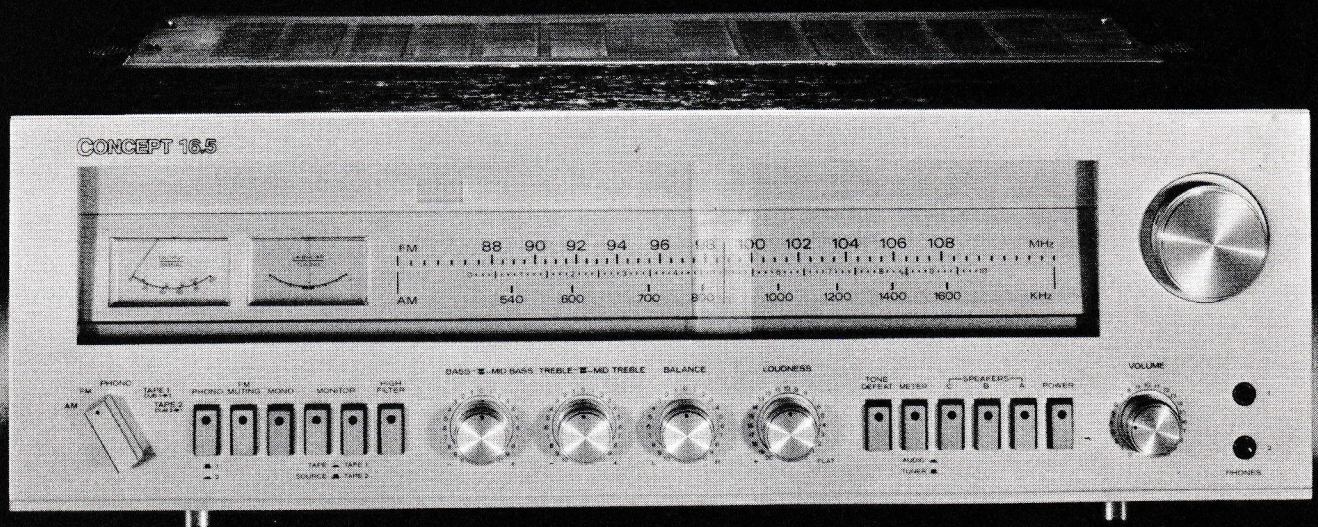


CONCEPT

16.5

Owner's Manual



Introduction

A Note On High-Powered Receivers

The extremely high power output capability of your Concept receiver will enable you to hear undistorted musical peaks, and bring fresh clarity and detail to your music. There are, however, a few things you should keep in mind regarding the high power capacity and what it can do.

Concept's amplifier is direct-coupled, with no capacitors or filters between the output transistors and the speakers. Any audio input is passed directly to the speakers, no matter how low the frequency. Thus, any sonic deficiencies in your other components will become very apparent. For this reason, you should use only the highest quality associated equipment. Inferior turntables can cause special problems; they're likely to have excessive rumble, and the low rumble frequencies have the potential to damage many speakers.

You should also be careful when handling your record player. Dropping the tonearm on the record, or flicking dust from the stylus, with the volume up, can send a power surge that may damage your woofer. It's good practice to turn the volume down whenever you're changing a record.

Check the power-handling capacity of your speakers; if it's modest, you might want to fuse your speakers. Your Concept dealer can advise you on that. Prolonged operation at very high volume levels can also cause excessive heat to build up in the voice coils of the speakers, shortening their lifespan. This is especially true of the relatively low-efficiency acoustic suspension bookshelf-type speakers. Sonically, they benefit most from the high power, but prolonged overdriving can lead to premature speaker failure.

Thank you for choosing a Concept receiver. We think you'll most appreciate this product if you understand it in the context of its design philosophy. Take a few minutes and read this manual before you set up the receiver; it'll save you a lot of time, and will help you get the full potential from the Concept.

The Concept 16.5 is the result of a concentrated effort to design a line of stereo receivers without compromise. Every detail, from the action of the controls to the surface area of the internal heat sinks, has been carefully thought out and crafted by a distinguished international team of designers and production engineers. A laboratory standard of performance is augmented by bold visual definition. The final product is a finely-crafted instrument that will satisfy the most discerning audiophile.

A myriad of design innovations make the Concept 16.5 as easy to use as to listen to. Most of the binary functions are controlled by newly engineered pushbuttons for maximum operational simplicity. The buttons themselves use light-emitting diodes to provide positive visual indication of the function.

The Concept 16.5 volume and tone controls have multiple detents to allow precise adjustments that are easily repeatable. A unique four-range tone control system offers a new level of control over the frequency response, so you can get the best possible sound in any environment. The innovative loudness contour is adjustable, so you get the precise amount of loudness compensation necessary for your speakers at any volume.

A sophisticated tuner section will match the performance of the finest separate tuners. Effective application is made of a 5-gang tuning assembly, full Quadrature detector, hand-picked filter elements and the latest Phase-Lock Loop circuitry. Many of the FM specifications exceed the limits of the latest test equipment. Tuning itself is unusually smooth, due in part to the massive internal flywheel and bearing assembly. Exact tuning is aided by a pair of calibrated meters and a stereo indicator light.

The hallmark of the Concept 16.5 is a standard of accuracy unmarred by significant audible or measurable distortion. This has been achieved by selecting only premium-quality parts and operating them far below their rated capabilities. A deliberate benefit of this design criterion is a dramatic decrease of breakdown due to parts failure.

Surely this is the most ambitious way to create a product, but consistent with making the Concept 16.5 receiver the ultimate synthesis of the technical, the visual, and the tactile.

Unpacking

Save the shipping carton and all packing materials. They'll assure the receiver's safety should you ever move or ship the unit.

Record the serial number of Concept 16.5 in the space provided here. The number may be found on the rear panel of your receiver.

Serial Number:

102117

Date of Purchase:

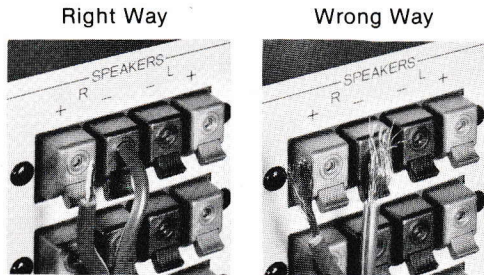
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Placement

You should, of course, place your receiver where it's most convenient. However, keep it away from direct sunlight or any other heat source, and don't block the vents on the underside of the unit. CAUTION: To prevent fire and avoid shock hazard, do not expose the receiver to rain or moisture. Also, as the 16.5 is very heavy, you should be sure it's on a secure shelf.

Wire Stripping

Strip off *only* ¼-inch of insulation. Stripping more than that will leave bare wire exposed and could cause a damaging short circuit.



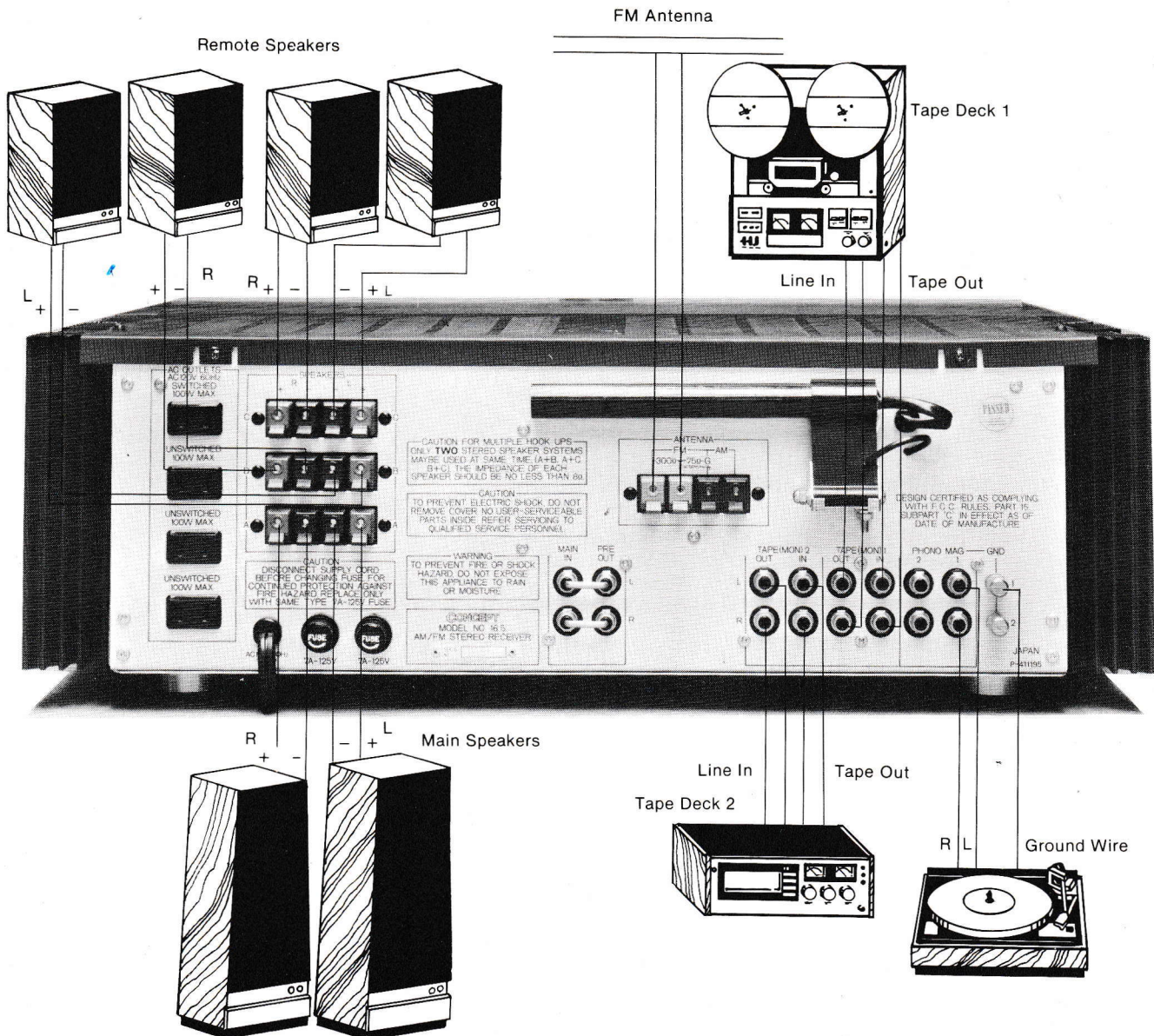
Be sure the power is switched *off* before you make *any* connections.

You should also be sure your speaker wire is of sufficiently heavy gauge. We recommend 18-gauge lamp cord ("zip cord"). If you need more than 50 feet to reach a speaker, you should use 16-gauge cord. Wire that is too thin will impair power transfer and high frequency response; heavier wire offers less electrical resistance and is a more efficient conductor.

Speakers

The Concept 16.5 receiver uses spring-loaded push terminals for all speaker connections; these are not only easier to use than the standard screw terminals, they greatly reduce the possibility of a stray wire strand short-circuiting the receiver.

To connect the speaker wires to the receiver, first strip off *only* ¼-inch of insulation and twist the strands tightly together. Press in on the movable part of the terminal and insert the bare wire in the center hole; release the terminal.



inner sections, called bass and treble, permit fine adjustment at *extreme* bass and treble frequencies. (See the Specifications for further information on tone control action.) The outer tone controls have 20 positions of 1 dB change; the inner controls have 10 positions of 2 dB change.

Don't hesitate to use the tone controls. They'll let you add depth to many recordings, or compensate for your listening room acoustics. You can use the four tone controls as an equalizer, and make precise adjustments to the sound at useful points in the frequency spectrum—add just the right amount of bass, or bring the sound a little closer. The extreme bass control is most effective at reducing low frequency and subsonic rumble as needed. It is provided in place of a conventional on-off rumble filter, which destroys low-frequency musical integrity. The extreme treble control may enhance definition and spaciousness.

Because these controls operate at *extremes* of the frequency spectrum, they have a very subtle effect on the sound. This full effect may be apparent only with well-recorded sources and only through wide-range loudspeakers, and even then only after extended listening. Use prudence in applying these controls, as the effect of each is cumulative. Extreme clockwise rotation of both the inner and outer sections may cause the amplifier to overload, but will more likely cause speaker damage; be careful when rotating both controls.

The Concept 16.5 has a TONE DEFEAT switch which removes the controls from the circuit; it restores the amplifier to laboratory-flat response and allows for instant comparisons of the effect of the controls.

The HIGH FILTER gently rolls off the high frequencies. It can be used to reduce tape hiss, record surface noise, and particularly excess noise in FM reception. It also cuts out any musical material at those frequencies; thus you should use it sparingly.

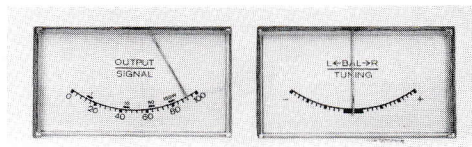
The compensation provided by the high filter is a compromise for casual listening. Use of the 4-array tone control in lieu of the high filter offers more accurate compensation and preserves musical integrity.

Use the BALANCE control to shift the stereo image from left to

right, to keep the image centered when the source is too strong in one channel, or when your listening position favors one speaker.

Meters

The meters on the Concept 16.5 serve as audio power meters as well as tuning meters. Their function is controlled by the METER (AUDIO-POWER) button. When the button is "in", the left meter measures average power output in watts. The meter is calibrated for 8-ohm loads; if you're operating the Concept 16.5 into a pair of 4-ohm speakers (or two sets of 8-ohm speakers simultaneously), the actual output will be *twice* the meter reading. The meter will momentarily hold readings. The right meter measures relative channel balance. If one channel is putting out more power than the other, the output meter will register the higher of the two, and the balance meter will indicate which channel that is. The meters are useful in monitoring output so you can relate your listening levels to your loudspeakers' requirements and power handling capability.



Tape Playback And Recording

The TAPE (MON) 1 jacks on the rear panel correspond to the "Tape 1" controls on the front panel. A deck connected to those jacks will be referred to as "deck 1" in the subsequent instructions. Similarly, the TAPE (MON) 2 jacks correspond to the "Tape 2" controls, and a deck connected there will be called "deck 2."

To *listen* to deck 1: First depress the right-hand MONITOR button (to the TAPE 1 position). The red LED will now illuminate. Now depress the left-hand MONITOR button (to the TAPE position). Its LED will also illuminate.

To *listen* to deck 2: The right-hand MONITOR button should be in the "out" position (the LED will

be off). Simply depress the left-hand MONITOR button (the LED will be red).

To *record*: Make sure your deck is in the record mode. (Refer to the tape deck instruction manual for proper record level settings.) Turn the SELECTOR to the program source you wish to record, e.g. to FM if you want to tape an FM radio program to Phono for taping of your records.

Monitoring: Tape recorders with a separate playback head (three-head decks) allow you to make an instant comparison between the recording and the original source. This comparison is known as *monitoring*. The monitoring controls differ from those found on other receivers; Concept's operation is more professional.

To monitor a recording, simply follow the above instructions for listening to a tape deck. Again, the right-hand MONITOR button selects deck 1 or deck 2; the left-hand MONITOR button lets you make an instant comparison between the source and the tape recording. This way you can check on the quality of your recording.

The Concept's flexible tape monitor arrangement also permits *dubbing*, i.e. copying tapes. To dub a recording *from* deck 1 *onto* deck 2, turn the SELECTOR to Tape 1. To monitor that recording, follow the procedure for listening to deck 2.

To dub a recording from deck 2 onto deck 1, turn the SELECTOR to Tape 2. To monitor, follow the procedure for listening to deck 1.

Concept does not offer a "dub-through" feature, i.e. a circuit that allows you to dub between decks while listening to yet another source. Concept believes that the apparent convenience offered by such a feature is misleading; if you do not check your recordings, you cannot know their quality.

Moreover, if something malfunctions, you wouldn't know until you played the tape. Professional results can be achieved only by professional methods, and in tape recording this means listening to either the recording source or the tape itself.

CAUTION: If you are recording onto deck 1, *never* set the SELECTOR to Tape 1. If you are recording onto deck 2, *never* set the SELECTOR to Tape 2. This would cause a howling feedback sound to build up, and could

Useful Information

damage your speakers in a few seconds. As a matter of good practice, use only the MONITOR buttons to listen or monitor.

Equalizing Tape Recordings

While it is sometimes tempting to equalize a recording source *before* the signal is put on tape, we recommend that you do the equalization only on playback. If for some reason you feel it is necessary to equalize the recording, the following instructions tell you how. However, take note of the precautions.

You can connect your tape deck's inputs to the PRE OUT jacks on the Concept's rear panel. Concept's tone controls will then affect the recording, and they make a very effective equalizer. BUT: The volume control and loudness contour *also* affect the recording, so once you've started recording, don't touch them. (Set the loudness control to "flat"; add loudness compensation only on playback.) NOTE: Do not use the tape monitor circuits when making an equalized recording. This will also cause a howling feedback sound with the potential for destroying your speakers. Monitor with headphones from the deck itself.

Headphones

For private listening, you can plug two sets of headphones into the Concept front panel. Any headphones of 8 ohms impedance (or higher) are suitable.

FM Reception Problems

If you're getting good FM reception, you can skip this section. If not, the following may help.

The T-shaped folded dipole antenna will give you adequate reception in most metropolitan areas. You can get the best possible indoor reception by moving the wire to face the transmitter.

"Fuzzy" stereo reception is usually the result of *multipath*, a phenomenon that causes the "ghosts" on a TV screen. Because FM radio waves are like light, they essentially travel along a straight "line-of-sight" path. They will go through plaster walls and such, but they are reflected by geographical features, massive concrete structures, metal surfaces and other dense objects common to cities and mountainous terrain. Not only does the signal reach your antenna directly from the transmitter, but it *also* gets there along its "bounce paths." These reflected signals arrive just slightly behind the direct signal. This causes the multiple images on a TV screen, and audible distortion in your stereo system.

Concept's advanced tuner circuits minimize the effects of multipath interference, so any audible problem will be an antenna problem. Try to get your antenna as high as possible, to give the direct signal a better chance at a clear path to it. A reflected signal can still give you good sound, but *multiple* reflections hurt; that's why proper orientation of your antenna may require some experimentation. In difficult reception areas, an outdoor antenna may be necessary; a good directional outdoor antenna is not only positioned higher, but it can better select between the desired direct signal and unwanted reflections. Your Concept dealer can advise you on an outdoor antenna.

FM Cable Connections

If you have cable FM, your cable service will provide the proper connecting hardware. However, cable services use TV frequencies and the FM sound usually leaves much to be desired.

75-ohm coaxial cable from an outdoor antenna may be connected directly to the 75-ohm antenna

terminals, without the necessity of a matching transformer. The center portion of the cable goes to the 75 Ω terminal; the outer "shield" goes to the antenna ground. If you use a balun or matching transformer, its two leads go to the blue (300 Ω) terminals.

AM Antenna

To get satisfactory AM reception, the hinged AM antenna must be swung away from the back of the receiver.

If you live in a fringe reception area, you can improve AM reception with an outdoor AM antenna. This can be a single piece of insulated wire, strung outdoors between two insulators. Place it as high as possible. The outdoor portion of the wire should be 25 to 75 feet long. Connect it directly to the AM antenna terminal on the Concept's rear panel. To reduce possible interference, and for safety reasons, you must use a ground with an outdoor AM antenna. Connect the antenna ground terminal to an *earth ground*, such as a cold water pipe.

Speaker Phasing

You can double-check your speaker phasing with a simple listening test. First move the speakers close to each other, and facing the listening area. With a stereo record playing, slightly advance the bass control (the outer section) on the receiver, and switch between stereo and mono. If there seems to be less bass in the mono position, *turn off* the receiver, reverse the leads at *one* speaker and repeat the test. When the quantity of bass seems similar in stereo *and* mono, the speakers are phased correctly.

Protection Circuits

The Concept 16.5 receiver has multiple sophisticated devices to protect against damage from short circuits and overload conditions. Should the speaker wires accidentally touch and cause a short circuit, the protection circuit shuts off the receiver and the green LED in the POWER button changes to red. If this happens, turn off the POWER button and check all

Specifications

Limited Warranty

Power Amplifier Section*

Continuous power output of 165 watts per channel minimum RMS, 20-20,000 Hz, both channels driven into 8 ohms with no more than 0.1% total harmonic distortion. (22.2 dBW)

Continuous power output of 250 watts per channel minimum RMS, 20-20,000 Hz, both channels driven into 4 ohms with no more than 0.1% total harmonic distortion. (24.0 dBW)

Typical THD at Full Power:
Less Than 0.03%

Frequency Response:
20-20,000 Hz \pm .2 dB

IM Distortion (50 Hz: 7 kHz = 4:1)
Less than 0.05%

1V Peak-to-Peak Rise Time:
2 μ Sec

Damping Factor:
Greater than 450 at 20 Hz.

Hum and Noise:
- 90 dB, weighted

Outputs:
Speaker A, B, C or any
2 together; 2 Lo-Z headphone

*Power measured in accordance with the Federal Trade Commission's rule on power output claims.

Preamplifier Section

Input Sensitivity
Phono 1,
Phono 2: 1.9 mV
Tape 1, Tape 2: 160 mV
Phono Overload: 200 mV

Input Impedance
Phono 1,
Phono 2: 50k Ω
Tape 1, Tape 2: 50k Ω
Main In: 20k Ω

Output Level
Tape 1, Tape 2: 600 mV, referenced to 100% FM modulation or 10 mV phono

Phono Frequency Response:
30-15,000 Hz, \pm .2 dB to RIAA curve

Tone Controls
Bass: \pm 6 dB at 50 Hz in 2 dB steps
Mid-Bass: \pm 10 dB at 100 Hz in 1 dB steps
Treble: \pm 6 dB at 20,000 Hz in 2 dB steps
Mid-Treble: \pm 10 dB at 10,000 Hz in 1 dB steps

Loudness Contour at - 30 dB at maximum setting:
+ 8 dB at 100 Hz, + 4 dB at 10,000 Hz

High Filter:
- 10 dB at 7,500 Hz, 6 dB/octave

Volume Control Balance:
within 0.3 dB tracking

Signal-to-Noise Ratio
Phono 1,
Phono 2: 78 dB unweighted,
84 dB weighted
Tape 1, Tape 2: 85 dB
Main In: 90 dB

Residual Hum and Noise:
.5 mV

Crosstalk at 1 kHz:
- 65 dB

FM Tuner Section

Tuning Range:
87.5—109 mHz
Sensitivity
IHF: 9.3 dBf (1.6 μ V)
at 300 Ω

50 dB Quieting (mono): 13.2 dBf (2.5 μ V)
50 dB Quieting (stereo): 36.4 dBf (36 μ V)

Signal-to-Noise Ratio at 65 dBf:
72 dB

Stereo Separation
At 1 kHz: 52 dB
At 100 Hz: 42 dB
At 10 kHz: 40 dB

Total Harmonic Distortion at 65 dBf:
0.08% (mono), 0.1% (stereo)

Frequency Response:
30-15,000 Hz \pm 0.5 dB

Capture Ratio:
0.9 dB

Alternate Channel Selectivity:
90 dB

Spurious Response Ratio:
Better than 110 dB

Image Response Ratio:
Better than 110 dB

IF Response Ratio:
Better than 110 dB

Muting Sensitivity:
16.1 dBf (3.5 μ V)

Stereo Threshold:
16.1 dBf (3.5 μ V)

AM Tuner Section

Tuning Range:
520—1650 kHz

IHF Sensitivity:
175 μ V/m

Image Response Ratio:
67 dB

Signal-to-Noise Ratio:
50 dB

General

Dimensions
Width: 21 $\frac{1}{8}$ " (53.66 cm)
Height: 7" (17.78 cm)
Depth: 18 $\frac{3}{4}$ " (47.63 cm)
Weight: 67 lbs. (30.5 kg)

Your Concept receiver is covered by a limited warranty against defects in materials and workmanship for a period of three years from the date of purchase. Concept warranty repair will be performed only when your purchase receipt is shown as proof of ownership. Defective parts will be replaced without charge if this Concept receiver is returned to your dealer's store, as shown on your purchase receipt, or to any branch of that store where, in all cases, authorized service will be available. Check the yellow pages or white pages of your telephone directory for the location nearest you. If additional assistance is required, please write to Concept at the address provided below describing the malfunction. Concept will send directions in writing.

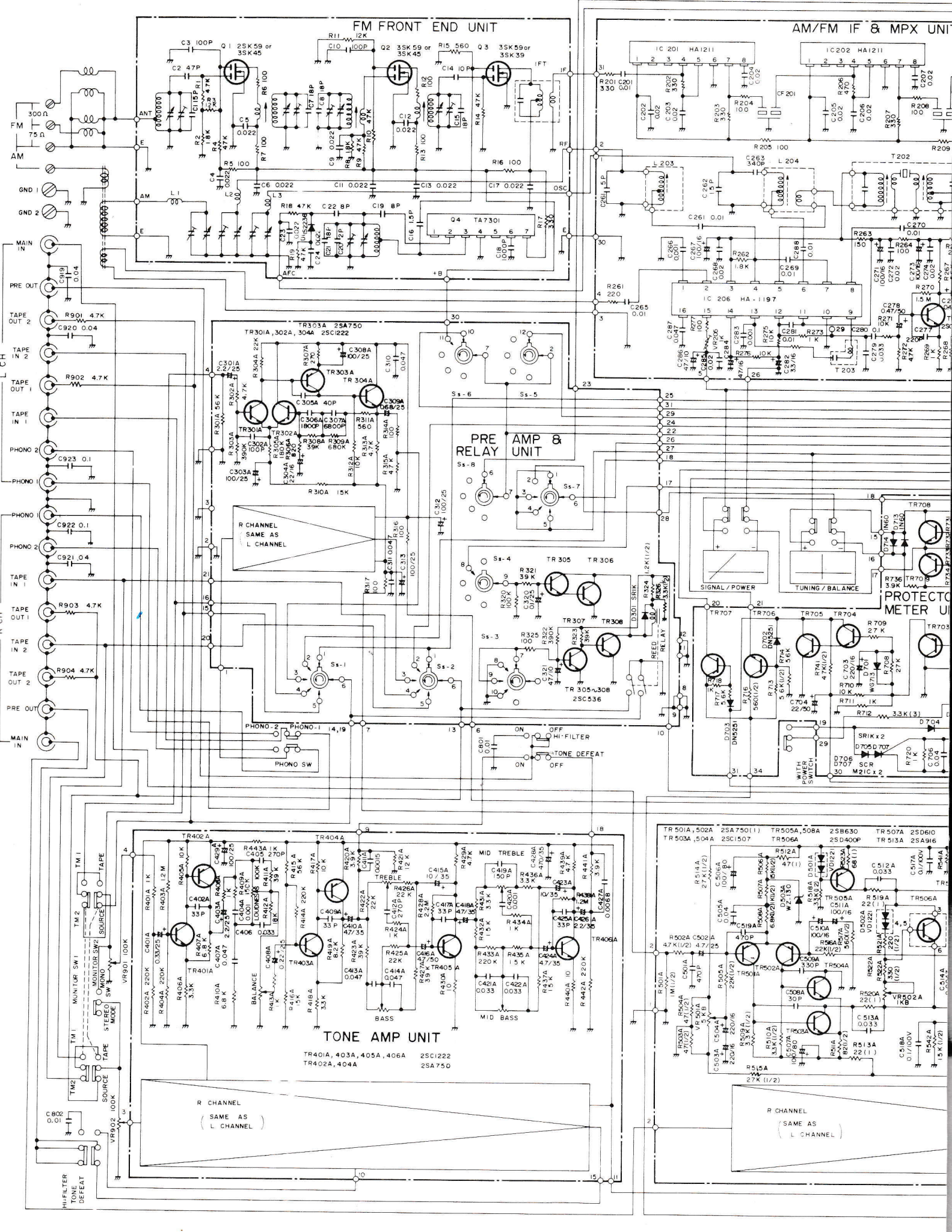
Charges for unauthorized service and transportation costs are not reimbursable under this warranty. Any damage or defect resulting from unauthorized parts or services is not covered by this warranty. Any services performed by other than a dealer authorized to perform such services are not reimbursable under this warranty.

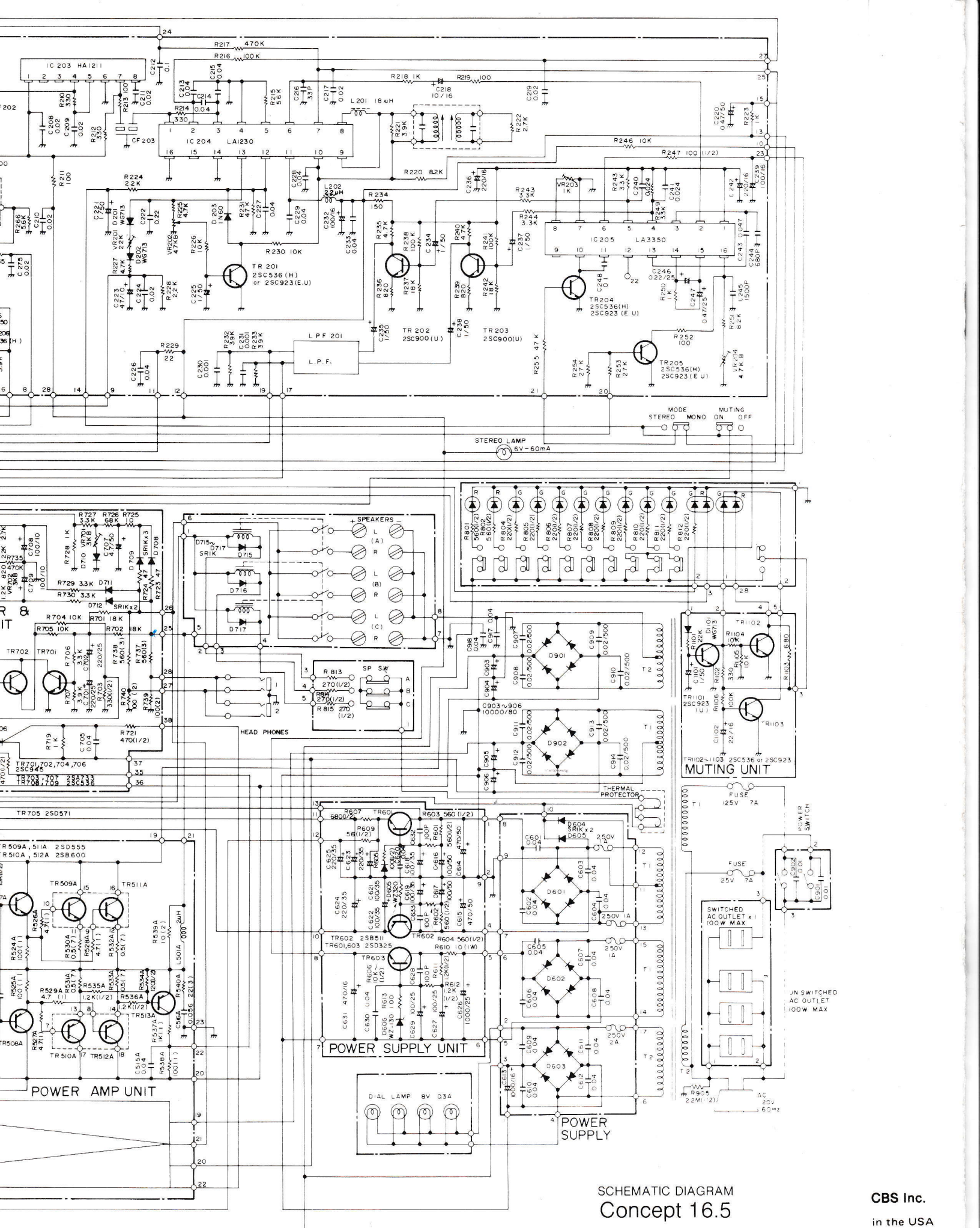
This warranty becomes void if the serial number is defaced or removed, or the product has been damaged by alteration, misuse, accident or neglect. THE WARRANTOR ASSUMES NO LIABILITY FOR PROPERTY DAMAGE OR ANY OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGE WHATSOEVER WHICH MAY RESULT FROM THE FAILURE OF THIS PRODUCE. Any and all warranties of MERCHANTABILITY and of FITNESS implied by law are limited to the duration of this expressed limited warranty.

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 limitation or 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.

Service Manager
Concept
CBS Inc.
1601 W. Glenlake Avenue
Itasca, Illinois 60143





SCHMATIC DIAGRAM
Concept 16.5

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