

SAFETY PRECAUTIONS

SERVICE WARNING

ONLY qualified service technicians who are familiar with safety checks and guidelines should perform service work. For continued SAFETY:

- Before replacing parts, disconnect power source to protect electrostatically sensitive parts. Examples of typical electrostatically sensitive parts are integrated circuits, some field effect transistors, and semiconductor "chip" components.
- Do not attempt to modify any circuit unless so recommended by the manufacturer.
- When servicing chassis, use an isolation transformer between the line cord and power receptacle. Maintain AC line voltage at rated input.
- Many electrical and mechanical parts are used in this VCR to provide protection against electrical shock, fire, and RF interference. These parts should be replaced with exact replacements only.
- Use extreme caution when handling the printed circuit boards. Some semiconductor devices can be damaged easily by static electricity. Drain off any electrostatic charge on your body by touching a known earth ground. Wear a commercially available discharging wrist strap device. This should be removed prior to applying power to the VCR under test.
- Use a grounded-tip, low voltage soldering iron. After removing an electrical assembly containing electrostatically sensitive parts, place the assembly on a conductive surface such as aluminum foil.
- Minimize body movement to avoid building an electrostatic charge when handling electrostatically sensitive parts.
- Use an isolation (times 10) probe on oscilloscope.
- Do not remove or install boards with AC power applied.
- Do not use freon-propelled sprays or vacuum operated desoldering devices. These can generate electrical charges sufficient to damage semiconductor devices.
- This VCR is equipped with a grounded three-prong AC plug. This plug must fit into a grounded AC power outlet. Do not defeat the AC plug safety feature.
- Periodically examine the AC power cord for damaged or cracked insulation.
- The VCR cabinet is equipped with vents to prevent heat build-up. Never block, cover, or obstruct these vents. Instructions should be given, especially to children, that objects

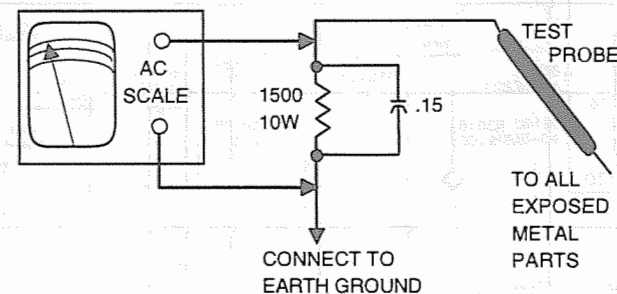
should not be dropped or pushed into the vents of the cabinet. This could cause shock or equipment damage.

- Remove plug from AC outlet during electrical storms. Do not allow anything to rest on AC power cord. Unplug AC power cord from outlet before cleaning VCR.
- Never use liquids or aerosols directly on the VCR. Spray on cloth and then apply to the VCR cabinet. Make sure the VCR is disconnected from the AC power line. Never expose the VCR to liquids. If exposed to liquids, turn the VCR off. Do not place the VCR near possible liquid sources.

SAFETY CHECKS -- FIRE AND SHOCK HAZARD

Hot Leakage Current Check

- Plug the AC cord directly into AC outlet. DO NOT use an isolation transformer.
- Use a 1500-ohm, 10-watt resistor in parallel with a .15-microfarad 150 Volts AC capacitor to connect between any exposed metal parts on the set and a good earth ground. (See figure below.)
- Use an AC voltmeter with at least 5000 ohms-per-volt sensitivity to measure the voltage across the resistor. Check all exposed metal parts and measure voltage at each point.
- Voltage readings should not exceed .3 volts RMS. Any value exceeding this limit constitutes a potential shock hazard and must be corrected.
- If AC plug is not polarized, reverse the AC plug and repeat exposed metal part voltage measurement at each point.



The listing of any available replacement part herein in no case constitutes a recommendation, warranty, or guarantee by Howard W. Sams & Company as to the quality and suitability of such replacement part. The numbers of the listed parts have been compiled from information furnished to Howard W. Sams & Company by the manufacturers of the specific type of replacement part listed.

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2647 Waterfront Parkway East Drive, Suite 100
Indianapolis, IN 46214-2041

Printed in the United States of America 5 4 3 2 1



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VCRfacts® Technical Service Data

VCR-314

VCR-314

MODELS VHR-H647, VHR-H697, VWM-648, VWM-662

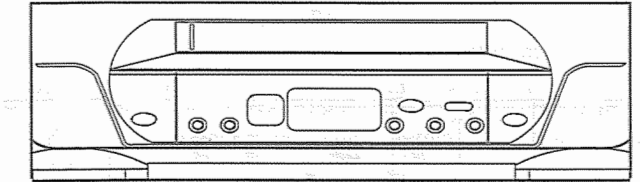
SANYO

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Models VHR-H647, VHR-H697, VWM-648, VWM-662



The following models are similar to this basic coverage and may effectively be repaired using this service information. However, minor differences may be found between these models and those in the basic coverage.

BRAND	MODELS
FISHER	FVH-T617
FISHER	FVH-T667S

Essential coverage
for servicing a video cassette recorder...

- Schematics
- Interconnect Diagram
- Electrical Parts List
- Exploded Views
- Mechanical Alignment
- Mechanical Parts List
- Service Information

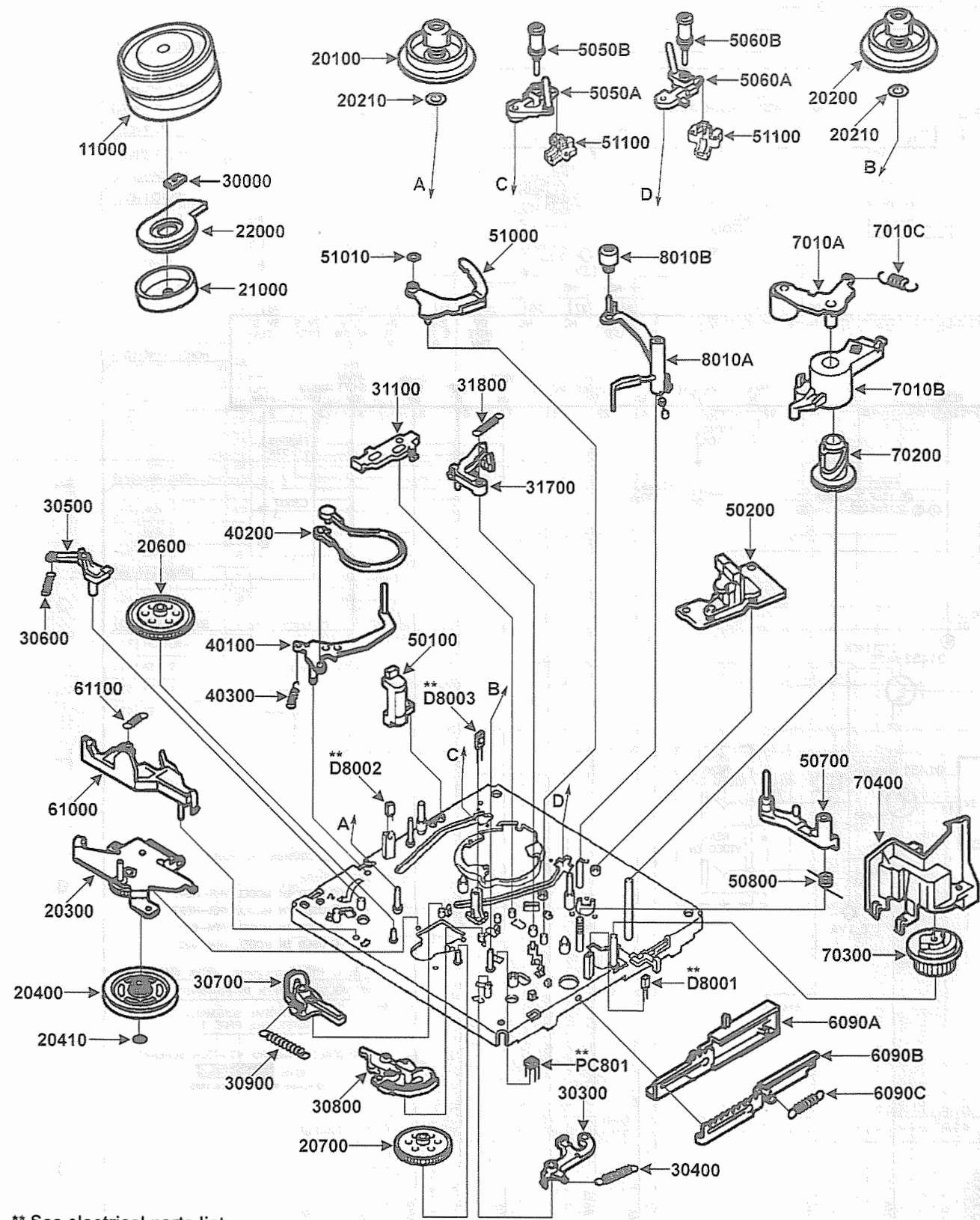


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OCTOBER 1999 VCR-314

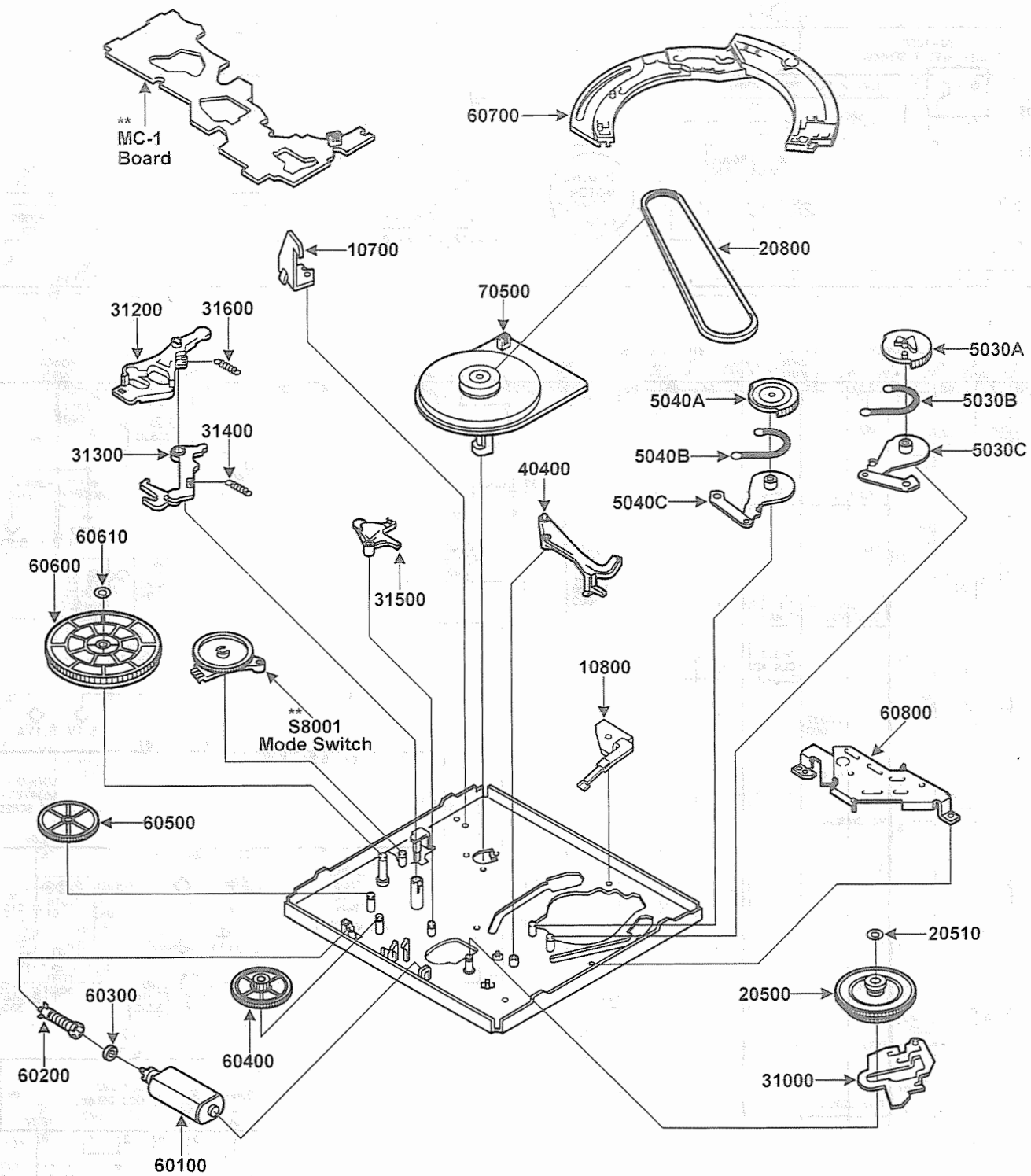
For Supplier Address,
See PHOTOFACT Annual Index

EXPLODED VIEW - TOP



** See electrical parts list.

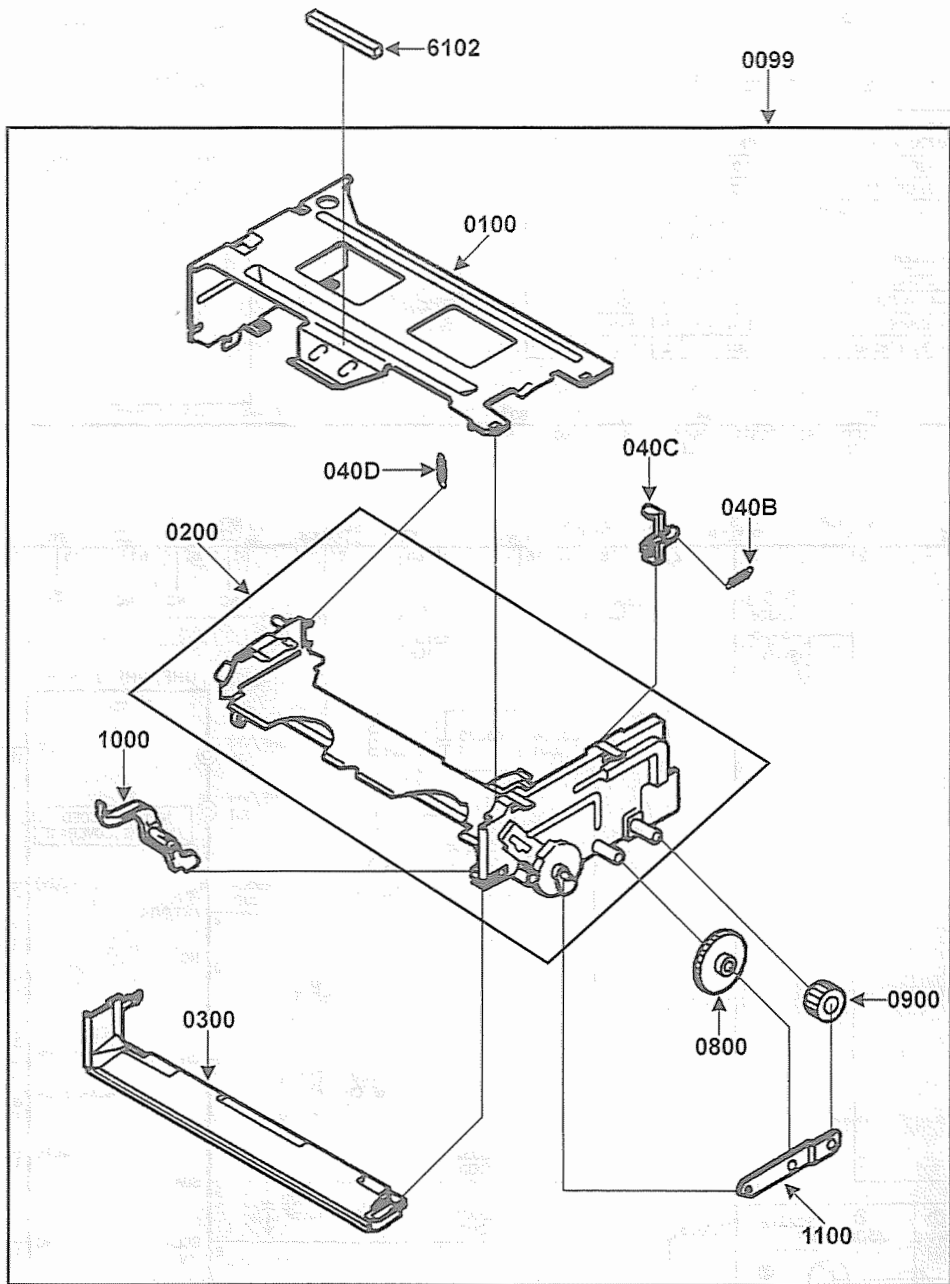
EXPLODED VIEW - BOTTOM



** See electrical parts list.

EXPLODED VIEW - CASSETTE MECHANISM ASSEMBLY

MECHANICAL PARTS LIST



Item No.	Description	Part No.	Item No.	Description	Part No.
040B	Lid Opener Spring	613 152 0417	20600	Supply Reel Gear	613 152 2749
040C	Release Lever	613 152 0707	20700	Take Up Reel Gear	613 152 2756
040D	Tray Lock Spring	613 152 0424	20800	Reel Belt	613 151 9039
0099	Cassette Mechanism Assembly	613 152 0578	21000	Cylinder Motor Rotor	645 015 7875
0100	Stand Left	613 152 0738	22000	Cylinder Motor Stator	645 015 7868
0200	Cassette Mechanism Chassis (5)	-	30000	Motor Spacer	613 081 4036
0300	Frame Under	613 152 0660	30300	Soft Take Up Brake Assembly	613 160 3356
0800	Lock Gear	613 152 2794	30400	Soft Take Up Spring	613 152 0295
0900	Pinion Gear	613 152 2800	30500	Soft Supply Lever	613 151 9411
1000	Door Opener Lever	613 151 9480	30600	Soft Supply Spring	613 152 0318
1100	Holder Gear	613 151 9299	30700	Supply Brake Assembly	613 160 6166
5030A	Supply Load Gear	613 152 2763	30800	Take Up Brake Assembly	613 159 2193
5030B	Load Supply Spring	613 152 0370	30900	Brake Spring	613 163 6996
5030C	Supply Load Lever Assembly	613 160 3691	31000	ACT Brake Supply Slide	613 152 0165
5040A	Take Up Load Gear	613 152 2770	31100	ACT Brake Take Up Slide	613 152 0189
5040B	Take Up Load Spring	613 152 0363	31200	Control Brake Lever	613 159 0991
5040C	Load Lever Take Up Assembly	613 160 3707	31300	Complete ACT Brake Lever	613 159 0847
5050A	Incline Supply Mounting Assembly	613 164 7237	31400	Return Brake Spring	613 152 0332
5050B	Guide Roller Assembly	613 022 0233	31500	Clutch Change Lever	613 151 9459
5060A	Incline Take Up Mounting Assembly	613 164 7251	31600	Clutch Change Spring	613 152 0349
5060B	Guide Roller Assembly	613 022 0233	31700	Capstan Brake Assembly	613 151 8490
6090A	Front Rack Gear	613 151 9152	31800	Capstan Brake Spring	613 152 0356
	Front Rack Gear	613 160 4636	40100	BT Lever Assembly	613 151 8759
6090B	Start Rack Gear	613 151 9114	40200	Brake Band Assembly	613 160 5282
6090C	Front Rack Spring	613 152 0226	40300	BT Spring	613 152 0271
6102	Pad	613 151 6618	40400	Spring Lever BT Assembly	613 153 7583
7010A	Pinch Roller Lever Assembly	613 151 8803	50100	Full Erase Head	645 017 6432
7010B	Lift Pinch Mounting	613 171 0221	50200	Audio/Control Head Assembly	613 176 8406
7010C	Pinch Roller Spring	613 152 0233	50700	Load Lever Assembly	613 164 4762
8010A	Cleaner Lever	613 171 9606	50800	Left Lever Guide Spring	613 152 0387
8010B	Cleaner Roller Assembly	613 171 9439	51000	Act L Guide Lever Assembly	613 173 6153
10700	Harness Mounting	613 167 5926		Act L Guide Lever Assembly	613 161 2365
10800	Earth Cylinder Assembly	613 165 8523	51010	Cut Washer 2.6 X 5 X .5 (6)	412 033 4106
	Earth Cylinder Assembly	613 160 4179	51100	Catcher Mounting	613 160 7057
11000	Cylinder Assembly	613 172 7908	60100	Loading Motor Assembly	645 003 4305
20100	Supply Reel Assembly (1)(3)(4)	613 169 0974	60200	Complete Worm Gear	613 151 8599
	Supply Reel Assembly (1)(3)(4)	613 160 5503	60300	Damper	613 151 9107
	Supply Reel Assembly (2)	613 169 3722	60400	Wheel Gear 1	613 151 9138
	Supply Reel Assembly (2)	613 176 2343	60500	Wheel Gear 2	613 160 3790
20200	Take Up Reel Assembly	613 160 4193	60600	Main Cam	613 156 4008
	Take Up Reel Assembly	613 168 1514	60610	Washer 3.6 X .5	412 054 6806
20210	Washer 3.1 X 6 X .3	412 021 5306	60700	Crescent Slide	613 159 9017
	Washer 3.1 X 6 X .4	412 015 8900	60800	Crescent Mounting	613 159 8997
	Washer 3.1 X 6 X .5	412 015 8504	61000	Lever EP Switch	613 151 9398
20300	Complete Clutch Mounting Assembly	613 175 0661	61100	Spring EP Switch	613 152 3692
	Complete Clutch Mounting Assembly	613 171 6896	70200	Pinch Lift Cam	613 156 3841
20400	Reel Pulley	613 151 9701	70300	Pinch Cam Gear	613 152 0677
20410	Washer 2.4 X 6 X .25	412 045 4606	70400	Opener Mounting	613 152 0714
20500	Friction Gear Assembly	613 160 4186	70500	Capstan Motor	645 008 1880
20510	Washer 2.6 X 6 X .25	411 109 1605			

(1) Used in model VHR-H647.
(2) Used in model VHR-H697.
(3) Used in model VWM-648.
(4) Used in model VWM-662.
(5) Available only as part of item number 0099.
(6) Cut washer is not reusable. If removed, replace with a new one.

MECHANICAL ALIGNMENT

Numbers in parenthesis indicate the number used in the Mechanical Parts List and Exploded Views. All alignments are made with unit in the eject mode.

MECHANISM MODE POSITION

The mechanism mode is displayed on the crescent slide (60700). The crescent slide moves under the crescent mounting (60800) to a point where the number or letter that corresponds to the current mechanism mode moves to the reference line. See figure 1.

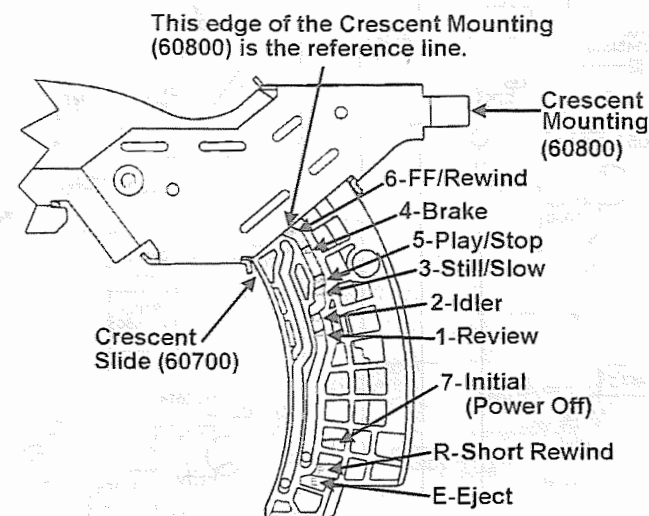


Figure 1

Main Cam / Front Rack Gear / Wheel Gear 2 / Wheel Gear 1

Align wheel gear 2 (60500) with wheel gear 1 (60400). Align the main cam (60600) with the front rack gear (6090A) and wheel gear 2. See figure 3.

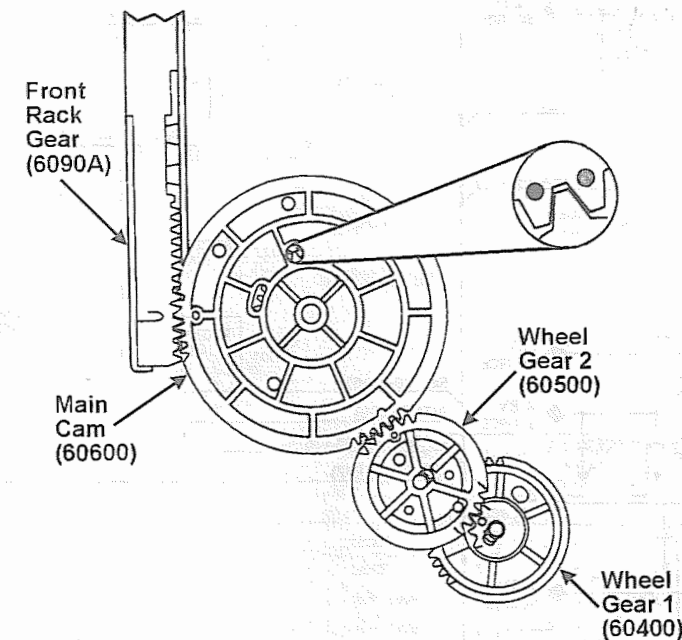


Figure 3

Take Up Load Gear / Supply Load Gear

Align the take up load gear (5040A) with the supply load gear (5030A). See figure 4.

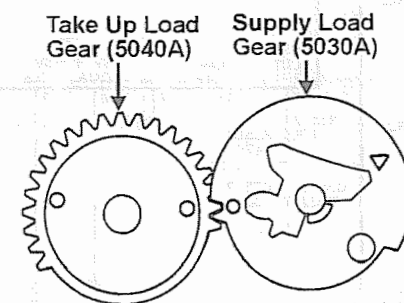


Figure 4

Pinch Cam Gear / Pinch Lift Cam / Mode Switch

Align the dots on the mode switch S8001 with the arrow on MC-1 board. Align the pinch cam gear (70300) with the mode switch and the pinch lift cam (70200). See figure 2.

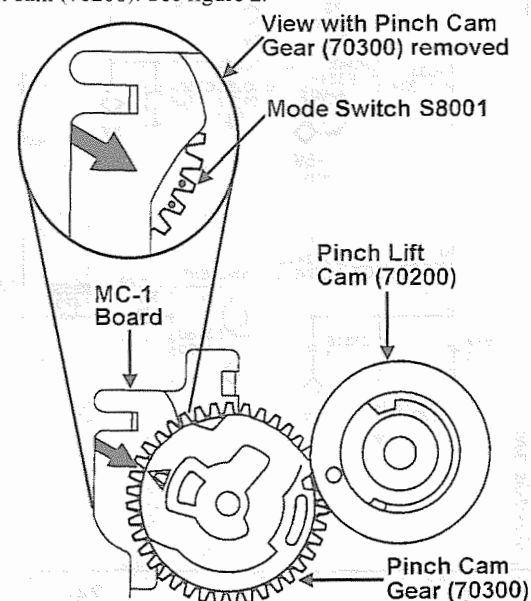


Figure 2

CASSETTE MECHANISM

Drive Gear / Lock Gear / Pinion Gear / Start Rack Gear

Align the pinion gear (0900) with the start rack gear (6090B). Align the lock gear (0800) with the drive gear part of the cassette mechanism chassis (0200) and the pinion gear. See figure 5.

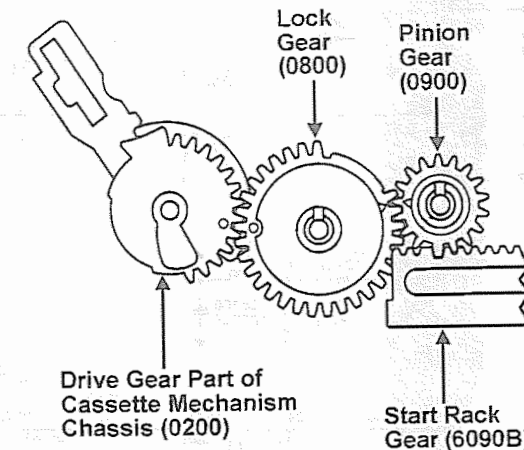


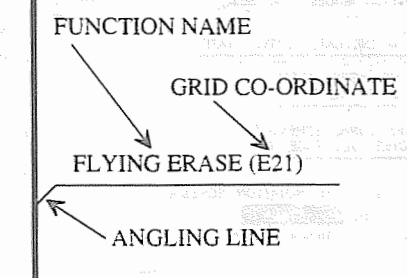
Figure 5

SCHEMATIC NOTES

- # For SAFETY use only equivalent replacement part, see parts list.
- ✖ Circuitry not used in some sets.
- Circuitry used in some versions.
- ⏏ Ground
- ⏏ Chassis ground
- ▽ Common tie point
- △ Taken from common tie point
- ◆ 12V SOURCE CIRCUI TRACE® point where a voltage source is developed in the power supply or on a board.
- ◆ 12V CIRCUI TRACE® point where a previously developed voltage source supplies voltage on a board.
- ◇ 12V CIRCUI TRACE® point where a component, or a board, connects to a voltage source supply.
- Cabling: Heavy lines reduce use of multiple lines.

Voltages are taken from ground, unless noted otherwise. Waveforms are taken from ground, unless noted otherwise. Waveforms taken with triggered scope and NTSC color bar generator with window pattern. Waveform voltage is peak to peak. Timebase is per division. Waveforms shown at 10 divisions. Supply voltages maintained as seen at input. Controls adjusted for normal operation. Capacitors are 50 volts or less, 5% or greater unless noted. Electrolytic capacitors are 50 volts or less, 20% or greater unless noted. Resistors are 1/2 W or less, 5% or greater unless noted. Value in () used in some versions. Measurements with switching as shown, unless noted. Rated voltage shown on zener diodes. Terminal identification may not be found on unit. If a board schematic has a grid locator at the left and bottom sides, function names and (grid co-ordinates) are added to lines shown entering or exiting the heavy cabling line. The (grid co-ordinates) help to locate where the other connecting points to the same line are located on the same schematic or on another schematic of the same board. A further help has been to use an angling line to indicate direction of the same line exiting the heavy cabling line.

EXAMPLE



CP-1-A MAIN BOARD, MC-1 MECHANISM CONNECTION BOARD SCHEMATIC

TO TM-1 DISPLAY
BOARD CN715 ①
CN711 ②
PAGE 3E

1	GND	29
2	ALWAYS 5V	28
3	REMOCON	27
4	HEATER+	26
5	NC	25
6	GRID 8	24
7	GRID 7	23
8	GRID 6	22
9	GRID 5	21
10	GRID 4	20
11	GRID 3	19
12	GRID 2	18
13	GRID 1	17
14	SEG L	16
15	SEG K	15
16	SEG J	14
17	SEG I	13
18	SEG H	12
19	SEG G	11
20	SEG F	10
21	SEG E	9
22	SEG D	8
23	SEG C	7
24	SEG B	6
25	SEG A	5
26	HEATER-	4
27	KEY 2	3
28	KEY 1	2
29	KEY 0	1

COMMON TIE POINT

TO TM-1
DISPLAY
BOARD CN711
PAGE 3G
CN714
PAGE 3E

④ ② CN321

1	NC	31
2	BACK UP GND	30
3	GND	29
4	ALWAYS 5V	28
5	REMOCON	27
6	HEATER+	26
7	NC	25
8	GRID 8	24
9	GRID 7	23
10	GRID 6	22
11	GRID 5	21
12	GRID 4	20
13	GRID 3	19
14	GRID 2	18
15	GRID 1	17
16	SEG L	16
17	SEG K	15
18	SEG J	14
19	SEG I	13
20	SEG H	12
21	SEG G	11
22	SEG F	10
23	SEG E	9
24	SEG D	8
25	SEG C	7
26	SEG B	6
27	SEG A	5
28	HEATER-	4
29	KEY 2	3
30	KEY 1	2
31	KEY 0	1

- ① USED IN MODEL VHR-H647
② USED IN MODEL VHR-H697
③ USED IN MODEL VWM-648
④ USED IN MODEL VWM-662

* INDICATES THE ITEM NUMBER USED IN THE
MECHANICAL PARTS LIST AND EXPLODED VIEWS.

VOLTAGES TAKEN
IN PLAYBACK

ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

A PHOTOFACT STANDARD NOTATION SCHEMATIC

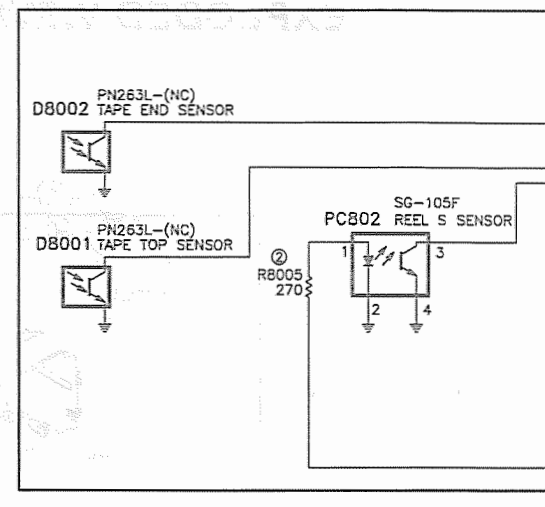
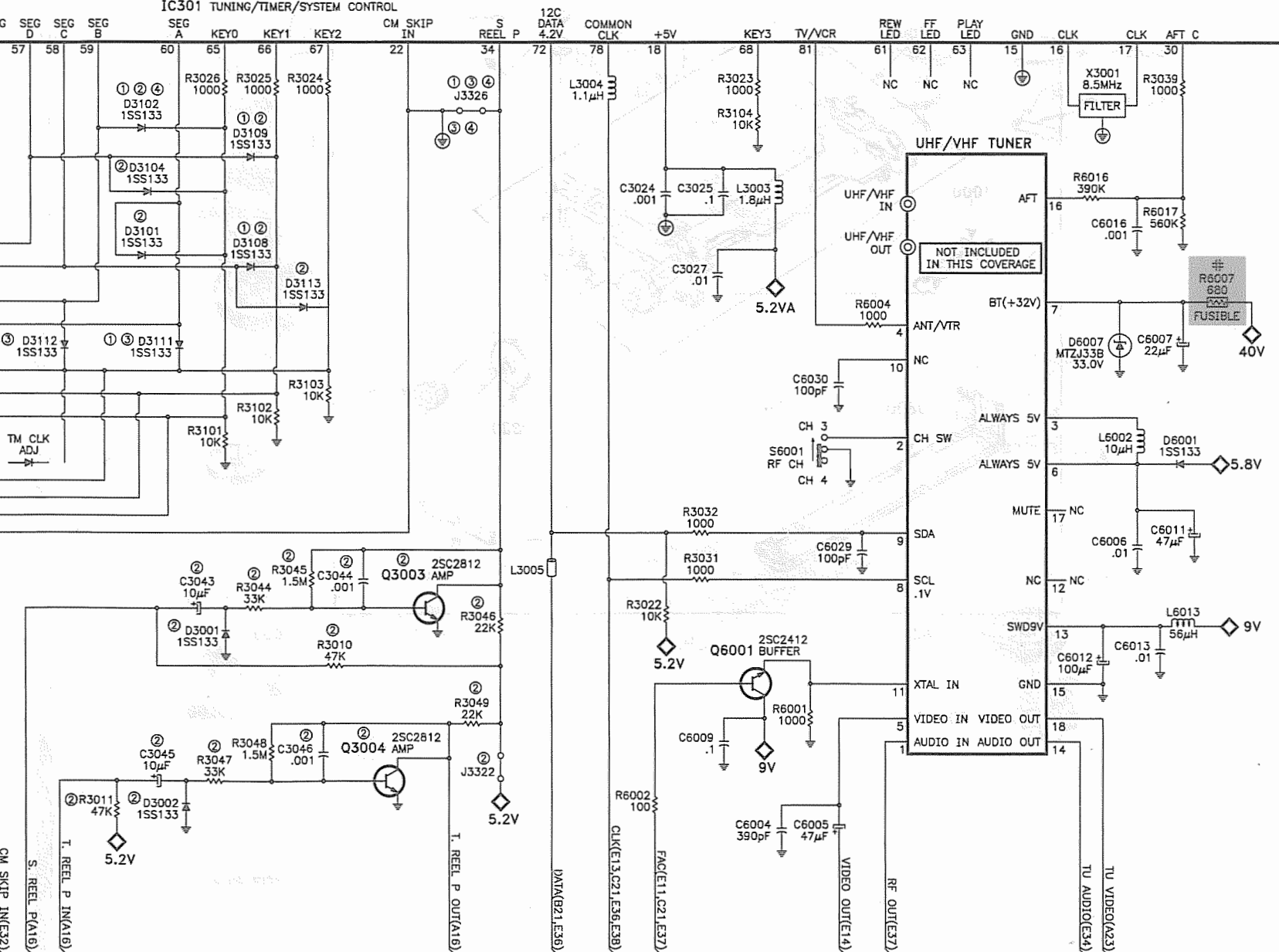
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H, L, AND M INDICATE ACTIVE STATE

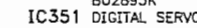
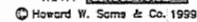
CRESCENT SLIDE 60700 = POSITION	CN801 PIN 8	S8001 X Y	CN801 PIN 12	S8001 Z
E-EJECT	2.0V	L L	5.0V	H
R-SHORT REWIND	2.0V	L L	5.0V	H
7-INITIAL (POWER OFF)	2.0V	L L	0V	L
1-REVIEW	5.0V	H H	0V	L
2-IDLER	2.5V	H L	5.0V	H
3-STILL/SLOW	2.5V	H L	0V	L
5-PLAY/STOP	3.4V	L H	0V	L
4-BRAKE	3.4V	L H	5.0V	H
6-FF/REWIND	2.0V	L L	5.0V	H

NC	NC	NC	NC	NC	NC	NC	NC
37	38	11	64	70	71	80	
STOP LED	NC	TEST1	DMSS LED	NC	NC	NC	

① ② ④ LC866848A-5E58
③ LC866732A-5E12
IC301 TUNING/TIMER/SYSTEM CONTROL



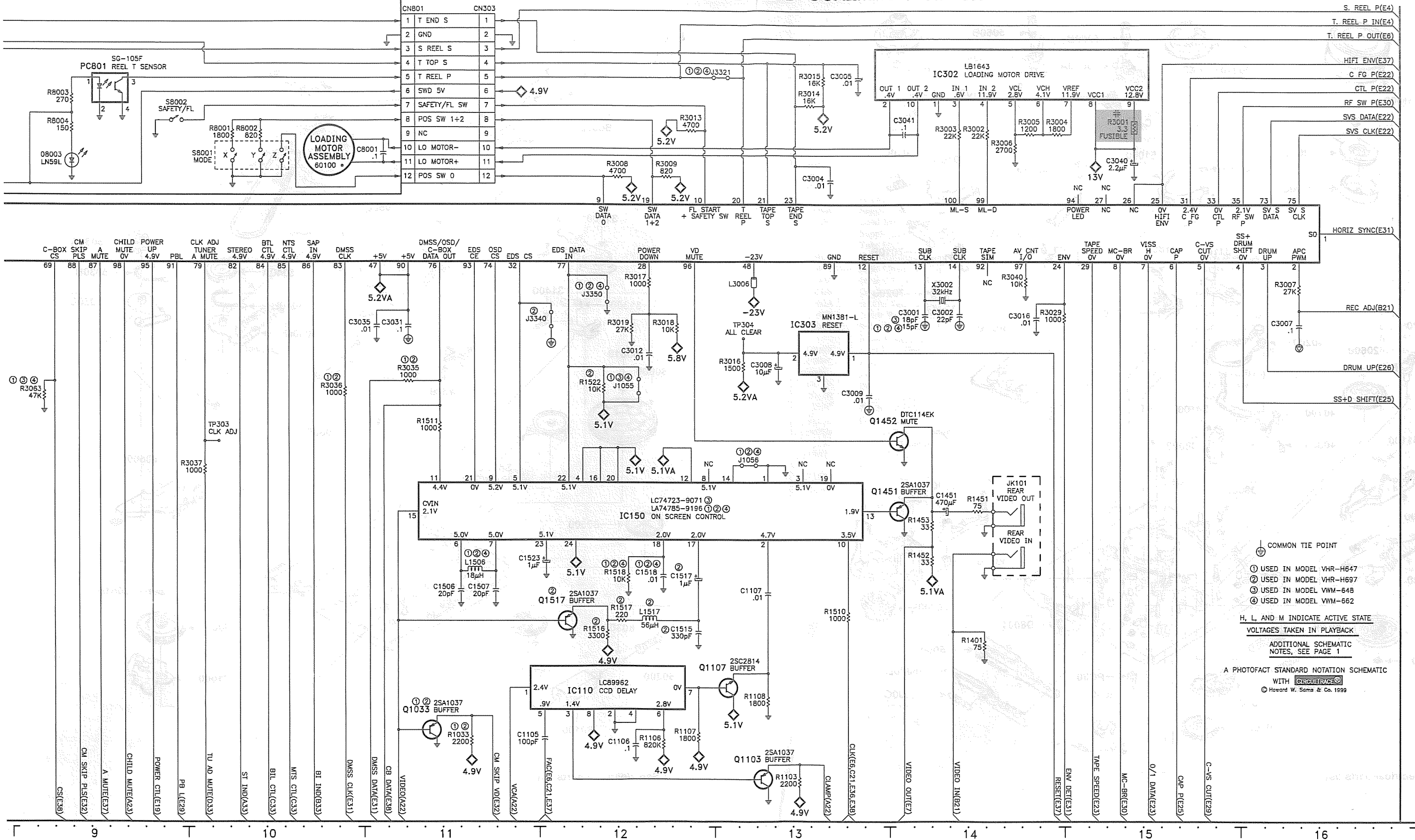
COMMON TIE POINT \downarrow



C

D

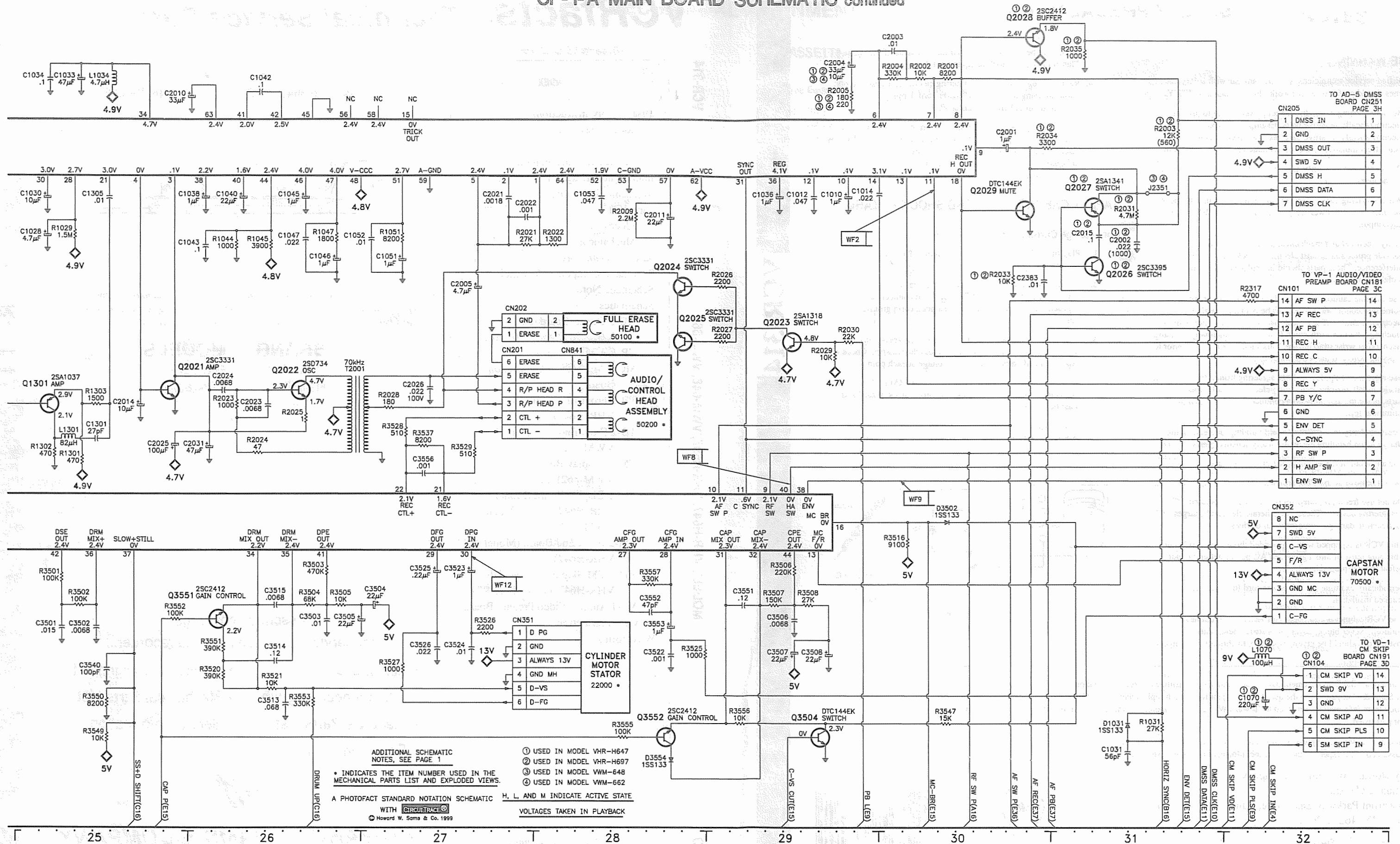
CP-1-A MAIN BOARD, MC-1 MECHANISM CONNECTION BOARD SCHEMATIC continued



COMMON TIE POINT
 ① USED IN MODEL VHR-H647
 ② USED IN MODEL VHR-H697
 ③ USED IN MODEL VWM-648
 ④ USED IN MODEL VWM-662
 H, L, AND M INDICATE ACTIVE STATE
 VOLTAGES TAKEN IN PLAYBACK
 ADDITIONAL SCHEMATIC
 NOTES, SEE PAGE 1
 A PHOTOFAC STANDARD NOTATION SCHEMATIC
 WITH **CIRCUITACE**
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CP-1-A MAIN BOARD SCHEMATIC continued

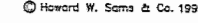
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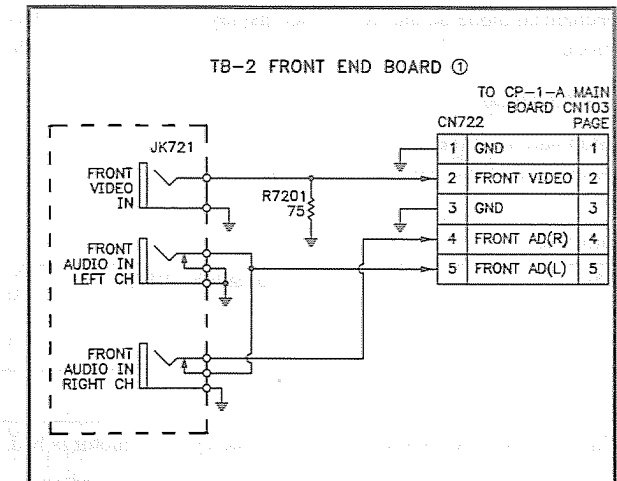
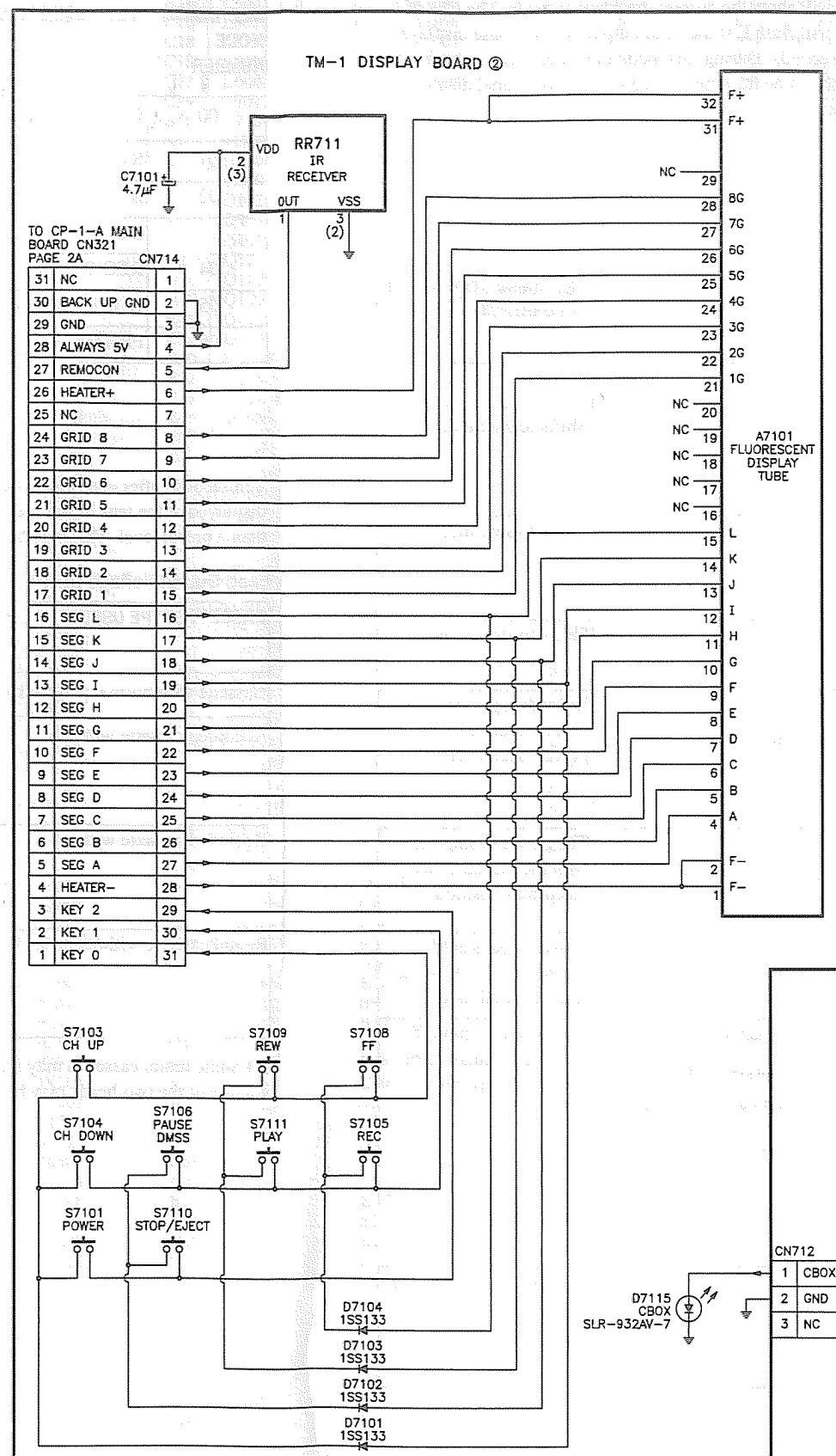
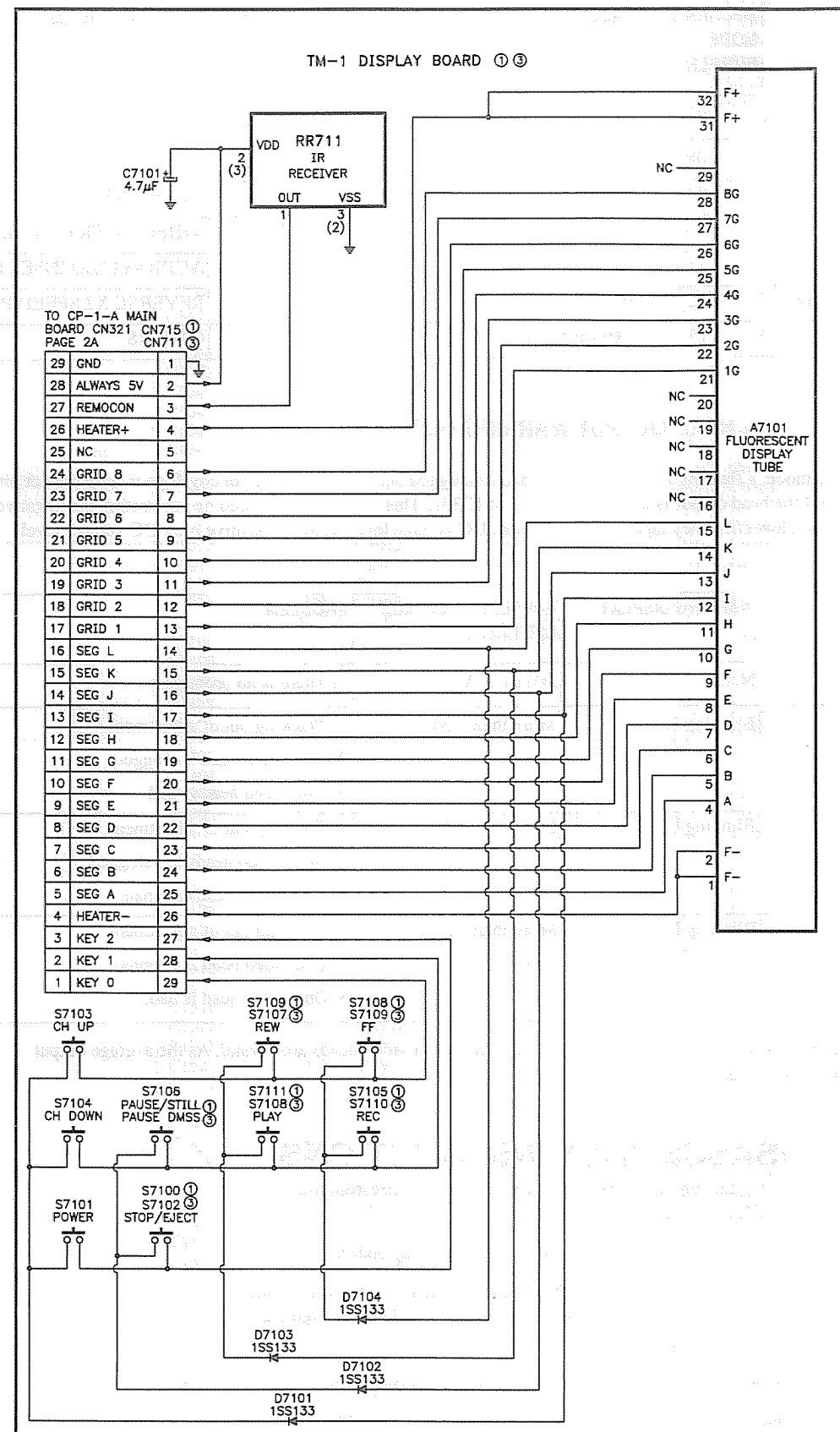
MODELS VHR-H647, VHR-H697, VWM-648, VWM-662

E



E
TB-2 FRONT END BOARD (Model VHR-H647), TM-1 DISPLAY BOARD (Models VHR-H647,
HR-H697, and VWM-648), TM-2 FRONT END BOARD (Model VHR-H647) SCHEMATIC

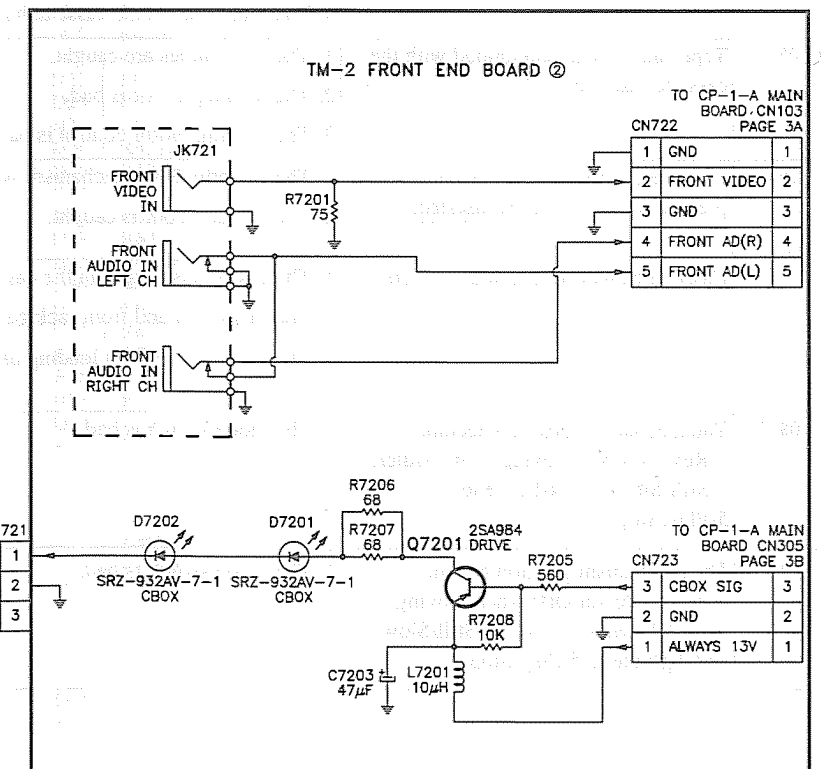
F



- ① USED IN MODEL VHR-H647
- ② USED IN MODEL VHR-H697
- ③ USED IN MODEL VWM-648

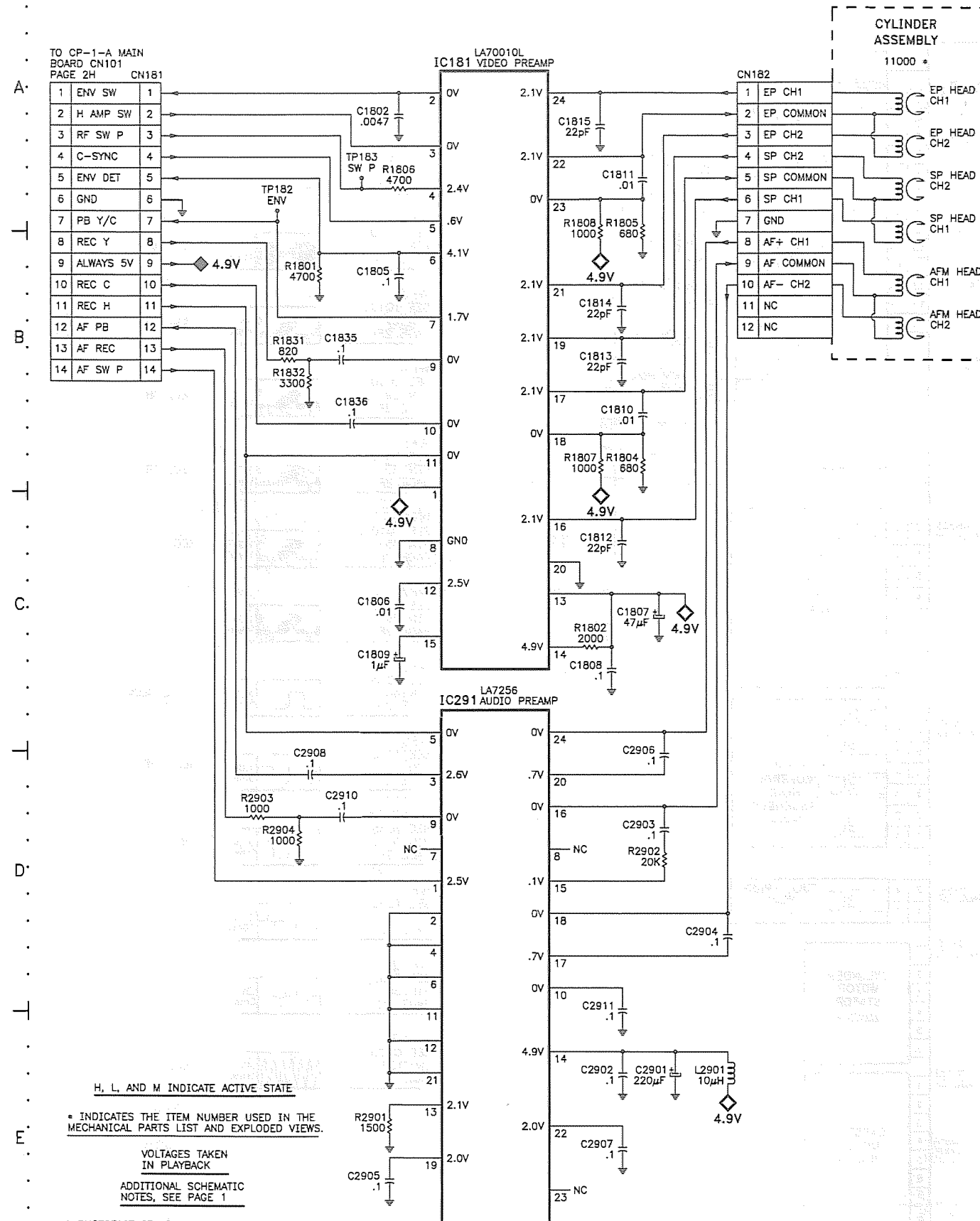
ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

A PHOTOFACIT STANDARD NOTATION SCHEMATIC
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C

VP-1 AUDIO / VIDEO PREAMP BOARD SCHEMATIC



H, L, AND M INDICATE ACTIVE STATE

* INDICATES THE ITEM NUMBER USED IN THE MECHANICAL PARTS LIST AND EXPLODED VIEWS.

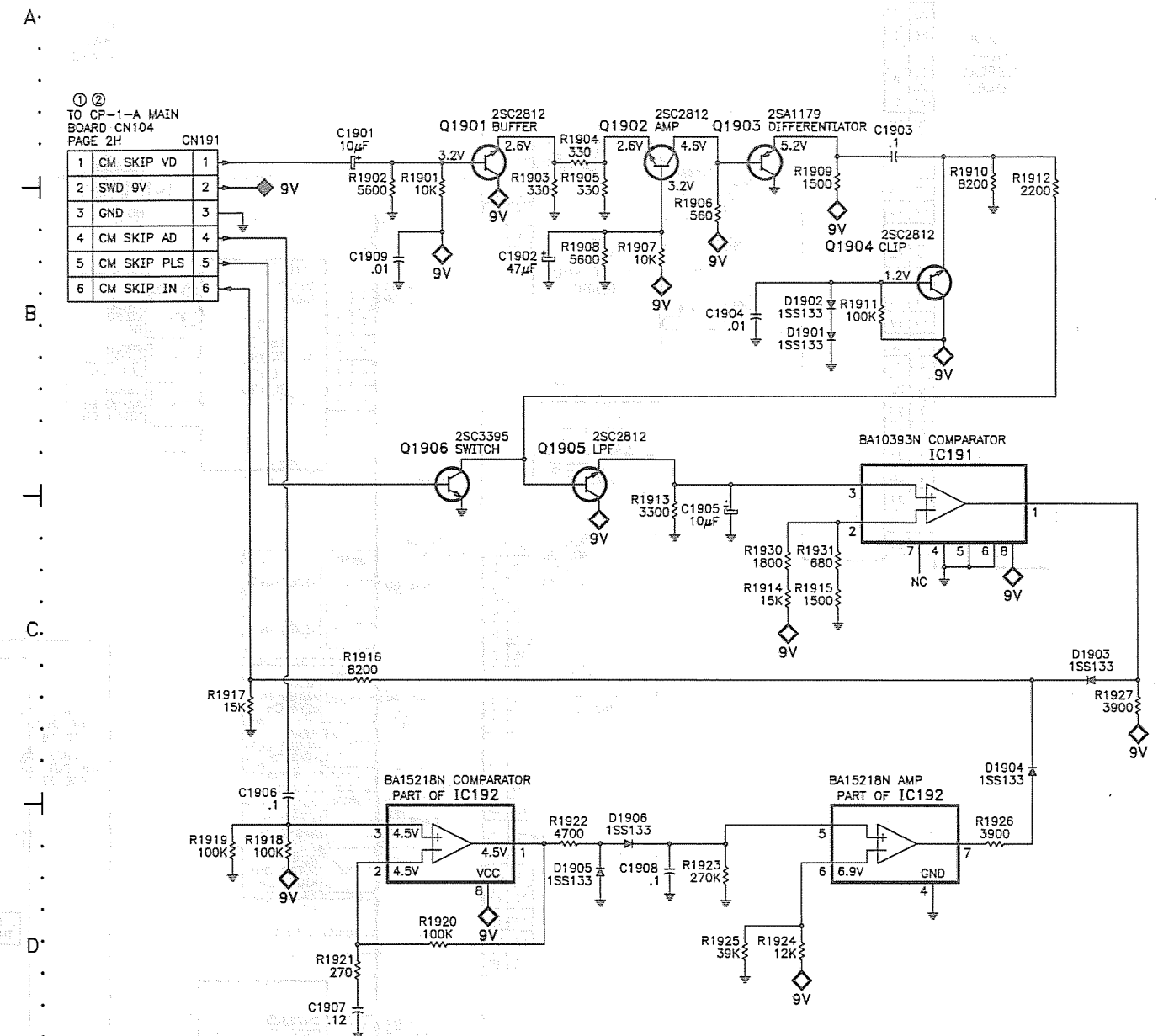
VOLTAGES TAKEN
IN PLAYBACK

ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

A PHOTOFACIT STANDARD NOTATION SCHEMATIC

WITH **CIRCUITRACE®**
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D
VD-1 CM SKIP BOARD
(Models VHR-H647 and VHR-H697) SCHEMATIC



① USED IN MODEL VHR-H647
② USED IN MODEL VHR-H697

VOLTAGES TAKEN
IN PLAYBACK

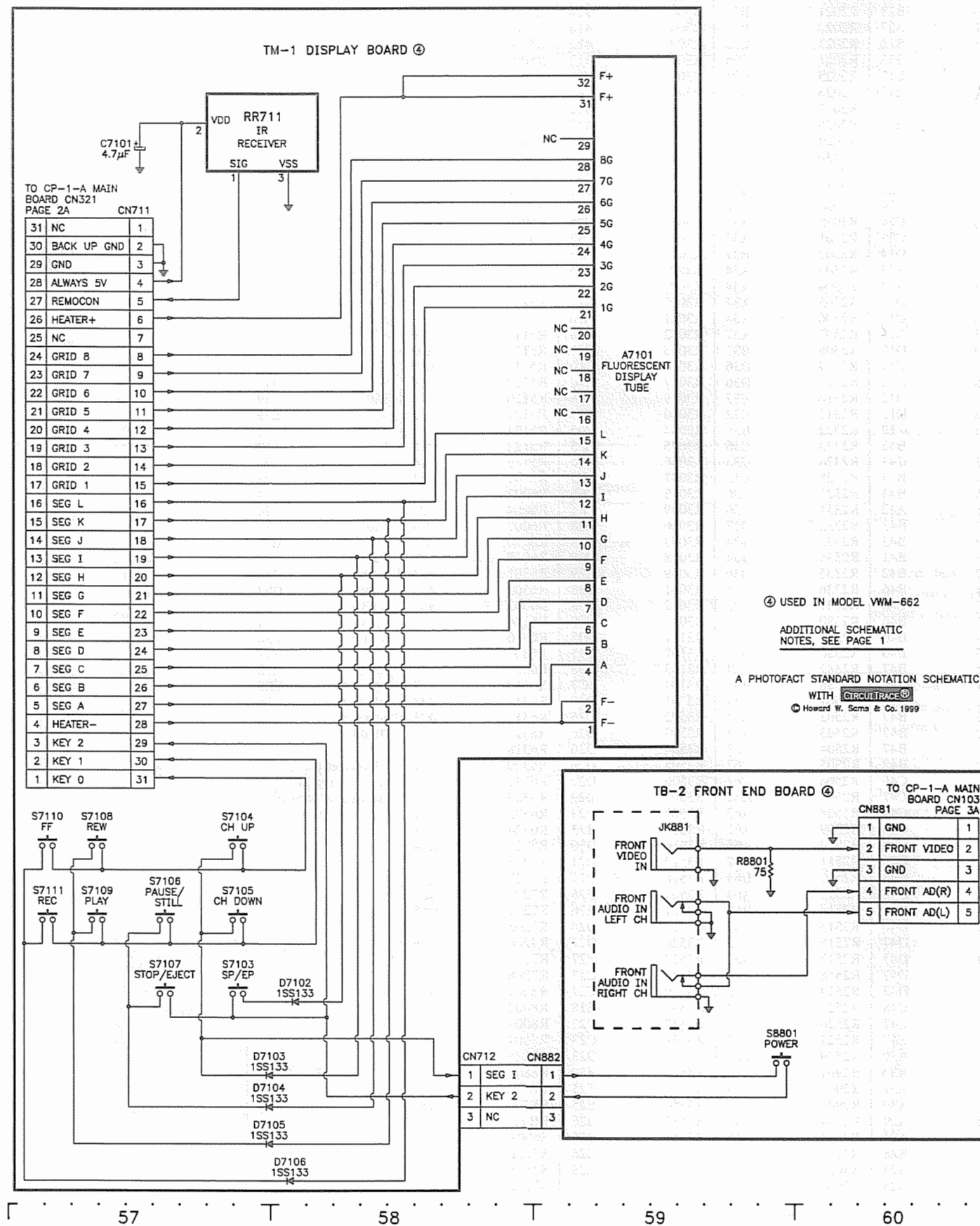
ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

A PHOTOFACT STANDARD NOTATION SCHEMATIC

WITH **CIRCUITRACE[®]**

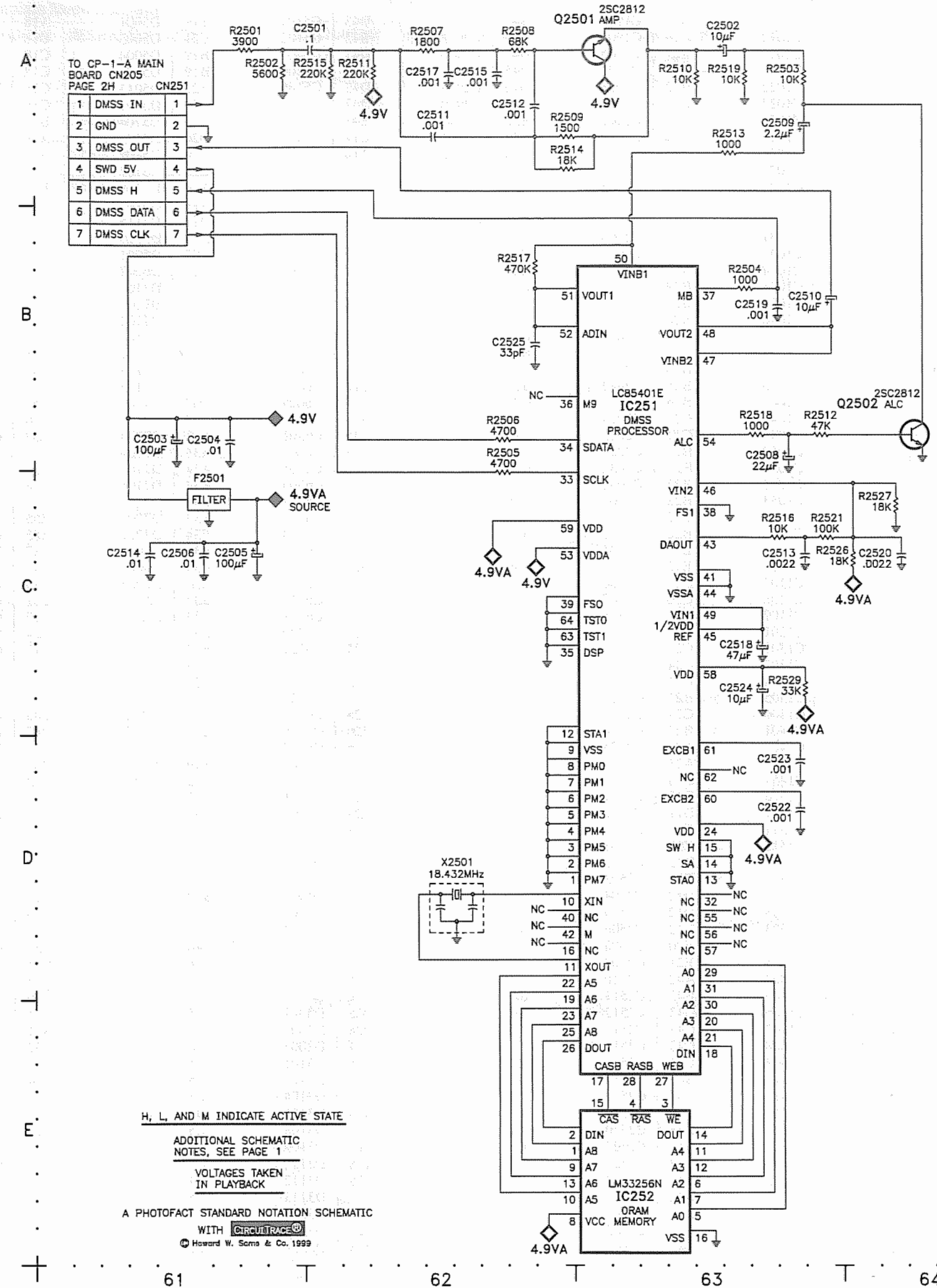
G

TB-2 FRONT END BOARD (Model VWM-662), TM-1 DISPLAY BOARD (Model VWM-662) SCHEMATIC



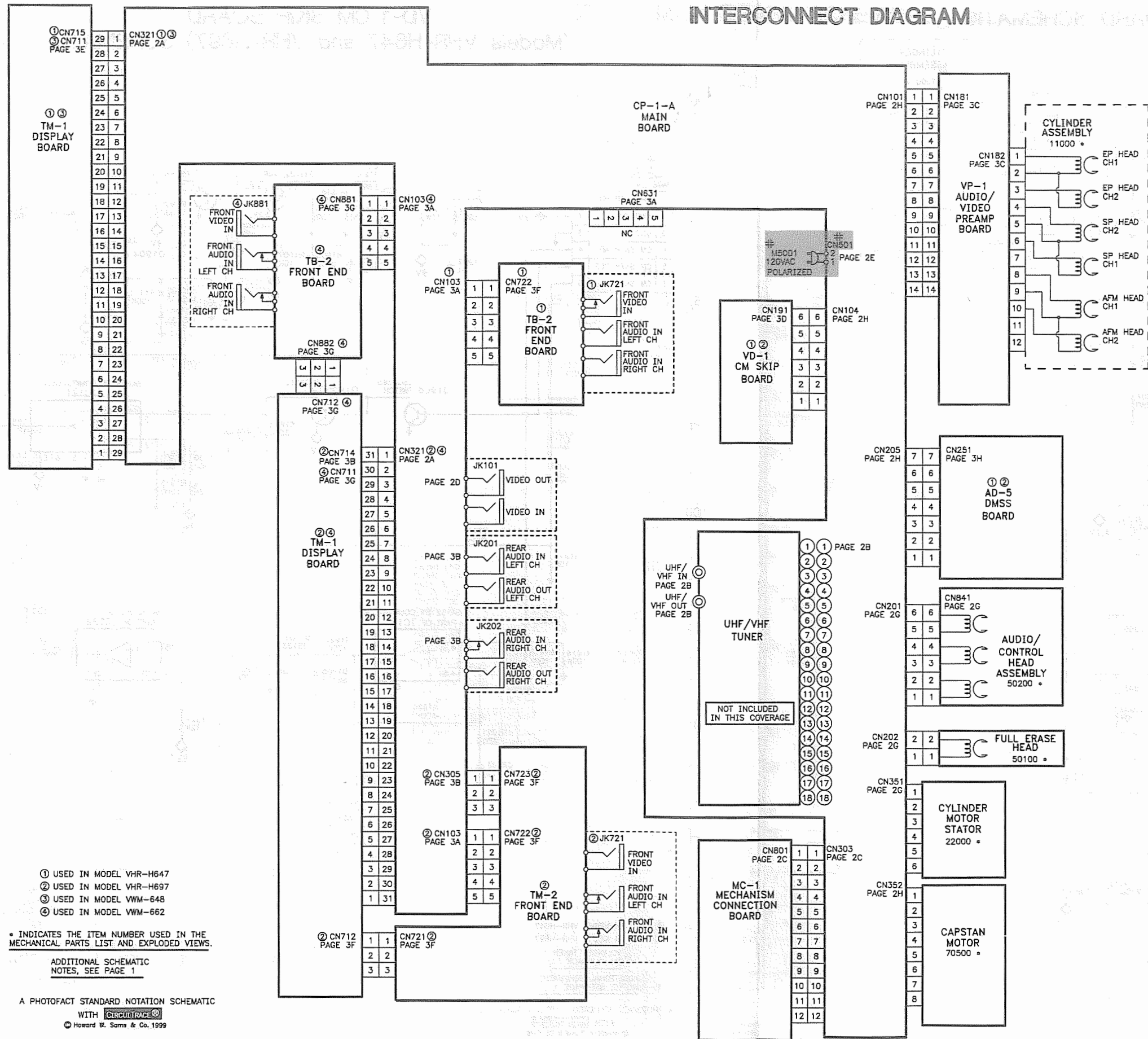
H

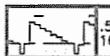






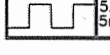
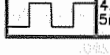

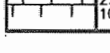
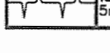

AD-5 DMSS BOARD (Models VHR-H647 and VHR-H697) SCHEMATIC



INTERCONNECT DIAGRAM

WAVEFORMS




- | | | |
|---|---|------------|
| WF1
SEE IC101
PIN 25
PAGE 2F |  | REC, PB |
| WF2
SEE IC101
PIN 11
PAGE 2H |  | REC EE |
| WF3
SEE IC101
PIN 27
PAGE 2F |  | REC, PB |
| WF4
SEE IC101
PIN 29
PAGE 2F |  | REC, PB |
| WF5
SEE IC101
PIN 33
PAGE 2F |  | REC, PB |
| WF6
SEE IC101
PIN 35
PAGE 2F |  | REC |
| WF7
SEE IC101
PIN 39
PAGE 2F |  | REC |
| WF8
SEE IC351
PIN 40
PAGE 2H |  | STILL/SLOW |
| WF9
SEE IC351
PIN 38
PAGE 2H |  | SLOW PB |
| WF10
SEE IC351
PIN 5
PAGE 2F |  | PB |
| WF11
SEE IC351
PIN 26
PAGE 2F |  | PB |
| WF12
SEE IC351
PIN 30
PAGE 2G |  | |
| WF13
SEE Q1050
EMITTER
PAGE 2F |  | REC, PB |

① USED IN MODEL VHR-H647
② USED IN MODEL VHR-H697
③ USED IN MODEL VWM-648
④ USED IN MODEL VWM-662

* INDICATES THE ITEM NUMBER USED IN THE MECHANICAL PARTS LIST AND EXPLODED VIEWS.

ADDITIONAL SCHEMATIC
NOTES, SEE PAGE 1

A PHOTOFACT STANDARD NOTATION SCHEMATIC
WITH 
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SCHEMATIC COMPONENT LOCATION GUIDE

C1010	B29	C1904	B47	C2904	D43	C5101	C19	D5001	A18	L5001	A17	R1049	B23	R2014	A23	R3005	B14	R3557	D28	S7103	D49
C1012	B29	C1905	C47	C2905	E42	C5102	C21	D5003	C18	L5010	B18	R1050	B23	R2021	B27	R3006	B14	R3558	E24	S7103	D52
C1014	B29	C1906	D45	C2906	D43	C5105	B19	D5004	C18	L5101	C19	R1051	B27	R2022	B28	R3007	B16	R3560	E24	S7103	E57
C1021	B24	C1907	D45	C2907	E43	C5106	B19	D5006	C18	L5102	B19	R1071	B22	R2023	C26	R3008	B12	R5001	A17	S7104	D57
C1022	B22	C1908	D46	C2908	D42	C5108	A21	D5013	C18	L6002	D8	R1103	E13	R2024	C26	R3009	B12	R5002	A19	S7104	E49
C1023	C24	C1909	B46	C2910	D42	C5109	A21	D5101	C19	L6013	D8	R1106	E12	R2025	C26	R3010	D5	R5003	A19	S7104	E52
C1024	B24	C2001	B30	C2911	E43	C5110	B19	D5104	B19	L7201	E55	R1107	E12	R2026	B29	R3011	E4	R5004	A17	S7105	D57
C1025	B24	C2002	B31	C3001	C14	C5113	D20	D5105	A19	M5001	A17	R1108	E13	R2027	C29	R3013	B12	R5007	C18	S7105	E52
C1026	B24	C2003	A30	C3002	C14	C5115	C20	D5106	A19	PC801	A9	R1201	E20	R2028	C27	R3014	A13	R5009	C18	S7106	D57
C1027	A22	C2004	A29	C3004	B13	C5116	E20	D5107	B19	PC802	A8	R1301	C25	R2029	C29	R3015	A13	R5012	B17	S7106	E49
C1028	B25	C2005	B27	C3005	A13	C5120	A19	D5108	E20	Q1025	B24	R1302	C25	R2030	C29	R3016	C13	R5014	A18	S7106	E52
C1029	A22	C2006	A24	C3007	C16	C5121	A19	D5109	A20	Q1033	E11	R1303	C25	R2031	B31	R3017	B12	R5015	D18	S7107	D49
C1030	B25	C2007	A23	C3008	C13	C5124	D19	D5115	D20	Q1050	B23	R1304	C24	R2033	B30	R3018	C12	R5020	B18	S7107	E57
C1031	E31	C2008	C21	C3009	C13	C5135	D18	D5116	D20	Q1103	E13	R1305	C24	R2034	B30	R3019	C12	R5021	B19	S7108	D52
C1033	A25	C2009	C20	C3012	C12	C6004	E7	D6001	D8	Q1107	E13	R1306	C24	R2035	A31	R3022	D6	R5026	B17	S7108	D57
C1034	A25	C2010	A26	C3016	C14	C6005	E7	D6007	C8	Q1201	E20	R1308	C24	R2301	A37	R3023	B7	R5101	C18	S7108	E49
C1036	B29	C2011	B28	C3017	D21	C6006	D8	D7101	E49	Q1301	C25	R1401	D14	R2302	B37	R3024	B5	R5102	C19	S7109	D50
C1038	B26	C2012	A23	C3024	C6	C6007	C8	D7101	E52	Q1302	C24	R1402	A23	R2303	A34	R3025	B5	R5103	D19	S7109	D52
C1040	B26	C2013	A24	C3025	C7	C6009	E7	D7102	E50	Q1451	D13	R1403	A23	R2304	A34	R3026	B5	R5104	B19	S7109	D57
C1042	A26	C2014	C25	C3027	C7	C6011	D8	D7102	E52	Q1452	C13	R1451	D14	R2305	A34	R3029	C14	R5111	D19	S7110	D57
C1043	B26	C2015	B31	C3030	D39	C6012	D8	D7102	E58	Q1517	D12	R1452	D14	R2306	A34	R3031	D6	R5112	D19	S7110	E50
C1045	B26	C2021	B27	C3031	C11	C6013	D8	D7103	E49	Q1901	B46	R1453	D14	R2307	A37	R3032	D6	R5114	C19	S7110	E52
C1046	B26	C2022	B27	C3035	C11	C6016	C8	D7103	E52	Q1902	B46	R1510	D13	R2308	B37	R3035	C11	R5115	E20	S7111	D57
C1047	B26	C2023	C26	C3040	B15	C6029	D7	D7103	E57	Q1903	B47	R1511	C11	R2309	D36	R3036	C10	R5118	E19	S7111	E52
C1048	C21	C2024	C26	C3041	B14	C6030	C7	D7104	E50	Q1904	B47	R1516	D12	R2310	D36	R3037	C10	R5119	E19	S8001	B10
C1049	C21	C2025	C25	C3043	D5	C6301	A33	D7104	E52	Q1905	C46	R1517	D12	R2316	E37	R3039	B8	R5120	A19	S8002	B9
C1050	B23	C2026	C27	C3044	D5	C6302	A33	D7104	E57	Q1906	C46	R1518	D12	R2317	B32	R3040	B14	R5121	B20	S8801	E59
C1051	B27	C2031	C26	C3045	E5	C6305	A34	D7105	E57	Q2021	C25	R1522	C12	R2322	B35	R3044	D5	R5122	D18	T2001	C26
C1052	B27	C2032	C20	C3046	E5	C6306	A34	D7106	E58	Q2022	C26	R1801	B42	R2323	C36	R3045	D5	R5123	D18	T5001	A19
C1053	B28	C2301	B36	C3050	C21	C6308	C33	D7115	E53	Q2023	C29	R1802	C43	R2324	C36	R3046	D6	R5135	D18	TM CLK ADJ	D4
C1070	E32	C2302	B36	C3501	D25	C6313	E33	D7201	E55	Q2024	B28	R1804	B43	R2325	C35	R3047	E5	R6001	E7	VR351	D23
C1071	B22	C2303	B36	C3502	D25	C6314	E34	D7202	E55	Q2025	C28	R1805	B43	R2327	E36	R3048	E5	R6002	E6	VR631	E34
C1105	E12	C2304	D36	C3503	D26	C6315	B34	D8001	A7	Q2026	B31	R1806	A42	R2331	D36	R3049	E6	R6004	C7	VR632	B34
C1106	E12	C2305	C36	C3504	D27	C6316	B34	D8002	A7	Q2027	B31	R1807	B43	R2332	D37	R3056	E38	R6007	C8	VR633	D33
C1107	D13	C2306	D36	C3505	D27	C6317	B34	D8003	B9	Q2028	A30	R1808	B43	R2333	B34	R3057	E38	R6016	C8	VR634	E33
C1108	C20	C2307	C36	C3506	D29	C6318	B34	F2501	C61	Q2029	B30	R1831	B41	R2334	B34	R3058	D38	R6017	C8	VR635	D33
C1109	C20	C2308	D37	C3507	D29	C6319	C34	F5001	A17	Q2302	B35	R1832	B42	R2335	D36	R3059	C39	R6301	A33	X1001	B23
C1201	E20	C2309	A36	C3508	D29	C6320	C34	IC101	B24	Q2311	C37	R1901	B46	R2336	C35	R3061	C38	R6302	B33	X2501	D62
C1301	C25	C2310	B36	C3509	D24	C6321	E33	IC110	E12	Q2312	B37	R1902	B46	R2337	C35	R3062	D38	R6303	B33	X3001	C8
C1302	C24	C2311	A36	C3510	D24	C6322	E33	IC150	D12	Q2313	C37	R1903	B46	R2380	A23	R3063	C9	R6304	B33	X3002	C14
C1304	C24	C2312	B36	C3511	C23	C6323	D34	IC181	A42	Q2501	A63	R1904	B46	R2385	C37	R3101	D5	R6306	C33	X3003	C38
C1305	B25	C2321	C36	C3512	D23	C6324	D34	IC191	C47	Q2502	B64	R1905	B46	R2386	B37	R3102	D5	R6307	C33	11000 *	B44
C1306	C21	C2323	B36	C3513	E26	C6325	E34	IC192	D46	Q3001	C39	R1906	B47	R2387	A37	R3103	D5	R6309	D33	22000 *	E28
C1401	B22	C2324	C35	C3514	E26	C6326	E34	IC192	D47	Q3002	D38	R1907	B46	R2388	B37	R3104	C7	R6310	D33	50100 *	C28
C1402	A24	C2325	C37	C3515	D26	C6327	E34	IC231	A36	Q3003	D5	R1908	B46	R2501	B47	R3501	D25	R6311	D33	50200 *	C28
C1403	A23	C2326	E36	C3516	D21	C7101	B49	IC251	B63	Q3004	E5	R1909	B47	R2502	A61	R3502	D25	R6312	D33	60100 *	B10
C1451	D14	C2330	E36	C3517	D22	C7101	B52	IC252	E63	Q3501	D18	R1910	B47	R2503	A63	R3503	D26	R6317	C33	70500 *	D32
C1506	D11	C2331	E37	C3518	E23	C7101	B57	IC291	D42	Q3504	E29	R1911	B47	R2504	B63	R3504	D26	R6318	C33		
C1507	D11	C2332	C36	C3519	E23	C7203	E55	IC301	B5	Q3507	E23	R1912	B48	R2505	B48	R3505	D26	R6320	B34		
C1511	E21	C2383	B30	C3522	D28	C8001	B11	IC302	A14	Q3551	D26	R1913	C46	R2506	C62	R3506	D29	R6321	C34		
C1512	E21	C2501	A61	C3523	D27	D1031	E31	IC303	C13	Q3552	E28	R1914	C47	R2507	A62	R3507	D29	R6322	D34		
C1515	D12	C2502	A63	C3524	D27	D1201	E21	IC305	B39	Q5002	B17	R1915	C47	R2508	A62	R3508	D29	R6323	B34		
C1516	E21	C2503	B61	C3525	D27	D1901	B47	IC351	D23	Q5003	B17	R1916	C45	R2509	A62	R3510	B23	R6324	E34		
C1517	D12	C2504	B61	C3526	D27	D1902	B47	IC511	D18	Q5004	B17	R1917	C45	R2510	A63	R3516	D30	R6325	E34		
C1518	D12	C2505	C61	C3529	E24	D1903	C48	IC631	A33	Q5020	B18	R1918	D45	R2511	A62	R3517	D21	R6326	E34		
C1523	D12	C2506	C61	C3530	D18	D1904	C48	JK201	A37	Q5102	C20	R1919	D45	R2512	B63	R3518	D21	R6327	E34		
C1524	E20	C2508	C63	C3531	E18	D1905	D46	JK202	B37	Q5103	D20	R1920	D46	R2513	A63	R3520	E26	R7201	B55		
C1525	E21	C2509	A63	C3536	E23	D1906	D46	JK721	B55	Q5104	E20	R1921	D45	R2514	B62	R3521	E26	R7201	D55		
C1802	A42	C2510	B63	C3540	E25	D2301	B36	JK721	D55	Q5105	D19	R1922	D46	R2515	A62	R3525	D28	R7205	E56		
C1805	B42	C2511	A62	C3551	D29	D3001	D5	JK881	D59	Q5106	D19	R1923	D47	R2516	C63	R3526	D27	R7206	E55		
C1806	C42	C2512	A62	C3552	D28	D3002	E5	L1034	A25	Q6001	E7	R1924	D47	R2517	B62	R3527	E27	R7207	E55		
C1807	C43	C2513	C63	C3553	D28	D3004	D20	L1048	B21	Q7201	E55	R1925	D47	R2518	B63	R3528	C27	R7208	E55		
C1808	C43	C2514	C61	C3554	E24	D3005	C20	L1070	B24	R1020	B24	R1926	D47	R2519	A63	R3529	C27	R8001	B10		
C1809	C42	C2515	A62	C3555	D18	D3101	C5	L1301	C25	R1023	B22	R1927	C48	R2521	C63	R3531	E18	R8002	B10		
C1810	B43	C2517	A62	C3556	C27	D3102	C5	L1302	C24	R1025	B24	R1930	C47	R2526	C63	R3537	C27	R8003	A9		
C1811	A43	C2518	C63	C5001	A17	D3104	C5	L1451	E21	R1026	C24	R1931	C47	R2527	C64	R3539	C23	R8004	B9		
C1812	C43	C2519	B63	C5002	A18	D3105	D4	L1506	D11	R1027	B24	R2001	A30	R2529	C63	R3546	D23	R8005	A8		
C1813	B43	C2520	C64	C5005	A18	D3108	C5	L1517	D12	R1029	B25	R2002	A30	R2901	E42	R3547	E30	R8801	D59		
C1814	B43	C2522	D63	C5007	D17	D3109	C5	L2001	C21	R1031	E31	R2003	A31	R2902	D43	R3549	E25	RR711	A50		
C1815	A43	C2523	D63	C5010	A18	D3111	C5	L2901	E43	R1033											

SERVICE INFORMATION

SELF-DIAGNOSIS MODE

This VCR displays problems in the mechanism or head output and also displays the mechanism mode on the front panel display while in the self-diagnosis mode.

Entering Self-Diagnosis Mode

Press and hold the stop button on the remote for about 10 seconds to enter the self-diagnosis mode. It is displayed on the front panel

display. The channel display will show the self-diagnosis number. The seconds display will show the current mechanism mode. The tens of minutes display will flash L if the head output is low. These displays last for about 3 seconds. During this mode the other parts of the front panel display will not be lit. After 3 seconds the front panel display will return to normal.

Self Diagnosis Contents

SELF DIAGNOSIS NUMBER	PROBLEM	POSSIBLE CAUSES	MECHANISM STATE AFTER OCCURRENCE
00	There is no problem in the mechanism.	-	-
01	The cylinder motor does not rotate.	1. The cylinder motor is bad. 2. The cylinder motor control is bad. 3. The tape is wound around the cylinder.	Shifts to stop mode.
02	The take-up reel does not rotate.	1. The take-up reel is caught. 2. The reel belt is bad. 3. The take-up torque has decreased.	Shifts to stop mode.
03	The capstan motor does not rotate.	1. The capstan motor is bad. 2. The capstan motor control is bad.	Shifts to stop mode.
04	The tape cannot be loaded with the cassette inserted. Unloading can be performed.	1. Error in the tape loading mechanism. 2. Foreign object in the tape loading mechanism. 3. The tape end sensor is bad. 4. The reel brake in the cassette has not been released.	Unloads tape, shifts to initial mode, and the power is shut off.
05	Tape cannot load and unload with the cassette inserted.	1. The tape guides are caught. 2. The loading motor is bad. 3. The loading motor control is bad.	The power is shut off with the mechanism at its current position.
06	Cassette cannot eject when eject is pressed. Cassette can be inserted.	1. The cassette drive mechanism is bad. 2. The cassette door is caught.	Cassette loads and mechanism shifts to the stop or initial mode.
07	Cassette cannot be inserted or ejected.	1. The cassette is caught in the cassette drive mechanism. 2. The main cam and front rack gear have not engaged properly. 3. The gears of the front loading drive mechanism have not engaged properly.	The power is shut off with the mechanism at its current position.
08	The mechanism position becomes 1-Review when moving from 2-Idler, 3-Still/Slow, and 4-Brake to 5-Play/Stop.	1. The mode switch is bad.	The power is shut off with the mechanism at it current position.
09	The mechanism position becomes 7-Initial (Power Off) when moving from 1-Review, 2-Idler, 3-Still/Slow, and 4-Brake to 5-Play/Stop.	1. The mode switch is bad.	Performs take-up, shifts to the initial mode, and the power is shut off.

Mechanism Mode Contents

MECHANISM MODE NUMBER	MECHANISM MODE	MECHANISM MODE NUMBER	MECHANISM MODE	MECHANISM MODE NUMBER	MECHANISM MODE
00	CASSETTE OUT	07	SLOW	14	FAST FORWARD
01	STANDBY	08	PLAY	15	REWIND
02	STOP	09	RECORD	16	VIDEO INSERT
03	STILL	10	AUDIO DUBBING	17	VIDEO INSERT-PAUSE
04	REC-PAUSE	11	X2 SPEED PLAY	18	AUDIO/VIDEO INSERT
05	AUDIO DUBBING-PAUSE	12	CUE	19	REVERSE X2 SPEED PLAY
06	FRAME ADVANCE	13	REVIEW	99	OTHERS

HEAD OUTPUT WARNING DISPLAY

Ten seconds after entering self-diagnosis mode, a flashing L will be displayed at the tens of minutes position if the head output is less than a preset level. This may be caused by a low efficiency tape or a

bad or clogged head. The head output envelope is measured at pin 25 of IC301. This voltage is measured by subtracting the negative peak DC voltage level from the positive peak DC voltage level.

Head Output Voltage Check

CASSETTE TYPE USED	WARNING DISPLAY	ENVELOPE VOLTAGE DIFFERENCE	PROBLEM
Cassette with normal playback output.	None	.5V to .95V	1. There is no problem.
Recorded cassette with tab.	Blinking L	More than .95V	1. Tracking out of adjustment. 2. One video head is clogged. 3. One video head is bad.
Recorded cassette with tab.	Blinking L	Less than .5V	1. Tracking out of adjustment. 2. Both video heads are clogged. 3. Both video heads are bad.
Rental cassette without tabs. (1)	Blinking L	More than .95V	1. Tracking out of adjustment. 2. One video head is clogged. 3. One video head is bad.

(1) Some rental cassettes may have extremely low playback output voltage even when both video heads are normal. As the average output voltage of the two heads may be less than .5V for some, no warning display will be shown.

DISASSEMBLY INSTRUCTIONS

After removing the top cover, bottom cover, and the cabinet front assembly, the rest of VCR can be disassembled as follows:

1. Spread locking clamps and remove TM-1 display board.
2. Remove the screw that at rear of the VCR. Remove the screw from the left rear of the chassis. Remove the screw and holder from the right rear of the chassis.
3. Remove the four screws that attach the mechanism to the chassis.
4. Press the locking clamps on the left side at the rear and the right side at the front of the chassis. Lift the whole mechanism and CP-1-A main board.

ELECTRICAL PARTS LIST

Item No. Description Mfr. Part No. Notes

AD-5 DMSS BOARD (Models VHR-H647 and VHR-H697)

SEMICONDUCTORS

IC251 (1)(2)	LC85401E	409 378 7107	-
IC252 (1)(2)	LM33256N-15	409 123 4306	-
IC252 (1)(2)	LM33256G-12	409 158 1400	-
IC252 (1)(2)	LM33256P-80	409 314 8403	-
IC252 (1)(2)	LM33256G-10	409 235 1408	-
Q2501, 02 (1)(2)	2SC2412K-S	405 014 4608	-
Q2501, 02 (1)(2)	2SC2412K-R	405 014 4509	-
Q2501, 02 (1)(2)	2SC2812-L6	405 015 8704	-
Q2501, 02 (1)(2)	2SC2812-L5	405 015 8407	-

OTHER

F2501 (1)(2)	Filter	610 247 3322	-
X2501 (1)(2)	Crystal	645 011 5431	18.432MHz
	PC Board (1)(2)	613 176 1490	AD-5 DMSS

CP-1-A MAIN BOARD

SEMICONDUCTORS

D1031	GMA01	407 007 9904	-
	ISS133	407 012 4406	-
D1201	MTZJ5.6C	407 063 8903	-
D2301	GMA01	407 007 9904	-
	ISS133	407 012 4406	-
D3001, 02 (2)	ISS133	407 012 4406	-
D3004 (1)(3)	ISS244	407 078 2705	-
D3004 (2)(4)	ISS133	407 012 4406	-
D3005	ISS133	407 012 4406	-
D3101 (2)	ISS133	407 012 4406	-
D3102 (1)(2)(4)	ISS133	407 012 4406	-
D3104 (2)	ISS133	407 012 4406	-
D3105	ISS133	407 012 4406	-
D3108 (1)(2)	ISS133	407 012 4406	-
D3109 (1)(2)	ISS133	407 012 4406	-
D3111 (1)(3)	ISS133	407 012 4406	-
D3112 (3)	ISS133	407 012 4406	-
D3113 (2)	ISS133	407 012 4406	-
D3501	MTZJ5.6C	407 063 8903	-
D3502, 54	ISS133	407 012 4406	-
# D5001	SIWB60	-	-
	SIWB(A)60	407 104 5304	-
	DB154G-S	407 197 6400	-
	DB155G-S	407 197 6509	-
D5003, 04, 06	ISS244	407 078 2705	-
# D5013	PS2501-1D	407 149 9404	-
	PS2501-1M	407 149 8209	-
D5101	ERB93-02L3	407 160 9308	-
	RL2Z-LF-C4	407 169 5707	-
D5104	RL2Z-LF-C4	407 169 5707	-
	ERB93-02L3	407 160 9308	-
	SF24	407 198 2500	-
D5105	ERA38-04	407 091 6902	-
	SFT14	407 198 2401	-
D5106	ISS244	407 078 2705	-
D5107	SFT14	407 198 2401	-
	ERA38-04	407 091 6902	-
D5108, 09	MTZJ5.6C	407 063 8903	-
D5115, 16	ERA38-04	407 091 6902	-
D6001	ISS133	407 012 4406	-
	GMA01	407 007 9904	-
D6007	MTZJ33B	407 099 9905	-
IC101	LA71010ML	-	-
	LA71010ML-MPB	410 262 0807	-

For SAFETY use only equivalent replacement part.

Item No. Description Mfr. Part No. Notes

IC110	LC89962	409 371 7302	-
IC150 (1)(2)(4)	LC74723-9196	409 387 0809	-
IC150 (3)	LA74785-9071	409 346 0307	-
IC231	BH7801K	-	-
	BH7801AK	409 392 2201	-
IC301 (1)(2)(4)	LC866848A-5E58	410 289 4208	-
IC301 (3)	LC866732A-5E12	410 284 7808	-
IC302	LB1643	409 314 2005	-
IC303	MN1380-L	409 243 4101	-
	MN1381-L	409 313 0903	-
IC305 (2)	UPD17215GT-514-E1	410 217 1804	-
IC351	BU2895K	-	-
	BU2895AK	409 392 8203	-
	XLU2895AK	409 388 4905	-
IC511	L5431	409 067 7203	-
	UPC1093J	409 180 2307	-
IC631	CXA1534S	409 272 3205	-
Q1025	2SC2812-L5	405 015 8407	-
	2SC2812-L6	405 015 8704	-
	2SC2412K-R	405 014 4509	-
	2SC2412K-S	405 014 4608	-
Q1033 (1)(2)	2SA1179-M5	405 002 6508	-
Q1033 (1)(2)	2SA1179-M6	405 002 6706	-
Q1033 (1)(2)	2SA1037K-R	405 002 0308	-
Q1033 (1)(2)	2SA1037K-S	405 002 0407	-
Q1050	2SC2812-L5	405 015 8407	-
	2SC2812-L6	405 015 8704	-
	2SC2412K-R	405 014 4509	-
	2SC2412K-S	405 014 4608	-
Q1103	2SA1179-M5	405 002 6508	-
	2SA1179-M6	405 002 6706	-
	2SA1037K-R	405 002 0308	-
	2SA1037K-S	405 002 0407	-
Q1107	2SC2814-F4	405 015 9701	-
	2SC2814-F5	405 015 9909	-
	2SC2413K-Q	405 035 6100	-
Q1201	2SC2274-E	405 013 6801	-
	2SC2274-F	405 013 7006	-
Q1301	2SA1179-M5	405 002 6508	-
	2SA1179-M6	405 002 6706	-
	2SA1037K-R	405 002 0308	-
	2SA1037K-S	405 002 0407	-
Q1302	2SC2814-F4	405 015 9701	-
	2SC2814-F5	405 015 9909	-
	2SC2413K-Q	405 035 6100	-
Q1451	2SA1179-M5	405 002 6508	-
	2SA1179-M6	405 002 6706	-
	2SA1037K-R	405 002 0308	-
	2SA1037K-S	405 002 0407	-
Q1452	DTC114EK	405 000 2908	-
	2SC3398	405 000 2908	-
Q1517 (2)	2SA1179-M5	405 002 6508	-
Q1517 (2)	2SA1179-M6	405 002 6706	-
Q1517 (2)	2SA1037K-R	405 002 0308	-
Q1517 (2)	2SA1037K-S	405 002 0407	-
Q2021	2SC3331-S	405 018 0002	-
	2SC3331-T	405 018 0101	-
	2SC3331-U	405 018 0200	-
Q2022	2SD734-E	405 024 9709	-
	2SD734-F	405 024 9907	-
Q2023	2SA1318-S	405 003 5609	-
	2SA1318-T	405 003 5708	-
	2SA1318-U	405 003 5807	-
Q2024, 25	2SC3331-U	405 018 0200	-
	2SC3331-S	405 018 0002	-
	2SC3331-T	405 018 0101	-
Q2026 (1)(2)	2SC3395	405 018 1900	-
Q2026 (1)(2)	DTC144EK	405 029 3504	-
Q2027 (1)(2)	2SA1341	405 003 7108	-
Q2027 (1)(2)	DTA144EK	405 000 2007	-
Q2028 (1)(2)	2SC2812-L5	405 015 8407	-
Q2028 (1)(2)	2SC2812-L6	405 015 8704	-

ELECTRICAL PARTS LIST continued

Item No.	Description	Mfr. Part No.	Notes
Q2028 (1)(2)	2SC2412K-R	405 014 4509	-
Q2028 (1)(2)	2SC2412K-S	405 014 4608	-
Q2029	DTC144EK	405 029 3504	-
	2SC3395	405 018 1900	-
Q2302	2SA984-F	405 006 6702	-
	2SA984K-F	405 006 7204	-
Q2311, 12	DTC343TK	405 083 5209	-
Q2313	2SA1341	405 003 7108	-
	DTA144EK	405 000 2007	-
Q3001 (2)	2SC2812-L5	405 015 8407	-
Q3001 (2)	2SC2812-L6	405 015 8704	-
Q3001 (2)	2SC2412K-R	405 014 4509	-
Q3001 (2)	2SC2412K-S	405 014 4608	-
Q3002 (2)	2SC3395	405 018 1900	-
Q3002 (2)	DTC144EK	405 029 3504	-
Q3003, 04 (2)	2SC2812-L5	405 015 8407	-
Q3003, 04 (2)	2SC2812-L6	405 015 8704	-
Q3003, 04 (2)	2SC2412K-R	405 014 4509	-
Q3003, 04 (2)	2SC2412K-S	405 014 4608	-
Q3501	2SC2274-E	405 013 6801	-
	2SC2274-F	405 013 7006	-
Q3504	DTC144EK	405 029 3504	-
Q3507	2SC2412K-S	405 014 4608	-
	2SC2412K-R	405 014 4509	-
Q3551, 52	2SC2412K-S	405 014 4608	-
	2SC2412K-R	405 014 4509	-
Q5002	2SC2274K-F	405 013 7303	-
	2SC2274-F	405 013 7006	-
Q5003	2SA984K-F	405 006 7204	-
	2SA984-F	405 006 6702	-
Q5004	2SC2274K-F	405 013 7303	-
	2SC2274-F	405 013 7006	-
# Q5020	2SK2434	405 132 7505	-
Q5102, 03	2SC4483-S	405 089 2103	-
	2SC4483-T	405 089 2202	-
Q5104	2SC2412K-R	405 014 4509	-
	2SC2412K-S	405 014 4608	-
Q5105	DTA114ES	405 000 0508	-
Q5106	DTC144EK	405 029 3504	-
Q6001	2SC2812-L5	405 015 8407	-
	2SC2812-L6	405 015 8704	-
	2SC2412K-R	405 014 4509	-
	2SC2412K-S	405 014 4608	-
OTHER			
# C5001, 02	.033 20% 250VAC	404 032 5208	-
# C5005	470pF 10% 250VAC	404 074 0506	-
# C5007	.0047 20% 250VAC	404 074 0902	-
C5020	680pF 10% 1kV	403 247 6505	-
# CN501	Socket	645 000 7019	AC Input
# F5001	Fuse	423 023 6406	2A, 250V
	Fuse	423 021 6804	2A, 125V
JK101	Jack	645 020 8928	Assembly
	Jack	645 006 9314	Assembly
	Jack	645 008 7608	Assembly
JK201	Jack	645 008 7592	Assembly
	Jack	645 020 8935	Assembly
	Jack	645 006 9307	Assembly
JK202	Jack	645 002 1077	Assembly
	Jack	645 020 8942	Assembly
	Jack	645 005 7069	Assembly
# L5001	Line Filter	645 010 0598	-
	Line Filter	645 000 3264	-
	Line Filter	645 023 0561	-
# R3001	3.3 5% 1/2W Fusible	402 067 7402	-
# R5001	2.7M 10% 1/2W	402 013 9108	-
# R5120	8.2 5% 1/4W Fusible	402 004 2705	-
# R6007	680 5% 1/6W Fusible	402 067 8706	-

For SAFETY use only equivalent replacement part.

Item No.	Description	Mfr. Part No.	Notes
S6001	Switch	645 001 8350	RF Channel (Channel 3/ Channel 4)
	Switch	645 017 7224	RF Channel (Channel 3/ Channel 4)
T2001	Oscillator	645 018 3515	70kHz
# T5001	Power	645 013 8096	Pulse
VR351	220K	645 006 5538	PG
	220K	645 003 5166	PG
	220K	645 003 5593	PG
VR631	10K	645 006 5422	Input Level
	10K	645 001 8770	Input Level
	10K	645 003 5531	Input Level
VR632	4700	645 003 5616	Separation Low
	4700	645 006 5606	Separation Low
	4700	645 003 5500	Separation Low
VR633	22K	645 006 5521	Stereo DBX Filter
	22K	645 003 5586	Stereo DBX Filter
	22K	645 001 8817	Stereo DBX Filter
VR634	4700	645 003 5500	Separation High
	4700	645 003 5616	Separation High
	4700	645 006 5606	Separation High
VR635	22K	645 001 8817	VCO
	22K	645 003 5586	VCO
	22K	645 006 5521	VCO
X1001	Crystal	645 000 5305	3.579545MHz
	Crystal	645 002 4245	3.579545MHz
	Crystal	645 014 8361	3.579545MHz
	Crystal	645 000 4643	3.579545MHz
X3001	Oscillator	645 008 8360	8.5MHz
X3002	Crystal	613 109 0972	32kHz
X3003 (2)	Crystal	645 006 3435	4MHz
X3003 (2)	Crystal	645 006 1752	4MHz
	Fuse Holder	645 008 7677	For F5001
	Fuse Holder	645 008 7660	For F5001
	Fuse Holder	645 016 0479	For F5001
	PC Board (1)	613 176 6785	CP-1-A Main
	PC Board (2)	613 174 1331	CP-1-A Main
	PC Board (3)	613 177 2786	CP-1-A Main
	PC Board (4)	613 174 5186	CP-1-A Main
	Tuner	645 018 8626	UHF/VHF
	Tuner	645 020 9031	UHF/VHF

MC-1 MECHANISM CONNECTION BOARD

SEMICONDUCTORS

D8001, 02	PN263L-(NC)	407 162 8705	-
D8003	LN59L	407 162 1102	-
PC801, 02	SG-105F	407 165 8108	-
	ON2170-R	407 043 0101	-

OTHER

S8001	Switch	645 007 1560	Mode
S8002	Switch	645 009 3388	Safety/FL
	Switch	645 003 4589	Safety/FL
60100 *	Motor	645 003 4305	Loading, Assembly
	PC Board (2)	613 175 0913	MC-1 Board
	PC Board (1)(3)(4)	613 173 9451	MC-1 Board

MISCELLANEOUS

OTHER

# M5001	Line Cord	645 005 1005	AC, Polarized
	Line Cord	613 152 1032	AC, Polarized
	Line Cord	645 003 2851	AC, Polarized
	Line Cord	645 024 0577	AC, Polarized
	Line Cord	645 019 2630	AC, Polarized

For SAFETY use only equivalent replacement part.

SANVO

MODELS VHR-H647, VHR-H697, VMM-648, VMM-662

ELECTRICAL PARTS LIST continued

Item No.	Description	Mfr. Part No.	Notes
11000 *	Cylinder	613 172 7908	Assembly
22000 *	Stator	645 015 7868	Cylinder Motor
50100 *	Head	645 017 6432	Full Erase
50200 *	Head	613 176 8406	Audio/Control. Assembly
60700 *	Slide	613 159 9017	Crescent
70500 *	Motor	645 008 1880	Capstan
	Transmitter (1)	645 023 5535	IR, With Battery Cover
	Transmitter (3)	645 023 5283	IR, With Battery Cover
	Transmitter (2)	645 021 3182	IR, With Battery Cover
	Transmitter (4)	645 022 8780	IR, With Battery Cover
TB-2 FRONT END BOARD (Models VHR-H647 and VWM-662)			
OTHER			
JK881 (4)	Jack	645 007 6527	Terminal Board Assembly
JK881 (4)	Jack	645 018 6349	Assembly
S8801 (4)	Switch	645 008 8049	Power
S8801 (4)	Switch	645 011 5172	Power
S8801 (4)	Switch	645 006 2797	Power
S8801 (4)	Switch	645 001 9777	Power
S8801 (4)	Switch	645 011 5165	Power
	PC Board (4)	613 168 2597	TB-2 Front End
	PC Board (1)	613 175 8377	TB-2 Front End
TM-1 DISPLAY BOARD			
SEMICONDUCTORS			
D7101 (1)(2)(3)	ISS133	407 012 4406	-
D7102, 03, 04	ISS133	407 012 4406	-
D7105 (4)	ISS133	407 012 4406	-
D7106 (4)	ISS133	407 012 4406	-
D7115 (2)	SLR-932AV-7	408 031 6000	-
OTHER			
A7101	Display Tube	645 007 1485	Fluorescent
RR711 (1)(2)(3)	Receiver	645 021 6152	IR
RR711 (1)(2)(3)	Receiver	645 006 8720	IR
RR711 (4)	Receiver	645 021 5384	IR
S7101 (1)(2)(3)	Switch	645 001 9777	Power
S7101 (1)(2)(3)	Switch	645 006 2797	Power
S7101 (1)(2)(3)	Switch	645 008 8049	Power
S7101 (3)	Switch	645 011 5172	Power
S7101 (3)	Switch	645 011 5165	Power
S7102 (3)	Switch	645 001 9777	Stop/Eject
S7102 (3)	Switch	645 006 2797	Stop/Eject
S7102 (3)	Switch	645 008 8049	Stop/Eject
S7102 (3)	Switch	645 011 5172	Stop/Eject
S7102 (3)	Switch	645 011 5165	Stop/Eject
S7103 (1)(2)(3)	Switch	645 001 9777	Channel Up
S7103 (1)(2)(3)	Switch	645 006 2797	Channel Up
S7103 (1)(2)(3)	Switch	645 008 8049	Channel Up
S7103 (4)	Switch	645 001 9777	SP/EP
S7103 (4)	Switch	645 006 2797	SP/EP
S7103 (4)	Switch	645 008 8049	SP/EP
S7103 (4)	Switch	645 011 5172	SP/EP
S7103 (4)	Switch	645 011 5165	SP/EP
S7104 (1)(2)(3)	Switch	645 011 5172	Channel Down
S7104 (1)(2)(3)	Switch	645 011 5165	Channel Down
S7104 (1)(2)(3)	Switch	645 001 9777	Channel Down
S7104 (1)(2)(3)	Switch	645 006 2797	Channel Down
S7104 (1)(2)(3)	Switch	645 008 8049	Channel Down
S7104 (4)	Switch	645 011 5172	Channel Up
S7104 (4)	Switch	645 011 5165	Channel Up
S7104 (4)	Switch	645 001 9777	Channel Up
S7104 (4)	Switch	645 006 2797	Channel Up
S7104 (4)	Switch	645 008 8049	Channel Up
S7105 (1)(2)	Switch	645 008 8049	Record
S7105 (1)(2)	Switch	645 011 5172	Record

Item No.	Description	Mfr. Part No.	Notes
S7105 (1)(2)	Switch	645 011 5165	Record
S7105 (1)(2)	Switch	645 001 9777	Record
S7105 (1)(2)	Switch	645 006 2797	Record
S7105 (4)	Switch	645 006 2797	Channel Down
S7105 (4)	Switch	645 008 8049	Channel Down
S7105 (4)	Switch	645 001 9777	Channel Down
S7105 (4)	Switch	645 011 5172	Channel Down
S7105 (4)	Switch	645 011 5165	Channel Down
S7106 (1)(4)	Switch	645 011 5172	Pause/Still
S7106 (1)(4)	Switch	645 011 5165	Pause/Still
S7106 (1)(4)	Switch	645 006 2797	Pause/Still
S7106 (1)(4)	Switch	645 008 8049	Pause/Still
S7106 (1)(4)	Switch	645 001 9777	Pause/Still
S7106 (2)(3)	Switch	645 001 9777	Pause DMSS
S7106 (2)(3)	Switch	645 006 2797	Pause DMSS
S7106 (2)(3)	Switch	645 008 8049	Pause DMSS
S7107 (3)	Switch	645 006 2797	Rewind
S7107 (3)	Switch	645 008 8049	Rewind
S7107 (3)	Switch	645 001 9777	Rewind
S7107 (3)	Switch	645 011 5172	Rewind
S7107 (3)	Switch	645 011 5165	Rewind
S7107 (4)	Switch	645 006 2797	Stop/Eject
S7107 (4)	Switch	645 008 8049	Stop/Eject
S7107 (4)	Switch	645 001 9777	Stop/Eject
S7107 (4)	Switch	645 011 5172	Stop/Eject
S7107 (4)	Switch	645 011 5165	Stop/Eject
S7108 (1)(2)	Switch	645 001 9777	Fast Forward
S7108 (1)(2)	Switch	645 006 2797	Fast Forward
S7108 (1)(2)	Switch	645 008 8049	Fast Forward
S7108 (3)	Switch	645 008 8049	Play
S7108 (3)	Switch	645 011 5165	Play
S7108 (3)	Switch	645 006 2797	Play
S7108 (3)	Switch	645 011 5172	Play
S7108 (3)	Switch	645 001 9777	Play
S7108 (4)	Switch	645 008 8049	Rewind
S7108 (4)	Switch	645 011 5165	Rewind
S7108 (4)	Switch	645 006 2797	Rewind
S7108 (4)	Switch	645 011 5172	Rewind
S7108 (4)	Switch	645 001 9777	Rewind
S7109 (1)(2)	Switch	645 001 9777	Rewind
S7109 (1)(2)	Switch	645 006 2797	Rewind
S7109 (1)(2)	Switch	645 008 8049	Rewind
S7109 (3)	Switch	645 011 5165	Fast Forward
S7109 (3)	Switch	645 008 8049	Fast Forward
S7109 (3)	Switch	645 011 5172	Fast Forward
S7109 (3)	Switch	645 006 2797	Fast Forward
S7109 (3)	Switch	645 001 9777	Fast Forward
S7109 (4)	Switch	645 011 5165	Play
S7109 (4)	Switch	645 008 8049	Play
S7109 (4)	Switch	645 011 5172	Play
S7109 (4)	Switch	645 006 2797	Play
S7109 (4)	Switch	645 001 9777	Play
S7110 (1)(2)	Switch	645 006 2797	Stop/Eject
S7110 (1)(2)	Switch	645 008 8049	Stop/Eject
S7110 (1)(2)	Switch	645 001 9777	Stop/Eject
S7110 (3)	Switch	645 001 9777	Record
S7110 (3)	Switch	645 011 5165	Record
S7110 (3)	Switch	645 008 8049	Record
S7110 (3)	Switch	645 011 5172	Record
S7110 (3)	Switch	645 006 2797	Record
S7110 (4)	Switch	645 001 9777	Fast Forward
S7110 (4)	Switch	645 011 5165	Fast Forward
S7110 (4)	Switch	645 008 8049	Fast Forward
S7110 (4)	Switch	645 011 5172	Fast Forward
S7110 (4)	Switch	645 006 2797	Fast Forward
S7111 (1)(2)	Switch	645 008 8049	Play
S7111 (1)(2)	Switch	645 001 9777	Play
S7111 (1)(2)	Switch	645 006 2797	Play
S7111 (4)	Switch	645 006 2797	Record
S7111 (4)	Switch	645 011 5172	Record
S7111 (4)	Switch	645 008 8049	Record
S7111 (4)	Switch	645 001 9777	Record

Item No.	Description	Mfr. Part No.	Notes
S7111 (4)	Switch	645 011 5165	Record
	PC Board (1)	613 176 7874	TM-1 Display Board
	PC Board (2)	613 174 1737	TM-1 Display Board
	PC Board (3)	613 176 2872	TM-1 Display Board
	PC Board (4)	613 174 3106	TM-1 Display Board
TM-2 FRONT END BOARD (Model VHR-H697)			
SEMICONDUCTORS			
D7201, 02 (2)	SRZ-932AV-7-1	408 031 5900	-
Q7201 (2)	2SA984K-F	405 006 7204	-
Q7201 (2)	2SA984-E	405 006 6504	-
Q7201 (2)	2SA984K-E	405 006 7006	-
Q7201 (2)	2SA984-F	405 006 6702	-
OTHER			
JK721 (2)	Jack	645 018 6349	Assembly
JK721 (2)	Jack	645 007 6527	Terminal Board Assembly
	PC Board (2)	613 174 1751	TM-2 Front End
VD-1 CM SKIP BOARD (Models VHR-H647 and VHR-H697)			
SEMICONDUCTORS			
D1901 Thru			
D1906 (1)(2)	1SS133	407 012 4406	-
D1901 Thru			
D1906 (1)(2)	GMA01	407 007 9904	-
IC191 (1)(2)	BA10393N	409 171 6406	-
IC192 (1)(2)	BA15218N	409 117 9201	-
Q1901, 02 (1)(2)	2SC2412K-S	405 014 4608	-
Q1901, 02 (1)(2)	2SC2412K-R	405 014 4509	-
Q1901, 02 (1)(2)	2SC2812-L6	405 015 8704	-
Q1901, 02 (1)(2)	2SC2812-L5	405 015 8407	-
Q1903 (1)(2)	2SA1037K-S	405 002 0407	-
Q1903 (1)(2)	2SA1037K-R	405 002 0308	-
Q1903 (1)(2)	2SA1179-M6	405 002 6706	-
Q1903 (1)(2)	2SA1179-M5	405 002 6508	-
Q1904, 05 (1)(2)	2SC2412K-S	405 014 4608	-
Q1904, 05 (1)(2)	2SC2412K-R	405 014 4509	-
Q1904, 05 (1)(2)	2SC2812-L6	405 015 8704	-
Q1904, 05 (1)(2)	2SC2812-L5	405 015 8407	-
Q1906 (1)(2)	2SC3395	405 018 1900	-
Q1906 (1)(2)	DTC144EK	405 029 3504	-
OTHER			
	PC Board (1)(2)	613 173 4227	VD-1 CM Skip
VP-1 AUDIO / VIDEO PREAMP BOARD			
SEMICONDUCTORS			
IC181	LA70010L	-	-
	LA70012L	409 391 5401	-
IC291	LA7256	409 326 0808	-
OTHER			
	PC Board	613 173 7402	VP-1 Audio/Video Preamp
ELECTRICAL PARTS LIST NOTES			
# For SAFETY use only equivalent replacement part.			
* Indicates the item number used in Mechanical Parts List and Exploded Views.			
(1) Used in model VHR-H647.			
(2) Used in model VHR-H697.			
(3) Used in model VWM-648.			
(4) Used in model VWM-662.			

Item	Mfr. Part No.
CABINET PARTS	
Cabinet Front Assembly (1)	613 176 8185
Cabinet Front Assembly (2)	613 175 3396
Cabinet Front Assembly (3)	613 177 1505
Cabinet Front Assembly (4)	613 174 5308
Cassette Door (1)	613 176 8222
Cassette Door (2)	613 174 1577
Cassette Door (3)	613 177 1635
Cassette Door (4)	613 174 5483
Cassette Door Spring	613 153 0478
Front Felt Stand (Feet)	613 121 1001
Top Cover (1)(2)	613 173 1844
Top Cover (3)(4)	613 177 5329
Top Cover Holder	613 162 4689
Remote Transmitter	
Battery Cover (1)(2)(4)	613 169 4385
Battery Cover (3)	645 177 1901
(1) Used in model VHR-H647.	
(2) Used in model VHR-H697.	
(3) Used in model VWM-648.	
(4) Used in model VWM-662.	

Important Parts Information

▪ The parts listed here are those not usually available from a well-stocked supply cabinet or bin.

▪ On the parts lists, safety items are marked with a # to remind you that only exact replacements are recommended for these items.

▪ When ordering parts, state the model number, part number, and description.

Obtaining Parts

Many of these parts are available from your local Sams authorized distributor or the manufacturer of the equipment. Call Sams for the name of your nearest distributor:

800-428-7267

Or consult the Sams Annual Index for the address of the original equipment manufacturer.

SAMPO
MODELS VHR-H647, VHR-H697, VWM-648, VWM-662