



VTL

IT-85 Integrated amplifier

Owner's Manual

MAKING TUBES USER FRIENDLY

VTL IT-85 Integrated Amplifier

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Introduction

Congratulations on your purchase of the VTL pure tube IT-85 Integrated amplifier.

This hand crafted equipment is designed to deliver superb performance for your listening pleasure for many years to come. Please take a moment to read through this owner's manual, as it contains all of the installation procedures needed to connect your new IT-85 to the rest of your audio system, as well as the various functions the IT-85 can perform. Please take enough time to get familiar with the features of this product. After you have finished reading this manual please keep it in a safe place for future reference.

The VTL team is proud that you have selected the VTL IT-85 Integrated amplifier as the newest member of your home audio system. The IT-85 is designed to give you the convenience and flexibility to manage all of your audio sources, while at the same time easily integrating into your existing home theater system.

The VTL IT-85 is a true integrated amplifier, insofar as it has both a full line level preamplifier and a complete amplifier section in one compact package. We have chosen this route over the "high gain amplifier with passive volume control" approach for several reasons.

Integrated amplifiers (ie. amplifiers that are both preamplifier and power amplifier) offer the user many benefits that separates cannot, primarily simplicity and space efficiency, coupled with some cost savings that is realized from eliminating a chassis, power supply, and a pair of interconnects to connect the two chassis. Ease of installation is another primary benefit with integrated amplifiers.

Yet another benefit from integrating the line preamplifier and power amplifier into one package is the elimination of the output buffer stage that is required on a typical preamplifier. Even though the output stages used today are very transparent sounding, absolute sonic purity dictates that any circuitry that is not needed is better left out. The reason a buffer is needed on an output stage in a preamplifier is to lower the output impedance to drive the next stage (usually a power amplifier, with unknown input impedance) and/or the interconnecting cable, with its capacitance.

When the power amplifier input impedance is known, (as it is in an integrated amplifier), this impedance matching circuit can be left out entirely, which gives a direct connection between these two necessary stages.

A line stage with gain (and therefore dynamic headroom) always yields superior sound in dynamic musical passages. This approach allows the use of a buffered preamplifier out, for a subwoofer or for bi-amplifying. (Check the relevant section in this owners manual for further details.)

Finally, the VTL IT-85 Integrated amplifier is designed primarily for the user whose primary source is a line source. If phono is a primary source then a separate phono stage will be required to step the cartridge voltage up to line level and to handle the RIAA equalization needed to re-equalize the signal from the record. Since this stage is usually a high gain stage and is therefore susceptible to noise, it is sonically better to separate this stage from the power amplifier and its high power fields anyway, so including this stage into an integrated amplifier would not be of much benefit.

Symbol Conventions used in this guide

Certain symbols are used in this owner's manual to draw your attention to important points being discussed. For your own safety and that of your equipment you should note and heed the warnings that follow these symbols.

The "Warning - Pay particular Attention" symbol used is



And the "Warning – Observe These Precautions for Your Safety" is



Electrical Safety Notice

Electrical voltage from power cables can be hazardous. We recommend that the power cord used with this unit be connected to a properly grounded AC outlet. To prevent electrical shock, do not remove the cover of the IT-85, especially while the unit is powered on.



Water and Moisture

The IT-85 should be kept away from sources of water or moisture. If liquid enters the unit it must be immediately returned to your dealer for servicing. In this case you should under no circumstances try to power the unit on - there are hazardous voltages present in this unit that can cause serious injury if they come in contact with you.





Location and Ventilation

Install the IT-85 in a location that is stable and well ventilated. If the IT-85 is placed in a built-in installation, ensure that there is adequate room for a supply of air to flow through the ventilation openings. Allow at least 9 inches clearance on the top and around the sides of the IT-85. Do not place the IT-85 next to heat sources such as radiators, stoves or other appliances. Be sure the IT-85 is at least 10 inches away from your turntable to prevent possible noise introduction into your system. Tiptoes or other isolation accessories may prove useful in reducing mechanical vibrations. Do not place the IT-85 on the floor where small children can tamper with the equipment. If it is not possible to place the IT-85 out of the reach of small children it is recommended that you remove power cables when the equipment is not in use.



Servicing

Do not attempt to service the IT-85 beyond the procedures described in this manual. For all other service and questions, please contact your authorized VTL dealer or the factory.

Operational Warnings

- ➔ **Do not touch the tubes after the IT-85 is turned on.** Tubes can get very hot while the IT-85 is operating. Turn off the IT-85 and allow the tubes to cool down before attempting to work with the tubes.
- ➔ **Do not attempt to disassemble the IT-85 chassis or remove any covers from the IT-85.** Always consult with your VTL authorized dealer or the VTL factory support department before attempting any service work on any VTL unit.
- ➔ Always connect your loudspeaker to the amplifier before powering the IT-85 on. Operating the IT-85 without a speaker load connected can damage the output transformer, and will not be covered under the warranty. Also, ensure that no speaker cables can become loose during use and that there are no intermittent faults with the cables.
- ➔ Tube amplifiers are heavy and awkward to lift, with the weight unevenly distributed, and you should not attempt to move the unit without help. The IT-85 Integrated amplifier weighs approximately **55 lbs. (26.5 Kg)**.
- ➔ Do not attempt to make or break any connections to the IT-85 while the unit is powered on as this can damage the IT-85 and/or the rest of the system, and this damage is not covered by warranty.





→ If this unit has tetrode/triode switch, do not flip the triode tetrode switches while the unit is powered on, as this can damage the switch and is not covered under warranty.



→ Do not exceed fuse ratings or attempt to bypass any fuses, as this can cause an extremely hazardous condition and will void any warranties. Use only the same type and rating of fuses as specified in the owners' manual and marked on the unit.

Getting Started

Unpacking the IT-85 from its box



The VTL IT-85 Integrated amplifier is shipped in a carton and wrapped in thick plastic. The plastic is not strong enough to support the unit, and may tear if you try to lift the unit out of the box with it. Also there are protruding switches which could break if the unit is not properly handled, and in addition to the awkward, unbalanced heavy load the unit has a cleaning polish on it which makes it slippery and hard to grasp. We have found that the best way to remove the IT-85 from the box is as follows:

1. With the box on a thick carpeted floor, fold back all the flaps of the top of the carton, leaving all the packing foam in place. Roll the carton onto one long side on top of the flap.
2. Roll the box once more onto the open top and, making sure that none of the flaps is trapped under the carton, lift the carton off the unit.
3. Rotate the IT-85 onto one of the foam ends.
4. Lift the top foam away from the unit and carefully cut away the plastic from around the IT-85.
5. Rotate the IT-85 onto the other end and lift off the other piece of foam and the plastic.
6. Rotate the unit onto its bottom so that it lands on its four rubber feet.
7. When lifting the unit, be sure to only lift it from the bottom under the transformers. Be careful not to break any switches. Be sure to only set the IT-85 down on its bottom side on the four rubber feet on a stable surface. Setting it on any other side may damage protruding components.

If the unit is too heavy or too awkward to lift then do not attempt to do this by yourself, but rather find someone to help you. Save the carton and all packaging for any future shipment of the IT-85.

After you open the carton you should find the following items inside:

- The VTL IT-85 Integrated amplifier
- A power cord for the electrical system in your country.
- The remote control hand-held unit
- This User Manual, VTL Quality Assurance and test documents, VTL product warranty registration card

Remove each item from its packaging material and check to make sure that no physical damage has occurred during shipping of the unit. There should be no rattles inside either of the IT-85 or remote control units. Look through the vent slots and check to see that the tubes appear properly seated firmly in their sockets. Contact your VTL dealer immediately if physical damage is detected.

Check for tube placement

Use the following procedures to check whether the tubes standing on the deck of your IT-85 are placed firmly in their sockets, as the tubes can become dislodged and loosen during shipping of the IT-85.

Visually inspect through the vent holes to ensure that all tubes are fully seated before powering the unit on for the first time. If there are any tubes not fully seated then you should refer to your VTL dealer, and take this procedure with the unit.

Notes for the servicing/installing technician:

1. Remove the protective wire cage on the top deck of the IT-85. The cage is mounted with two screws on each side of the IT-85. Loosen the screws and lift the wire cage slowly and carefully. Do not let the cage touch or hit any of the tubes inside the IT-85. Keep the cage and the screws in a separate place while you're working on the IT-85.
2. Make sure that the IT-85 is not connected to the power outlet and not turned on. Use your fingers to hold onto the upper portion of the tube towards its tip. Gently rock the side of the tube to see if there is any movement in the tube. If there is any movement that means the tube has come loose. Press the tube firmly into its socket, using a gentle force and a slight "rocking" motion.
3. Repeat the above procedure for the rest of the tubes. There are a total of four output tubes and six input tubes in the VTL IT-85 integrated amplifier.
4. Proceed to the connection and power up steps in this manual, watching for any unusual glow in the tubes when powering up for the first time.

5. Check that the tubes are stable under idle current draw into the desired loudspeaker load and with all source components powered on (refer to the checking bias section of the manual for instructions on how to do this).
6. Once the unit is functioning correctly, put the protective cage back onto the IT-85 unit. Tighten the screws to make sure that the cage is securely fastened to the unit.

IT-85 Front Panel

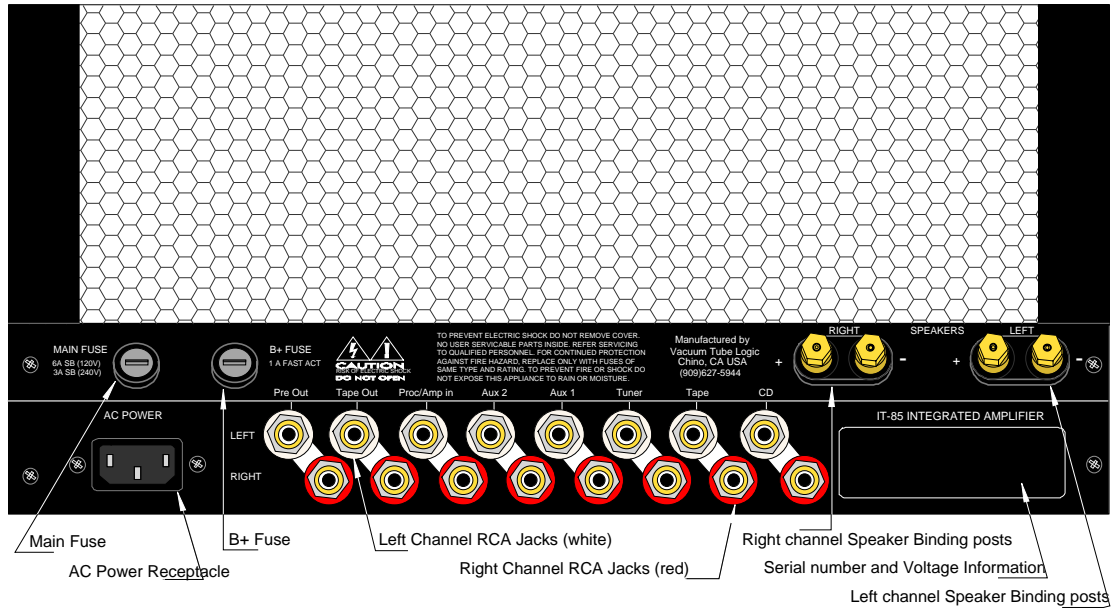


The full functionality of the VTL IT-85 Integrated amplifier can be accessed from the front panel controls and switches. The following is a description of each control and its function.

- ➔ The *Input Selector* is used to select the source component for the preamp section of the IT-85. Choose any one of the 5 inputs by turning the selector knob to the location as marked by the knob.
- ➔ The *Headphone output Jack* accepts a 1/4 inch stereo headphone jack. Insertion of the headphone jack automatically mutes the pre-out (and subwoofer / Bi-amp).
- ➔ The *Headphone/Speaker selector switch* is used to select between the use of headphones or loudspeakers. Switching to headphone mutes the loudspeakers.
- ➔ The *Volume Control* knob changes the loudness level of the output from the pre-amp section to the amplifier section. Turning the knob clockwise will increase the volume level, and turning the knob counter-clockwise will decrease the volume level.
- ➔ The Amp in/external *Processor* loop selector switch: In the default-operating mode of the IT-85, this switch stays in the down position. This means that the IT-85 is receiving the signal from the selected source component (ie the volume is controlled by the preamplifier section of the IT-85.) In the *Processor* position the amplifier section of the IT-85 can be driven directly by an external source (eg. a surround processor in home theater systems,) thereby bypassing the IT-85's preamplifier section and allowing the external surround processor to control the volume of the front left and right channels. Engaging the *Processor* position automatically mutes the pre-out.
- ➔ The *Mute* switch is a momentary switch to allow you to toggle the preamplifier section of the IT-85 between the mute and ready states. If the IT-85 is currently in the operate mode press the switch down to mute. The *Status* LED light will start flashing, indicating that the preamplifier section is in mute state. If the IT-85 is already in mute state, pressing this switch down again will change the system back into the operate mode.
- ➔ The Remote Receiver window allows the transmission of signal from the remote hand-held unit to be received by the IT-85. Keep this window clear from obstruction to allow maximum signal transmission.
- ➔ The *Power On/Off* switch is always used to turn the IT-85 on and off. Press the switch up to turn the IT-85 ON and down to turn the unit OFF. The *Status* LED should be on or off respectively, according to the setting of the *Power On* switch.
- ➔ The *Status* LED indicates the powered on status of the IT-85. When powered on, the LED light will blink to indicate the pre-amp section is muted, and then after 30 seconds, the LED will switch to steady state, indicating that the IT-85 is in operating state. The LED is off when the system is powered off.

The IT-85 Rear View

From the IT-85's back panel, you can access the inputs, outputs, power connector, the main fuse and B+ fuse holders, the serial number and voltage setting of the unit.



→ The *Main Fuse Holder* contains the main power fuse.

→ CAUTION: Replace fuses only with fuses of same type and rating.

→ The *Power Receptacle* is used for connecting the IT-85 to the AC power from a wall outlet using the power cord.

→ The *B+ Fuse Holder* holds the B+ fuse

→ CAUTION: Replace fuses only with fuses of same type and rating.

→ The *RCA Jacks*. 5 pairs of single-ended line inputs to connect your source components to the preamplifier section of the IT-85, including CD, Tape, Tuner, Aux 1 and Aux 2, and 1 pair processor loop/IT-85 inputs. 2 pairs of outputs include 1 pair buffered pre-outs, and 1 pair fixed record outputs.

→ The *Right channel binding posts*. Connect right channel speakers to these binding posts (make sure to observe the “+” and “-“ markings).

→ The *Left channel binding posts*. Connect left channel speakers to these binding posts (make sure to observe the “+” and “-“ markings).

→ The *Information label* contains Serial number and voltage information.



Connecting the VTL IT-85 Integrated amplifier to your system

Caution: Prior to connecting the VTL IT-85 Integrated amplifier to any audio equipment in your system, make sure this unit's power (and the rest of the equipment connected to its input and output channels) is turned off. Adding or removing input or output cables to the IT-85 while the system is powered on can cause damage to the system.



1. Before powering up your system, Make sure that the IT-85 and the source components are powered off. Connect all source components (e.g. CD, Tuner, Tape, DAT, Video Player etc.) to the inputs of the IT-85. For example, connect the analog output cables from the CD player or DAC to the CD input connectors of the IT-85. Use appropriate interconnects for the different sources. If a direction indicator is printed on the cable make sure that the cable is connected to the source and the IT-85 in the appropriate direction (arrows pointing in the direction the signal will travel, i.e. from the source to the IT-85.) It is also important that the left and right channels from the source components are connected to the corresponding left and right channels of the IT-85 preamplifier section.
2. Connect Surround Sound Processor to the IT-85 (if applicable). To take advantage of the Surround Processor loop capability, connect the front left and front right out of the external surround processor to the processor/amp in left and right on the IT-85.
3. Connect the Tape input and output cables to the IT-85 (if applicable). To take advantage of the tape record function, connect the *Tape Out* on your tape deck to the *Tape in* on the IT-85 and connect the *Tape Out* on the IT-85 to the *Record In* on your tape deck.
4. Connect your speaker cables to the speaker binding posts. Follow the “+” and “-” markings on the binding posts, as well as the right channel and left channel markings in the IT-85.
5. Connect either your subwoofer line in to the pre-out, or your subwoofers speaker binding posts to the IT-85 speaker binding posts (if applicable), or the second IT-85 to the IT-85 pre-out (in a Bi-amplified system)(if applicable).
6. Connect headphones if desired (only connect headphones when in use, as inserting the plug into the headphone jack will automatically mute the pre-out).

7. Connect the supplied power cord to the AC receptacle on the back of the IT-85. If you need a replacement and you are not sure what the appropriate cord should be, consult your authorized VTL dealer or the VTL factory customer support department.



Caution Before connecting the power cord into the wall outlet be sure to read the next 2 very important sections on voltage setting and power source for the IT-85

Voltage Setting

Your VTL IT-85 integrated amplifier has been set to the correct voltage for your country where you made your purchase. The voltage setting is marked on the Serial Number Badge located on the back panel of your IT-85.



→Caution: Check to make sure that the voltage setting on your IT-85 is correct for your local voltage rating before plugging in and turning on your IT-85.

Power Source for the VTL IT-85 Integrated amplifier



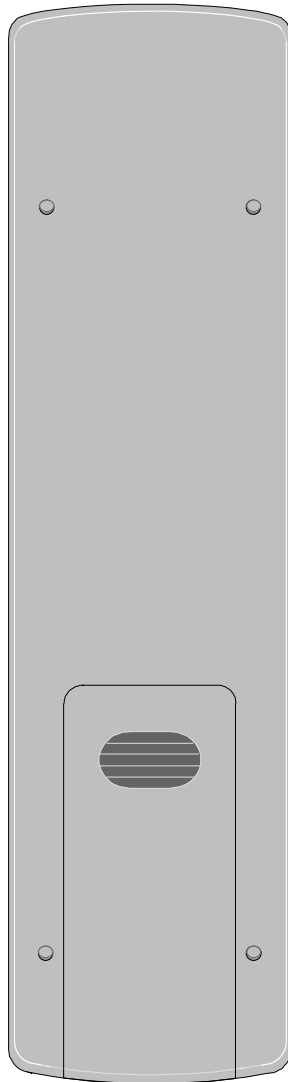
Your IT-85 Integrated amplifier is a high-performance, high power amplifier, capable of outputting up to 80 watts per channel. To assure best conditions for optimal results, you should plug the unit directly into a wall AC outlet (if bi-amplifying you should use one separate outlet for each amplifier). Do not plug your IT-85 into a light extension cord or into the back of another component, as this will starve the IT-85 of current and significantly impact the performance of your system.

See the chapter on **Specifications** for the power consumption requirements of your IT-85.

Fitting the Batteries to the Remote Control

1. The back cover of the remote control is a sliding cover that is removable by pressing down on the arrow and sliding the cover off in the direction of the arrow to reveal the battery compartment. Remove the cover and put it aside for re-installation later.
2. Locate the battery holder and insert the two AA batteries (supplied) in the marked positions, + to + and - to -.

3. Being careful not to damage the cover or the remote shell, replace the back cover and slide it back into position with a snap.
4. After power up of the IT-85, test the remote control functions and ensure that all the functions are working correctly. If the functions are not working then check that the batteries are in the correct mounting positions and that they are not stale. If you still encounter problems then you should call the VTL factory or your VTL dealer.



Operating the VTL IT-85 Integrated Amplifier

Power on Stages

When you first power-on your IT-85 it goes through a warm-up stage which takes approximately 30 - 50 seconds. During this period the IT-85 is in the muted mode, as indicated by the blinking Status LED. After the warm-up stage is completed the IT-85 automatically goes into the operate state. The blinking status LED turns into a steady light, indicating that the IT-85 is ready for use. Be sure to check the volume level while the unit is in the warm up state so the volume does not come on too loud when the IT-85 switches to operating state.

Powering your system on

After you have properly connected all your components to the IT-85 you are ready to power your system on.

1. If you haven't already done so, ensure that all the tubes inside the VTL IT-85 are properly seated all the way into their sockets before connecting to an AC source. (Refer to the factory or your local VTL dealer if you find that any tubes are loose or broken). Also double check that your IT-85 is correctly set for your AC voltage.
2. Power on the source component(s) you intend to use for your listening session
3. From the IT-85's front panel, check that the headphone/speaker switch is in the appropriate position. If using headphones, ensure that they are properly connected, or otherwise disconnect them. Make sure the *Processor* switch is in the down position. Check to ensure that the volume control is at the minimum or desired level. Press the Power on switch to turn on the IT-85. Check to make sure that the Status LED indicates warm up mode, as indicated by the flashing Status LED.

Caution: Ensure that there is no signal coming to the IT-85 before powering up.



→Caution: It is recommended that for first power up, the headphones are away from your ears until you are familiar with all of the controls of the IT-85, as loud signals can damage your hearing.



→Caution: When you turn on your IT-85 for the first time, watch the tubes while they warm up and observe if any of them goes into an exceptionally bright red glow on the outside of the large metal part (plate) of any of the tubes. If this happens turn the system off immediately and refer to your authorized VTL dealer or the VTL factory service dept. This glow may indicate a defective tube that needs to be replaced.



4. Once the IT-85 completes its warm up cycle (30-50 seconds), the Status LED will stop flashing to indicate that the IT-85 is ready. In case the Status LED does not behave as described above, turn the power switch to off. Check to make sure that the power cable is securely connected to the AC Power connector in the back panel of the IT-85, and that the power cable is firmly plugged into the AC supply before powering on again. (Contact your VTL dealer if the unit still will not power up after these checks have been performed.)
5. Adjust the Input Selector to the input source you would like to use. Make sure the *Processor* switch is in default mode (down position) if you're not utilizing this function. Check that the volume control is in the correct position.

Caution: Make sure that the volume control is not set too high before switching into or out of the Processor mode, as engaging this switch in either direction can result in high signal levels.



6. Press play on the selected source component.
7. After warm up, if the IT-85 is in mute (Status LED is flashing) press the mute switch down to remove the mute and return to operating mode. Turn the volume control clockwise and listen to the volume increase until you get to the desired playing level.

Caution: Before unmuting the IT-85, make sure that the volume control is not set too high. The VTL IT-85 is capable of very high signal levels. High signal levels can damage your speakers and your hearing.



→Caution: If powering on the system using the above steps results in tripping a circuit breaker in your house, or blowing a fuse on the IT-85, then turn off the power IT-85 and the rest of the system immediately. Find the fuse box and turn the circuit on again to restore power to your house. Contact your VTL authorized dealer or the VTL factory customer



support department immediately so that they can help you resolve this problem.



→ See the Biasing checking and Setting section for further information about the operation of the output tubes in the VTL IT-85 Integrated amplifier.

Ground Loop Hum

If you get a ground loop hum from your stereo system after installation and power up you should immediately turn off the IT-85 and consult your VTL dealer or the VTL factory.



Caution: Under no circumstances should you attempt to lift or defeat any grounds on electrical equipment plugged into the AC, as these grounds are installed for your and the equipment's safety, and an ungrounded component can present an extremely hazardous condition and is illegal under most electrical safety codes. For your own safety please refer all questions of this nature to a properly trained service technician

The Remote Control Hand-held Unit

The Remote Control hand held unit which comes with this IT-85, allows you to perform some basic functions from the comfort of your seat:

- Increase/decrease the Volume Control by pressing the up and down arrows respectively on the remote control hand-held unit.
- Set the system in mute or operate modes by pressing the mute button on the remote control hand-held unit. This is a toggle control that changes the operating state from one to the other each time it is pressed.

If the IT-85 is in mute, pressing the up arrow to increase the volume will remove the mute to allow you to hear the change of the volume adjustment. The volume down command will not change the mute state.

When you first press the buttons on the remote control unit, there is a delay of a few seconds (about 1-2 seconds) before the IT-85's completes the processing of the signal sent by the remote. Wait for the response from the IT-85 before pressing another button on the remote unit. During this processing period, selection of other remote functions will be ignored. If more of one button is pressed at once then the remote will perform no function. While the IT-85 is

in the warm up mode, with the LED blinking, the IT-85 will not be able to react to commands from the hand held remote.



Powering the system off

1. When you're done listening to your system always turn the IT-85 and (any other power amplifier(s)) off first. Allow a short time (15 - 20 seconds) for the IT-85 to completely power down after you turn off.

2. Then turn the IT-85 volume control down all the way. This is a precaution to avoid a sudden loud signal in your system as it comes out of the power up sequence the next time you turn the IT-85 on.
3. Turn the source components off, if you prefer to keep these off when not in use. (You may choose to keep your source components on permanently if you prefer to keep them warm, but your VTL IT-85 should always be powered down when not in use. Leaving it on all the time wastes power unnecessarily and uses up the life of the tubes).

Selecting Source Components

The Input Selector for the IT-85 Integrated amplifier is marked for CD, Tape, Tuner, Aux1 and Aux2 for selecting the most common types of source component. These names are not restrictive and could be used for any line level out source component. The input connectors on the back panel of the IT-85 are correspondingly marked CD, Tape, Tuner, Aux1 and Aux2. Check to make sure that the correct interconnect cable from the source component is connected to the corresponding input connector of the IT-85 and in the correct channels. For Phono connections a separate phono stage is needed, which can then be connected to any of the line inputs on the IT-85.

Selecting Headphone out

The VTL IT-85 Integrated amplifier offers a high quality headphone connection for a 1/4" phone jack that is driven from the amplifier stage of the IT-85. A switch is provided on the front panel of the IT-85 to toggle between use of the loudspeakers and the headphones.

To use this function first lower the volume control (to ensure that the headphones are not accidentally damaged by the high power of the IT-85), and then plug in the headphones, (before selecting the headphone output) ensuring a load on the power amplifier at all times.

In the headphone mode all loudspeakers should be muted. Plugging the headphone jack into the headphone out automatically mutes the subwoofer that may be connected to the pre outs, and toggling the headphone selector switch automatically mutes the loudspeakers connected to the amplifier section of the IT-85 when the headphone mode is selected.

Caution: Be sure to check the volume level first before using your headphone, as accidental high signal levels so close to your ears can surprise you



unpleasantly and/or damage your hearing.

Caution: Do not set the headphone selector switch to the headphone mode if there is no headphone connected to the IT-85 as this may cause the internal headphone load resistors to heat up unnecessarily.



There is a safety feature in the IT-85 that will automatically mute the IT-85 before permanent damage is caused in case this condition accidentally happens, which will turn the pre outs (i.e. subwoofer or lower amplifier, if connected) on and off intermittently. If you hear this condition then lower the volume and check to see that the headphone selector switch is set to the correct position.

Connecting the IT-85 to a Home Theater System

Your VTL IT-85 integrated amplifier is designed to work in conjunction both with conventional two-channel and with home theater systems. If you have both systems set up so that your front speakers are used for your audio as well as home theater systems, then connect the external processor front left and right outputs to the IT-85 Processor/Amp In input, so that it will be able up to drive the front left and right speakers.

Under this configuration, when you are listening to your two-channel audio system from sources connected to the line inputs of the IT-85 set the Processor switch on the IT-85 front panel to the default operating position (down). The system and the IT-85 are now driving the front speakers, giving you the full volume control and source selection.

When you wish to use your system for home theater, set the processor switch to the *Processor* position (up). Under this configuration the IT-85 amplifier section receives the external surround processor's signal for the front left and right channels directly from the external surround processor. This gives the external surround processor the volume control of these channels, at the same time as it is controlling the center, rear and subwoofer channels.

Note that when using any type of bi-amplified system, either with a sub-woofer or with another amplifier controlling another part of the front left and right speakers, this function will be muted when switching to the Processor position. The preamp out from the IT-85 is always controlled by the volume control in the preamplifier section of the IT-85. Note that in home theater use the bass signal is usually dedicated to the subwoofer output from the external processor, which may render a subwoofer less useful when connected to the front left and right outputs. In this type of installation a second subwoofer is recommended.

Caution: Before switching the Processor switch to either position ensure that there are no high signals present, as switching to either of these positions can result in extremely high signals from the IT-85, which can give you an unpleasant surprise and/or damage your hearing.

Using the Tape out

To take advantage of the fixed out put record out feature of the IT-85, connect the tape deck's input and output cables to the *Tape Out* and *In* connectors of the IT-85, as per the instructions in the *Getting Started* section of this manual.

Connecting a second amplifier to your IT-85

Your VTL IT-85 integrated amplifier is designed to offer maximum flexibility and re-use in a later system upgrade path, should you desire it. The buffered preamp out is for use with either a subwoofer, or with another amplifier for driving some of the loudspeaker load (on speakers that offer the ability to connect separate amplifiers to the upper and lower frequency sections.)

To properly bi-amplify without using an external crossover, special consideration must be given to matching the gains and input impedances of both power amplifiers, so as not to over-accentuate one part of the frequency spectrum and cause an imbalance in the sound character of the speaker.

The best example of this type of bi-amped system would be the use of the VTL ST-85 stereo power amplifier, which has been precisely gain-matched to the signal that will be output from the preamp outs of the VTL IT-85. It is recommended that for this type of system the amplifiers get connected to the loudspeakers in a horizontal (rather than vertical) bi-amp mode (i.e. with one stereo amplifier on the bass of both channels and with the other stereo amplifier on the top of both channels). In this fashion the IT-85 becomes the central source director and volume control for the whole system.

In this mode it is important to ensure that the home theater processor mode is not needed, as this function mutes the pre out.

Consult your speaker and amplifier manuals and your dealer for additional installation instructions on this mode of usage.

Care and Maintenance of your VTL IT-85

Break in Period

Your VTL IT-85 integrated amplifier is designed to give you continuous optimum performance over a long time period. Initially the tubes and circuits will require a burn-in period to reach maximum sonic performance. During the first 100 hours of usage the IT-85 will undergo an improvement in sound. To break in the IT-85 you should simply use it with a music source connected to it and playing as you would in normal use. This is all that is needed to achieve burn in.

Tube types

The VTL IT-85 Integrated amplifier uses a total of 4 EL34 tubes for the output stage, 4 12AT7 tubes (2 per channel) for the input and driver stages in the amplifier section and 2 12AU7 tubes (1 per channel) in the preamplifier stage.



→Caution: We recommend that your VTL component be fitted only with the tubes that are supplied by the factory (see the warranty section for further details). Any damage caused by the fitting of any other tubes will not be covered by the warranty.

Tube Life

Your VTL IT-85 Integrated Amplifier has been designed to ensure long tube life. Tube replacement need not be considered until after approximately 3000 hours of use (roughly 3 to 4 years, depending on your listening habits.) As the tubes age beyond their peak performance there will be a general softening of the sound.

We recommend a complete replacement of all tubes in your IT-85 at that time, which will restore it to a “like new” sound quality. Your VTL dealer or VTL factory service department will be happy to assist you with the re-tubing process.

Note: use only tube types and tube brands that are recommended by VTL. VTL specified replacement tubes are available from your authorized VTL dealer or the VTL factory service department. Any damage incurred to units which use non-VTL approved tubes will not be covered under the warranty.



Your VTL component is fine-tuned for the original tubes. Improperly installing any other tubes may upset the unit's delicate balance, causing your VTL component to not operate as it was designed, or even possibly damaging the unit, neither of which would be covered under the warranty. It is therefore recommended that you not consider installing any other tubes, unless you are completely familiar with all aspects of the design and can service and calibrate the IT-85 yourself.

Bias checking and Setting

The idle (or quiescent) draw for the output tubes has been factory preset for approximately 27 mA for each tube, and should be re-set upon initial installation into your system.



Someone trained in this procedure, as it requires removal of one of the covers, which will expose potentially hazardous voltages that are present in the unit, should only perform this setting. Do not attempt to undertake this procedure yourself as you could be severely injured. The idle current of the tubes will fluctuate slightly over time at a rate that is dependent on the usage of the unit. We recommend that the bias setting should be checked on all the tubes after every 1000 hours of listening (or once per year.)

Using your IT-85 with incorrect bias settings will result in poor performance and /or shorten the lifetime for the tubes.



There is a fuse on the back panel of the IT-85 that will protect the rest of the circuitry in the event that a tube fails or draws excessive current. If the fuse blows then you should immediately turn the IT-85 off and contact your authorized VTL dealer or the VTL factory customer support department before attempting to turn the IT-85 back on again. The symptom for this fuse blowing is either a condition where all the tubes appear to be lit but with no sound coming out of the IT-85, or a tearing sound coming from your speaker if the fuse blows while the IT-85 is playing music. This sound will not damage your loudspeakers as the IT-85 is losing power while the fuse is blowing, and its level is not changed by the volume control position of the IT-85.

→Caution: Bias checking and setting on all tubes must be performed every time a tube is replaced in



the VTL IT-85 Integrated amplifier.

For checking the bias you should take the unit and this procedure to your authorized VTL dealer and ask them to check the bias for you.

Notes for the service/installing technician:

Bias measurements are preferably taken with a digital multimeter equipped with the auto-ranging feature. If you don't have such a meter you can purchase one at a local electronics supply store such as Radio Shack. The Radio Shack catalog numbers for usable multimeters are 22-166, 22-167, 22-163, 22-174 or even 22-179.

Use the following procedures to measure and adjust the bias setting:

1. Make sure that the IT-85 is powered off. Remove the protective metal cage of the IT-85, and make sure that there is sufficient room around the unit for you to access the bias measurement points at the back edge of the IT-85. Set the multimeter for resistance measurement (ohms). (Consult the owner's manual of the multimeter to make sure that you have used the correct settings.)
2. Connect the negative (black, “-”) probe from the multimeter to the ground point on the IT-85 or the negative (“-”) speaker binding post of the amplifier.
3. Consult the following figure for the locations of the bias measurement points on the IT-85's top deck. Insert the positive (red, “+”) probe of the multimeter into each bias measurement point. The resistance reading on each point should be 10 ohms, within a 10% range. If the resistance reading is outside the acceptable range, please consult the VTL factory customer service department immediately. Repeat the measurement procedure for all 4 bias measurement points.
4. Remove the multimeter probes from the IT-85. Check to make sure that the IT-85 is connected to a loudspeaker or a load resistor. Power on the IT-85 and let it warm up for about 10-15 minutes so that the tubes become stabilized. Either short the input or put the IT-85 in the mute state (or turn the volume down) to make sure that no signal is coming from the preIT-85 section.
5. Change the meter setting to measure DC voltage. Insert the negative probe (black) from the multimeter into the ground point on the IT-85 or the negative speaker binding post of the IT-85 fitting it into the post where the speaker cable is connected. Insert the positive probe into the bias measurement point of each tube going from the #1 point to #4. The

reading on the multimeter should stabilize after a second or two and indicate a reading between 275 to 300 millivolts DC (0.275 to 0.300 Volts.) This reading may fluctuate a little due to variations in the AC lines. (It is not unusual for a 120V rated AC line to vary between 115V and 122 V.)

6. Caution: If the voltage reading is 50 millivolts or more below or above the acceptable range then adjust the trimpot in the direction required (clockwise for increase and counter-clockwise for decrease) and ensure that the reading is changing as desired. If the reading does not respond or continues to climb rapidly, or fluctuates with large swings back and forth then you should turn off the IT-85 immediately and contact the VTL factory service department for assistance.



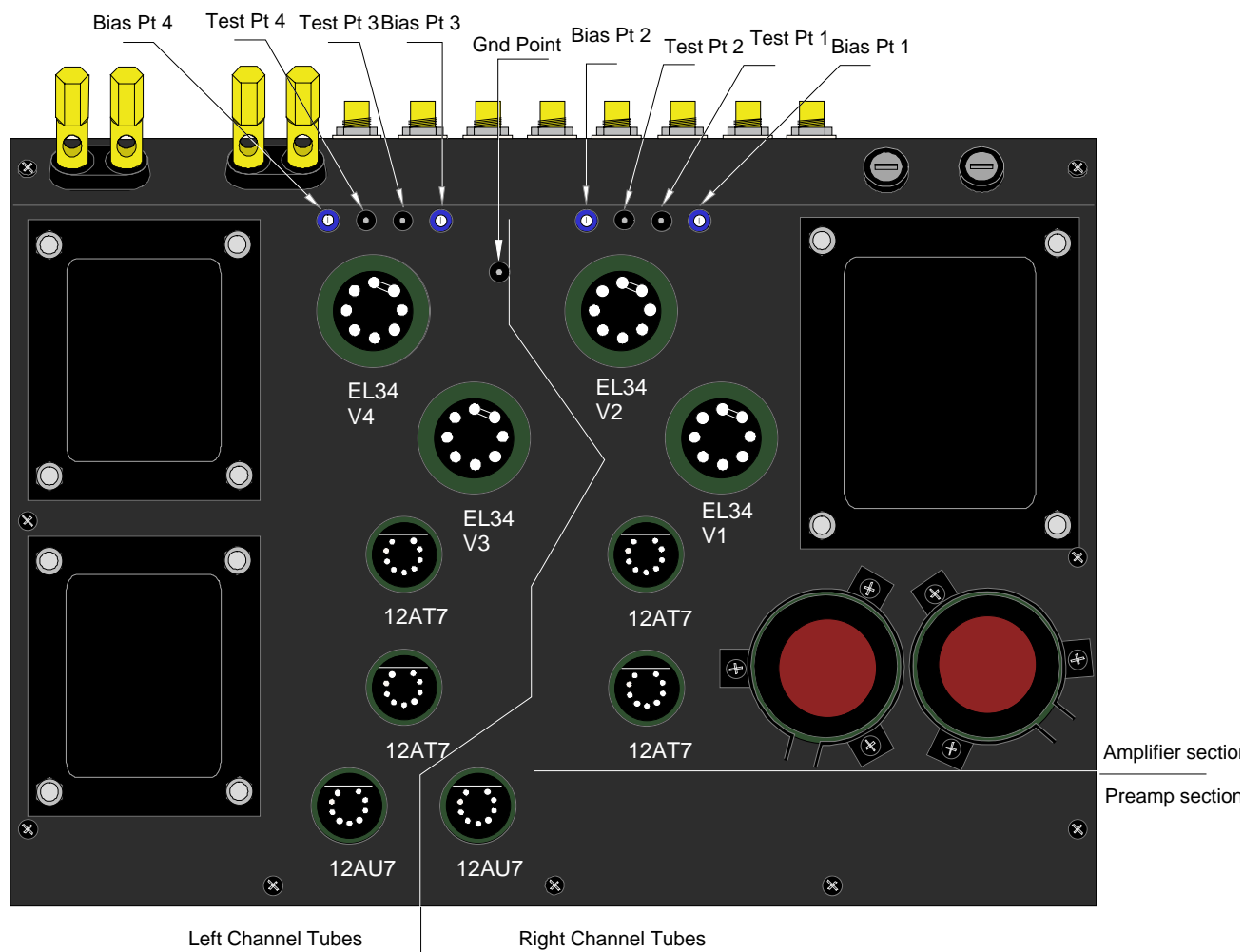
7. In general a 10 - 15% variation around the 275-300 millivolts range is an acceptable current measurement. When the measurement is outside this range, you will need to adjust the bias setting by using the following procedures:

1. Keep the positive probe from the meter in the same measurement point where you found the out of range bias reading. Locate the bias adjustment point whose number corresponds to the bias measurement point. See Figure 2 for the locations of the measurement points.
2. Insert a 1/8" flat tipped screwdriver (with a plastic shaft or a properly insulated handle) into the bias adjustment trimpot that corresponds to the out of range measurement point. Rotate the screwdriver slowly to see the changes on the multimeter reading. Try rotating the screw slightly in both directions to see the effect of the change. Adjust the setting of the bias to the proper range, i.e. 275 to 300 millivolts DC.
3. After you've completed the bias adjustment changes, it is a good idea to go back and check the bias measurements for all the other tubes since changes made to one tube will slightly affect the setting of the others.
4. Place the IT-85's protective cage firmly back onto the IT-85 after you are satisfied that the measurements are stable.

→Caution: If your observations do not conform to the above instructions, or if you do not feel confident about performing the bias procedures yourself, please consult with the VTL factory service department. Improper setting of the bias will affect the current draw of the output tubes and affect the performance and/or lifetime of the tubes.



Top view and Bias Measurement points and Tube complement of the IT-85 amplifier



Changing Tubes

Do not attempt to change tubes yourself. Contact your authorized VTL dealer or the VTL factory service department so that a trained technician can perform this service. You will need to take the unit and this procedure to your dealer for them to perform this procedure and the corresponding bias procedure properly.

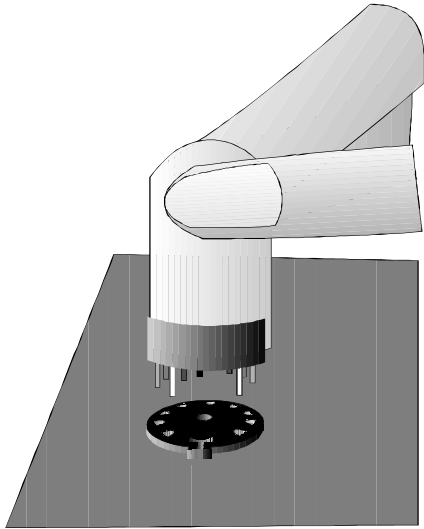
Notes to the Service technician:

Re-tubing the VTL IT-85 requires removal of some or all of the covers, which can expose potentially lethal voltages. Be sure to only touch the tubes themselves, and do not allow any part of your body or hanging jewelry to come into contact with any part of the circuit inside the unit.



1. **Diagnose the tubes:** If you are not undergoing a complete re-tube for the entire IT-85, then you must first decide how many tubes and which tubes should be changed. Use the bias checking procedure as documented in the previous section of this manual to find out how to measure the bias setting of the tubes and to determine whether they are within the acceptable range. For example if you find out from the bias measurements that tube #1 and #3 are fluctuating frequently and they are above or below the acceptable range this may indicate that a replacement of these two tubes is necessary. A full power test of the IT-85 may also need to be undertaken to ensure that all power tubes are conducting equally.
2. **Power off the IT-85:** To change tubes in this IT-85 you should first power the unit down, unplug the unit from the wall outlet and disconnect the IT-85 from the rest of the system. Let the IT-85 stay powered off for at least 15 minutes before working with it. Make sure the tubes are cool before you touch them. Using a Philips #2 point screwdriver remove the protective cage from the unit by loosening the two screws from the side of the IT-85. Carefully remove the cover and the screws and store them in a safe place.
3. **Removing Tubes:** Locate the tube you need to remove and hold onto the upper portion of the tube towards its tip. Being careful not to bend the tube pins or break the locating pin, gently and in small amounts rotate and rock the tube with your fingers to loosen it from its socket until its pins are completely disengaged from the socket. Take the tube out of the unit.

1. Plugging in a new tube: Hold onto the upper portion of the tube



towards its tip. Lower the tube onto the socket, making sure that the pins from the tube match the holes in the socket. There are either two pins on the tube which are spaced at a wider distance from each other than the rest of the pins (9 pin miniature tubes), or there is a locating pin in the middle of the tube (8 pin octal tubes). Make sure that these locators go into the side of the socket that matches. Press the tube

firmly into its socket, using a gentle force and a slight “rocking” motion. When the tube is properly and completely inserted into the socket it should be firmly seated and does not give in to any movement at all when you try to rock it gently. If the socket appears loose and not making contact with any or all of the tube pins, the socket should be re-tensioned.

2. Replacing the protective cage: Lower the IT-85’s cover chassis slowly back onto the opened IT-85 box, making sure that the cover is put on in the correct front and back position. Locate the screws that were removed from the cover and put them back in the correct holes. Tighten all screws to make sure that the cover is securely fastened to the unit.

Changing the Main and B+ Fuses

The B+ fuse for your IT-85 is rated at 1A ceramic Fast Acting. There is also one primary mains fuse rated at 6A Slo Blo (100/120Volt AC) or 3A Slo Blo (220/240 Volt AC) ceramic. The B+ fuse is housed in a fuse holder located on the back panel of the IT-85, and the mains fuse is housed in a separate holder also located on the back panel of the unit. To change either fuse make sure the unit is powered off, and disconnect the AC power cord from the unit. Move the IT-85 so that you can work with the panel in the back. The type of fitting used for the fuses is called a bayonet fit, which describes the action needed to remove the fuse cap. Locate the Main fuse holder, to loosen it by inserting a flat head screwdriver into the slot and turning the screw head approximately one quarter of a turn in a counter-clockwise direction while pressing inwards. The fuse cap should spring out from its housing with the fuse held inside the cap. Take the fuse out and replace it with a new one, and insert the fuse cap back into the holder, pushing it downward while turning it in the clockwise direction to lock it in place. Use the same procedure to replace the B+ fuse.



WARNING: For continued protection against fire hazard only replace the fuse with the same type and rating as was originally specified for the IT-85. If you have problems locating the correct fuse contact your VTL dealer or the VTL factory service department.

WARNING Before powering on the IT-85, after either fuse change, it is extremely important to find the problem that caused the fuse to blow in the first place. Consult your dealer or the VTL factory for service.



Cleaning

Your VTL IT-85 should be dusted occasionally with a damp, non-abrasive cloth. You should not use any solvents for cleaning the front panel, as this can damage the lettering and the finish. It is recommended that you use a contact cleaner such as Pro-Gold on the input and output connectors from time to time. This will ensure optimum sound and proper signal conducting capability where tarnishing is observed on the connectors or if the IT-85 is in an environment where corrosion might be a problem. Use the contact cleaner in accordance with its instructions, but under no circumstances should you allow excess fluid to enter the IT-85, as this fluid is conductive and could cause you to get a shock or damage the IT-85. Under no circumstances should any type of abrasives be used on any of the electrical contacts. Damage to the IT-85 through improper or excessive use of contact cleaners is not covered under the warranty.

Troubleshooting

- 1. When I power on the IT-85, Status LED does not come on and nothing else happens. What should I do?**

Check to make sure that the power cord is properly connected to the IT-85 and the AC outlet. Make sure the outlet has power by plugging in another component. If there is no problem with the power source, check the fuse unit in the back panel of the IT-85. If the fuse is blown, refer to the “replacing the fuse” section in this manual. Turn the power on the IT-85 again. If the problem still persists, contact your authorized VTL dealer immediately.

- 2. Using the remote control from another stereo component in my system affects the control of my VTL IT-85. Why is this happening and what should I do?**

Your VTL IT-85 is equipped with a remote control receiver unit that decodes signals coming from a NEC microcontroller chip with a unique respond code. If you own another stereo component that comes with a remote control unit

using the same microcontroller chip, the VTL IT-85 could pick up signals transmitted from this component as well. If your other remote unit also adopts the same standard as the IT-85, then there is a chance that the signals from both remotes may be interpreted as the same. If the functions with the same command are different for both units then one or other of the remote controls will have to be re-programmed. Contact your VTL Dealer or the Factory for a solution to this problem. *Note that in either case there is no damage being done to your VTL IT-85 while it is being used in these states and you can continue to safely use the IT-85 until a solution is reached.*

Please contact the VTL factory service department to report this problem, as we are interested in knowing which models of stereo equipment could cause this problem.

3. I am getting a noise and hum coming from my system when I turn the IT-85s on. What can I do to eliminate the noise?

It is recommended that you connect as many components as possible to a good clean AC ground in your system for optimum noise reduction and safest operation. If however there are too many paths to ground then a ground loop hum can result. You should either contact your dealer or the VTL factory to try to resolve this problem.

4. I am getting a noise and hum coming from my video source. What can I do to eliminate the noise?

The noise may be coming in from your video Cable system. First disconnect the VCR from the system to see if this will solve the problem. If it does then you will need to try to lift the ground from the Cable TV wire, using a ground lifter module sold at your local electronics supply store. If the problem still persists, contact your VTL authorized dealer or the VTL factory service department.

5. I am getting a ringing noise from the IT-85 when I touch or bump it. What should I do?

One or more of the tubes in the IT-85 may have become microphonic (usually the small tubes). Follow the procedures listed in this manual to remove the tubes and change them for new ones.

6. My remote control hand held unit for the IT-85 is not working. What should I do?

Look at the back of the remote control unit. Open the back cover. Locate the two batteries inside the remote unit. Take the old batteries out and replace them with new AA batteries. Slide the back cover on and snap it into place. Test the remote unit to see if it is working properly.

If the remote control unit is still not functioning properly, contact your VTL authorized dealer or the VTL factory service department.

Specifications

IT 85 Integrated amplifier

Vacuum Tube Complement	4x EL34, 2x12AU7, 4x12AT7
T.H.D. 20 Hz - 20 kHz	0.01%
Signal to Noise Ratio	109 dB
Maximum Output Power	55 watts per channel into 5 ohms
Gain	20 dB
Input Impedance	20K ohms line in, 135K ohms amp in
Channel Separation	75 dB @ 1 kHz
Power Consumption	Idle: 150 Watts Full Power: 500 Watts
Primary Mains Fuse Rating	6A Slo Blo Ceramic (120Volt AC) 3 A Slo Blo Ceramic (240 Volt AC)
B+ Fuse Rating	0.75A A Fast acting 250V ceramic fuse
Dimensions	W = 16" (40 cm) D = 12" (30 cm) H = 7" (18 cm)
Packed Weight	60 lbs. (27.22 Kg)

Warranty

Your VTL IT-85 Integrated amplifier is covered by a limited warranty against defects in materials and workmanship for a period of 90 days from date of purchase by the original purchaser only, when purchased from an authorized VTL dealer only. A further optional extended limited warranty is available to the original purchaser upon proper registration of ownership within 30 days of purchase.

Proper registration is made by filling out and returning to the factory the warranty card attached to this general warranty statement, along with a copy of the original sales receipt as proof of the original date of purchase, within 30 days of purchase. Only one card is issued with each unit.

If the warranty registration card has already been removed then this is not a new unit, and is therefore not warranted by the factory. If you believe this to be a new unit then please contact the factory with the details of purchase.

VTL Amplifiers Inc. provides this warranty in cooperation with the dealer where the unit was purchased and under the terms of the warranty defective parts will be repaired or replaced without charge, excepting the cost of tubes. An extended limited warranty on tubes is available with the correctly filled out warranty registration card, mailed with your purchase receipt to VTL.

If a VTL product fails to perform properly under the above warranty then the purchaser's sole remedy shall be to return the product to the authorized VTL dealer or to VTL Amplifiers Inc, where the defect will be repaired without charge for parts and labor. The product will then be returned via prepaid, insured freight, method and carrier to be determined solely by VTL Amplifiers Inc. All returns to the factory must be in the original packing (new packing will be supplied for a nominal charge if needed). A Return Authorization accompanied by a written description of the defect, must be shipped to VTL Amplifiers Inc via insured freight at the customer's own expense. Charges for unauthorized service and transportation costs are not reimbursable under this warranty, and all warranties, express or implied, become null and void where the product has been damaged by misuse, accident, neglect, modification, tampering or unauthorized alteration by anyone other than VTL Amplifiers Inc. This includes the use of any tubes in the equipment other than those supplied by VTL Amplifiers Inc.

This warranty applies only to units used in residential non-commercial use. The warrantor assumes no liability for property damage or any other incidental or consequential damage whatsoever that may result from failure of this product. Any and all warranties of merchantability and fitness implied by law are limited to the duration

of the expressed warranty. All warranties apply only to VTL products purchased and used in the USA only. The importer to the country of sale offers international warranties on VTL equipment, with all applicable terms on the local warranty and superceding these terms.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you.

This warranty gives you specific legal rights and you may also have other rights, which vary, from state to state.

Warranty Registration

Warranty registration for VTL products is valid in the USA only. International VTL customers should consult their local VTL dealer regarding product registration and warranty procedures.

To obtain valid US warranty service, please fill out the enclosed VTL **Warranty Registration card** and a **copy of your sales receipt** and mail it to the following address within the first thirty days of purchase:

**VTL Warranty Registration
4774 Murrieta Street, Suite 10
Chino, CA 91710**

To help you keep a record of the serial number and purchase information, please enter the following information into this manual.

Product Model Number: IT-85 Integrated amplifier

Serial Number: _____

Purchase Date: _____

Authorized Dealer: _____

Service Notes

Date	Service	Initials
_____	_____	_____
_____	_____	_____
_____	_____	_____
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