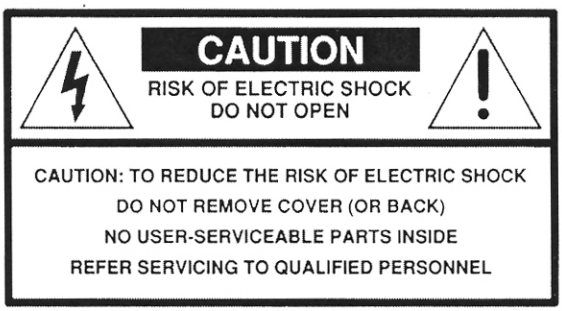
CARVER

DPL-33 Dolby Pro Logic® Surround Sound Processor/Amplifier

Owner's Manual

CARVER



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Safety Instructions

1. Read Instructions — All the safety and operation instructions should be read before the Carver Component is operated.

2. Retain Instructions — The safety and operating instructions should be kept for future reference.

3. Heed Warnings — All warnings on the Component and in these operating instructions should be followed.

4. Follow Instructions — All operating and other instructions should be followed.

5. Water and Moisture — The Component 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, etc.

6. Ventilation — The Component should be situated so that its location or position does not interfere with its proper ventilation. For example, the Component should not be situated on a bed, sofa, rug, or similar surface that may block any ventilation openings; or placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through ventilation openings.

7. Heat — The Component should be situated away from heat sources such as radiators, or other devices which produce heat.

8. Power Sources — The Component should be connected to a power supply only of the type described in these operation instructions or as marked on the Component.

9. Power Cord Protection — Power-supply cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit the Component.

10. Cleaning — The Component should be cleaned only as recommended in this manual.

11. Non-use Periods — The power cord of the Component should be unplugged from the outlet when unused for a long period of time.

12. Object and Liquid Entry — Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the Component.

13. Damage Requiring Service — The Component should be serviced only by qualified service personnel when:

A. The power-supply cord or the plug has been damaged; or

B. Objects have fallen, or liquid has spilled into the Component; or

C. The Component has been exposed to rain; or

D. The Component does not appear to operate normally or exhibits a marked change in performance; or

E. The Component has been dropped, or its cabinet damaged.

PORTABLE CART WARNING

Carts and stands - The Component should be used only with a cart or stand that is recommended by the manufacturer. A Component and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the Component and cart combination to overturn.

Can't Wait?

DPL-33

If you're super-impatient (and/or are expert at home video theater installation, you can skip ahead to the "nitty gritty" information which is marked with tabs on the upper right hand corner of manual pages.

Otherwise, we suggest you read the entire manual carefully before proceeding. The DPL-33 offers a wide variety of connection options which you should consider in advance.

Hook-Up instructions start on page 7 Hook-Up

Operating instructions start on page 16 Operation

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14. Servicing — The user should not attempt to service the Component beyond those means described in this operating manual. All other servicing should be referred to qualified service personnel.

15. To prevent electric shock, do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Pour préevenir les chocs électriques ne pas utiliser cette fiche polariseé avec un prolongateur, un prise de courant ou une autre sortie de courant, sauf si les lames peuvent être insérées à fond sans laisser aucune pariie à découvert.

16. Grounding or Polarization - Precautions should be taken so that the grounding or polarization means of the Component is not defeated.

17. Internal/External Voltage Selectors — Internal or external line voltage selector switches, if any, should only be reset and re-equipped with a proper plug for alternate voltage by a qualified service technician. See an Authorized Carver Dealer for more information.

18. Attachment Plugs for Alternate Line Voltage (Dual voltage models only)— See your Authorized Carver Dealer for information on the attachment plug for alternate voltage use. This pertains to dual-voltage units only.

This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

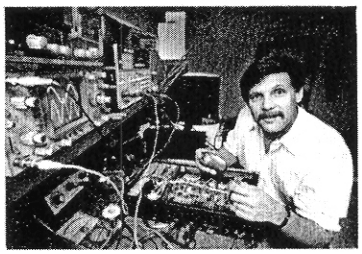
ATTENTION – Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant las limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le règlement sur le brouillage radioélectrique édicté pa les ministere des communications du Canada.

WARNING – To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

A Message from Bob Carver

Congratulations on purchasing a Carver DPL-33 Dolby Pro Logic Processor/Amplifier. We expect that its sophisticated engineering and meticulous craftsmanship will provide you with many years of listening enjoyment.

At the heart of the DPL-33 is Dolby's most advanced surround sound technology, circuitry that closely approximates the Dolby Stereo effects found in many state-of-the-art theaters.



Instead of just front and rear channels, Pro Logic uses three different outputs (rear left and right channels are monophonic, i.e., the same) and five amplifier channels, three of which are built into the DPL-33. The key to the system is center channel active logic steering that provides a natural sound stage and a realistic simulation of the environment seen on the video screen, independent of viewer position.

The DPL-33 also features Dolby's latest auto-balance circuits that continuously monitor and adjust the relative levels of the source material input for proper decoding.

For conventional stereo sources, we have provided a "hall" ambience generator that convincingly simulates the sound of a live concert hall. For monophonic inputs, such as most TV programs and older movies, the DPL-33 has a "matrix" stereo synthesizer that adds a worthwhile spacial dimension.

We've also included a subwoofer output fed by its own built-in electronic crossover, giving you the option of further increasing the impact of modern VHS Hi-Fi and laser disc movie soundtracks.

Once you're familiar with the DPL-33's controls, you'll find them easy to use. To get the best performance from your home video theater, you'll need to read all safety, installation and operating information that follows in this manual.

Again, let me thank you for choosing a Carver component. I am proud to present to you the DPL-33, incorporating the best in craftsmanship and design.

Bob Carver

Robert W. Carver
President
Carver Corporation

Set-up

Carefully unpack your DPL-33 and keep the original carton and packing materials for moving, shipment, or long-term storage.

Upon opening the box, please check for any visible sign of damage that did not appear on the outside of the box. If you do encounter what appears to be concealed damage, please consult your Carver Dealer before proceeding to further unpack or install the unit.

Important Paperwork

Make sure to save your sales receipt. It is extremely important to establish the duration of your Limited Warranty, and for insurance purposes.

Next, make a note of the serial number which is located on the back of the DPL-33. Record it in the space provided below for convenient reference.

Model: **DPL-33**

Serial Number: _____

Purchased at: _____

Date: _____

Finally, take a moment to fill out and return the Warranty Card that came with the DPL-33 and return it to Carver. In the event that you misplace your sales receipt, having your Warranty Card will assist us in honoring the warranty.

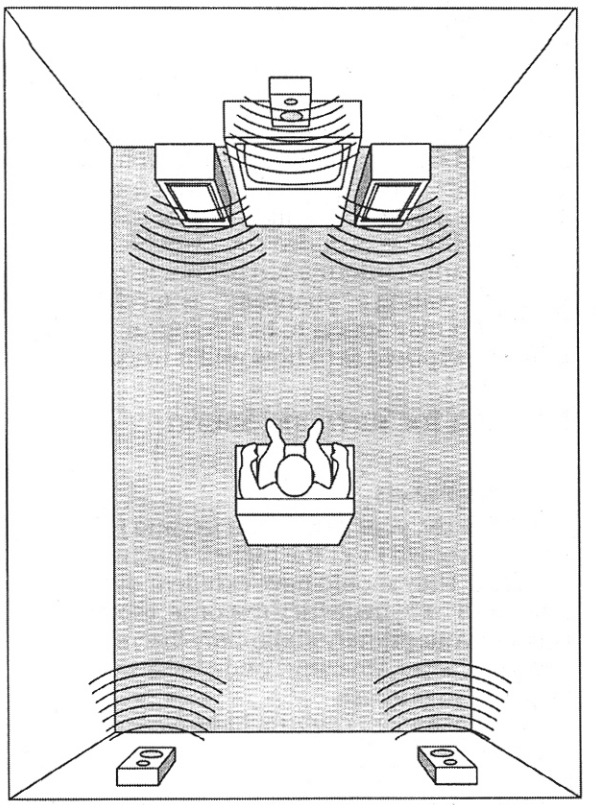
Placement

The DPL-33 is a solid state device and can be placed in any position including vertically. Heat, at least in normal amounts, shouldn't be any problem. However, be sure not to block the DPL-33's ventilation slots by setting other components directly on top of it and make sure that it is not placed directly above power amplifiers that radiate heat.

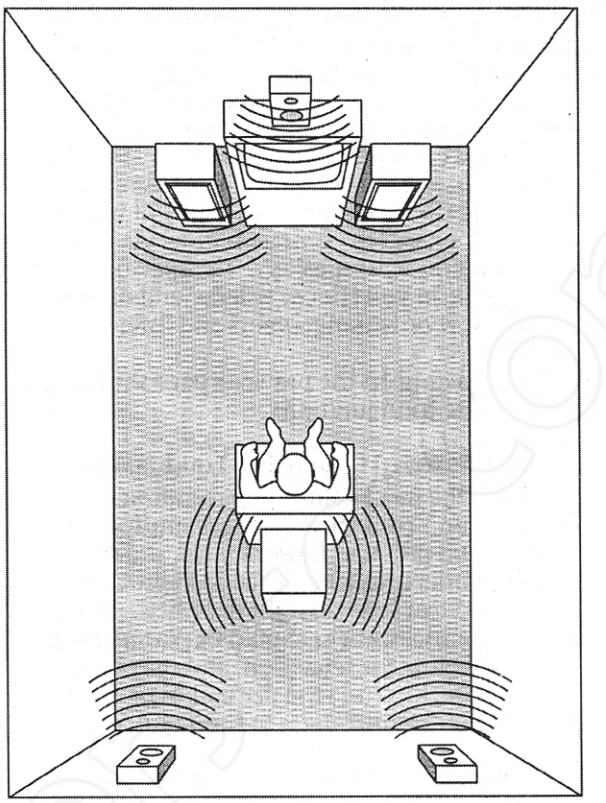
Since the DPL-33 is going to be directly connected to your receiver or preamplifier, it should naturally be located with the rest of your stereo equipment.

Planning your Dolby Surround Sound layout

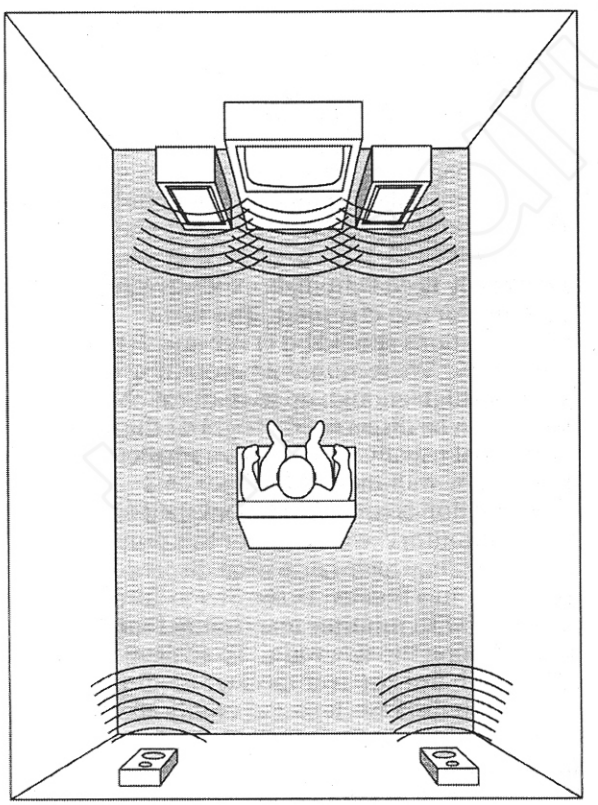
Before we delve into the details of hooking up the DPL-33, it is necessary to consider just HOW you intend to employ its various options. That decision will determine what combination of connections are used.



1A



1B



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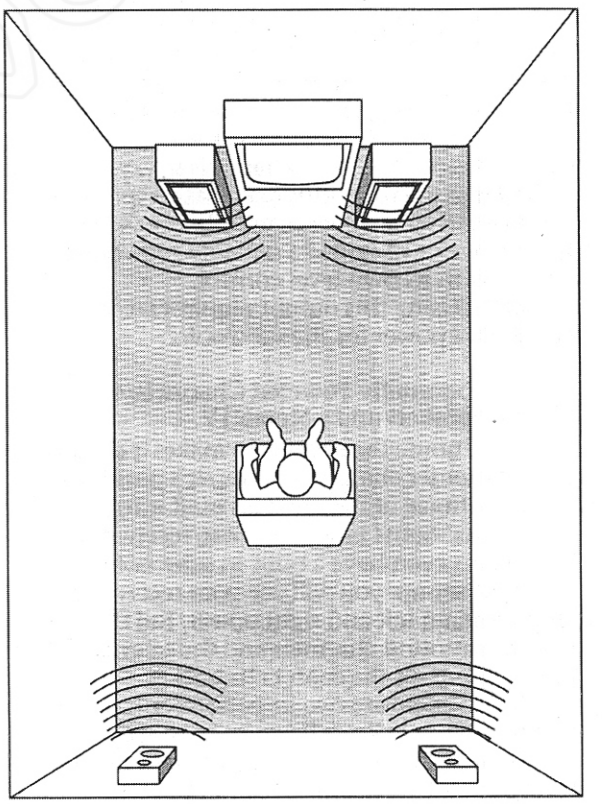


1D

One of the key differences between Dolby Pro Logic and Dolby Surround Sound is the addition of a center channel (we cover the principles of Pro Logic starting on page 18). This extra sound source can be achieved three ways 1) with an additional center channel speaker; 2) via the speakers in stereo televisions, 3) by using an electronic circuit built into the DPL-33 which creates a "phantom" center channel via your main left and right speakers. The specific configuration you choose will depend on your resources, room arrangements and listening tastes.

The drawing on the previous page shows some of the basic configurations.

1A. 5 Powered Channels/5 Loudspeakers

This is the most commonly recommended Pro Logic set-up. Your receiver or preamp/power amp combo provides power for left and right front channel speakers; the DPL-33 provides the center and rear left and right channels. The center channel speaker should be placed directly above or below the television, and may need to be video shielded (see the discussion of "Speakers for Surround Sound" later in this manual).

1B. 6 Powered Channels/5 Loudspeakers and a Subwoofer

This is basically the same system as Fig. 1A with the addition of a subwoofer for more low bass response. While rear-channel Pro Logic frequency response is deliberately limited in bandwidth, front channel information extends from 20 to 20,000 Hz, the full range of human hearing. In a Dolby Stereo (surround sound) movie theater, the front channels always use VERY large speakers with deep bass response. To achieve the same effect in your home video theater, we've provided a separate subwoofer output with its own level control.

NOTE: Using this output requires an extra channel of power for the subwoofer.

1C. 4 Externally-Powered Channels/4 Loudspeakers and a Stereo TV

If your home theater set-up makes it difficult to add a center channel speaker, it's possible to take advantage of the speakers built into stereo televisions. Some larger monitor/receivers and big screens even have a built-in subwoofer.

In this set-up, you will use your receiver/power amp for main left and right power, the DPL-33 for rear surround channels and the television's built-in amp for the center channel.

NOTE: There are two important criteria for this hook-up: 1) Your TV must have separate audio inputs; 2) It cannot be more than ten feet from your stereo system. That's about the maximum distance which a signal can go via line level "patch cord" without severe signal degradation.

1D. 4 Powered Channels/4 Loudspeakers

Although you're not taking advantage of one of the DPL-33's amplifier channels, you can still enjoy Dolby Pro Logic with just four speakers: two main left and right and two rear left and right. Dolby has included circuity which routes center channel information to your left and right speakers creating a "phantom" center channel. While this may appear to be a compromise, you'll be quite surprised as to how well it works.

Speakers for Surround Sound

Main speakers

Obviously, your main front left and front right speakers should be of the highest quality possible. They should have excellent dynamic range and wide frequency response, especially if they are your primary audio-only listening system. Carver Amazing Loudspeakers work very well for this purpose.

Since Dolby Pro Logic includes a center channel, your main front left/front right speakers can be placed farther away from the TV monitor than is normally recommended. The benefits are two-fold. First, the TV image is psychoacoustically enlarged without losing on-screen centered dialog. Second, the main speaker system needn't be video shielded.

Rear surround channels

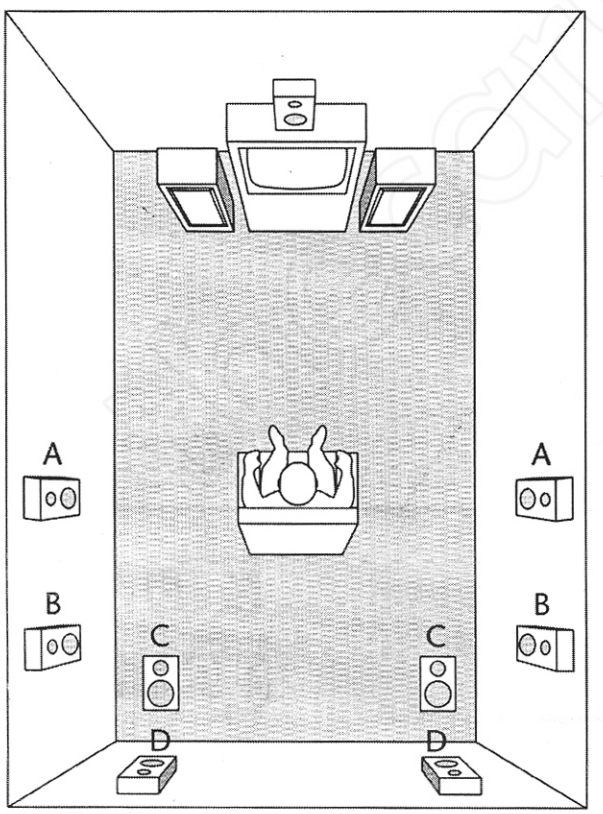
By Dolby's own specifications, the sounds which emerge from rear left and rear right speakers are not full-range. Rather, the Surround channel output is mainly midrange and treble (100 to 6000Hz). This suggests that you don't necessarily need extremely expensive, full-range speakers for rear channels. The main considerations should be 1) size and 2) non-directivity. We recommend mounting rear speakers high enough up so that rear channel sound can be dispersed throughout the viewing area. That usually necessitates a smaller speaker that can be wall-mounted. Since bass reproduction is not critical, bookshelf and even "mini-monitors" work well for this purpose assuming they have fairly wide dispersion patterns. In a theater, Dolby Stereo Surround is achieved with multiple rear channel speakers spaced along the side walls. To achieve the same effect with just two rear speakers requires a design which can disperse its sound evenly across the listening area. Another approach is to mount small speakers facing upwards so that their sound is dispersed by the ceiling and rear walls.

Center Channel

Unlike rear channels, the Pro Logic center channel is full range, carrying a large amount of bass information. However, information below about 100Hz is routed equally to your main front loudspeakers, reducing the need for a gigantic center channel speaker. The considerations boil down to 1) video shielding, and 2) what you can buy just one of.

Video shielding is an important consideration in many cases. A loudspeaker contains magnets whose fields extend past the enclosure. These flux lines can produce severe color distortion. Since the center channel must be placed just under the TV, make sure to use a design which is video shielded. Your Carver dealer can make specific recommendations.

Possible rear channel surround sound speaker placements: Side (A&B), in corners pointing toward ceiling (C), rear wall firing forward (D)



Hook-up

General tips

The following suggestions can help you avoid potential problems and general frustrated fussing-around later:

Component-to-component connections

- ✔ Make sure all components are OFF before making any connections.
- ✔ Use high quality interconnects. Cheap, worn or frayed patch cords will not only degrade the sound, but can be a source of hum and RF noise as well. Special higher-quality interconnects are available in many grades. They have more durable plugs which make better connections, won't short out or break as cheap patch cords may. Consult your Carver dealer for recommendations.
- ✔ Double-check that "left's go to left's and right's go to right's". It is general practice to use RED patch cord plugs for RIGHT channel connections and WHITE or BLACK patch cord plugs for LEFT connections. Whatever way you choose, remain consistent while hooking up all of your components.

Amplifier-to-speaker connections

- ✔ Use wire no thinner than 14 gauge for front channel connections; rear channels can use wire as thin as 20-gauge for runs up to 25 feet.
- ✔ Use the same length of wire for left and right channels, even if one speaker is closer to the amp than the other. This is less important if you're using hefty wire, but extremely critical if you've cheaped out with thin wire.
- ✔ Double-check positive and negative connections at both the amplifier speaker terminals and the speakers. To do this, you need to be able to discriminate between the two conductors in the speaker cable. If your wire has transparent insulation, it's usually easy. One conductor will be copper-colored and the other silver-colored. Generally, the copper one is denoted as POSITIVE (+) and the silver one as NEGATIVE (-). If your wire has opaque insulation, there are still differentiating markings. Examine the wire closely and look for:

✔ A series of ribs or grooves on one conductor
✔ A painted stripe
✔ A single strand of yarn intertwined with the multi-stranded wire in one conductor.

Use this conductor as POSITIVE (+) for similar connections on both ends.

✔ Make sure that the little wires in each conductor are twisted tightly together to prevent them from straying and causing short circuits.

Rear Panel Connections

As shown in the drawing below, the DPL-33 includes 4 groups of connections: inputs and outputs (1 & 3 in the drawing), tape monitor loop (2), line level outputs for center channel (4), rear channel outputs (5) and mono subwoofer (6), plus three sets of amplifier/speaker connections: rear left (7), rear right (8) and center (9).

Having both line level and powered outputs for rear and center channels gives you exceptional flexibility. The DPL-33 provides 15 watts RMS each for rear left, rear right and 25 watts for center. This should be more than sufficient in all but extreme cases (such as a huge room or extremely inefficient rear or center channel speakers). However, the line level outputs allow you to add additional power amplifier channels (such as our 60+60+60-watt AV-63). In addition, the center channel line level output enables you to take advantage of the internal amplifiers and speakers found on many stereo televisions.

Getting sound to and from the DPL-33

In all of the hookup diagrams which follow, we've shown your video input (VCR, LD or combo player) connected to a receiver/preamplifier. That makes switching sources easy, especially when the receiver is remote controlled. Depending on what make and model of components you have, the sound can get to the DPL-33 two different ways.

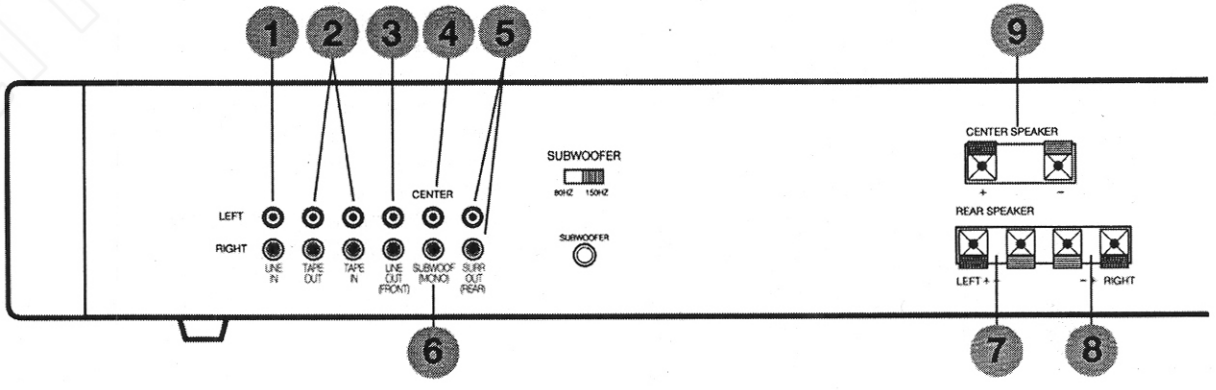
Tape monitor loop

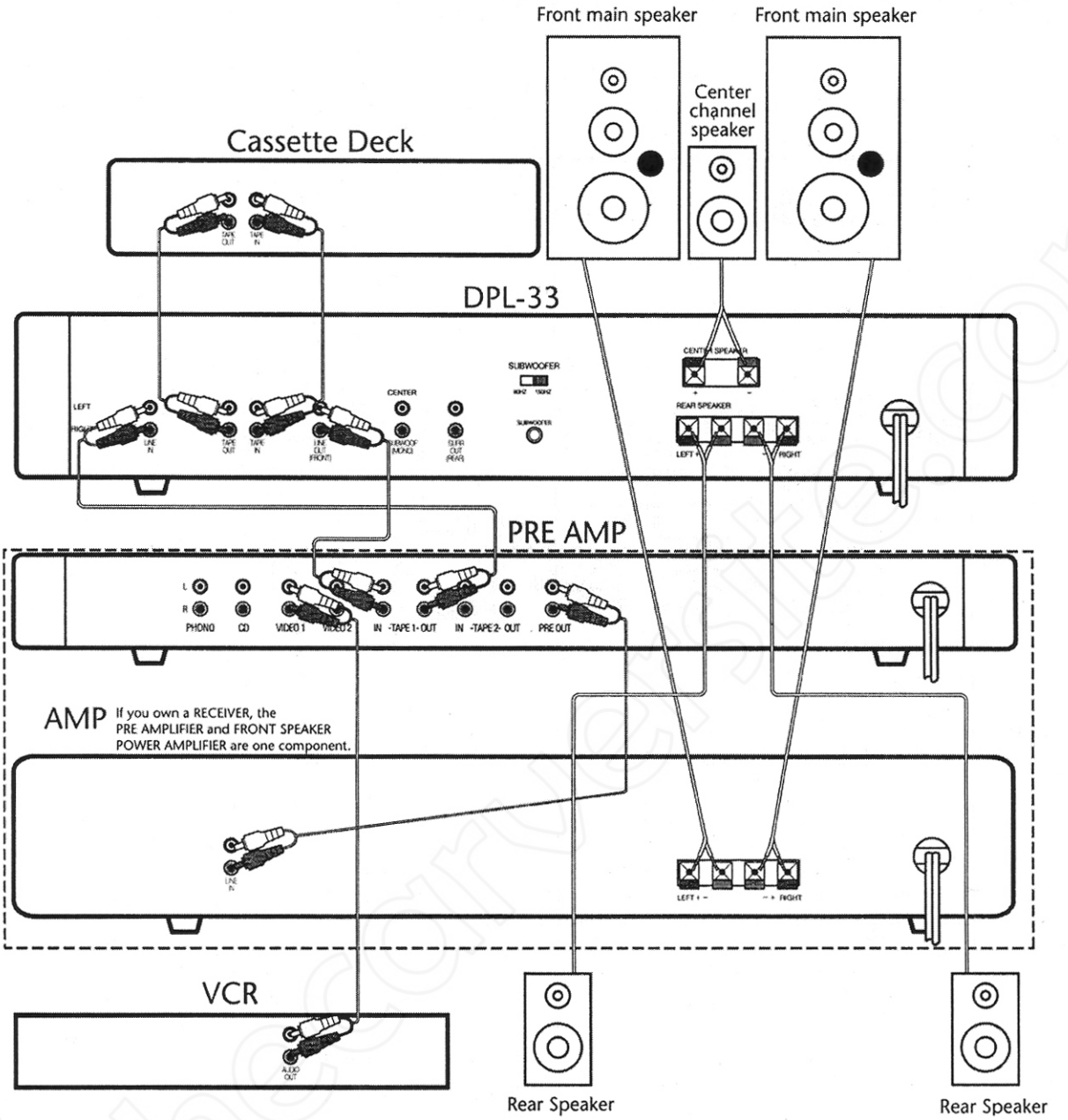
The most common hookup routes the signal out a tape monitor loop, into the DPL-33 and then returns the front channel information to the receiver/preamp. Naturally, this ties up one of your tape monitor loops, normally used for connecting a tape deck. To compensate, we've included an additional tape monitor loop and switching on the DPL-33.

External processor loop.

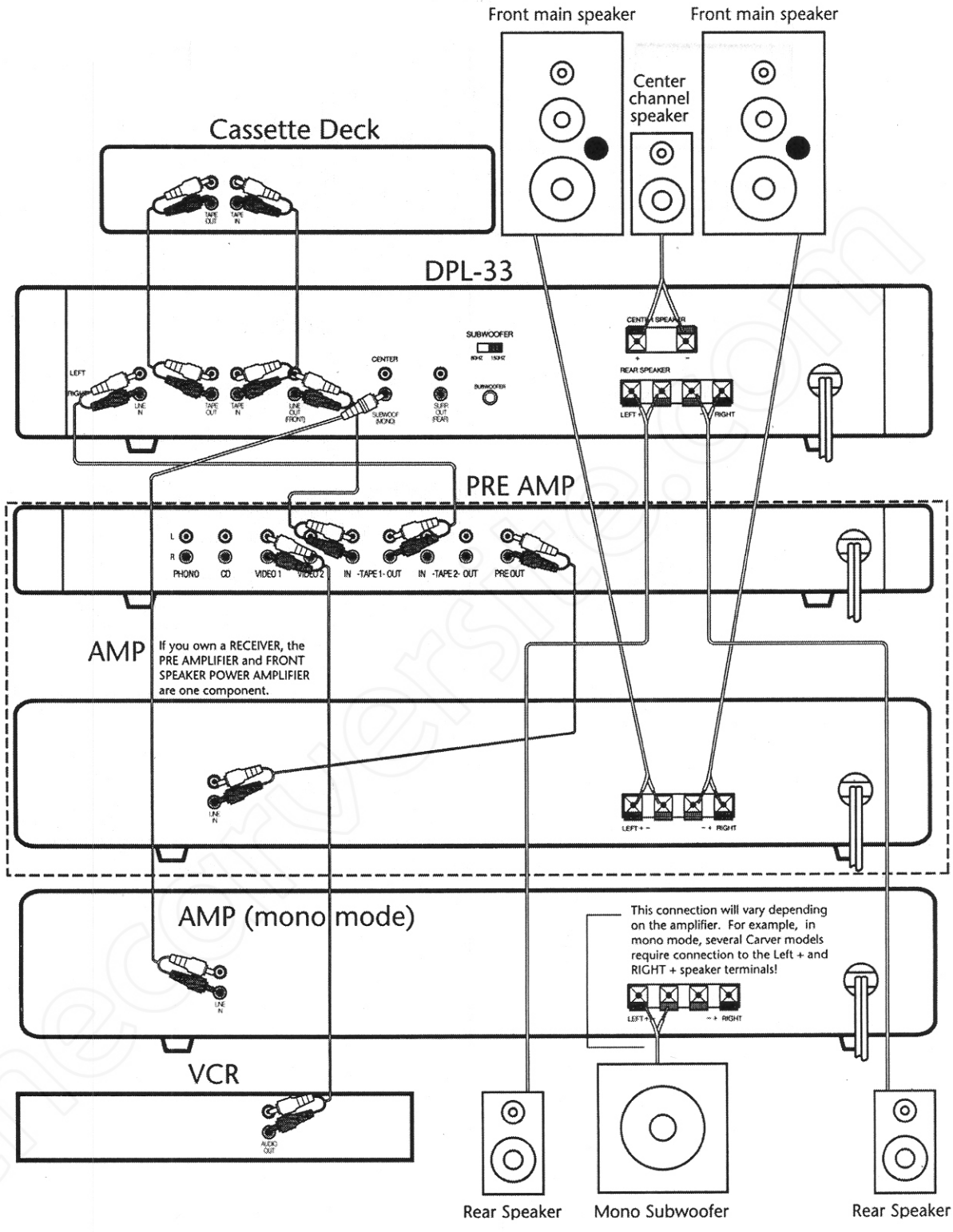
Some receivers, preamps and tuner/preamps include an additional loop for external components such as equalizers, etc. The advantage of using the processor loop when possible is that you don't tie up your tape loops and thus can connect two cassette decks directly to the receiver/preamp.

For simplicity, we've only shown the first method (tape monitor loop) in the connection drawings that follow.

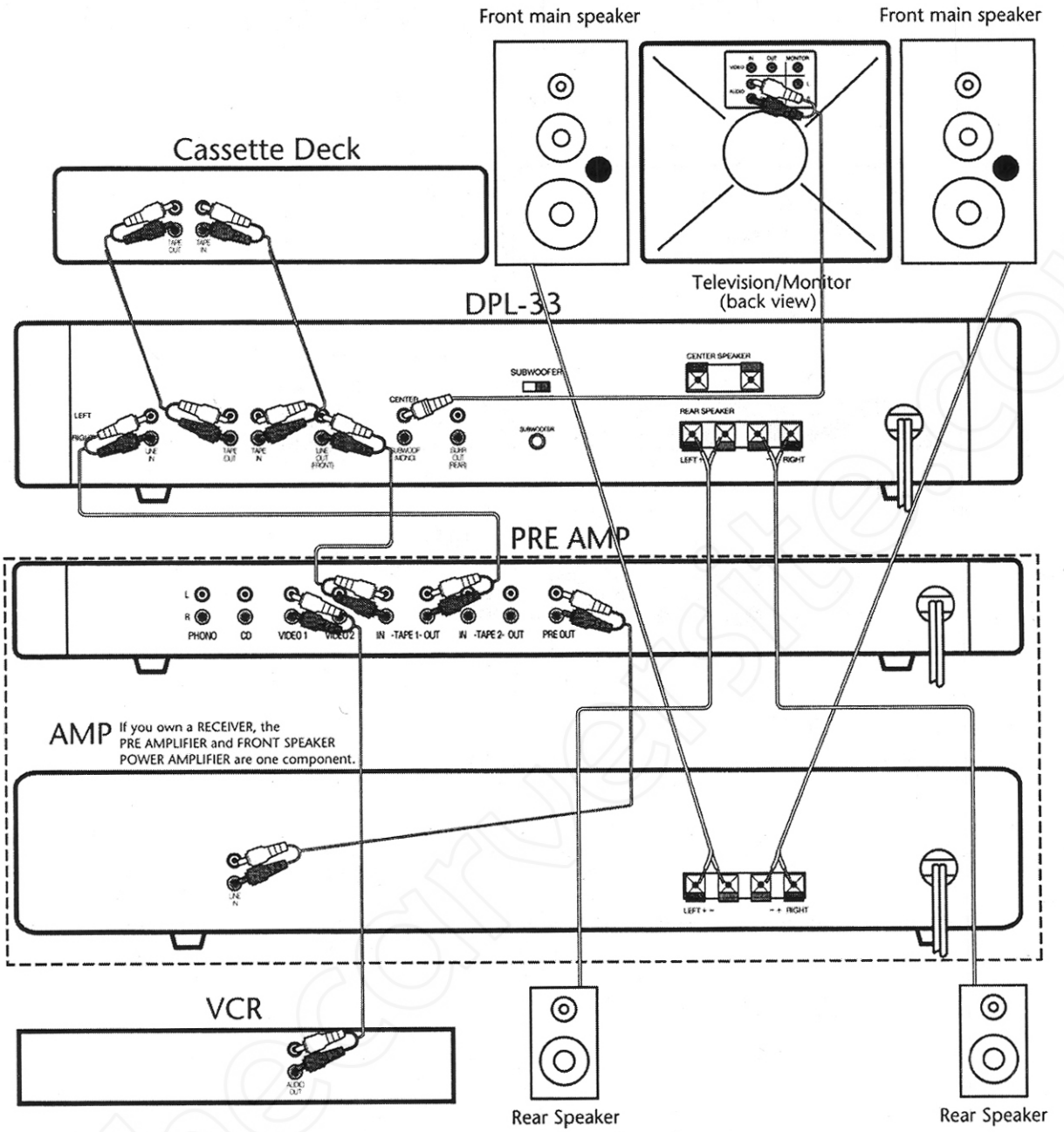




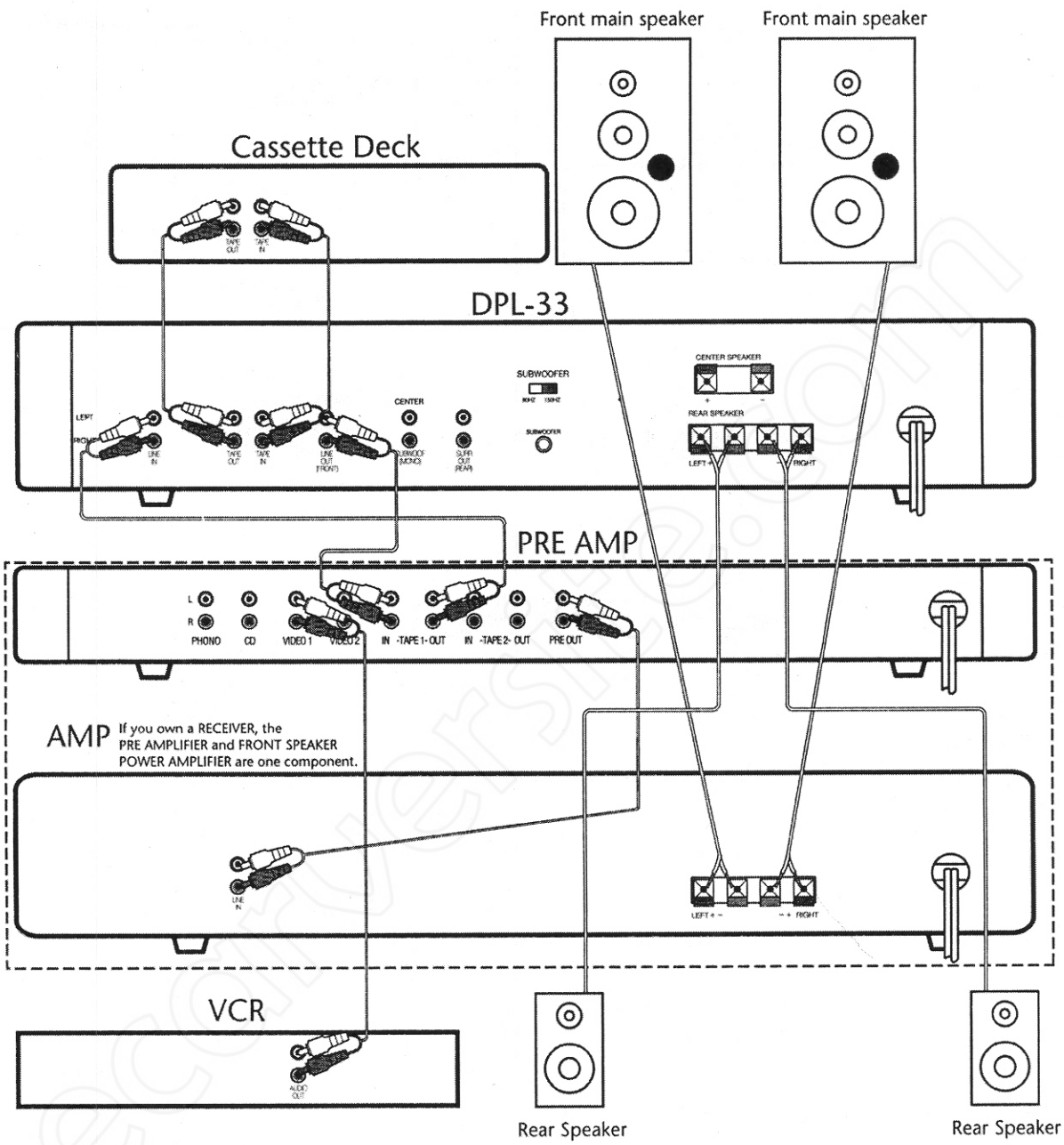
Five channels — Five speakers



Six channels — Five speakers & a subwoofer



Five channels — Four loudspeakers plus the TV's speaker system



Four channels — Four speakers (Phantom mode)

Remote control

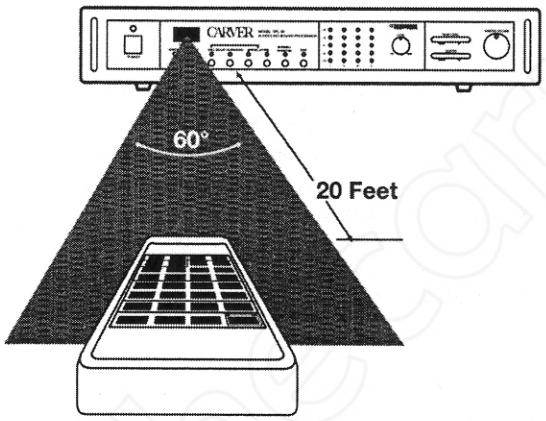
One of the DPL-33's niftiest features is its ability to give you "one-touch" overall volume control — PLUS rear and center channel volume control for fine tuning.

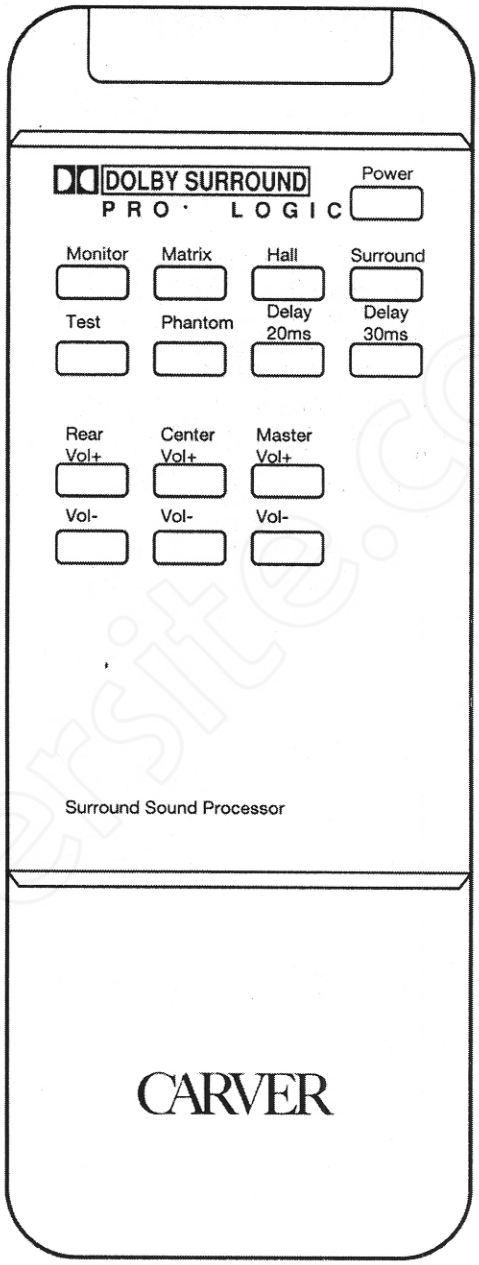
Batteries

The DPL-33's wireless infrared remote requires two AA batteries. Remove the battery compartment door on the back of the remote control by sliding it outward parallel to the surface of the remote. Insert the batteries supplied, making sure to match the positive (+) and negative (-) ends as indicated by the diagram inside the battery compartment.

Remote Operation

The remote control unit will work in a range of approximately 20 feet in front of and about 30 degrees to either side of the DPL-33. If the remote control begins to occasionally not respond, 1) check its batteries; 2) make sure the infrared projection area on its tip is clean; 3) check that the DPL-33's infrared remote sensor square is not dirty or blocked from direct line-of-sight contact with the remote.



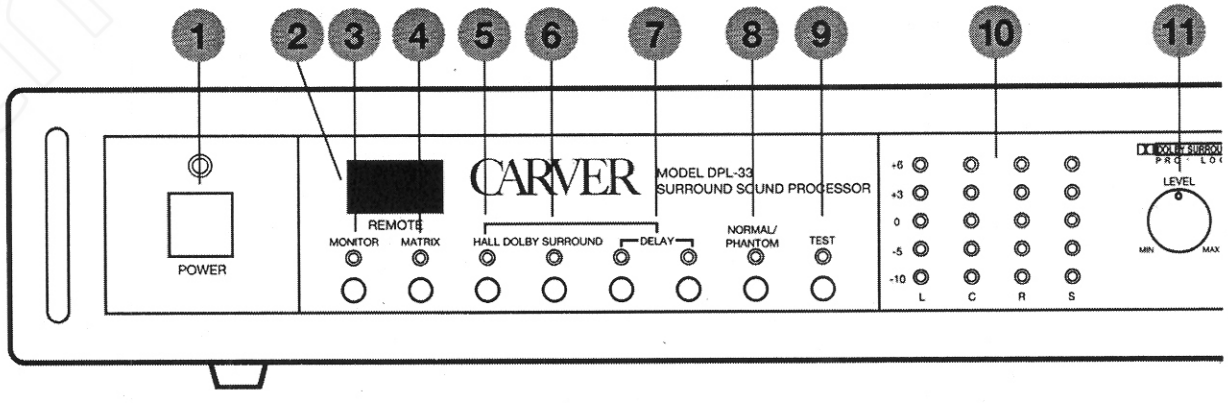


DPL-33

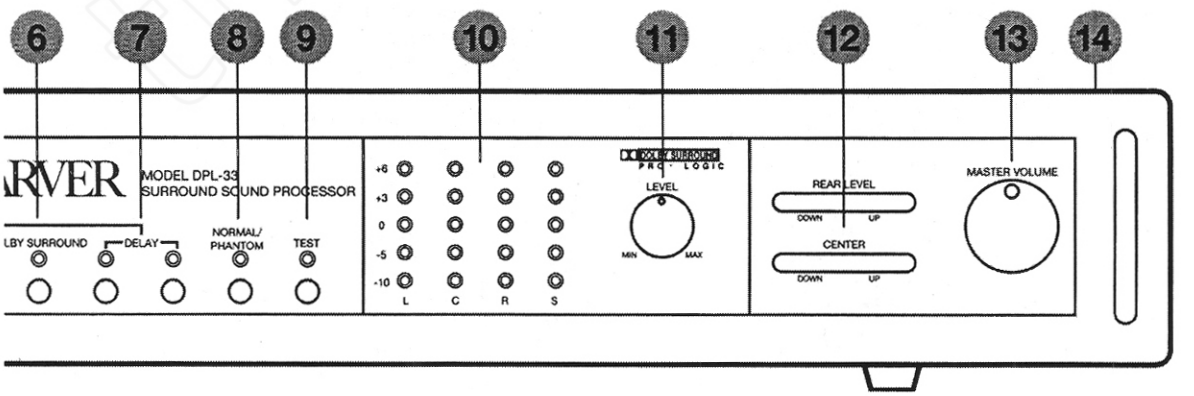
Front panel controls

Before you fire up your new surround sound video theater, let's take a guided tour of the DPL-33's controls.

1. POWER switch. Turns the DPL-33 on and off.
2. Remote sensor. Receives secret, invisible, mysterious, coded infrared impulses from the DPL-33 remote. Doesn't work if coated with finger prints, peanut butter or cat hair.
3. MONITOR. This button is only used if you have connected a cassette deck to the DPL-33. When pressed, it loops incoming sound out the rear panel TAPE OUT sockets and then back in the TAPE IN sockets. IMPORTANT CAUTION: If nothing is connected to the DPL-33's tape monitor loop, pressing this button will result in silence. If you aren't getting any sound while using the DPL-33, check this button before panic sets in.
4. MATRIX. Provides simulated stereo for monophonic sources such as regular television broadcasts. Matrix may also be used on monophonic records as well as videotapes with mono sound tracks.
5. HALL. This button activates spacial simulation circuitry which provides an airy, 3-dimensional effect to mono or stereo sources. It may be used on non-Dolby-Surround-encoded tapes or audio sources such as CD's, FM, records or tapes;
6. DOLBY SURROUND. Needless to say, this button is the whole point of owning a DPL-33. It is for use with Dolby Surround-encoded videotapes or laser discs and has no worthwhile effect on non-encoded tapes or audio music selections;
7. DELAY. Dolby Pro Logic circuitry uses a special digital delay circuit to properly processthe embedded Dolby Surround information. This "chip" can be switched from 20 to 30 milliseconds of delay time. It only has an effect in Dolby Surround mode where it varies the dimensionality and spaciousness of the surround sensation. Which setting you use will depend on the distance between your listening position and the speakers. Since sound travels about a foot per millisecond, you are in effect adding twenty feet to the "dimension" of your listening room. There is no right or wrong setting. Experiment with both the 20 and 30-millisecond modes while listening to the same passage on a Dolby-Surround-encoded videotape or laser disc.
8. PHANTOM. This button should always be used if you have NOT employed a center channel speaker. Although the active center channel is sacrificed in a phantom center setup, increased separation between front and rear channels, system calibration via the built-in sequencer, automatic input balance and other Dolby-esque techno-wowzer effects are are still provided. It may also be used on non-Dolby-Surround-encoded material when in HALL and MATRIX modes for a fuller sound, or to accentuate indistinct vocals.



9. TEST. This button activates a special test signal which alternates between the five Pro Logic speakers (actually it "stops" for 2 seconds each at four different places: Front Right, Center, Front Left and Rear Surround (which is really a mono source). The tone is "pink noise" which has been specially equalized so that it psychoacoustically appears to be the same tone whether it's coming from the front or smaller rear speakers. NOTE: Before critical listening with Dolby-encoded movie tapes, you MUST calibrate the system to balance all three speaker channels (Front, Surround and Center) in relation to each other — even if you're only using a "phantom" center channel. After that, you should only need to use the MASTER volume control unless you want to exaggerate rear or center channel levels for some reason. If you change speakers, rearrange your listening room, move or inadvertently push the wrong volume buttons, you'll need to re-calibrate the system.
10. OUTPUT LEVEL LED'S. This dual-purpose display indicates the input levels for surround, left, center and right channels, as well as their respective volume settings. It's also a nifty light show and can be used to hypnotize some parakeets.
11. LEVEL. Adjusts the input levels for all four channels. This is generally a "set-once-and-forget" control. We'll cover its use later on.
12. REAR LEVEL & CENTER LEVEL. NOTE: These are more than just volume controls! They also activate the respective LED displays on the DPL-33 front panel:
    ✔ When first pressed, each control turns on the LED display but has no effect on level.
    ✔ When pressed again or held down 3 or 4 seconds, the control then changes the level. Push UP for higher volume or DOWN for lower volume.
13. MASTER VOLUME CONTROL. Simultaneously raises and lowers the volume of all four channels: center, left & right front, left & right rear.
14. SUBWOOFER CONTROLS (on back). On the back of the DPL-33 are two subwoofer adjustments.
    ✔ LEVEL adjusts the relative volume of the subwoofer output. It's especially useful if you're using a power amplifier which does not have its own input level controls, such as our TFM-22/25, TFM-42/45 or Silver 9t.
    ✔ 150Hz - 80Hz crossover point. This switch selects the "low pass" point at which frequencies are routed to the subwoofer output. Consult the owner's manual which came with your subwoofer for the optimum setting.



DPL-33

Using your DPL-33

Before critical listening to Dolby-encoded movie tapes, you MUST calibrate the system to set input level, and balance all three speaker channels (Front, Surround and Center) in relation to each other.

Setting input level

1. Turn the DPL-33 Master Volume to MIN.
2. Turn on the DPL-33.
3. Turn on the receiver or preamplifier/ power amplifier and video source such as a VCR or LaserDisc player.
4. Make sure you have a video tape or disc which is Dolby Surround Sound-encoded.
5. Set the INPUT selector on your receiver or preamp to the video source and activate the VCR or LD player.
6. If the DPL-33 is connected through a tape monitor or external processor loop, push the appropriate button on the receiver or preamp.
7. Locate a section of the tape/disc soundtrack which has a considerable amount of full-range sound — the opening theme music, a fight scene, a battle, a large crowd reacting, actors screaming at each other, etc. *NOTE: If some or all of the LED indicators on the DPL-33 don't light up, re-check your connections.*
8. Adjust the DPL-33 Input LEVEL control until the top rows of LED's (+6dB) occasionally light up during especially loud bursts of sound. Generally this will be between the 12 and 3 o'clock positions.

Calibration

1. Make sure the DPL-33 and receiver/ preamplifier are turned on (also your subwoofer amplifier if you're using one). *You will not need a video sound source for this operation.*
2. If the DPL-33 is connected to a tape monitor or external processor loop, make sure the appropriate button is pushed.
3. Make sure that the receiver/preamp BALANCE control is centered and that tone controls are neutral and the LOUDNESS button is not pushed in.
4. Confirm that the DPL-33's MATRIX and HALL buttons are NOT activated.
5. If you're not using a center channel speaker, press the PHANTOM button. If you are using a center channel speaker make sure this button is also in the OUT position.
6. Press the DPL-33's DOLBY SURROUND button.
7. Turn the DPL-33 MASTER VOLUME control all the way down.
8 Set the receiver/preamplifier volume to the position you normally use for listening to music..
9. Take the DPL-33's remote control (and the receiver's remote control if it has one) and retire to your normal listening position where you'll be watching your TV or bigscreen.
10. Press TEST on the DPL-33 remote control.
11. Increase the DPL-33 MASTER volume until you hear a roaring noise. This is a 2-second "pink noise" tone which will alternate from the Right Main speaker to the Center Channel to the Left Main Speaker to the Surround Speakers. It will "go around" as long as the TEST button remains pushed.
12. Turn up the REAR and CENTER volumes until you hear sound from back and center speakers. Use your receiver's remote control to turn up its volume until you also hear sound from the FRONT left and right speakers. If you're not hearing sound from REAR or FRONT speakers, re-check your connections carefully. If no sound is coming from the CENTER channel, confirm that the DPL-33's PHANTOM button isn't pressed (unless you're not using a center speaker at all; in that case, make sure it *is* pushed in).
13. Now adjust the relative volumes of each channel using both remote controls until the sound level is the same from all five speakers. The pink noise test signal needs to be relatively loud for proper evaluation, so if you're having trouble judging when the sound is equal from each speaker, turn up the DPL-33 MASTER volume a bit.
14. Press the TEST button again to turn off the "pink noise" test signal.
15. Note the relative level of your receiver or preamplifier volume control. It will need to be set to this point during Dolby Pro Logic Surround sound

listening. You might want to make a tiny pencil mark or place a sliver of tape at this position.

16. Make all subsequent volume adjustments with the MASTER volume control only, either from the DPL-33 front panel or its remote control.

Dolby Pro Logic Surround Operation

1. Turn on the DPL-33, receiver/preamp/power amp, video source, TV, popcorn maker, lava lamp, Massage-A-Lounger chair and anything else necessary for home video theater enjoyment.
2. Press the DOLBY SURROUND button on the DPL-33 front panel.
3. If you're not using a center channel speaker, also press PHANTOM.
4. Select the proper input source on your receiver or preamp.
5. If the DPL-33 is connected through a tape monitor or external processor loop, press the appropriate button.
6. Begin playback of the Dolby-Surround-encoded tape or disc.
7. Advance the MASTER volume control to the desired listening level.
8. Enjoy!

This is a good time to experiment with the DPL-33's DELAY settings. Switch back and forth between 20 and 30 milliseconds during a soundtrack passage which has lots of rear channel effects.

MATRIX and SURROUND modes (video or audio)

1. Turn on the DPL-33, receiver/preamp/power amp and audio or video source.
2. Press the DPL-33 MATRIX or HALL buttons.
3. Select the proper input source on your receiver or preamp.
4. If the DPL-33 is connected through a tape monitor or external processor loop, press the appropriate button.
5. Begin playback of the music source.
6. Advance the MASTER volume control to the desired listening level.
7. Enjoy!

Troubleshooting

If you're having trouble or suspect a problem, try some simple troubleshooting first. Most likely, the problem lies elsewhere in the system or with a button or control in the wrong position.

No sound

1. DPL-33 power off.
2. Line cord disconnected.
3. Poor fit between plug and wall receptacle.
4. Power off at wall receptacle (check with tester or lamp).

No sound (power OK and on)

1. Receiver or preamplifier input selector set to inactive source.
2. DPL-33 tape monitor or wrong receiver tape monitor button pushed in.
3. MUTE button on receiver is activated.
4. Selected input not functioning.
5. DPL-33 MASTER VOLUME turned down.
6. Speaker cables connected to wrong set of amplifier speaker outputs.

No sound in one channel

1. Defective or loose connection cable. Swap 'em around to isolate the culprit.
2. Speaker wire loose or disconnected.
3. Receiver BALANCE control fully clockwise or counterclockwise.
4. Speaker fuse blown.
5. Power amplifier malfunctioning.

No sound from rear channels

1. REAR volume control on DPL-33 is turned down.
2. Videotape does not have surround sound effects. Try Hall or Matrix modes to confirm that rear channels are working.

No sound from center channel

1. DOLBY SURROUND has not been selected on the DPL-33.
2. PHANTOM button has been pushed.
3. Center-channel volume is turned down.

Hum and constant noise

1. Defective or loose signal cables.
2. Improper fit between signal-cable plugs and sockets.
3. Signal cables have been routed too closely to AC cables, power transformers, motors or gigantic alien anti-matter generators.

Remote control won't work

1. Batteries dead or missing.
2. Remote is too far from or at too much of an angle from the remote sensor on the DPL-33.
3. Remote sensor on DPL-33 or transmitter panel on remote are dirty.

Cleaning

You'll want to wipe off the DPL-33's front panel and chassis from time-to-time with a soft, dry cloth. If you have something stubborn to remove, use a mild dish soap or detergent sparingly applied to a soft cloth; don't use alcohol, ammonia, or other strong solvents.

Service

We suggest that you read the LIMITED WARRANTY completely to fully understand what your service coverage constitutes and its duration. Please promptly complete and return the WARRANTY REGISTRATION CARD for validation of your LIMITED WARRANTY. Also be sure to keep the sales receipt in a safe place. It may be necessary for warranty service.

If your DPL-33 should require service, we suggest you first contact the dealer from whom you purchased it. Should the dealer be unable to take care of your needs, call the CARVER Service Department at (206) 775-6245, or write us at CARVER CORPORATION, Service Department, P.O. Box 1237, Lynnwood, WA 98046. We will then direct you to the nearest in our international network of Authorized Warranty Service Centers, or give you detailed instructions on how to return the product to us for prompt action.

We wish you many hours of musical enjoyment. If you should have questions or comments, please write to us at: CARVER CORPORATION P.O. Box 1237, Lynnwood, WA 98046 (206) 775-1202

Specifications

Frequency Response	20-20kHz +0,-3dB
Maximum Output	4/2.5V (surround)
THD	less than 1%
S/N (IHF weighted)	85/55dB
Power @ 8 ohms	
Center	25 watts RMS
Rear	15 watts RMS/ch. both ch. driven
Weight	14 lbs
Dimensions (HxWxD)	3.8"x19x12.75"

About Dolby Pro Logic

How it works

By the late '70's, Dolby Stereo was established as a stereophonic system having three to six channels to enhance the action and drama of cinematic presentations. The most obvious feature of Dolby Stereo is an additional channel of sound that is distributed along the sides and back of the theater to "surround" the audience with sound.

In Dolby Stereo (surround) coding, the center channel is combined in equal portions on both left and right channels. Surround channels are encoded onto the left and right channels by phase shifting both channels plus and minus 90 degrees and then adding this information to the respective front channels. It provides the correct orientation for theater playback by use of complex analog logic steering circuits.

Dolby Laboratories then devised a simple method to emulate the overall effect of Dolby Stereo in a home environment by recovering the surround sound effects. Known as Dolby Surround, it is a greatly simplified circuit without logic steering and with no separate center channel. Instead a "phantom" channel must be created from the Left Front and Right Front speakers. In spite of this, dialog "bleeds" into the rear channels, diffusing the centering of dialog on the screen. All circuitry is passive and does not respond to specific changes in levels, confusing the location of sounds containing front-channel-only information.

Dolby Pro Logic features improved spatial articulation and expansive listening area through the use of a true center channel and active logic steering circuitry. The center channel is removed from the left and right channels for accurate positioning and separation and fed through a discrete speaker. To decode the surround channels, the differences between the front channels are extracted, delayed, sent through a low-pass filter, time delay and then processed by modified Dolby B-type noise reduction. An adaptive matrix is used to actively derive the left, center, right and surround signals contained in the sound track. The matrix is actually a complex analog computer which breaks down the encoded signals and reassembles them into four different channels.

The following is a comparison between the two circuits:

DOLBY SURROUND Passive system	DPL-33's DOLBY PRO LOGIC Active system
Phantom dialog channel	Separate dialog channel
No logic steering	Logic steering
Dialog mixed with rear effects	Dialog-free rear effects
Listener position critical	Much wider listener position
Marginal cross screen sound movement	Good cross-screen sound movement

When we included this chart in the manual for another Carver product that features Pro Logic, we got a terse communication from Dolby Laboratories stating that "*there seemed to be a tendency to malign Dolby Surround in an attempt to highlight Dolby Pro Logic*". We think "malign" is a bit strong. But if Pro Logic doesn't have some benefits over regular Surround, you probably wouldn't be reading this manual right now. As Dolby Laboratories puts it, "*key points are increased channel separation, active center channel which serves to anchor dialog on-screen for a variety of seating positions, built-in noise sequencer for easy system calibration and (in the case of the DPL-33) an automatic balance control which continually optimize the decoder operation by balancing the right and left inputs.*" We agree.

Surround sound sources

Not all movies are Dolby Surround-encoded, even if they're VHS Hi-Fi-encoded stereo or digital laser disc audio. Look for the Dolby logo on the box. Most major "blockbuster" movies have Dolby Surround soundtracks, however.

The general rule of thumb is that the movie must have had major theatrical release including 70 millimeter prints. There are exceptions, but you must remember that Dolby Surround begins as theatrical Dolby Stereo. Creating such a multi-channel soundtrack is far more expensive and time-consuming than a conventional mono soundtrack. Still there are some fairly obscure selections out there with fantastic Dolby Surround effects. Just read the fine print on the box to uncover them.

MTS stereo TV broadcasts of movies with Dolby Stereo contain a substantial amount of surround sound information, too. If you have a stereo TV or VCR which receives MTS, try decoding a movie broadcast with the DPL-33. You may be surprised. This won't work on programs which are merely synthesized stereo — trying to "decode" Dolby on them merely results in strange noises and crosstalk, so opt for MATRIX or just use the front channels. But on "The Major Movie of the Week" which WAS Dolby Stereo in the theaters, and is broadcast on a station that has a stereo transmitter, DOLBY SURROUND mode can work fairly well.

If you read *Video* or *Video Review* magazine, you'll notice that movie reviews often comment on the quality of the Dolby Surround encoding. In fact, both magazines also publish lists of films which have better-than-average to excellent Dolby Surround effects. From this you can deduce that some people believe that all encoding is not created equally.

Just how effective and pronounced the rear channel surround sound effects will be depends on several things: **1) The rear channel effects have to be well-mixed and well-engineered.** The movie sound engineer has final control over just what sound appears where in the 3-dimensional sound field. Sometimes this is done so subtly that very little appears to be different on the rear channels. Or other times, the rear sound effects come in too loudly or are not placed correctly in relation to the image on-screen. **2) The encoding has to have been done right.** For technical reasons too lengthy to go into in this manual, transfering Dolby Surround tracks to videotape can be done ineptly enough to make them almost disappear — or so well that it rivals a six-track 70-millimeter print.

Dolby Laboratories has a different theory (although the video magazine editors we know agree with us). Dolby points out that many of the apparent problems with variations in surround sound levels between various tapes and laser discs have, in the past, had to do with unequal stereo level balance. It is critical that left and right channel input levels be exactly the same. In older surround sound decoders, this could only be done through careful adjustment every time you watched a movie. The DPL-33 has an automatic input balance control which constantly monitors levels and compensates accordingly. Thus, you get the maximum effect possible with any given program material.

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