

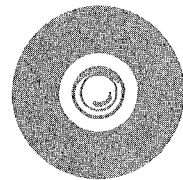
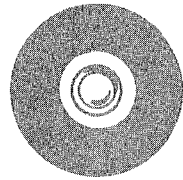
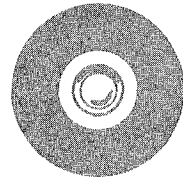
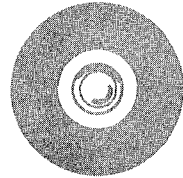
351

MAGNETIC TAPE RECORDER/REPRODUCER

TM-2002A
89-0144
MAY 1962

AMPEX CORPORATION, AUDIO DIVISION

Issue A



ERRATA

Date 8-20-65

PUBLICATION Model 351 MAINTENANCE MANUAL

No. 89-0144

Errata No. 1

REASON FOR ERRATA Bring parts list up to date.

Page Reference	Nature of Errata
6-5	Delete 3.75 MFD for capacitors C512 and C513 (on illustration).
6-15, 6-16, 6-17, 6-18	Replace with three pages provided
6-21, 6-22	C512 and C513 should be 10 MFD
<p>NOTE</p> <p>Where Ampex Part Number and Alternate Part Number are both shown on the new parts list pages, use the Ampex Part Number when ordering replacement parts.</p>	

Ref. Sym.	02-30970				DESCRIPTION	AMPEX		Alternate	
	-01	-02	-03	-04		Part Number		Part Number	
K506	2	2	2	2	PIN, Cotter: 1/16 in. dia. by 1/2 in. lg.	401-005	Δ	---	
	1	1	1	1	PIN, Clevis: 1/8 in. dia. by 9/32 in. lg.	400-002	Δ	---	
	1	1	1	1	PIN, Clevis: 1/8 in. dia. by 15/32 in. lg.	400-007	Δ	---	
	1	1	1	1	SOLENOID, Brake	4590067-10	Δ	---	
	1	1	1	1	STOP, Solenoid	4260184-10	Δ	---	
	1	1	1	1	BRACKET, Solenoid	4260183-10	Δ	---	
	2	2	2	2	LINK, Solenoid	4230163-10	Δ	---	
	2	2	2	2	CONNECTOR, Solderless: disconnect splice	171-008	Δ	---	
	1	1	1	1	ARM ASSEMBLY, Takeup tension	4030111-80	Δ	---	
	1	1	1	1	SPRING, Takeup tension arm	4270158-10	Δ	---	
	1	1	1	1	GUIDE, Tape	4210183-10	Δ	---	
	1	1	1	1	HOOK, Tape guide	4230158-10	Δ	---	
	1	1	-	-	REEL IDLER ASSEMBLY, 7½-15 ips	4040407-15	Δ	---	
	-	-	-	1	REEL IDLER ASSEMBLY, 3¾-7½ ips	4040407-03	Δ	---	
	1	1	1	1	GUIDE, Tape	4210188-20	Δ	---	
	1	1	-	-	PULLEY ASSEMBLY, 7½-15 ips	4040408-50	Δ	---	
	-	-	-	1	PULLEY ASSEMBLY, 3¾-7½ ips	4040408-10	Δ	---	
	1	1	1	1	ARM	4230159-10	Δ	---	
	1	1	1	1	SPRING, Tension	4270160-10	Δ	---	
	1	1	1	1	HOUSING, Reel idler	4290272-10	Δ	---	
	1	1	1	1	FLYWHEEL, Reel idler	4250115-10	Δ	---	
	1	1	-	-	WHEEL ASSEMBLY, Capstan idler: 7½-15 ips	4030116-70	Δ	---	
	-	-	-	1	WHEEL ASSEMBLY, Capstan idler: 3¾-7½ ips	4030116-10	Δ	---	
	1	1	1	1	CAP	4100129-10	Δ	---	
	1	1	1	1	RING, Retaining: external, for 0.250 in. dia. shaft, Truarc 5100-25-S	430-004	Δ	---	
	1	1	1	1	RING, Lock	4320112-10	Δ	---	
	1	1	1	1	WASHER, Cambric	4440027-10	Δ	---	
	a/r	a/r	a/r	a/r	WASHER, Shim: brass, 0.250 in. ID by 0.437 in. OD by 0.002 in. thk.	501-049	Δ	---	
	1	1	1	1	WASHER, Felt	4440239-10	Δ	---	
	1	1	1	1	ARM, Capstan idler	4330106-10	Δ	---	
	1	1	1	1	BUSHING, Capstan idler	4200122-10	Δ	---	
	1	1	1	1	ARM, Capstan solenoid	4230160-10	Δ	---	
	1	1	1	1	SOLENOID ASSEMBLY, Capstan idler	4030112-10	Δ	---	
	K501	1	1	1	SOLENOID, Capstan	4590063-10	Δ	---	
		1	1	1	BOLT, Eye	4400496-30	Δ	---	
		1	1	1	STOP, Capstan solenoid	4220139-20	Δ	---	
		1	1	1	WASHER, Felt: 1/4 in. thk.	503-015	Δ	---	
		1	1	1	SPRING, Solenoid pressure	4270162-10	Δ	---	
		1	1	1	SPRING, Solenoid return	4270161-10	Δ	---	
		1	1	-	-	DUST CAP, Capstan: 7½-15 ips	4040406-20	Δ	---
-		-	-	1	DUST CAP, Capstan: 3¾-7½ ips	4040406-10	Δ	---	
1		1	1	1	WASHER, Felt	4440237-20	Δ	---	
1		1	1	1	RING, Retaining: rubber	432-007		31-0050	Δ
4		4	4	4	GUARD, Pushbutton	4100124-10	Δ	---	
2		2	2	2	GUARD, Reel	4110172-10	Δ	---	
1		1	1	1	HARNESSE ASSEMBLY	4050140-10	Δ	---	
P501P		1	1	1	CONNECTOR, Plug: male, 21 contacts, Jones P-321-CCT-L	145-022	Δ	---	
S501		1	1	1	SWITCH, Safety	120-062		62-0116	Δ
S502	1	1	1	SWITCH, Pushbutton: normally closed (STOP)			62-0154	Δ	
S503	1	1	1	SWITCH, Toggle: DPDT (TAPE SPEED)	120-004		62-0121	Δ	
S504	1	1	1	SWITCH, Toggle: SPST (REEL SIZE)	120-005		62-0102	Δ	
S505	3	3	3	SWITCH, Pushbutton: normally open (PLAY)			62-0153	Δ	
S506	-	-	-	(Same as S505) (FAST FORWARD)			62-0153	Δ	
S507	-	-	-	(Same as S505) (REWIND)			62-0153	Δ	
1	1	1	1	SHIELD, Safety switch	4170184-01	Δ	---		
1	1	1	1	CONTROL BOX ASSEMBLY	4020204-30	Δ	---		
C502	1	1	1	CAPACITOR, Electrolytic: 150mfd, +100%-10%, 180vdcw, G. E. 43F7364AA1	031-624	Δ	---		
C503	6	6	6	CAPACITOR, Mylar: 0.047mfd, ±20%, 400vdcw, Sprague 109P47304	035-059	Δ	---		
C504	1	1	1	CAPACITOR, Paper: 0.25mfd, ±20%, 400vdcw, G. I. Type 155	033-151	Δ	---		
C505	-	-	-	(Same as C503)	035-059	Δ	---		
C506	-	-	-	(Same as C503)	035-059	Δ	---		
C507	2	2	2	CAPACITOR, Mylar: 0.01mfd, ±20%, 400vdcw, C. D. Type WMF	035-799	Δ	---		
C508	-	-	-	(Same as C507)	035-799	Δ	---		
C509	-	-	-	(Same as C503)	035-059	Δ	---		
C510	-	-	-	(Same as C503)	035-059	Δ	---		
C511	-	-	-	(Same as C503)	035-059	Δ	---		
J501S	1	1	1	CONNECTOR, Receptacle: female, 21 contacts, Jones S-321-AB	146-057		63-0139	Δ	
J502S	1	1	1	CONNECTOR, Receptacle: female, 10 contacts, Jones S-310-AB	146-018		63-0111	Δ	

TAPE TRANSPORT

Ref. Sym.	02-30970				DESCRIPTION	AMPEX Part Number	Alternate Part Number
	-01	-02	-03	-04			
	X				TAPE TRANSPORT, 7 $\frac{1}{2}$ -15 ips, 60 cps		02-30970-01
		X			TAPE TRANSPORT, 7 $\frac{1}{2}$ -15 ips, 50 cps		02-30970-02
			X		TAPE TRANSPORT, 3 $\frac{3}{4}$ -7 $\frac{1}{2}$ ips, 60 cps		02-30970-03
				X	TAPE TRANSPORT, 3 $\frac{3}{4}$ -7 $\frac{1}{2}$ ips, 50 cps		02-30970-04
B501	1	-	-	-	MOTOR ASSEMBLY, Drive: 7 $\frac{1}{2}$ -15 ips, 60 cps	4040416-15 Δ	---
B501	-	-	1	-	MOTOR ASSEMBLY, Drive: 7 $\frac{1}{2}$ -15 ips, 50 cps	4040416-17 Δ	---
B501	-	1	-	-	MOTOR ASSEMBLY, Drive: 3 $\frac{3}{4}$ -7 $\frac{1}{2}$ ips, 60 cps	4040416-16 Δ	---
B501	-	-	-	1	MOTOR ASSEMBLY, Drive: 3 $\frac{3}{4}$ -7 $\frac{1}{2}$ ips, 50 cps	4040416-18 Δ	---
	1	1	1	1	FLYWHEEL, Drive motor	4250113-10 Δ	---
P504P	1	1	1	1	CONNECTOR, Plug: male, 6 contacts, Jones P-306-CCT-L	145-012 Δ	---
C501	1	1	1	1	CAPACITOR, Drive motor	4040591-02 Δ	---
	1	1	1	1	FAN, Drive motor	591-001 Δ	---
	1	1	1	1	TAKEUP ASSEMBLY	4030113-50 Δ	---
B502	1	1	1	1	MOTOR ASSEMBLY	4040804-40 Δ	---
	1	1	1	1	TURNTABLE	4330116-10 Δ	---
	1	1	1	1	PAD, Turntable	4130105-10 Δ	---
C512	1	1	1	1	CAPACITOR, Motor	4050361-10 Δ	---
	2	2	2	2	CONNECTOR, Solderless: disconnect splice	171-008 Δ	---
P505P	1	1	1	1	CONNECTOR, Plug: male, 8 contacts, Jones P308-CCT-L	145-013 Δ	---
	4	4	4	4	CONNECTOR, Solderless, disconnect splice	171-008 Δ	---
	1	1	1	1	BRAKE ASSEMBLY, Takeup	4030114-10 Δ	---
	1	1	1	1	HOUSING, Brake	4330112-10 Δ	---
	1	1	1	1	BAND, Brake	4040414-10 Δ	---
	1	1	1	1	SPRING, Leaf: brake band	4270164-10 Δ	---
	2	2	2	2	SPRING, Tension: short	4270163-10 Δ	---
	1	1	1	1	SPRING, Tension: long	4270178-10 Δ	---
	1	1	1	1	BOLT, Eye	4400496-60 Δ	---
	1	1	1	1	CROSSHEAD, Brake	4330109-10 Δ	---
	1	1	1	1	ANCHOR	4330110-10 Δ	---
	2	2	2	2	SPACER	4220141-10 Δ	---
	1	1	1	1	PIN, Roll: 1/8 in. dia. by 7/8 in. lg.	406-042 Δ	---
	4	4	4	4	SCREW, Machine: cap, socket head, 4-40 by 3/16 in. lg.	470-007 Δ	---
	2	2	2	2	LINK, Brake band	4230161-10 Δ	---
	2	2	2	2	CLAMP, Band link	4330113-10 Δ	---
	1	1	1	1	LEVER, Brake	4230162-10 Δ	---
	2	2	2	2	PIN, Drivelock: 1/8 in. dia. by 1/2 in. lg.	403-008 Δ	---
	2	2	2	2	PIN, Cotter: 1/16 in. dia. by 1/2 in. lg.	401-005 Δ	---
	1	1	1	1	PIN, Clevis: 1/8 in. dia. by 9/32 in. lg.	400-002 Δ	---
	1	1	1	1	PIN, Clevis: 1/8 in. dia. by 15/32 in. lg.	400-007 Δ	---
K505	1	1	1	1	SOLENOID, Brake	4590067-10 Δ	---
	1	1	1	1	STOP, Solenoid	4260184-10 Δ	---
	1	1	1	1	BRACKET, Solenoid	4260183-10 Δ	---
	2	2	2	2	LINK, Solenoid	4230163-10 Δ	---
	2	2	2	2	CONNECTOR, Solderless: disconnect splice	171-008 Δ	---
	1	1	1	1	REWIND ASSEMBLY	4030115-60 Δ	---
B503	1	1	1	1	MOTOR ASSEMBLY	4040804-40 Δ	---
	1	1	1	1	TURNTABLE	4330116-10 Δ	---
	1	1	1	1	PAD, Turntable	4130105-10 Δ	---
C513	1	1	1	1	CAPACITOR, Motor	4050361-10 Δ	---
	2	2	2	2	CONNECTOR, Solderless: disconnect splice	171-008 Δ	---
P506P	1	1	1	1	CONNECTOR, Plug: male, 8 contacts, Jones P-308-CCT-L	145-013 Δ	---
	4	4	4	4	CONNECTOR, Solderless: disconnect splice	171-008 Δ	---
	1	1	1	1	BRAKE ASSEMBLY, Rewind	4030114-20 Δ	---
	1	1	1	1	HOUSING, Brake	4330112-10 Δ	---
	1	1	1	1	BAND, Brake	4040414-10 Δ	---
	1	1	1	1	SPRING, Leaf: brake band	4270164-10 Δ	---
	2	2	2	2	SPRING, Tension: short	4270163-10 Δ	---
	1	1	1	1	SPRING, Tension: long	4270178-10 Δ	---
	1	1	1	1	BOLT, Eye	4400496-60 Δ	---
	1	1	1	1	CROSSHEAD, Brake	4330109-10 Δ	---
	1	1	1	1	ANCHOR	4330110-10 Δ	---
	2	2	2	2	SPACER	4220141-10 Δ	---
	1	1	1	1	PIN, Roll: 1/8 in. dia. by 7/8 in. lg.	406-042 Δ	---
	4	4	4	4	SCREW, Machine: cap, socket head, 4-40 by 3/16 in. lg.	470-007 Δ	---
	2	2	2	2	LINK, Brake band	4230161-10 Δ	---
	2	2	2	2	CLAMP, Band link	4330113-10 Δ	---
	1	1	1	1	LEVER, Brake	4230162-10 Δ	---
	2	2	2	2	PIN, Drivelock: 1/8 in. dia. by 1/2 in. lg.	403-008 Δ	---

Ref. Sym.	02-30970				DESCRIPTION	AMPEX Part Number	Alternate Part Number
	-01	-02	-03	-04			
J503S	3	3	3	3	CONNECTOR, Receptacle: female, 8 contacts, Jones S-308-AB	146-003	63-0032 Δ
J504S	1	1	1	1	CONNECTOR, Receptacle: female, 6 contacts, Jones S-306-AB	146-004	63-0135 Δ
J505S	-	-	-	-	(Same as J503S)	146-003	63-0032 Δ
J506S	-	-	-	-	(Same as J503S)	146-003	63-0032 Δ
K502	3	3	3	3	RELAY, 3PDT; 115 vdc coil, 10 amp contacts, Philtrol 33QA	020-006	Δ ---
K503	-	-	-	-	(Same as K502)	020-006	Δ ---
K504	-	-	-	-	(Same as K502)	020-006	Δ ---
P502P	1	1	1	1	CONNECTOR, Plug (REMOTE DUMMY PLUG)	4050101-10	Δ ---
P503P	1	1	1	1	CONNECTOR, Plug (60 CYCLE DUMMY PLUG)	4050138-10	Δ ---
P507P	1	1	1	1	CONNECTOR, Plug: male, 6 contacts, Jones P-306-CCT-L	145-012	62-0060 Δ
R501	1	1	1	1	RESISTOR, Fixed: ww, 10 ohms, ±10%, 5W, Truohm FRL-5	043-156	Δ ---
R502	1	1	1	1	RESISTOR, Fixed: ww, 75 ohms, ±5%, 50W, Truohm FR-50	043-002	Δ ---
R503	2	2	2	2	RESISTOR, Adj.: ww, 150 ohms, ±5%, 50W, Truohm AR-50	040-011	Δ ---
R504	1	1	1	1	RESISTOR, Adj.: ww, 750 ohms, ±5%, 50W, Truohm AR-50	040-007	Δ ---
R505	-	-	-	-	(Same as R503)	040-011	Δ ---
R506	1	1	1	1	RESISTOR, Fixed: comp, 22 ohms, ±10%, 1W, RC32GF220K	041-132	Δ ---
R507	4	4	4	4	RESISTOR, Fixed: comp, 100 ohms, ±10%, ½W, RC20GF101K	041-038	Δ ---
R508	-	-	-	-	(Same as R507)	041-038	Δ ---
R509	-	-	-	-	(Same as R507)	041-038	Δ ---
R510	-	-	-	-	(Same as R507)	041-038	Δ ---
SR501	1	1	1	1	RECTIFIER, Selenium: single phase, half wave, G. E. 6RS25PH6ATD1	582-016	Δ ---

INTRODUCTION

USE OF THE INSTRUCTION MANUAL

This instruction manual is an attempt to give the installation man, the operator, and the maintenance man the most complete and accurate information that is available.

For the installation man:

the description and performance characteristics section, the installation section, and the operating instructions section

are required reading and the principles of magnetic recording section will provide good background.

For the operator:

the description and performance characteristics section, and the operating instructions section

are required reading. Again, the principles of magnetic recording section will provide good background.

For the maintenance man:

the description and performance characteristics section, the principles of magnetic recording section, and the individual component sections (i.e., tape transport, etc.)

are required reading.

THE DESCRIPTION AND PERFORMANCE CHARACTERISTICS SECTION

The description and performance characteristics section briefly describes the system, the components, their uses, and their performance characteristics. This section also describes additional related equipment that may be of value to the user.

THE INSTALLATION SECTION

The installation section provides all necessary information for properly installing and connecting the equipment. All mounting dimensions are given for custom installation. Testing of the equipment after installation is *not* covered in this section, but rather is covered in the electronic assembly section.

THE OPERATING INSTRUCTIONS SECTION

The operating instructions section describes the operating controls and their functions, describes the ways in which the equipment can be used, and describes how to use the equipment.

THE PRINCIPLES OF MAGNETIC RECORDING SECTION

The principles of magnetic recording section provides the user and the maintenance man with a basic knowledge of how a magnetic recorder works and the principles behind the major adjustments.

THE TAPE TRANSPORT SECTION

The tape transport section describes the tape transport in detail and provides all necessary maintenance adjustment procedures. The section also covers the replacement of parts.

THE HEAD ASSEMBLY SECTION

The head assembly section describes the head assembly in detail and provides all necessary maintenance procedures. This section also covers the replacement of parts. Adjustment procedures, for the most part, are covered in the electronic assembly section.

THE ELECTRONIC ASSEMBLY SECTION

The electronic assembly section provides the detailed theory of the electronics along with the maintenance procedures and some troubleshooting hints. The lists of replacement parts are, of course, included.

THE ACCESSORIES SECTION

The accessories section describes the accessories available for use with the system and describes their use in the system. The accessories are provided to simplify or extend the use of the system.

THE INDEX

In an attempt to give as complete a manual as possible, the index is included to aid in locating the required information as quickly as possible.