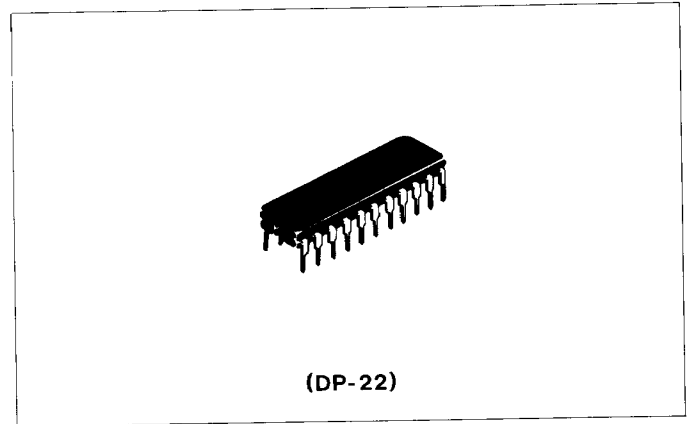


# HA12001W

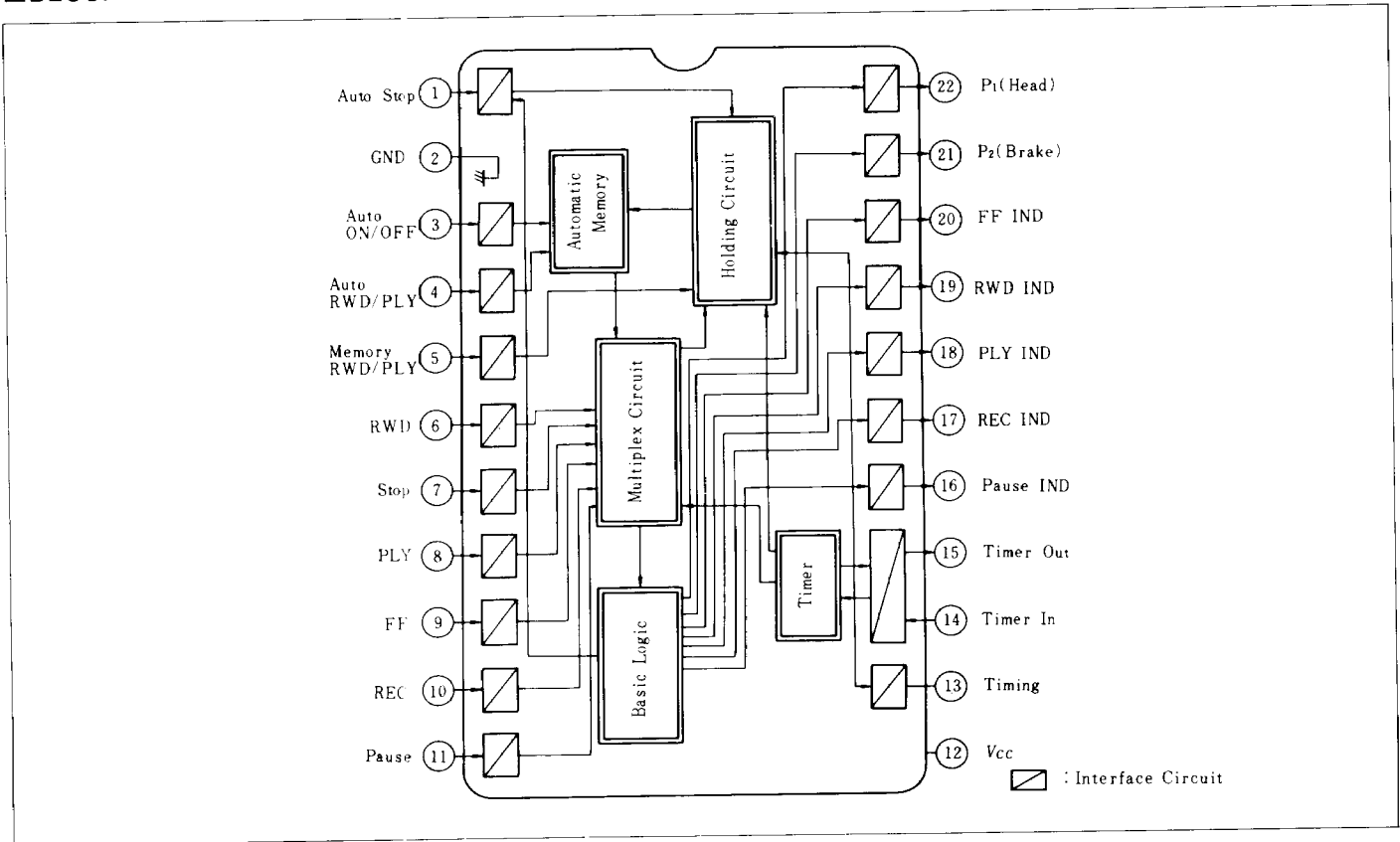
## Mechanical Controller for Cassette Tape Deck

### FUNCTIONS

- Tape ending detector
- Automatic shut-off
- Automatic Rewind and automatic Rewind/Play
- Memory Rewind and memory Rewind/Play
- Solenoid predriver
- Display driver
- Recording timer



### BLOCK DIAGRAM & PIN CONFIGURATION (Top View)



### ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Ratings	Unit
Supply Voltage	$V_{CC}$	7.5	V
Input Voltage	$V_{in}$	7.5	V
Power Dissipation	$P_T^*$	750	mW
Operating Voltage	$V_{opr}$	4.5 to 7.5	V
Operating Temperature	$T_{opr}$	-10 to +70	°C
Storage Temperature	$T_{stg}$	-55 to +125	°C

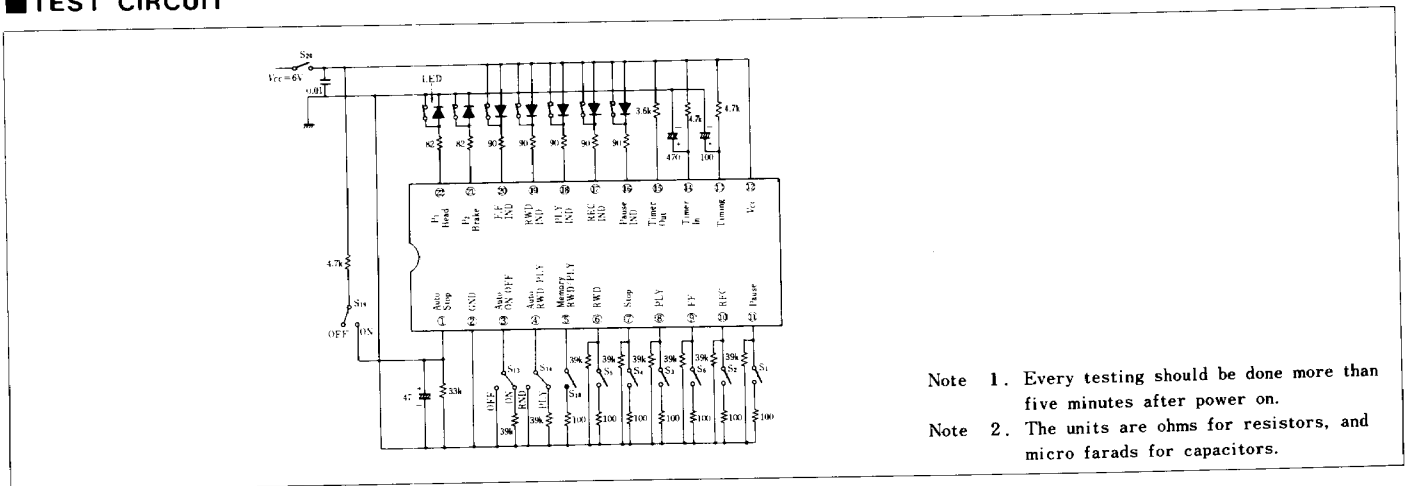
\* Value at  $T_a = 70^\circ\text{C}$

■ELECTRICAL CHARACTERISTICS ( $T_a = 25^{\circ}\text{C}$ ,  $V_{CC} = 6.0\text{V}$  unless otherwise specified)

Item	Symbol	Test Conditions	min.	typ.	max.	Unit
Operating Voltage Range*	$V_{CC-opr}$	S19:OFF	4.5	6.0	7.5	V
Dissipation Current*	$I_{CC}$	"STOP"	—	—	50	mA
Display Output*	$V_{OL16}$	S1:ON after S3:ON	—	—	2.0	V
Low Level Voltage*	$V_{OL17}$	S2:ON	—	—	2.0	V
	$V_{OL18}$	S3:ON	—	—	2.0	V
	$V_{OL19}$	S5:ON	—	—	2.0	V
	$V_{OL20}$	S6:ON	—	—	2.0	V
	Solenoid Brake Driver High Level Output Voltage*	$V_{OH21}$	S5:ON	0.8	—	—
	$V_{OH22}$	S3:ON	0.8	—	—	V
Solenoid Brake Driver Low Level Output Voltage*	$V_{OL21}$	S5:OFF, S6:OFF	—	—	0.3	V
	$V_{OL22}$	S3:OFF	—	—	0.3	V
Input High Level Voltage*	$V_{IH3}$		2.0	—	—	V
	$V_{IH4}$					
	$V_{IH5}$					
	$V_{IH6}$					
	$V_{IH7}$					
	$V_{IH9}$					
	$V_{IH11}$					
Input Low Level Voltage*	$V_{IL3}$		—	—	0.4	V
	$V_{IL4}$					
	$V_{IL5}$					
	$V_{IL6}$					
	$V_{IL7}$					
	$V_{IL9}$					
Timer Input High Level Voltage	$V_{IH4}$		5.0	—	—	V
Timer Input Low Level Voltage	$V_{IL4}$		—	—	3.0	V
Timer Output High Level Voltage	$V_{OH5}$		5.5	—	—	V
Timer Output Low Level Voltage	$V_{OL5}$		—	—	0.3	V
PLY Input High Level Voltage	$V_{IH8}$		3.0	—	—	V
REC Input High Level Voltage	$V_{IH10}$		3.0	—	—	V
PLY Input Low Level Voltage	$V_{IL8}$		—	—	0.8	V
REC Input Low Level Voltage	$V_{IL10}$		—	—	0.8	V
Automatic Stop Input High Level	$V_{IH1}$		2.0	—	—	V
Automatic Stop Input Low Level	$V_{IL1}$		—	—	0.8	V

\*These testings should be done with LED shorted.

■TEST CIRCUIT



- Note 1. Every testing should be done more than five minutes after power on.
- Note 2. The units are ohms for resistors, and micro farads for capacitors.



FUNCTIONS BY KEY INPUT (V<sub>CC</sub>=4.5 to 7.5V)

MODE	Present Mode					SOLENOID		Key Input						
	PLY	FF	RWD	REC	PAUSE	P1 <sup>(1)</sup>	P2 <sup>(1)</sup>	STOP	PLY	FF	RWD	REC	REC/PLY <sup>(4)</sup>	PAUSE
STOP						○		—	PLY	FF* <sup>(3)</sup>	RWD*	(REC) <sup>(2)</sup>	REC	—
PLY	○					○		STOP	—	FF*	RWD*	—	REC	PLY/PAUSE
FF		○					○	STOP	PLY*	—	RWD*	—	REC*	—
RWD			○				○	STOP	PLY*	FF*	—	—	REC*	—
REC	○			○		○		STOP	—	FF*	RWD*	—	—	REC/PAUSE
REC/PAUSE	○			○	○			STOP	REC	FF*	RWD*	—	REC	—
PLY/PAUSE	○				○			STOP	PLY	FF*	RWD*	—	REC*	—

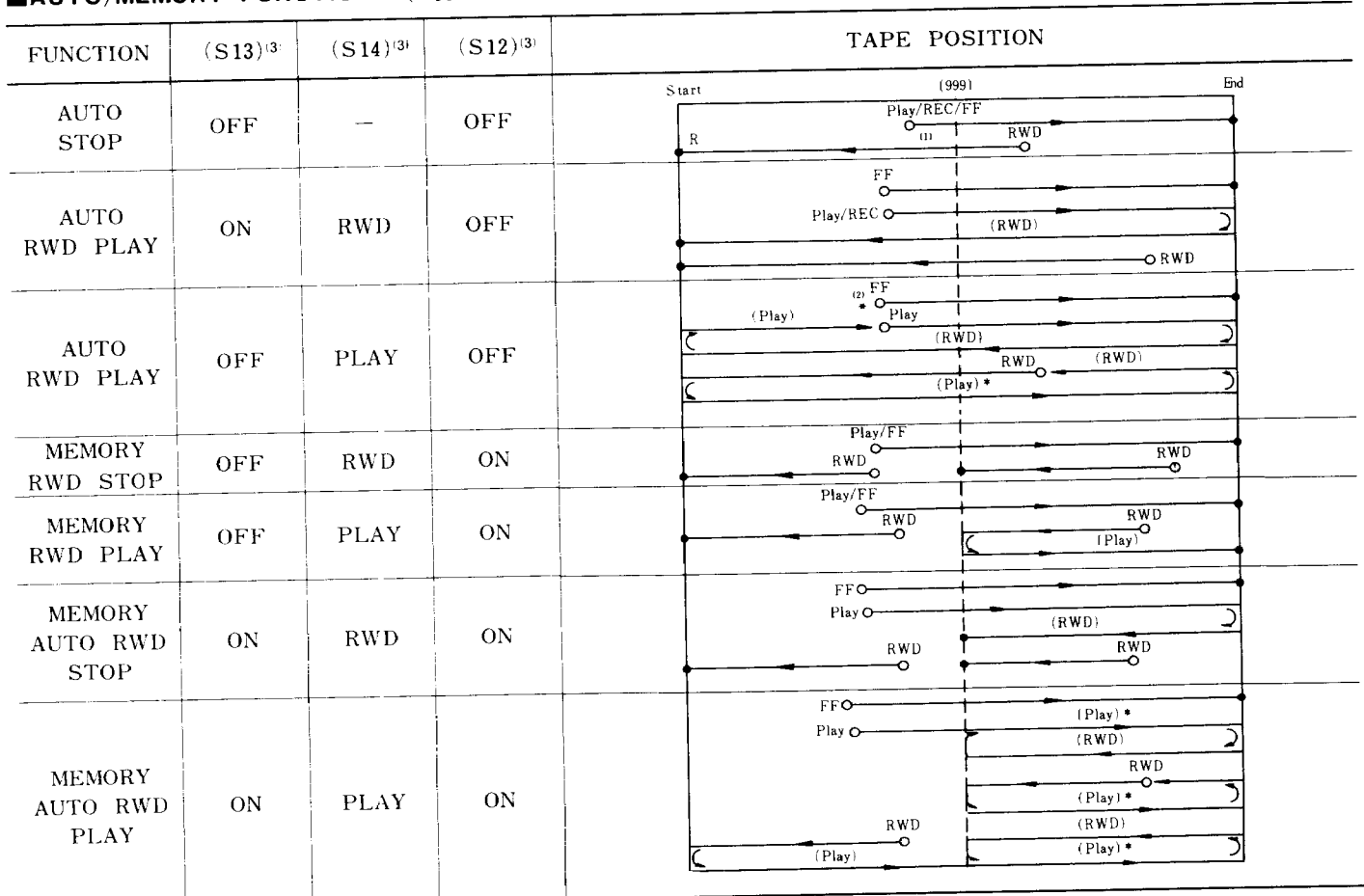
NOTES:

1. P1: Head Solenoid, P2: Brake Solenoid
2. Only while the input key is pressed, the REC indicator is on. When the key is released, the mode will return to "STOP".
3. In case of the change-over to the mode with "\*", P1 and P2 work 0.5 to 1.0 sec. after the key is pressed. On the other hand, in case of

the change-over to the mode without "\*", P1 and P2 works simultaneously. In both cases, the indicator is driven simultaneously.

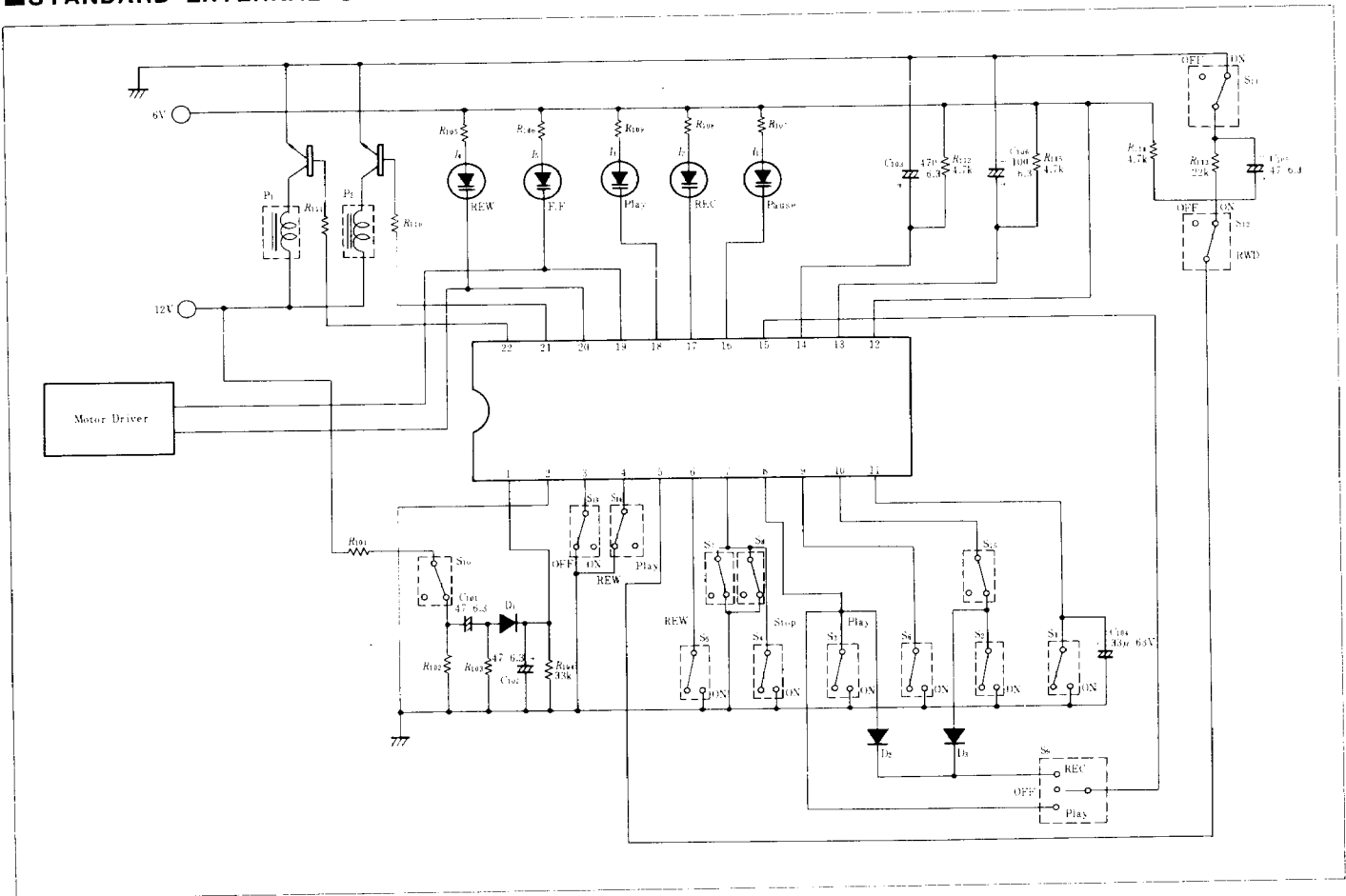
4. "PLY" key should be pressed with "REC" key kept pressed.

AUTO/MEMORY FUNCTIONS (V<sub>CC</sub>=4.5 to 7.5V)



- Note: 1. ○—; START, —●; STOP  
 2. \* Automatic Repeat  
 3. See Standard External Components

STANDARD EXTERNAL COMPONENTS



EXPLANATION OF SYMBOLS

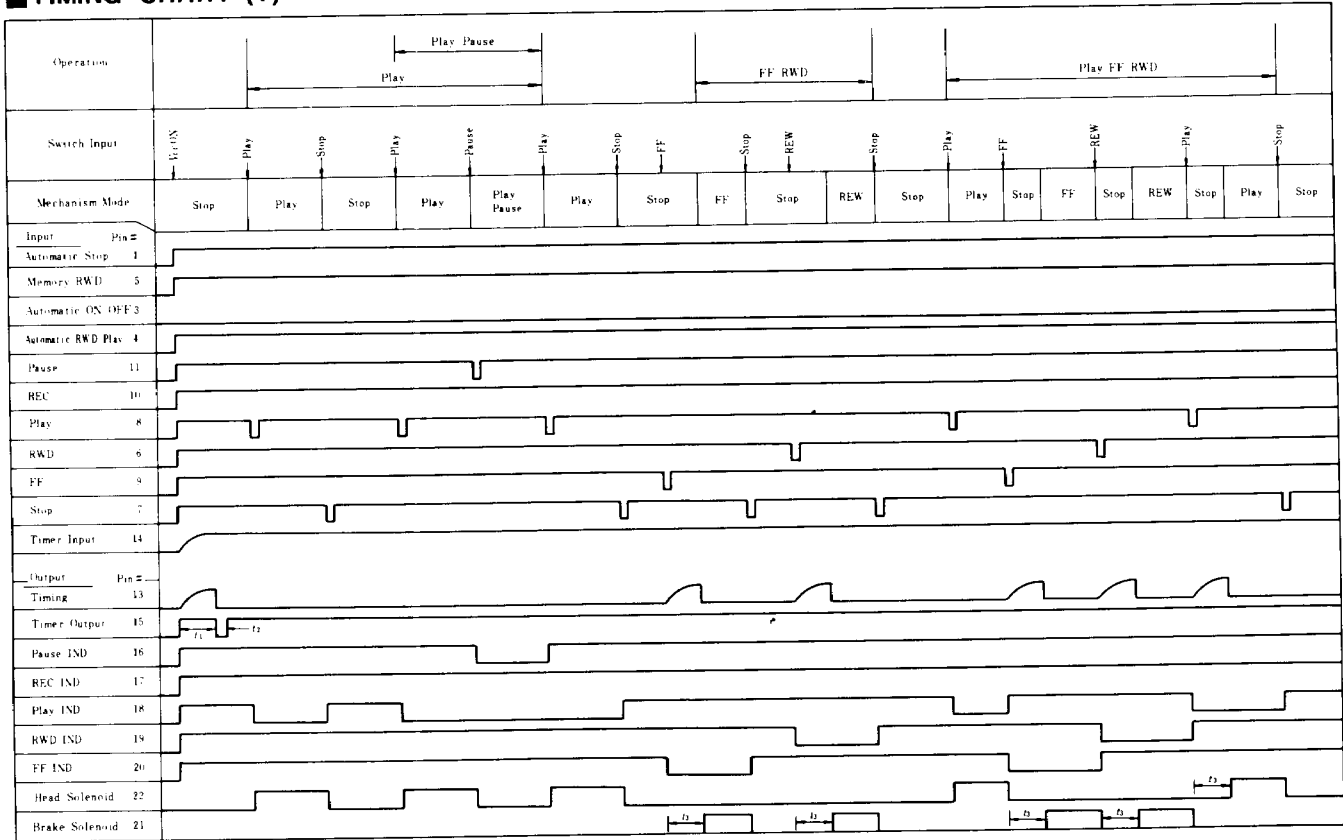
SYMBOL	FUNCTION
S1	PAUSE INPUT SWITCH
S2	REC SWITCH
S3	PLAY SWITCH
S4	STOP SWITCH
S5	RED SWITCH
S6	FF SWITCH
S7	CASSETTE INSERTION SWITCH
S8	EJECTION SWITCH
S9	REC/PLAY SWITCH FOR TIMER
S10	LEAD SWITCH FOR AUTOMATIC STOP
S11	COUNTER SWITCH
S12	MEMORY RWD SWITCH
S13	AUTOMATIC ON/OFF SWITCH
S14	AUTOMATIC RWD/PLAY SWITCH
S15	REC ERROR PROTECTION SWITCH
I1	PAUSE INDICATOR
I2	REC INDICATOR
I3	PLAY INDICATOR
I4	RWD INDICATOR
I5	FF INDICATOR
P1	HEAD PLUNGER
P2	BRAKE PLUNGER

EXPLANATION OF PINS

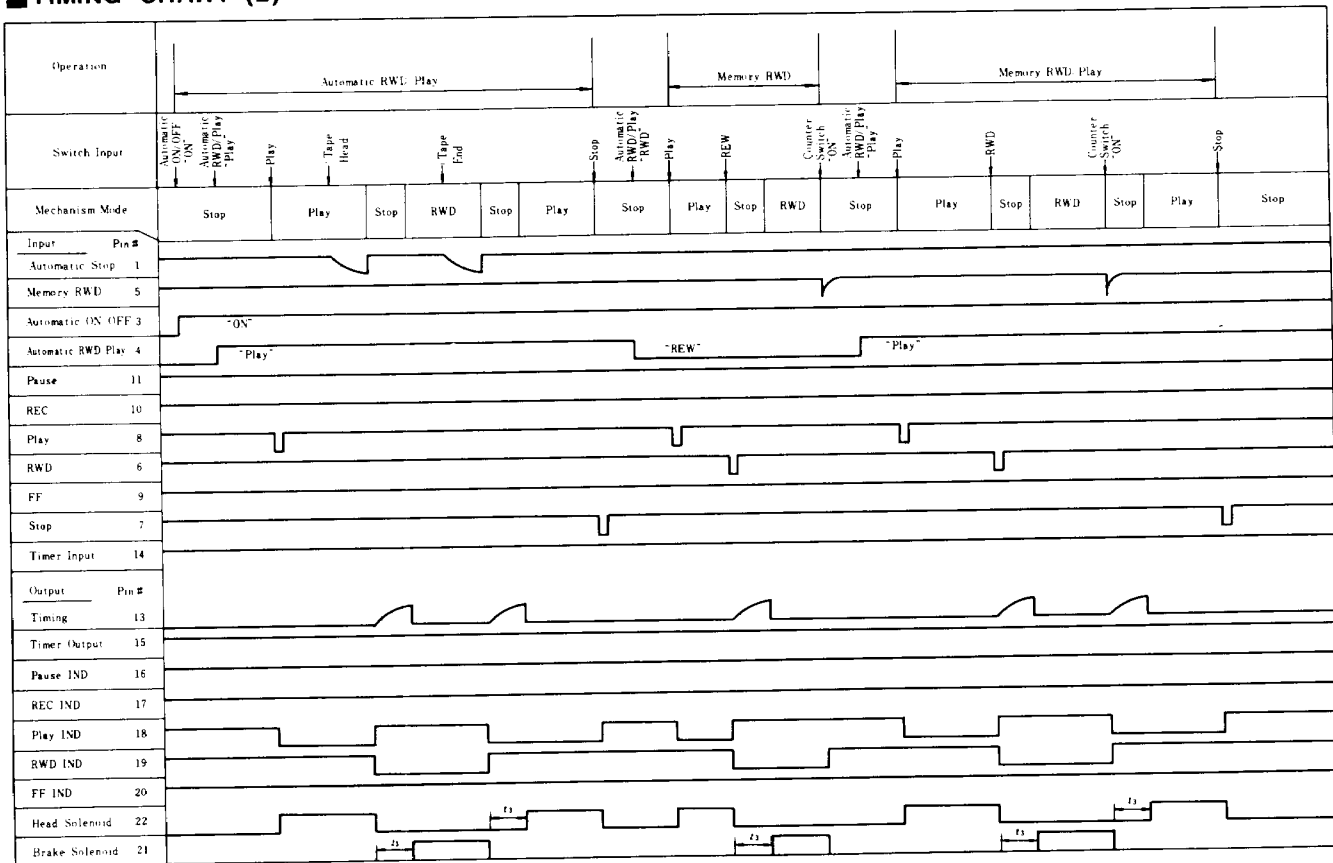
PIN NO.	FUNCTION
1	AUTOMATIC STOP INPUT
2	GROUND
3	AUTOMATIC ON/OFF INPUT
4	AUTOMATIC RWD/PLAY INPUT
5	MEMORY RWD INPUT
6	RWD INPUT
7	STOP INPUT
8	STOP INPUT
9	FF INPUT
10	REC INPUT
11	PAUSE INPUT
12	POWER SUPPLY
13	TIMING OUTPUT
14	TIMER INPUT
15	TIMER OUTPUT
16	PAUSE INDICATOR DRIVER
17	REC INDICATOR DRIVER
18	PLAY INDICATOR DRIVER
19	RWD INDICATOR DRIVER
20	FF INDICATOR DRIVER
21	BRAKE SOLENOID DRIVER
22	HEAD SOLENOID DRIVER



■ TIMING CHART (1)



■ TIMING CHART (2)



■ TIMING CHART (3)

