



# HITACHI

## SERVICE MANUAL

TK

No. 3546E

**VM-E10A(U,C)**  
**VM-E15A(U,C)**  
**VM-H18A(U,C)**

### *Troubleshooting Guide*

#### MANUAL RELATED TO TROUBLESHOOTING GUIDES

MODEL	TITLE	MANUAL No.
VM-E10A(U,C)	Technical Data	No.3372E
VM-E15A(U,C)	Technical Data	No.3375E
VM-H18A(U,C)	Technical Data	No.3378E

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SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

8mm VIDEO CAMERA/RECORDER

July

1991

TOKAI WORKS

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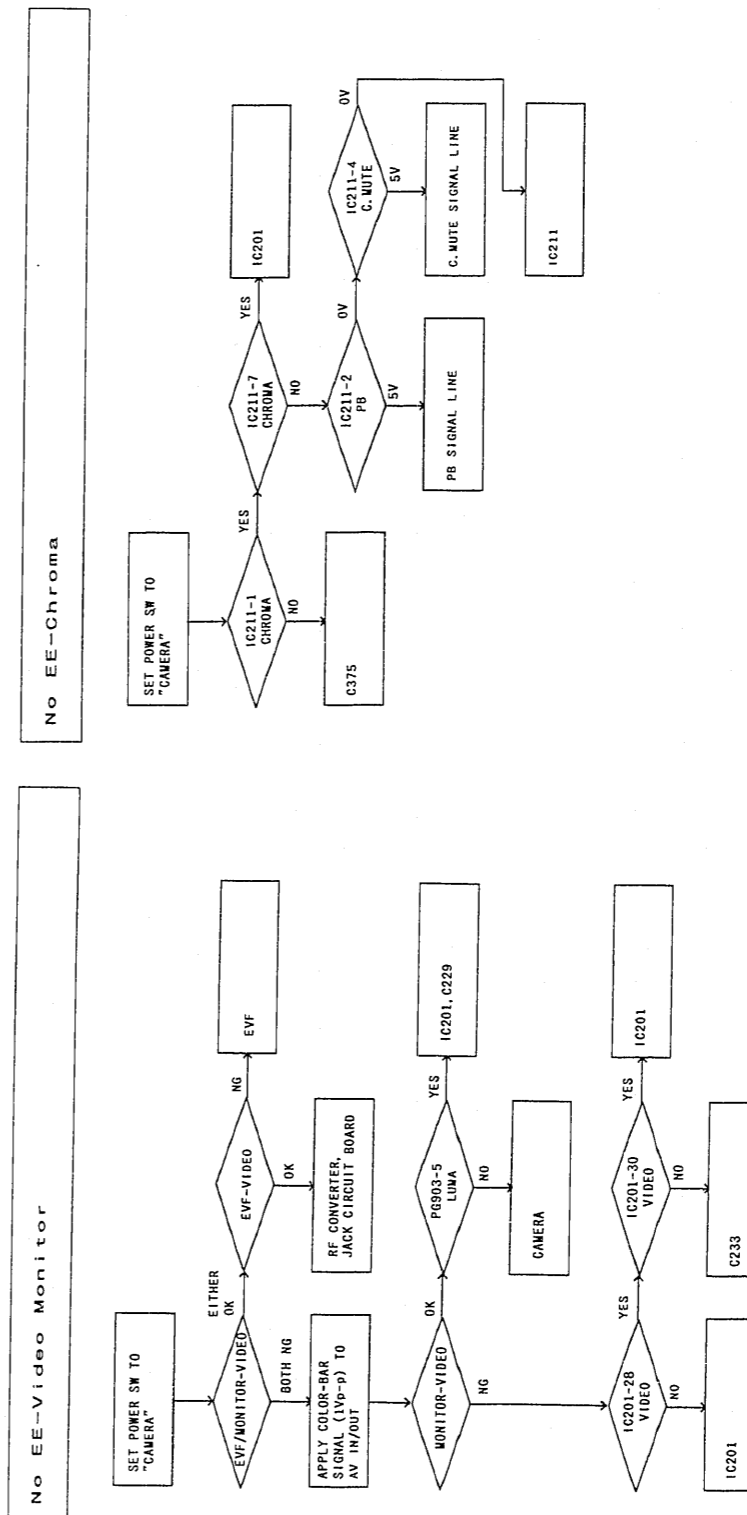
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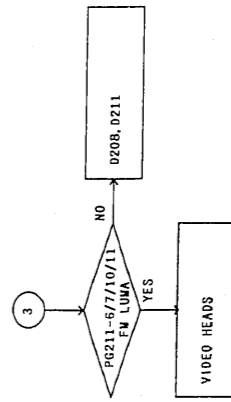
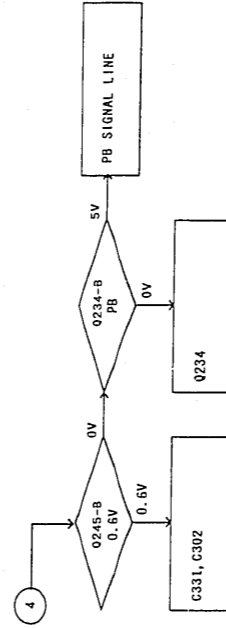
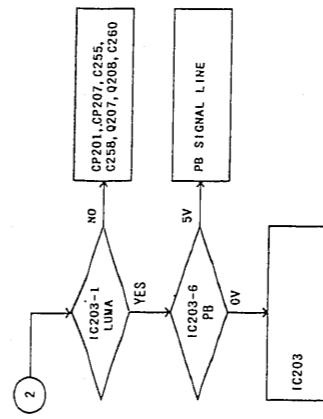
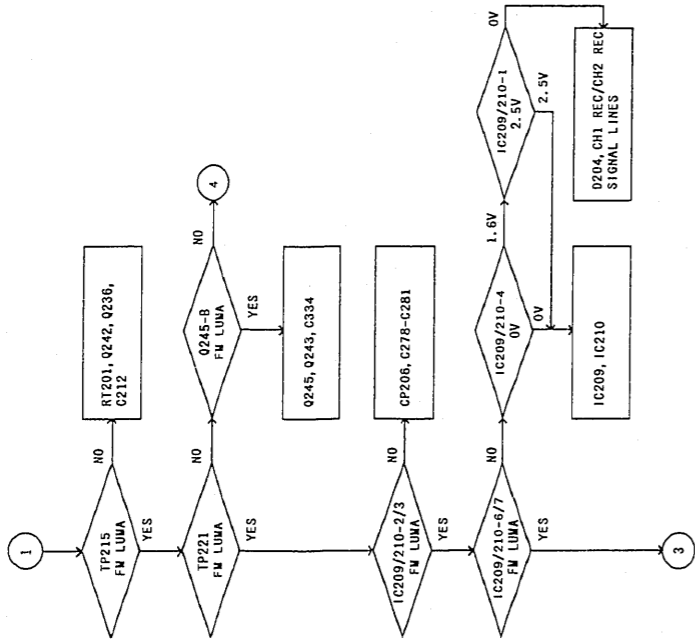
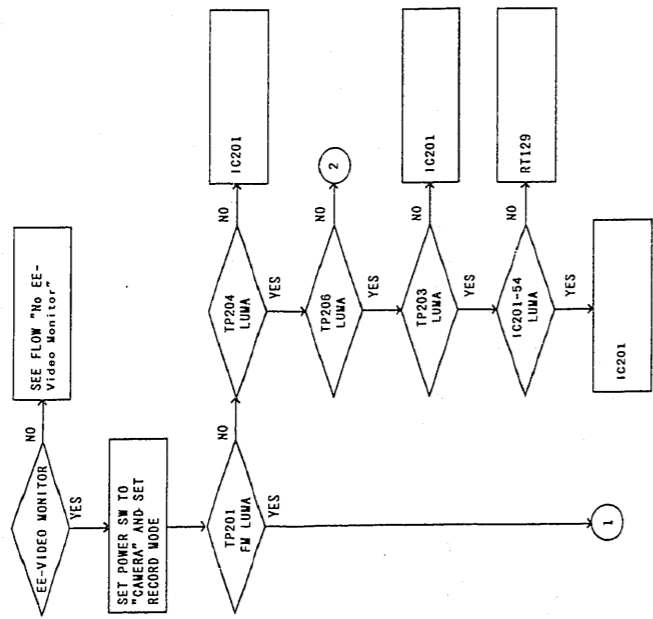
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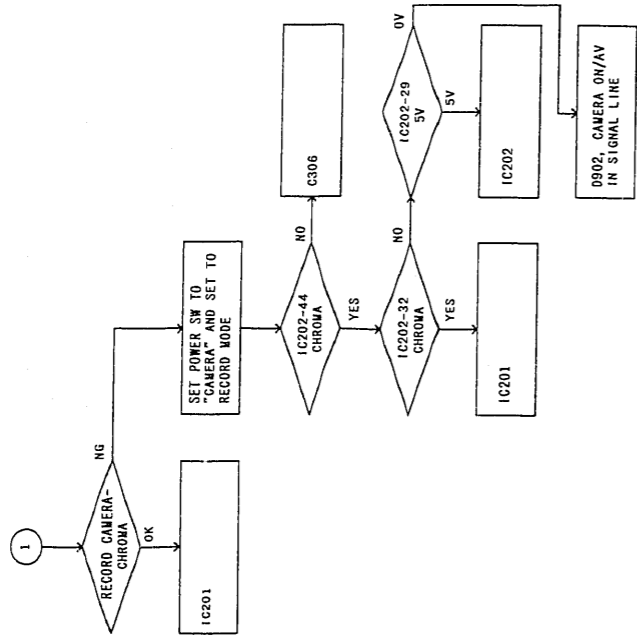
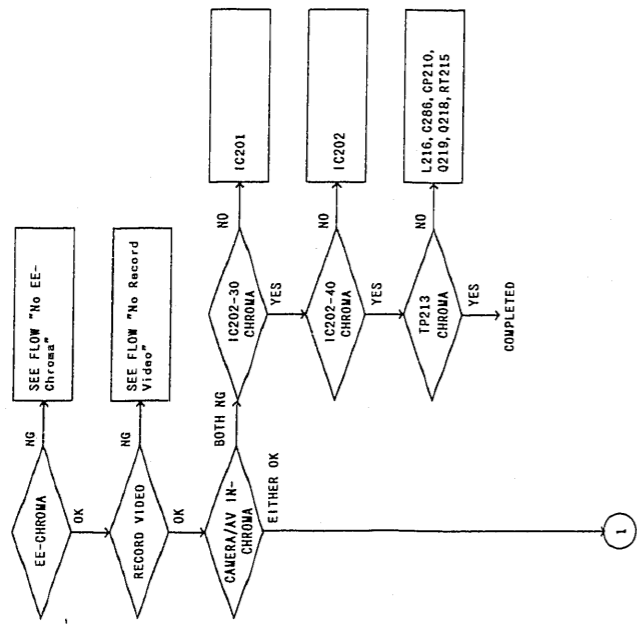
CHAPTER 1 TROUBLESHOOTING GUIDE  
1. VM-E10A TROUBLESHOOTING GUIDE



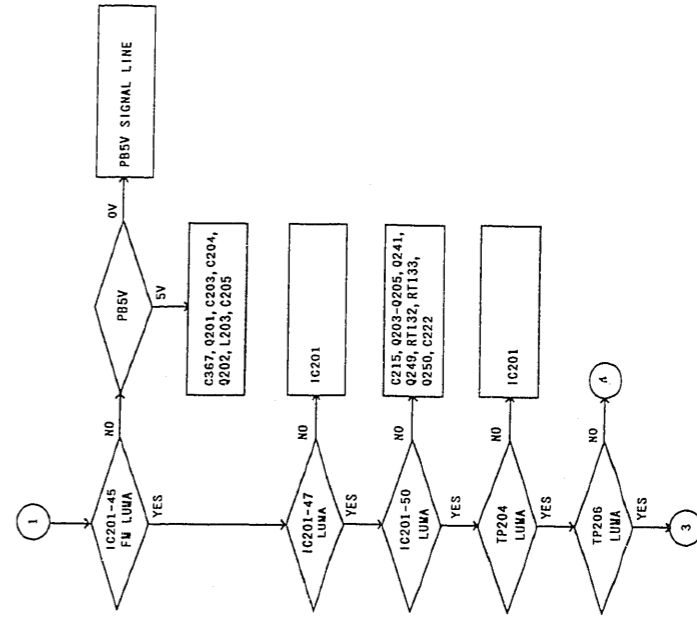
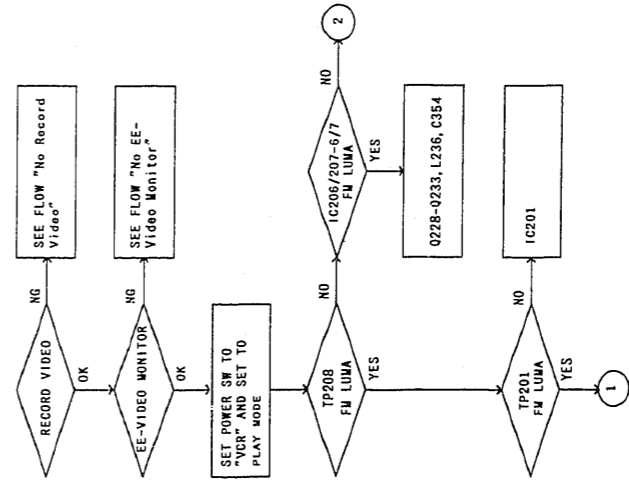
No Record Video

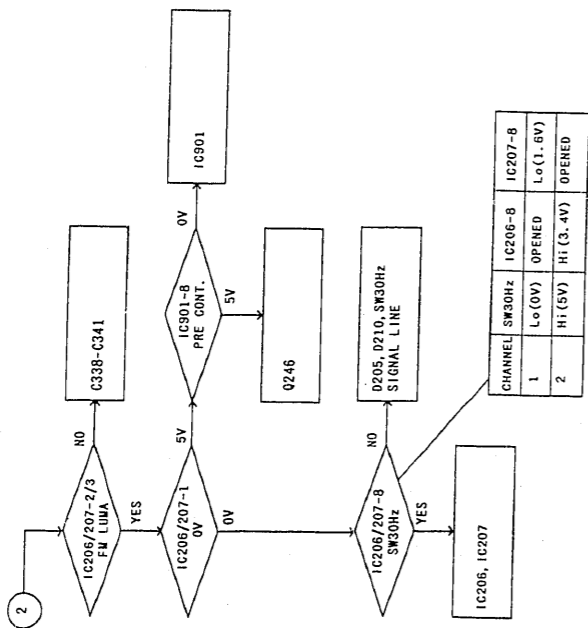
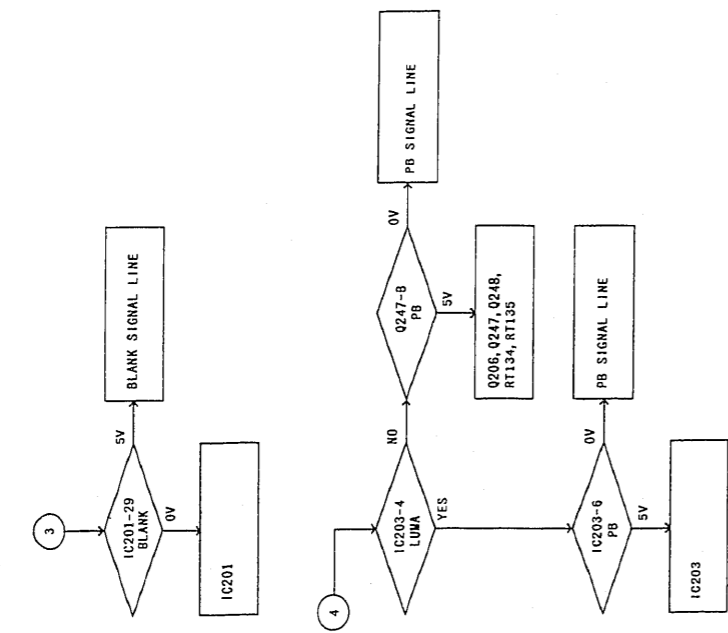


No Record Chroma

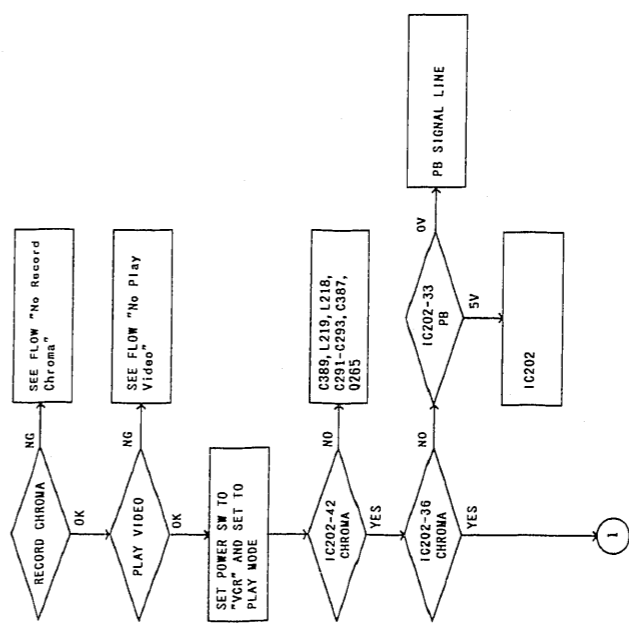
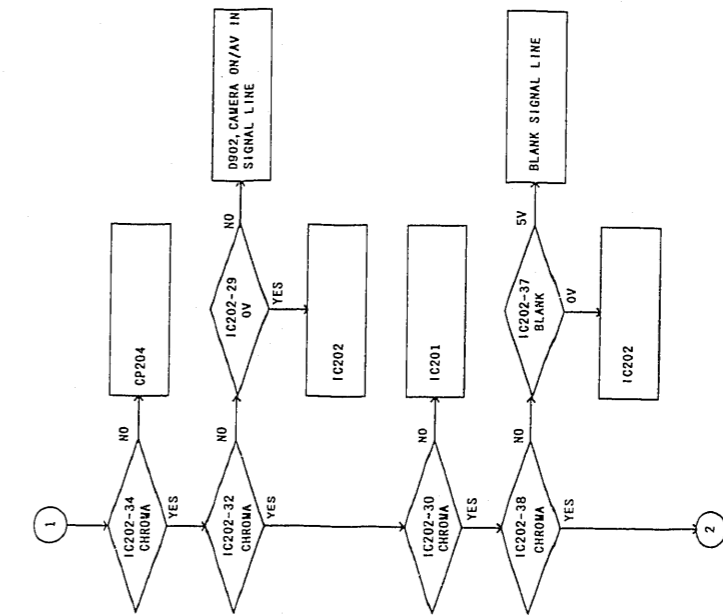


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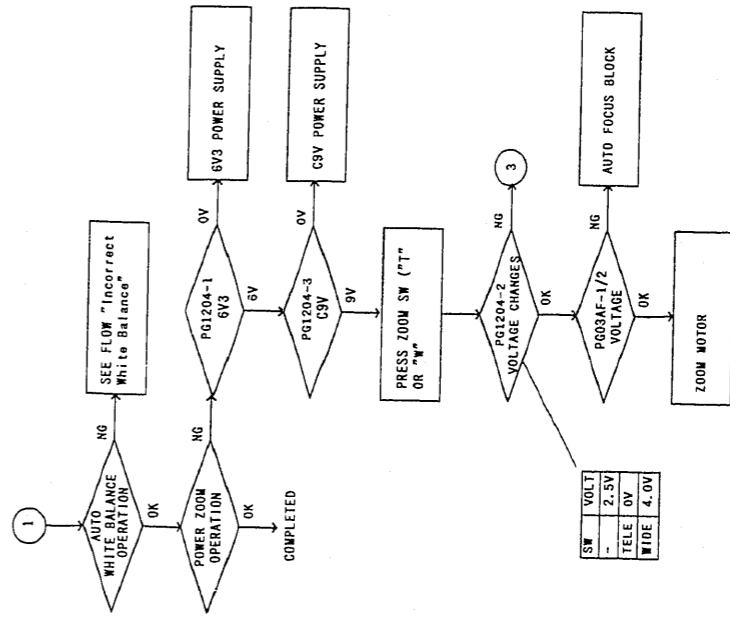
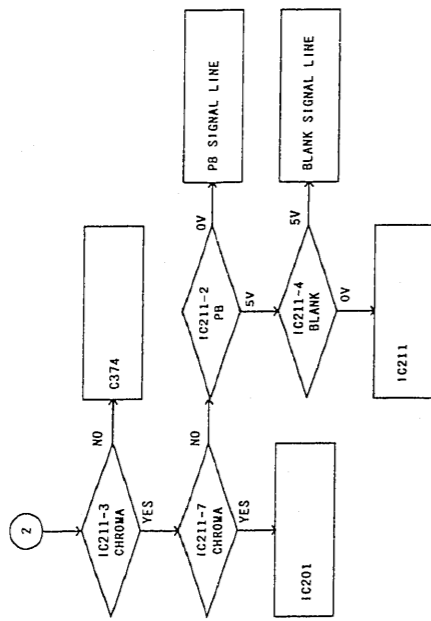
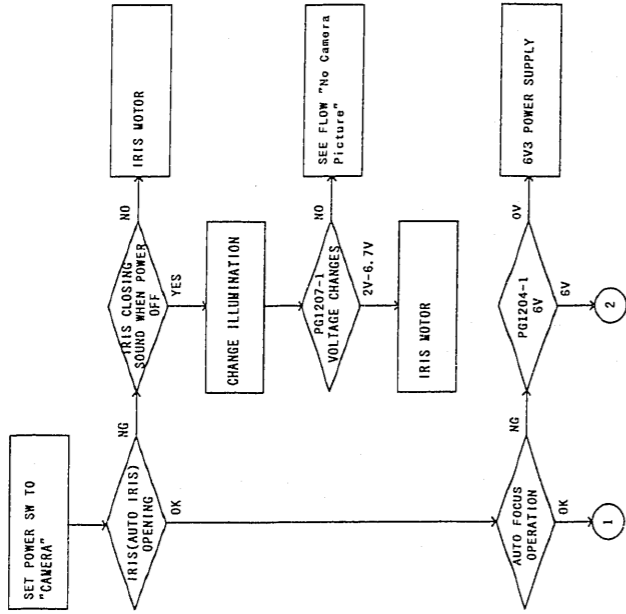




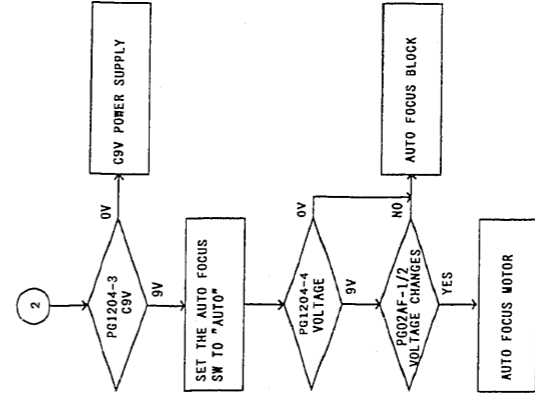
No Play Chroma

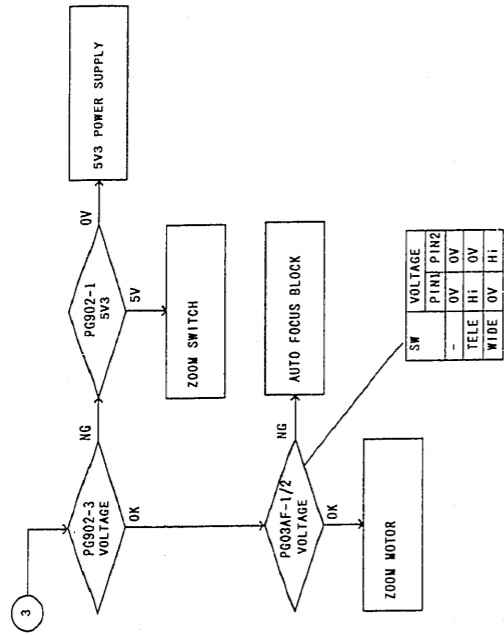


Does not operate Auto Iris/Auto Focus/Auto White Balance/Power Zoom

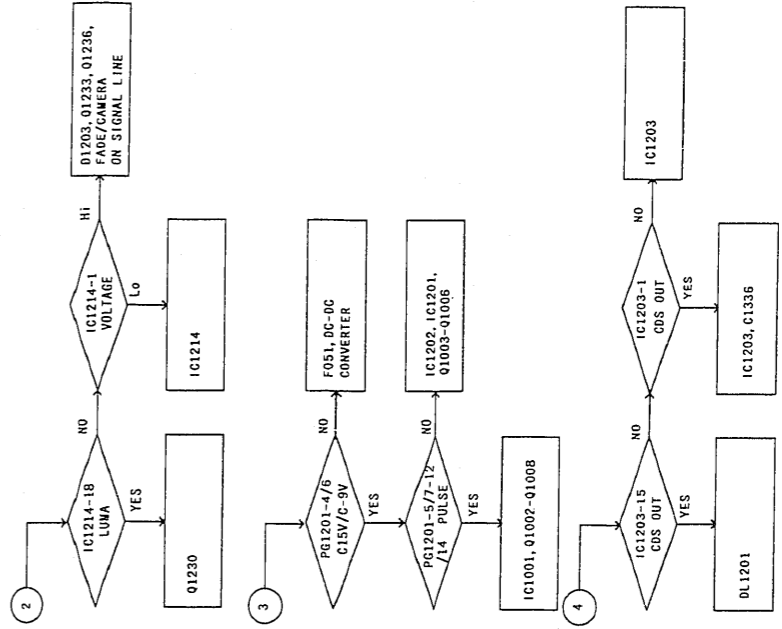
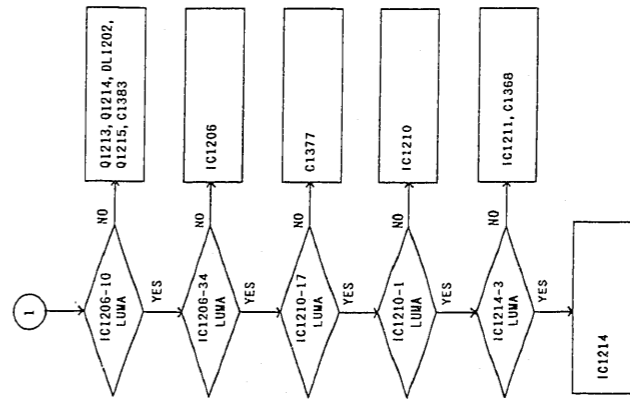
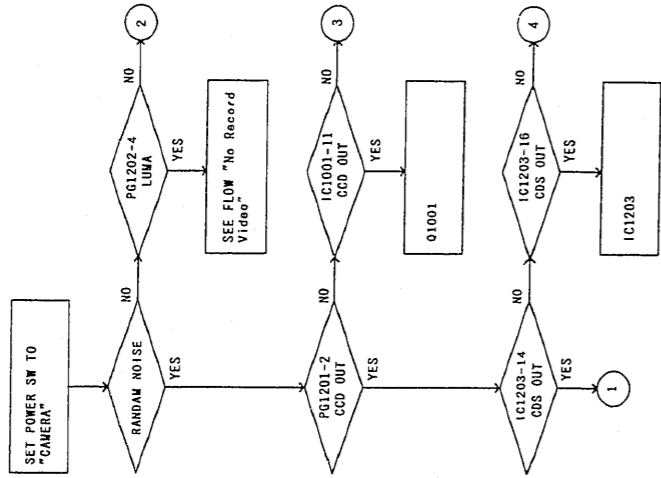


SW	VOLT
--	2.5V
TELE	0V
WIDE	4.0V

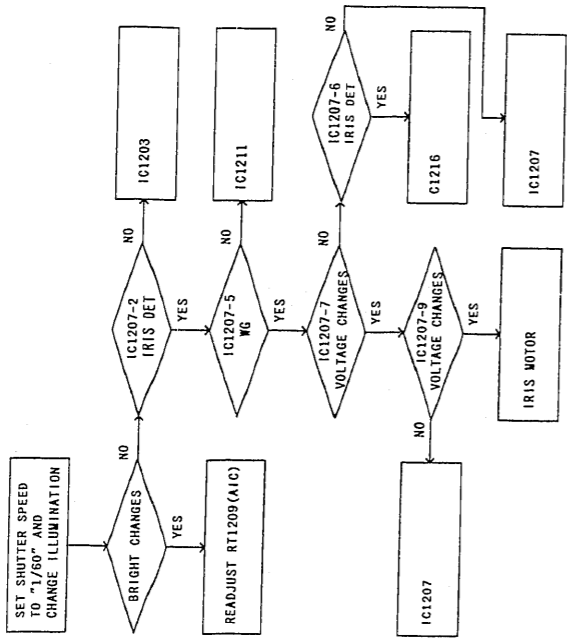




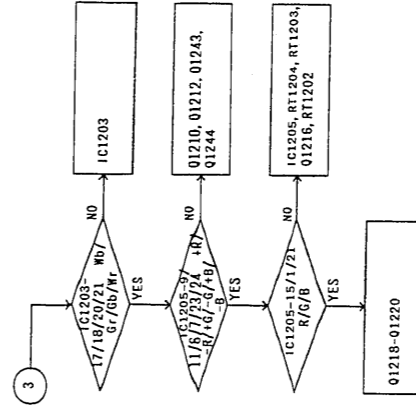
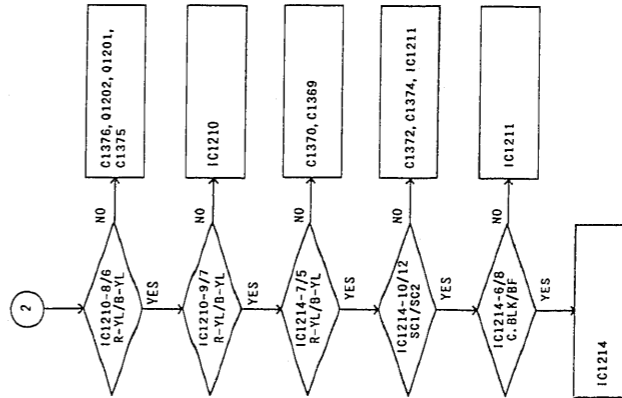
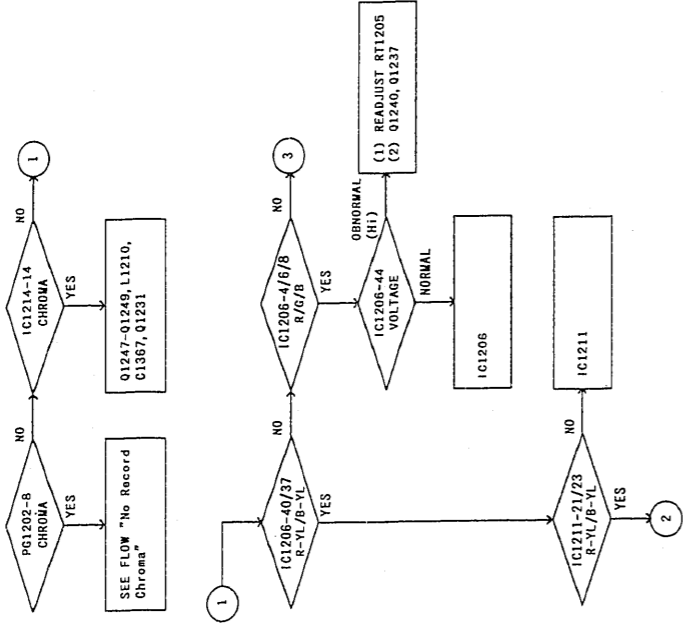
No Camera Picture



Video Level too High/Low

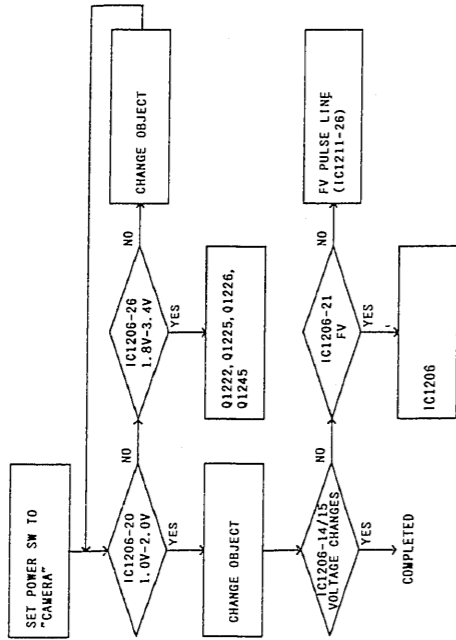


No Camera Color

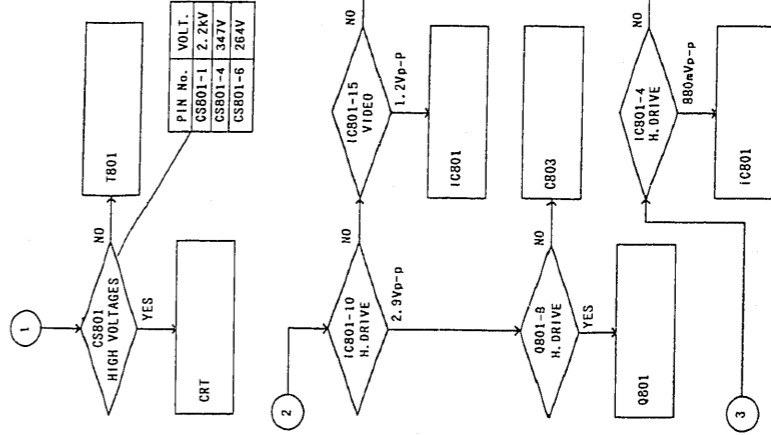
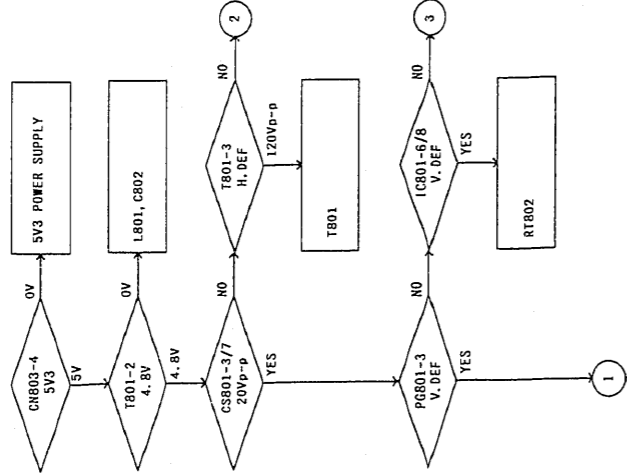




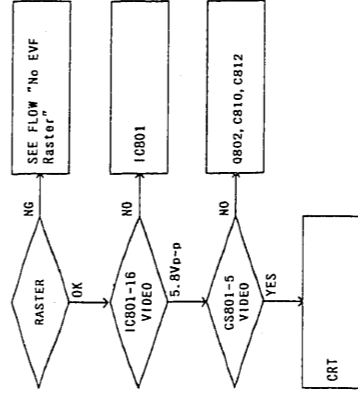
Incorrect White Balance



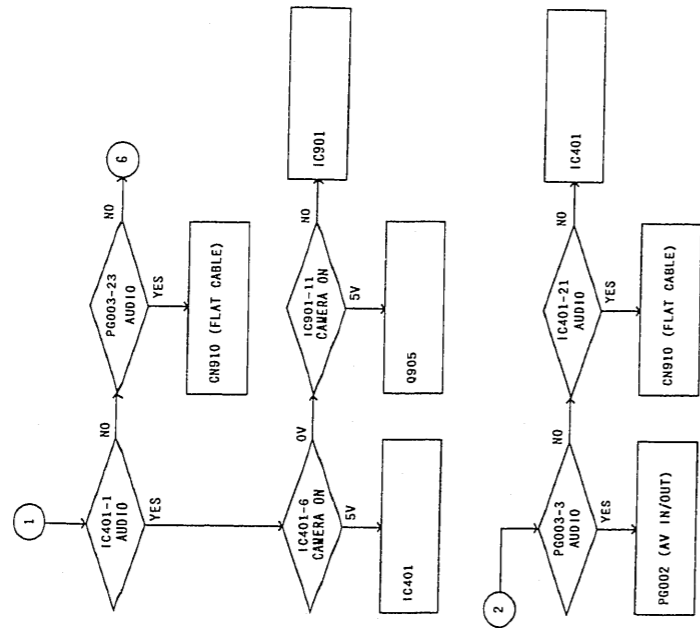
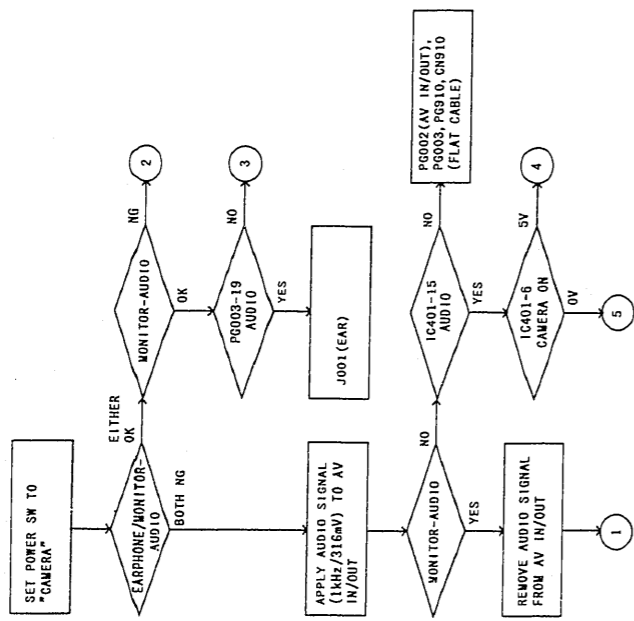
No EVF Raster



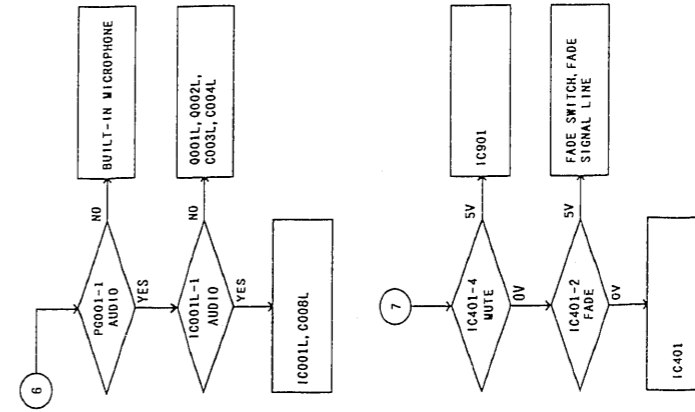
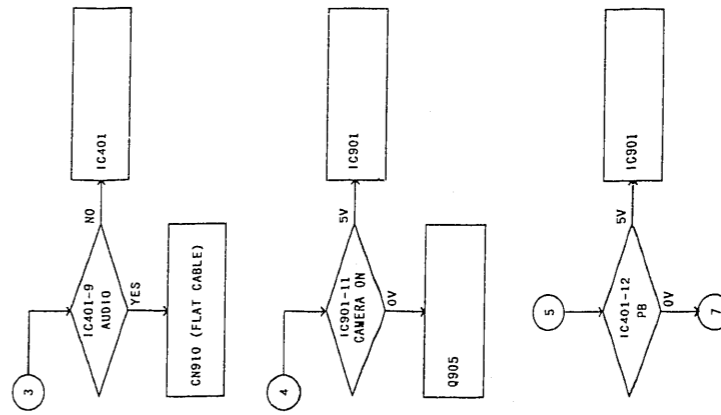
No Picture on EVF



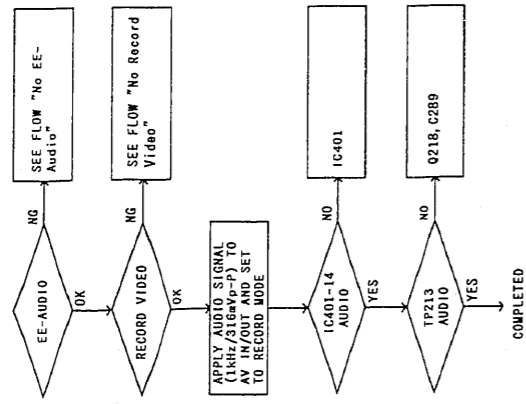
No EE-Audio



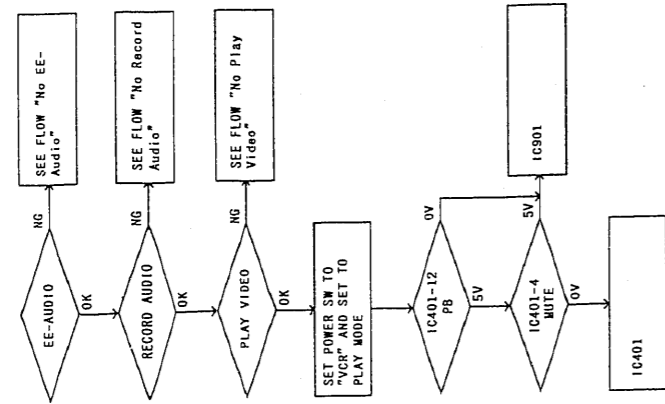
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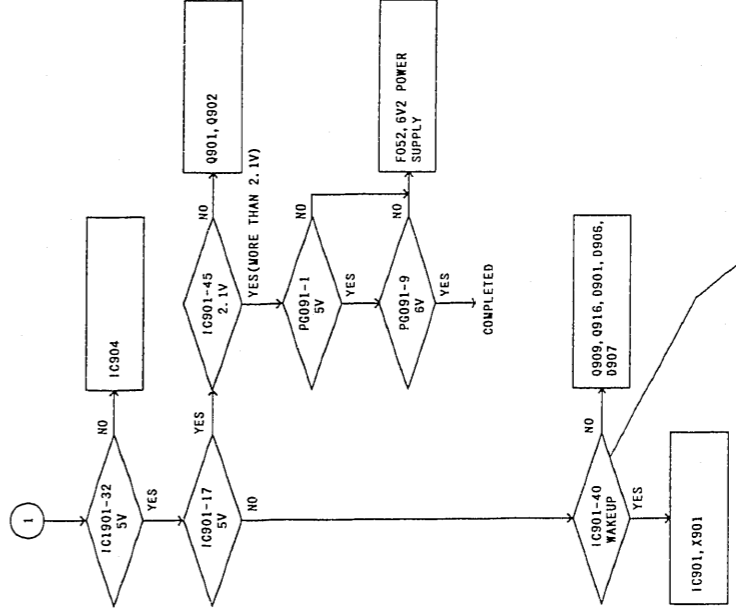
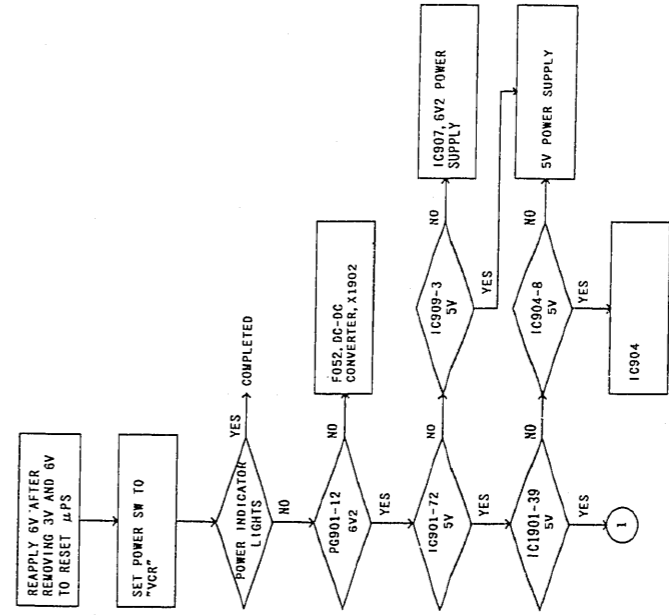
No Record Audio



No Play Audio

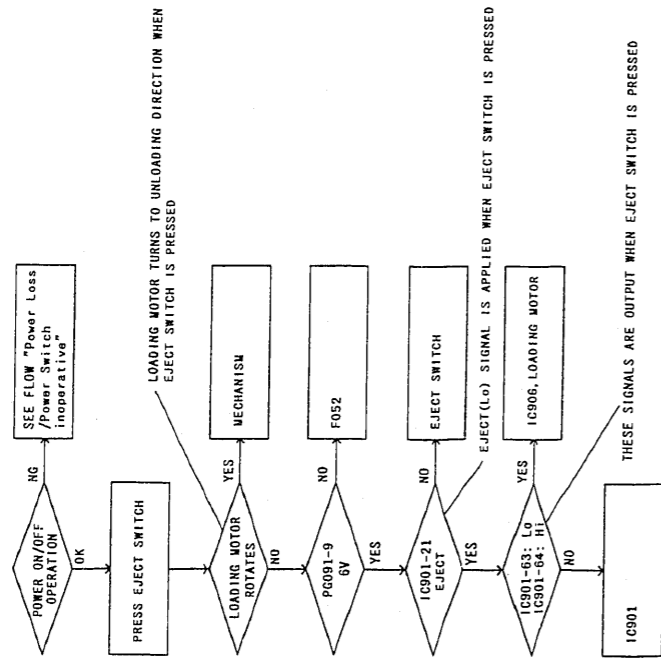


Power Loss/Power Switch inoperative

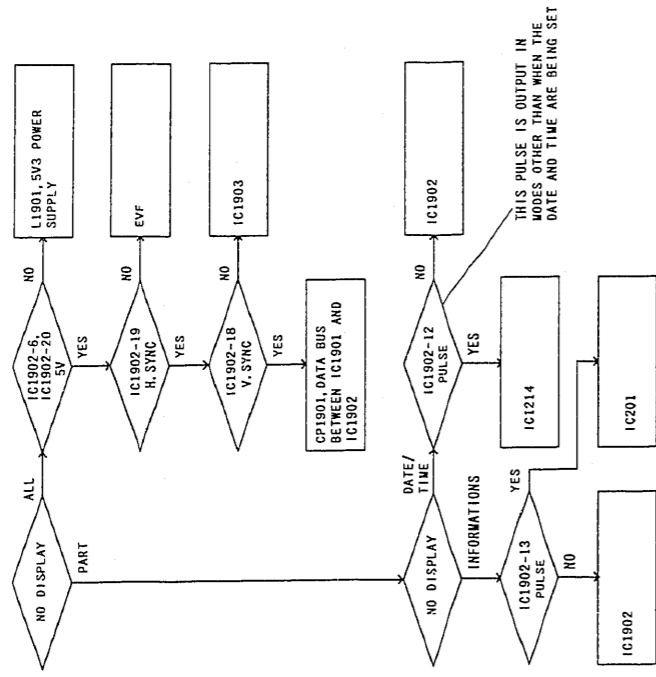


THE WAKEUP (Lo) PULSE IS APPLIED WHEN CASSETTE HOLDER IS CLOSED, WHEN RECORD START/STOP OR EJECT SWITCH IS PRESSED OR WHEN POWER SWITCH IS SET TO "CAMERA" OR "VCR".

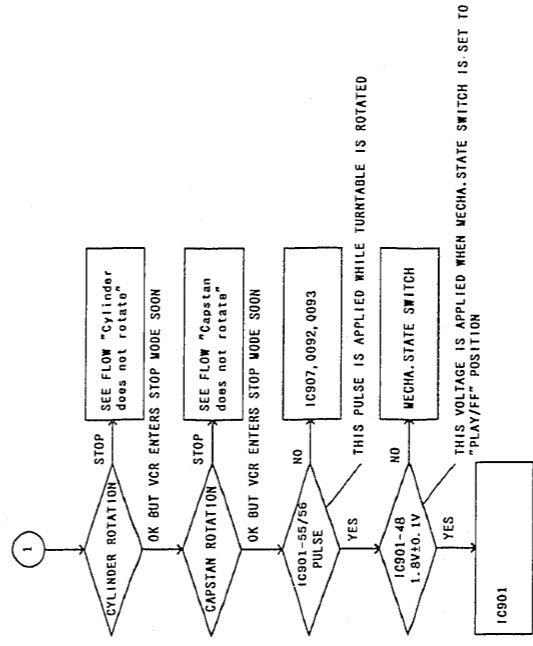
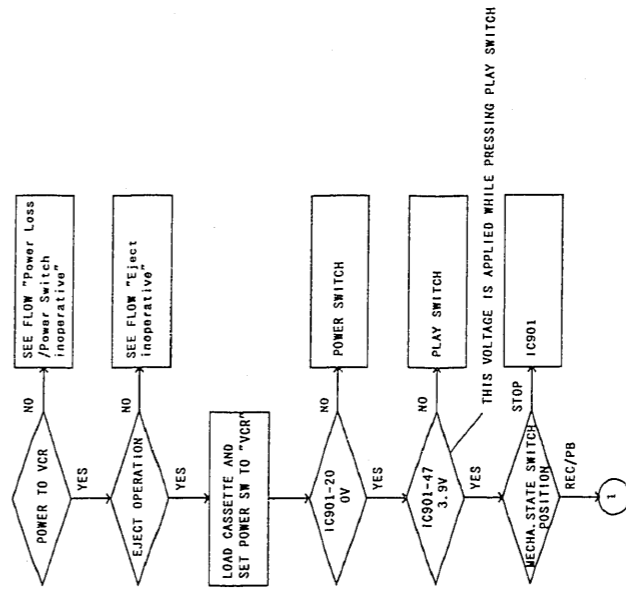
Eject inoperative



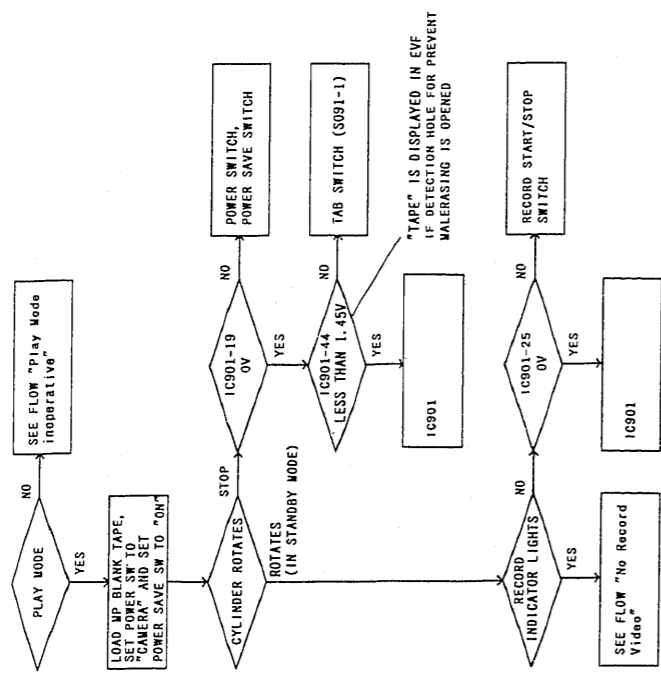
On Screen Display inoperative



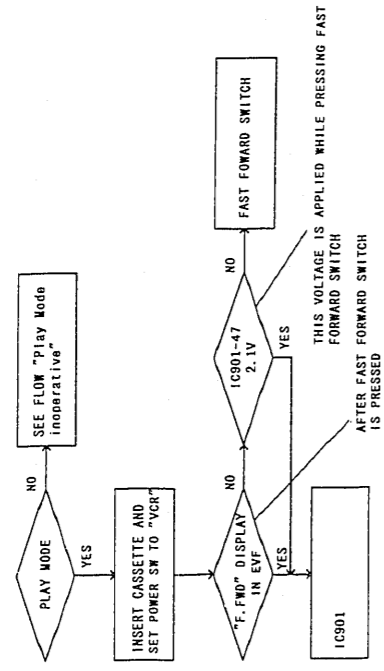
Play Mode inoperative



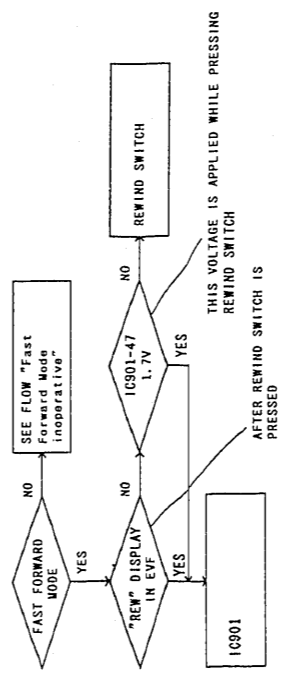
Record Mode inoperative



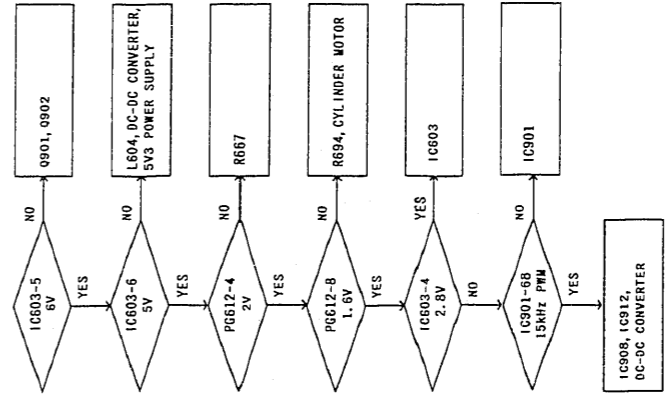
Fast Forward Mode inoperative



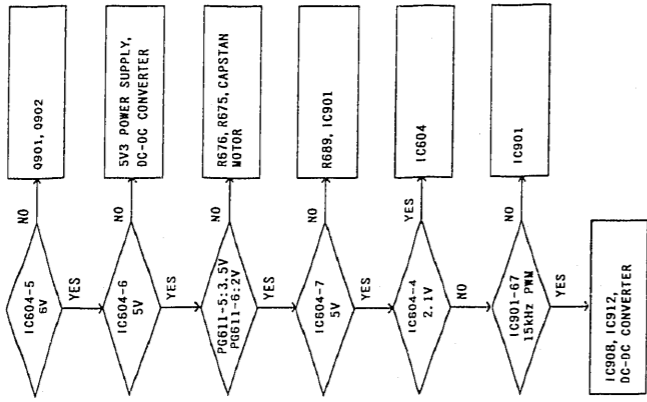
Rewind Mode inoperative



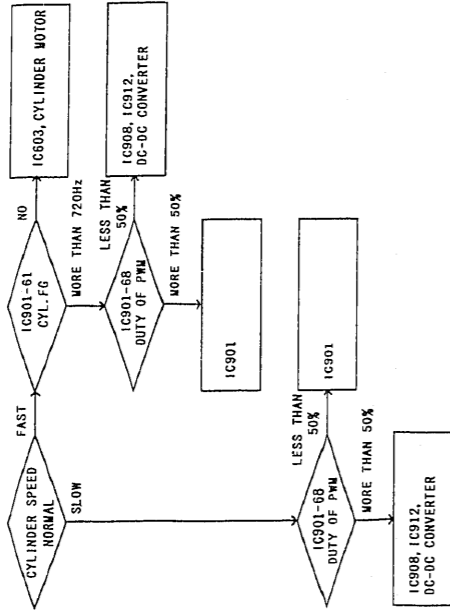
Cylinder does not rotate



Capstan does not rotate

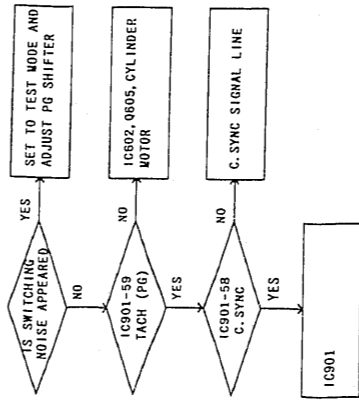


Horizontal Sync Loss/Noise Picture in Play Mode

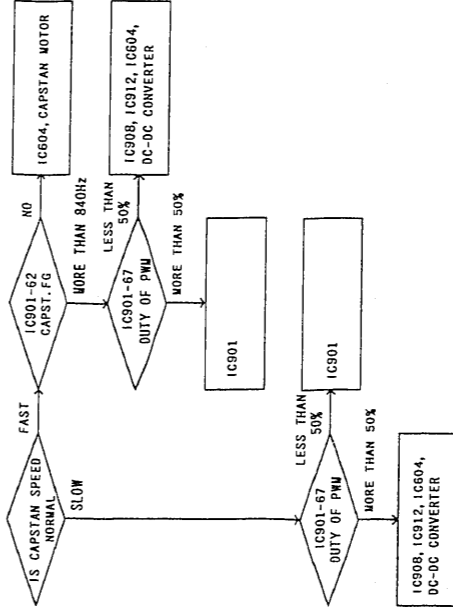


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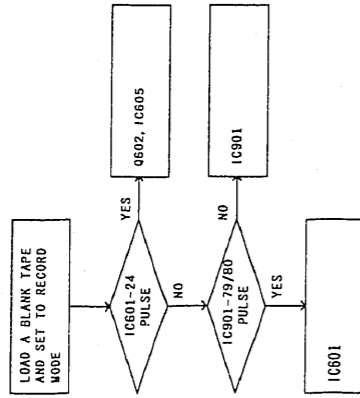
Horizontal Jitter/Noise Picture in Play Mode



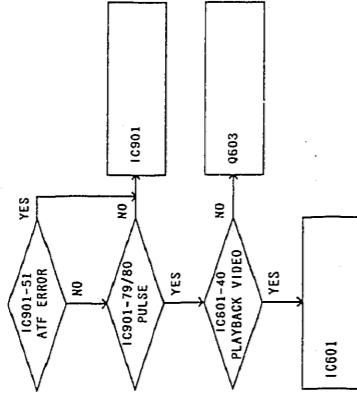
Noise Picture in Play Mode



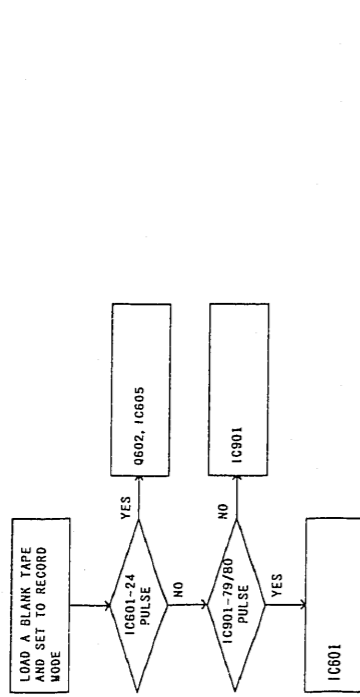
Vertical Jitter/Noise Picture in Play Mode



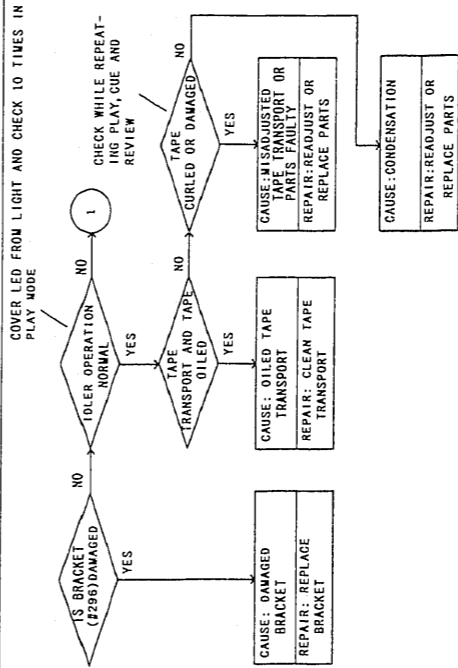
Noise Picture only when Prerecorded Tape is played back



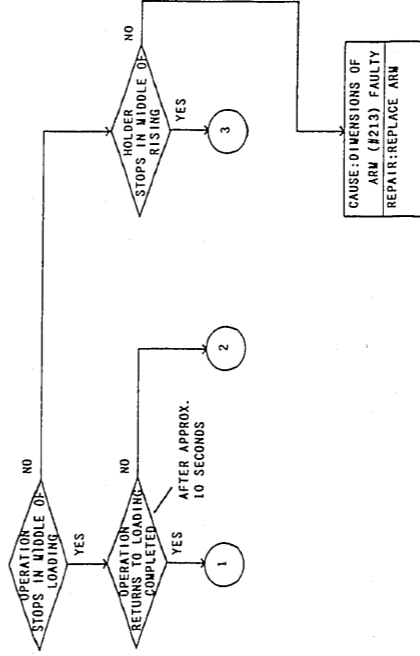
Vertical Jitter/Noise Picture in Play Mode



Tape entangled



Eject not possible



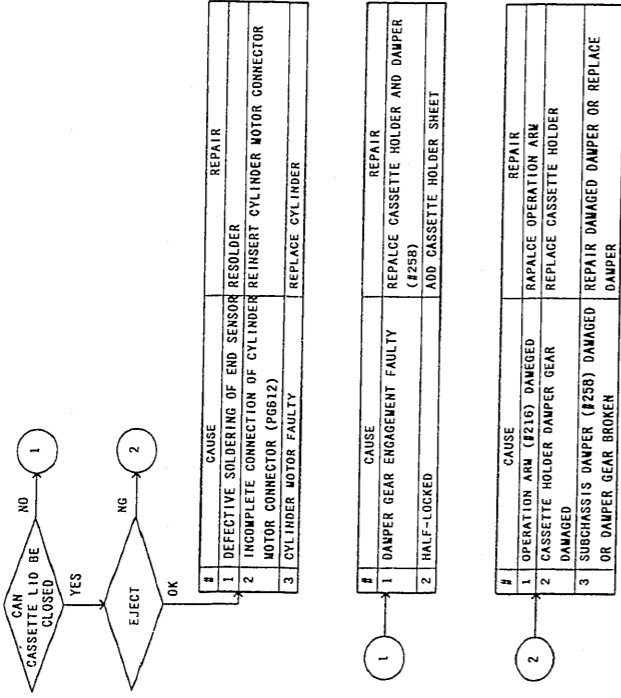
#	CAUSE	REPAIR
1	IDLER SHEET (#295) DAMAGED (CAUSED BY BURRS OF PLATE (#253))	REPLACE NEW TYPE IDLER (#246) AND PLATE (#253) (IDLER SHEET NOT USE)
2	IDLER SHEET COMES OFF (DEFECTIVE WORK OR PLATE FAULTY)	REPLACE NEW TYPE IDLER PLATE (IDLER SHEET NOT USE)
3	IDLER SHEET DIRTY	REPLACE NEW TYPE IDLER AND CLEAN PLATE (IDLER SHEET NOT USE)
4	DIMENSIONS OF PLATE FAULTY (FAULTY IN WARPING)	REPLACE PLATE

#	CAUSE	REPAIR
1	COMES OFF DUE TO FAULTY DIMENSION OF PRESSURE ROLLER (#288) ARM	REPLACE PRESSURE ROLLER AND MOUNT IT WITH E-RING
2	OPERATION ARM (#216) DAMAGED	REPLACE OPERATION ARM
3	ARM (#281), DAMAGED	REPLACE ARM AND MOUNT IT WITH E-RING

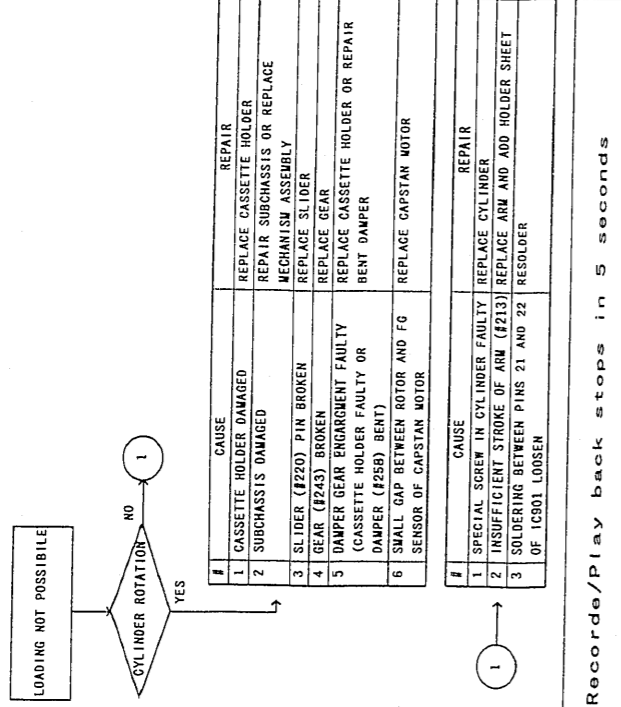
#	CAUSE	REPAIR
1	SLIDER (#220) FAULTY (DAMAGED, ETC.)	REPLACE SLIDER
2	BENT OF DAMPER (#258) OF SUBCHASSIS	REPAIR BENT AND REPLACE DAMPER
3	OPERATION ARM (#216) DAMAGED	REPLACE OPERATION ARM
4	PLATE SPRING OF ARM (#288) DAMAGED	REPLACE ARM
5	ARM (#281) DAMAGED	REPLACE ARM AND MOUNT IT WITH E-RING
6	RACK (#214) REMOVED	REPLACE NEW TYPE RACK

#	CAUSE	REPAIR
1	DAMPER GEAR (#258) BROKEN OR DAMPER SHAFT BENT	REPLACE DAMPER OR REPAIR BENT DAMPER
2	CASSETTE HOLDER DAMPER GEAR DAMAGED	REPLACE CASSETTE HOLDER

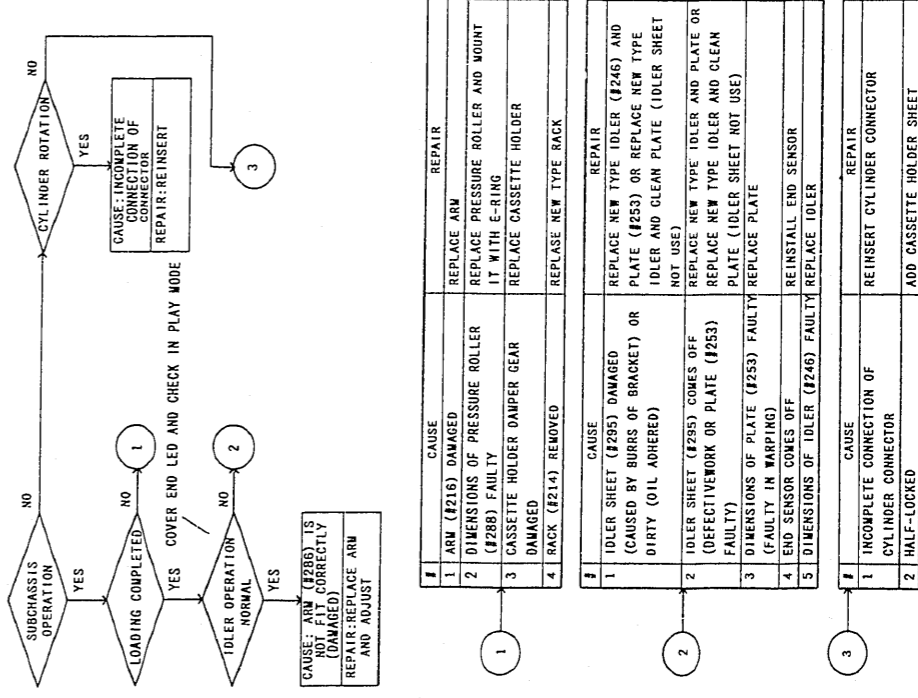
Cassette Lid cannot be opened and closed



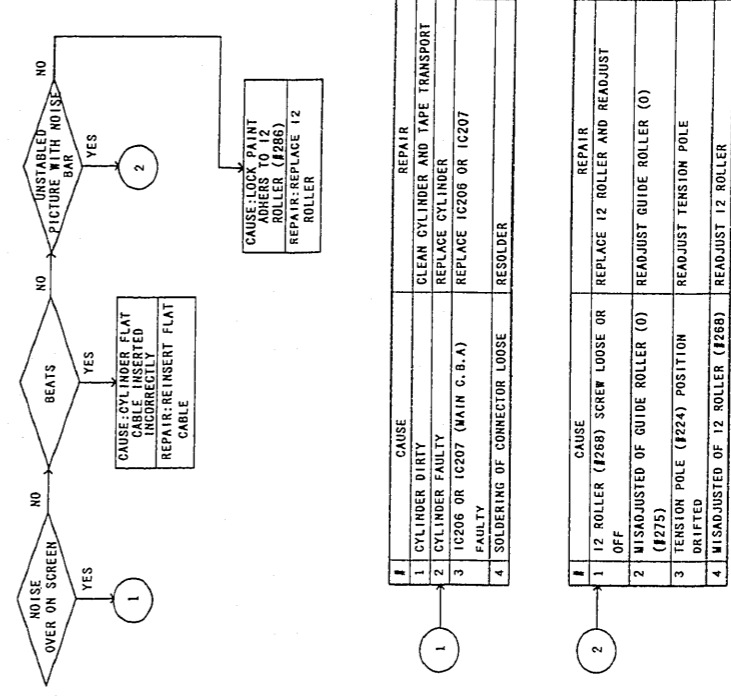
Cassette Tape cannot be loaded



Loading not possible/Tape not run



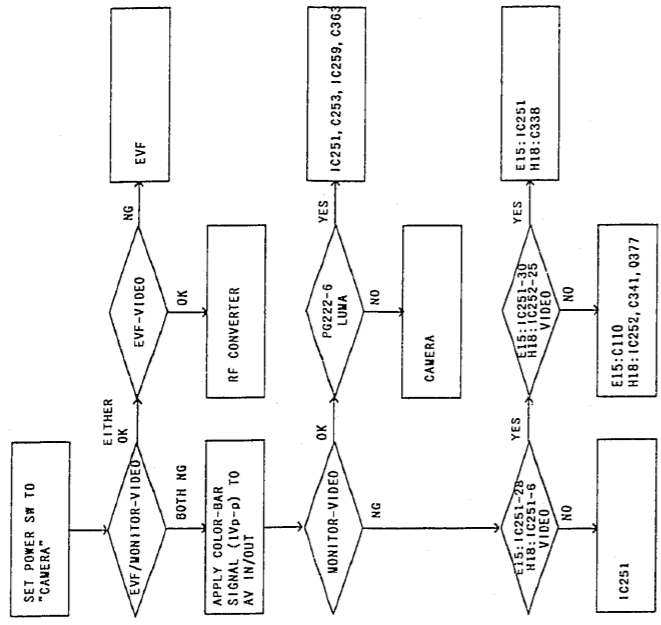
Played Back Picture is Abnormal



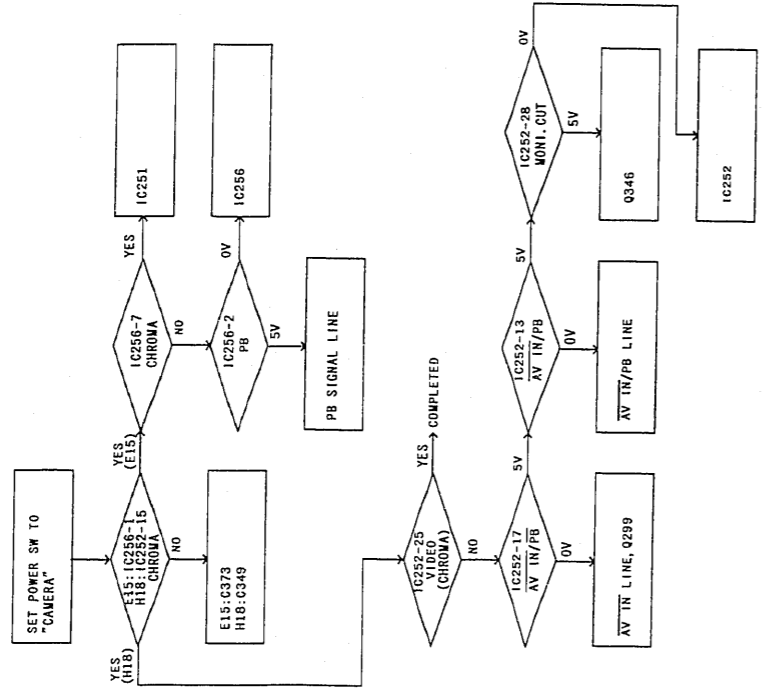


2. VM-E15A/VM-H18A TROUBLESHOOTING GUIDE

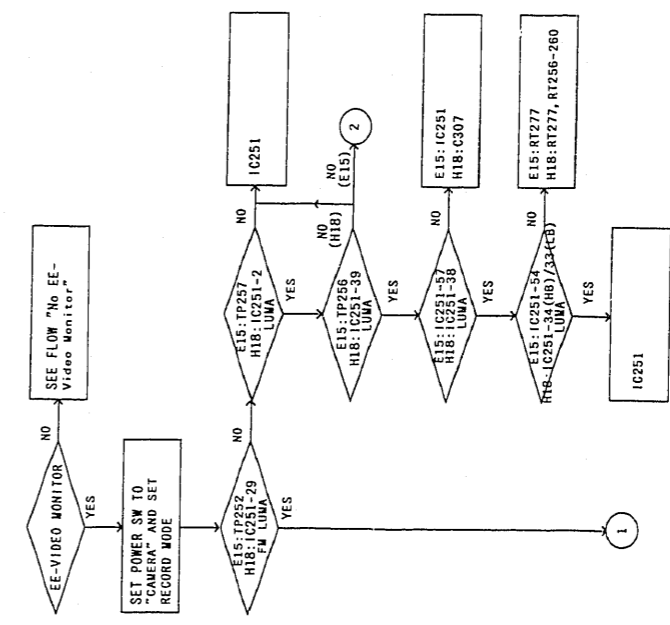
No EE-Video Monitor



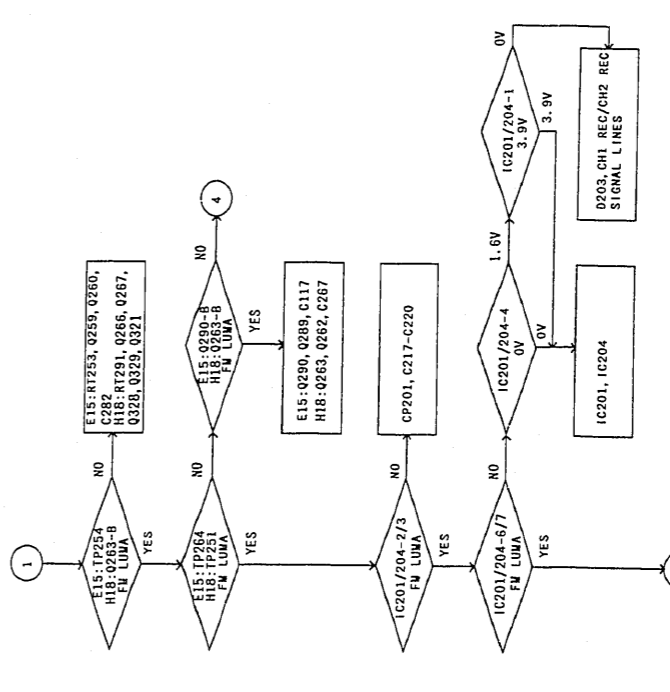
No EE-Chroma

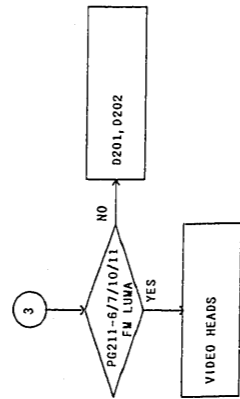
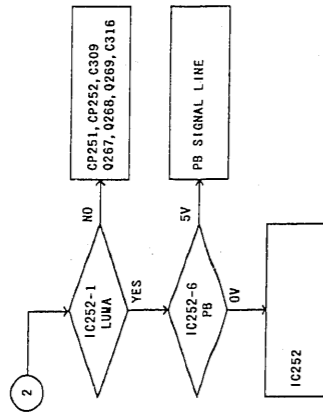
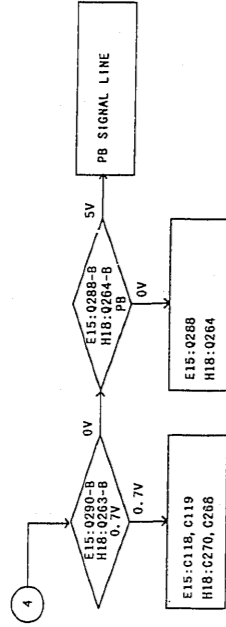


No Record Video



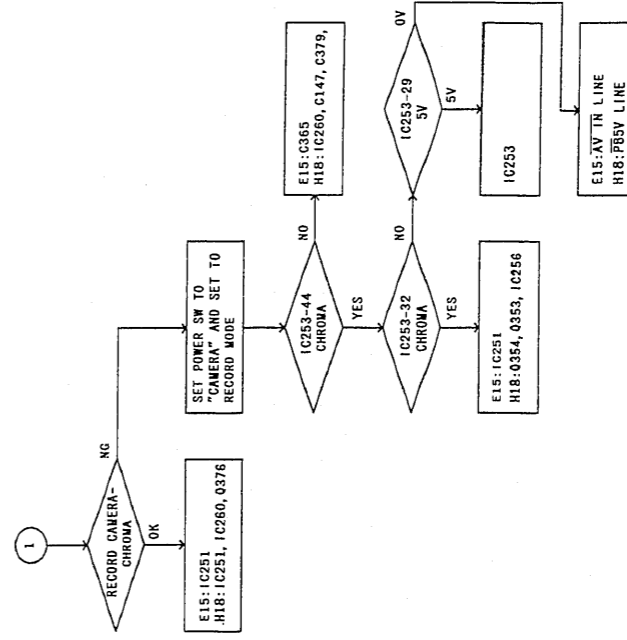
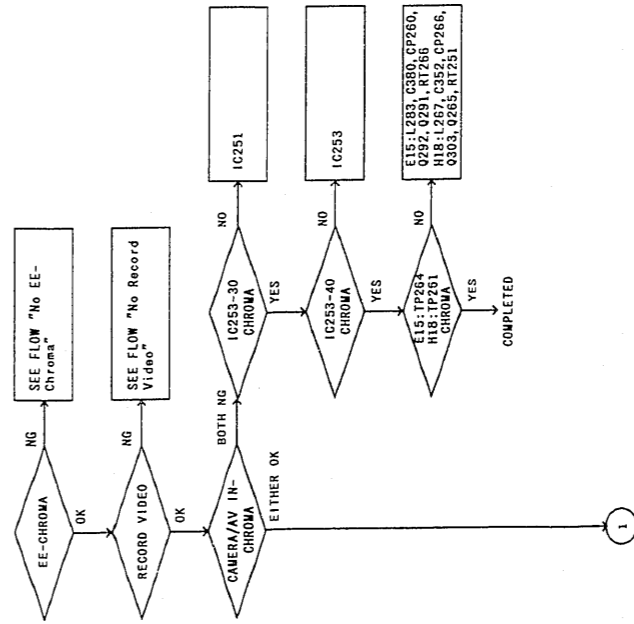
No Record Video



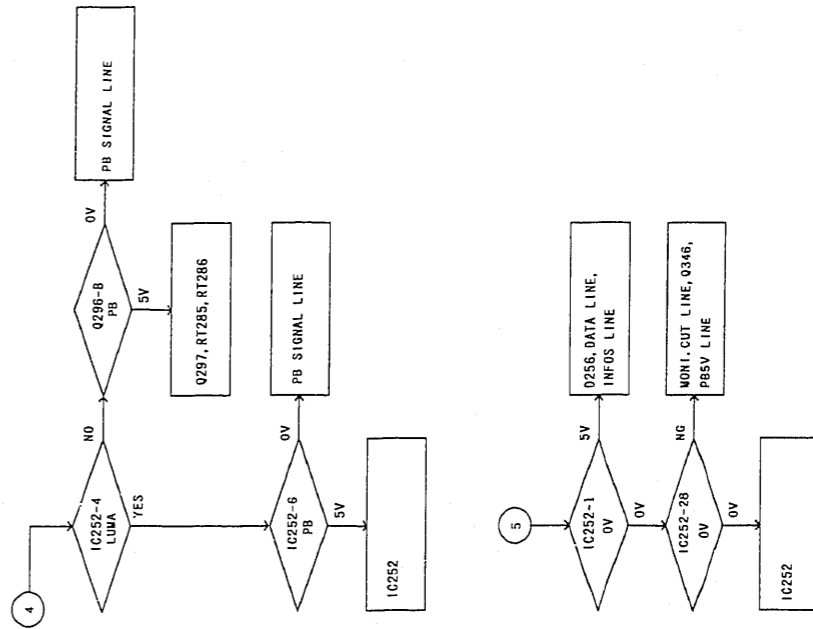
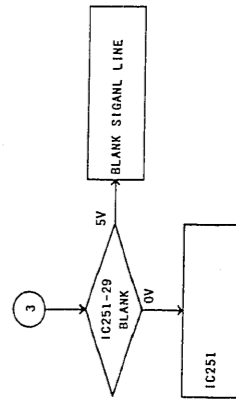
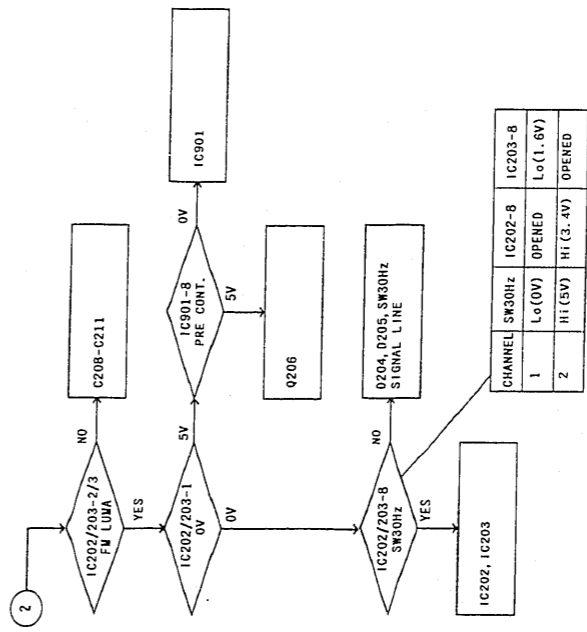
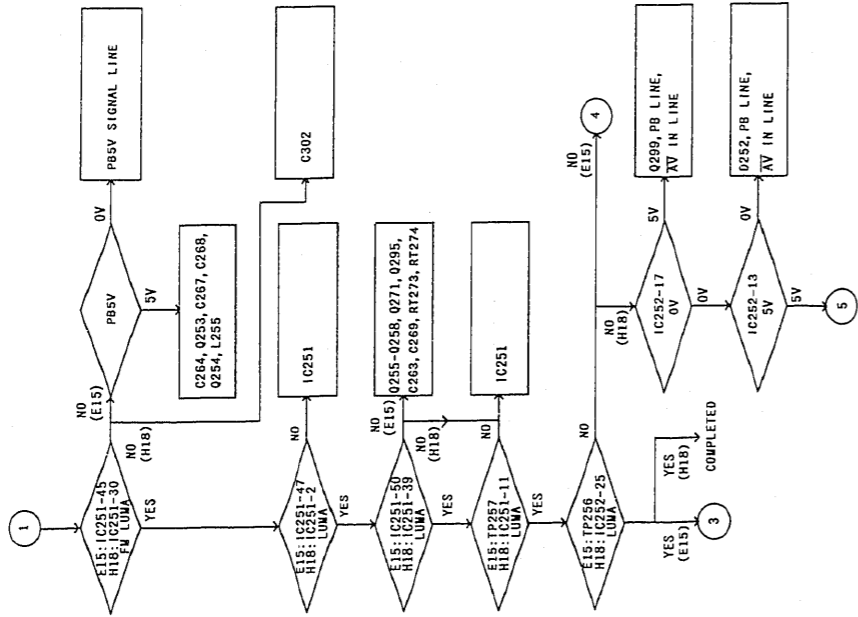
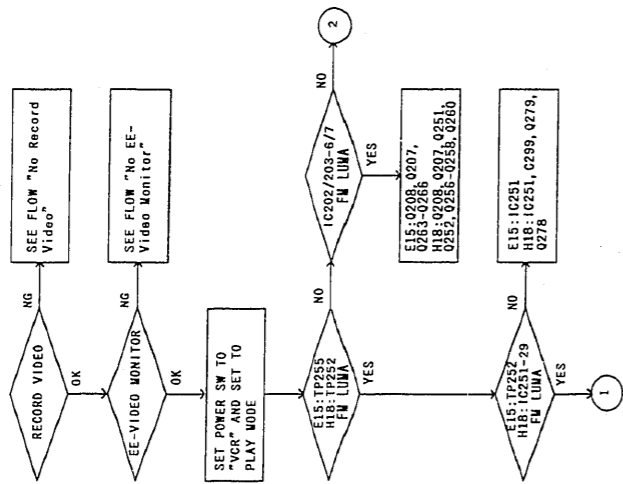


4986

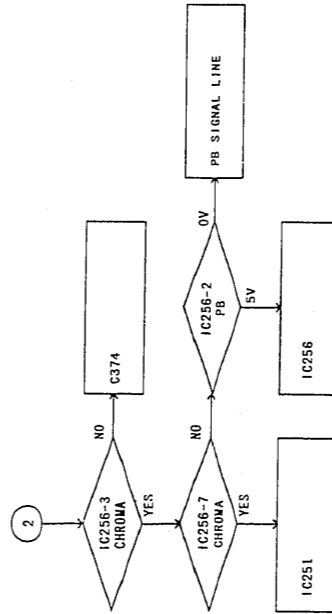
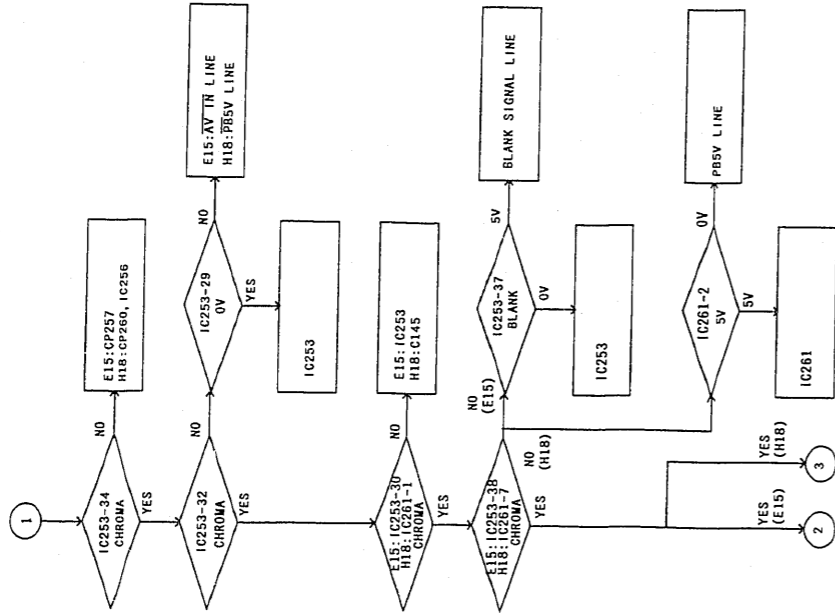
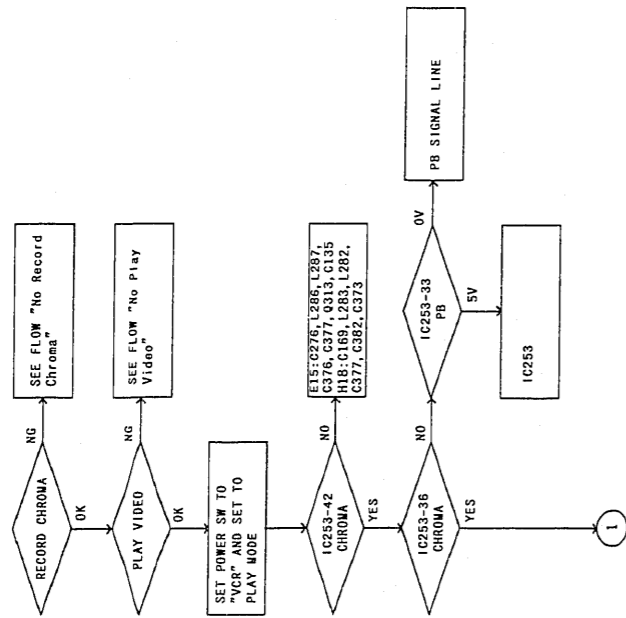
No Record Chroma



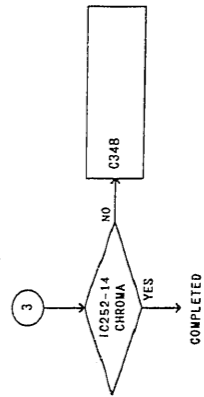
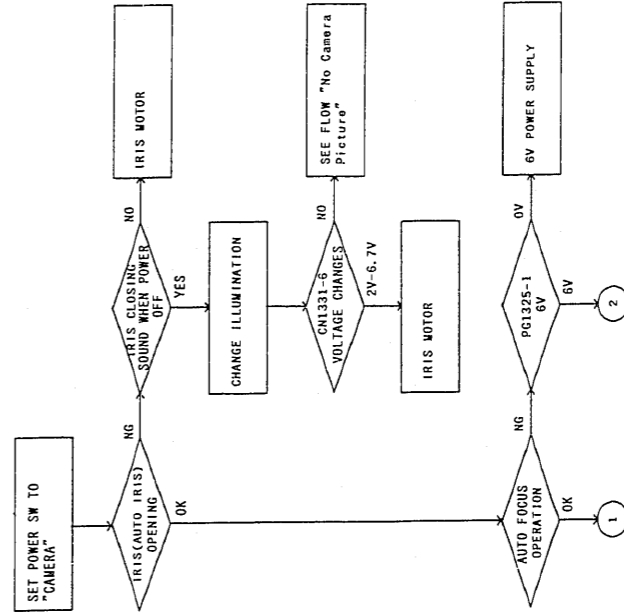
No Play Video

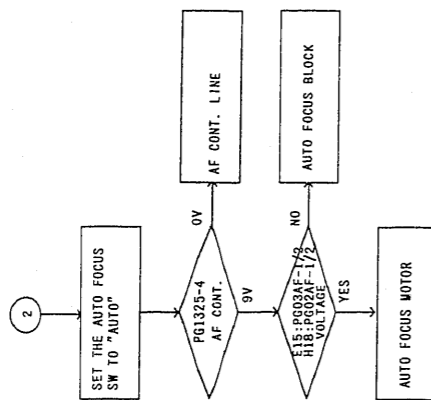
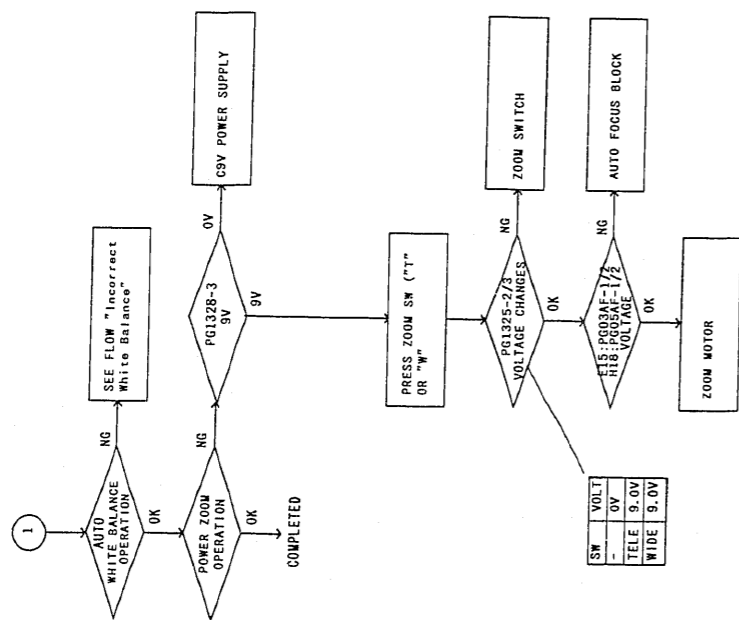


No Play Chroma

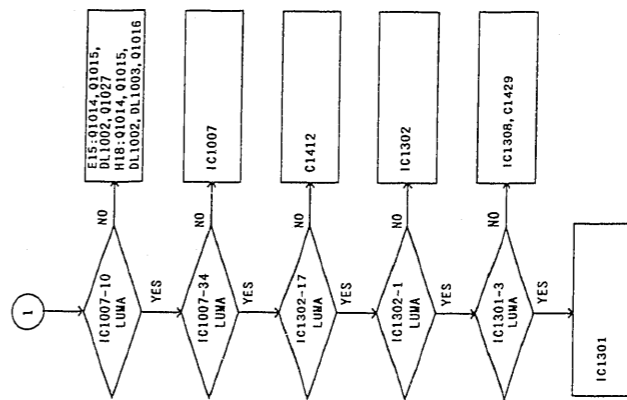
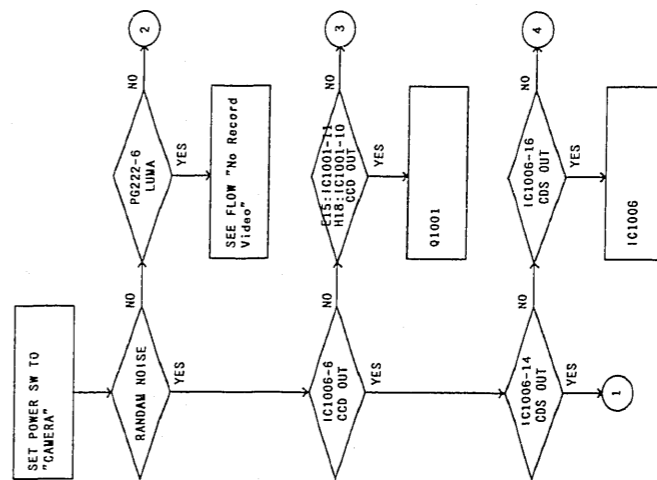


Does not operate Auto Iris/Auto Focus/Auto White Balance/Power Zoom

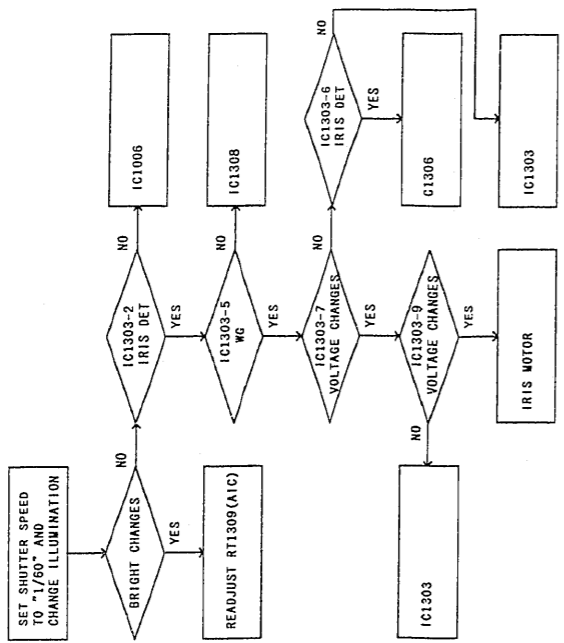
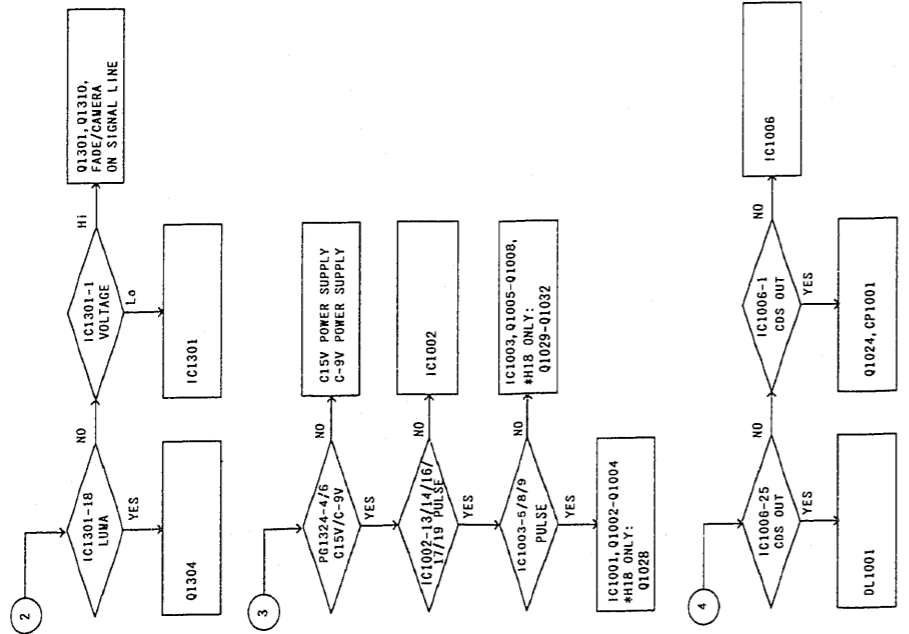




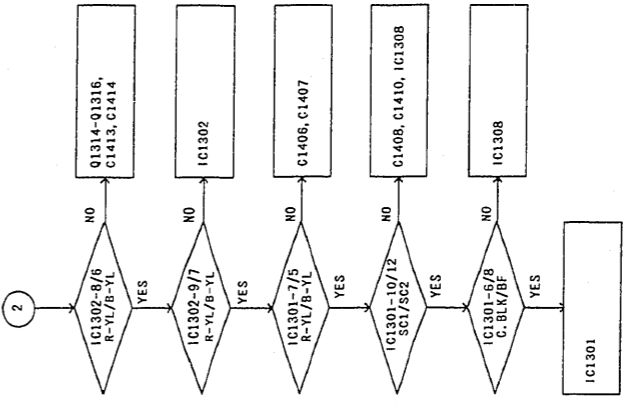
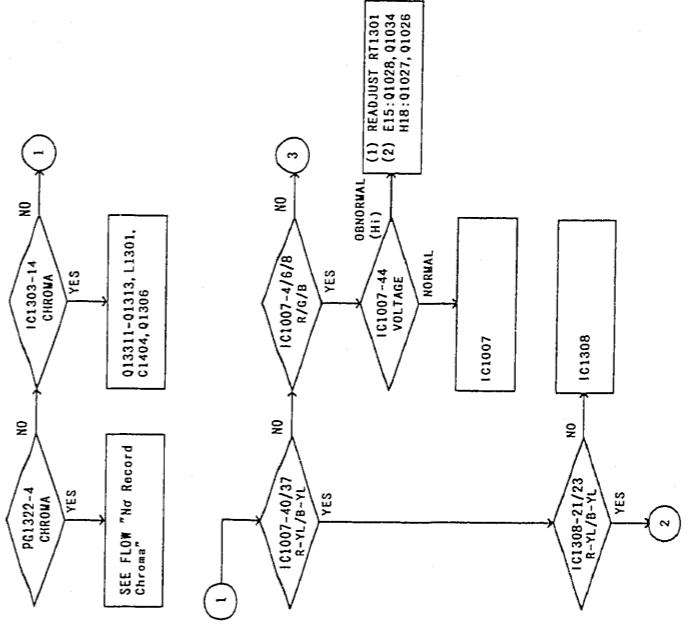
No Camera Picture



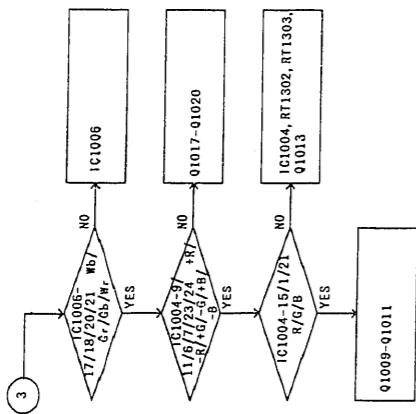
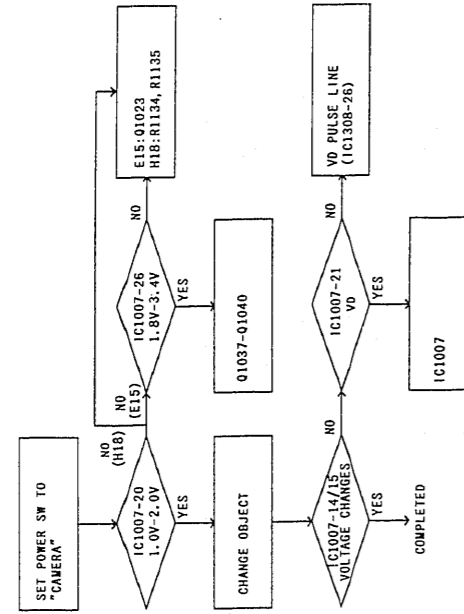
Video Level too High/Low



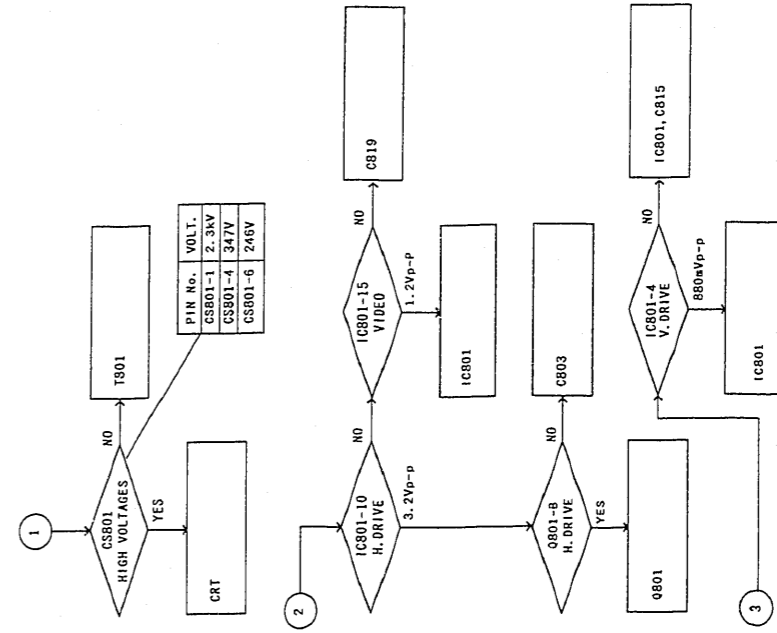
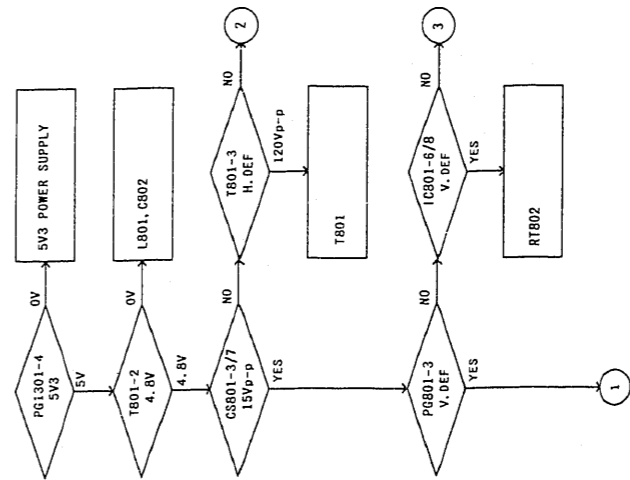
No Camera Color



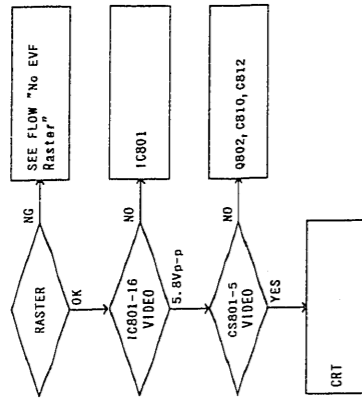
Incorrect White Balance



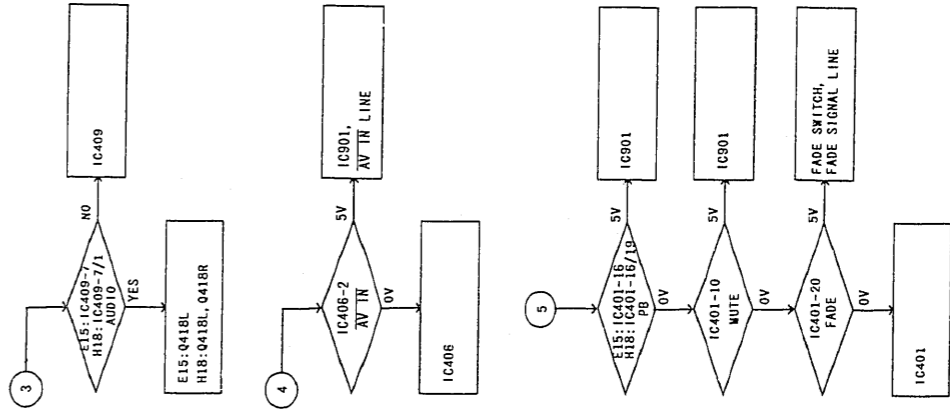
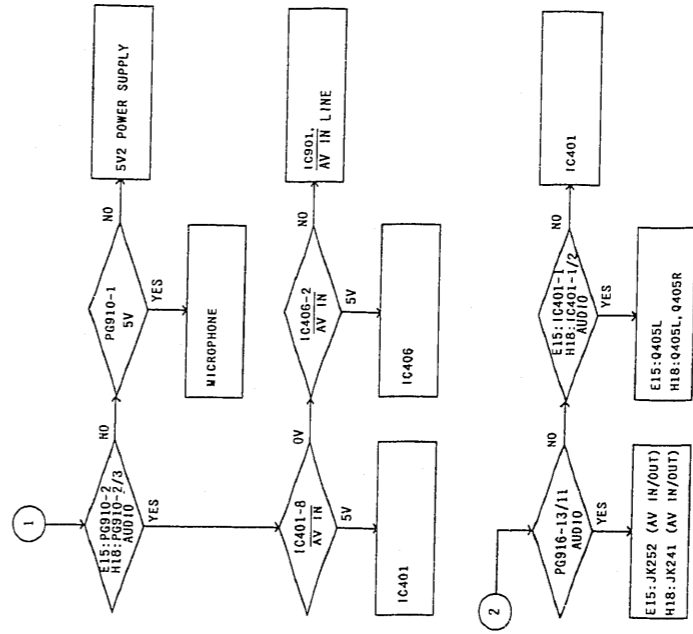
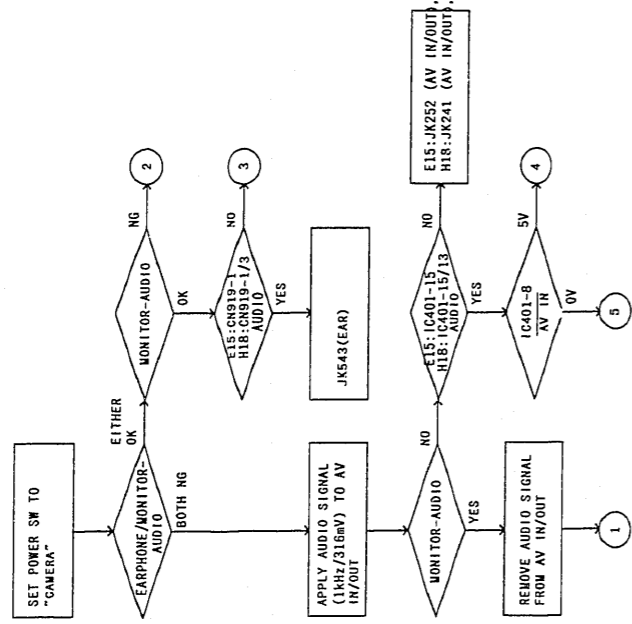
No EVF Rastor



No Picture on EVF

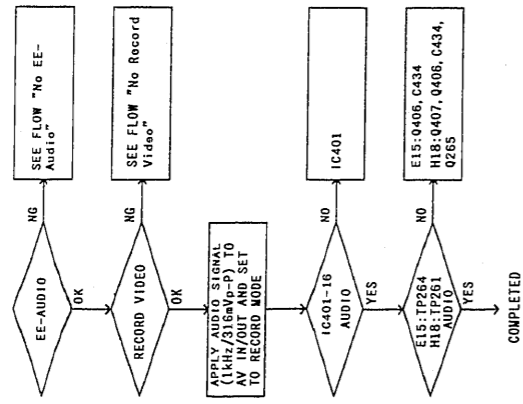


No EE-Audio

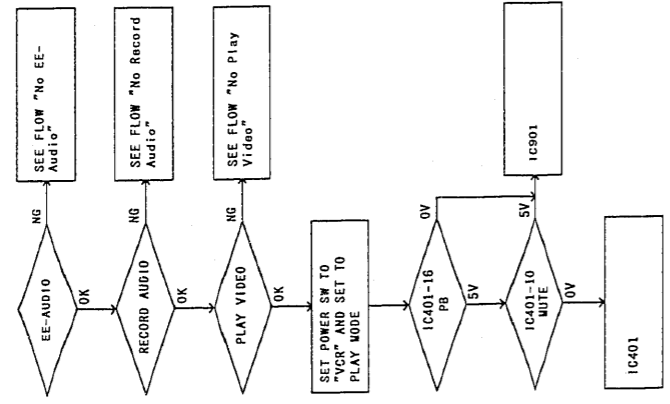




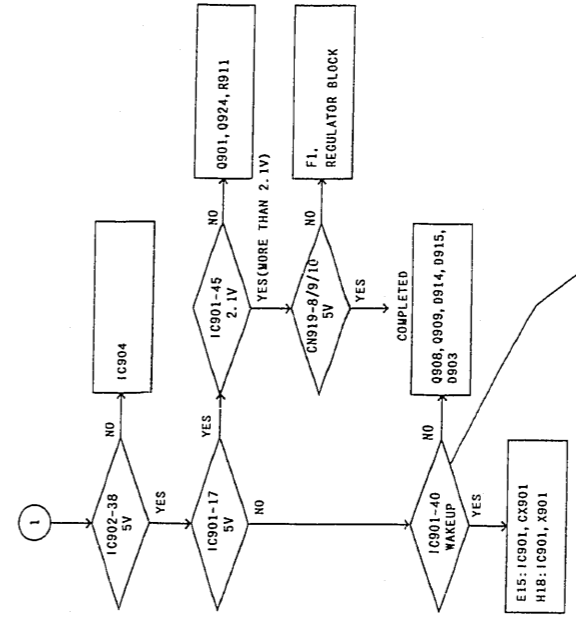
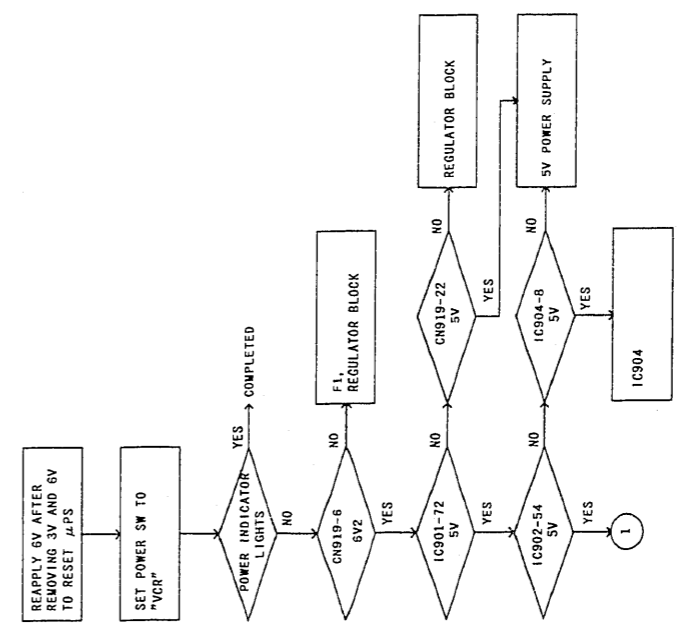
No Record Audio



No Play Audio

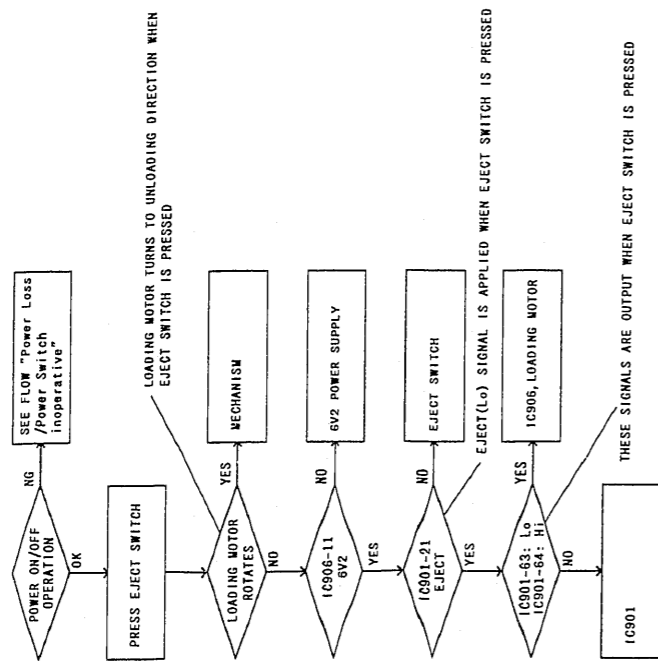


Power Loss/Power Switch inoperative

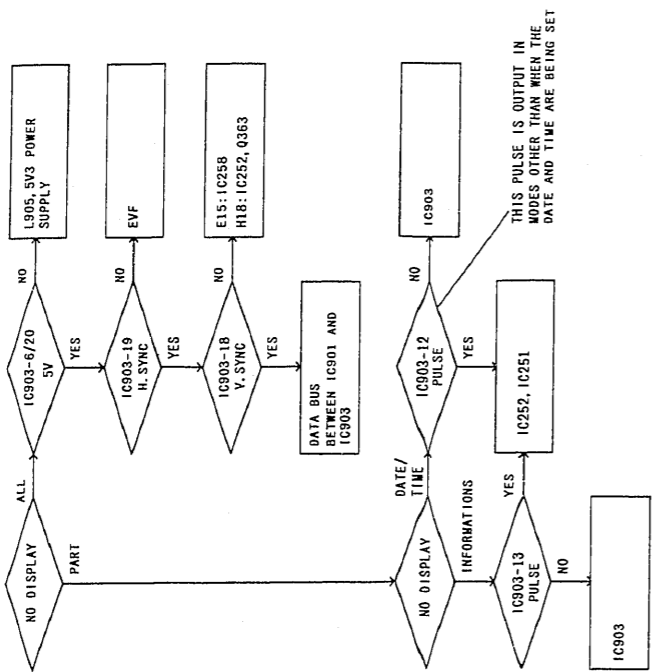


THE WAKEUP(Lo) PULSE IS APPLIED WHEN CASSETTE HOLDER IS CLOSED, WHEN RECORD START/STOP OR EJECT SWITCH IS PRESSED OR WHEN POWER SWITCH IS SET TO "CAMERA" OR "VCR".

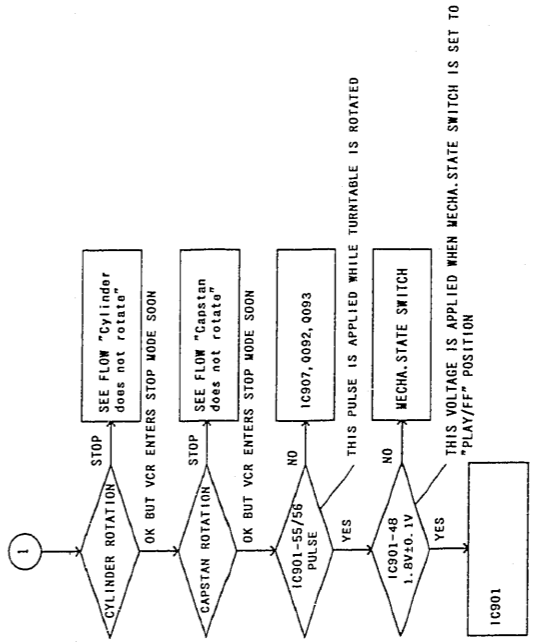
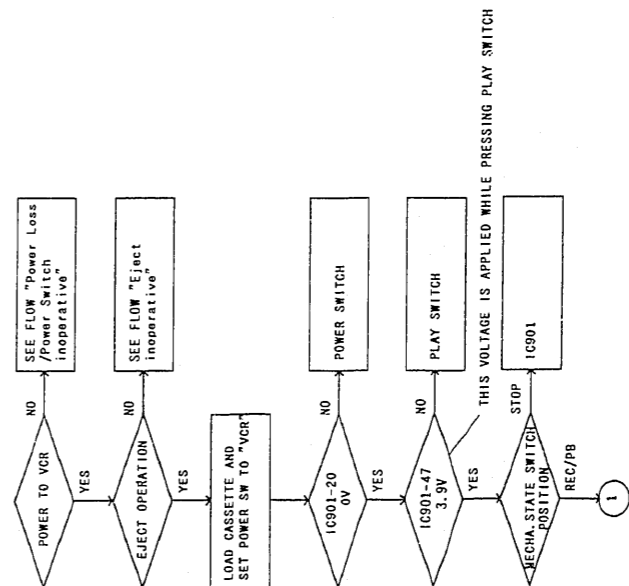
Eject inoperative



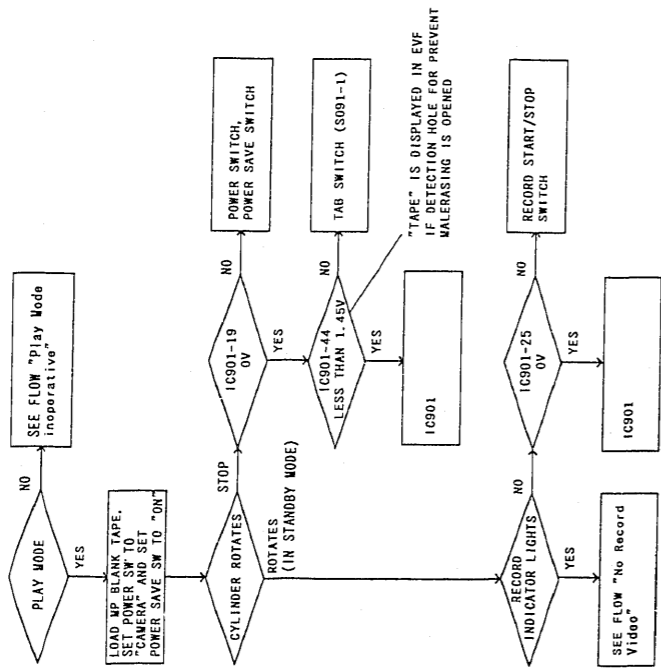
On Screen Display inoperative



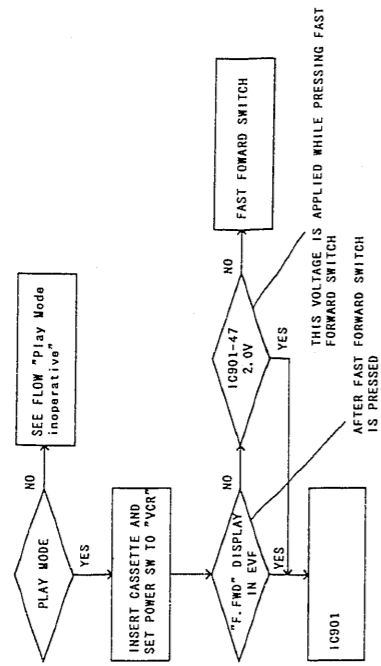
Play Mode inoperative



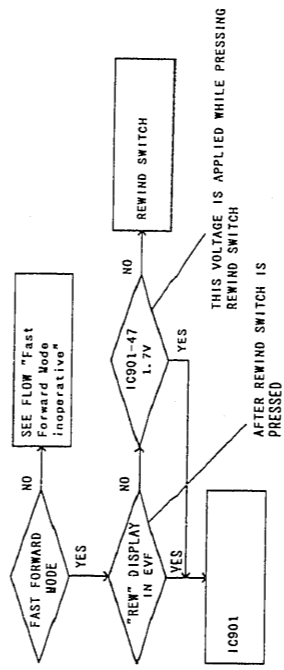
Record Mode inoperative



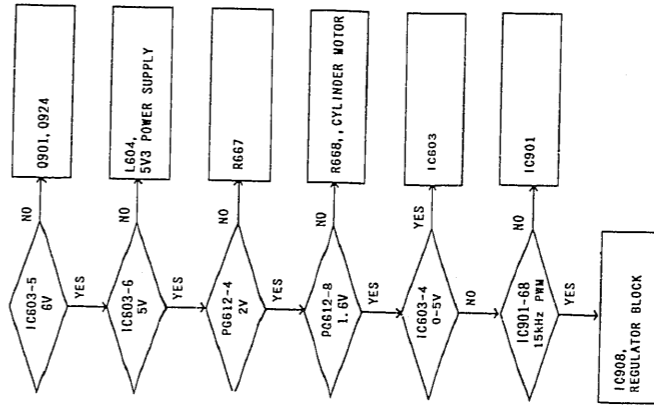
Fast Forward Mode inoperative



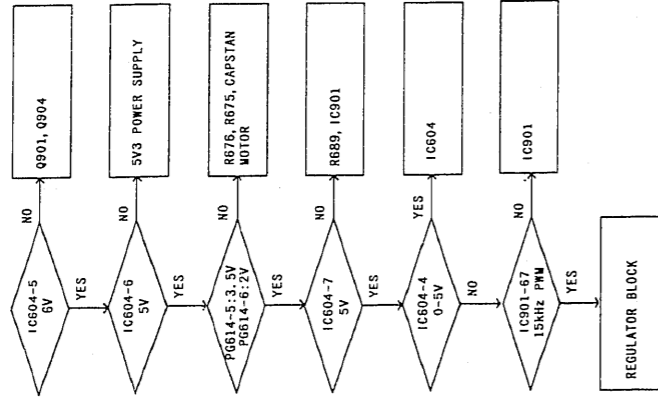
Rewind Mode inoperative



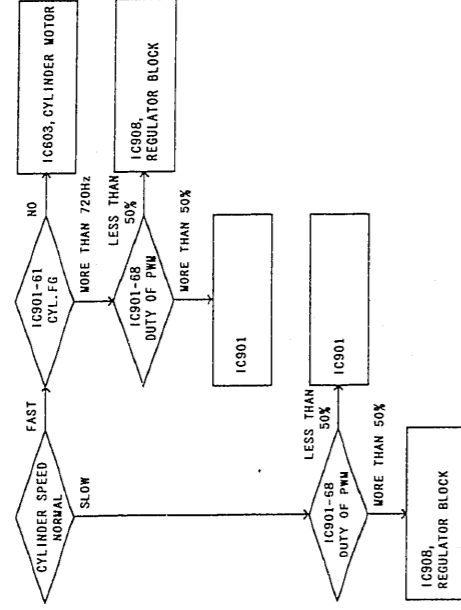
Cylinder does not rotate



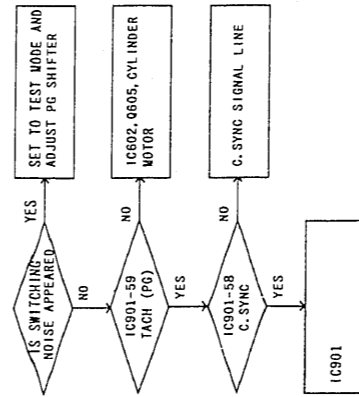
Capstan does not rotate



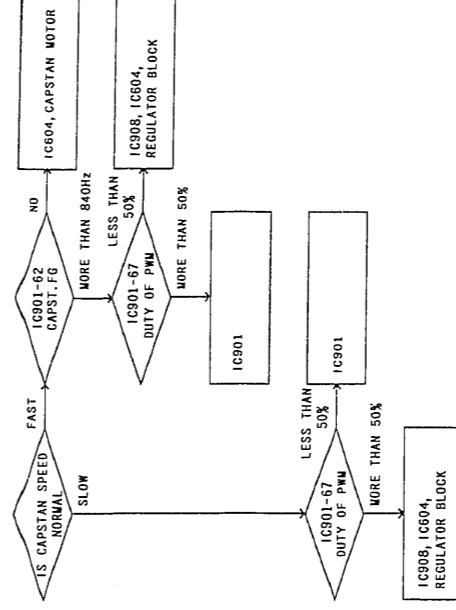
Horizontal Sync Loss/Noise Picture in Play Mode



Horizontal Jitter/Noise Picture in Play Mode

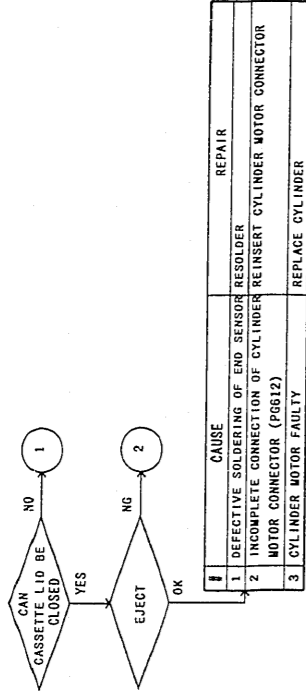


Noise Picture in Play Mode





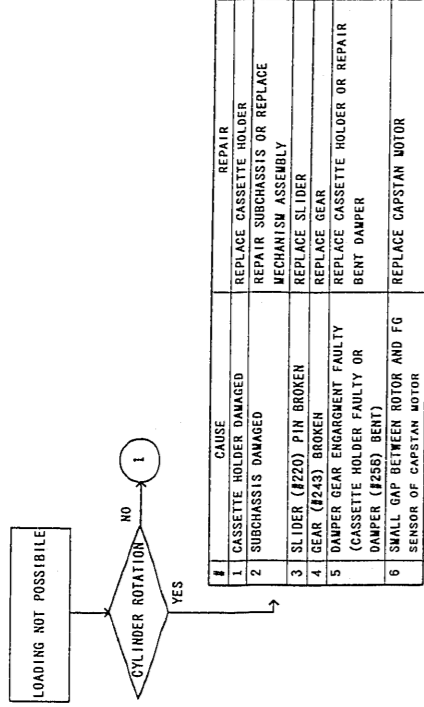
Cassette Lid cannot be opened and closed



#	CAUSE	REPAIR
1	DAMPER GEAR ENGAGEMENT FAULTY	REPLACE CASSETTE HOLDER AND DAMPER (#258)
2	HALF-LOCKED	ADD CASSETTE HOLDER SHEET

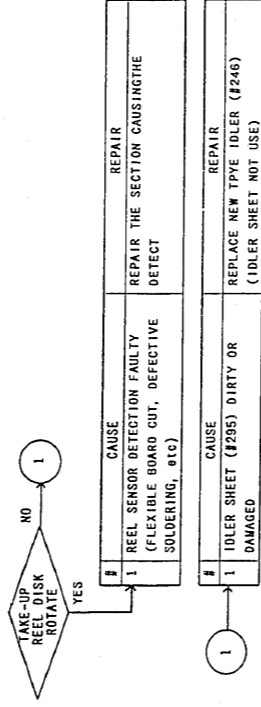
#	CAUSE	REPAIR
1	OPERATION ARM (#216) DAMAGED	REPLACE OPERATION ARM
2	CASSETTE HOLDER DAMPER GEAR DAMAGED	REPLACE CASSETTE HOLDER
3	SUBCHASSIS DAMPER (#258) DAMAGED OR DAMPER GEAR BROKEN	REPAIR DAMAGED DAMPER OR REPLACE DAMPER

Cassette Tape cannot be loaded

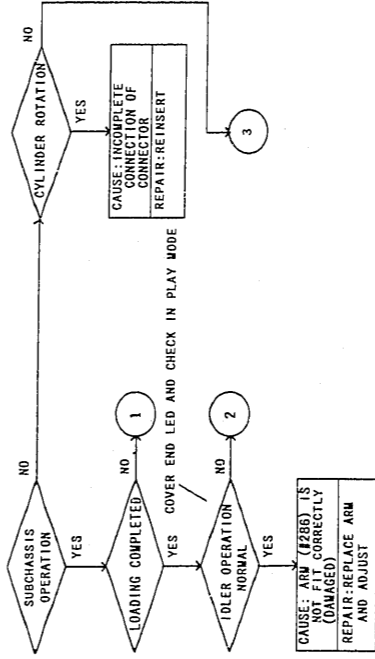


#	CAUSE	REPAIR
1	SPECIAL SCREW IN CYLINDER FAULTY	REPLACE CYLINDER
2	INSUFFICIENT STROKE OF ARM (#213)	REPLACE ARM AND ADD HOLDER SHEET
3	SOLDERING BETWEEN PINS 21 AND 22 OF IC901 LOOSEN	RESOLDER

Record/Play back stops in 5 seconds



Loading not possible/Tape not run

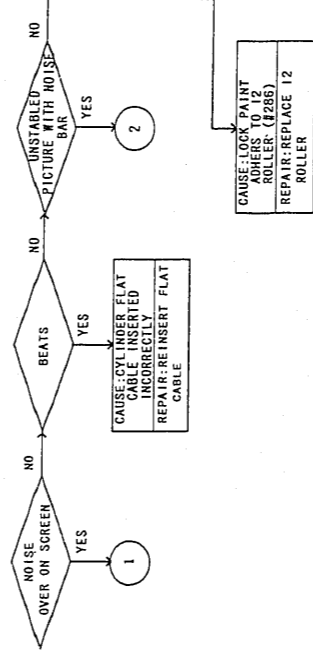


#	CAUSE	REPAIR
1	ARM (#216) DAMAGED	REPLACE ARM
2	DIMENSIONS OF PRESSURE ROLLER (#288) FAULTY	REPLACE PRESSURE ROLLER AND MOUNT IT WITH E-RING
3	CASSETTE HOLDER DAMPER GEAR DAMAGED	REPLACE CASSETTE HOLDER
4	BACK (#214) REMOVED	REPLACE NEW TYPE RACK

#	CAUSE	REPAIR
1	IDLER SHEET (#295) DAMAGED (CAUSED BY BURRS OF BRACKET) OR DIRTY (OIL ADHERED)	REPLACE NEW TYPE IDLER (#246) AND PLATE (#253) OR REPLACE NEW TYPE IDLER AND CLEAN PLATE (IDLER SHEET NOT USE)
2	IDLER SHEET (#295) COMES OFF (DEFECTIVEWORK OR PLATE (#253) FAULTY) (FAULTY IN WARPING)	REPLACE NEW TYPE IDLER AND PLATE OR REPLACE NEW TYPE IDLER AND CLEAN PLATE (IDLER SHEET NOT USE)
3	DIMENSIONS OF PLATE (#253) FAULTY (FAULTY IN WARPING)	REPLACE PLATE
4	END SENSOR COMES OFF	REINSTALL END SENSOR
5	DIMENSIONS OF IDLER (#246) FAULTY	REPLACE IDLER

#	CAUSE	REPAIR
1	INCOMPLETE CONNECTION OF CYLINDER CONNECTOR	REINSERT CYLINDER CONNECTOR
2	HALF-LOCKED	ADD CASSETTE HOLDER SHEET

Played Back Picture is Abnormal



#	CAUSE	REPAIR
1	CYLINDER DIRTY	CLEAN CYLINDER AND TAPE TRANSPORT
2	CYLINDER FAULTY	REPLACE CYLINDER
3	IC202 OR IC203 (MAIN C.B.A) FAULTY	REPLACE IC202 OR IC203
4	SOLDERING OF CONNECTOR LOOSE	RESOLDER

#	CAUSE	REPAIR
1	12 ROLLER (#268) SCREW LOOSE OR OFF	REPLACE 12 ROLLER AND READJUST
2	MISADJUSTED OF GUIDE ROLLER (O) (#275)	READJUST GUIDE ROLLER (O)
3	TENSION POLE (#224) POSITION DRIFTED	READJUST TENSION POLE
4	MISADJUSTED OF 12 ROLLER (#268)	READJUST 12 ROLLER

## CHAPTER 2 QUICK GUIDE TO TROUBLESHOOTING

Note: Numbers (#XXX) are index symbols in the exploded views and parts list.

Symptom	Power not turned on.		
Model	VM-E10A	VM-E15A	VM-H18A
1	<b>Cause</b>	DC-DC converter (#122) faulty.	DC-DC converter (#611) faulty.
	<b>Remedy</b>	Replace DC-DC converter (#122).	Replace DC-DC converter (#611).
2	<b>Cause</b>	Defective soldering of Q916 (main board).	Defective soldering of Q908 (main board).
	<b>Remedy</b>	Re-solder.	Re-solder.
3	<b>Cause</b>	Fuse (F501) blown due to defective DC-DC converter (#122).	Fuse (F1) blown due to defective DC-DC converter (#611).
	<b>Remedy</b>	(1) Replace fuse (F501). (2) Replace DC-DC converter (#122).	(1) Replace fuse (F1). (2) Replace DC-DC converter (#611).
4	<b>Cause</b>	Defective soldering of Q909 (main board)	
	<b>Remedy</b>	Re-solder.	
5	<b>Cause</b>	CN908 (power save switch) and PG908 (main board) not connected correctly.	CN1329 (power save switch) and PG1329 (main board) not connected correctly.
	<b>Remedy</b>	Connect CN908 and PG908 correctly.	
6	<b>Cause</b>	X901 (main board) faulty.	X901 (main board) faulty.
	<b>Remedy</b>	Replace X901.	Replace X901.
7	<b>Cause</b>	Gear (#211) lifts.	
	<b>Remedy</b>	Replace gear (#211).	
8	<b>Cause</b>	Defective soldering of PG051 (fuse board).	Defective soldering of PG552 (regulator block).
	<b>Remedy</b>	Re-solder.	
9	<b>Cause</b>	X1902 (process board) faulty.	X902 (main board) faulty.
	<b>Remedy</b>	Replace X1902.	Replace X902.

Symptom	Power turned off after operation is accepted.		
Model	VM-E10A	VM-E15A	VM-H18A
1	<b>Cause</b>	Arm (#222) is caught by arm (#268).	
	<b>Remedy</b>	Replace arm (#268).	

Symptom	No camera picture		
Model	VM-E10A	VM-E15A	VM-H18A
1	<b>Cause</b>	DC-DC converter (#122) faulty.	DC-DC converter (#611) faulty.
	<b>Remedy</b>	Replace DC-DC converter (#122).	Replace DC-DC converter (#611).
2	<b>Cause</b>	PG1207 (process board) and CN1207 (iris) not connected correctly.	PG1331 (process board) and CN1331 (iris) not connected correctly.
	<b>Remedy</b>	Connect PG1207 and CN1207 correctly.	Connect PG1331 and CN1331 correctly.
3	<b>Cause</b>	IC1211 (process board) faulty.	IC1308 (process board) faulty.
	<b>Remedy</b>	Replace IC1211.	Replace IC1308.
4	<b>Cause</b>	Iris (#756) not opened.	Iris (#754) not opened.
	<b>Remedy</b>	Replace iris (#756) and adjust.	Replace iris (#754) and adjust.
5	<b>Cause</b>	IC1206 (process board) faulty.	IC1007 (sensor board) faulty.
	<b>Remedy</b>	Replace IC1206 and adjust.	Replace IC1007 and adjust.
6	<b>Cause</b>	PG1201 (process board) and PG1001 (sensor board) not connected correctly.	PG1323/1324 (process board) and CN1023/1024 (sensor board) not connected correctly.
	<b>Remedy</b>	Connect PG1201 and PG1001 correctly.	Connect PG1323/1324 and CN1023/1024 correctly.
7	<b>Cause</b>	Fuse (F053) blown.	Fuse (F2) blown.
	<b>Remedy</b>	Replace fuse (F053).	Replace fuse (F2).

Symptom	Tape does not run.		
Model	VM-E10A	VM-E15A	VM-H18A
1	<b>Cause</b>	Wobbling of arm (#286) causes unstable tape running.	
	<b>Remedy</b>	Replace arm (#286).	

Symptom	No eject		
Model	VM-E10A	VM-E15A	VM-H18A
1	<b>Cause</b>	Arm (#268) comes off from the chassis.	
	<b>Remedy</b>	Replace arm (#268).	
2	<b>Cause</b>	Pressure roller (#288) wobbles and does not operate normally.	
	<b>Remedy</b>	Replace pressure roller (#288) and fix it with an E-ring.	
3	<b>Cause</b>	PG613 (main board) and CN613 (cylinder) not connected correctly.	
	<b>Remedy</b>	Connect PG613 and CN613 correctly.	
4	<b>Cause</b>	Defective soldering of take-up end sensor.	
	<b>Remedy</b>	Re-solder.	
5	<b>Cause</b>	Operation arm (#216) wobbles and rides over the base, deforming the leaf spring.	
	<b>Remedy</b>	Replace operation arm (#216).	
6	<b>Cause</b>	The Hall device's printed coil in cylinder (#501) is disconnected.	
	<b>Remedy</b>	Replace cylinder (#501).	
7	<b>Cause</b>	Defective soldering of PG611 (main board).	Defective soldering of PG614 (main board).
	<b>Remedy</b>	Re-solder.	Re-solder.
8	<b>Cause</b>	Arm (#286) hits arm (#281) and deforms it.	
	<b>Remedy</b>	Replace arm (#281).	
9	<b>Cause</b>	Pressure roller (#288) comes off from the chassis.	
	<b>Remedy</b>	Replace pressure roller (#288) and fix it with an E-ring.	
10	<b>Cause</b>	The damper (#258) attaching section is deformed and the gear is damaged.	
	<b>Remedy</b>	Correct the attaching section and then replace damper (#258).	
11	<b>Cause</b>	CN612 (flat cable) and cylinder (#501) not connected correctly.	
	<b>Remedy</b>	Replace cylinder (#501).	
12	<b>Cause</b>	Cassette holder (#401) is deformed which disables unlocking.	
	<b>Remedy</b>	Replace cassette holder (#401).	
13	<b>Cause</b>	Guide plate (#277) is caught by arm (#286).	
	<b>Remedy</b>	Replace guide plate (#277).	
14	<b>Cause</b>	Operation arm (#216) is deformed and pushes arm (#213).	
	<b>Remedy</b>	Replace operation arm (#216).	
15	<b>Cause</b>	Guide roller base I (#266) and O (#275) wobble and rack (#214) comes off.	
	<b>Remedy</b>	Replace rack (#214).	
16	<b>Cause</b>	Dew sensor faulty.	
	<b>Remedy</b>	Replace the dew sensor.	
17	<b>Cause</b>	PG904 (main board) and CN904 (loading motor) not connected correctly.	
	<b>Remedy</b>	Connect PG904 and CN904 correctly.	
18	<b>Cause</b>	Loading motor (#218) faulty.	
	<b>Remedy</b>	Replace loading motor (#218).	

Symptom	Tape is entangled		
Model	VM-E10A	VM-E15A	VM-H18A
1	<b>Cause</b>	The dimensions of pressure roller (#288) are defective and the height regulating guide position is not accurate.	
	<b>Remedy</b>	Replace pressure roller (#288) and then fix it with an E-ring.	
2	<b>Cause</b>	Plate (#253) has burrs. Sheet (#295) comes off and is caught by idler (#246), causing the idler to be inoperable.	
	<b>Remedy</b>	Replace plate (#253) and idler (#246) (sheet (#295) is not required).	
3	<b>Cause</b>	Idler (#246) is damaged.	
	<b>Remedy</b>	Replace idler (#246) (sheet (#295) is not required).	

Symptom	EVF faulty (1/2)		
Model	VM-E10A	VM-E15A	VM-H18A
1	<b>Cause</b>	RT805 (EVF board) faulty and no picture.	
	<b>Remedy</b>	Adjust RT805.	
2	<b>Cause</b>	CRT (#703) faulty and no picture.	
	<b>Remedy</b>	Replace CRT (#703) and then adjust.	

Symptom				EVF faulty (2/2)			
Model		VM-E10A	VM-E15A	VM-H18A			
3	Cause	Foreign matter in CRT (#703) shorts the electrodes.					
	Remedy	Replace CRT (#703) and adjust.					

Symptom				Noise is conspicuous in playback picture			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Arm (#268) height adjustment faulty.					
	Remedy	Adjust the height of arm (#268).					

Symptom				No recording/playback			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Guide (#219) damaged.					
	Remedy	Replace guide (#219).					
2	Cause	The nut comes off from arm (#268), causing noise at the start of playback.					
	Remedy	Replace arm (#268).					

Symptom				No output from one channel			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	PG211 (main board) and CN211 (head) not connected correctly.					
	Remedy	Connect PG211 and CN211 correctly.					

Symptom				Tape does not run during recording/playback			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Arm (#286) fixing screw is loosened and the arm is not set into catcher (#290) on capstan motor (#291) correctly.					
	Remedy	Re-tighten the arm (#286) fixing screw.					

Symptom				Horizontal line noise during playback			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Cylinder (#501) is dirty, demagnetizing part of tape.					
	Remedy	Clean cylinder (#501).					
2	Cause	Guide roller I (#266) height faulty.					
	Remedy	Adjust the height of guide roller I (#266).					

Symptom				Abnormal sound during cylinder rotation			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Guide (#219) is damaged.					
	Remedy	Replace guide (#219).					
2	Cause	Abnormal sound from the inside of cylinder (#501).					
	Remedy	Replace cylinder (#501).					

Symptom				Monitoring sound enters microphone during camera recording.			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Abnormal sound from the inside of cylinder (#501).					
	Remedy	Replace cylinder (#501).					

Symptom				Mechanical block stops operation instantaneously.			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Sheet (#295) is folded.					
	Remedy	Replace idler (#246) (sheet (#295) is not necessary).					

Symptom				Audio noise during camera recording			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Disconnection inside microphone.					
	Remedy	Replace microphone.					

Symptom				Noise bar moves or tape is damaged during search.			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Arm (#286) wobbles.					
	Remedy	Replace arm (#286).					

Symptom				Incorrect tint of camera picture			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Defective soldering of DL1202 (process board).	Defective soldering of DL1002 (sensor board).	Defective soldering of DL1002, DL1003 (sensor board).			
	Remedy	Re-solder.	Re-solder.	Re-solder.			
2	Cause	IC1203 (process board) faulty.	IC1006 (sensor board) faulty.				
	Remedy	Replace IC1203 and adjust.	Replace IC1006 and adjust.				
3	Cause	Defective soldering of IC1205 (process board).	Defective soldering of IC1004 (sensor board).				
	Remedy	Re-solder.	Re-solder.				

Symptom				Power zoom does not operate.			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Autofocus board faulty.					
	Remedy	Replace the autofocus board.					
2	Cause	Abnormal sound occurs because the gear box of zoom motor (#754) is faulty.		Zoom motor (#756) faulty.			
	Remedy	Replace zoom motor (#754).		Replace zoom motor (#756).			

Symptom				Focus is not correct with autofocus			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Autofocus sensor position faulty.					
	Remedy	Adjust the position of the autofocus sensor.					
2	Cause	Autofocus sensor or infrared emitter faulty.		Autofocus sensor or infrared emitter faulty.			
	Remedy	Replace AF block (#754).		Replace AF block (#757).			

Symptom				Cassette lid is not closed			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	PG612 (main board) and CN612 (cylinder) not connected correctly.					
	Remedy	Connect PG612 and CN612 correctly.					
2	Cause	Mode switch (#217) faulty.					
	Remedy	Replace mode switch (#217).					

Symptom				No video signal from AV output cable			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	R910 (main board) faulty.	R262 (Y/chroma board) faulty.	R370 (Y/chroma board) faulty.			
	Remedy	Replace R910.	Replace R262.	Replace R370.			

Symptom				Cassette holder does not lock			
Model		VM-E10A	VM-E15A	VM-H18A			
1	Cause	Cassette holder (#401) is deformed.					
	Remedy	Replace cassette holder (#401).					



Symptom		Camera picture becomes cyan		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	IC1206 (process board) faulty.	IC1007 (sensor board) faulty.	
	Remedy	Replace IC1206 and adjust.	Replace IC1007 and adjust.	

Symptom		Camera picture becomes pink		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	IC1205 (process board) faulty.	IC1004 (sensor board) faulty.	
	Remedy	Replace IC1205 and adjust.	Replace IC1004 and adjust.	

Symptom		Camera picture becomes green		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	IC1203 (process board) faulty.	IC1006 (sensor board) faulty.	
	Remedy	Replace IC1203 and adjust.	Replace IC1006 and adjust.	

Symptom		Camera picture becomes red		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	IC1203 (process board) faulty.	IC1006 (sensor board) faulty.	
	Remedy	Replace IC1203 and adjust.	Replace IC1006 and adjust.	
2	Cause	IC1205 (process board) faulty.	IC1004 (sensor board) faulty.	
	Remedy	Replace IC1205 and adjust.	Replace IC1004 and adjust.	

Symptom		Spots in camera picture		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	CCD image sensor has a white scratch.		
	Remedy	Replace CCD image sensor and adjust.		

Symptom		Camera picture is dark		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	IC1206 (process board) faulty.	IC1007 (sensor board) faulty.	
	Remedy	Replace IC1206 and adjust.	Replace IC1007 and adjust.	

Symptom		Autofocus does not operate		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	Autofocus board's plug and focus motor's connector not connected correctly.		
	Remedy	Connect them correctly.		

Symptom		Camera picture's sync distorted		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	IC1211 (process board) faulty.	IC1308 (process board) faulty.	
	Remedy	Replace IC1211 and adjust.	Replace IC1308 and adjust.	

Symptom		Battery cannot be removed		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	Lock holder (#134) comes off.	Eject lever (#139) comes off.	
	Remedy	Attach lock holder (#134) correctly.	Attach eject lever (#139) correctly.	

Symptom		Tape unloads during loading		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	Defective soldering of supply/take-up end sensors.		
	Remedy	Re-solder.		

Symptom		Camera picture distorted occasionally		
Model	VM-E10A	VM-E15A	VM-H18A	
1	Cause	Defective soldering of CN1001 (sensor board).	Defective soldering of CN1023, CN1024 (sensor board).	
	Remedy	Re-solder.	Re-solder.	

## CHAPTER 3 DISASSEMBLY

### 1. VM-E10A DISASSEMBLY WHEN A TROUBLE OCCURS

If the VM-E10A does not enter the eject state when the power is supplied normally, perform the following procedure to set the VM-E10A to the eject state (disassembling). If the cassette cannot be removed, also perform the following procedure.

1-1. If the VM-E10A cannot be set to the eject state I

#### Remove the EVF

- (1) Move the EVF in the direction of arrow (A). (See Fig. 3-1)
- (2) Turn the EVF in the direction of arrow (B).
- (3) Remove one (1) screw and remove the EVF shoe in the direction of arrow (A).
- (4) Disconnect connector CN801. (See Fig. 3-2)

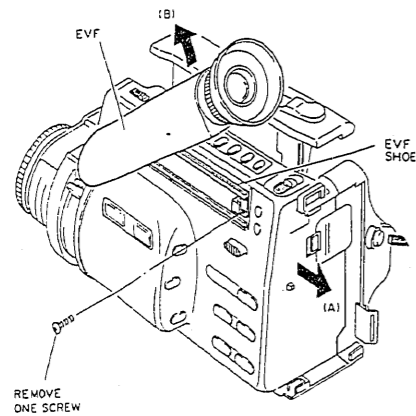


Fig. 3-1

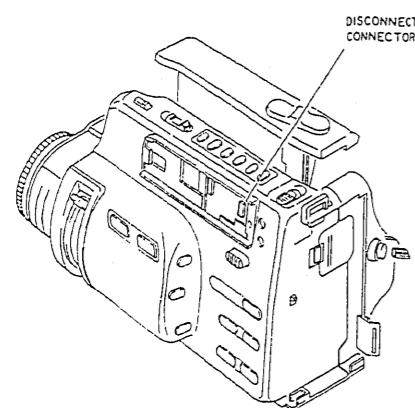


Fig. 3-2

#### Remove the microphone (MIC)

- (5) Remove one (1) screw holding the MIC. (See Fig. 3-3)
- (6) Remove the MIC in the direction of arrow (B) and disconnect connector CN001 on the jack circuit board.

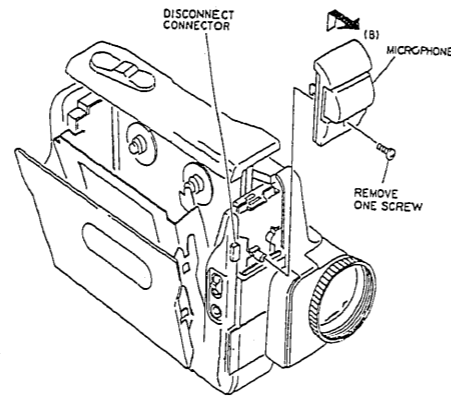


Fig. 3-3

#### Separating the Camera Section and VCR Section

- (7) Remove six (6) screws holding the camera section and VCR section. (See Fig. 3-4)
- (8) Disconnect four (4) connectors (CN093, CN903, CN051, CN001) on the DC-DC converter, process circuit board and fuse circuit board. (See Fig. 3-5)

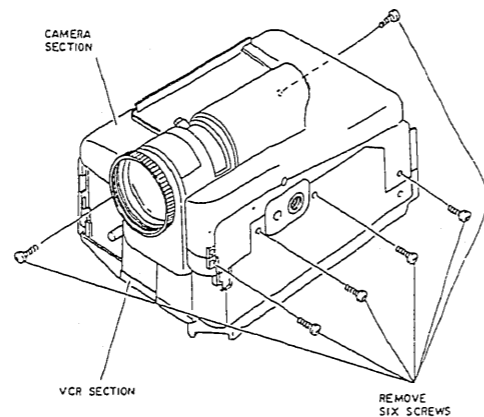


Fig. 3-4

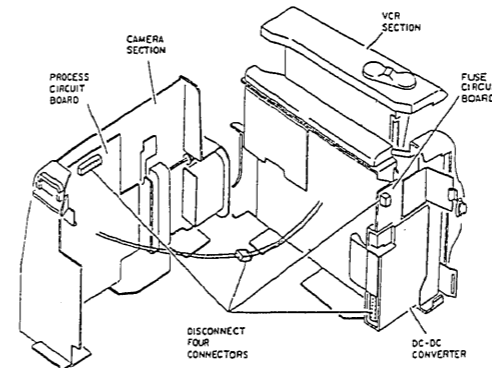


Fig. 3-5

- (9) Disconnect connector CN904 from the main circuit board. (See Fig. 3-6)
- (10) Apply DC3V to CN904 (loading motor).

	RED	BLK
LOADING	-	+
UNLOADING	+	-

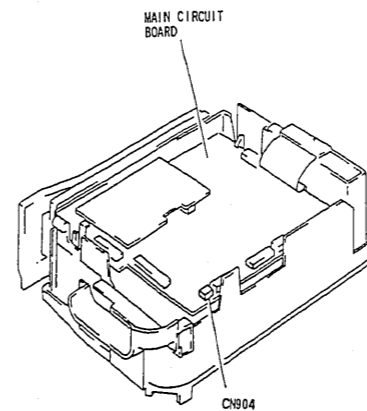


Fig. 3-6

- 1-2. If the VM-E10A cannot be set to the eject state II
- If the VM-E10A does not enter the eject state with the above procedure, remove the right case by performing steps (11)-(19) below.
- If the cassette cannot be removed, perform steps (11)-(19) below to eject the cassette.

- (11) Disconnect the DC3V power supply from CN904 (loading motor).

- (12) Insert a flat bladed screwdriver between the right case and cassette lid and push sections (A) and (B) of the cassette holder in the direction of the arrow (be careful) not to damage the case) to remove the cassette lid, then return section (A) and (B) to the original position. (See Fig. 3-7)
- (13) Lift the zoom switch and release two (2) tabs (see Fig. 3-8), then release two (2) tabs (see Fig. 3-9) and remove the zoom switch.
- (14) Remove three (3) screws holding the right case. (See Fig. 3-10)

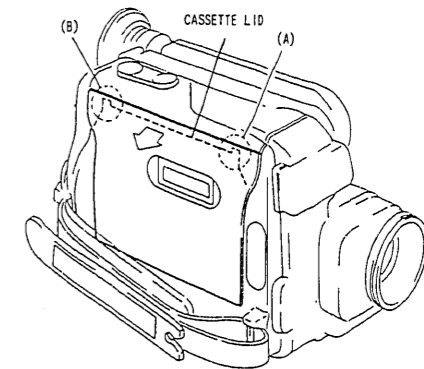


Fig. 3-7

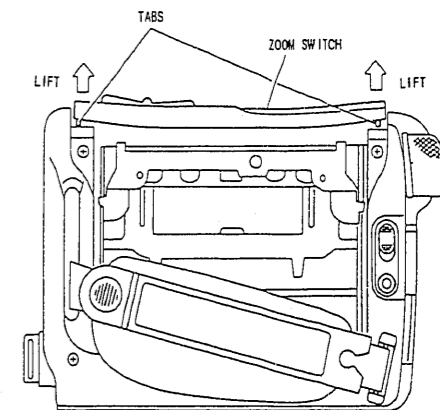


Fig. 3-8

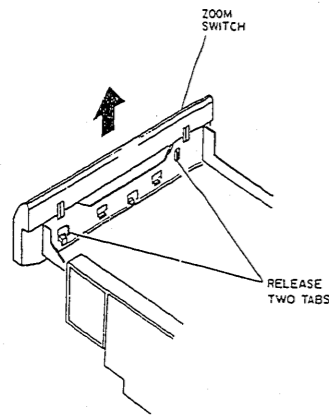


Fig. 3-9

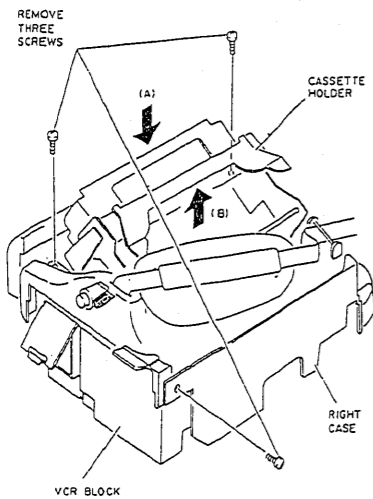


Fig. 3-10

Supply Guide Roller (2), Supply Tape Guide, Loading Motor Removal

- (15) Remove one (1) washer holding the supply guide roller (2).  
 (See Fig. 3-11)  
 (16) Remove two (2) screws holding the supply tape guide.

- (17) Remove the supply guide roller (2) and supply tape guide from the main chassis.  
 (18) Remove one (1) screw and remove the loading motor from the main chassis.

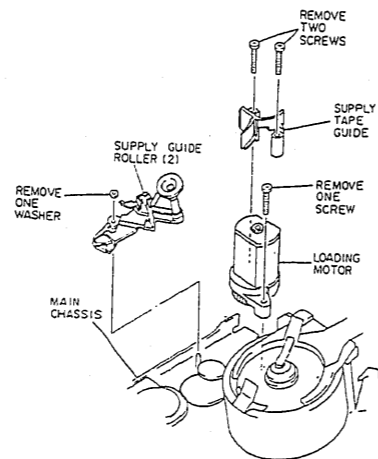


Fig. 3-11

- (19) Turn loading gear (1) in the direction of the arrow with your fingers to set the VM-E10A to the eject state. (See Fig. 3-12)

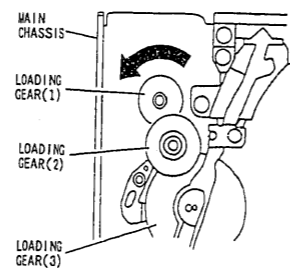


Fig. 3-12

2. PHOTO TO BE REFERRED WHEN ASSEMBLING THE MECHANISM BLOCK

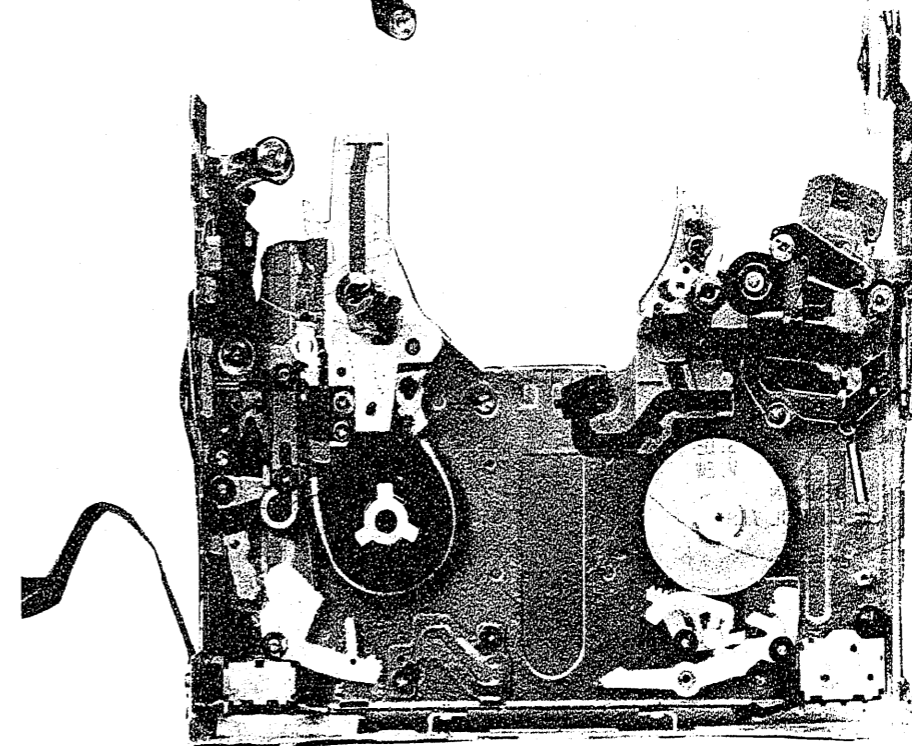
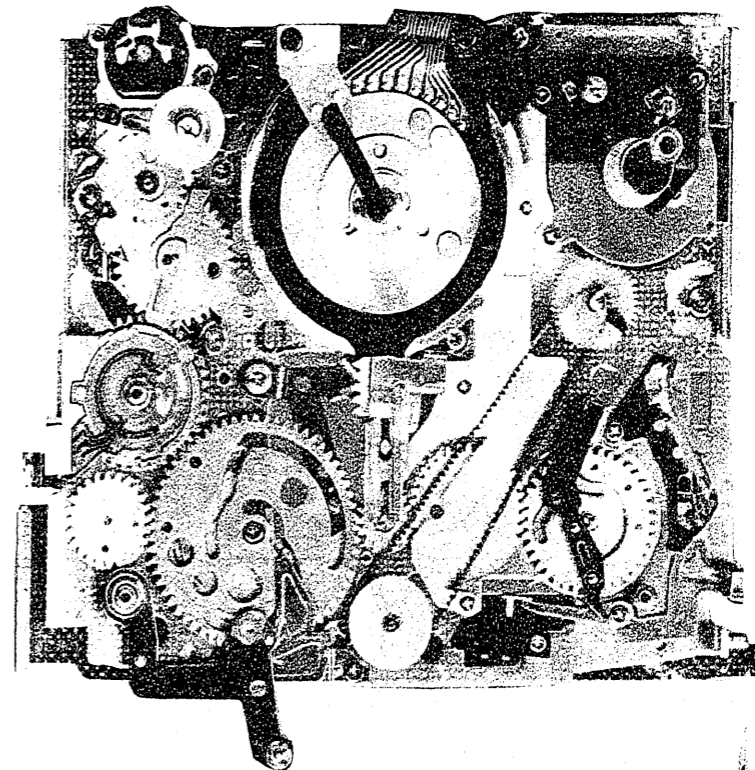


Fig. 3-51

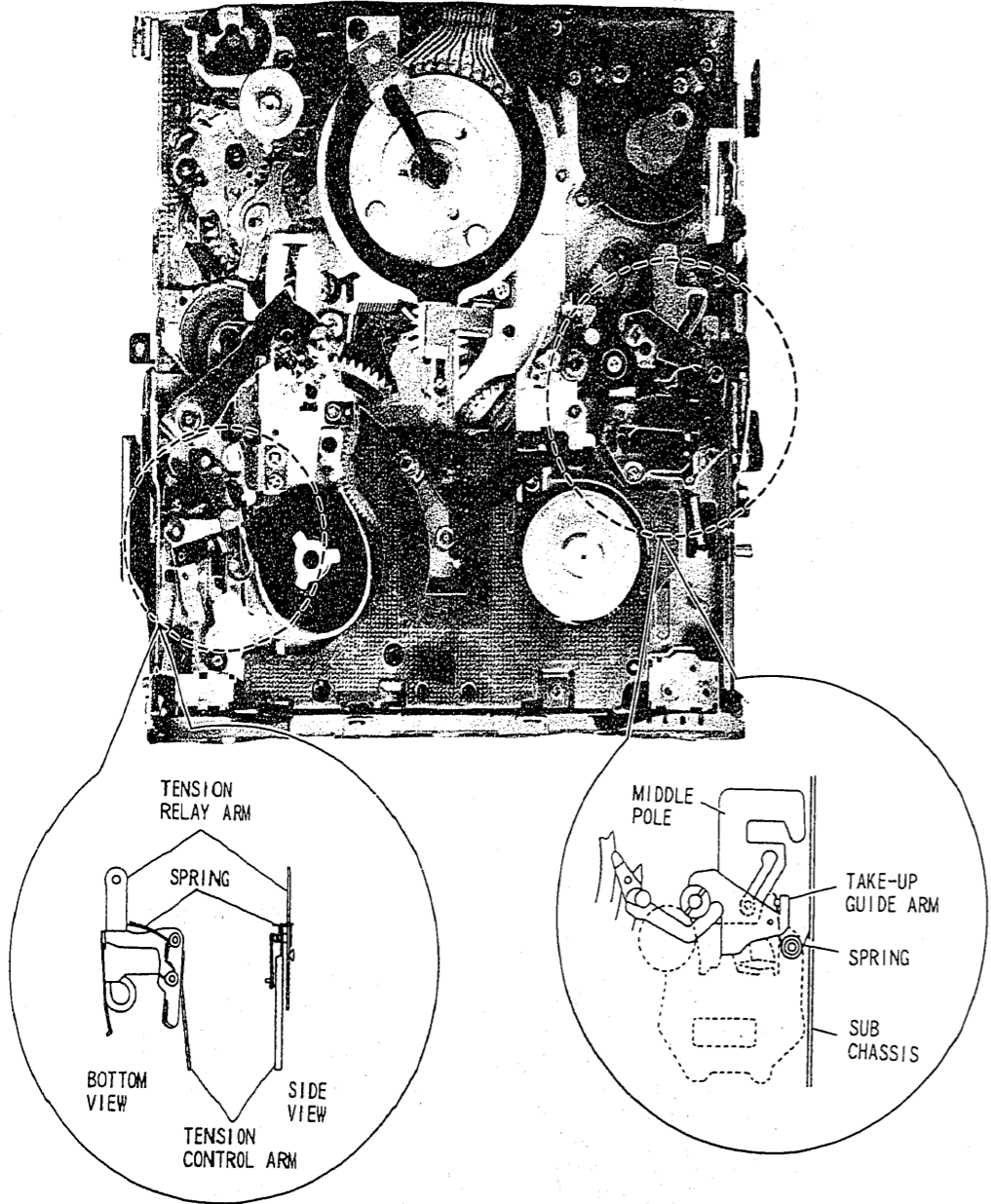


Fig. 3-52

## CHAPTER 4 MAINTENANCE/INSPECTION PROCEDURE

### 1. REQUIRED MAINTENANCE

The mechanical block (tape transport system) in an 8mm video camera/recorder uses very precise components. If any of these components is worn or dirty, the symptoms will be the same as if the component is defective.

To ensure a good picture, the tape transport system must be cleaned and lubricated periodically, and worn-out components must be replaced. The tape transport system is a general term for the sections (components) with which the tape is in contact.

### 2. SCHEDULED MAINTENANCE

Schedules for maintenance and inspection are not fixed because they are greatly according to the way in which the customer uses the 8mm video camera/recorder and the environment in which it is used. But, in general home use, a good picture will be maintained if inspection and maintenance are done every 1,000 hours. Table 1 shows the relation between the time used and inspection period.

Table 1

Average hours	When inspection is necessary		
	About 1 year	About 18 months	About 3 years
One hour	[Bar chart showing inspection needed after 1 year]		
Two hours	[Bar chart showing inspection needed after 18 months]		
Three hours	[Bar chart showing inspection needed after 3 years]		

### 3. CHECK BEFORE STARTING REPAIRS

The following faults (see Table 2) during playback may be remedied when the tape transport system is cleaned and lubricated. Check the conditions of cleanliness in the unit and the need for lubrication.

If from that you determine that the unit is ready for inspection and maintenance, check the components in Table 2.

Table 2

Defective phenomenon during play	Inspection location
Poor picture S/N, No color	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller
Vertical jitter (shaking)	Dirt on video head or in tape transport system
Low volume or sound distorted	Dirt on video head or worn video head

### 4. TOOLS NEEDED FOR INSPECTION AND MAINTENANCE

- (1) Head cleaning kit
- (2) VCR oil kit
- (3) Ethyl alcohol (ethanol)
- (4) Gauze
- (5) Cleaning tape  
NTSC: Maxell 8M-CL MCA (dry type)  
PAL: Maxell 8M-CLX (dry type)

Table 3 Locations for Greasing and Lubricating using the Oil Kit

Name	Using locations
Sonic Slidas Oil (#1600)	Lubricates low-speed rotating sections
Froil (G31-SAY)	Grease metal components or molded sections subject to light load
Lock paint	Fix adjustment screws and nuts
Pan motor oil	Do not use.
Hitazol	Do not use.

The above VCR oil kit and head cleaning kit are those used conventionally (for VHS and VHS-C recorders). Always use these kits for maintenance.

### 5. MAINTENANCE PROCEDURES

#### 5-1. Cleaning

##### (1) Cleaning video heads

First use a specified cleaning tape. Before using it, read its instruction sheet carefully.

If the dirt on the video heads is too stubborn to be removed by tape, use the head cleaning kit by the following procedure. (See Fig. 4-1)

- 1) Moisten the chamois leather on the cleaning stick with cleaning fluid.
- 2) Touch the head tip with the chamois leather on the cleaning stick and gently turn the upper cylinder to the left and right.

Caution: Do not move the cleaning stick vertically or and make sure that only the chamois leather on the cleaning stick comes into contact with the head tip. Otherwise, the head tip could be damaged.

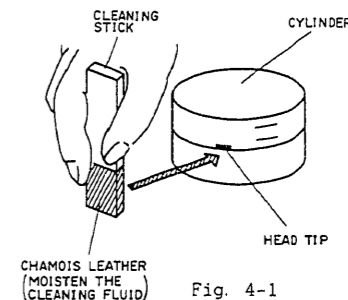


Fig. 4-1

- (2) Cleaning the tape transport system  
Moisten gauze with ethyl alcohol and use it to wipe the surfaces of components which come into contact with the tape.

Caution: Be careful that the tape transport components are not damaged nor deformed by cleaning.

#### 5-2. Lubricating Sonic Slidas Oil (#1600)

(1) Procedure

Use the oiler to apply one or two drop of Sonic Slidas oil to the specified sections. Refer to the exploded views in Technical Data manuals for lubricating locations.

Caution: Do not use too much oil because it may spill over or leak, coming into contact with rotating parts and causing slippage or other defects. If too much oil is applied, wipe clean using gauze moistened with ethyl alcohol.

(2) Periodic lubrication

Lubricate specified locations every 1,000 hours.

#### 5-3. Greasing the Froil (G31-SAY)

(1) Procedure

Apply Froil with a stick or brush to the specified locations. Refer to the exploded views in Technical data manuals for the greasing locations.

Caution: Do not use excess Froil. It may come into contact with the tape transport parts and may cause defects. Wipe off any excess using gauze moistened with ethyl alcohol.

(2) Periodic greasing

Grease specified locations every 5,000 hours.



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<b>HITACHI SALES (THAILAND) LTD.</b> 2240-46, New Petchburi Road, Bankapi, Hueykuang Bangkok, Thailand Tel:2-314-2741 Fax:2-319-2460	<b>HITACHI PRODUCTIONS MAROC ELECTRONIQUES DOMESTIQUES S.A.</b> Rue du Havre, Casablanca, Morocco Tel:212-2-30-73-68, 212-2-30-73-57 Fax:212-2-31-67-42	

VM-E10A(U, C)  
 VM-E15A(U, C)  
 VM-H18A(U, C)

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