Car Stereo cassette player 02AC180A

Service
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Service Manual

12 V

SPECIFICATIONS

NUMBER OF TRACKS	–	4 Track – 2 Channels
TAPE CARTRIDGE	–	Stereo/Monoural Compact Cassette
TAPE SPEED	–	4.75 cm/sec.
POWER OUTPUT	–	3.5 Watts min. RMS (at T.H.D. = 10%) per Channel
SPEAKER IMPEDANCE	–	4 ohms per Channel
POWER INPUT	–	12V Negative to Earth
CURRENT	–	Approx. 0.55 amp (at 0.5 Watt Output)
SEMI-CONDUCTORS	–	3 ICS 2 Transistors 4 Diodes

THE MICRO REED SWITCH

Micro reed switches basically consist of 2 reed pieces sealed inside a glass tube as shown in Fig. 1a. Magnetism is induced in the 2 reed pieces (N and S polarities) by the permanent magnet shown in Figs 1b and 1c.

When the magnetic attractive force exceeds the reed elasticity, the reed tips make contact with each other, thereby closing the circuit. When the magnetic field strength is reduced again, the reed tips spring back to their former positions, thereby opening the circuit.

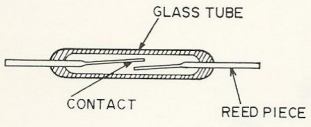


Fig. 1a Basic Structure of the Micro Reed Switch

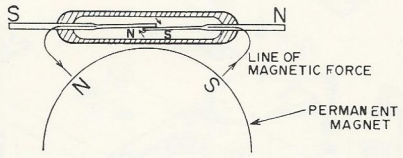


Fig 1b Switched ON Status

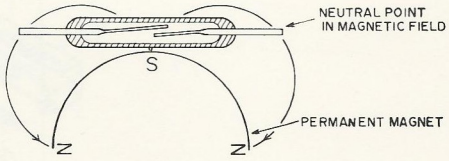


Fig. 1c Switched OFF Status

CASSETTE HOLDING & TAPE END DETECTOR CIRCUITS

Cassette holding in the AC180 is effected by using the electrical circuits described below in place of the conventional mechanical methods.

1. Cassette Holding Lock

a) The cassette holding mechanism is operated by the solenoid E1 which is controlled by Q1 and Q2.

b) The power switch is turned on by inserting the cassette tape. Because of the C30 charging current, a voltage is applied via R17 to the base of Q2 thereby turning Q2 ON.

c) This causes Q1 to be turned on and a current to flow through the solenoid E1, thus operating the cassette holding mechanism.

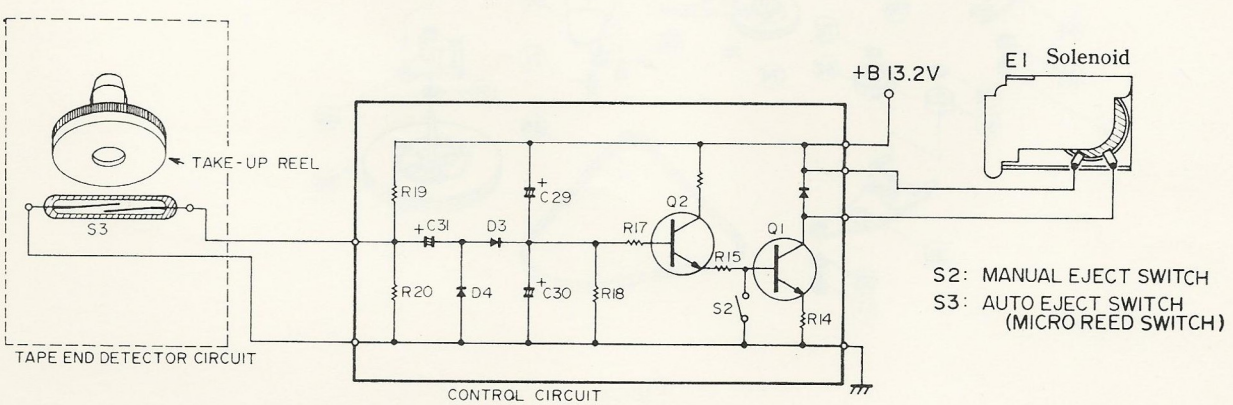
2. Tape End Detector Circuit

a) During the play mode, the magnet on the rotating take up reel causes the reed switch to constantly open and close, thus generating a O.V. to 6.V. square wave which is applied across R20. This square wave is passed via C31 to charge up C30 thereby supplying bias to Q2 for the play mode to be continued.

b) When the take up reel stops at the end of the tape, the reed switch stops operating and remains in either the ON or the OFF position.

c) The input signal across R20 is now stopped and the C30 bias voltage discharged via R18. With this drop in bias voltage, Q2 is de-activated and the current to E1 is switched OFF. The holding lock is released, the cassette tape ejected and the power to the unit switched OFF.

d) The cassette tape is ejected about 2 or 3 seconds after the take up reel stops.



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CASSETTE DECK EXPLODED VIEW

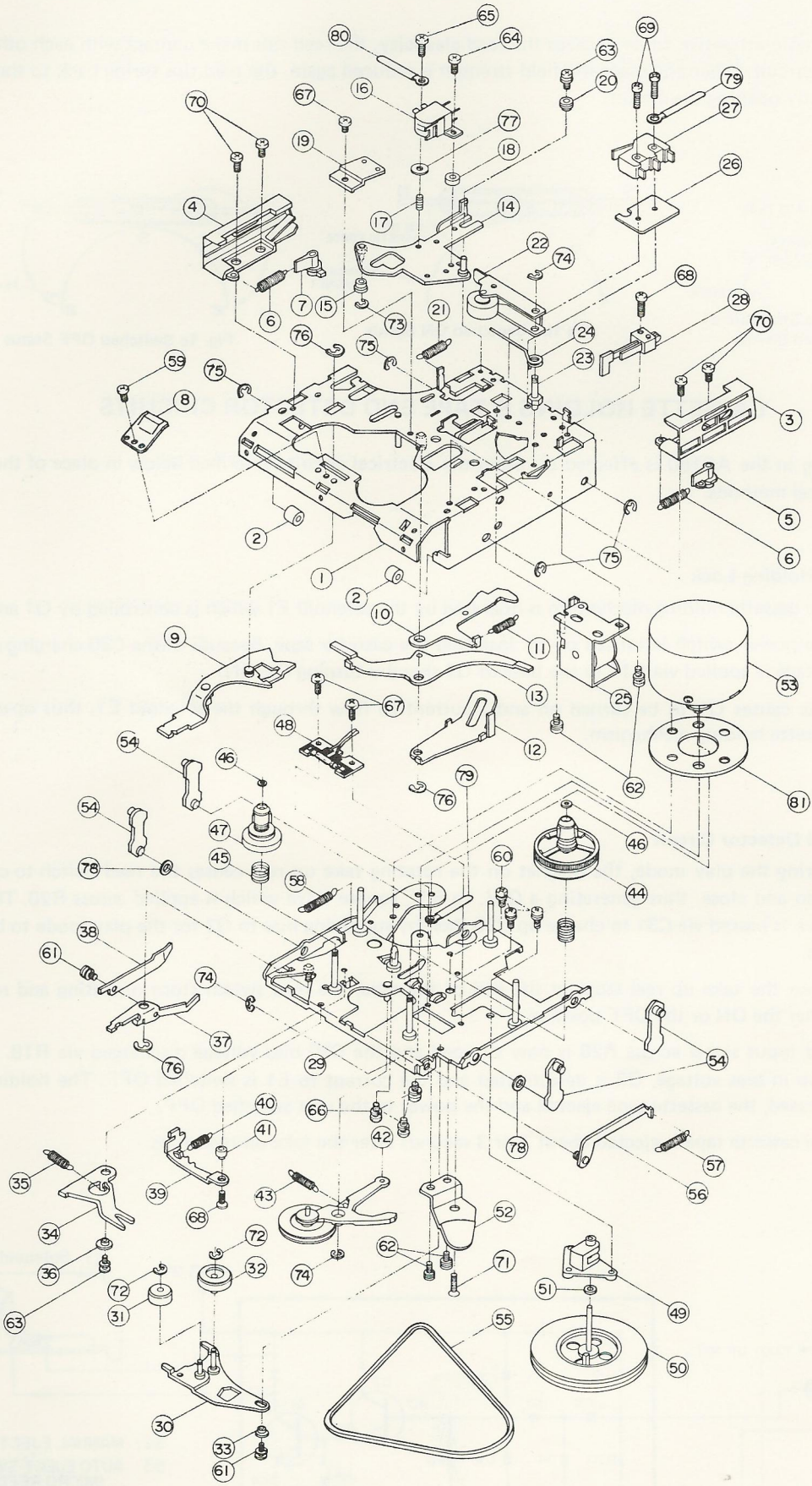


Fig. 2

EXPLODED VIEW

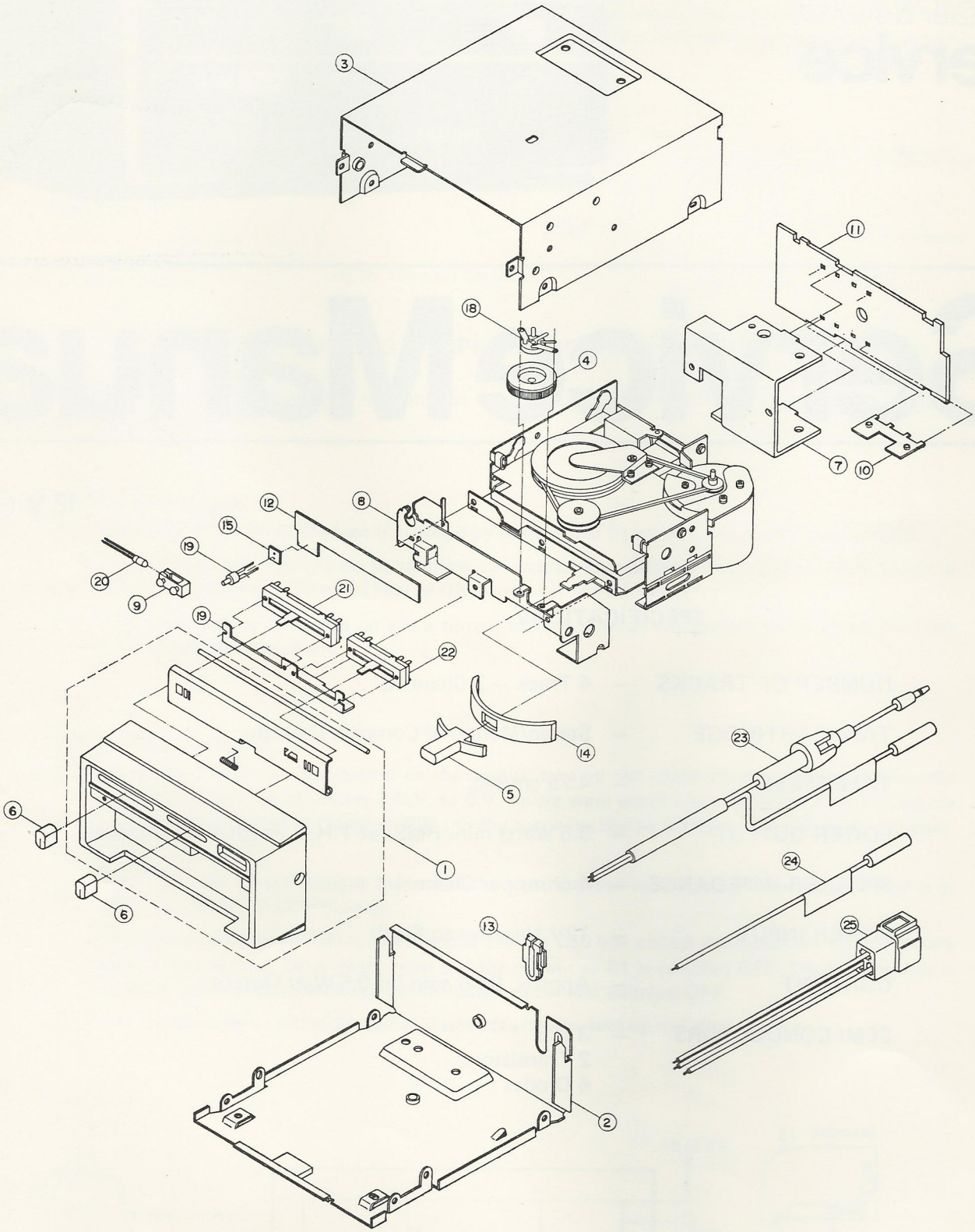


Fig. 3

REPLACEMENT PARTS LIST

REF. NO	DESCRIPTION			SERVICE CODE
CAPACITORS				
C1, 2	.001μF	500V	Ceramic	4802 122 47083
C3, 4, 1.1, 12, 29	10μF	16V	Electro	4802 124 47044
C5, 6, 20, 21, 30	47μF	10V	Electro	4802 124 47016
C7, 8	330ρF	500V	Ceramic	4802 122 47079
C9, 10	.015μF	50V	Mylar	4802 121 47161
C13	220μF	10V	Electro	4802 124 47006
C14, 15	.1μF	12V	Ceramic	4802 122 47055
C16, 17, 27, 28	.0022μF	50V	Ceramic	4802 121 47151
C18, 19	100μF	10V	Electro	4802 124 47002
C22, 23	.068μF	50V	Mylar	4802 121 47169
C24, 25	1000μF	10V	Electro	4802 124 47003
C26	2,200μF	16V	Electro	4802 124 47019
C31	22μF	16V	Electro	4802 124 47021
C32, 33	200pF	50V	Ceramic	4822 122 30094
RESISTORS & CONTROLS				
Note: All resistors are standard values and tolerances unless specified otherwise				
RV1	20k ohm (Balance)			4802 100 57006
RV2, 3	10k ohm (Tone)			4802 105 17051
RV4, 5	10k ohm (Volume)			4802 105 17051
SEMICONDUCTORS				
IC1	EQ – amp. (M51521L)			4802 209 87107
IC2	Power amp. (HA1366W)			4802 209 87166
IC3	Power amp. (HA1366WR)			4802 209 87167
Q1	Relay control (2SC1317QR)			4802 130 47056
Q2	Relay control (2SC828QR)			4822 130 40965
D1	L.E.D. GL2PG1			4802 130 37183
D2	1S1885			4802 130 37123
D3	1S1555			4802 130 37033
Coils				
L1	Choke	filter	3mH	4802 152 27028
L2	Choke	filter	.85μH	4802 157 47036
L3	Choke		.74μH	4802 158 17077

REF. No.	DESCRIPTION	SERVICE CODE
MISCELLANEOUS ELECTRICAL		
PL1	Lamp	4802 134 47086
F1	Fuse 3A	4802 253 47006
CHASSIS STYLING		
1	Escutcheon (includes flap assy.)	4802 459 47077
4	Knob (balance control)	4802 412 37014
5	Knob (FF & eject)	4802 411 67058
6	Knob (tone & vol. control)	4802 411 67059
CASSETTE DECK		
3	Runner (right)	4802 403 27039
4	Runner (left)	4802 403 27041
5	Lever	4802 403 27042
7	Lever	4802 403 27043
8	Spring	4802 492 37237
16	Playback head	4802 249 37012
22	Pinchroller assy.	4802 403 47016
25	Solenoid (E1)	4802 281 57011
27	Micro switch (S1)	4802 271 37008
28	Leaf switch (S2)	4802 278 97041
31	Roller	4802 403 27044
32	Roller	4802 403 27045
42	Lever	4802 403 27047
44	Slip mechanism	4802 528 27042
45	Spring	4802 492 57032
47	Slip mechanism	4802 528 27043
48	PC Board assy.	4802 214 57086
50	Flywheel & capstan	4802 528 87087
53	Motor & pulley	4802 361 27045
55	Belt	4802 538 30175
67	Screw 2 c 3mm	4802 535 17005
68	Screw 2 x 8mm	4822 502 10681
69	Screw 2.3 x 10mm	4802 502 17039
70	Screw 2.6 x 4mm	4822 502 11084
72	E – type ring 1.2mm	4822 530 70119
73	E – type ring 1.5mm	4822 530 70121
74	E – type ring 2mm	4822 530 70122
76	E – type ring 3mm	4822 530 70123
	Cassette Deck complete	4802 691 27024

3. Manual Eject

When the eject button is depressed, the leaf switch S2 is turned on, thereby grounding the Q1 base. Q1 is consequently turned off, the E1 solenoid released, and the cassette tape ejected.

4. Mechanical Eject Operations During Fast Forward and Rewind Modes

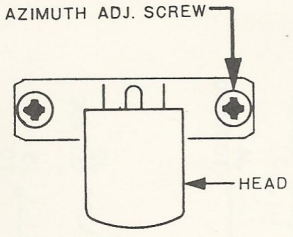
When the end of the tape is reached during fast forward and rewind modes, the tape end detector circuit is activated in the same manner as described above. However, there is a slight modification in the related mechanical operation sequence:

TAPE END ⟶ TAKE-UP REEL STOP (2-3 seconds) ⟶ E1 TURNS OFF ⟶ FAST FORWARD OR REWIND BUTTON IS RELEASED ⟶ TAPE EJECT.

PLAYBACK HEAD ADJUSTMENT (Azimuth)

Normally, the adjustment is precisely set at the factory and further adjustment should not be required unless the playback head or its mounting components are replaced.

Incorrect adjustment will cause a reduction in performance.



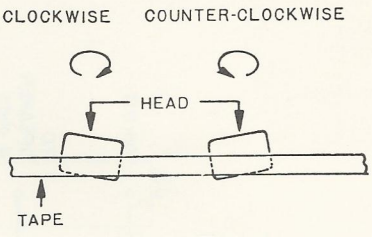


Fig. 4.

If the azimuth is moved, then carefully adjust the azimuth screw as shown in Fig. 4.

Using a Test Tape for Azimuth Adjustment

Insert a test tape and set the control knobs as follows:

VOL. CONTROL KNOB (VOL)	Normal Volume
BALANCE CONTROL KNOB (BAL)	Central
BASS CONTROL KNOB	Central
TREBLE CONTROL KNOB	Right Hand Side

Carefully adjust the azimuth adjustment screw for maximum volume and treble tones. It is recommended that a VTVM or Circuit Tester is connected to the speaker terminals for obtaining the maximum value because the test tape for azimuth adjustment is recorded in high treble tones.

If a test tape is not available, use a stereo music tape with some high treble tones (piano or violin music) and follow the same procedure as above.

CLEANING

After extended use, a layer of iron-oxide from the tape can build-up on the tape playback head and the drive capstan. The oxide layer prevents the tape from making full contact with the playback head, resulting in a gradual loss of high frequency response and an increased noise level. In the case of the capstan, the oxide deposit can cause slippage (wow) which might be mistaken for a more serious mechanical problem. To clean the head, a swab moistened with alcohol should be used.

WARNING – Do not use a solvent such as lighter fluid or thinners as these may cause damage to plastic parts or instrument finish.

First, using the end of a pencil, press the rod in the cassette door back until it clicks into position and then thoroughly clean the playback head, capstan and pinchroller.

After cleaning, press the eject button to return the rod to its original position.

DEMAGNETISATION

The playback head may become magnetised over a period of time. A magnetised head will record noise on a tape, even when it is being used for playback, so it is important that the head be periodically demagnetised. This can be done with a commercial demagnetiser (or degausser).

ADJUSTMENT FOR TAKE-UP TORQUE

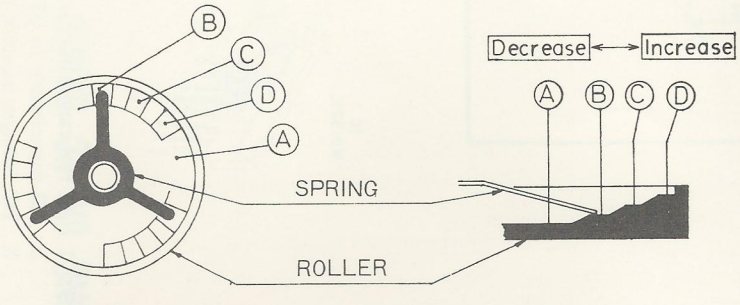


Fig. 5

With the motor rotating use an appropriate gauge to measure the take up torque which should normally be 50 g.cm. If necessary, the torque may be adjusted to this figure by moving the spring up or down the adjustment steps in the take up head. (See Fig. 5).

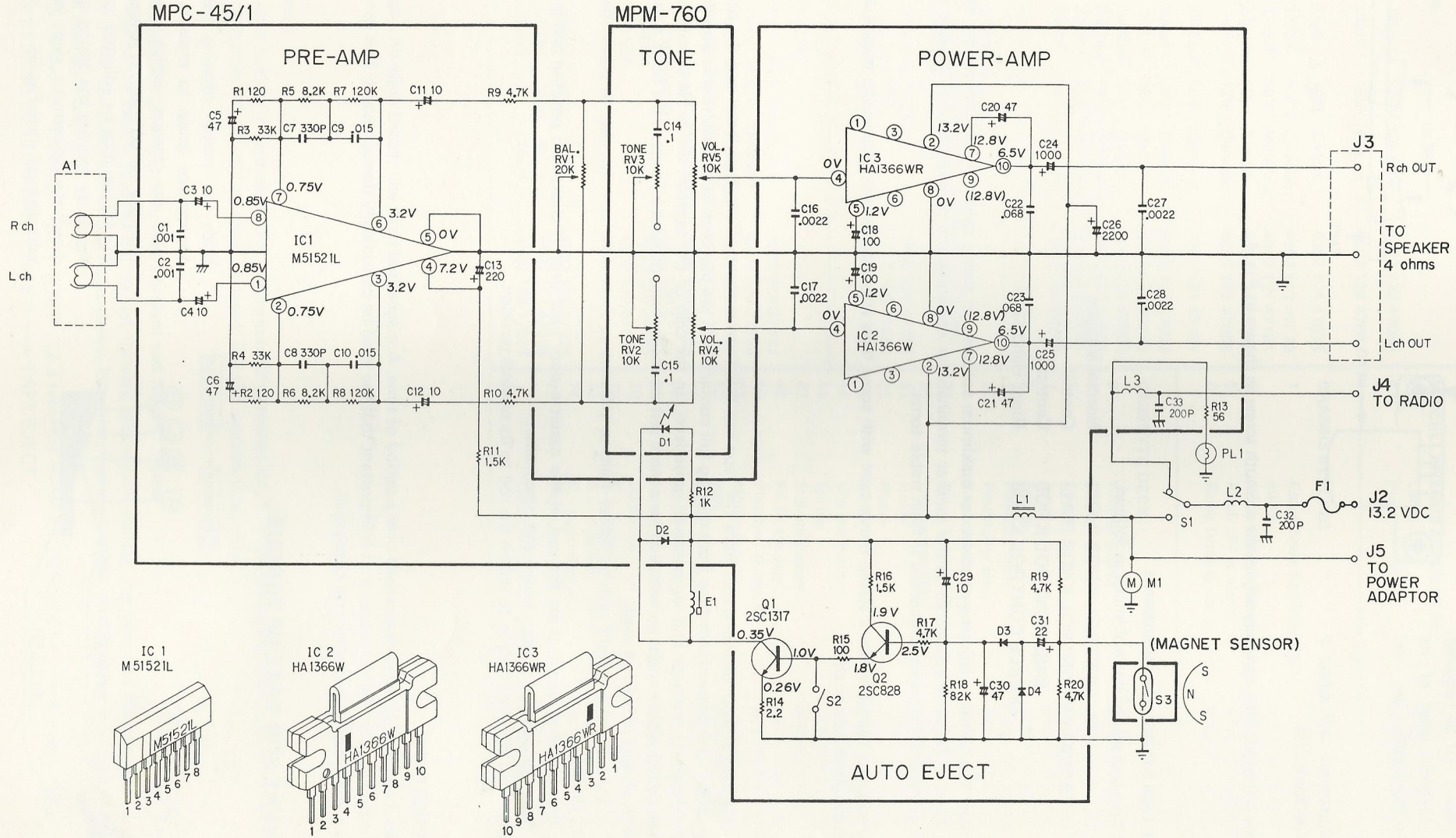


Fig. 6

NOTES: 1. All resistance in ohm, K=10^3

2. All capacitance in μF, P=$\mu\mu$F

3. DC voltages against the chassis measured with 100,000 ohm per volt meter, power supply set at + 13.2 VDC, no signal input.

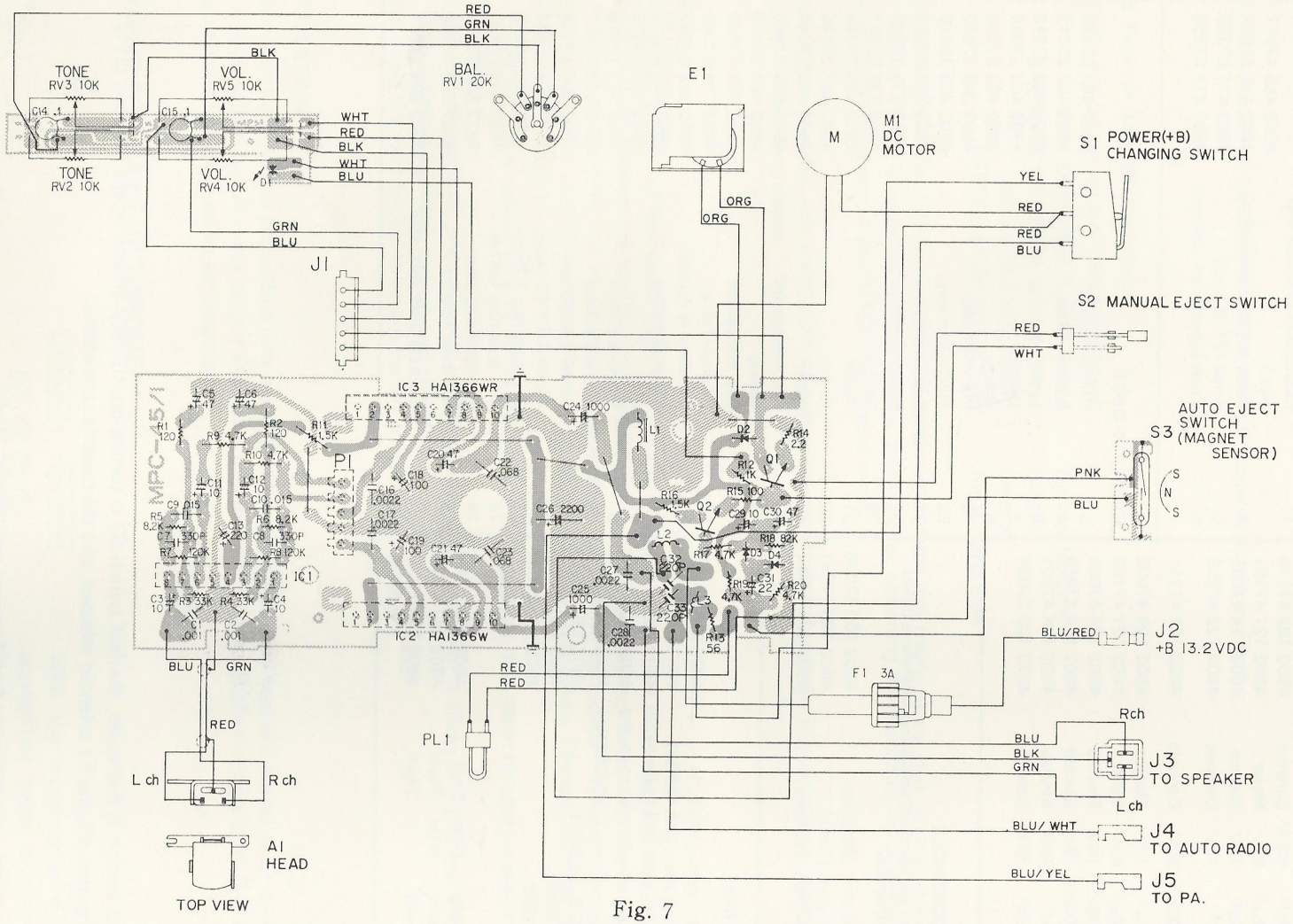


Fig. 7

IC \ Pin No.	1	2	3	4	5	6	7	8	9	10
IC 1	0.85V	0.75V	3.2V	7.2V	0V	3.2V	0.75V	0.85V		
IC 2, 3		13.2V		0V	1.2V		12.8V	0V	12.8V	6.5V

Pin \ Tr	Q 1	Q 2
B	1.0V	2.5V
C	0.35V	1.9V
E	0.26V	1.8V

NOTE: Connector J_3 shows pin side view.