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"Clarion Service Manual"

# Service Manual

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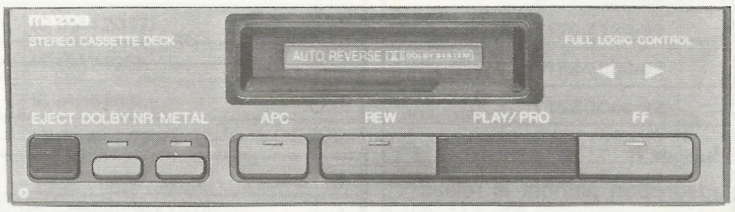
## MAZDA Automobile Genuine Stereo Cassette Deck

## Model PT-8052C




## ■ SPECIFICATIONS:

| | | |
|---|---|---|
| Reproduction system: | 4 track, 2 channel stereo playback | |
| Tape speed: | 4.76cm/sec. | |
| Wow & flutter: | Less than 0.15% (W.R.M.S) | |
| Separation: | More than 30dB | |
| Crosstalk: | More than 40dB | |
| S/N ratio: | | |
| NORM | DOLBY NR OFF | More than 46dB |
| | DOLBY NR ON | More than 54dB |
| METAL | DOLBY NR OFF | More than 48dB |
| | DOLBY NR ON | More than 56dB |
| FF/REW time: | Less than 120sec. | |
| Output level: | 185mV±1.5dB (315Hz, OVU Tape 10kΩ load) | |

| | | |
|---|---|---|
| Power supply voltage: | DC 13.2V | |
| Current consumption: | Less than 5A (at max. output) | |
| Dimensions: | Width | 180mm |
| | Height | 50mm |
| | Depth | 160mm |
| Weight: | 1.25kg | |



## ■ COMPONENT:

● **PT-8052C-A**

Main unit 1


Published by Service Administration Section PT-8052C

# ■ ADJUSTMENT:

**1. ADJUSTMENT DOLBY LEVEL**

Play the test tape CTT-422-112 (400 Hz, 200 nWb/m) and adjust VR101 and VR201 so that the voltage at TP101 and TP201 becomes 300 mV ± 1 dB.

# ■ TAPE MECHANISM

**1. Head-azimuth Adjustment**

Make playback for the azimuth-tape (8kHz, −10VU), and turn each azimuth-adjusting screw to make each FWD & REV maximum. After adjustment, make adhesion with bond.

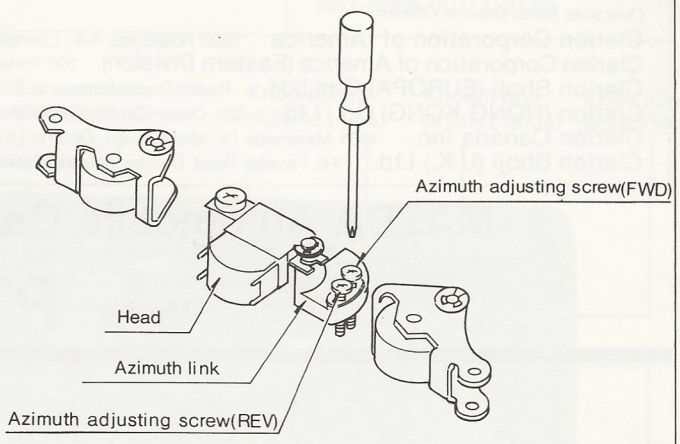



Fig. 1

**2. Adjustment of Adsorption Plunger B**

Under FF-operation, when adsorption plunger is released, mount the plunger to make the adsorption-surface of adsorption plunger B in parallel to the bent surface of plunger link B, and make adhesion of the rear side of the screw with bond.

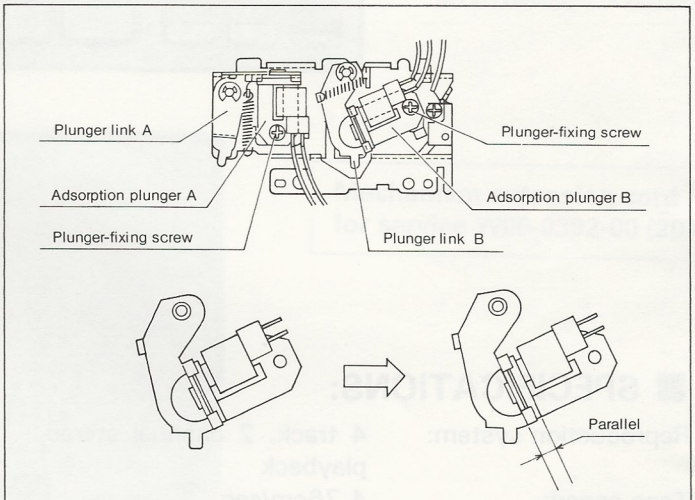



Fig. 2

**3. Adjustment of Adsorption Plunger A**

Under REW-operation, when adsorption plunger is released, mount the plunger to make the adsorption-surface of adsorption plunger A in parallel to the bent surface of plunger link A, and make adhesion of the rear side of the screw with bond.

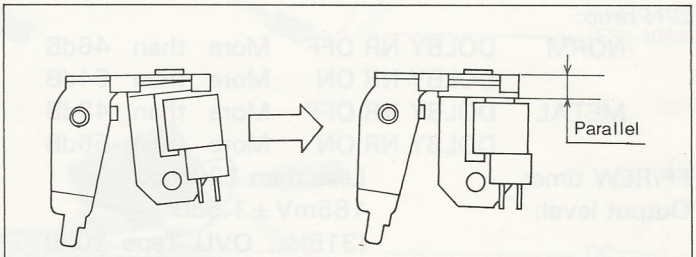



Fig. 3

# ■ PARTS LIST:

## <Electrical section>

| Ref. No. | Part No. (Order No.) | Description | Q'ty |
|---|---|---|---|
| D101, 201, 401, 402, 403, 404, 405, 413, 414, 415, 416, 418, | 001-0330-00 | Diode (1SS119) | 12 |
| D502, 503, 504 | 001-0360-00 | Diode (S5566B) | 3 |
| D419 | 001-0421-19 | Diode (MTZ5.6J) | 1 |
| D301, 302 | 001-0421-23 | Diode (MTZ8.2J) | 2 |
| D417 | 001-0423-15 | Diode (MA4039) | 1 |
| D501 | 001-0429-00 | Diode (S3V10) | 1 |
| L501 | 009-0603-00 | Choke | 1 |
| VR101, 201 | 012-4100-06 | Variable resistor (50kΩ) | 2 |
| CCT401 | 050-0077-02 | Component circuit | 1 |
| CCT402 | 050-0088-00 | Component circuit | 1 |
| IC7 | 051-0172-00 | IC (TC4011BP) | 1 |
| IC9 | 051-0266-00 | IC (TA78L008P) | 1 |
| IC3 | 051-0285-51 | IC (NJM4558S) | 1 |
| IC6 | 051-0396-00 | IC (TC9130) | 1 |
| IC5 | 051-0443-00 | IC (TD62504P) | 1 |
| IC2 | 051-0507-00 | IC (HA12047) | 1 |
| IC1 | 051-0539-00 | IC (TA7405) | 1 |
| IC8 | 051-0561-01 | IC (AN6263) | 1 |
| IC4 | 051-0740-00 | IC (TMP42C70N) | 1 |
| X401 | 060-0067-52 | Ceramic resonator | 1 |
| Q407 | 100-1048-00 | Transistor (2SA1048) | 1 |
| Q501 | 100-1315-00 | Transistor (2SA1315) | 1 |
| Q302, 408 | 102-1815-00 | Transistor (2SC1815) | 2 |
| Q405, 414 | 102-2785-00 | Transistor (2SC2785) | 2 |
| Q401, 402 | 102-3112-02 | Transistor (2SC3112) | 2 |
| Q409~412 | 102-3402-00 | Transistor (2SC3402) | 4 |
| Q101, 201 | 103-1504-05 | Transistor (2SD1504) | 2 |
| Q301 | 103-1225-18 | Transistor (2SD1225M) | 1 |
| Q502 | 125-0003-02 | Transistor (RN2202) | 1 |
| Q406, 413 | 125-2003-02 | Transistor (RN1202) | 2 |
| Q403, 404 | 125-2003-06 | Transistor (RN1206) | 2 |

| Ref. No. | Part No. (Order No.) | Description | Q'ty |
|---|---|---|---|
| R506 | 114-1501-11 | Film resistor (1W/15Ω) OM | 1 |
| C401, 402 | 160-1012-05 | Ceramic capacitor (100pF) HD | 2 |
| C101, 102, 201, 202, | 173-1022-10 | Polyester capacitor (1000pF) S | 4 |
| C104, 204 | 173-1032-10 | Polyester capacitor (0.01μF) S | 2 |
| C502, 507 | 173-1042-10 | Polyester capacitor (0.1μF) S | 2 |
| C108, 208 | 173-1831-10 | Polyester capacitor (0.018μF J) S | 2 |
| C414 | 173-2232-10 | Polyester capacitor (0.022μF J) S | 1 |
| C114, 214 | 173-3331-10 | Polyester capacitor (0.033μF J) S | 2 |
| C111, 211 | 173-4721-10 | Polyester capacitor (4700pF J) S | 2 |
| C413 | 173-4732-10 | Polyester capacitor (0.047μF) S | 1 |
| C117, 217 | 173-4712-10 | Polyester capacitor (470pF) S | 2 |
| C508 | 179-1063-32 | Electrolytic capacitor (16V 10μF) S | 1 |
| C304, 306 | 179-1073-22 | Electrolytic capacitor (10V 100μF) S | 1 |
| C301 | 179-2273-22 | Electrolytic capacitor (10V 220μF) S | 1 |
| C501 | 179-4753-62 | Electrolytic capacitor (50V 4.7μF) S | 1 |
| C309, 310, 506 | 179-4763-22 | Electrolytic capacitor (10V 47μF) S | 3 |
| C503 | 179-4773-32 | Electrolytic capacitor (16V 470μF) S | 1 |
| C106, 107, 206, 207, 302 | 182-1053-62 | Electrolytic capacitor (50V 1μF) SS | 5 |
| C113, 213, 290, 303, 308 | 182-1063-32 | Electrolytic capacitor (16V 10μF) SS | 5 |
| C305, | 182-1073-22 | Electrolytic capacitor (10V 100μF) SS | 1 |
| C109, 209 | 182-2243-62 | Electrolytic capacitor (50V 0.22μF) SS | 2 |
| C105, 112, 205, 212 | 182-4753-52 | Electrolytic capacitor (35V 4.7μF) SS | 4 |
| C103, 203 | 182-4763-22 | Electrolytic capacitor (10V 47μF) SS | 2 |
| C407, 409, 410, 411 | 183-1043-62 | Electrolytic capacitor (50V 0.1μF) USS | 4 |
| C115, 116, 215, 216, 404, 405, 406 | 183-1053-62 | Electrolytic capacitor (50V 1μF) USS | 7 |
| C504, 505 | 183-1063-32 | Electrolytic capacitor (16V 10μF) USS | 2 |
| C412 | 183-2243-62 | Electrolytic capacitor (50V 0.22μF) USS | 1 |
| C118, 218 | 183-2253-62 | Electrolytic capacitor (50V 2.2μF) USS | 2 |
| C403, 408 | 183-2263-32 | Electrolytic capacitor (16V 22μF) USS | 2 |
| C307, 311 | 183-3363-22 | Electrolytic capacitor (10V 33μF) USS | 2 |
| C110, 210 | 183-6843-62 | Electrolytic capacitor (50V 0.68μF) USS | 2 |

## <MECHANISM P.W.B.>

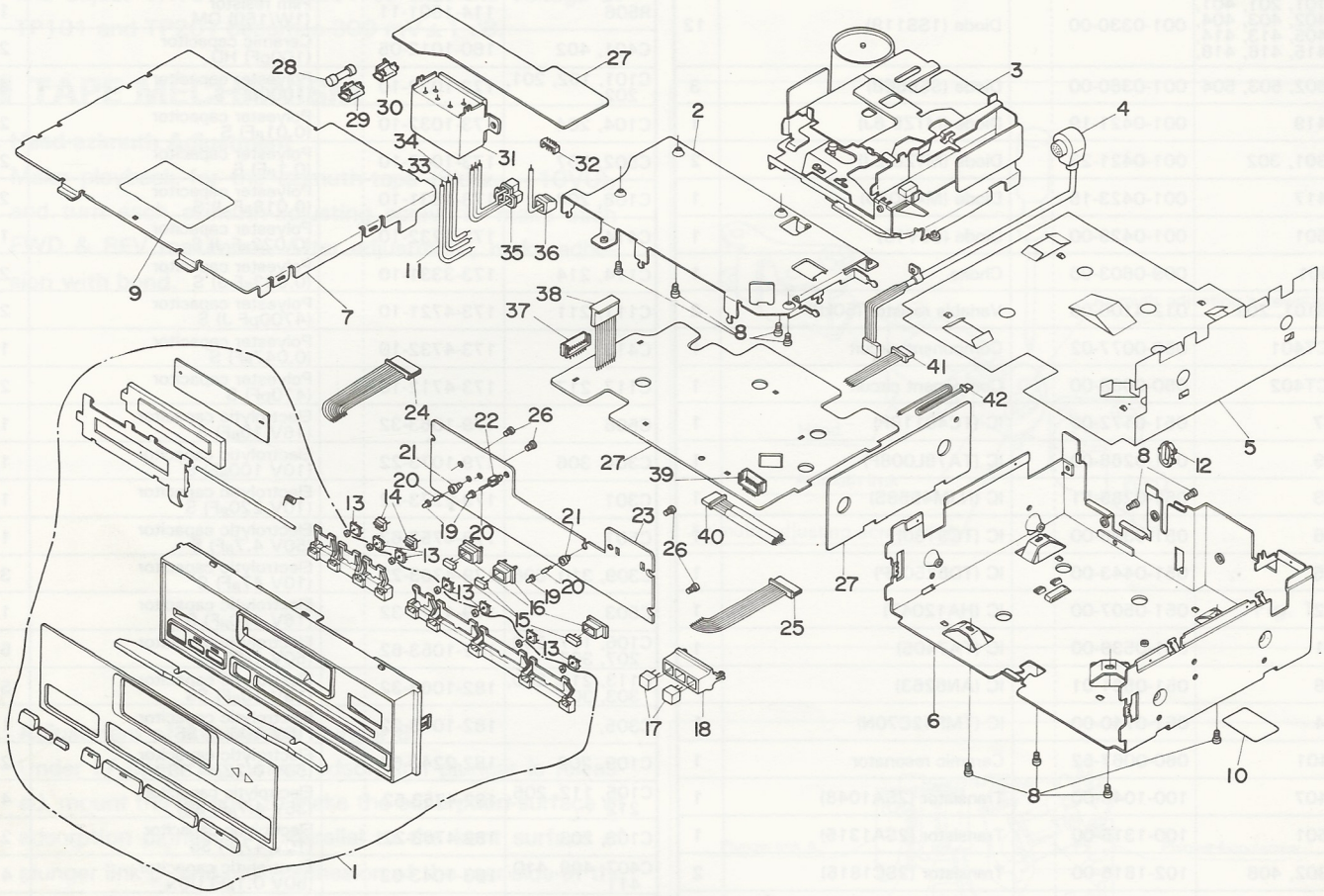
| Ref. No. | Part No. (Order No.) | Description | Q'ty |
|---|---|---|---|
| D601~604 | 001-0330-00 | Diode (1SS119) | 4 |
| Q605 | 100-1048-00 | Transistor (2SA1048) | 1 |
| Q601, 602 | 100-1297-00 | Transistor (2SA1297) | 2 |

| Ref. No. | Part No. (Order No.) | Description | Q'ty |
|---|---|---|---|
| Q603, 604 | 102-3267-50 | Transistor (2SC3267GRBL) | 2 |
| R601 | 114-2291-11 | Film resistor (1W 2.2Ω) OM | 1 |
| C601 | 182-1073-32 | Electrolytic capacitor (16V 100μF) SS | 1 |

Note: OM (Oxidized Metal) SS (Super Small)
S (Small) TC (Temperature - Compensating)
HD (Higher Dielectric) LL (Low Leak)
SC (Semi - Conductor) USS (Ultra Super Small)

# ■ EXPLODED VIEW·PARTS LIST:

## <Main section>

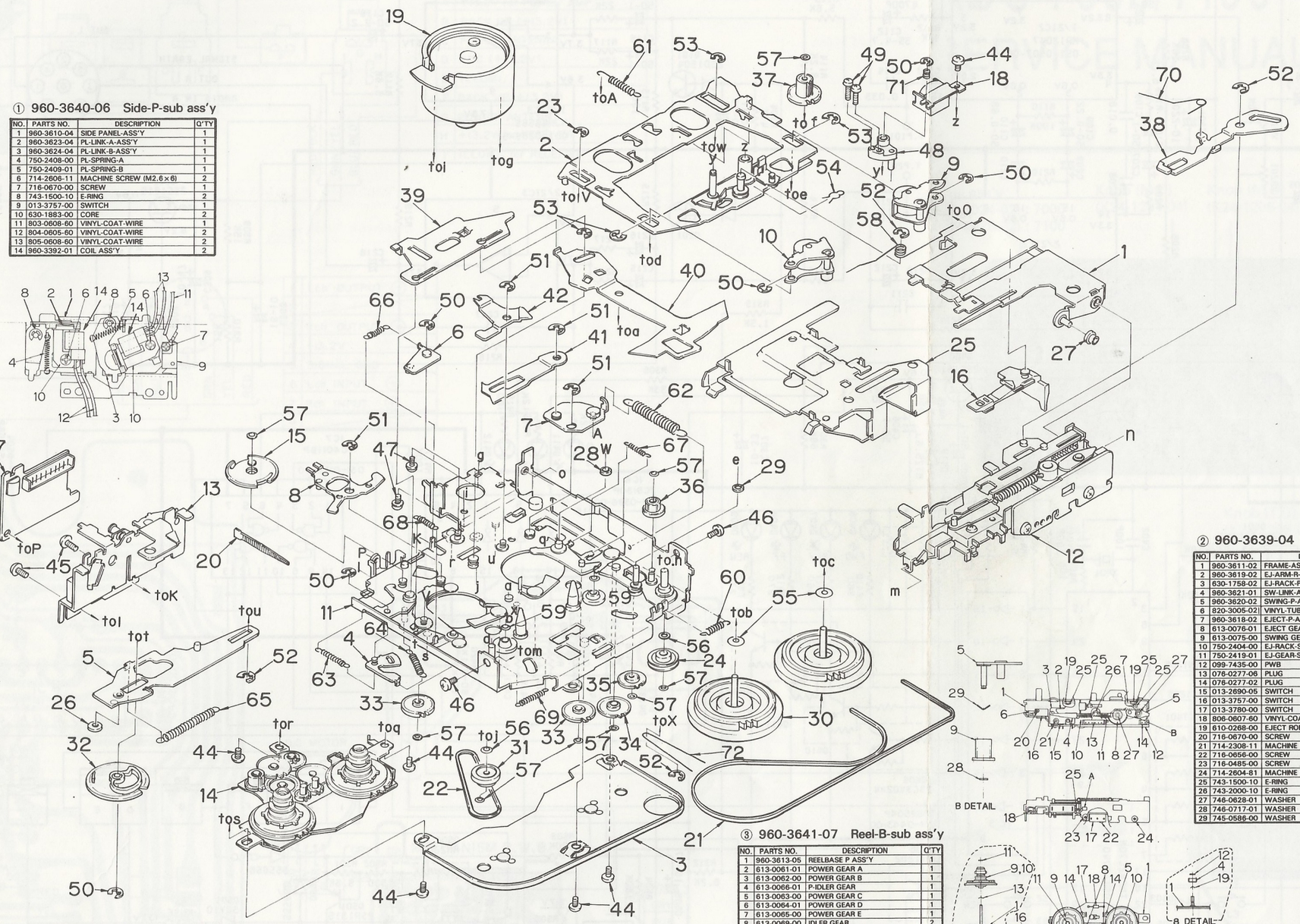



| Ref. No. | Part No. (Order No.) | Description | Q'ty |
|---|---|---|---|
| 1 | 940-0554A | Escutcheon ass'y | 1 |
| 2 | 312-0264-00 | Chassis | 1 |
| 3 | 930-0530-00 | Tape mechanism | 1 |
| 4 | 852-8820-00 | Extension lead | 1 |
| 5 | 347-1954-00 | Insulator | 1 |
| 6 | 311-1216-01 | Lower case | 1 |
| 7 | 310-1253-00 | Upper case | 1 |
| 8 | 714-3005-80 | Machine screw (M3 × 5) | 10 |
| 9 | 290-2909-02 | Label | 1 |
| 10 | 286-5738-00 | Set plate | 1 |
| 11 | 803-0122-03 | Vinyl coat wire | 1 |
| 12 | 335-0580-00 | Lead holder | 1 |
| 13 | 013-3694-01 | Switch | 7 |
| 14 | 001-0358-10 | LED | 2 |
| 15 | 001-0432-00 | LED | 3 |
| 16 | 335-2174-00 | LED holder | 3 |
| 17 | 001-0441-04 | LED | 2 |
| 18 | 335-2169-00 | LED holder | 1 |
| 19 | 345-2830-67 | P.L cap | 3 |
| 20 | 017-0345-09 | Pailot lamp | 3 |
| 21 | 345-4202-00 | P.L holder | 2 |

| Ref. No. | Part No. (Order No.) | Description | Q'ty |
|---|---|---|---|
| 22 | 345-4091-00 | P.L holder | 1 |
| 23 | 099-7575-01 | PWB | 1 |
| 24 | 852-8904-00 | Extension lead | 1 |
| 25 | 852-8286-00 | Extension lead | 1 |
| 26 | 704-2605-11 | Tap screw | 4 |
| 27 | 099-7574-01 | PWB | 1 |
| 28 | 120-0050-02 | Fuse (5A) | 1 |
| 29 | 077-0081-04 | Fuse holder | 1 |
| 30 | 077-0081-05 | Fuse holder | 1 |
| 31 | 074-0780-00 | Outlet socket | 1 |
| 32 | 076-0276-06 | Plug | 1 |
| 33 | 801-0118-03 | Vinyl coat wire | 1 |
| 34 | 802-0118-03 | Vinyl coat wire | 1 |
| 35 | 852-8607-00 | Extension lead | 1 |
| 36 | 852-8605-00 | Extension lead | 1 |
| 37 | 076-0276-10 | Plug | 1 |
| 38 | 852-8194-00 | Extension lead | 1 |
| 39 | 076-0277-08 | Plug | 1 |
| 40 | 852-8903-00 | Extension lead | 1 |
| 41 | 852-8902-02 | Extension lead | 1 |
| 42 | 852-8901-00 | Extension lead | 1 |

# ■ EXPLODED VIEW·PARTS LIST:

## <Mechanism section>




① 960-3640-06 Side-P-sub ass'y

| NO. | PARTS NO. | DESCRIPTION | Q'TY |
|---|---|---|---|
| 1 | 960-3610-04 | SIDE PANEL-ASS'Y | 1 |
| 2 | 960-3623-04 | PL-LINK-A-ASS'Y | 1 |
| 3 | 960-3624-04 | PL-LINK-B-ASS'Y | 1 |
| 4 | 750-2408-00 | PL-SPRING-A | 1 |
| 5 | 750-2409-01 | PL-SPRING-B | 1 |
| 6 | 714-2606-11 | MACHINE SCREW (M2.6×6) | 2 |
| 7 | 716-0670-00 | SCREW | 1 |
| 8 | 743-1500-10 | E-RING | 2 |
| 9 | 013-3757-00 | SWITCH | 1 |
| 10 | 630-1883-00 | CORE | 2 |
| 11 | 803-0608-60 | VINYL-COAT-WIRE | 1 |
| 12 | 804-0605-60 | VINYL-COAT-WIRE | 2 |
| 13 | 805-0608-60 | VINYL-COAT-WIRE | 2 |
| 14 | 960-3392-01 | COIL ASS'Y | 2 |

② 960-3639-04 Frame-sub-ass'y

| NO. | PARTS NO. | DESCRIPTION | Q'TY |
|---|---|---|---|
| 1 | 960-3611-02 | FRAME-ASS'Y | 1 |
| 2 | 960-3619-02 | EJ-ARM-R-ASS'Y | 1 |
| 3 | 630-1758-02 | EJ-RACK-PLATE | 1 |
| 4 | 960-3621-01 | SW-LINK-ASS'Y | 1 |
| 5 | 960-3620-02 | SWING-P-ASS'Y | 1 |
| 6 | 820-3005-02 | VINYL-TUBE | 1 |
| 7 | 960-3618-02 | EJECT-P-ASS'Y | 1 |
| 8 | 613-0076-01 | EJECT GEAR | 1 |
| 9 | 613-0075-00 | SWING GEAR | 1 |
| 10 | 750-2404-00 | EJ-RACK-SPRING | 1 |
| 11 | 750-2419-01 | EJ-GEAR-SPRING | 1 |
| 12 | 099-7435-00 | PWB | 1 |
| 13 | 076-0277-06 | PLUG | 1 |
| 14 | 076-0277-02 | PLUG | 1 |
| 15 | 013-2690-05 | SWITCH | 1 |
| 16 | 013-3757-00 | SWITCH | 1 |
| 17 | 013-3780-00 | SWITCH | 1 |
| 18 | 806-0607-60 | VINYL-COAT-WIRE | 1 |
| 19 | 610-0268-00 | EJECT ROLLER | 2 |
| 20 | 716-0670-00 | SCREW | 1 |
| 21 | 714-2308-11 | MACHINE SCREW (M2.3×8) | 1 |
| 22 | 716-0656-00 | SCREW | 1 |
| 23 | 716-0485-00 | SCREW | 1 |
| 24 | 714-2604-81 | MACHINE SCREW (M2.6×4) | 1 |
| 25 | 743-1500-10 | E-RING | 5 |
| 26 | 743-2000-10 | E-RING | 1 |
| 27 | 746-0628-01 | WASHER | 2 |
| 28 | 746-0717-01 | WASHER | 1 |
| 29 | 745-0586-00 | WASHER | 1 |

③ 960-3641-07 Reel-B-sub ass'y

| NO. | PARTS NO. | DESCRIPTION | Q'TY |
|---|---|---|---|
| 1 | 960-3613-05 | REELBASE P ASS'Y | 1 |
| 2 | 613-0061-01 | POWER GEAR A | 1 |
| 3 | 613-0062-00 | POWER GEAR B | 1 |
| 4 | 613-0066-01 | P-IDLER GEAR | 1 |
| 5 | 613-0063-00 | POWER GEAR C | 1 |
| 6 | 613-0064-01 | POWER GEAR D | 1 |
| 7 | 613-0065-00 | POWER GEAR E | 1 |
| 8 | 613-0069-00 | IDLER GEAR | 2 |
| 9 | 960-3634-02 | REELBASE-F-ASS'Y | 1 |
| 10 | 960-3635-02 | REELBASE-R-ASS'Y | 1 |
| 11 | 746-0628-01 | WASHER | 7 |
| 12 | 746-0717-01 | WASHER | 3 |
| 13 | 746-0712-01 | WASHER | 2 |
| 14 | 013-3707-00 | SWITCH | 2 |
| 15 | 802-0614-60 | VINYL-COAT-WIRE | 1 |
| 16 | 801-0614-60 | VINYL-COAT-WIRE | 1 |
| 17 | 099-7216-02 | PWB | 1 |
| 18 | 111-1021-91 | FILM RESISTOR (1/4Wss 1kΩ) | 1 |
| 19 | 745-0678-01 | WASHER | 3 |

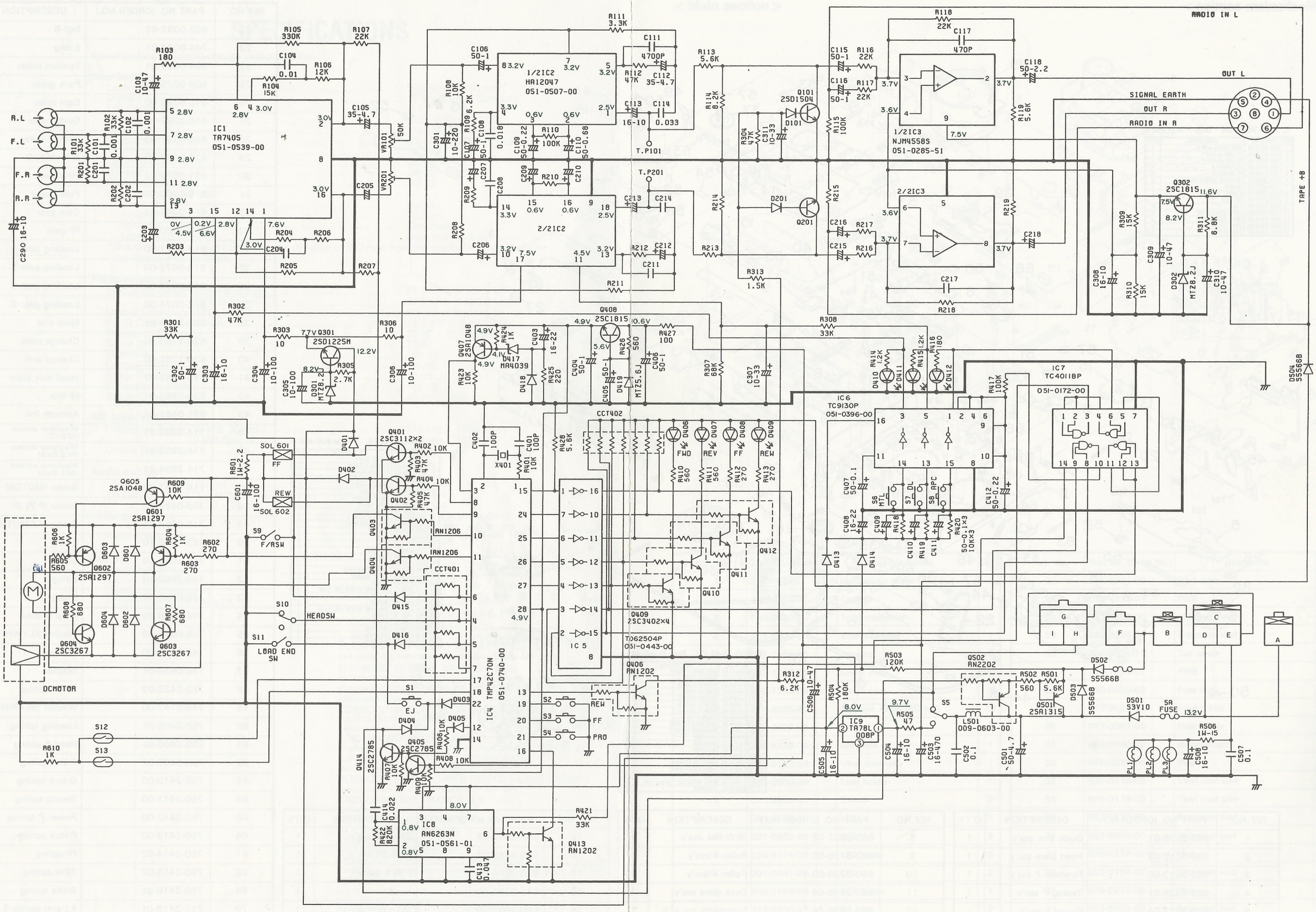
| REF.NO. | PART NO. (ORDER NO.) | DESCRIPTION | Q'TY |
|---|---|---|---|
| 1 | 960-3609-01 | Guide arm ass'y | 1 |
| 2 | 960-3612-03 | Head plate ass'y | 1 |
| 3 | 960-3617-00 | Flywheel-P ass'y | 1 |
| 4 | 960-3626-01 | Timing-P ass'y | 1 |
| 5 | 960-3627-03 | Power-P ass'y | 1 |
| 6 | 960-3628-01 | P-lock-P ass'y | 1 |
| 7 | 960-3631-02 | Power link ass'y | 1 |

| REF.NO. | PART NO. (ORDER NO.) | DESCRIPTION | Q'TY |
|---|---|---|---|
| 8 | 960-3632-02 | REW-link ass'y | 1 |
| 9 | 960-3738-00 | Roller-F ass'y | 1 |
| 10 | 960-3739-00 | Roller-R ass'y | 1 |
| 11 | 960-3638-04 | Deck plate ass'y | 1 |
| 12 | 960-3639-04 | Frame-sub ass'y ② | 1 |
| 13 | 960-3640-06 | Side-P-sub ass'y ① | 1 |
| 14 | 960-3641-07 | Reel-B-sub ass'y ③ | 1 |

| REF.NO. | PART NO. (ORDER NO.) | DESCRIPTION | Q'TY |
|---|---|---|---|
| 15 | 960-3642-03 | CH-gear ass'y | 1 |
| 16 | 960-3643-02 | Pack-ST ass'y | 1 |
| 17 | 990-0614-00 | P.W.B ass'y | 1 |
| 18 | 011-0291-00 | Head | 1 |
| 19 | SMA-105-100 | DC motor ass'y | 1 |
| 20 | 335-0833-01 | Lead holder | 1 |
| 21 | 602-0091-01 | Belt-A | 1 |

| REF.NO. | PART NO. (ORDER NO.) | DESCRIPTION | Q'TY |
|---|---|---|---|
| 22 | 602-0092-02 | Belt-B | 1 |
| 23 | 744-0024-01 | E-ring | 1 |
| 24 | 604-0029-01 | Tension pulley | 1 |
| 25 | 606-0079-04 | Pack guide | 1 |
| 26 | 610-0266-00 | Cam roller | 1 |
| 27 | 610-0267-00 | Guide roller | 1 |
| 28 | 610-0281-00 | Head-P-roller | 1 |
| 29 | 610-0282-00 | H-P-roller B | 1 |
| 30 | 611-0072-02 | Flywheel | 2 |
| 31 | 613-0060-00 | Pulley gear | 1 |
| 32 | 613-0067-03 | Cam gear | 1 |
| 33 | 613-0070-00 | FF-gear | 2 |
| 34 | 613-0071-00 | Loading gear-A | 1 |
| 35 | 613-0072-00 | Loading gear-B | 1 |
| 36 | 613-0073-00 | Loading gear-C | 1 |
| 37 | 613-0074-00 | Loading gear-D | 1 |
| 38 | 630-1759-02 | Eject arm | 1 |
| 39 | 630-1760-02 | Change plate | 1 |
| 40 | 630-1761-00 | Change arm | 1 |
| 41 | 630-1762-02 | Head lock plate | 1 |
| 42 | 630-1763-01 | FF-link | 1 |
| 43 | 631-0461-01 | Azimuth link | 1 |
| 44 | 714-2003-81 | Machine screw (M2x3) | 6 |
| 45 | 714-2603-81 | Machine screw (M2.6x3) | 2 |
| 46 | 714-2604-81 | Machine screw (M2.6x4) | 2 |
| 47 | 716-0347-00 | Screw (MOTOR) | 2 |
| 48 | 716-0485-00 | Screw (P.W.B) | 1 |
| 49 | 716-0654-01 | Screw (AZIMUTH) | 2 |
| 50 | 743-1500-10 | E-ring | 6 |
| 51 | 743-2000-10 | E-ring | 4 |
| 52 | 743-2500-10 | E-ring | 4 |
| 53 | 744-0031-10 | E-ring | 4 |
| 54 | 744-0028-00 | Snap retainer | 1 |
| 55 | 745-0646-00 | Washer (FLYWHEEL) | 2 |
| 56 | 746-0624-00 | Washer | 2 |
| 57 | 746-0628-01 | Washer | 9 |
| 58 | 750-2422-03 | Roller spring | 1 |
| 59 | 746-0747-00 | Washer (BEARING) | 2 |
| 60 | 750-2405-01 | Loading spring | 1 |
| 61 | 750-2406-03 | Head-P-spring | 1 |
| 62 | 750-2407-02 | P-link spring | 1 |
| 63 | 750-2410-00 | G-lock spring | 1 |
| 64 | 750-2411-00 | Timing spring | 1 |
| 65 | 750-2412-00 | Power-P-spring | 1 |
| 66 | 750-2413-00 | P-lock spring | 1 |
| 67 | 750-2414-02 | FF-spring | 1 |
| 68 | 750-2415-01 | REW-spring | 1 |
| 69 | 750-2416-01 | Brake spring | 1 |
| 70 | 750-2418-01 | EJ-arm spring-B | 1 |
| 71 | 750-2420-00 | Azimuth spring | 1 |
| 72 | 750-2421-00 | Change-A-spring | 1 |

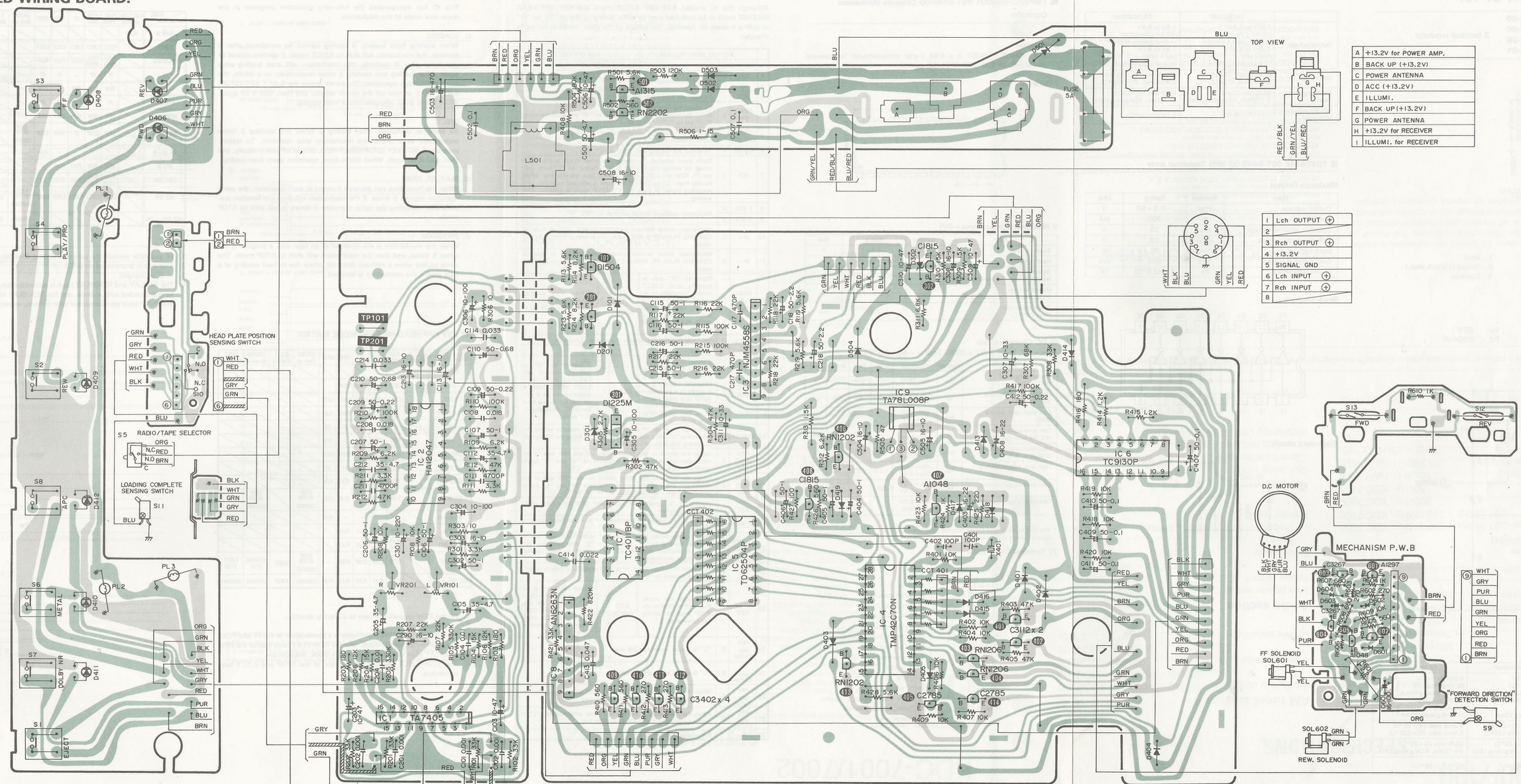
# ■ CIRCUIT DIAGRAM






PT-8052C

## ■ PRINTED WIRING BOARD:

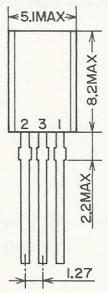


# ■ EXPLANATION OF IC:

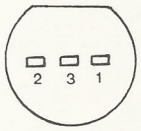
## ■ TA78L005AP 051-0352-00
## 006P 051-0296-00
## 008P 051-0266-00
## 008AP 051-0266-01

**3 terminal regulator**

### Outward Form




### Terminal structure

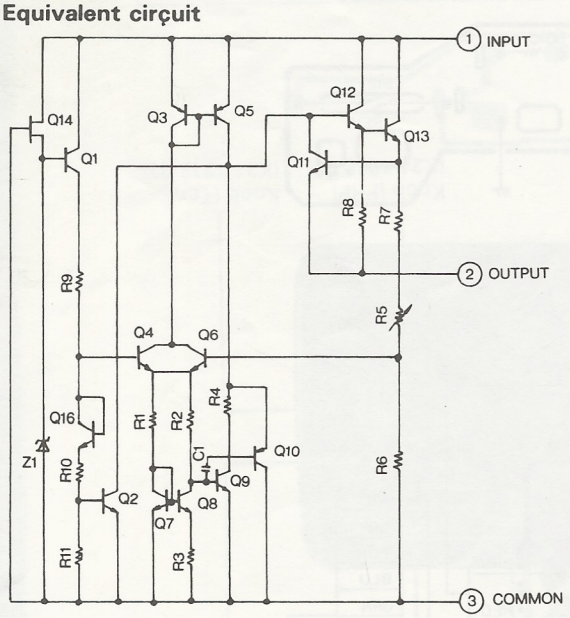



1. Input
2. Output (150mA max.)
3. Common

### Maximum Ratings

| | | |
|---|---|---|
| Input voltage | VIN | 35V |
| Power dissipation | Pd | 800mW |

### Equivalent cirçuit




### Electrical Characteristics

| | TA78L005AP | TA78L006P |
|---|---|---|
| Output voltage | 4.75V to 5.25V (7.0V≦Vin≦20V, 1.0mA≦Iout≦40mA) 4.75V to 5.25V (Vin=10V, 1.0mA≦Iout≦70mA) | 5.52V to 6.48V (8.1V≦Vin≦21V, 1.0mA≦Iout≦40mA) 5.52V to 6.48V (Vin=11V, 1.0mA≦Iout≦70mA) |
| Bias current | 6.0mA max. (Tj=25°C) 5.5mA max. (Tj=125°C) | 6.0mA max. (Tj=25°C) 5.5mA max. (Tj=125°C) |
| Ripple regulating factor | 41dB min. (Tj=25°C) (f=120Hz, 8.0V≦Vin≦18V) | 38dB min. (Tj=25°C) (f=120Hz, 9.0V≦Vin≦19V) |
| Min I/O voltage difference | 1.7V (Tj=25°C) | 1.7V (Tj=25°C) |

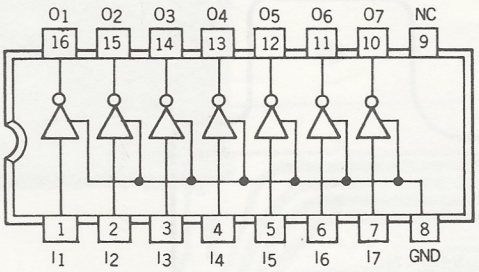
| | TA78L008P | TA78L008AP |
|---|---|---|
| Output voltage | 7.36V to 8.64V (10.5V≦Vin≦23V, 1.0mA≦Iout≦40mA) 7.36V to 8.64V (Vin=14V, 1.0mA≦Iout≦70mA) | 7.6V to 8.4V (10.5V≦Vin≦23V, 1.0mA≦Iout≦40mA) 7.6V to 8.4V (Vin=14V, 1.0mA≦Iout≦70mA) |
| Bias current | 6.5mA max. (Tj=25°C) 6.0mA max. (Tj=125°C) | 6.5mA max. (Tj=25°C) 6.0mA max. (Tj=125°C) |
| Ripple regulating factor | 36dB min. (Tj=25°C) (f=120Hz, 12V≦Vin≦23V) | 37dB min. (Tj=25°C) (f=120Hz, 12V≦vin≦23V) |
| Min I/O voltage difference | 1.7V (Tj=25°C) | 1.7V (Tj=25°C) |

## ■ TD62504P 051-0443-00 NPN Transistor array

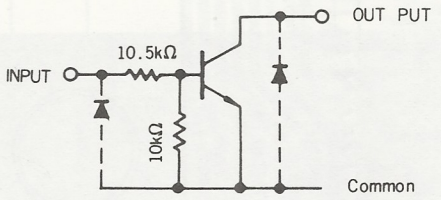
### Maximum Ratings

| Item | Symbol | Rating | Unit |
|---|---|---|---|
| Output voltage | VCER | −0.5~50 | V |
| Collector current | Ic | 200 | mA |
| Collector -emitter voltage | Vceo | 35 | V |
| Collector-base voltage | VCBO | 50 | V |
| Input voltage | VIN | 30 | V |
| GND terminal current | IGND | 500 | mA |
| Power dissipation | PD | 1.0 (2.5°C) | W |

### Block Diagram




### Equivalent circuit

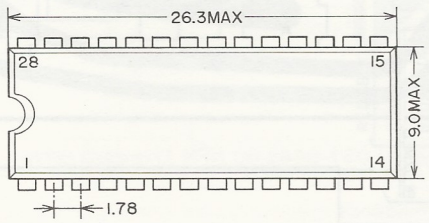


## ■ TMP42C70N8001 051-0740-00 Cassette Mechanism Controller

### Description

The TMP42C70N8001 is a 4-bit 1-chip microcomputer for cassette mechanism 4F-700 (930-0530-XX) control.

### I Outward Form




### II Maximum Ratings (Vss = 0V)

| Item | Symbol | Rating | Unit |
|---|---|---|---|
| Supply voltage | $V_{DD}$ | −0.5 ~ 7 | V |
| Input voltage | $V_{IN}$ | −0.5 ~ $V_{DD}$ + 0.5 | V |
| Output voltage (except open drain terminal) | $V_{OUT1}$ | −0.5 ~ $V_{DD}$ + 0.5 | V |
| Output voltage (Nch open drain terminal P3, P4) | $V_{OUT2}$ | −0.5 ~ 12 | V |
| Power dissipation (Topr = 85°C) | $P_D$ | 300 | mA |

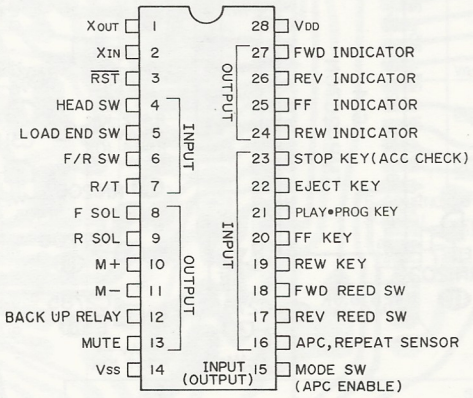
### III DC Characteristics

**(Vss = 0V, $V_{DD}$ = 5.0V ± 20%, Topr = −40 ~ 85°C)**

| Item | Symbol | Condition | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|
| Hysteresis voltage (RST input) | $V_{HS}$ | Ta = 25°C | — | 0.3 | — | V |
| High level input current (P0, P1, P2) | $I_{IH}$ | $V_{DD}$ = 6.0V, $V_{IN}$ = 6.0V | 20 | 40 | 100 | μA |
| Low level input current (RST) | $I_{IN1}$ | $V_{DD}$ = 5.0V, $V_{IN}$ = 0V | — | −30 | −100 | μA |
| Low level input current (P3, P4 with pull up) | $I_{IL}$ | $V_{DD}$ = 6.0V, $V_{IN}$ = 0.6V | — | −30 | −100 | μA |
| High level output voltage (CMOS output) | $V_{OH}$ | $V_{DD}$ = 5.0V, $I_{OH}$ = −5μA | 4.7 | 4.9 | — | V |
| High level output current | $I_{OH}$ | $V_{DD}$ = 4.0V, $V_{OH}$ = 2.4V | −1.0 | −2.5 | — | mA |
| Low level output current | $I_{OL}$ | $V_{DD}$ = 4.0V, $V_{OL}$ = 0.4V | 1.6 | 3 | — | mA |
| Operating supply current * | $I_{DDO}$ | $V_{DD}$ = 6.0V, f = 2MHz | — | 0.8 | 3 | mA |

* The $\overline{RST}$ terminal is of 0V by external clock action.
Supply current with Xout and ports opened.

### IV Terminal Connection




### V Terminal Function Table

Although this IC enables KEY OFF EJECT mode and KEY OFF HEAD RELEASE mode to be switched over by either pulling up the pin (15) to "H" or pulling it down (or opening), the actions of the other terminals are partly changed.

| | KEY OFF HEAD RELEASE | | | KEY OFF EJECT | | |
|---|---|---|---|---|---|---|
| No. | Terminal | I/O | Function | Terminal | I/O | Function |
| 1 | $X_{OUT}$ | O | Ceramic resonators terminal. | | | |
| 2 | $X_{IN}$ | I | | | | |
| 3 | $\overline{RST}$ | I | To reset the microcomputer when "L" is input. | | | |
| 4 | HEAD SW | I | To detect the head's position. When the mode PLAY, FF or REW set to "H" and when the mode STOP set to "L". | | | |
| 5 | LOAD END SW | I | To judge the loading is complete when "L" is input. Other operations → "H". | | | |
| 6 | F/R SW | I | To detect the running way. FWD → "L", REV → "H". | | | |
| 7 | R/T | I | Radio input terminal. To change the mode PLAY to the STOP mode by setting this terminal to "L". During the "L" level, only the FF, REW and EJECT (STOP·EJECT) keys are effective. When turning from "L" to "H", PLAY mode is effected regardless of a preceding mode. In case of "L", STOP mode is effected after loading. | | | |
| 8 | F SOL | O | Mechanism solenoid control terminal. ACTIVE "H". | | | |
| 9 | R SOL | O | | | | |
| 10 | M+ | O | Mechanism motor forward rotation terminal. "H" in case of LOADING, PLAY, FF or REW mode. "L" in case of STOP or EJECT mode. | | | |
| 11 | M− | O | Mechanism motor reverse rotation terminal. "L" in case of LOADING, PLAY, FF, REW or STOP mode. "H" in case of EJECT mode. | | | |
| 12 | BACK UP RELAY | O | Turns to "H" only in loading and EJECT mode. Completes to an end by backup even if Acc is turned of half way. "L" in case of STOP, PLAY, FF or REW mode. | BACK UP RELAY | O | When the mode, LOADING, STOP, PLAY, FF or REW set to "H". |
| 13 | MUTE | O | "H" only in stable operation in PLAY mode. Otherwise, "L". | | | |
| 14 | VSS | | Ground | | | |
| 15 | APC ENABLE | O | If turned to "L" in resetting, the IC will become KEY OFF HEAD RELEASE MODE. Then it works as a permission signal to a head search IC, becoming OUTPUT mode. "H" only in FF or REW mode. | MODE | I | If turned to "H" in resetting, the IC will become KEY OFF EJECT MODE. Then, it doesn't work as a permission signal to a head search IC, becoming INPUT mode. |
| 16 | APC, REPEAT SENSOR | I | To change the mode, FF or REW to the PLAY mode by setting this terminal to "L". And to change the mode, PLAY to the REW mode by setting this terminal to "L". | | | |
| 17 | REV REED SW | I | Inputs the status of the READ switch on the REV side of the mechanism and detects a tape end. Repeats "H" and "L" during operation. Tape end: Fixed either to "H" or "L". | | | |
| 18 | FWD REED SW | I | Inputs the status of the READ switch on the FWD side of the mechanism and detects a tape end. Repeats "H" and "L" during operation. Tape end: Fixed either to "H" or "L". | | | |
| 19 | REW KEY | I | Turning to "L" makes the mechanism REW to a play mode operating direction. | | | |
| 20 | FF KEY | I | Turning to "L" makes the mechanism FF to a play mode operating direction. | | | |
| 21 | PLAY• PROG KEY | I | To change the mode, STOP, FF or REW to the PLAY mode by setting this terminal to "L". If turned to "L" after selecting "H" again, a playback direction will be changed to the opposite, operating as programmed. | | | |
| 22 | EJECT KEY | I | To change the mode, STOP, FF or REW to the EJECT mode by setting this terminal to "L". | | | |
| 23 | STOP KEY | I | To change the mode, PLAY, FF or REW to the STOP mode by setting this terminal to "L". | ACC CHECK | I | Inputs the status of the ACC line, and judged "L" as ACC ON and "H" as ACC OFF. Shifts to EJECT mode when "H" continues for 0.16 second. |
| 24 | REW INDICATOR | O | "L" is output when the REW mode. | | | |
| 25 | FF INDICATOR | O | "L" is output when the FF mode. | | | |
| 26 | REV INDICATOR | O | When the mechanism is set to REV mode while playing, "L" is output by pressing the PLAY, FF or REW key. | | | |
| 27 | FWD INDICATOR | O | When the mechanism is set to FWD mode while playing, "L" is output by pressing the PLAY, FF or REW key. | | | |
| 28 | $V_{DD}$ | | Power supply terminal. | | | |

## VI Mechanism Protective Programs

This IC has incorporated the following protective programs in the respective mode of the mechanism.

a) LOADING

When starting from loading, if loading cannot be completed after 3 seconds, the mechanism will shift to EJECT mode. If ejection cannot be completed after 3 seconds, the mechanism will start loading once again. After loading and ejecting 3 times respectively as a whole, the mechanism stops operation. To restart, press the EJECT KEY (STOP/EJECT KEY), or turn off the power supply, and then, turn it on again. When this is done, operation starts from loading.

b) EJECT

As same as LOADING, after loading 2 times and ejecting 3 times respectively as a whole, the mechanism stop operation. To restart, press the EJECT KEY (STOP/EJECT KEY), or turn off power supply, and then, turn it on again. When this is done, operation starts from loading.

c) PLAY, FF, REW

When the head does not advance forward in each operation, the same operation repeats 5 times. If the mechanism still does not function properly after repeating the same operation 5 times, it will shift to STOP mode.

d) PROGRAM

When the mechanism is not reversed at an tape end, a program is excuted 5 times, and then the mechanism will shift to STOP mode. The same applies when a reelbase does not rotate due to hard winding of a tape even if the mechanism is reversed.

## VII KEY OFF HEAD RELEASE MODE MATRIX

| MODE / OPERATION | EJECT (No cassette) | PLAY (FWD) | PLAY (REV) | FF | REW | STOP | LOADING (Back up) | EJECT (Back up) | LOADING (No back up) | EJECT (No back up) |
|---|---|---|---|---|---|---|---|---|---|---|
| PACK IN | PLAY | | | | | | | | | |
| STOP | | STOP | STOP | STOP | STOP | – | | | | |
| EJECT | | EJECT | EJECT | EJECT | EJECT | EJECT | | | | |
| PLAY/PROG | | PLAY (REV) | PLAY (FWD) | PLAY | PLAY | PLAY | | | | |
| FF | | FF | FF | – | FF | FF | | | | |
| REW | | REW | REW | REW | – | REW | | | | |
| (STOP/EJECT) | | STOP | STOP | STOP | STOP | EJECT | | | | |
| (FF/PLAY) | | FF | FF | PLAY | FF | FF | | | | |
| (REW/PLAY) | | REW | REW | REW | PLAY | REW | | | | |
| R/T (H→L) | | STOP | STOP | FF | REW | STOP | STOP AFTER LOADING | | STOP AFTER LOADING | |
| R/T (L→H) | | | | – | – | PLAY | | | | |
| APC IN | | REW | REW | PLAY | PLAY | | | | | |
| TAPE END | | PLAY (REV) | PLAY (FWD) | PLAY | PLAY | | | | | |
| ACC OFF | | STOP | STOP | STOP | STOP | – | STOP AFTER LOADING | EJECT | LOADING STOP | EJECT STOP |
| ACC OFF → ON | | PLAY | PLAY | PLAY | PLAY | PLAY | LOADING | EJECT | LOADING | LOADING |

1. FF and REW rewinds the tape to a playing direction.
2. — is unchanged.
3. The FF/PLAY and REW/PLAY keys is a combination of the FF and PLAY keys connected with a diode, and the REW/PLAY keys that of the REW and PLAY keys also connected with a diode, respectively.
4. The STOP/EJECT key is a combination of the STOP and EJECT keys connected.

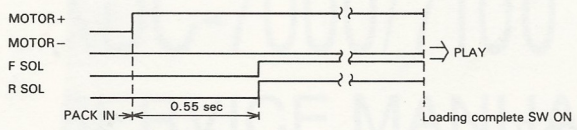
## VIII KEY OFF EJECT MODE MATRIX

| MODE / OPERATION | EJECT (No cassette) | PLAY (FWD) | PLAY (REV) | FF | REW | STOP | LOADING (Back up) | EJECT (Back up) |
|---|---|---|---|---|---|---|---|---|
| PACK IN | PLAY | | | | | | | |
| EJECT | | EJECT | EJECT | EJECT | EJECT | EJECT | | |
| PLAY/PROG | | PLAY (REV) | PLAY (FWD) | PLAY | PLAY | PLAY | | |
| FF | | FF | FF | – | FF | FF | | |
| REW | | REW | REW | REW | – | REW | | |
| (FF/PLAY) | | FF | FF | PLAY | FF | FF | | |
| (REW/PLAY) | | REW | REW | REW | PLAY | REW | | |
| R/T (H→L) | | STOP | STOP | FF | REW | STOP | STOP AFTER LOADING | |
| R/T (L→H) | | | | – | – | PLAY | | |
| APC IN | | REW | REW | PLAY | PLAY | | | |
| TAPE END | | PLAY (REV) | PLAY (FWD) | PLAY | PLAY | | | |
| ACC OFF | | EJECT | EJECT | EJECT | EJECT | EJECT | EJECT AFTER LOADING | EJECT |
| ACC OFF → ON | | | | | | | LOADING | EJECT |

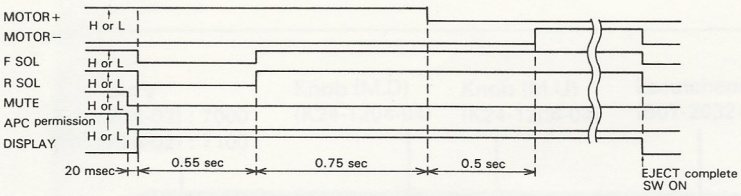
1. FF and REW rewinds the tape to a playing direction.
2. This matrix is premised on BACK UP.
3. — is unchanged.
4. The FF/PLAY and REW/PLAY keys is a combination of the FF and PLAY keys connected with a diode, and the REW/PLAY keys that of the REW and PLAY keys also connected with a diode, respectively.

# IX Timing Chart

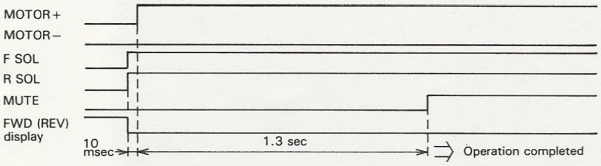
### 1. LOADING



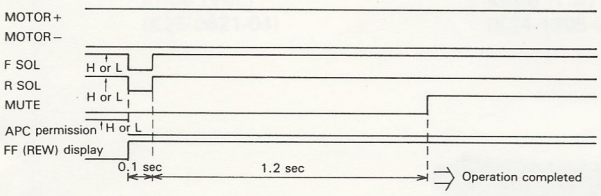

### 2. STOP, PLAY, FF, REW → EJECT



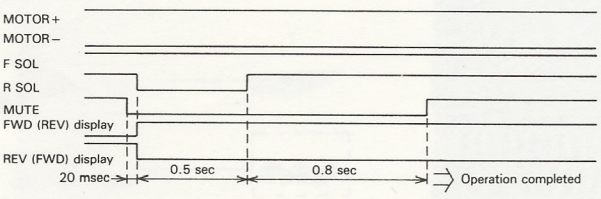

### 3. STOP → PLAY



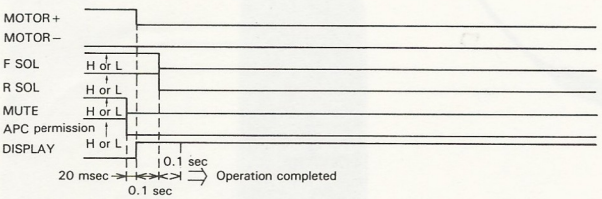

### 4. LOADING, FF, REW → PLAY



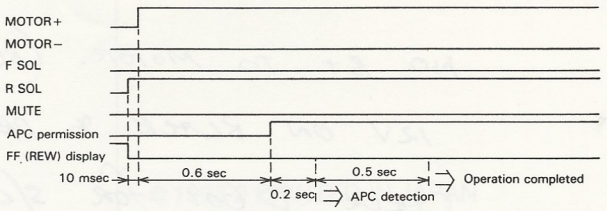

### 5. PROGRAM, FWD → REV (REV → FWD)



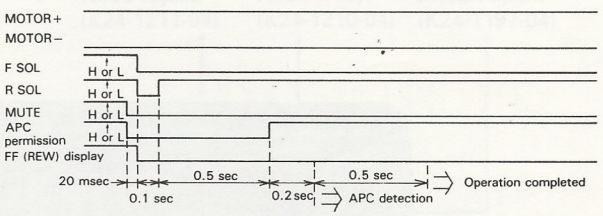

### 6. PLAY, FF, REW → STOP



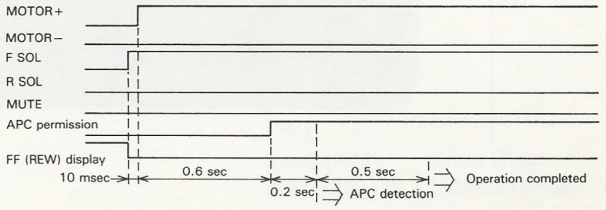

### 7. STOP → FWD·FF (REV·REW)



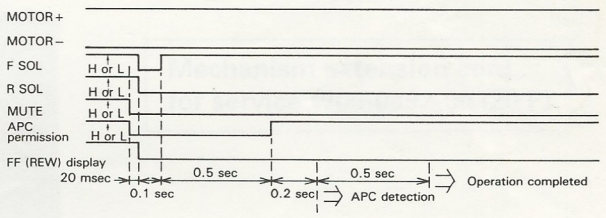

### 8. PLAY, REV·FF, FWD·REW → FWD·FF (REV·REW)




### 9. STOP → REV·FF (FWD·REW)




### 10. PLAY, FWD·FF, REV·REW → REV·FF (FWD·REW)




- FF and REW rewinds the tape to a playing direction.
- Each output is a logic from a control IC. MUTE shall be cancelled at "H".
- A return to PLAY mode by a head search shall be after "APC detection".
- In each operation mode, key operation shall be ignored until operation is completed.

NO B+ TO MOTOR. (BLUE LEAD)

12V ON BLACK & DRAWS CURRENT.

CHECK D601 FOR S/C.



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