

Carvin

VTR2800 Tube
musical instrument
amplifier

PDF Conversion by
The Carvin Museum
<http://www.carvinmuseum.com>

owner's manual

SETTING UP

Remove any items in the rear of the amplifier, including speaker cords, packing paper and footswitch, if included. Set both MASTER VOLUME controls fully counterclockwise, the POWER switch to OFF, and the B+ VOLTAGE switch to STANDBY. Uncoil the AC line-cord and plug into a standard 3-wire grounded outlet. Plug the speakers into either SPEAKER OUTPUT jack, and set the Impedance Selector switch to correct Impedance. Your instrument can be plugged into the center jack ("SUSTAIN & NORMAL"). Set the POWER switch to ON, and note that the pilot light is on. After a minute or so, switch the B+ VOLTAGE switch to ON, and you are ready to play.

WARRANTY

Your Carvin Tube Instrument Amplifier is protected against failure for a full three years. Excluding tubes, the entire amplifier unit will be serviced by Carvin free of charge if *anything* should go wrong during the first three years of ownership. The tubes themselves are fully covered for a period of 90 days, the standard O.E.M. guarantee.

While Carvin suggests you utilize the specialized technicians of the Carvin Service Dept., non-factory repairs will not void the warranty, although all charges for such repairs must be paid for by the customer. Furthermore, Carvin will supply amp parts (at no charge) upon receipt of defective parts. Naturally, any damages caused by improper outside repairs will not be covered by the warranty.

Carvin speaker systems and related components are covered for a period of 1 year, with the exception of Altec, JBL and Electro Voice components, which are guaranteed for 5 years by the manufacturers.

All above warranties are extended to the original purchaser only, by the Carvin Music and Sound Mfg. Company, and do not cover failures caused by misuse or natural disasters.

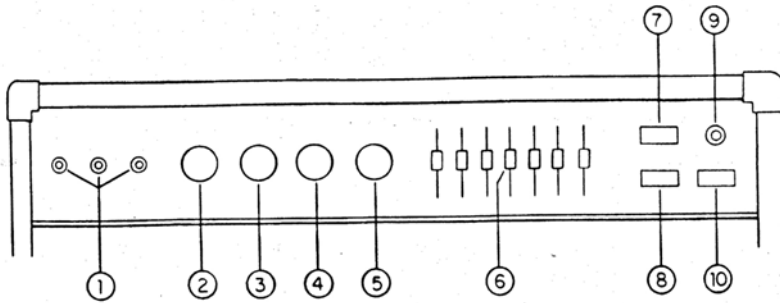
This Carvin Product is offered with a 10 day free trial period to allow the purchaser to evaluate its performance. The following two steps should be taken immediately *after* a decision to keep the unit is made.

1.) Fill out the Warranty Card and mail the top half back to Carvin. Note that the Warranty is VOID if not returned within 15 days of receiving the equipment. The bottom half of the card is your copy and should be filed in a safe place. If the need for factory servicing should ever arise, you should *not* send this copy in, as the top half will be maintained on file at Carvin.

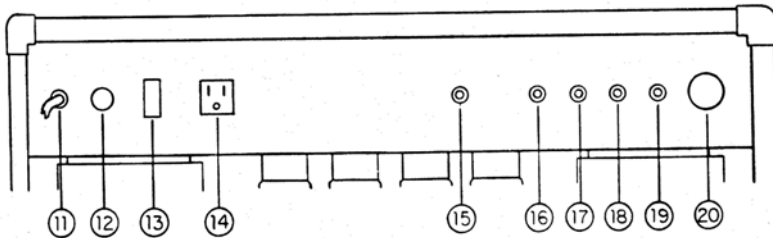
2.) Obtain the use of an "electric pencil" or similar engraving tool, and etch your name into the rear chassis. This will serve as a more permanent form of identification than the serial number tag, and will facilitate recovery in the event of theft.

AMPLIFIER SPECIFICATIONS

POWER OUTPUT	100 Watts RMS minimum.
HARMONIC AND INTER-MODULATION DISTORTION	3% at 100 Watts RMS.
S/N RATIO	Better than 62 dB.
SPEAKER OUTPUT IMPEDANCE	2, 4, and 8 Ohms (selectable)
FREQUENCY RESPONSE	30 Hz to 20,000 Hz \pm 2 dB.
SENSITIVITY	8 mv for full output.
HAMMOND REVERB	30-40 milliseconds delay with a total 1.4 second tone decay.
GRAPHIC EQUALIZER	Active, 7-Band.
BAND WIDTH	6 One-Octave Filters
CENTER FREQUENCIES	1 Multi-Octave Filter (High Frequency Band) 60, 120, 250, 500, 1K, 2K, 8K Hz
FREQUENCY RESPONSE	15 Hz to 20K Hz \pm 2 dB (All sliders at mid-position)
NOISE INSERTION	Less than 1dB
FILTER DESIGN	Active, R-C tuned
DISTORTION	Less than 0.05% (THD and IM)
VOLTAGE REQUIREMENTS	ONE 12AT7, FOUR EL34. 7 Active Filters for Equalization, plus 5 Silicon diodes.
TUBES	120 VAC 50-60 Hz.



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|------------------------------|-----------------------------|
| 1. INPUT JACKS | 6. 7-BAND GRAPHIC EQUALIZER |
| 2. HARMONIC DRIVE, Channel 1 | 7. RMS OUTPUT |
| 3. MASTER VOLUME, Channel 1 | 8. B+ VOLTAGE |
| 4. MASTER VOLUME, Channel 2 | 9. PILOT LIGHT |
| 5. REVERB INTENSITY | 10. POWER |



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|----------------------------|-------------------------------------|
| 11. LINE CORD | 16. NORMAL-SUSTAIN FOOT-SWITCH JACK |
| 12. FUSE HOLDER | 17. PRE-AMP OUT |
| 13. GROUND | 18. & 19. SPEAKER OUTPUTS |
| 14. ACCESSORY AC OUTLET | 20. SPEAKER IMPEDANCE |
| 15. REVERB FOOTSWITCH JACK | |

FRONT CHASSIS

INPUT JACKS

Three jacks are featured on the front panel. The left jack drives channel one, and is used when Harmonic Distortion and Sustain are desired. The right jack drives channel two, which provides a clean, natural sound. The center jack is used to feed both channels simultaneously from one instrument. This jack is designed to allow the unique channel switching arrangement of the Carvin Tube Amplifier. For further information, read under "NORMAL/SUSTAIN Footswitch Jack". (Use of either channel one or channel two jacks will automatically switch out the center jack.)

HARMONIC DRIVE (Channel One)

Channel One features a sophisticated Harmonic Distortion with a variable Sustain.

This effect is created by designing the pre-amps to reach saturation (maximum input) at signal levels well below what the guitar produces. Therefore, all normal or strong guitar levels overdrive the pre-amp. This causes a clipped waveform, very rich in harmonics (Harmonic Distortion) and a sound level that remains constant until the original guitar note has decayed below the pre amp's saturation point (Sustain).

The HARMONIC DRIVE control is electronically located in front of the pre-amp circuitry, providing control over the amount of distortion and the length of the sustain. Note that the actual amount of Harmonic Distortion/Sustain also depends upon the output of the guitar. Therefore, for maximum effect, *the guitar's volume controls must be on full*, as well as the HARMONIC DRIVE control.

This same Harmonic Distortion is possible with electric piano, organs, synthesizers, or any electronic instrument.

Due to the nature of the circuitry, it is also possible to obtain a clean (non-distorted) sound from channel one. Set the HARMONIC DRIVE control at minimum (fully counterclockwise) and then turn down the instrument's volume control. The input is thereby reduced below the pre-amp's saturation point, and the output is clean.

MASTER VOLUME (Channel One)

The MASTER VOLUME controls the overall sound level of Channel One. Being independent of the Harmonic Drive control, any amount of sustain/distortion is available at any volume.

MASTER VOLUME (Channel Two)

This is a standard volume control, and governs the over-all sound level of Channel Two.

REVERB INTENSITY

The amount of reverb effect is controlled by the REVERB INTENSITY. Both channel one and two are fed into the reverb circuitry, so that the reverb effect is not sacrificed in either channel, as it is in simpler channel-switching amps. Reverb is turned off by setting this control fully counterclockwise, or by use of the reverb footswitch.

SEVEN-BAND GRAPHIC EQUALIZER

Of all the features offered, the Carvin Seven-Band Graphic Equalizer makes the most important single contribution to your unit's flexibility. To help understand the Graphic Equalizer, consider that the ordinary bass and treble system is actually a two-band equalizer.

Such a system divides the entire audio spectrum (everything you can hear) into two sections. The lower frequencies are called "Bass", and the higher frequencies are called "Treble". Each section is

given its own passive volume control, so the sound level of one section can be changed without affecting the other section. By "turning up the bass", you are simply making the lower (bass) frequencies louder, without changing the higher (treble) frequencies.

The Carvin 7-BAND GRAPHIC EQUALIZER divides the audio spectrum into seven separate sections, or bands. Obviously, each band covers a smaller area of frequencies than the bass/treble system. Specifically, each of the first six bands covers one-octave of sound. What this means is a very precise control of the "frequency-response", or tonal characteristics, of your amplifier.

Using the slider-type controls against the grid of white lines forms a simple graph of the amplifier's frequency response (hence the term GRAPHIC). When all the sliders are positioned in the middle, the graph shows a straight line, representing a "flat" frequency response. This means that no tones are boosted or cut, so the sound is natural, and is exactly what the original instrument is producing.

By raising any one of the slider controls, that band of frequencies gets louder, while the other frequencies remain the same. Likewise, lowering any slider makes that band quieter.

All of the slider controls may be set at maximum, which will provide a higher output volume. However, adequate volume is always obtainable through the volume control, and the flattest response is available when all the sliders are set at the mid-position.

Rather than labelling the bands "Deep Bass," "Middle Bass," "Hi Bass," etc, the sliders are identified by the band they control. The center-frequencies (in Hz, or cycles-per-second) are printed under each slider, rather than the whole band. The full frequencies covered by each band are listed below. Note that the highest filter covers a broader range. This is because the highest notes of most electronic instruments are well below 3,000 Hz (3K Hz). The guitar's highest note, for example, is about 1.24K Hz (1,240 Hz). The highest band covers all the harmonic overtones, leaving six bands to provide maximum control of your instrument's fundamental notes.

CENTER FREQUENCY	FREQUENCIES COVERED BY BAND
60 Hz	30 to 90 Hz
120 Hz	90 to 180 Hz
250 Hz	180 to 375 Hz
500 Hz	375 to 750 Hz
1K Hz	750 to 1500 Hz
2K Hz	1500 to 3000 Hz
8K Hz	3K to 18K Hz

An excellent way to acquaint yourself with the 7-BAND GRAPHIC EQUALIZER is to set up the amp with all of the sliders at minimum (the lowest position). While playing, raise one slider separately to hear the sound of that particular band, then return it to minimum. Repeat that with all seven sliders. Next, set the amplifier for a flat response (all sliders at mid-position). Try boosting one band by raising its slider to maximum. Then cut that same band by lowering the slider to minimum. Return the slider to its mid-position and repeat with the other six bands.

You will soon discover that a variety of different sounds are available from this one amplifier. Certain settings will produce sounds that you will especially like. The graphic design will make remembering those settings very easy.

RMS OUTPUT SWITCH

This exclusive Carvin feature provides a "Half Power" setting, which decreases the amplifiers rated output from 100 Watts RMS to 50 Watts. This is accomplished by removing the filament

voltage from two of the four EL34 output tubes when the switch is set to "½". The life of these two tubes is extended while power consumption and operating temperature are reduced. Possibly a more important advantage is that the output circuitry can thereby be overdriven at a lower volume level. Overdriving the output tubes and transformer causes saturation, which in turn delivers a distortion/sustain that is unique to tube amplifiers. Note: This is different from, and in addition to, the pre-amp overdrive that is provided by Channel One.

A slight mismatch occurs in the output circuitry when the two tubes are "removed" (at "½" setting). The output transformer has been designed for this, and provides an increase in saturation for greater harmonics when overdriven. The tube life of the remaining EL34 tubes is not substantially affected.

NOTE: This switch can be used while playing through the amp without any detrimental effects. However, allow 90 seconds for the change of power, as tube filaments require both a warm-up and a cooling time.

B+ VOLTAGE

Setting the B+ VOLTAGE Switch to STANDBY removes the plate voltage from the tubes, while leaving the tube heater filaments on. By using the STANDBY position during any breaks, the life of the tubes is extended. Furthermore, because the tubes remain hot, the normal warm up period is eliminated, and the amplifier is ready for use as soon as the B+ VOLTAGE Switch is changed to ON.

PILOT LIGHT

The pilot light provides a visual indication that the amplifier is on. Note that the light is on whenever the POWER switch is on, and is not affected by the B+ VOLTAGE switch.

POWER

This is the switch that supplies power to the overall amplifier. When the switch is first turned on, there will be a warm up period of up to a minute before the amplifier is able to deliver power to the speakers. This is normal for any tube amplifier, and is due to the tubes being cold. After the amp has warmed up, use of the B+ VOLTAGE switch will eliminate this period, as described above.

REAR CHASSIS

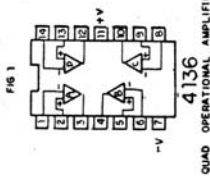
LINE CORD

All Carvin Equipment is supplied with three-conductor line cords ending in grounding-type plugs. This arrangement will greatly reduce the possibility of electrical shock, provided the equipment is used with three-conductor grounding-type outlets, and provided these outlets have been properly wired. If, at any time, electrical shock is experienced, disconnect the amplifier and have a qualified technician correct the trouble.

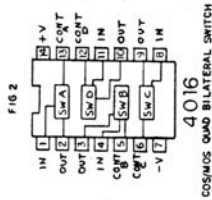
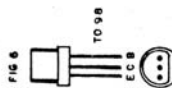
Carvin does not recommend the use of the older, two-conductor non-grounding type of outlets, as there is an increased danger of electrical shock. If use of this type of outlet is unavoidable, setting the GROUND switch for minimum hum will also minimize the possibility of such shock.

FUSE HOLDER

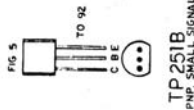
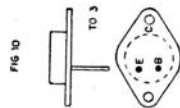
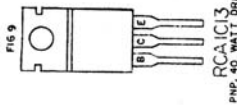
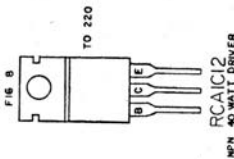
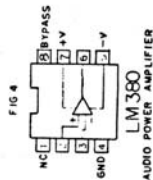
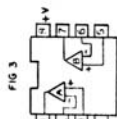
Access to the fuse can be gained by pushing the fuse-holder inwards, then turning counterclockwise. The type of fuse to be used is printed just below the fuse-holder. Should the fuse ever fail, replace it with an identical fuse (an extra fuse is provided). If the second fuse fails, then a problem is indicated, and the amp should be serviced. To prevent excessive damage to the amplifier, NEVER USE A FUSE WITH A HIGHER RATING.



2N3391A
NPN, LOW NOISE, SMALL SIGNAL



1458
DUAL OPERATIONAL AMPLIFIER



DIODES
1N5392 100V/15A
CR3-020 200V/3A
MR 752 200V/6A
CBB25-020 200V/25A BRIDGE

ZENERS
C12488 24V/1WATT
C12158 8V/1WATT

LED'S

5022
R15084

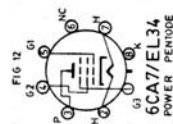
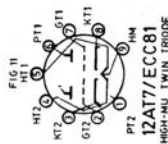
RESISTORS
EXCEPT WHERE NOTED,
ALL RESISTORS ARE
1/4 WATT, 5%, FILM
VALUES LISTED IN OHMS

CAPACITORS
EXCEPT WHERE NOTED
ALL CAPACITORS ARE
TANTALUM OR MYLAR FILM
VALUES LISTED IN MFD.
CURVED ELEMENT=LOWEST
POTENTIAL

D C VOLTAGES $\pm 10\%$
REFERENCED TO CHASSIS
WITH SIMPSON 464 DVM, 10 MEG

AC VOLTAGES $\pm 10\%$
REFERENCED TO CHASSIS
WITH HP 400H IMEG METER

GROUND LOOPS
IMPROPER GROUNDING IN AUDIO
EQUIPMENT CAN CAUSE HUM.
FOLLOW ORIGINAL WIRING.



REVISIONS	DATE	DRAWN BY	
	8-24-77	1st. Flannery	

CARVIN MUSIC CO

SCHEMATIC NOTES