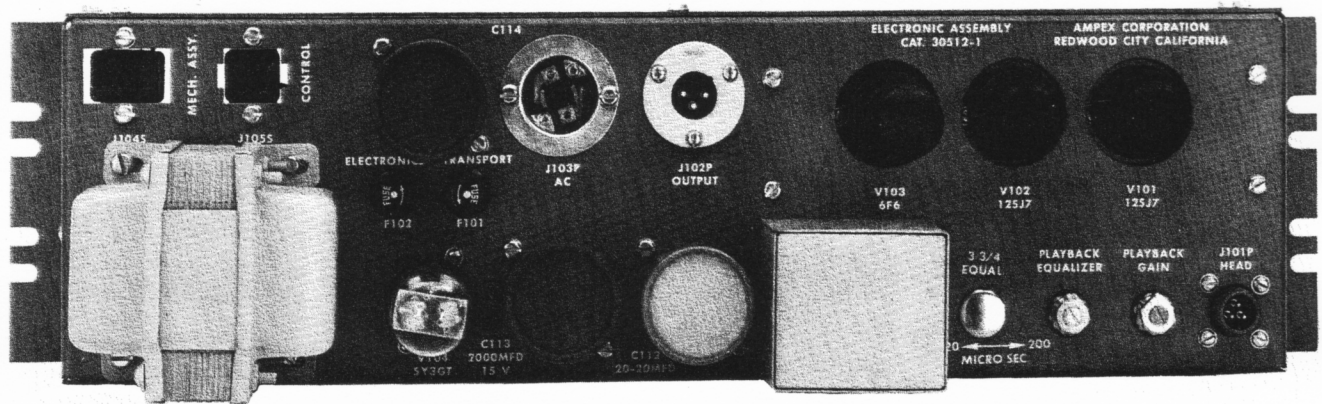


ELECTRONIC ASSEMBLY

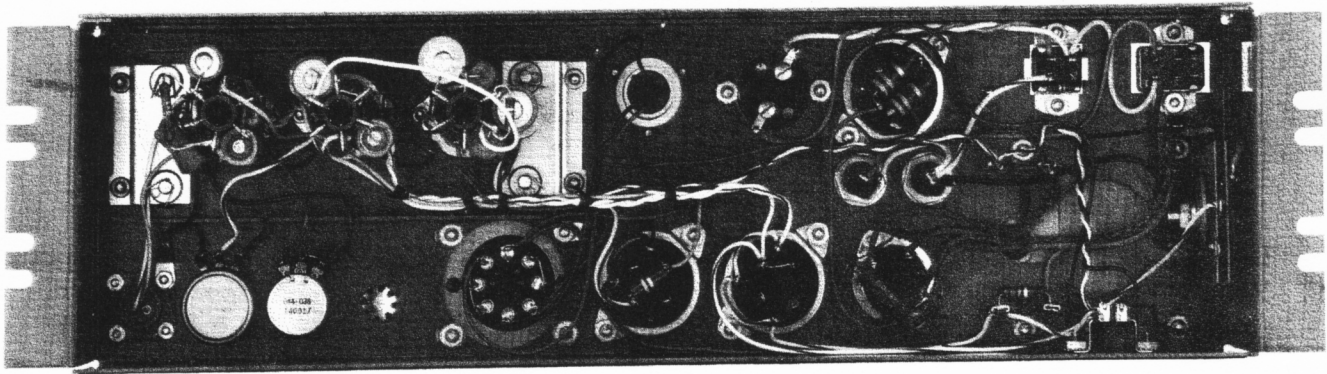
GENERAL

The reproduce amplifier is a three-stage amplifier which provides up to +8 vu (factory setting up to +4 vu) into a 600 ohm output. The required equalization is provided by C102 and R108 (the EQUALIZATION control) in the plate circuit of V101. The equalization circuit is adjusted to give a response conforming with the standard curve shown at the back of SECTION 6. Reproduce gain is adjusted by R111, in the grid circuit of V102.

The power supply provides 6.3 ac heater power, the 12.6 dc heater power through a full



Reproduce amplifier, rear view



Reproduce amplifier, internal view

wave selenium rectifier SR101, and the plate supply through a 5Y3G full wave rectifier V104.

ELECTRONIC ALIGNMENT

Alignment consists of making all adjustments necessary for proper electronic performance. Equipment out of alignment may be characterized by poor frequency response, high noise, low output, or a combination of these faults. All AMPEX equipment is correctly aligned at the factory before shipment, and should not be necessary to realign the machine on arrival. Should there be a doubt at any time concerning the condition of the reproducer, it is suggested that an overall performance check be made as described in SECTION 2. Realignment is called for only if the performance does not fall within limits given in SECTION 1.

Alignment and Test Equipment Requirements—The following list covers the minimum equipment requirements for proper alignment and testing.

Audio Oscillator

Hewlett-Packard Model 200C or equivalent Hewlett-Packard Model 400C or equivalent Ampex Catalog Number 31321-01 for 7½ inches per second (ips), Catalog Number 31311-01 for 15 inches per second. The tape is recorded at 10 db below the Ampex recommended operating level at both speeds. The tape contains voice announcements for the following tone sequence; head azimuth check tone, reference tone for reproduce level adjustment, and tone series for reproduce response check.

Ampex Head Demagnetizer

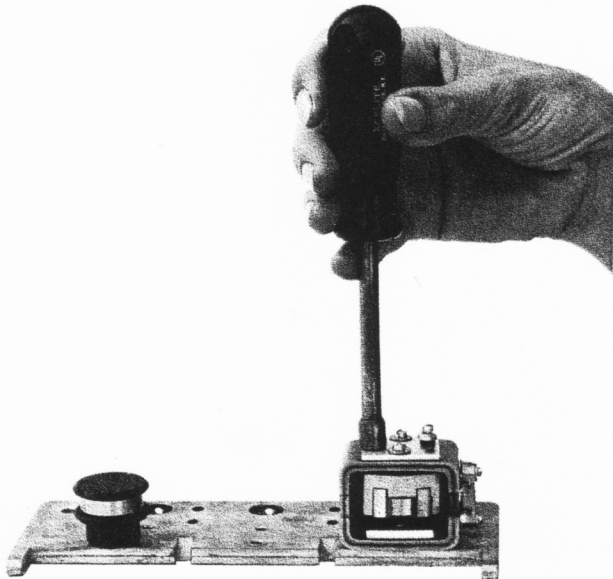
Ampex Catalog Number 704-00

High Impedance Headphones

¼-inch Hexagonal Socket Wrench

General Precautions—It is always advisable to demagnetize the head, BEFORE putting an alignment tape on the machine. Magnetization of the head will cause partial erasure of the high frequencies on the tape and make it useless as a standard. The demagnetization procedure is given in SECTION 5. The amplifier output must always be terminated in a nominal 600 ohm load when testing or aligning by placing this load across pins 2 and 3 of output connector J102P.

Reproduce Level Adjustment—The first tone on the tape is used for reproduce level adjustment. With the machine reproducing this tone, adjust the reproduce GAIN control (R111) for a reading of -6 dbm on the vtm.



Reproduce head azimuth adjust

Head Alignment

Step 1: Remove the head housing cover by removing the two screws that hold it, then lift it gently up and back. The left-hand elastic stop nut on the top of the head is the azimuth adjust.

CAUTION

Do not attempt to adjust any other nut or screw on this head.

Step 2: Thread an AMPEX alignment tape on the machine.

Step 3: Connect a vtm to the output, throw the TAPE SPEED switch to the proper position and press the PLAY button. The second tone on the tape will be announced as the head alignment tone.

Step 4: Using the 1/4-inch hexagonal socket wrench, adjust the left-hand elastic stop nut on top of the head for maximum output. If the peak adjustment for maximum output is broad, adjust for minimum variation of output.

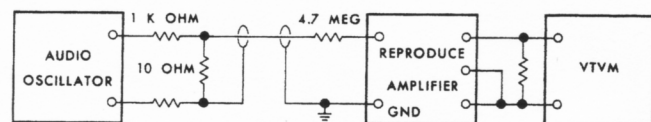
NOTE

When replacing the head housing cover, use caution in tightening the screws; overtightening may cause the head mounting plate to bow and the head to be thrown out of alignment.

Response Check: The next series of tones is for checking frequency response. If the equipment does not remain within specifications when reproducing these tones, one of the following is indicated:

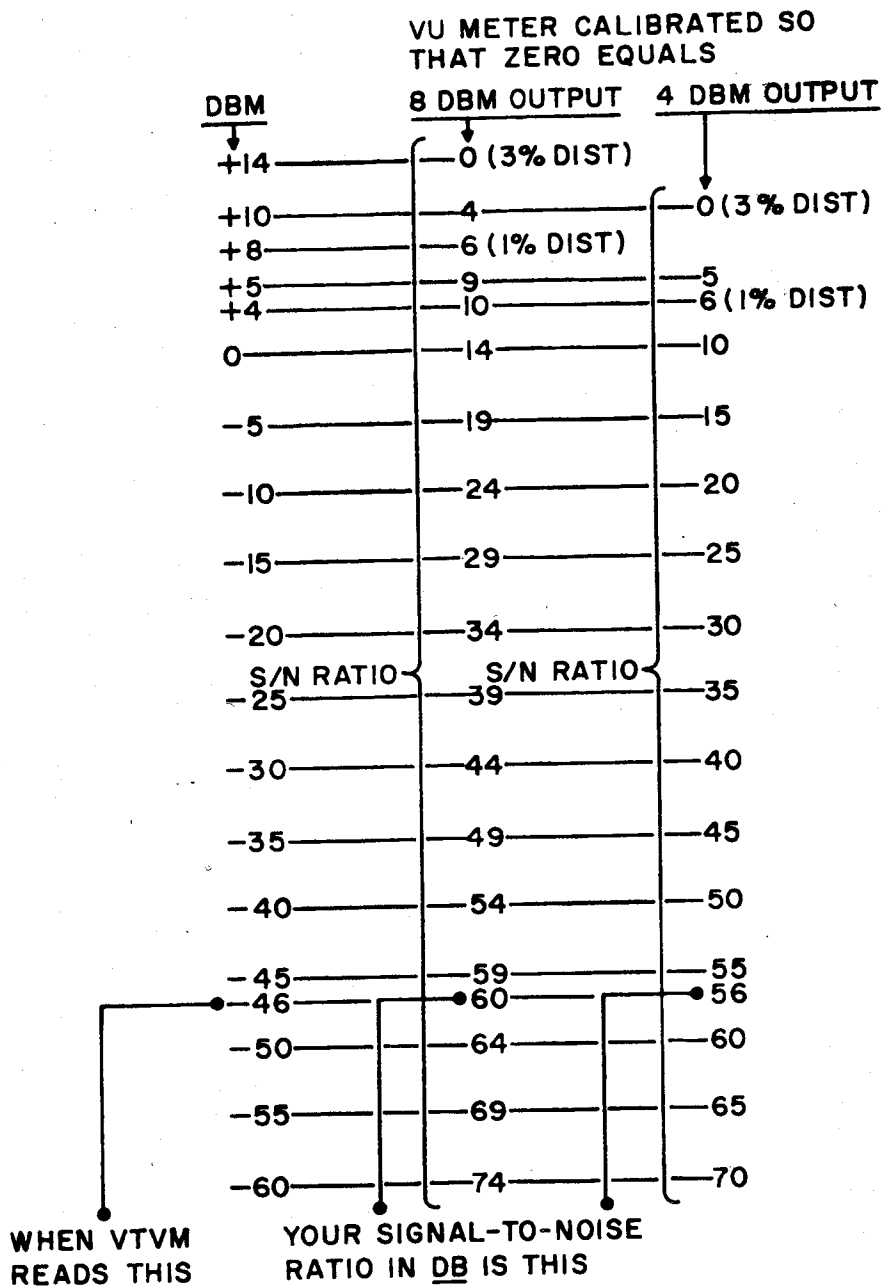
1. Improper equalization.
2. Faulty alignment tape. (High frequencies partially erased by passing over a magnetized head.)
3. Worn or otherwise faulty head.

Equalization Adjustment—Equalization is factory set to the standard curve shown at the back of SECTION 6. Remove the head cable, connect an audio oscillator and vtm as shown in the illustration, and adjust the reproduce equalizer to obtain the correct response.



Test set-up, reproduce equalization

Signal-to-noise—To translate vtm readings into specific signal-to-noise ratios when the vu meter is so calibrated that 0 vu corresponds to $+4$ dbm output, add 6 db to obtain the output value at the 3% distortion level, arriving at a total of $+10$ dbm. Having made this computation, bear in mind that, although the noise



Signal-to-noise computations

reading taken on the vtvm is dbm, the measurement is a ratio which must include the 10 dbm computed to arrive at the 3% distortion level. Therefore, the dbm level must be converted to the signal-to-noise ratio.

Example: 10 (dbm, includes +4 dbm normal level and +6 dbm to 3% distortion level)
-46 (dbm vtvm reading)

56 (db signal-to-noise ratio)

Any reading below -46 dbm meets the performance specifications of 56 db signal-to-noise ratio, and satisfies the signal-to-noise ratio definition.

When the vu meter is so calibrated that 0 vu corresponds to +8 dbm output value from the 3% distortion level, arriving at a total of 14 dbm.

Example: 14 (dbm, includes +8 dbm normal level and +6 dbm to 3% distortion level)
 -46 (dbm, vtvm reading)
 60 db signal-to-noise ratio.

Any reading below -46 dbm meets the performance specifications of 60 db signal-to-noise ratio, and satisfies the signal-to-noise definition.

Ampex signal-to-noise ratio specifications on audio instruments define (in decibels) the ratio existing between the level of a steady 1000

cycle tone, recorded at a level at which distortion produced by the approach of tape saturation equals 3% total rms, and that level of total rms noise (in the band from 30 to 15,000 cycles) which exist in reproduction under the same gain conditions. Thread an AMPEX Alignment Tape (Catalog Number 31321-01 for 7½ ips or 31311-01 for 15 ips) on the equipment. Press the PLAY button and make a response check. Press the STOP button. Signal-to-noise measurements are made, with no tape motion, on the fully erased blank portion of the tape.

AMPEX ALIGNMENT TAPES FOR ¼-INCH TAPES

<i>Speed</i>	<i>Ampex Catalog Number</i>
7½ inches per second (ips)	31321-01
15 inches per second (NAB)	31311-01

STANDARD TAPES

<i>Order of Recording</i>	<i>7½ ips</i>			<i>15 ips</i>		
	<i>Tone (cps)</i>	<i>Level</i>	<i>Function</i>	<i>Tone (cps)</i>	<i>Level</i>	<i>Function</i>
<i>First Tone</i>	700	-10 db	reproduce reference	700	operating	reproduce gain calibration and reference
<i>Second Tone</i>	15,000 (30 sec.)	-10 db	reproduce head alignment	15,000 (30 sec.)	operating	reproduce head alignment
<i>Series of Tones</i>	12,000 to 50	-10 db	check frequency response	12,000 to 30	operating	check frequency response
<i>Last Tone</i>	700	operating	reproduce gain calibration	NOT USED		

ELECTRONIC ASSEMBLY

PARTS LIST

CATALOG NO.

30512

MODEL 352 and 352-2 REPRODUCER

MODEL 352 COMPLETE EQUIPMENT

Rack Mount, 7-1/2-15 ips, Full Track, 60 Cycle Power	9991-01
Rack Mount, 7-1/2-15 ips, Full Track, 50 Cycle Power	9991-02
Rack Mount, 7-1/2-15 ips, Half Track, 60 Cycle Power	9991-05
Rack Mount, 7-1/2-15 ips, Half Track, 50 Cycle Power	9991-06
Rack Mount, 7-1/2-15 ips, Stereophonic, 60 Cycle Power	30689-01
Rack Mount, 7-1/2-15 ips, Stereophonic, 50 Cycle Power	30689-02

REF. NO.	PART DESCRIPTION	AMPEX PART NO.
	ELECTRONIC ASSEMBLY	30095
C101	CAPACITOR, fixed: metallized, .1 uf ± 5%, 400 vdcw; Astron Part No. ML2-1	033-003
C102	CAPACITOR, fixed: mica, .006 uf ± 5%, 500 vdcw, Sangamo Part No. CR-1260	034-086
C103	CAPACITOR, electrolytic; 4 uf, 150 vdcw; Astron Part No. MM-4-105	031-020
C104	CAPACITOR, electrolytic; 50 uf, 25 vdcw; Cornell Dubilier Part No. BRM-502	031-030
C105	CAPACITOR, fixed: metallized, .01 uf ± 20%, 400 vdcw; Astron Part No. ML-4-01	033-005
C106	Same as C103	031-020
C107	CAPACITOR, electrolytic; 25 uf, 25 vdcw; Sangamo Part No. MT-0225	031-031

When ordering replacement parts always include the following information: Equipment Type; Equipment Serial Number; Ampex Part or Catalog Number; and Description of Part. DO NOT simply use the schematic reference number.

REF. NO.	PART DESCRIPTION	AMPEX PART NO.
C108	CAPACITOR, fixed: metallized, .1 uf \pm 20%, 400 vdcw; Astron Part No. ML-4-1	033-007
C109	CAPACITOR, fixed: metallized, .25 uf \pm 20%, 400 vdcw; Astron Part No. ML-4-1	033-008
C110	Same as C107	
C111	CAPACITOR, electrolytic; 4 uf, 450 vdcw; Sangamo Part No. MT-4504	031-009
C112	CAPACITOR, electrolytic; 20-20-20 uf, 450 vdcw; Mallory Part No. FP376.5	031-080
C113	CAPACITOR, electrolytic; 2,000 uf, 15 vdcw; Mallory Part No. WP-041	031-085
C114	CAPACITOR, electrolytic; 20-30-30 uf, 475 vdcw; Mallory Part No. FP396	031-082
F101	FUSE: fast blow, 250 volt, 3 amp; Littlefuse Part No. 312003	070-001
F102	FUSE: slow blow, 125 volt, 1 amp; Littlefuse Part No. 313001	070-004
J101P	CONNECTOR, receptacle: male, 3 contact; AN-3102-10S-3P	143-008
J102P	CONNECTOR, receptacle: male, 3 contact; Cannon Part No. XL-3-14	147-004
J103P	CONNECTOR, receptacle: male, 2 contact, 250 volt, 10 amp; Hubbell Part No. 7466	147-013
J104S	CONNECTOR, receptacle: female, 6 contact, 730 volt rms, 10 amp; Jones Part No. S-306-AB	146-004
J105S	CONNECTOR, receptacle: female, 4 contact, 730 volt rms, 10 amp; Jones Part No. S-304-AB	146-005
J106S	CONNECTOR, receptacle: female, 8 contact, 730 volt rms, 10 amp; Jones Part No. S-308-AB	146-003
R101	RESISTOR, fixed: carbon, .33 meg \pm 1%, 1 watt; Stemag Part No. type D	042-060

When ordering replacement parts always include the following information: Equipment Type; Equipment Serial Number; Ampex Part or Catalog Number; and Description of Part. DO NOT simply use the schematic reference number.

REF. NO.	PART DESCRIPTION	AMPEX PART NO.
R102	RESISTOR, fixed: carbon, 2.2 K ohm \pm 1%, 1/2 watt; Electra Part No. type DC-1/2	042-107 ✓
R105	Same as R101	042-060
R106	RESISTOR, fixed: carbon, 2.2 K ohms, 10%, 1/2 watt; MIL-R-11:RC20GF222K	041-052
R108	RESISTOR, variable: carbon, .1 meg \pm 20%, 1/4 watt; C.R.L. Part No. Mod 2 (TPR C2)	044-038
R109	RESISTOR, fixed: carbon, 1 meg \pm 1%, 1/2 watt; Radell Part No. type CD 1/2 SA	042-010
R110	RESISTOR, fixed: carbon, .15 meg \pm 10%, 1 watt; MIL-R-11A, RC32GF154K	041-172
R111	RESISTOR, variable: carbon, 1 meg \pm 20%, 2 watts; Allen Bradley Part No. JA1052, SD3056	044-017
R112	RESISTOR, fixed: carbon, 1 meg \pm 10%, 1/2 watt; MIL-R-11A, RC20GF105K	041-031
R113	RESISTOR, fixed: carbon, .33 meg \pm 10%, 1/2 watt; MIL-R-11A, RC20GF334K	041-078
R114	RESISTOR, fixed: carbon, 2.7 K ohm \pm 10%, MIL-R-11A, RC20GF272K	041-053
R115	RESISTOR, fixed: carbon, 220 ohm, \pm 10%, 1/2 watt; MIL-R-11A, RC20GF221K	041-040
R116	RESISTOR, fixed: carbon, .15 meg \pm 10%, 1/2 watt; MIL-R-11A, RC20GF154K	041-074
R117	RESISTOR, fixed: carbon, .56 meg \pm 10%, 1/2 watt; MIL-R-11A, RC20GF564K	041-081
R118	RESISTOR, fixed: carbon, 1.5K ohm \pm 10%, 1/2 watt; MIL-R-11A, RC20GF152K	041-050
R119	Same as R116	041-074
R120	RESISTOR, fixed: carbon, 47K ohm \pm 10%, 2 watts; MIL-R-11A, RC42GF473K	041-166

When ordering replacement parts always include the following information: Equipment Type; Equipment Serial Number; Ampex Part or Catalog Number; and Description of Part. DO NOT simply use the schematic reference number.

REF. NO.	PART DESCRIPTION	AMPEX PART NO.
R121	RESISTOR, fixed: carbon, 47K ohm \pm 10%, 1 watt; MIL-R-11A, RC32GF473K	041-166
R122	RESISTOR, fixed: carbon, 2.7 ohm \pm 10%, 1 watt; Ohmite Part No.	041-094
R123	RESISTOR, fixed: wirewound, 3.5K ohm \pm 10%, 5 watts; Dalohm Part No. type C8-5	043-275 ✓
R124	RESISTOR, fixed: carbon, 3.3K ohm \pm 10%, 2 watts; MIL-R-11A, RC42GF332K	041-207
R125	Same as R124	
R126	RESISTOR, fixed: carbon, 8.2K ohm \pm 10%, 1 watt; MIL-R-11A, RC32GF822K	041-157
R127	RESISTOR, fixed: carbon, 22K ohm \pm 10%, 1/2 watt; MIL-R-11A, RC20GF223K	041-064
SR101	RECTIFIER, selenium: single phase, center tap 26 volt ac rms in; 1.2 amp dc out; G. E. Part No. 6RS5WH5	581-001 ✓
T101	TRANSFORMER: output	6300 ✓
T102	TRANSFORMER: power	3953 ✓
V101	TUBE, electron: 12SJ7	012-085
V102	Same as V101	012-085
V103	TUBE, electron: 6F6	012-007
V104	TUBE, electron: 5Y3	012-013
XC114	SOCKET, capacitor	150-006
XF101	FUSE POST: finger operated, short body; Littlefuse Part No. 342003	085-001
XF102	Same as XF101	
XV101	SOCKET, turret	1208-00
XV102	Same as XV101	

When ordering replacement parts always include the following information: Equipment Type; Equipment Serial Number; Ampex Part or Catalog Number; and Description of Part. DO NOT simply use the schematic reference number.

REF. NO.	PART DESCRIPTION	AMPEX PART NO.
XV103	Same as XV101	
XV104	SOCKET, turret	2317-01
	SHOCKMOUNT: Barry Part No. 275-1	350-003
	CLEVIS PIN: Pan Hd, steel, 21/32 long; MS20392-2-21	400-013
	COTTER PIN: Mitre end, 1/16" Dia., 1/2" LG. ASA	401-005

HEAD ASSEMBLIES

(Including Cables and Plugs)

Half Track	475-22
Full Track	475-23
Two-Track	30028-04

Individual Replaceable Parts:

Gate Spring, Two Required	438-01 ✓
Gate Pin, Two Required	403-006
Glass Rod Tape Guide, 13/16 inches long. Two required	475-00
Glass Rod Tape Guide, 1/2 inch long. Two required	1372-00
Gate Assembly	479-00
Cable Connector, three-contact	140-008
Clamp	302-010
Housing	433-01
Flat Allen Head Screw, 6-32 x 3/8. Two Required	471-476
Alignment Adjustment Screw	471-481

When ordering replacement parts always include the following information: Equipment Type; Equipment Serial Number; Ampex Part or Catalog Number; and Description of Part. DO NOT simply use the schematic reference number.

REF. NO.	PART DESCRIPTION	AMPEX PART NO.
	Alignment Adjustment Nut	493-005
	Guide Post	6163-00
MAINTENANCE ITEMS		
	Ampex Alignment Tape, 15 ips	31311-01
	Ampex Alignment Tape, 7-1/2 ips	3132-01
	Ampex Head Demagnetizer	704-00
	Head Cleaner	087-007
	Lubricating Oil	087-005
MISCELLANEOUS		
	Console Cabinet	6125-00
	Editing Knob (Portable and Console)	1917-00
	Reel Adapter	976-00
	Reel Hold-Down Knob (Rack)	9093-00
	Cover, Electronics Assembly (Console models)	5520-00
	Cover, Electronics Assembly Stainless Steel (Rack Mount)	17206-01
	Power Cable	2413-00
	Knob Reel Holddown (EIA Reels)	30971-01
	Connector, output: Female, 3 pin; XL-3-11	144-003
POWER PANEL		
	Single Channel Assembly	30602-01
	Two Channel Assembly	30862-01
P201P	CONNECTOR, plug: male, 4 contact, 730 volt rms, 10 amp; Jones Part No. P-304-CCT-L	145-011

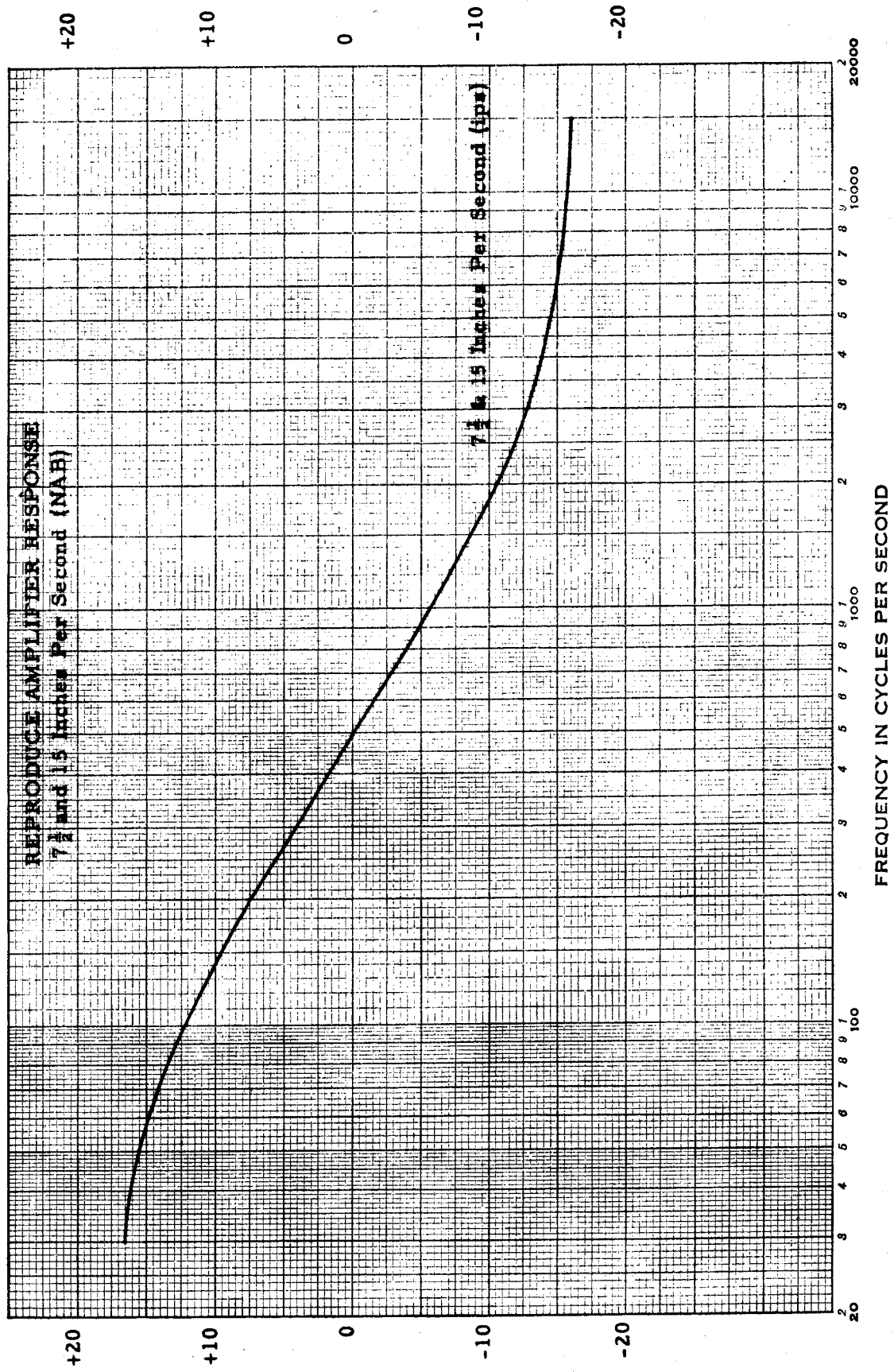
When ordering replacement parts always include the following information: Equipment Type; Equipment Serial Number; Ampex Part or Catalog Number; and Description of Part. DO NOT simply use the schematic reference number.

REF. NO.	PART DESCRIPTION	AMPEX PART NO.
DS201	POST LIGHT: 1/4 watt neon without internal resistor; Drake MGF. Co. Part No. 105	132-003
S201	SWITCH, toggle: 3 amp, 250 volt; Cuttler Hammer Part No. 8280K15	
S301	Same as S201	120-028
S302	Same as S201	120-028
DS301	Same as DS201	132-003
DS302	Same as DS201	132-003
R301	Same as R127	041-064
P302S	CONNECTOR, plug: female, 2 contact, 250 volts, 2 amps; Hubbell Part No. 7464	144-014
P301P	Same as P201P	145-011
REMOTE CONTROL		
	Remote Control Unit, boxed, with 30' cable	5763-00
	Extension Cable, 30'	5795-00
	Wood Box, Grey	3661-00
	Remote Control Panel, unwired, without cable or box	763-01
A701	LAMP, remote record: 120 volt, 6 watts	064-006
	LAMP BASE, red	132-006
A702	LAMP, remote tape motion: Same as A701	
	LAMP BASE, green	132-007
J701P	CONNECTOR, receptacle: male, 10 contact, Jones Part No. P-310-AB	147-014
	CABLE (with plugs), remote control	5795-00

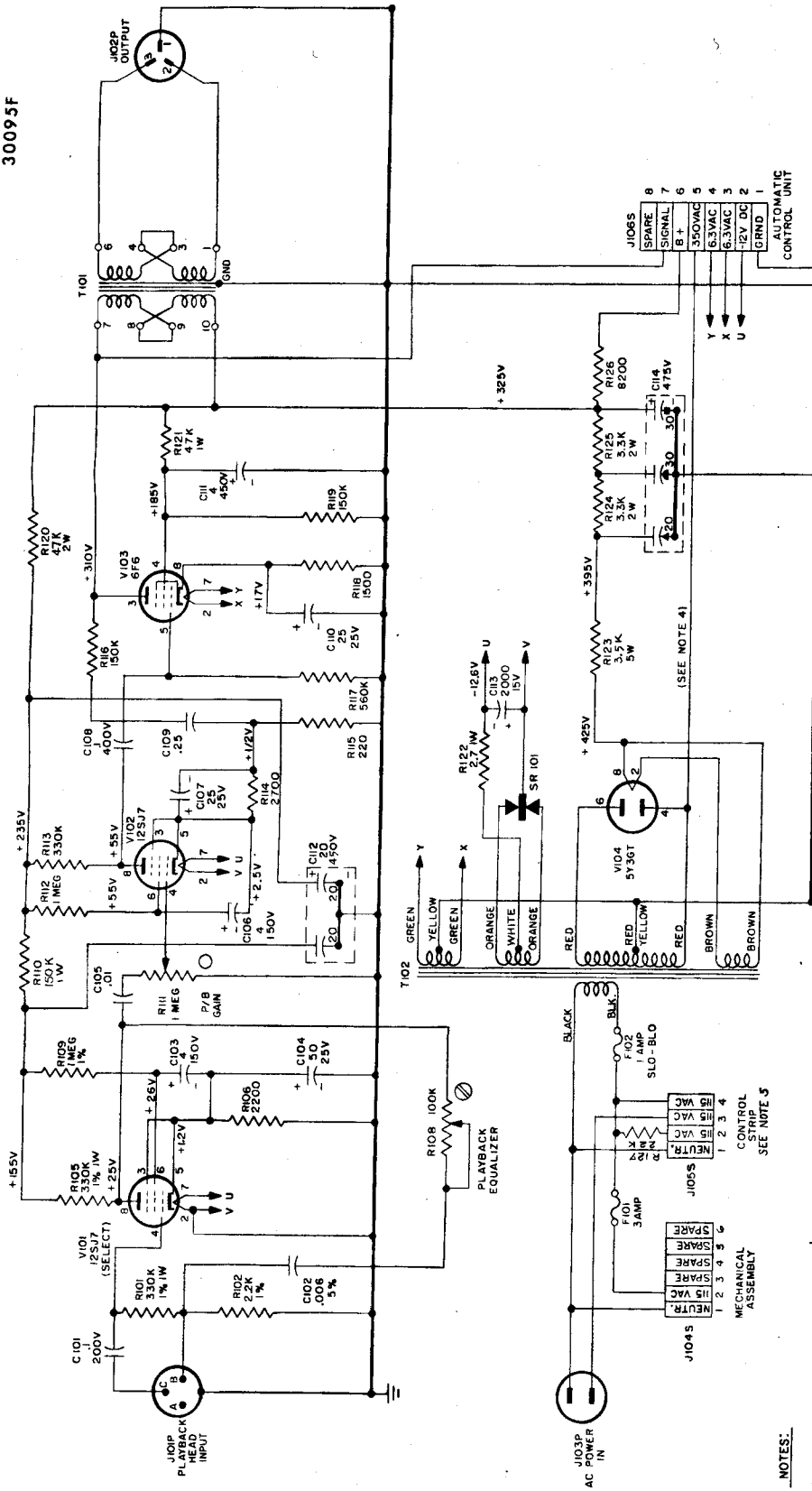
When ordering replacement parts always include the following information: Equipment Type; Equipment Serial Number; Ampex Part or Catalog Number; and Description of Part. DO NOT simply use the schematic reference number.

REF. NO.	PART DESCRIPTION	AMPEX PART NO.
	CABLE, extension: 6 conductor (for monaural) console	3768-01
S701	PUSHBUTTON, FAST FWD: SPST, normally open; A H and H Part No. 3391BSA	120-013
S702	PUSHBUTTON, REWIND: same as S701	120-013
S703	PUSHBUTTON, STOP: SPST, normally closed; A H and H Part No. 3391BSA	120-014
S704	PUSHBUTTON, START: Same as S701	120-013
S705	PUSHBUTTON, RECORD: Same as S701	120-013

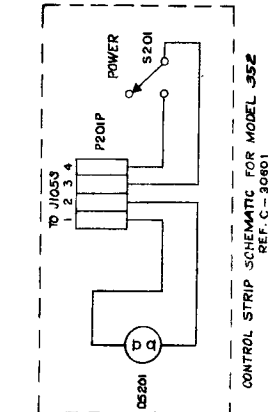
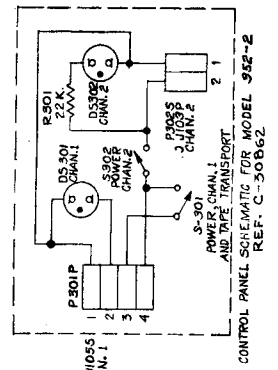
When ordering replacement parts always include the following information: Equipment Type; Equipment Serial Number; Ampex Part or Catalog Number; and Description of Part. DO NOT simply use the schematic reference number.



ELECTRONIC ASSEMBLY
CURRENT SCHEMATIC DIAGRAM
CATALOG NUMBER 30512
30095F

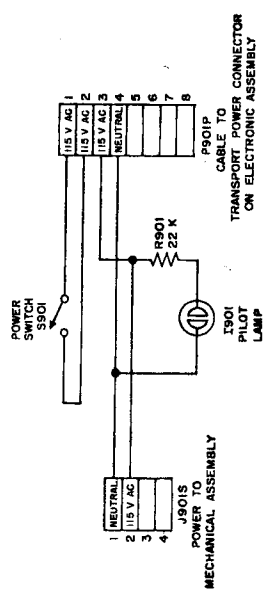
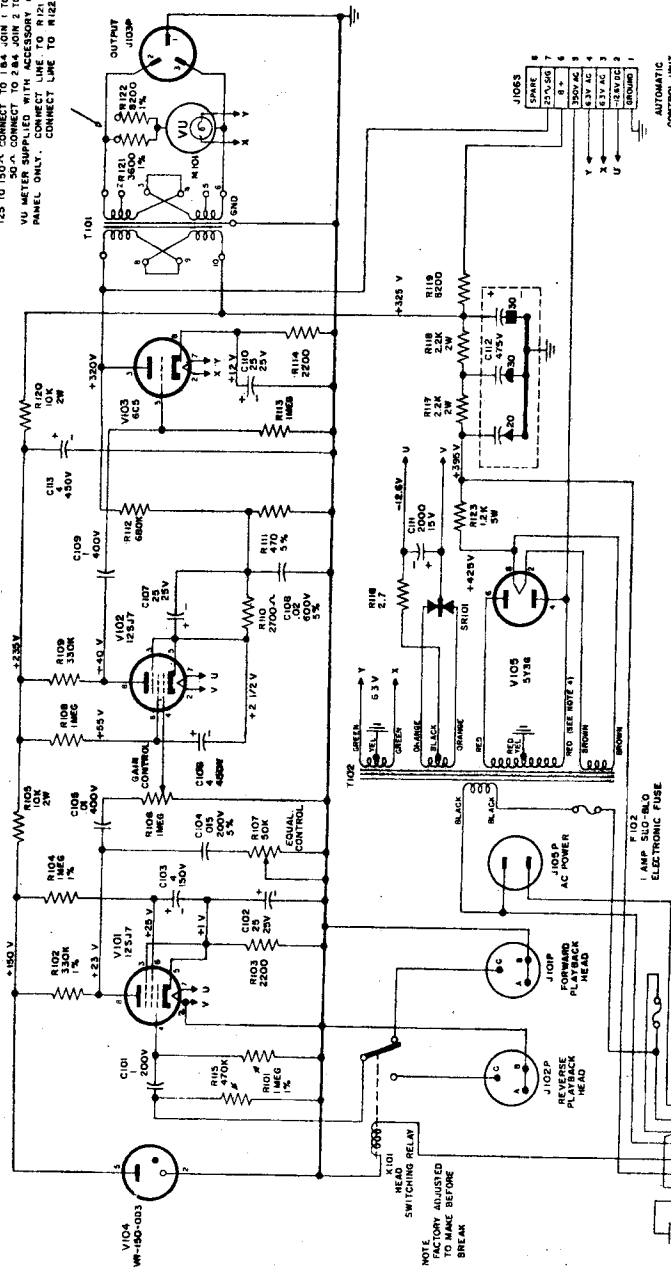


- NOTES:
1. ALL RESISTORS IN OHMS AND RATED $\frac{1}{2}$ W. 10% UNLESS OTHERWISE SPECIFIED.
 2. ALL CAPACITORS RATED IN MICROFARADS.
 3. ALL VOLTAGES MEASURED WITH 20,000 OHMS/VOLT METER, WITH 15V AC LINE, AND AMPLIFIER CONNECTED TO TAPE TRANSPORT.
 4. TRANSFORMER VOLTAGE AT PIN NO.5 OF J1065 MUST BE IN PHASE WITH VOLTAGE AT PIN NO.3 OF J1065.
 5. ON MODEL 352-2, CONNECT TAPE TRANSPORT TO J1045 ON CHANNEL 1 ELECTRONICS. INSTALL DUMMY PLUG #30867 IN J1065 ON CHANNEL 2.



ELECTRONIC ASSEMBLY
SCHEMATIC DIAGRAM
MODEL 352
(FORMERLY USED) ED 5593

T101 TRANSFORMER IMPEDANCE CONNECTIONS
500 TO 600A CONNECT TO 18.6 JOHN 3 TO 4
100 TO 250A CONNECT TO 18.6 JOHN 3 TO 4
200 TO 250A CONNECT TO 28.5 JOHN 3 TO 4
100 TO 150A CONNECT TO 18.4 JOHN 1 TO 3 & 4 TO 8
125 TO 150A CONNECT TO 18.4 JOHN 1 TO 3 & 4 TO 8
VU METERS: CONNECT TO 28.4 JOHN 2 TO 3 & 4 TO 8
VU METERS: CONNECT TO 28.4 JOHN 2 TO 3 & 4 TO 8
PANEL ONLY: CONNECT LINE TO R122 FOR +8VU.



POWER PANEL
CATALOG NO. 6120

- NOTES
1. ALL RESISTORS IN OHMS UNLESS NOTED OTHERWISE 10% UNLESS OTHERWISE SPECIFIED.
 2. ALL CAPACITORS IN MICROFARADS.
 3. ALL RELAYS SHOWN DE-ENERGIZED.
 4. IN PHASE WITH VOLTAGE AT PIN 3 OF J1048.
 5. ALL DC VOLTMETERS MEASURED WITH 20,000 OHM PER VOLT METER WITH 15 V AC LINE B AMPLIFIER CONNECTED TO TAPE TRANSPORT. (WITHOUT AUTOMATIC CONTROL UNIT)