



## **MODEL 502HV<sup>®</sup>** **(1996 - MSRP \$1099)**

# **OWNER'S MANUAL AND INSTALLATION GUIDE**

### **502HV<sup>®</sup> COMPETITION CHALLENGER**

A new approach in competition amplifiers is here...The **LINEAR POWER<sup>™</sup> 502HV<sup>®</sup>** amplifier is a 25-watt per channel amplifier with extremely low distortion and lots of dynamic headroom. We have utilized **TO-3** transistors throughout the amplifier for the highest reliability and unmatched sound quality.

**LINEAR POWER<sup>™</sup>** designers and engineers listened to the suggestions of seasoned competitors to find the right foundation for this amplifier. We chose an amplifier that has been tried and tested in challenging situations. We then took the next step of deciding on an operating format that went against conventional competition designs. **LINEAR POWER<sup>™</sup>** engineers were convinced that the **HV<sup>®</sup> (HIGH VOLTAGE)** competition amplifier would be much more stable and controllable, establishing high damping factor and unmatched dynamic headroom, than ANY high current design amp. Distortion at rated power is extremely low and the unregulated power supply is capable of delivering serious output when needed - **NOT to extremely low impedances - but to higher impedances where sound quality can be assured.** This can be done due to the extreme **HIGH VOLTAGE** design of the **HV<sup>®</sup>** amplifier. There is no need to have low impedance loads to stress the amplifier to make power. The minimum operating impedance of the **502HV<sup>®</sup>** is **2 ohms stereo** or **4 ohms mono**, eliminating the need for multiple drivers to lower the impedance load to get maximum power output. A benefit of **HIGH VOLTAGE** design is less heat and lower current draw from your electrical system, at the same time, delivering the power that you want.

Features include the **LINEAR POWER<sup>™</sup> DYNAMICS IMPROVING PROCESSOR<sup>®</sup>** or D.I.P. "Bass Boost" switch, which adds **6dB** of gain at **45 Hz** for that additional 'OOMPH', if needed. The **502HV<sup>®</sup>** also has an inverted channel so that the amp will bridge without the use of an internal bridge switch or external bridging module. This inverted channel also allows the **502HV<sup>®</sup>** to play in stereo/mono mode simultaneously. With all the **502HV<sup>®</sup>** delivers, it could be the final element needed to dominate competitions.

## WIRING

Disconnect battery ground cable before making any power connections.

**RED WIRE:** +12 volts. Connect directly to battery positive terminal and should be fused within 18 inches from the battery and another fuse where the connection to the amplifier is made. Remember to use the proper size fuses. The **Model 502HV®** uses a **SC60** fuse. This may appear to be a small fuse size, but the **Bussman SC series** fuse is a fiberglass cased, silica (sand) filled ¼ diameter fuse able to take many times its rating for peak current demands over several seconds without blowing, but is still able to protect the amp from sustained current draws in excess of its rating.

**WARNING: USING OVERSIZED FUSES IS DANGEROUS AND WILL DAMAGE YOUR AMPLIFIER!**

**BLACK WIRE:** Negative Ground. Connect to clean unpainted metal surface on car chassis.

**RED/WHITE WIRE:** Remote turn on lead requires 12 volts; connect to power antenna lead from radio. When this is not available, you may connect to a +12 volts wire that is on with the ignition on or in the accessory position.

**RCA CONNECTIONS:** Connect with quality-shielded patch cords from source, crossover, or any other sound processor.

**SPEAKER CONNECTIONS:** Connect speaker terminals to amplifier, facing the terminal, left to right, **Left (-)**, **Left (+)**, **Right (-)**, and **Right (+)**. For **mono** operation use **left positive (+)** and **right negative (-)**. These amplifiers are capable of **2-ohm** operation in **stereo** or **4 ohm** in **mono**.

**OPERATING THE AMPLIFIER AT LESS THAN THESE RATINGS WILL CAUSE AMPLIFIER FAILURE AND VOID YOUR WARRANTY.**

**NOTE:** The **502HV®** has internal taps for 2-ohm operation. To access, remove bottom cover. They are located about the middle of the amplifier and are set to 4 ohms at the factory. To change to 2-ohm operation, pull the quick disconnects off the taps marked "4" and place them on the taps marked "2". This will ensure safe operation into **2-ohm stereo** loads, as well as, **4-ohm bridged** loads.

**502HV® BASS BOOST:** This switch is accessible through a plug on the bottom of the amplifier. In the on position it redistributes power in the bass region to help overcome factors in the mobile environment that limit bass response. This "bass boost" is a carefully measured EQ curve to enhance performance if needed. The boost occurs at 45 Hz.

## OPERATION / ADJUSTMENT

The output of most any car audio equipment will follow a common distortion curve. This curve will show that the distortion is at its lowest level right before it reaches full rated output. After that point, the distortion increases rapidly to unusable levels.

For any system to operate at minimum distortion with minimum noise and still reach full power output, the equipment should all be aligned to operate at the same point on the curve at the same time.

In a basic system, using a single amplifier, set the amp gain to minimum, turn the deck up until it just starts to distort, then back the deck down slightly. This is the point where the output of the deck is cleanest. Now, bring the gain of the amp up until it just starts to distort, and back it down slightly. This will allow the amp to reach maximum useable output at the same time.

## WARNING

Your new **LINEAR POWER™ 502HV®** amplifier, when used in conjunction with many of the efficient speaker systems on the market today, can produce sound pressure levels that are considered harmful to your hearing.

Exposure to loud music may lead to loss in hearing. This effect may not be readily appreciated because the damage to hearing is progressive. Those who are exposed to excessive sound pressure should utilize direct individual protection in the form of earplugs or earmuffs, which are specifically designed for noise reduction.

In accordance with the **OSHA** (Occupational Safety and Health Act) regulations for noise levels as they relate to the work area, excessive sound pressure is defined as **115db(a)** continuous for any length of time.

We recommend that you exercise restraint while enjoying the performance of this and other high-powered mobile audio equipment.

## MOUNTING

1. The amplifier works best if it is kept as cool as possible. Mount in a position that allows air to flow freely through the fins. Be sure there is ample space above the amplifier to avoid trapping heated air rising from the amplifier. The amplifier should not be mounted upside down. Avoid mounting any amplifier in the dash or on the firewall to avoid noises being radiated directly onto the case.

2. The case of your amplifier is designed to act as a noise shield. To maintain this protection, be sure the metal case of the amp does not touch the metal of the

car. Do not remove or damage the rubber grommets, which provide electrical insulation and vibration isolation.

## **GENERAL TROUBLESHOOTING**

**NO SOUND:** Check all connections. Check fuses. With a meter be sure there is +12 Volts on the main power wire and the turn on wire, but not on the ground wire. Check by substitution or other method for proper operation of music source.

**BLOWS FUSE:** Check all connections to be sure all power wires and speaker wires do not touch ground or each other. Re-check polarity of main power wires.

**SHUTS OFF:** This amplifier is equipped with a thermal and short circuit protection. In the unlikely event of excessive temperature or improper speaker impedances, the amp will turn itself off. When the condition is corrected (temperature decreases or speaker short is fixed), the amp will turn itself back on. To avoid damage to the speakers, turn volume to a minimum while waiting for the amp to turn itself back on.

## **SERVICE OR REPAIR**

To obtain service or repair, please contact our authorized **LINEAR POWER** product service center:

**T.I.P.S. INC.**  
3599 Old Brandon Road  
Pearl, MS 39208  
(601) 932-8477  
E-mail: ray@tipsinc.net

**LINEAR POWER** <sup>TM</sup>  
3455 LANELL LANE, PEARL, MS 39208 (601) 932-8477

## SPECIFICATIONS

### 502HV<sup>©</sup>

<b>Power Output @ 4 Ohms</b>	250 x 2
<b>THD @ full output 20 - 20Khz</b>	.02%
<b>Slew Rate (volt/microsecond)</b>	16V/ms
<b>Damping Factor @ 4 ohms/@ 2 ohms</b>	210 / 105
<b>Headroom</b>	3 dB
<b>Maximum current</b>	
4 ohms	70A
2 ohms	90A
Idle	2A
<b>Fuse rating (SC60 AMP slow blow fuse)</b>	60A
<b>Dimensions</b>	3.0"x 9.5"x14.5"

**LINEAR POWER** <sup>TM</sup>  
3455 LANELL LANE, PEARL, MS 39208 (601)932-8477