

**harman kardon**

MODEL A-300

*The Theme*

HIGH FIDELITY AM-FM TUNER

**INSTALLATION — OPERATION AND SERVICE INSTRUCTIONS**



**UNPACKING:**

After unpacking the Theme, inspect it carefully for any signs of damage in transit. Your unit was subjected to many inspections and tests, and then carefully packed. If any damage is visible, notify the transportation company at once.

Check the contents of the package carefully.

You should find:

- 1 Tuner, Model A-300
- 1 Instruction Booklet
- 1 Mounting Template
- 1 Bag of mounting hardware
- 1 Antenna wire, hanked
- 1 Warranty Card

The Mounting Template and bag of mounting hardware is for use only if the Theme is installed in a cabinet. If the unit is not installed in a cabinet, it is suggested that this material and the instruction booklet (which contains information needed for repairs) be kept for possible future use.

It is strongly urged that the warranty card be completed and mailed without delay, to protect your rights under the warranty. If you should require repair ser-

vice or information on the use of the Theme, we will be able to identify your unit immediately, and respond quickly.

**CONNECTIONS:**

**AM Antenna**

The Harman-Kardon ceramic loopstick, built into the Theme, comprises all the antenna required for the finest in noise-free local AM reception. This antenna may be used as a carrying handle for the Theme. In locations more-removed from metropolitan areas, an outdoor antenna may be required. This should consist of a single wire, as long as is reasonably practical, located away from large metal objects, power lines, or electrical machinery. Connect one end to the AM terminal of the ANTENNA terminal strip on the rear of the chassis.

**FM Antenna**

Due to the extremely high FM sensitivity of the Theme, the 48 inch wire furnished will be sufficient antenna for all but the most difficult locations. One end of the wire should be connected to the FM terminal of the ANTENNA terminal strip, the other end

being left free and extended as may be convenient. In remote locations, a standard roof-top dipole and suitable twin leadin wire may be used, connected between the FM and G terminals.

## **POWER CONNECTION**

Plug the power cord into any outlet furnishing 117 volts, 60 cycles house current. The exact voltage is relatively unimportant, and may vary between 105 and 125. Be sure, however, that you have 60 cycle AC power. For many installations, such as with the Melody, Model C100 Amplifier, it will be more convenient, from an operational point of view, to plug the power cord of the Theme into the convenience outlets provided on the amplifier chassis. The tuner will then be turned on or off by the amplifier power switch.

## **INSTALLATION:**

The appearance and construction of the Theme encourages its use, placed on a shelf or table rather than concealed in a cabinet. The only precaution to be observed consists of allowing sufficient ventilation. DO NOT cover the perforated tube grill or surround the unit with books or other impediments.

Installation in a cabinet is quite simple

- 1- Remove the knobs.
- 2- Remove the escutcheon mounting panel by removing the two screws on each side and pull the panel forward.
- 3- Separate the escutcheon from the escutcheon mounting panel by removing the two nuts at the rear of the panel.
- 4- Remove the perforated tube grill by removing the two mounting screws on each side and lifting it up.
- 5- Assemble the four rubber shockmounts to the chassis. The shockmounts and screws for mounting them will be found in the mounting hardware bag.
- 6- Drill the panel and shelf of the cabinet to clear the control shafts, escutcheon and chassis mounting screws. (Complete instructions and hole locations will be found on the Mounting Template.)
- 7- Fasten the escutcheon in place, using the two nuts previously removed.
- 8- Fasten the Theme in place, using the four #8 x 1" cadmium-plated screws to be found in the mounting hardware bag.
- 9- Remount the knobs.

## **VENTILATION:**

All electrical equipment generates heat which must be allowed to escape. Although the Theme is well ventilated in itself, installation in a completely closed cabinet will reduce the ventilation and result in sharply reduced component and tube life. These precautions should be observed when the Theme

is installed in a cabinet:

1- Leave the back of the cabinet open. If this is not possible, provide several large holes or slots as low down and as high up in the cabinet back as possible. As an alternate, holes may be provided in the sides, bottom or top of the cabinet. Remember that really effective ventilation requires provision for cool air to enter at the bottom and hot air to leave at the top.

2- Isolate any accessories which might interfere with ventilation or be affected by heat. Do not drape connecting cables over the Theme.

3- In some cases, it might be advisable to provide insulation (such as sheet asbestos) between the Theme and any other heat producing or heat-sensitive device.

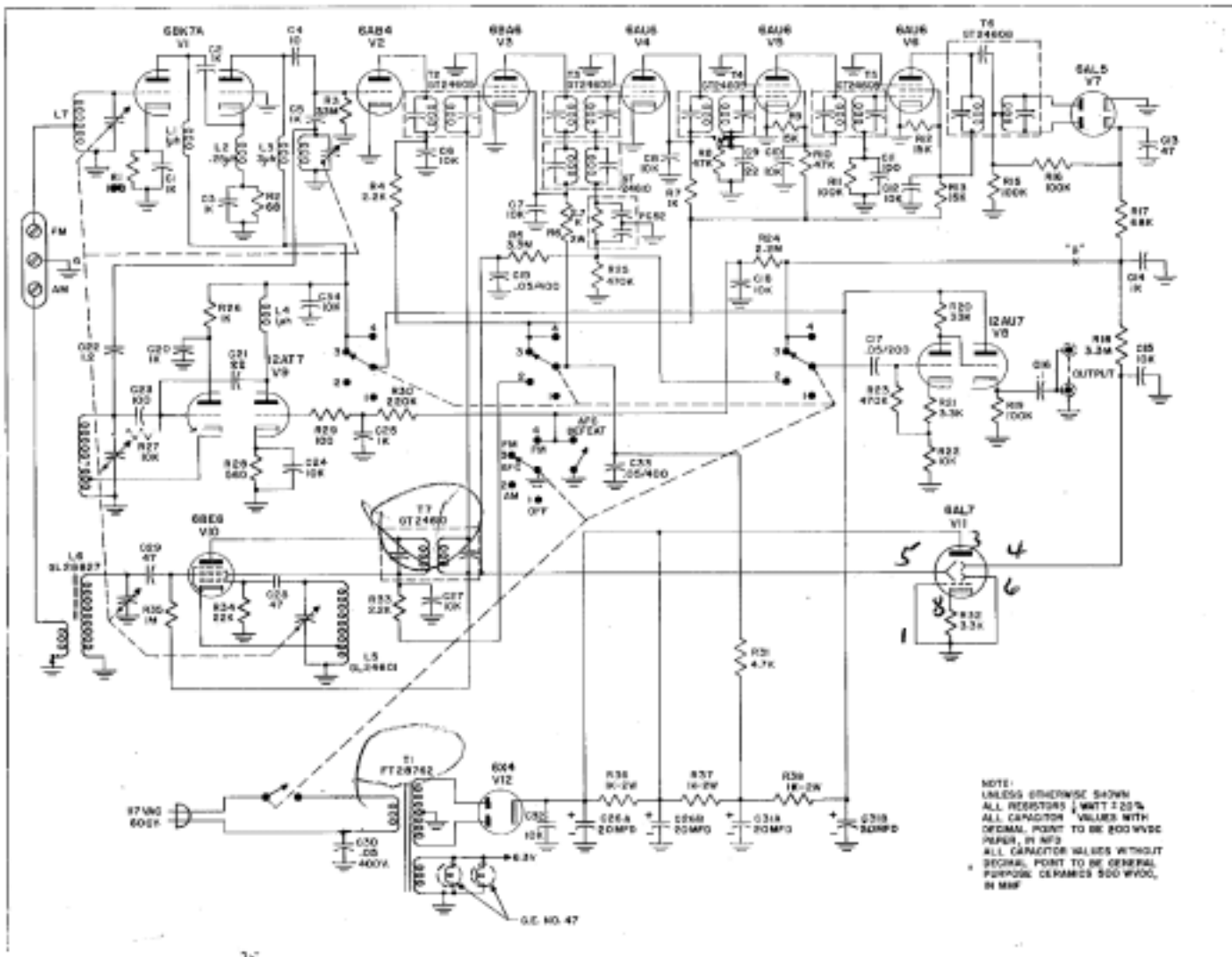
## **AUTOMATIC FREQUENCY CONTROL (AFC)**

FM Broadcasting, by its very nature, eliminates almost all natural and man-made static. However, the characteristics of FM which make this possible also make for problems in tuning. The HARMAN-KARDON Theme incorporates an effective Automatic Frequency Control (AFC) circuit that overcomes these problems and insures proper tuning even if the manual tuning is not accurately done. The following experiment will lead to an understanding of AFC, and the fuller enjoyment of the Theme. First, tune across the FM scale. Note how the stations "pop" into place, one after the other. Now tune to any station, preferably one with a musical program. Press the tuning knob in to defeat the AFC, and tune slowly through the station from left to right. Notice that there are three points where the station sounds clean, interspersed with points of distorted sound. The middle clean-sounding point is the proper tuning position for the best tone quality with minimum noise and interference. With the knob pressed in, tune slightly away from the proper tuning position, until the sound is distorted. Release the tuning knob to reactivate the AFC, and notice how the sound clears up, as if the receiver had been manually retuned.

Actually, the tuning has been readjusted by the operation of the AFC circuit, which automatically retunes the electronic circuits to the center of the station channel.

The AFC circuit of the Harman-Kardon Theme performs the further function of overcoming any tendency of the tuning to drift.

In order to take maximum advantage of the benefits of AFC, it is suggested that fine tuning be done with the knob pressed in, so that the center clean response point can be located. When the knob is released AFC will improve this careful tuning by a factor of 10 to 1. This procedure is especially recommended in those cases where a weak station is found close to a strong station. Under these conditions, the AFC may tend to reach for the strong station, and completely skip over the weak station. If the weak station is tuned with the AFC defeated, the AFC will lock it in, after the knob is released.



### ALIGNMENT PROCEDURE

Func. Switch Setting	Signal Generator Freq.	Generator Mod.	Signal Input Point	Output Indicator	Connect Indicator To:	Dial Setting	Adjust	Output Indication	Func. Switch Setting	Signal Freq.	Generator Mod.	Signal Input Point	Output Indicator	Connect Indicator To:	Dial Setting	Adjust	Output Indication
AM	455KC	30%AM	6BE6 Pin 7	AC-VTVM or scope	Output Terminal	—	2AM IF Transformers (T7, T8)	Max. Output	FM	10.7MC	300KC FM 60 Cycles	6BA6 Pin 1	AC-VTVM or scope	"A" on Schematic Box 100K	—	4 FM IF Transformers (T1, T2, T3, T4)	Max gain and asymmetry
AM	1500KC	30%AM	AM Ant Terminals	AC-VTVM or scope	Output Terminal	1500KC	OSC and Antenna Trimmers	Max. Output	FM	10.7MC	300KC FM 60 Cycles	6BA6 Pin 1	AC-VTVM or scope	"B" on Schematic	—	Limiter Transformer (T5)	Max. gain
AM	600KC	30%AM	Am Ant Terminals	AC-VTVM or scope	Output Terminal	600KC	OSC coil	Rack Gang for Max. Output	FM	10.7MC	300KC FM 60 Cycles	6BA6 Pin 1	AC-VTVM or scope	"B"	—	Discriminator Transformer	Pattern of Max gain and asym
									FM	105MC	300KC FM 60 Cycles	FM Ant. Terminals	AC-VTVM or scope	"A"	100MC	OSC, RF and Ant. Trimmer	Max. Output
									FM	90MC	300KC FM 60 Cycles	FM Ant. Terminals	AC-VTVM or scope	"A"	90MC	OSC, RF and Ant. Trimmer	Max. Output

*8 to 2*  
*orange white*  
*red*  
*22k 1/2W*  
*Green*  
*1/15*

# SPECIFICATIONS

Note that the function selector switch (on the left side) has four positions. The position marked "FM-AFC" should be selected whenever you wish to tune with the assistance of AFC. The experiment, described above should be conducted with the selector switch in this position. Should you wish to disable the AFC circuit fully, however, select the position marked "FM". In this position the AFC circuitry is eliminated and the depressing action of the tuning control is completely ineffective. A very dramatic demonstration of the AFC action can be achieved by switching between the FM and FM-AFC positions after tuning slightly off a station with "FM" selected. This is another expression of the experiment described above.

**SENSITIVITY:** FM: 2 microvolts for 30 db quieting. AM—Field Strength Required: 50 microvolts/meter. Equivalent to 15 microvolt sensitivity.  
**SELECTIVITY:** FM—180 KC bandwidth 6 db down. AM—8 KC bandwidth 6 db down.  
**TUNING RANGE:** FM—88 to 108 MC. AM—530 to 1650 KC.  
**FM DRIPT:** +2 KC maximum (AFC operating). +15 KC maximum (AFC defeated).  
**IMAGE REJECTION:** FM—50 db minimum. AM—35 db minimum.  
**ANTENNA INPUT:** FM—300 ohms. AM—Built-in low-noise ceramic ferrite antenna plus high impedance input terminal.  
**AUDIO OUTPUT:** 3 volts (cathode follower output).  
**HUM LEVEL:** 65 db below 100% modulation.  
**DISTORTION:** .03% at 1 volt.  
**FREQUENCY RESPONSE:** FM— $\pm 3$  db 20 to 20,000 cycles. AM— $\pm 3$  db 20 to 5,000 cycles.  
**TUBE COMPLEMENT:** (Total 11 plus Rect.) 1—6BE7A, 1—12AT7, 1—6AB6, 1—6BE5, 1—6BA6, 1—6AL5, 3—6AU6, 1—6AL7, 1—12AU7, 1—6X4.  
**CONTROLS:** (2) 1—Tuning and AFC Defeat, 1—Function and Power (1—power off, 2—AM, 3—FM with AFC, 4—FM without AFC).  
**POWER CONSUMPTION:** 50 watts @ 117 volts, 60 cycles.  
**DIMENSIONS:** 4" high x 12 1/2" wide x 7 1/2" deep (excluding knobs and loopstick).

## MAGIC EYE

The dual bar magic eye, built into the Theme tuner is a further aid to precise tuning.

**ON AM:** Optimum tuning has been achieved when the minimum total bar area is seen.

**ON FM:** The magic eye operates whether AFC is in circuit or not. Optimum tuning has been achieved when the two right sides of the tuning bars line up. This "picture" will also exist when you are tuned entirely off a station. Between these two conditions, the two right sides of the tuning bars will vary their positions with respect to each other.

## MAINTENANCE AND REPAIR:

In some installations, hum may be encountered due to a voltage difference between the amplifier, tuner and record changer chassis. This may be eliminated by reversing one or all of the AC power plugs. Simply reverse one at a time until improvement is experienced.

Due to the conservative design and high quality components of the Theme, no routine maintenance other than yearly tube-testing is required. Should trouble develop, however, only the most qualified serviceman should be employed, as special equipment and training is required to properly service high fidelity equipment.

This instruction booklet contains diagrams and other information needed by your repairman. It should be kept available for his use.

## WARRANTY:

We warrant each Theme, Model A-300 to be free from defects in material and workmanship under normal use and service, and in accordance with the conditions herein below set forth, for a period of 90 days from date of delivery to the original purchaser, and agree to replace or repair any part or parts returned to us within said 90 days, with transportation prepaid, and which our examination shall disclose to our satisfaction to have been thus defective. This warranty does not include free labor, nor is it applicable to any instrument which shall have been repaired or altered in any way so as in our judgment to affect its stability or reliability nor which has been subject to neglect, misuse, abuse, negligence or accident nor which has had the serial number altered, effaced, or removed. Neither shall this warranty apply to any instrument which has been connected otherwise than in accordance with the instructions furnished by us.

This warranty is expressly in lieu of all other warranties, express or implied, and of all other obligations or liabilities on our part, and we neither assume nor authorize any representative or other person to assume for us any other liability in connection with the sale of the Model A-300 Theme.

## LIST OF REPLACEABLE PARTS

Symbol	Description	Haman-Kardon Part Number	List Price
T1, T2, T3, T4, T5	FM IF Transformer	GT 24605	1.50
T6	FM Discr. Transformer	GT 24608	2.10
T7, T8	AM IF Transformer	GT 24610	1.30
T9	Power Transformer	FT 28762	1.50
S1	Function Switch	ER 28793	2.50
	Gang Capacitor	JV 24600	9.00
	FM Osc. Trimmer Coils	JV 20688	.30
L1, L4	1 microhenry choke	GC 24602	.20
L2	.24 microhenry choke	GC 28831	.35
L3	3 microhenry choke	GC 24603	.35
L5	AM Osc. Coil	GL 24601	1.00
L6	AM Loop Stick	GL 28827	3.50

### RESISTORS

R1, R29	100 ohm 1/2 watt $\pm 20\%$	.10
R2	68 ohm 1/2 watt $\pm 20\%$	.10
R3, R5, R18	3.3M ohm 1/2 watt $\pm 20\%$	.10
R4, R33	2.2K ohm 1/2 watt $\pm 20\%$	.10
R6	2.7K ohm 2 watt $\pm 20\%$	.25
R7, R26	1K ohm 1/2 watt $\pm 20\%$	.10
R8, R10	47K ohm 1/2 watt $\pm 20\%$	.10
R9, R12, R13	15K ohm 1/2 watt $\pm 20\%$	.10
R11, R15, R16, R19	100K ohm 1/2 watt $\pm 20\%$	.10
R17	68K ohm 1/2 watt $\pm 20\%$	.10
R20	33K ohm 1/2 watt $\pm 20\%$	.10
R21, R32	3.3K ohm 1/2 watt $\pm 20\%$	.10
R22, R27	10K ohm 1/2 watt $\pm 20\%$	.10
R23, R25	470K ohm 1/2 watt $\pm 20\%$	.10
R24	2.2M ohm 1/2 watt $\pm 20\%$	.10
R28	560 ohm 1/2 watt $\pm 20\%$	.10
R30	220K ohm 1/2 watt $\pm 20\%$	.10
R31	4.7K ohm 1/2 watt $\pm 20\%$	.10
R34	22K ohm 1/2 watt $\pm 20\%$	.10
R35	1M ohm 1/2 watt $\pm 20\%$	.10
R36, R37, R38	1K ohm 2 watt $\pm 20\%$	.25

### CAPACITORS

C1, C2, C3, C5, C25, C20	1K MMF Ceramic GMV	.25
C4	10 MMF Ceramic $\pm 20\%$ N750	.45
C6, C7, C8, C10, C12 } C15, C18, C24, C27, C32 }	10K MMF Ceramic GMV	.30
C9, C21	22 MMF Ceramic $\pm 20\%$	.35
C11	100 MMF Ceramic $\pm 20\%$	.35
C13, C28, C29	47 MMF Ceramic $\pm 20\%$	.35
C16	.1 MFD 200 v Paper	.45
C17	.05 MFD 200 V Paper	.50
C19, C30, C33	.05 MFD 400 V Paper	.50
C22	1.2 MMF Ceramic $\pm 20\%$	.45
C26, C31	20, 20 MFD/250V Electrolytic	2.20
C14	1K MMF Ceramic $\pm 20\%$	.25
C23	100 MMF $\pm 20\%$ N750 Ceramic	.45

Escutcheon	P 28760	7.00
Pointer	Z 24773	.30
Dial Glass	P 28767	1.25
Glass clips	Z 24774	.05
IF transformer clips	Z 24614	.05
Knob	P 20778	.15