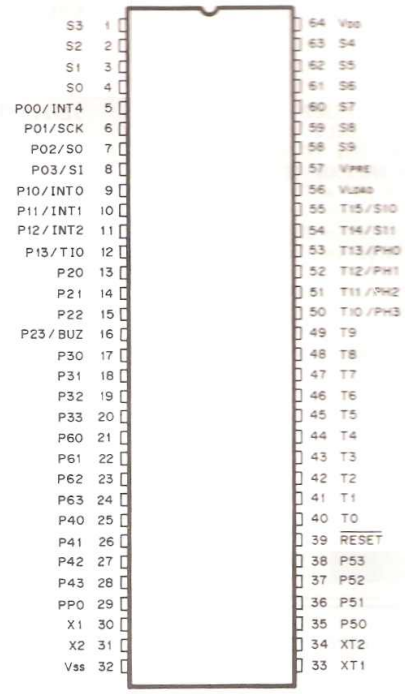
Test Mode: RECORD/PLAY (unless otherwise specified)
Signal Connection Point: LINE IN Terminal
Measurement Point: LINE OUT Terminal (unless otherwise specified)

Adjustment Item	Preliminary	Input Signal	Adjustment Point	Measurement Point/Spec.
1. Bias Amp.	Connection as shown in Fig. 5-2 RECORD FUNCTION Sw. set to ON, and Transport to RECORD/PAUSE	–	L2 (every channel)	Adjust for minimum DC voltage between TP5-TP6
2. dbx Timing	Same as above	–	R30 (every channel)	Adjust for 18.4 mV DC voltage between TP1-TP2.
3. Bias Set	Connect. as in Fig. 5-1 DBX NRs set to IN	–30 dB (–20 dB with respect to nominal input)	R62 (every channel)	Adjust for same level at 1 kHz and 10 kHz.
4. Record reference level setting (without DBX)	Same as above Except: DBX NRs set to OUT	400 Hz/–10 dB (nominal input)	R47 (every channel)	Adjust for nominal level of –10 dB ± 1 dB in reproduce.
5. Record Distorsion	Same as above	Same as above	Check only	2 % or less (every channel)
6. Record Reference Level Setting (with DBX)	Same as above Except: DBX NRs set to IN	Same as above	R68 (every channel)	Adjust for nominal level of –10 dB ± 1 dB in Reproduce.
7. Record Frequency Response	Same as above DBX NRs set to IN and OUT alternately	63 – 14 kHz/–30 dB (–20 dB with respect to nominal input level)	Check only	Specifications shown in Fig. 5-5 (every channel)
8. Level Difference between Channels	Same as above Besides: DBX NRs set to OUT	Same as above	Check only	Within 2 dB for 400 Hz, within 3 dB for 63 Hz to 6.3 kHz, within 4 dB for 6.3 kHz to 10 kHz (all within the limits of record/reproduce frequency response)
9. Record/Reproduce Level Fluctuation	Same as above	Same as above	Check only	Within 1 dB for 400 Hz, within 2 dB for 63 to 6.3 kHz, within 3 dB for 6.3 kHz to 14 kHz (all within the limits of record/reproduce frequency response)
10. Sync Mode Crosstalk	Connection as shown in Fig. 5-1 RECORD FUNCTION Sw. of channel being tested set to ON (all others disengaged)	14 kHz/–10 dB	R57 (every channel)	Adjust for minimum leakage from recording channel onto the adjacent channels.
11. Track Crosstalk	Same as above, Besides: RECORD FUNCTION Sw. of all channels set to ON	125 Hz/–10 dB into channels 1 to 4 (no signal connected to channels 5 to 8)	Check only	Calculate the difference of output level between from channels 1 to 4 and channels 5 to 8. Spec.: 30 dB or more. Repeat measurement connecting no signal to channels 1 to 4 and the 125 Hz/–10 dB signal to channels 5 to 8.
12. Channel Separation	Connection as shown in Fig. 5-1 (with a 1 kHz band pass filter inserted)	1 kHz/–10 dB into channels 1 and 3, no signal into the remaining channels	Check only	Calculate the difference of output level between from channels 1 and 3 and channels 2 and 4. Spec.: more than 35 dB Repeat procedures for the following pairs of channels: 2 and 4 → 1 and 3 5 and 7 → 6 and 8 6 and 8 → 5 and 7 (no signal ch.)
13. Cross Erasure	Connection shown as in Fig. 5-1	10 kHz/–10 dB into channels 1 to 4, no signal into channels 5 to 8	Check only	Within 1.5 dB: Record through channels 1 to 4, then reproduce the recording and note the output level. Then, erase tracks 5 to 8 to check to see that the output level from channels 1 to 4 drops by the specified level (within 1.5 dB)
14. Erasure	Connection shown as in Fig. 5-1 (with a 1 kHz band pass filter inserted)	1 kHz/0 dB (+10 dB with respect to nominal level)	Check only	65 dB or more: Reproduce the recording and measure output level, then erase the recording and reproduce the erased portion to measure again the output level. Compare this against the previous reading.
15. Record/Reproduce S/N Ratio	Connection shown as in Fig. 5-1 DBX NRs set to OUT	400 Hz/–10 dB thereafter no signal	Check only	45 dB or more (Exception: 43 dB or more as for channels 1 & 8): Difference between the 400 Hz recording and the no-signal portion.

8. IC BLOCK DIAGRAMS
ICブロック・ダイアグラム

μPD75206CW-071





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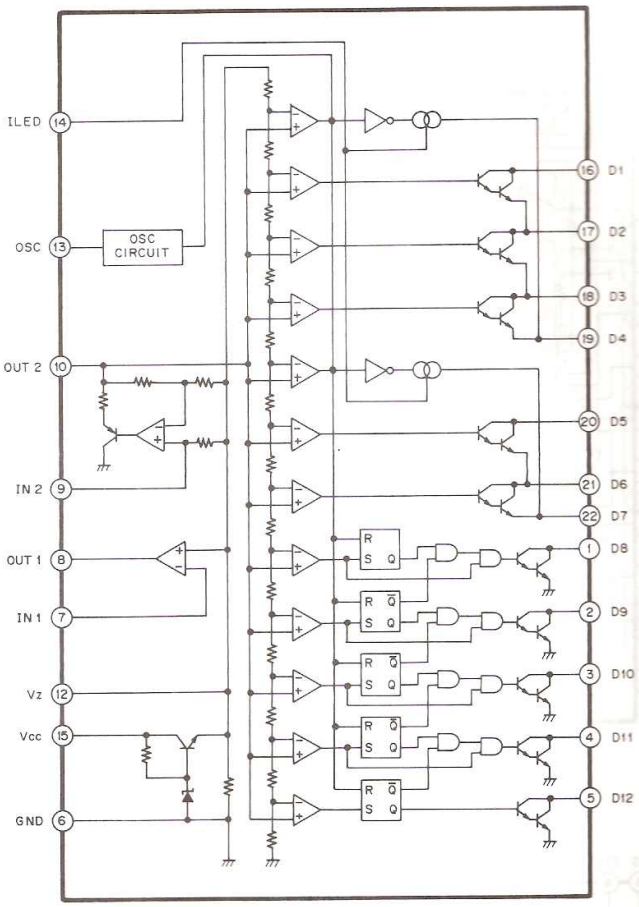
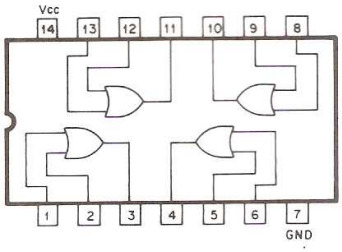
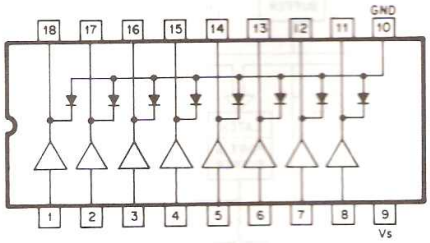
LB1412



TC4071BP

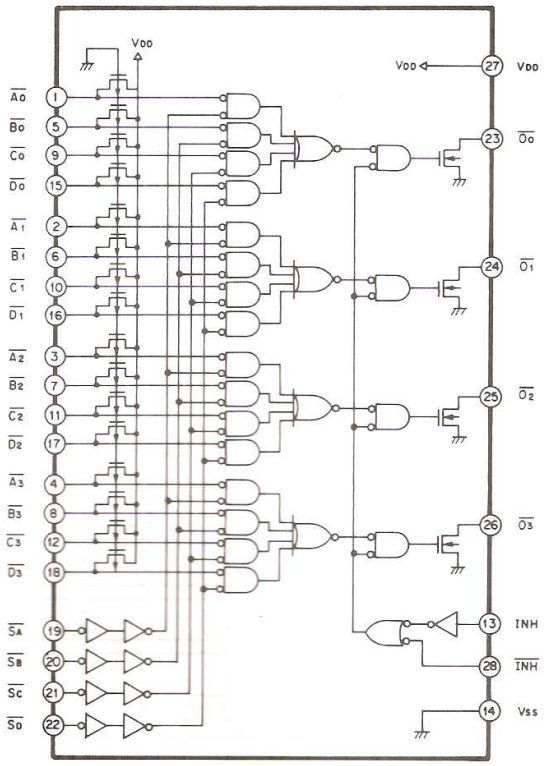


M54563P

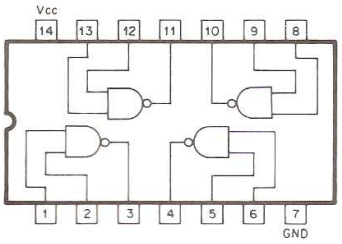


Tascam_238_19.jpg

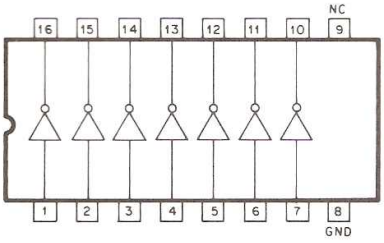
LC7800



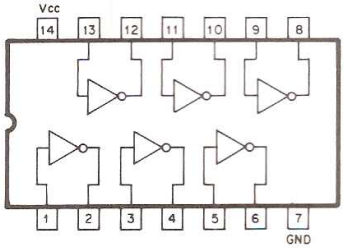
TC4011BP



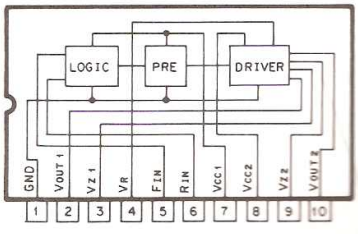
BA6251



HD14069UBP



BA6209



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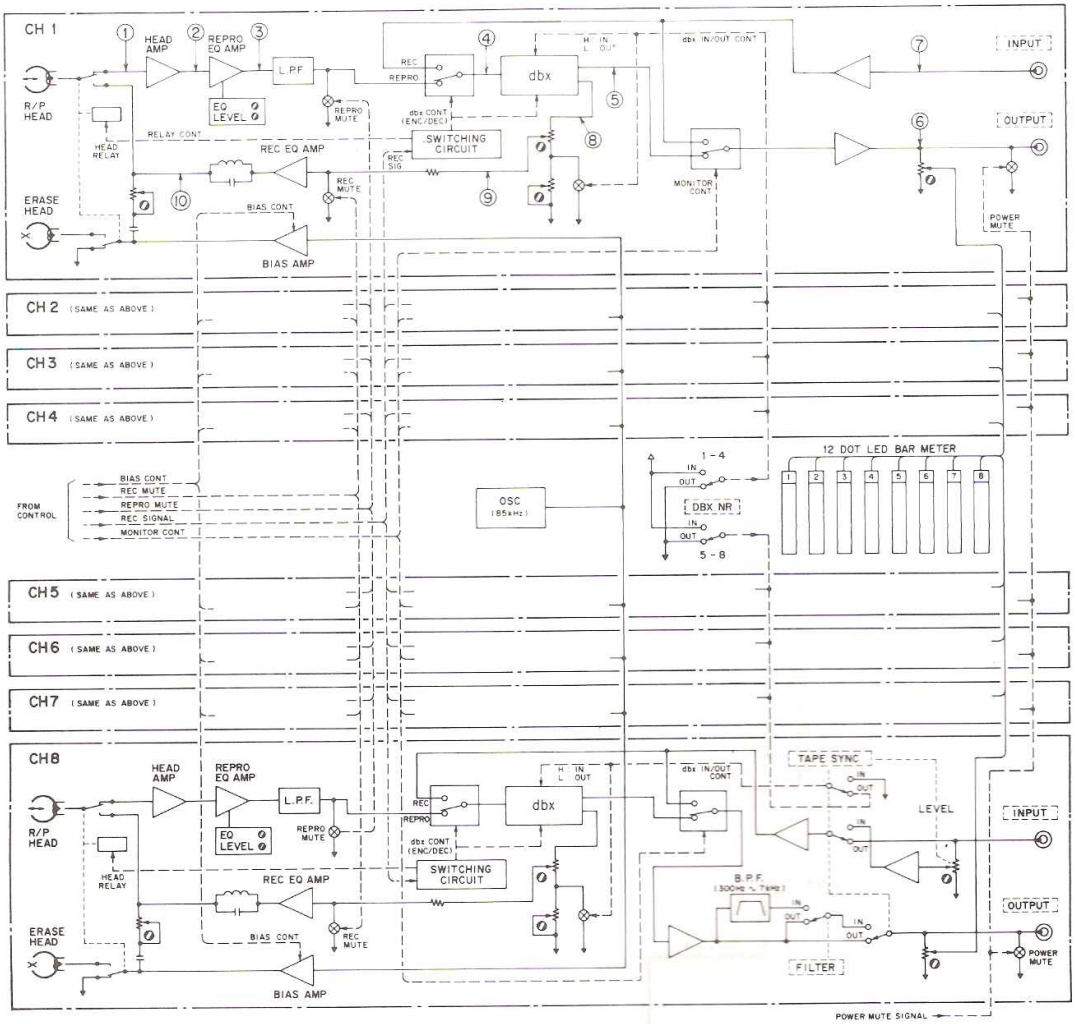
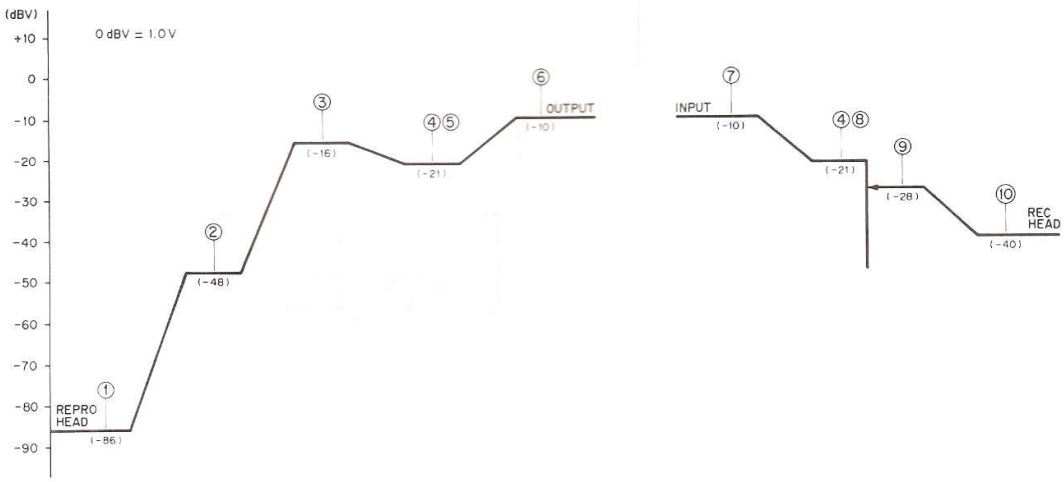
9. BLOCK AND LEVEL DIAGRAM
ブロック・レベル・ダイアグラム





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