## ‘diamond-dot'

CAR RADIO DIVISION, ELECTRONIC INDUSTRIES LTD.

ASTOR HOUSE: I6I-173 STURT STREET, SOUTH MELBOURNE Phone: 690300 SERVICE DATA MODEL "T6E"

T6E - 1
File: TAPE UNITS
Date: 2.11.1968
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## STEREOPHONIC TAPE PLAYER UNIT

## FOR OPERATION FROM A 12 VOLT D.C. SUPPLY <br> NEGATIVE TO CHASSIS



[^0]Before connecting unit to supply source check then connect negative supply lead to chassis and positive supply lead to unit fuse lead.

## OPERATION

NOTE:

$$
\begin{aligned}
& \text { Do not apply pressure to the operating button } \\
& \text { unless a cassette is inserted against stop } \\
& \text { inside unit. } \\
& \text { Incorrect sequence of operation will damage the } \\
& \text { unit. Refer back page. } \\
& \text { CHASSIS SERIAL NUMBER }
\end{aligned}
$$

The number is visible through a slot in the rear of the unit can.
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(PRINTED WIRING SIDE)
PRE AMPLIFIER MODULE
PART NO. 4067-011-01

| ORAWN | OATE | CH'K' $^{\prime}$ | APP'D | DATE |
| :---: | :--- | :--- | :--- | :--- |
| AP.W. | 1.7 .68 | B.S | 16.6. | $1-11-68$ |








Audio Generator - 600 ohms output impedance
Output Meter - VT.VM type
D.C. Supply - 13Volt D.C.

Current Drain - 650 mA approx. No signal.
HEAD OUTPUT BALANCE TEST
This adjustment is required when the tape head, pre-amplifier board or associated componentry has been altered or replaced.

Connect unit to D.C. supply
Insert gain test cassette, 3 KHz tone, into unit. Operate pushbutton to switch unit 'ON'

Connect AC voltmeter to each of the preamplifier outputs in turn and compare readings.

Adjust head balance potentiometer, circuit No. 27 to obtain identical readings approx. 250 mV .

GAIN TEST
Disconnect leads from tape head.
Assemble 10,000:1 attenuator


Connect generator via attenuator to amplifier input. Apply input to Channel 1 then repeat test for Channel 2.
Turn volume and tone controls to fully clockwise position
Connect 3.5 ohm impedance load and the voltmeter to each amplifier output (speaker) socket as required. Turn balance control to obtain maximum output of each channel as required.

Do not insert a cassette into player unit.
To operate unit, press trip lever with fingers then push button 'IN' to switch amplifier 'ON'

Set generator frequency to 1 KHz and generator output level to . 64 mV .
The amplifier output level is to be approx. 50mW. (between . 4 and : 6 volt indication)

EQUALIZATION TEST (connections and procedure as for gain test)
Set frequency to 100 Hz and generator output to 20 mV Output voltage level is to be between . 4 and . 6 V .

Set frequency to 8 KHz and generator output to 190 mV . Output voltage level is to be between . 4 and . 6 V .

## POWER OUTPUT

Disconnect attenuator and connect generator output directly across the volume control. Adjust the level until clipping occurs in the output.

At this point the power output should be greater than 2.5 Watts (2.95 Volts).

The difference in output between the two channels should not exceed 2dB (approx. $\cdot 7$ Volt).


TONE CONTROL MODULE
PART NO. 4O67-OI3-OI CIRCUIT BOARD IDENT. OP IO3

| DRAWN | DATE | CHECK'D | DATE | APP'D | DATE |
| :---: | :--- | :--- | :--- | :---: | :--- |
| ASW. | 26.6 .68 | B.S. | $1-11-68$ | 12 b | $1-11-68$ |


| ITEM | PART NO. | DESCRIPTION |
| :---: | :---: | :---: |
| 1. | 7052-206-02 | Main Chassis |
| 2. | 7108-022-01 | Guide - Tape |
| 3. | 7196-334-04 | Screw - 3/16" x No. 8 |
| 4. | 4066-003-01 | Tape Head |
| 5. | 7225-257-01 | Spring - Head |
| 6. | 7293-014-02 | Spacer - Head |
| 7. | 7309-075-01 | Screw 8 mm x $2 \mathrm{~mm} \mathrm{Ch.Hd}$. |
| 8. | 7192-013-51 | Runner - L.H. |
| 9. | 7189-020-02 | Roller |
| 10. | 7225-243-01 | Spring - Roller |
| 11. | 7261-138-10 | Washer |
| 12. | 7196-375-20 | Screw - 5/16" x No. 6 BA Ch.Hd. |
| 13. | 7224-395-01 | Spindle - Pivot |
| 14. | 7055-534-02 | Circlip |
| 15. | 7303-038-01 | Bearing - Pinch Wheel |
| 16. | 7295-017-01 | Carrier - Pinch Wheel |
| 17. | 7261-105-01 | Washers - Nylon |
| 18. | 7189-019-01 | Roller - Pinch Wheel |
| 19. | 7225-245-01 | Spring Wheel Pressure. |
| 20. | 7015-059-01 | Actuator Bar |
| 21. | 7225-244-01 | Spring - Head Actuator |
| 22. | 4067-005-01 | Motor Control Module |
| 23. | 7015-060-02 | Latch Plate |
| 24 | 7225-242-01 | Spring - Trip Bar |
| 25 | 7055-534-01 | Circlip |
| 26 | 7225-239-01 | Spring - Lock Plate |
| 27 | 7028-633-01 | Lever - Trip |
| 28 | 7192-013-01 | Runner - R.H. |
| 29 | 7222-143-01 | Socket - Lamp |
| 30 | 4068-003-04 | Lamp |
| 31 | 7169-672-01 | Actuator Plate Assembly |
| 32 | 7261-163-08 | Washer |


| 7055-255-03 | Circlip |
| :---: | :---: |
| 7225-262-01 | Spring - Act. Switch |
| 7225-247-01 | Spring Act. Bar |
| 7261-538-01 | Washer |
| 7108-021-01 | Cam Guide |
| 7169-629-01 | Plate - Cam |
| 7261-120-06 | Washer |
| 7196-375-11 | Screw |
| 4067-011-01 | Module - Audio Pre-Amplifier |
| 7293-012-02 | Spacer |
| 7293-018-07 | Spacer - Chassis Locate |
| 7225-241-01 | Spring - Chassis Locate |
| 7225-248-01 | Spring - swing chassis |
| 7120-216-01 | Insulator |
| 4054-016-01 | Motor |
| 7054-116-01 | Motor Bracket |
| 7225-240-01 | Spring Motor Mount |
| 7196-375-18 | Screw - Motor Mount |
| 7017-008-01 | Belt - Clutch |
| 7017-010-01 | Belt - drive, round |
| $7174-059-01$ | Idler Pulley Assembly |
| 7055-255-02 | Circlip |
| 7043-017-01 | Cam - Plate |
| 7303-034-01 | Bearing self aligning |
| 7054-119-01 | Clamp - self aligning bearing |
| 7054-114-01 | Clamp - self aligning bearing |
| 7272-025-01 | Flywheel Assembly |
| 7159-057-01 | Thrust Pad |
| 7027-696-01 | Clutch \& Flywheel bearing mount includes spacers |
| 7308-023-01 | Bearing - clutch bottom |
| 7057-025-01 | Stud - spring locator |
| 7225-250-01 | Spring - clutch |


| ITEM. | PART NO. | DESCRIPTION |
| :---: | :---: | :---: |
| 65 | 7174-062-01 | Clutch pulley assembly includes: |
|  |  | Bearing (68) |
|  |  | Lining (92) |
| 66 | 7224-383-01 | Spindle - clutch |
| 67 | 7169-599-01 | Plate - clutch |
| 68 | 7303-035-01 | Bearing - clutch |
| 69 | 7076-003-01 | Dog carrier |
| 70 | 7225-246-01 | Spring tape spool |
| 71 | 7076-004-51 | Drive Dog |
| 72 | 7076-004-01 | Idler dog |
| 73 | 7308-022-01 | Cap - Driver \& Idler dogs |
| 74 | 7196-367-11 | Screw - 1/4" x No. 4 brass |
| 75 | 7309-204-01 | Screw $1 / 4$ " x 4-40 |
| 76 | Escutcheon | - Refer Styling List |
| 77 | 7198-626-17 | Escutcheon screws |
| 78 | 7196-375-09 | Screw 1/4" x No. 6 |
| 79 | 7124-437-01 | Knob - Push button |
| 80 | 7045-040-01 | Cam assembly |
| 81 | 4078-053-01 | Lead assembly |
| 82 | 7065-259-02 | Cover Plate |
| 83 | 7052-204-01 | Chassis - brace |
| 84 | 7052-209-01 | Swing Chassis - assembly |
| 85 | 7159-060-01 | Pad |
| 86 | 7228-033-01 | Stop - chassis |
| 87 | 7261-085-02 | Washers |
| 88 | 7261-232-02 | Washer |
| 89 | 7261-103-06 | Washer - Head adjustment |
| 90 | 1104-050-99 | Sleeve PVC 5mm |
| 91 | 7032-001-03 | Button |
| 92 | 7261-563-05 | Clutch lining |
|  | 7171-124-01 | Plug 5-Pin, part of 81 |
|  | 1171-048-99 | Cable - part of 81 |
|  | 7171-115-01 | Socket, 7-pin, part of 81 |
|  | 7055-568-01 | Circlip, 5-pin plug cover |

PART NO. 4067-011-01

| Circuit No. | Value | Description | $\begin{gathered} \text { Tol } \\ \underline{ \pm} \end{gathered}$ | Rating D.C.W. | Part Number |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | CAPACITORS |  |  |  |
| 1 | . 0039uF | Polyester | 10\% | 400 | 4009-036-01 |
| 2 | . 0039uF | Polyester | 10\% | 400 | 4009-036-01 |
| 3 | $2.5 u F$ | Electrolytic |  | 64 | 4005-035-02 |
| 4 | 2.5uF | Electrolytic |  | 64 | 4005-035-02 |
| 5 | 4 uF | Electrolytic |  | 40 | 4005-045-02 |
| 6 | 4 uF | Electrolytic |  | 40 | 4005-045-02 |
| 7 | 10uF | Electrolytic |  | 16 | 4005-007-08 |
| 8 | 10uF | Electrolytic |  | 16 | 4005-007-08 |
| 9 | .0027uF | Polyester | 10\% | 400 | 4009-037-02 |
| 10 | .0027uF | Polyester | 10\% | 400 | 4009-037-02 |
| 11 | $4 u F$ | Electrolytic |  | 40 | 4005-045-02 |
| 12 | 4 uF | Electrolytic |  | 40 | 4005-045-02 |
| 13 | 10uF | Electrolytic |  | 16 | 4005-007-08 |
| 14 |  |  |  |  |  |
| 15 |  |  |  |  |  |
| Circuit | Value |  | Tol | Rating |  |
| No. | Ohms | Description | $\underline{\square}$ | Watt | Part Number |

## RESISTORS

| 16 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 17 | 1K | Carbon | 10\% | . 5 | 4022-008-01 |
| 18 | 1K | Carbon | 10\% | . 5 | 4022-008-01 |
| 19 | 150K | Carbon | 10\% | . 5 | 4022-038-01 |
| 20 | 150K | Carbon | 10\% | . 5 | 4022-038-01 |
| 21 | 39K | Carbon | 10\% | . 5 | 4022-023-01 |
| 22 | 39K | Carbon | 10\% | . 5 | 4022-023-01 |
| 23 | 100K | Carbon | 10\% | . 5 | 4022-013-02 |
| 24 | 100K | Carbon | 10\% | . 5 | 4022-013-02 |
| 25 | 150K | Carbon | 10\% | . 5 | 4022-038-01 |
| 26 | 150K | Carbon | 10\% | . 5 | 4022-038-01 |
| 27 | 4.7 K | Tab Control |  |  | 4025-038-02 |
| 28 |  |  |  |  |  |
| 29 | 100K | Carbon | 10\% | . 5 | 4022-013-02 |
| 30 | 100K | Carbon | 10\% | . 5 | 4022-013-02 |
| 31 | 4.7 K | Carbon | 10\% | . 5 | 4022-005-01 |
| 32 | 4.7 K | Carbon | 10\% | . 5 | 4022-005-01 |
| 33 | 18K | Carbon | 10\% | . 5 | 4022-018-01 |
| 34 | 18K | Carbon | 10\% | . 5 | 4022-018-01 |
| 35 | 22K | Carbon | 10\% | . 5 | 4022-026-02 |
| 36 | 22K | Carbon | 10\% | . 5 | 4022-026-01 |
| 37 | 680K | Carbon | 10\% | . 5 | 4022-055-01 |
| 38 | 680K | Carbon | 10\% | . 5 | 4022-055-01 |
| 39 | 8.2K | Carbon | 10\% | . 5 | 4022-027-02 |
| 40 | 8. 2 K | Carbon | 10\% | . 5 | 4022-027-02 |
| 41 | 1 K | Carbon | 10\% | . 5 | 4022-008-01 |
| 42 | 1 K | Carbon | 10\% | . 5 | 4022-008-01 |
| 43 | 270K | Carbon | 10\% | . 5 | 4022-019-01 |
| 44 | 33K | Carbon | 10\% | . 5 | 4022-059-03 |

45
46
47
48
Circuit
No.

Part Number

## MISCELLANEOUS

| 49 | Transistor - Type AT337 | $4128-133-01$ |
| :--- | :--- | :--- |
| 50 | Transistor - Type AT337 | $4128-133-01$ |
| 51 | Transistor - Type AT327 | $4128-125-01$ |
| 52 | Transistor - Type AT327 | $4128-125-01$ |
| 53 | Transistor - Type AT327 | $4128-125-01$ |
| 54 | Transistor - Type AT327 | $4128-125-01$ |
| 55 | Transistor - Type AT321 | $4128-119-01$ |
| 56 | Switch | $4059-202-01$ |

This should be performed after a Driver Module or Output Transistors or associated componentry have been replaced

EQUIPMENT Current Meter - O-50mA D.C.

CONDITIONS Volume Control set at minimum. No input signal.

Connect 3.5 ohm impedance speaker to the channe1 output under test.

Remove link from pin "O" and "N" on Driver Module board.

Connect leads from meter to test pins. Positive meter lead to test pin ' $N$ '

Adjust 100 ohm potentiometer circuit No. 15 until a meter reading of $20 \mathrm{~mA} \pm 2 \mathrm{~mA}$ is indicated.

Disconnect meter leads and reconnect link.

## REPLACEMENT OF OUTPUT TRANSISTORS

When refitting or replacing the output transistors check that the mount positions and faces are clean and free from dust, grit or metal particles.

Check mica washers and insulating ferrules to ensure correct location with transistors. Securely fasten with screws, washers and nuts.

## SERVICE CASSETTES

| Part Number | Description |
| :---: | :---: |
| 4121-031-01 | Speed Check and Azimuth Adjustment. Philips type 4822-218-001-99 |
| 4121-032-01 | Mirror, pinch wheel adjustment Philips type 4822-397-3001 |
| 4121-033-01 | Wow and Flutter, Gain test. Philips type HU71515 |

PART NO. 4067-012-01

| Circuit No. | Value | Description | Tol | $\begin{aligned} & \text { Rating } \\ & \text { V.DCW } \end{aligned}$ | Part Number |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | CAPACITORS |  |  |  |
| 1 | 4uF | Electrolytic |  | 40 | 4005-045-02 |
| 2 | 4 uF | Electrolytic |  | 40 | 4005-045-02 |
| 3 | 250uF | Electrolytic |  | 15 | 4005-011-17 |
| 4 | . 012 uF | Polyester | 10\% | 160 | 4009-033-02 |
| 5 |  |  |  |  |  |
| 6 |  |  |  |  |  |
| Circuit No. |  |  | Tol | Rating |  |
|  | Value | Description |  | Watts | Part Number |
|  |  | RESISTORS |  |  |  |
| 7 | 2.7K | Carbon | 10\% |  | 4022-043-01 |
| 8 | 47 K | Carbon | 10\% | . 5 | 4022-051-03 |
| 9 | 120K | Carbon | 10\% | . 5 | 4022-031-01 |
| 10 (10) |  |  |  |  |  |
| 11 | 220K | Carbon | 10\% |  | 4022-063-01 |
| 12 | 2.7K | Carbon | 10\% | . 5 | 4022-043-01 |
| 13 | 10 | Carbon | 10\% | . 5 | 4022-035-01 |
| 14 | 820 | Carbon | 10\% | . 5 | 4022-009-01 |
| 15 | 100 | Tab Control |  |  | 4025-031-03 |
| 16 | 180 | Carbon | 10\% | . 1 | 4022-025-01 |
| 17 |  |  |  |  |  |
| 18 |  |  |  |  |  |
| 19 |  |  |  |  |  |
| 20 |  |  |  |  |  |
| Circuit |  |  |  |  |  |
| No. |  | Description |  |  | Part Number |
|  |  | MISCELLANEOUS |  |  |  |
| 21 |  | Transistor - | e AT |  | 4128-125-01 |
| 22 |  | Transistor - | e AX |  | 4128-108-01 |

PART NO.4067-013-01

| Circuit <br> No. | Value | Description | Tol <br> $\pm$ | Rating <br> V.DCW | Part Number |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 1 | .0033 uF | $\frac{\text { CAPACITORS }}{\text { Polyester }}$ | $10 \%$ | 400 | $4009-006-07$ |
| 2 | .0033 uF | Polyester | $10 \%$ | 400 | $4009-006-07$ |
| 3 | .012 uF | Polyester | $10 \%$ | 160 | $4009-033-02$ |
| 4 | .012 uF | Polyester | $10 \%$ | 160 | $4009-033-02$ |
| 5 | .047 uF | Polyester | $10 \%$ | 160 | $4009-001-15$ |
| 6 | .047 uF | Polyester | $10 \%$ | 160 | $4009-001-15$ |
| 7 | 640 uF | Electrolytic |  | 16 | $4005-046-01$ |
| 8 | 640 uF | Electrolytic |  | 16 | $4005-046-01$ |
| 9 | 640 uF | Electrolytic |  | 16 | $4005-046-01$ |


| Circuit Value <br> No. Ohms | Description | To1 <br> $\pm$ | Rating <br> Watts |
| :--- | :--- | :---: | :--- |

## RESISTORS

| 11 | $8.2 K$ | Carbon | $10 \%$ | .5 | $4022-027-02$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| 12 | $8.2 K$ | Carbon | $10 \%$ | .5 | $4022-027-02$ |
| 13 | $12 K$ | Carbon | $10 \%$ | .5 | $4022-029-01$ |
| 14 | $12 K$ | Carbon | $10 \%$ | .5 | $4022-029-01$ |
| 15 | .51 | Wire Wound | $10 \%$ | .5 | $4024-010-02$ |
| 16 | .51 | Wire Wound | $10 \%$ | .5 | $4024-010-02$ |
| 17 | .51 | Wire Wound | $10 \%$ | .5 | $4024-010-02$ |
| 18 | .51 | Wire Wound | $10 \%$ | .5 | $4024-010-02$ |

Circuit
No. Description

Part Number

| 1 | Module (1) Motor Control |
| :---: | :---: |
| 2 | Module (1) Audio Pre-Amplifier (refer separate |
| 3 | Module (1) Audio Driver (refer separate list) |
| 4 | Module (1) Tone Control |
| 5 | Module (1) Audio Driver (refer separate list) |
| 6 | Capacitor (1) . 1uF Disc Ceramic 25V. DCW |
| 7 | Capacitor (1) . 1uF Disc Ceramic 25V. DCW |
| 8 | Capacitor (1) .047uF Disc Ceramic 25V. DCW |
| 9 | Capacitor (1) . 047uF Disc Ceramic 25V. DCW |
| 10 |  |
| 11 | Capacitor (1) . 047uF Disc Ceramic 25V. DCW |
| 12 | Capacitor (1) .047uF Disc Ceramic 25V. DCW |
| 13 | Capacitor (1) . 1 uF Disc Ceramic 100V. DCW |
| 14 | Capacitor (1) . 1uF Disc Ceramic 100V. DCW |
| 15 | Capacitor (1) . 001 uF Feed-thru |
| 16 |  |
| 17 | Volume Control (1) 250K.ohm tapped 100K.ohm ganged |
| 18 | Tone Control (1) 250K.ohm ganged |
| 19 | Balance Control (1) 100K. ohm |
| 20 (1) |  |
| 21 | Resistor (1) 15 ohm NTC |
| 22 | Resistor (1) 15 ohm NTC |
| 23 ( 23 |  |
| 24 | Transistor - type AD161 ) Matched pair |
| 25 | Transistor - type AD162 ) Matched pair |
| 26 | Transistor - type AD161 ) Matched pair |
| 27 | Transistor - type AD162 ) Matched pair |
| 28 | Choke (1) iron cored , input filter |
| 29 | Choke (1) ferrite cored, speaker filter |
| 30 |  |
| 31 | Choke (1) ferrite cored, speaker filter |
| 32 | Choke (1) ferrite cored, input filter |
| 33 | Tape Head (1) |
| 34 | Plug and Lead Assy (1) |
| 35 | Indicator Lamp (1) 16V. |
| 36 | Socket (1) 5-pin input |
| 37 | Socket (1) jack, speaker |
| 38 | Socket (1) jack, speaker |
| 39 | Plug (1) jack, speaker |
| 40 | Plug (1) jack, speaker |
| 41 | Speaker (1) 5"dia. 3.5 ohm impedance |
| 42 | Speaker (1) 5"dia. 3.5 ohm impedance |
|  | Extension Cable Assy (1) 36" for use with Circuit No. 34 |

4067-005-0 1
4067-011-01
4067-012-01
4067-013-01
4067-012-01
4008-004-06
4008-004-06
4008-057-03
4008-057-03
4008-057-03
4008-057-03
4008-004-05
4008-004-05
4008-040-08
4034-011-02

> 4034-005-04

4032-001-21
4021-075-01
4021-075-01
4128-109-01
4128-109-01
4048-025-05
4048-04 3-02
4048-043-02
4048-033-01
4066-003-01
4078-053-01
4068-003-04
7222-155-01
7222-033-01
7222-033-01
7171-015-01
7171-015-01
4056-006-15
4056-006-15

4078-062-01

## STYLING

Knob (3) volume, balance, tone
Nut (3) control bushes
7124-471-01
7150-057-01
Washer (3) fibre
Escutcheon (1) controls
Escutcheon (1) tape

| ASTOR | AIRCHIEF |
| :---: | :---: |
| $7084-297-01$ | $7084-288-02$ |

B.M.C.

7084-297-01
CHRYSLER
7084-288-02
includes
"Diamond
Dot" 7081-001-01
-
7008-385-11
7081-001-01
Badge 7008-358-01
7008-385-21
7008-385-31

This unit is designed for 'negative to chassis' operation only. Check battery lead polarity before making connections.

NOTE: When servicing the tape player unit it is important that the bench top be covered with a soft flexible material or alternatively that the unit main chassis be spaced up off the flat surface.

The reason for specifying these conditions is to preven the end of clutch and flywheel bearing plate (61) from being hammered against the bench top during each test operation.

If the above precautions are not adhered to the lower bearing (62) of the clutch will be pressed upward and so cause the clutch to slip resulting in tape being to the hub

1. CASSETTE RUNNERS
a. Insert cassette and check that runners (8) and (28) are free and do not stick.
b. Observe that the spring loaded rollers (9) grip the cassette.
c. Pull back each corner of the cassette about $1 / 16$ in turn and then let go. The spring loaded rollers should return the cassette to the 'in' position.
REMEDY: Check or replace springs (10). Adjust runners (8) and (28) then securely tighten runners (12).

SWING CHASSIS BEARING
a. Check that button is in the 'OUT' position.
b. Apply sideways pressure to the swing chassis Apply sideways pressure to mein chassis.
c. Visually check that there is not more than .O20" sideways movement of the swing chassis at the point where the driving spindle protrudes.
REMEDY: Check that spring (44) and spacer (43) are securely attached to spindle (13)

CLEARANCE BETWEEN CAPSTAN AND CASSETTE
a. Set button to 'OUT' position.
b. Insert a cassette into the unit.
c. Check that a . 006 feeler gauge will pass easily between the bottom of the cassett and the top of the capstan
REMEDY: Check that flywheel mount plate (61)and screws 74) are securely tightened. Check that orrect thrust pad (60) is in position.

## CASSETTE LOCATION

> With a cassette in position and the button in the ${ }^{\ominus}$ IN position observe that the hub holes in the cassette are concentric with the drive dog $(71)$ and idler dog $(72)$.

REMEDY: Check swing chassis (84) location also Check swing chat
refer Para. 2.

PINCH WHEEL PRESSURE
a. Connect player unit to 12 Volt DC supply.
b. Operate trip lever with fingers then push button 'IN ${ }^{\text {• }}$
c. Connect tension measuring device to the pinch wheel carrier (16).
d. Increase gauge tension until pinch wheel ceases to revolve, indicating that it has lifted clear of the capstan.
e. Tension gauge reading is to be between 250 gram min. and 300 grams max.

REMEDY: Adjustment of pressure is achieved by bending the tension spring lug ' $D$ ' on the chassis.

## 10. PINCH WHEEL ALIGNMENT

a. Connect player unit to 12 Volt DC supply.
b. Insert 'mirror cassette' into unit then push button 'IN'.
c. Observe carefully the tracking of the tape through the pinch wheel and capstan. If the tape tends to ride up or down off the capstan the alignment of the pinch wheel is at fault.
REMEDY: Open or close the adjustment gap 'E' in the rear of the pinch wheel carrier (16) until the tape runs smoothly between the pinch wheel and capstan.

## ALIGNMENT OF MOTOR BELT

a. Check by eye that the belt arrives on the motor pulley approximately at right angles to the motor shaft.
REMEDY: Loosen the two screws (50) fastening clamp bracket (48). Slide motor forward or backward to achieve alignment. Securely tighten the screws.

## IDLER DOG SPINDLE

a. Operate trip lever with fingers then push button 'IN'.
b. Turn the idler dog with the fingers and check that it is free
c. An idler dog which does not turn freely must be replaced.

REMEDY: Prise off the cap (73) then lift dog (72) off dog carrier (69). Note that the spring (70) is in position and operating. Replace dog, check movement and refit cap. NOTE: The round end of dog is to be uppermost against cap.

## ACTUATOR BAR - PINCH WHEEL CARRIER CLEARANCE

a. Operate trip lever with fingers then push button 'IN'.
b. Insert a .020" feeler gauge between the rear tag 'F' of pinch wheel carrier (16) and the protruding lug ' $G^{\prime}$ ' of actuator bar (20). Tolerance of $-0 "+.010 "$ is allowable.

REMEDY: Bend tag ' F ' on pinch wheel carrier to achieve tolerance.

Insert a cassette into player unit.
b. Note when the cassette reaches the full in position that the trip lever (27) has operated freeing the push button actuator plate (31).
c. Remove cassette and check that button is locked out and cannot be operated.

REMEDY: To adjust trip lever, bend end ' A ' of lever nearest the cassette with long nosed pliers Cherest the cassette with long nosed pli sharp edge to cassette and the plastic sleeve (90) is in position.

ACTUATOR PLATE LATCH
a. Insert a cassette into player unit.
b. Operate push button (79) and note that latch plate (23)locks plate in the 'IN' position.
c. Note that actuator bar (20) has moved across allowing the pinch wheel carrier (16) to press against tape
d. Check function by operating push button several times.

REMEDY: Check that springs (21), (24) and (19) are in position. Note the rear face of push button (79) is not fouled with foreign matter.

## 7. NON-RELEASE OF ACTUATOR PLATE

If the actuator plate does not return to 'OUT' position when the push button is pressed the following checks should be made
a. Note that springs (35), (45) and (34) are in position and operating.
b. Check the formed ramp 'B' of latch plate (23) has not been altered and that it presents a smooth curved face to projection ' $C$ ' of actuator plate (31).
c. Check adjustment of cam follower. Refer Para. 8.

## CAM FOLLOWER HEIGHT ADJUSTMENT

a. Operate trip lever with fingers then push button 'IN'.
b. Turn adjusting screw (12) on the cam follower (37) until the dimples on the swing chassis are tight against the neoprene pads (85) on the main chassis.
c. Press push button again. If adjusting screw has been tightened sufficiently, the button has been tightened
d. Slowly turn adjusting screw anticlockwise until button releases.
e. Check freedom of movement by operating button several times.
f. Lock screw (12) with lacquer.
g. Check paragraph 3. CLEARANCE BETWEEN CAPSTAN AND CASSETTE.
a. Connect player unit to 12 Volt DC supply.
b. Insert 'motor speed test cassette' into uni then push button 'IN'.
c. With the secondhand of a clock check that the 400 Hz tone is between 98 and 102 secs. apart.
REMEDY: Adjust potentiometer circuit No. 21 of the motor module until tolerance is achieved.

CLUTCH TORQUE MEASUREMENT - refer NOTE preceeding Para. 1
a. Check that large diameter flange of bearing (62) is hard against top face of bearing mount plate (61) Correct before proceeding.
b. Connect player unit to 12 Volt DC supply.
c. Operate trip lever with fingers then push button 'IN'
d. Connect torque gauge to drive dog (71) and check that the reading obtained is between 25 grams/cm. and 30 grams/cm.

REMEDY: Adjust to within range by removing circlip (54) and refitting to a higher notch to increase or a lower notch to decrease torque.

Check reading and note that circlip is securely located.

## AZIMUTH ALIGNMENT OF TAPE HEAD

a. This adjustment is to be performed whenever the tape head has been replaced or the adjusting and mounting screws (7)
b. CAUTION: Do not place magnetized tools in close proximity to tape head.
c. Connect player unit to 12 Volt DC. supply.
d. Insert "azimuth" test cassette into player then push button 'IN?
e. Connect an $A C$ voltmeter to the output of one amplifier (speaker socket).
f. Check that screw (7) fastening head spacer (6) has been securely tightened then adjust other reading is obtained.
. Lock the mount screws with lacquer.

## LUBRICATION

a. Check greasing points indicated with an asterisk on the mechanical assembly drawing.
b. Clean off any accumulated dust or grit then apply molybdenum-di-sulphate base grease to the surfaces indicated.


[^0]:    WARNING: BATTERY CONNECTION OF INCORRECT POLARITY WILL DAMAGE UNIT.

