



Congratulations on your purchase of the PB100/PB200 bass amplifier. You have purchased a bass amplifier that you will be proud to own for years to come. Carvin has been building bass amplifiers for over 35 years, so you can expect award-winning performance from these compact professional bass systems. A total of 3 models are offered ranging from the 100 watt PB100 10" and PB100 15" combos, to the 160 watt PB200 15" combo with 1" Titanium HF Driver.

BASS SIGNAL PROCESSING

The preamp of a bass amplifier is the key to great tone. Of course, you have to start with a great sounding bass. If you have ever played your bass straight into a power amp, you would soon discover that it doesn't sound very good. The reason is that bass guitar pickups must go through some serious signal processing before you can use the sounds. That's where the PB100/PB200 electronics come in. The first thing you will notice is the PRE SHAPE EQ switches on your amp. These switches will dial in your tone through special filters without having to use your tone controls. Secondly, your BASS, MID & TREBLE controls are powerful active circuits, which will add flexibility in generating other tones. The PB200 also features a 5 BAND GRAPHIC EQ allowing you to put the final touches on your sound from specialized filters designed just for the bass guitar.

The PB100 and PB200 continues with features that are only found in the most comprehensive bass rigs. A COMPRESSOR, which is sought out by most professional's, is featured because it controls the over-all level of the amp regardless of where the volume control is set. You can now control your peaks without the amp getting too loud or keep the amp from distorting.

Another feature in the PB100 and PB200 is the NOISE GATE. This feature is normally associated with recording studios. However, we felt it was important enough to include into every professional bass amp that Carvin builds. The noise gate eliminates or "gates off" the noise generated from your pickups when you stop playing. This feature will be appreciated by your band and audience.

You may easily add to your signal processing with an effects processor to enhance your sound. Any device from a foot pedal to a full effects rack can be plugged into the rear of the "buffered" Send / Receive EFFECTS LOOP.

The preamp LINE/PHONES jack can also be used as a main output from the preamp to send your signal to a mixing console or another high powered amplifier, allowing you to use the full complement of signal processing from your unit.

RECEIVING INSPECTION—read before getting started

INSPECT YOUR AMP FOR ANY DAMAGE which may have occurred during shipping. If any damage is found, please notify the shipping company and CARVIN immediately.

SAVE THE CARTON & ALL PACKING MATERIALS. In the event you have to re-ship your unit, always use the original carton and packing material. This will provide the best possible protection during shipment. CARVIN and the shipping company are not liable for any damage caused by improper packing.

SAVE YOUR INVOICE. It will be required for warranty service if needed in the future.

SHIPMENT SHORTAGE. If you find items missing, they may have been shipped separately. Please allow several days for the rest of your order to arrive before inquiring.

RECORD THE SERIAL NUMBER on the enclosed warranty card or below on this manual for your records. Keep your portion of the card and return the portion with your name and comments to us, or you may register online at www.carvin.com/registration.

GETTING STARTED QUICKLY

If you are like most bass players, you probably want to get started right away, in order to get started, you will need your new amp, a 120 or 230 AC grounded power outlet, your instrument and a standard guitar cord. Now, turn the amp and volume off, set the tone controls at their mid "0" center position, turn the compressor and noise gate off and set the 5 band graphic EQ (PB200) to their center/mid positions. Plug your amp into the AC voltage and then plug in your bass. Now, turn the amp's power switch ON and gradually raise the volume. Re-adjust the pre-shape switches and tone controls as needed and your ready to go.

COMBO CABINET DESIGN

Part of the success of the PB100/PB200 combo amplifiers are their light weight design and high performance. A tuned bass reflex port is featured in each system adding to the speaker's efficiency in the 35 Hz to 50 Hz range, while giving overall warmth for a bigger and rounder sound. The PB200 combo series also features a 1" Titanium HF Driver to extend the upper range to 16k Hz, enhancing the harmonics for percussive slap and fingering. The 1" Titanium HF Driver is fully adjustable from a continuously variable rheostat located at the rear. All enclosures are covered in durable black DuraTuff II™ for your transport-protection.

POWER AMP

Pure, clean bass power is delivered to your speaker from the PB100/PB200 series ultra-low distortion power amp. The PB100/PB200 THD (total harmonic distortion) is lower than 1%. Typical distortion is less than .08% at nominal listening levels. The output impedance is designed for maximum. The power amp features turn-on muting, short circuit and thermal overload protection. (Note: It is normal for the amp to get warm to the touch).

Model PB100-10/15 Specifications:

Freq. Response: 20 Hz to 20k Hz ±3 dB
THD: Typically less than .1%
RMS Power: 100 watts
CD/Tape Input: (150kΩ) Passive or Active
Pre EQ Switches: LO 100Hz, MID 300/500, HI 6 k
Tone Controls: LO: 80Hz ±12dB
 MID: 200-2KHz ±12dB
 HI: 8KHz ±12dB
(3 band active)
Compressor / Gate: 30dB reduction
Comp Thresh/Ratio: -7 to -27 dB, 3:1 ratio
Cabinet Freq. Resp: 45 Hz to 3.5 kHz (10")
Cabinet Freq. Resp: 41 Hz to 2.5 kHz (15")
Cabinet Types: Tuned ported bass reflex
Cabinet Construction: 13 Ply Plywood
Warranty: One Year
Power Requirements: 120VAC, 130VA
 240VAC, 130VA
Fuse: 3A 250V slow blow
PB100-10: 16W x 12D x 17.7H. 30 lbs.
PB100-15: 17.5W x 12D x 22.7H. 48 lbs.
Cover Options: CV100-10 or CV100-15

Model PB200 Specifications:

Freq. Response: 20 Hz to 20k Hz ±3 dB
THD: Typically less than .1%
RMS Power: 160 watts @ 8Ω bridged or 80W @ 4Ω per output jack
CD/Tape Input: (150kΩ) Passive-Active
Pre EQ Switches: LO 100Hz, MID 300/500, HI 6k
Tone Controls: LO: 80Hz ±12dB
 MID: 200-2KHz ±12dB
 HI: 8KHz ±12dB
(3 band active)
Compressor / Gate: 30dB reduction
Comp Thresh/Ratio: -7 to -27 dB, 3:1 ratio
5 Band Graphic EQ: 80Hz, 250Hz, 500Hz, 800Hz, & 2kHz, ±12dB
Cabinet Freq. Resp: 41 Hz to 16k Hz
Cabinet Types: Tuned ported bass reflex
Cabinet Construction: 13 Ply Plywood
Tweeter Attenuation: Continuously variable
Warranty: One Year
Power Requirements: 120VAC, 225VA
 240VAC, 225VA
Fuse: 5A 250V slow blow
PB200-15: 17.5Wx12Dx25H. 46 lbs.
Cover Option: CV200-15

For your records, you may wish to record the following information.

Serial No. _____ Invoice Date _____



12340 World Trade Drive, San Diego, CA 92128
 800.854.2235 www.carvin.com

FRONT & REAR PANEL CONTROLS

1. INPUT JACK 1/4", CD/TAPE RCA INPUTS

The 1/4" phone jack is an instrument input designed to handle both active and passive basses. The RCA Tape/CD inputs are line level inputs designed to work with CD and TAPE players. These jacks will work simultaneously together. Use the volume control on the CD player to control the mix with the bass guitar.

2. VOLUME CONTROL

The VOLUME control adjusts the overall volume of the amplifier. Depending on the output of your bass guitar's pickups, the volume control will be set at different positions. Because of the amps extra gain to compensate for low output pickups, you can easily get the amps full output at "3" on the dial with high output pickups, so adjust the volume accordingly. Likewise, if you add more boost from the LOW pre-shape switch or increase the BASS tone control, you can easily distort the amp unless you reduce the volume. The setting of the volume control does not affect the compressor or gate settings.

3. PRE-SHAPING SWITCHES

The pre-shaping switches are preset boost and cut equalization settings to enhance your sound.

- **LOW** - With this switch in, the result is a strong punchy low end starting at 100Hz.
- **MID** - The mid switch is a mid cut switch in both switch positions. With the mid pushed in, the cut is centered around 300Hz which enhances the deep bass and leaves the mids intact. For the slap player and anyone who wants tight lows and bright mids and highs this is the desired position. With the mid left in the out position, the cut is centered around 500Hz and produces a brighter more common bass amp sound for the player who uses a pick or is light on the fingers.
- **HI** - The Hi switch is a treble boost for frequencies above 6k Hz. This switch is for player who wants a bright fret clicking sound.

4. BASS AND TREBLE TONE CONTROLS

The BASS and TREBLE tone controls are custom shaped controls to deliver punchy lows and crisp tight highs for a variety of bass sounds.

When the BASS control is turned to the right, it boosts the signal and when turned to the left cuts the signal. The effected frequencies are centered at 80Hz and can deliver a great deal of volume. Be careful not to distort the low end, especially with the LOW pre-shaping switch pushed in.

When the TREBLE control is turned to the right, it boosts the signal and when turned to the left, it cuts the signal. The boosted frequency for the TREBLE control is centered at 8k Hz.

5. MID SWEEP TONE CONTROLS (GAIN & FREQ.)

These two controls will take some time to learn how to use. First, the FREQ. control does not function if the GAIN control is set in the center "0" position. To demonstrate, turn the GAIN to the right for full boost. Now turn the FREQ. control from full left to full right and notice the added mids change frequencies as you play your bass. Now turn the GAIN to the full left and re-sweep the FREQ. control and notice the mids disappear at different frequencies. There are many variables as you can hear, so write down some of the settings for future reference. Unlike normal mid sweeps, Carvin's mid sweep system is tailored to gradually lower the gain in the harsher frequency ranges around 1k Hz. The mid sweep system is designed for fine tuning your overall sound. However, with the pre-shape filter switches already in your amplifier, you may not require the use of the mid sweep feature.

6. COMPRESSOR (COMP)

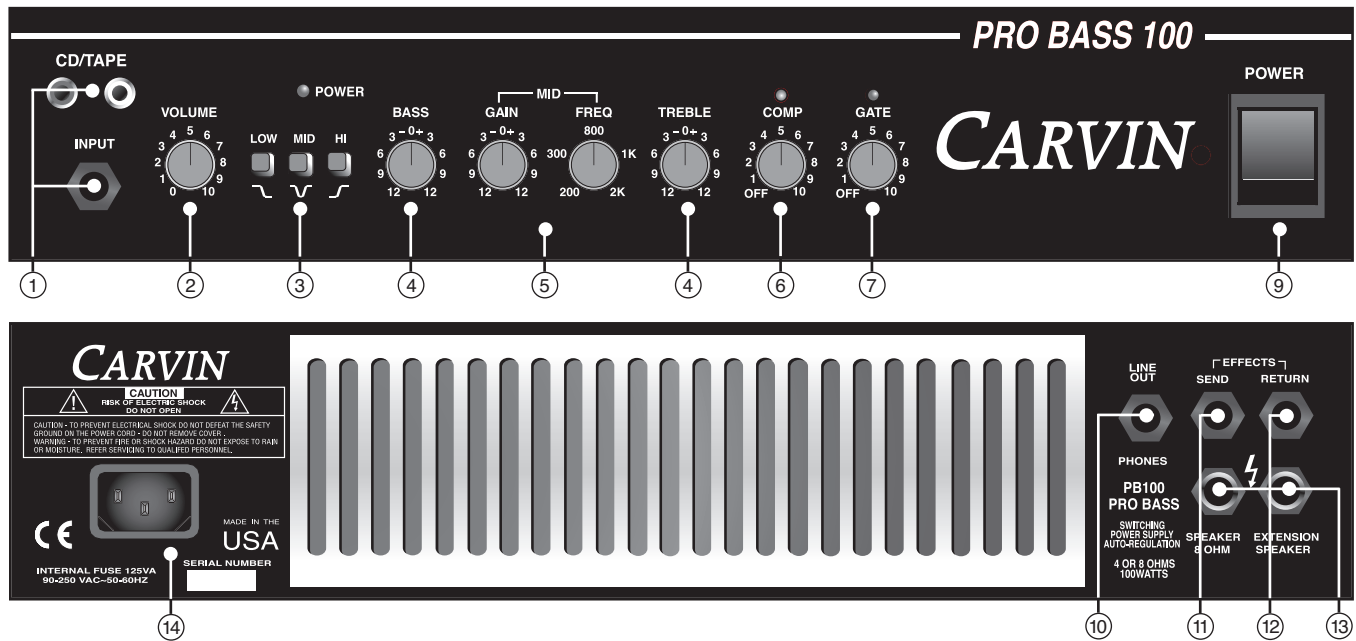
For some people, a compressor is a new feature. What it basically does is reduce (or compress) the volume of the incoming signal to conform to a preset maximum output level. This describes the COMP knob in the full-clock wise position where it functions as a limiter. As the knob is turned back (counter clockwise) the compressor lets a larger and larger percentage of the incoming signals to pass through. This percentage is called the "compression ratio". When the knob reaches the off position (full counter clockwise) the ratio is 1:1 were all the input signal passes through the compressor. The maximum compression ratio is 3:1.

The advantages of a compressor is to increase the overall level of playing (or the average level) and not have peaks or other sudden loud parts (transients). For example, in slap bass playing, the plucked notes can put out peaks that could distort the amplifier at normal playing volumes. On the other hand, if the amplifiers volume was adjusted for these peaks, the rest of the notes would be too quiet to hear. Now, when the compressor is adjusted to where the indicator LED comes on when the peaks are present, the amplifier can be played louder and still reduce the peaks without distortion. It's like having someone constantly and instantly re-adjusting the volume of the amplifier to prevent distortion when the peaks occur.

7. NOISE GATE

The noise gate may also be a new feature to some people, but it is a fairly simple tool for reducing pickup hum noise or any other noise on the input of the amplifier when the player is not playing. Think of the gate functioning like a door or (gate) at the input of the amplifier. When no input signal is detected the volume shuts down (as if a gate closes), therefore eliminating any noise picked up from entering the amplifier. Then when an input signal is detected, the volume is restored instantly (as if a gate was

PB100



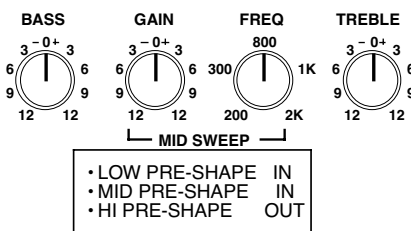
SUGGESTED SETTINGS PB100/PB200

The following are suggested settings for common bass sounds and styles. These settings provide a good starting point to get familiar with the PB200 and PB100's controls. Don't be afraid to make adjustments and experiment with the controls to find your particular sound.

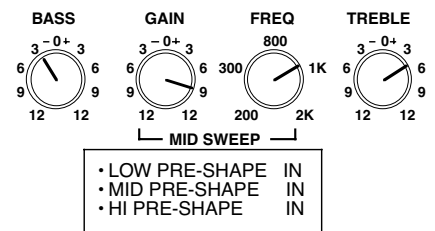
STANDARD FINGER



STANDARD SLAP



ACCENTED SLAP



FRONT & REAR PANEL CONTROLS CONT.

opened) and the amplifier runs as normal. The GATE control sets the amount of input signal required before the gate opens. It is best to set this level with one hand on the bass strings not playing and then turning the gate level control to where the gate LED just comes on. Then start playing, if the gate does not open fast enough, turn the GATE control counter clockwise until it feels comfortable. If the gate jumps in and out of gating when not playing, turn the control clockwise until it stops. This may need to be repeated several times until the desired gating action is achieved. Changing the level on your guitar will affect the setting of the noise gate.

8. PB200 5 BAND POST SHAPE EQUALIZER

5 band's of the GRAPHIC EQ have been custom shaped and selected for the bass guitar. The levels and tonal shaping of each band are customized individually unlike a standard graphic EQ to increase its usefulness and sweeten the sound of each band. Here are some references for the individual sliders to help relate the frequencies in hertz to perceived sounds.

- The 80Hz slider is for the ultra lows. Often used in the cut region to boost or reduce the low end.
- The 250 Hz slider is for the mid-low bass. The bass has a great deal of sound here, so this slider can change the sound drastically. Slide it up and down to hear what you like.
- The 500Hz slider is for the mid-bass frequencies. Like the 250Hz slider, there is a great deal of bass guitar here also.
- The 800Hz slider is for the bass guitar's high mids. This is where the mids start to get snappy, but they can also get honky.
- The 2KHz slider is for the bass guitar's highs. The crispy high's in slap bass playing start in the range of this slider.

ADJUSTING THE GRAPHIC EQ SLIDERS:

The best way to use the GRAPHIC EQ is to set all the sliders to their center detent positions. When the sliders are in this position, they do not affect the audio signal. After playing in this "flat" setting for a few minutes, raise one slider (to boost) and play a broad range of notes to hear the change. Then lower the same slider pass the center detent (to cut), play a few notes to hear the change and return the slider to the center position. Try this with each slider to hear what they do, then go back and adjust them together if needed for your sound.

9. POWER LED AND SWITCH

The power LED indicates when the amplifier is on and ready to use.

10. HEADPHONE/LINE OUT JACK

The 1/4" jack can be used for mono headphone or a line output to feed a mixer or power amp.

11. SEND JACK (EFFECTS LOOP)

The SEND jack is the output of the preamp. This jack, used in conjunction with the RETURN jack, makes up the external effects loop. The SEND jack is designed to put out the proper level for the input of an external effects processor.

12. RETURN JACK (EFFECTS LOOP)

The RETURN jack completes the effects loop in conjunction with the SEND jack. This jack is designed to receive signals from an external effects processor. When something is plugged into this jack it goes directly into the power amp portion of the bass amplifier and breaks the connection between the bass preamp and the internal power amp.

13. SPEAKER OUTPUT JACK(S)

The PB100 features 2 speaker output jacks designed for a single 8Ω speaker or a multiple of speakers that are wired for a total impedance of 4 ohms.

The PB200 features 3 speaker output jacks. 2 jacks are label 4Ω MIN. which are driven by two separate amps rated at 80 RMS watts each. You can use one or both of these jacks at the same time with loads as low as 4 ohms delivering 80 watts each for a total power of 160 watts.

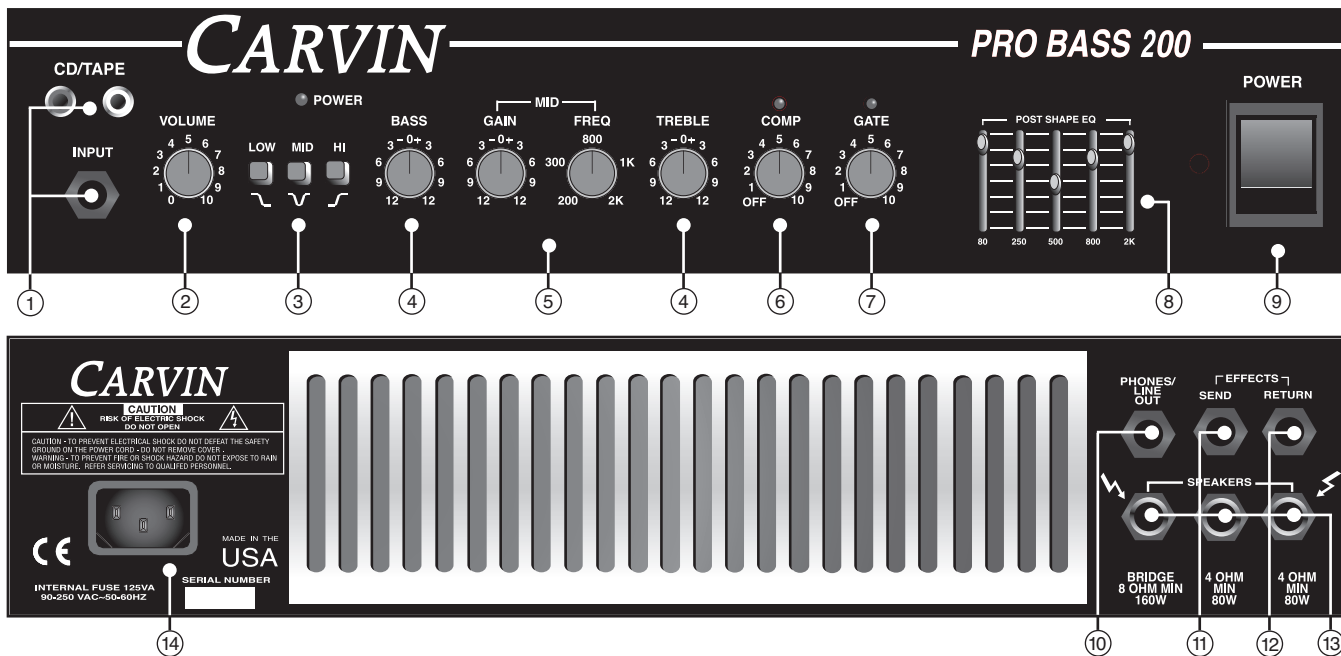
A third jack labeled BRIDGE 160W 8Ω MIN. takes the 2 internal power amps and ties them together to produce a bridged amp delivering a total of 160 watts into 8Ω. In order to use this jack, nothing can be plugged into either of the 4Ω jacks. If a 4 ohm speaker is used in the BRIDGE jack, the amp will go into protect mode and shut down. If this happens, change the speaker to 8Ω.

14. AC POWER & FUSE

The detachable AC POWER CORD supplied is designed to operate with one type of voltage (the European 230V export model uses a CEE-7 plug cord set). Check the rear power cord label for the proper voltage. Plug the cord into a grounded "3" prong" power source. No attempt should ever be made to defeat or use the amp without the ground connected.

The FUSE is located internally above the AC connector cord. To check or replace the fuse, remove the power cord. The fuse type is a 250V Fast Blow rated at 5A for 120V or 3A for 230V models.

PB200

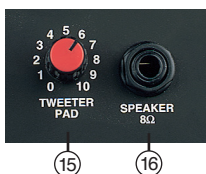


15. PB200 1" TITANIUM HF DRIVER LEVEL CONTROL (ENCLOSURE)

In the back of the PB200 there is a small jack plate with a level knob for the HF Driver. This level control adjusts the volume of the HF Driver and does not effect the 15" woofer.

The HF Driver level control is another way to increase or decrease the highs coming from your bass. If more highs are desired, the HF Driver level can be turned up (clock wise), or turned off if a warmer sound is desired.

Note: One thing to consider with the HF Driver volume is the direction the cabinet is facing. Because the combo amplifier's HF Driver is less than two feet off the ground, the listeners seated in front of the amplifier may be getting more of the HF Driver volume than you (the player) standing in front of the amplifier. So be conscious of the volume and direction of the HF Driver when adjusting.



16. PB200 SPEAKER CONNECTION (ENCLOSURE)

The 15" speaker cabinet is 8Ω and designed to handle 200 watts. This allows the cabinet to be plugged into the bridge output of the PB200 (This should already be done from the factory). In using the bridge output of the PB200, a full 160 watts will be delivered to the 8 ohm speaker.

If a case comes up where less power is needed or if the amplifier is too sensitive or loud, the combo cabinet can be plugged into one of the other two jacks labeled 4 OHMS MIN. This will deliver 50 watts at 8 ohms instead of 160 watts, reducing the power and sensitivity of the amplifier.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.



IMPORTANT! FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:

WATER AND MOISTURE: Appliance should not be used near water (near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

POWER SOURCES: The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

GROUNDING OR POLARIZATION: Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

POWER CORD PROTECTION: Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

SERVICING: The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

FUSING: If your unit is equipped with a fuse receptacle, replace only with the same type fuse. Refer to replacement text on the unit for correct fuse type.

SAFETY INSTRUCTIONS (EUROPEAN)

The conductors in the AC power cord are colored in accordance with the following code.

GREEN & YELLOW—Earth BLUE—Neutral BROWN—Live

U.K. MAIN PLUG WARNING: A molded main plug that has been cut off from the cord is unsafe. NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAIN PLUG INTO A POWER SOCKET.

LIMITED WARRANTY

Your Carvin product is guaranteed against failure for ONE YEAR unless otherwise stated. Carvin will service and supply all parts at no charge to the customer providing the unit is under warranty. Shipping costs are the responsibility of the customer. CARVIN DOES NOT PAY FOR PARTS OR SERVICING OTHER THAN OUR OWN. A COPY OF THE ORIGINAL INVOICE IS REQUIRED TO VERIFY YOUR WARRANTY. Carvin assumes no responsibility for horn drivers or speakers damaged by this unit. This warranty does not cover, and no liability is assumed, for damage due to: natural disasters, accidents, abuse, loss of parts, lack of reasonable care, incorrect use, or failure to follow instructions. This warranty is in lieu of all other warranties, expressed or implied. No representative or person is authorized to represent or assume for Carvin any liability in connection with the sale or servicing of Carvin products. CARVIN SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

When RETURNING merchandise to the factory, you may call for a return authorization number. Describe in writing each problem. If your unit is out of warranty, you will be charged the current FLAT RATE for parts and labor to bring your unit up to factory specifications.

HELP SECTION

1) AMP WILL NOT TURN ON

Check the power to the amp. Check for tripped circuit breakers, unplugged extension cords or power-strip switches that may be turned off. Check the fuse. If a dark brownish color or no wire can be seen within the glass tube, then replace. The amp may be perfectly fine but occasionally a fuse may blow because of high AC voltage surges. After the fuse has been replaced with the proper Slow Blow value and if the fuse fails again, the amp will require servicing.

2) NO OUTPUT with POWER LED light ON

Check the speaker cable. If OK, it's possible that a speaker jack is defective. Check the SEND & RETURN jacks as one of these jacks could be defective. Insert a guitar cord between these two jacks to test. Defective jacks will require servicing.

3) KEEP YOUR AMP LOOKING NEW

Use a damp cloth to wipe the controls on the front & rear chassis panels. Wipe dry! Brush the lint off the Duratuff II™ covering.

REPLACEMENT PARTS LIST (for circuit cards)



CAUTION
RISK OF ELECTRIC SHOCK

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL! THIS UNIT CONTAINS HIGH VOLTAGE INSIDE!

Carvin P/N	Description	Ref. Des.	Carvin P/N	Description	Ref. Des.	Carvin P/N	Description	Ref. Des.
06-40050	1 EACH TERMINAL VERT MALE PC MTG .250	QC5	58-10015	2 EACH 10.5 SMT .25W 1206 1%	R31, R32	60-75200	4 EACH DIODE GEN RECT MR752 6A 200V D32, D33, D34	D31,
06-40060	5 EACH TERMINAL 90deg MALE PC MTG .250 QC2, QC3, QC4, QC6	QC1,	58-10035	11 EACH 1K SMT .25W 1206 1% R102, R111, R131, R133, R136*, R150*, R38, R43, R86, R99*	R101, R102, R111, R131, R133, R136*, R150*, R38, R43, R86, R99*	60-50253	1 EACH OPTO ISOLATOR VACTROL AXIAL	OP1
21-06457	3 EACH JACK .250" 7 PIN 24MM PLASTIC J11, J12	J10*,	58-10045	16 EACH 10K SMT .25W 1206 1% R121, R167*, R17, R178*, R18, R186*, R24, R25, R26, R69, R70, R94, R30, R115*, R139*	R120, R121, R167*, R17, R178*, R18, R186*, R24, R25, R26, R69, R70, R94, R30, R115*, R139*	60-55500	4 EACH TRANS 2N5550 HV NPN 250V T0-92 Q2, Q23*, Q25*	Q11,
21-31100	1 EACH RECEPTACLE AC W/FAST-ON CHASS	PL1	58-10055	8 EACH 100K SMT .25W 1206 1% R14, R78, R48*, R135*, R138*, R100, R105	R13,	60-75320	3 EACH LED RED DIFFUSED 3MM T-1.00 D2, D3	D1,
21-40020	1 EACH JACK RCA DUAL PC VERTICAL MTG	J4	58-10065	3 EACH 1M SMT .25W 1206 1% R40, R41	R20,	60-78120	1 EACH REGULATOR VOLTAGE 12 +V 500mA	Q26
21-50345	4 EACH JACK .250" PHONE MONO PCB MTG J3, J5	J1, J2,	58-15045	4 EACH 15K SMT .25W 1206 1% R56, R67, R73	R125,	60-79120	1 EACH REGULATOR VOLTAGE 12 -V 500mA	Q27
23-03529	2 EACH FUSEHOLDER CLIPS 3AG VERT MTG	F1	58-15045	4 EACH 15K SMT .25W 1206 1% R56, R67, R73	R125,	62-04391	1 EACH TRANSISTOR SMT MMBF4391LT1	Q14
23-11004	4 EACH CONNECT HEADER 4 PIN STRAIGHT H1A, H7A, H7B	H1A,	58-15055	3 EACH 150K SMT .25W 1206 1% R3, R79	R175*,	62-04739	3 EACH SMT DIODE ZENER 4739	Z11,
23-11010	2 EACH CONNECT HEADER 10 PIN STRAIGHT H3A, H3B	H3A,	58-22025	2 EACH 220.5 SMT .25W 1206 1% R137*	R104,	62-06001	4 EACH DIODE ULTRA FAST 600V 1A SMA D35, D36, D37	D26,
23-15605	1 EACH CONNECT HEADER .156" 5 PIN	H2	58-22035	12 EACH 2.2K SMT .25W 1206 1% R109, R110, R116, R124, R155*, R34, R35, R95*, R97*, R98*, R123	R106, R109, R110, R116, R124, R155*, R34, R35, R95*, R97*, R98*, R123	62-19140	11 EACH 1N914 HI SPD SMT 250mW DIODE D11, D13, D14, D4, D5, D6, D7, D8*, D9*, D12	D10,
25-02201-1	3 EACH ASSEMBLED SWITCH AND CAP S3	S1, S2,	58-22045	16 EACH 22K SMT .25W 1206 1% R11, R117*, R129, R140*, R23, R39, R5, R52, R55, R62 R63, R74, R8, R81, R9	R10,	62-29010	1 EACH NJM2901 SMT SINGLE SUPPLY	A6
41-47322	1 EACH CAP MYLAR .0470UF 250VAC BOX	C33	58-22055	7 EACH 220K SMT .25W 1206 1% R173*, R177*, R65, R7, R77	R171*,	62-45650	9 EACH NJM4565 SMT DUAL HI FREQ A8*, A9*, A1, A10, A2, A3,	A11*,
42-47251-1	2 EACH CAP ELEC 4.700 MFD 50V 20%	C98, C99	58-27025	4 EACH 270.5 SMT .25W 1206 1% R53, R50, R76	R152*,	62-54001	16 EACH MMBT5401LTI PNP SOT-23 SMT Q12, Q13, Q15, Q16*, Q17*, Q21*, Q24*, Q3, Q4, Q5, Q6, Q8, Q22, Q28	Q10,
47-22151	1 EACH CAP ELEC 220 MFD 50VOLT 10%	C90	58-33035	4 EACH 3.3K SMT .25W 1206 1% R22, R75, R90	R21,	62-55500	5 EACH MMBT5550 NPN SOT-23 Q19*, Q20*, Q7, Q8	Q1,
47-10225-1	2 EACH CAP ELEC 1.000 MFD 25V 20%	C94, C96	58-33045	6 EACH 33K SMT .25W 1206 1% R57, R60, R83, R85, R29	R12,	70-05713	2 EACH RELAY SPDT 12A@120VAC/24V COIL K2*	K1,
49-10312	16 EACH 0.01UF SMT 10% FILM 080550V C17, C21, C22, C23, C24, C28, C3, C51, C6, C65*, C73*, C8 C82*, C93, C95	C104, C17, C21, C22, C23, C24, C28, C3, C51, C6, C65*, C73*, C8 C82*, C93, C95	58-36055	4 EACH 365K SMT .25W 1206 1% R68, R82, R93*	R169*,	70-21050	1 EACH FUSE ABC 5.00A FAST 6.35X32MM	F1
49-10451	6 EACH 0.1 uF SMT 10% FILM 1206 50V C7, C71*, C72*, C74*	C1, C14, C7, C71*, C72*, C74*	58-36055	4 EACH 365K SMT .25W 1206 1% R68, R82, R93*	R169*,	71-09252	3 EACH POT 9 "D-P" 25F B50K-CC P3, P4	P2,
49-22035	15 EACH SMT CAP 22uF 35V ELECTROLYTIC C100, C102, C107, C108, C12, C25, C26, C29, C47*, C48, C55*, C56*, C60, C91	C10, C100, C102, C107, C108, C12, C25, C26, C29, C47*, C48, C55*, C56*, C60, C91	58-39035	2 EACH 3.9K SMT .25W 1206 1% R174*	R172*,	71-09253	4 EACH POT 9 "D-P" 25F B50K- P5, P6, P7	P1,
49-22212	3 EACH 0.0022UF SMT 10% FILM 0805 50V C78*	C106, C76*, C78*	58-43045	1 EACH 43K SMT .25W 1206 1%	R64	71-10320*	5 EACH FADER 20MM SL20V3-B10K-L15D(G) P9*, P10*, P11*, P12*	P8*,
49-22312	1 EACH 0.022UF SMT 10% FILM 0805 50V	C20	58-47015	3 EACH 47.5 SMT .25W 1206 1% R119*, R89	R112,	58-18035**	2 EACH 1.8K ON PB100 **R191	**R190,
49-25152	3 EACH 220PF SMT 5% CERAMIC 0805 C34, C92	C27,	58-47025	2 EACH 470.5 SMT .25W 1206 1% R146*	R1,			
49-27052	2 EACH 27 PF SMT 5% CERAMIC 0805	C30, C49	58-47035	6 EACH 4.7K SMT .25W 1206 1% R168*, R170*, R176*, R91, R88	R132,			
49-33152	2 EACH 330PF SMT 5% CERAMIC 0805 C52*	C11,	58-47045	16 EACH 47K SMT .25W 1206 1% R107, R108*, R118, R15, R166*, R19, R192*, R27, R28 R6, R37, R71, R72, R84, R96*	R103, R107, R108*, R118, R15, R166*, R19, R192*, R27, R28 R6, R37, R71, R72, R84, R96*			
49-33212	3 EACH 0.0033UF SMT 10% FILM 0805 50V C19, C75*	C16,	58-47055	3 EACH 470K SMT .25W 1206 1% R66	R92, R4, R66			
49-33312	2 EACH 0.033UF SMT 10% FILM 0805 50V	C79*, C9	58-68015	1 EACH 68.5 SMT .25W 1206 1%	R80			
49-39052	5 EACH 39PF SMT 5% CERAMIC 0805 C50, C53, C54, C69*	C46,	58-68025	2 EACH 680 SMT .25W 1206 1% R49	R151*,			
49-47312	7 EACH 0.047UF SMT 10% FILM 0805 50V C18, C31*, C32, C4, C62, C77*	C13,	58-68035	5 EACH 6.8K SMT .25W 1206 1% R36, R87, R122, R16	R33,			
49-56152	3 EACH 560PF SMT 5% CERAMIC 0805 C64, C81*	C15,	58-68045	1 EACH 68K SMT .25W 1206 1%	R61			
49-82052	7 EACH 82PF SMT 5% CERAMIC 0805 C2, C5, C67*, C70*, C80*, C83*	C103,	58-91025	3 EACH 910.5 SMT .25W 1206 1% R191**, R44	R190**,			
55-03300	4 EACH RES .33 OHM 5W 5% SB VERT R114, R127*, R128*	R113,	60-00142	2 EACH TRANS NPN TIP142 TO-218 Q34*	Q32,			
58-00035	4 EACH 0.0 SMT JUMPER 1206 R51, R54, R130 (B1, B2, B3, B4, B5 PB100 ONLY)	R156*,	60-00147	2 EACH TRANS PNP TIP147 TO-218 Q33*	Q31,			
58-02207	1 EACH 22 SMT 1W 2512 20%	R42						