

REAR PANEL

(1) Phono GND Screw

Connect the ground lead (typically green or black) from the Turntable/Record Changer to this screw (to reduce or eliminate hum).

(2) PHONO Jacks

Connect Turntable/Record Changer with magnetic cartridge to these jacks. These jacks are active when PHONO Push-button is pressed.

(3) VIDEO

Connect video audio to these jacks.

(4) CD Jacks

Connect output from any high-level source — a Compact Disc Player, third Tape Deck, etc. These jacks are activated when CD push-button Selector is pressed.

(5) TAPE IN 1 Jacks

Use as following (8) for a second Tape Deck. To activate these jacks, TAPE MONITOR must be set to 1.

(6) VENTED TOP COVER

Allow for air flow thru vents when installing unit.

(7) TAPE OUT 1 Jacks

Use as following (10) for a second Tape Deck.

(8) TAPE IN 2 Jacks

Connect from Tape Deck's Output jacks for tape playback. To activate these jacks, TAPE MONITOR must be set to 2.

(9) POLARIZED AC LINE PLUG

Insert into a polarized 120 volt AC/60 Hz outlet.

(10) TAPE OUT 2 Jacks

Connect to the Tape Deck's Auxiliary Input for recording any one of the Receiver's program sources. The output from these and all TAPE jacks is unaffected by VOLUME, BALANCE, LOUDNESS or TONE CONTROLS.

(11) (12) PRE OUT/MAIN IN JACKS

As supplied, there are jumper wires between these jacks. If you want to operate a multi-channel system you can remove these jumpers and so use only the power amp circuits. Or, install a Frequency Equalizer system between the PRE OUT and MAIN IN jacks.

(13) A/B SPEAKERS

Terminals

(14) SWITCHED Convenience AC OUTLET

Plug in an audio accessory which you want turned on and off by front panel POWER switch. For example, connect a Tape Deck to this receptacle. Thus, when you turn the Receiver on and off, the Tape Deck will automatically be turned on and off at the same time. Power drawn from this receptacle should not exceed 300 watts.

(15) UNSWITCHED Convenience AC OUTLET

Can be used to power any audio accessory up to 300 watts. The front panel POWER switch does not affect this receptacle.

(16) AC Cord

Supplies the power. Plug the cord into any 120V AC, 60 Hz outlet. (220/240V AC, 50Hz for European and 240V AC, 50 Hz for Australian model.)

(17) Power FUSE

This is the power supply fuse. It protects the Receiver from voltage surges or other abnormal operating conditions. If the Digital Display or an LED Function Indicator does not go on when POWER is pressed, check the FUSE: if it is blown, replace with the same size and value.

(18) AM Loop Antenna

Is adequate in most areas for AM reception. Move around on its swivel for best reception.

(19) AM Antenna Screw Terminals

Connect an external AM antenna here for long distance AM reception. In most areas the built-in antenna will provide excellent reception. The ground terminal is optional, and may be used for extreme long distance reception.

(20) FM Antenna 300 Ohm Screw Terminals

Connect the Dipole Antenna (provided), or connect external FM antenna here using standard 300 ohm lead-in.

(21) FM Antenna 75 Ohm Terminal

Connect external antennas here using 75 ohm coaxial lead-in. Coaxial cable provides extremely high immunity for static and other noise.

Adding Your CARVER Receiver to Your System

Before making connections,

be sure the POWER switch is "OFF" and the AC power cord is not connected.

Note: To reduce hum, use shielded audio cable for all connections except speakers. For speaker connections use lamp cord or speaker cable.

Speakers

Your CARVER Receiver output is designed for use with 4— 16 ohm speakers. If you plan to have both A (main) and B (remote) speakers, you should use 8 or 16 ohm speakers to prevent overload.

Note: Be sure to observe proper wiring "polarity". Most speaker wire is clearly marked with a raised line along one conductor, or has one wire a different color from the other. Connect the (+) Receiver output to the (+) or "marked" (color dot or other marking) Speaker terminal. Do not allow stray strands of wire to touch adjacent terminals or the metal chassis.

Phonograph

Connect the turntable leads to the PHONO input. If the turntable has a ground wire (usually black or green) connect it to the PHONO GND screw. Plug the turntable AC cord into the AC convenience outlet or wall socket.

Tape Deck(s)

Connect your Recorder's inputs (usually labeled AUX or LINE IN) to the Receiver's TAPE OUT 1 jacks. The Receiver's TAPE IN 1 jacks should be connected to your Recorder's PRE AMP OUTPUT or LINE OUTPUT jacks. You can connect a second Recorder's inputs to the Receiver's TAPE OUT 2 jacks and the Recorder's output to the Receiver's TAPE IN 2 jacks.

AUXiliary Equipment

The CD and Video inputs may be used with any high level source — Compact Disc Player, Video Audio, a second tuner, an additional tape player or recorder, shortwave radio, etc.

Antennas

Your receiver comes with an FM Dipole Antenna and an AM Loop Antenna. For FM reception, connect the Dipole to 300-ohm antenna terminals on the rear. Tack it to the back of a record cabinet or onto a wall — the higher the better. For the best FM reception, you should use an external antenna.

For AM reception use the Loop Antenna supplied or you may connect an external antenna to the AM terminal.

Before Plugging In Your CARVER Receiver

- Double-check all connections — especially the Speaker connections — to assure that they are all secure and that there are no shorts.
- Set the Volume control to minimum (counter-clockwise) position.
- All push buttons should be out.

Now, connect the power cord to a source of AC power and you are ready for fantastic sound!

Using Your CARVER Receiver 900

Power On

Press POWER button to turn the Receiver on. Note: After about 5 seconds, you'll hear a faint click as the protection relay closes. This pause before the output stages are activated protects your speakers and the Receiver's internal circuitry from high-level switching pops and voltage peaks during the power-on cycle. The faint click is your reminder of this vital safety feature. If at any time during operation the protection relays are activated (by a short across the speaker terminals for example), the Receiver will become silent. If this happens, check for improper connection or overheating.

Speakers/Headphones

Set SPEAKERS Selector to A or B (or A + B). For private listening, set SPEAKERS to OUT and plug a pair of headphones into PHONES.

Select the Source

Press the desired Selector push-button: TUNER, PHONO, VIDEO, or CD.

AM/FM Reception

Press AM or FM push-button.

Auto Tuning

Press the AUTO TUNING button and press either UP or DOWN TUNING button. The Receiver will automatically stop at the next station. To continue or make another choice, press either TUNING button again. The locked LED will indicate perfect tuning. When you reach the highest frequency (1620 [or 1611] kHz AM, 107.9 [or 108.00] MHz FM) in UP TUNING mode, it will automatically start over. The Receiver will continue to scan the band over and over again. The Auto TUNING will only stop at strong signals on AM and FM. If you want to tune weaker stations, you will have to tune manually. Push the Manual Tuning button to

Manual position for manual tuning. You may find weaker FM stations noisy. To improve quality, engage the Asymmetrical Detector. If the stations still sound noisy or distorted, push the Noise/Multipath button.

Manual Tuning

Press the Manual Tuning button. Press UP or DOWN button until you find the desired station. If you press and hold the UP (DOWN) button for 3 seconds or more, the Receiver will start a rapid scan (will not automatically stop on stations).

How to Set the Memory

A total of 16 frequencies can be set into the Receiver's Memory (eight for FM, eight for AM).

1. Press either AM or FM push-button.
2. Tune to desired station (either Automatically or Manually).
3. Press the MEMORY SET button. The MEMORY LED will be lit.
4. Press MEMORY 1; the MEMORY LED will turn off.
5. Repeat steps 2 - 4 until all the stations you want are set into the Memory.
6. Select the other band (AM or FM) and repeat as above for six more frequencies.

Want to change the stations you've stored in Memory? Simply add new stations as in steps 1 - 6 and old ones are automatically erased.

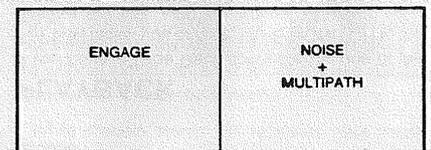
Note: You may want to put a small stick-on label next to each MEMORY button to show the call letters of the stations set into Memory.

Memory Receive

To tune a frequency programmed into Memory, just press the desired Memory button, 1 through 8. If AM push-button is pressed, you'll receive the AM frequency; if in the FM mode, you'll receive the FM frequency.

Note: When the Receiver is unplugged, a built-in Time Constant Circuit will keep the pre-set frequencies in Memory for a few hours. If the Receiver is unplugged for more than a few hours, you'll have to re-enter stations into Memory.

Asymmetrical Detector



The engage button engages the circuit. Simply push for quiet FM reception.

The NOISE button is a two position switch that allows you to optimize the circuit for a particular reception problem. In the "OUT" position, the circuit will reduce weak station noise. When the button is pushed to the "IN" (Multipath) position, the circuit will reduce both weak station noise and multipath distortion. Ordinarily, optimum performance is obtained when the button is positioned "OUT", except for those reception conditions where multipath distortion is present. Feel free to experiment with either position and choose the best.

Listening to Records

Press PHONO push-button and adjust the VOLUME, BALANCE, BASS, and TREBLE controls.

Note: For the best fidelity and longest record life, make sure the cartridge on your turntable is operating within the recommended tracking force. Too light or too heavy tracking forces cause distortion and record wear.

Auxiliary Sources

Inputs are provided for Compact Discs and Video Audio, but these jacks will accept any high-level input from auxiliary equipment. Typical auxiliary equipment would be: tape player, a UHF or VHF tuner, ham radio, etc. Connect such sources to the rear panel CD or Video inputs and press the corresponding push-button.

VOLUME and BALANCE

Increase or decrease the VOLUME control for a pleasant listening level. You can monitor the power available to the speakers by observing the two POWER METERS. If necessary, adjust BALANCE for best stereo effect and channel balance, or to compensate for slightly off-center listening positions.

Tone Control Settings

Your Receiver gives you unusually precise control over the frequency response. You're probably familiar with the use of bass and treble controls. To increase bass or treble response, rotate the appropriate control clockwise; to decrease, rotate control counterclockwise. In center position, controls are removed from the circuit for a flat, unadjusted response.

Or, you can leave the controls set for your favorite sound compensation and just press TONE when you want to engage the controls.

For Low Listening Levels

Press LOUDNESS. This increases low frequencies to overcome the human ear's lack of sensitivity at low listening levels.

Tape Functions

Your Receiver has two sets of Tape Input and Output jacks on the rear, plus DUBBING and MONITOR switches on the front panel. This makes it easy to copy tapes, make dual recordings or record any program source without changing rear panel connections.

Recording

Set the Function switch to the desired source — you can record any program source being played through your receiver. Set TAPE DUBBING to center (off) position. Adjust Volume, Balance and tone controls for your preference — they will not affect the output to your Recorder. If you have a 3-head tape deck, you can set TAPE MONITOR switch to 1 (or 2) to hear the recording immediately after it passes the recording head.

When TAPE DUBBING and MONITOR switches are set to their center (off) positions, the signal you are listening to (AM, FM, PHONO, etc.) will appear at both TAPE 1 and TAPE 2 OUT jacks. So, you can record via either or both jacks.

If you set TAPE MONITOR to other than OFF, it will interrupt the "source" signal and connect the Receiver's input to the TAPE IN jacks selected by the position on the TAPE MONITOR switch.

To Duplicate (Dub) Tapes:

Let's say you have Tape Deck "A" connected to TAPE 1 IN and OUT jacks. And you have Tape Deck "B" connected to TAPE 2 IN and OUT jacks.

Put Tape Deck "A" into Play function. Set DUBBING to 1 \downarrow 2 and Record with Tape Deck "B". If Tape Deck "B" is a 3-head machine, you can monitor its recording by setting TAPE MONITOR to 2.

You can also record onto Tape Deck "A", when Tape Deck "B" is in the Play mode. Just set DUBBING to 2 \downarrow 1. Then, to monitor the recording made on Tape Deck "A" (assuming "A" is a 3-head machine), set MONITOR to 1. As you use and experiment with these jacks and front panel switches, you'll soon begin to appreciate the unusual flexibility and versatility of these inputs and outputs.

Dubbing While Listening to Another Source:

It's possible to dub tapes (from Tape 1 to Tape 2 or Tape 2 to Tape 1) while you are listening to another source (AM, FM, PHONO, VIDEO, or CD). This surprising feature is possible because the TAPE IN/OUT circuits are independent from the rest of the circuitry under the following conditions:

- (a) TAPE MONITOR switch must be set to center (off) position.
- (b) TAPE DUBBING switch must be set to 1 \downarrow 2 or 2 \downarrow 1 position, depending on which deck is in playback mode and which is in record mode.

So now if you're doing a lot of dubbing and it gets tedious, you're free to listen to whatever source you choose.

PLAYBACK

If you have a Tape Deck connected to one of the TAPE IN jacks, you can set TAPE MONITOR to the desired position and, regardless of which input source you're using, you will hear the tape being played.

Note: If you have set TAPE MONITOR to 1 or 2 without a signal source being connected to TAPE IN 1 or TAPE IN 2, the Receiver's sound will cease. TAPE MONITOR (1 or 2) interrupts the signal flow through the Receiver and activates TAPE IN 1 or TAPE IN 2 for the input source. So if the Receiver is "dead", be sure MONITOR is not set to 1 or 2.

ASSYMETRICAL CHARGE COUPLED DETECTOR

YOU HAVE PURCHASED AN ABSOLUTELY UNIQUE RECEIVER THAT WILL ALLOW YOU TO RECEIVE NOISE-FREE AND MULTIPATH FREE STEREO FM RECEPTION FROM MANY STATIONS THAT YOU HAVE PREVIOUSLY FOUND TO BE UNLISTENABLE.

The FM Stereo Problem

The fundamental FM stereo problem is simple: the broadcast system was designed over 30 years ago before the advent of stereo. When stereo came along, two channels were forced to fit where one channel went before. The result: a giant step backwards in terms of noise-free, distortion-free reception for all but nearly ideal and perfect reception conditions. Enter the CARVER Receiver.

Your CARVER Receiver can drastically reduce multipath and distant station noise and still provide fully separated stereo reception with space, depth and ambience. We're tempted to say, sound **quality** as it was intended over 30 years ago. Back then, FM was a noise-free, wide-band alternative to static-filled AM. But it was in mono. Unfortunately, the stereo transmission system selected to augment mono FM ended up degrading the ratio of signal noise FIFTEEN TIMES! (More than 23 dB.)

That's the system we live with today: hiss and often multipath, distortion-filled unless you're in a direct line with a strong station.

Understanding FM

Stereo frequency modulation transmission is a lot more complicated than you might think. But understanding it will clarify both the problems and CARVER's solution.

Stereo FM, is not like a 2-track cassette with separate signals next to each other. Rather, there is a Left-Minus-Right and a Left-Plus-Right signal. A receiving circuit adds and subtracts sums and differences to get Left-only and Right-only signals (As you might have guessed, Left-Plus-Right comes in just fine on mono receivers because it IS mono.) It's that Left-Minus-Right signal that's to blame.

These signals are transmitted at different parts of the audio spectrum and unfortunately L-R is extremely prone to mishaps on the way to your home.

Audio Ghosting

To get stereo FM perfectly, you'd have to be the only house in the middle of a vast flat plain with no other buildings anywhere on the plain.

Because any protruding mass — hills, mountains, skyscrapers, other antennas, even bridges — looms up to reflect signals while on their way to your tuner.

Then you get TWO signals, one directly, and one or more a fraction of a second later, after it's taken a longer angular path of bouncing off something. (This happens with TV and AM, too. AM isn't audibly

affected, but you can see the frustrating result on TV: a second, third and fourth image.)

These additional images are disastrous to FM reception because they reinforce and then remove part of the signal alternately. As the main signal deviates in frequency, it beats with the reflective signal, causing constructive and destructive interference patterns which bear no resemblance to the original signal. An engineer calls these "beats" phase and amplitude modulation.

While modern stereo FM receivers have made much of correcting the amplitude modulation component of this interference, they have never addressed the truly audible distortion caused by the phase modulation part.

Without waxing too technical, suffice it to say that all other FM receivers are tricked into reading phase modulation as frequency modulation, which is decoded and made into a brand new signal.

Thus instead of just degrading the existing signal, multipath reception problems actually CAUSE NEW AUDIBLE SOUNDS. And we've all heard how bad these sounds sound.

Your CARVER Receiver eliminates these distortions whenever the ASSYMETRICAL DETECTOR button is engaged. We recommend leaving the ENGAGE button "IN" all the time and the NOISE button "OUT" for normal listening. For severe multipath reception problems, push the NOISE button "IN" to additionally activate the multipath reduction mode of the circuit.

SPECIFICATIONS

PRE-AMPLIFIER & AMPLIFIER

Minimum Audio Output Power at no more than 0.15% Total Harmonic Distortion into 8 ohms, over the audio spectrum 20 - 20,000 Hz	: 90 watts per channel (RMS power, both channels driven)
Frequency Response (20 - 20,000 Hz)	: Flat
IM Distortion	: 0.05%
Gain: PHONO	: 35 dB
AMPLIFIER	: 26 dB
TUNER, VIDEO	: 17 dB
TAPE IN 1, 2	: 17 dB
Tone Control Action	: ± 8 dB
BASS (100 Hz)	: ± 8 dB
TREBLE (10 kHz)	: ± 8 dB
Signal-to-Noise Ratio	
PHONO	: 82 dB
AUX and TAPE IN 1, 2	: 90 dB
TAPE OUT 1, 2 Level	: 140mV
FM TUNER	
Sensitivity (IHF)	: 1.8 μ V
Sensitivity for 50 dB Quieting Mono, Stereo	: 3.1 μ V, 5.0 μ V
Limiting Sensitivity (-3 dB)	: 1.5 μ V
Signal-to-Noise Ratio (1mV)	: 74 dB
Image Rejection	: 82 dB
IF Rejection	: 80 dB
Capture Ratio	: 1.0 dB
Harmonic Distortion	
Mono	: 0.15%
Stereo	: 0.2%
AM Suppression	: 80 dB
Stereo Separation (1 kHz)	: 40 dB
AM TUNER	: 20 μ V
Sensitivity Terminal	: 250 μ V
Radiated	: 250 μ V/m for 20 dB S/N
Distortion (5mV/M)	: .9%
Selectivity	: 42 dB
Image Rejection	: 45 dB
IF Rejection	: 34 dB
AGC Figure of Merit	: 50 dB

ANTENNAS

AM: Loop Antenna
 FM: Dipole antenna
 Plus terminals for external antennas.
POWER REQUIREMENTS
 120V AC, 60 Hz (350 watts max.)

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

CARVER LIMITED WARRANTY

This equipment is warranted against defects for two years from date of purchase. Within this period, we will repair it without charge for parts and labor. Simply write to or call Carver Corporation (Attention: Customer Service Department), P.O. Box 1237, 19210 33rd Ave. W., Lynnwood, Washington 98036, 206-775-1202. You will be directed to an authorized Carver Corporation Service Station or receive instructions to ship the unit to the factory. Please save the original shipping carton and packing materials in case shipping is required. Please do not ship by Parcel Post. Be sure you have received authorization from Carver Corporation and include a complete description of the problem, the associated components and connections, and a copy of the purchase receipt. Initial shipping costs are not paid by Carver Corporation; return shipping costs will be prepaid if repairs were covered by the scope of this Warranty.

Carver Corporation's liability is limited to the repair or replacement, at our option, of any defective product and shall not, in any event, include property or any other incidental or consequential damages which may result from the failure of this product.

Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions 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. We suggest that you attach your purchase receipt to this Warranty and keep these in a safe place. Thank you for your choice of a Carver Corporation product.

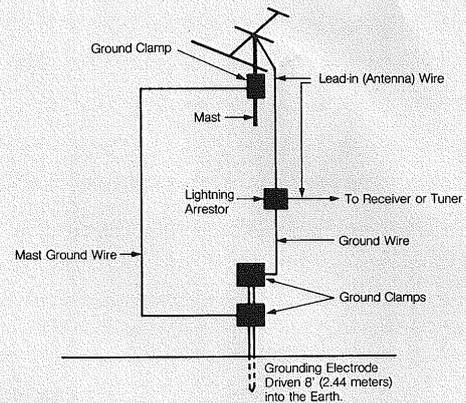
Notice: The preceding warranty information is exclusive to the United States. Please see your local Carver dealer or distributor for the correct information for your area and locale.

SAFETY INSTRUCTIONS

READ BEFORE OPERATING THE EQUIPMENT

This product was designed and manufactured to meet strict quality and safety standards. There are, however, some installation and operation precautions which you should be particularly aware of.

1. Read instructions — Read and follow all the safety and operating instructions before operating the equipment.
Save the Owner's Manual for future reference.
2. The equipment should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
3. The equipment should not be located near heat sources such as radiators, heat registers, stoves, or other appliances that produce heat.
Position the equipment so that its proper ventilation is not interfered with. For example, the equipment should not be placed on a bed, sofa, rug, or similar surface that may block the ventilation openings.
Except as described in the Owner's Manual, don't place the equipment in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
4. The equipment should be used only with a cart, stand, or rack specifically designed to hold stereo equipment. If the equipment is to be mounted in a wall or ceiling, care should be taken to assure a stable and solid installation; professional assistance should be sought in difficult installation situations.
5. The equipment should be connected to a power source of the same type described in the Owner's Manual and also on the equipment. The power cord should be routed so it won't be walked on or pinched by objects placed upon or against it. Pay particular attention to power cords where they connect to plugs, convenience outlets and the equipment itself.
6. To avoid a possible shock hazard situation:
 - A) Don't remove the center (ground) conductor, if any, from the power plug.
 - B) Don't file down a conductor of a power plug so it will fit into an extension cord.
7. If an outdoor antenna is used in your system, it should be located away from power lines. The outdoor antenna should be grounded to provide protection against lightning and built-up static charges. Figure A illustrates a typical installation. A lightning arrester can be obtained from stereo stores and electronic shops. Instructions will be included with the lightning arrester.



- A) Use No. 10 AWG (5.3 mm²) copper or No. 8 AWG (8.4 mm²) aluminum or No. 17 AWG (1.0 mm²) copper-clad steel or bronze wire, or larger as ground wires for both mast and lead-in.
- B) Secure lead-in wire from antenna to lightning arrester and mast ground wire to house with stand-off insulators, spaced from 4 feet (1.22 meters) to 6 feet (1.83 meters) apart.
- C) Mount lightning arrester as closely as possible to where lead-in enters house.

Fig. A. Typical Installation for Lightning Arrester

8. Care should be taken so that objects do not fall and liquids are not spilled into the equipment. The equipment should be cleaned only as described in the CLEANING section of the Owner's Manual.
9. The power cord of the equipment should be unplugged from the outlet if the unit won't be used for a long period of time.
10. You should not attempt to service the equipment beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

The equipment should be serviced by qualified service personnel whenever any of the following occurs:

- A) The power supply cord or the plug has been damaged.
 - B) Objects have fallen, or liquid has been spilled into the equipment.
 - C) The equipment has been exposed to rain.
 - D) The equipment does not appear to operate normally or exhibits a marked change in performance.
 - E) The equipment has been dropped or the case damaged.
11. Heed Warnings — All warnings on the appliance and in the operating instructions should be adhered to.