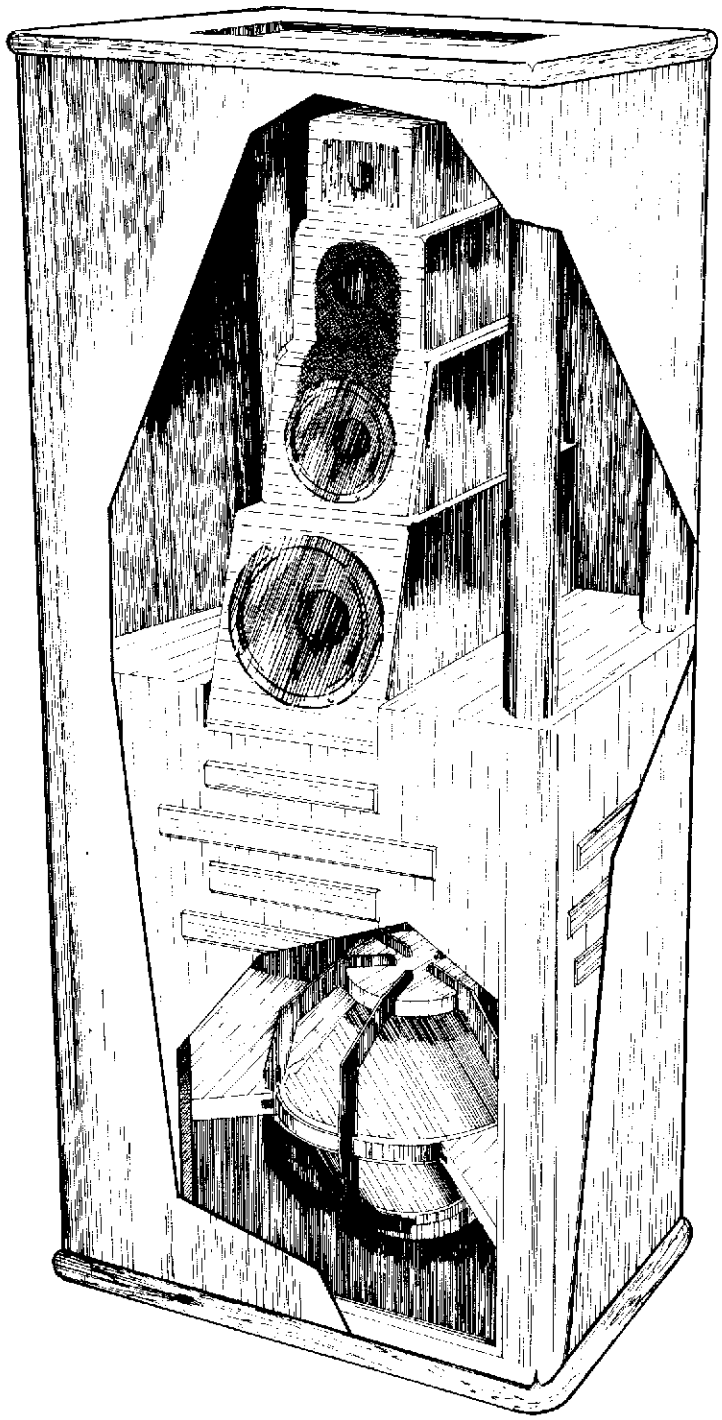
VANDERSTEEN

MODEL 4



OPERATION MANUAL

GENERAL DESCRIPTION

The Vandersteen Model 4 speaker system you have just purchased will provide years of trouble free musical enjoyment. Please read this manual thoroughly before attempting hook-up. The Model 4 is a very sophisticated five-way system designed to reproduce full range musical information at realistic playback levels.

DRIVER COMPLEMENT

Super-tweeter:	3/4 inch poly dome with ferrofluid voice coil cooling. Range of operation: 12KHz-35KHz, 6db per octave slopes.
Tweeter:	1 1/8 inch textile dome with vented pole piece and ferro-fluid voice coil cooling. Range of operation: 4KHz-12KHz, 6db per octave slopes.
Midrange:	4 1/2 inch die-cast basket with linear surround poly cone, ferrofluid voice coil cooling. Range of operation: 500Hz-4KHz, 6db per octave slopes.
Woofer:	8 inch die-cast basket with poly curvlinear cone, 1 1/2 inch voice coil. Range of operation: 80Hz-500Hz, 6db per octave slopes.
Sub-woofer:	(2) 12 inch die-cast basket poly cone with 4 inch voice coils. Push-pull tandem woofers floor mounted in second order enclosure with slot front loading. Range of operation: 24Hz-80Hz, 6db per octave slopes.

CROSSOVER

The transient perfect first-order dividing network uses air core inductors with polyproplene, polycarbonate and polystyrene capactors in the signal path. Phase compensating networks allow ideal transient response; impedance-compensating networks aviod the frequency response irregularities associated with typical crossovers.

SPECIFICATIONS

Impedance:	Upper section 7.8 ohms + or - .5 Sub-woofer 4 ohms min.
Efficiency:	88db with 1 watt (2.83 volts) at 1 meter
Min. Power:	Fullrange: 100 watts with 4 ohm capability Bi-amped upper section: 70 watts Bi-amped sub-woofer: 100 watts with 4 ohm capability
Freq. Response:	24Hz-35KHz + or - 3db 29Hz-25KHz + or - 1db
Crossover Freq:	80Hz, 500Hz, 4KHz, 12KHz 6db per octave with less than 18 degree phase error
Physical Dim:	52" high, 18" wide, 17" deep, 135# net, 150# gross

UNPACKING

Stand boxes upright, open flaps, lay box down on carpet, remove cardboard end cap, and carefully invert the box. Lift the outer white box up and off. If you have 8' high ceilings, you won't have enough ceiling height to remove the box, so either do it outdoors, or get someone to help you by holding the box over at an angle. After removing the outer box, lift up and remove the inner cardboard sleeve. You should retain all packing materials for possible future use.

SPEAKER CABLE CONNECTIONS

CAUTION: When wiring the Model 4 be sure that no connector or bare wire comes into contact with the aluminum dress plate. Possible amplifier damage could occur. There are three sets of screw terminals on the rear of the speaker. This is to allow you to either single wire the system (if you are single amping), bi-wire the system, or tri-wire. We strongly urge tri-wiring and bi-amping because when single amped **power handling** and **crossover linearity** between sub-woofer and upper section is **severly compromised.** It is also possible to tri-amp the system, and without using a 3-way crossover. Tri-amping is fairly simple to do, but it is necessary that the midrange and tweeter amps deliver the same power into an 8 ohm load with the same input signal level, or that the more sensitive of the two amps have level controls to allow matching it to the other amp. We suggest that you "hard wire" the Model 4's, and avoid the use of banana plugs where possible. The speakers are designed to accept a spade or eyelet with a #10 hole. Depending upon the size of connector you are using, you may find it necessary to file the sides of the connector down a bit to fit the terminal strips. When preparing the cable ends you should first crimp the connector tightly to the wire to get a good mechanical connection before soldering. Use a high grade of solder. After soldering the connectors, buff them with a wire brush until they are shiney and then connect to the speaker. At the amplifier, depending upon the amps used, the same general rules as above apply. Avoid banana plugs where possible. If you must use them, use the Monster Cable "Power Connect 2" or "X-Terminators". They will lock into the socket and do a reasonable job of connecting the speakers. It is best to use spade lugs with amplifiers equipted with "5-way" binding posts.

SINGLE AMP, SINGLE WIRING

1) Set the switch on the rear of the speaker to the "full range" position. Using short heavy gauge copper wire (something like 14 gauge), connect the following terminals. Try to connect them keeping the wire in one continuous piece; just remove the insulation where necessary, wrap the wire around the terminal, and continue the run to the next terminal.

2) One wire should connect the top terminal strip right-hand screw to the middle terminal strip right-hand screw, and then cross over and connect to the bottom terminal strip left-hand screw.

3) The next wire should connect the top terminal strip left-hand screw to the middle terminal strip left-hand screw, then cross over and connect to the bottom terminal strip right-hand screw.

4) Connect the speaker cables going to the amplifier to the bottom two terminals. Observe polarity of the wire and terminals. Red wire to the red marked terminal and the black wire to the other bottom terminal.

5) Repeat #1-4 for the other speaker.

SINGLE AMP, BI-WIRED

1) Set the switch on the rear of the speaker to the "full range" position. Using short, heavy gauge (something like 14 guage), wire as jumpers, connect the terminals as follows:

2) One wire should connect the top terminal strip right-hand screw to the middle terminal strip right-hand screw.

3) The next wire should connect the top terminal strip left-hand screw to the middle terminal strip left-hand screw.

4) Connect the cable you are using for the midrange/tweeter to amplifier, to the middle two terminals. Observe the polarity of the wire and terminal; the polarity should be reversed from what you would think of as normal! The black wire to the red marked terminal and the red wire to the other middle terminal.

5) Connect the cable you are using for the woofer to amplifier, to the bottom two terminals. Observe the polarity of the wire and terminals; the polarity will be reversed from that in step #3 above! The red wire to the red marked terminal and the black wire to the other bottom terminal.

6) At the amplifier, connect the two cables coming from the same speaker together, and connect both black wires to the black amplifier speaker binding post (or "0" in the case of a tube amp), and both red wires to the red amplifier speaker binding post. In the case of a tube amp connect the red wire from the midrange/tweeter cable, to the "8" ohm tap, and the red from the woofer cable to the "4" ohm tap.

7) Repeat steps #1-6 for the other speaker.

SINGLE AMP, TRI-WIRED

1) Set the switch on the rear of the speaker to the "full range" position.

2) Connect the cable you are using for the tweeter to amplifier, to the top two terminals. Observe the polarity of the wire and terminals; the polarity should be reversed from what you would think of as normal! The black wire to the red marked terminal and the red wire to the other top terminal.

3) Connect the cable you are using for the midrange to amplifier, to the middle two terminals. Observe the polarity of the wire and terminals; the polarity should be reversed from what you would think of as normal! The black wire to the red marked terminal and the red wire to the other middle terminal.

4) Connect the cable you are using for the woofer to amplifier, to the bottom two terminals. Observe the polarity of the wire and terminals; the polarity will be reversed from that in step #3 above! The red wire to the red marked terminal and the black wire to the other bottom terminal.

5) At the amplifier, connect the three cables coming from the same speaker together, and connect all three black wires to the black amplifier speaker binding post (or "0" in the case of a tube amp), and all three red wires to the red amplifier speaker binding post. In the case of a tube amp, connect the two red wires from the midrange and tweeter cables to the "8" ohm tap, and the red from the woofer cable to the "4" ohm tap.

6) Repeat steps #1-4 for the other speaker.

BI-AMPING, BI-WIRED (One set of cable to each amp)

1) Set the switch on the back of the speaker to the "bi amp" position. Using short, heavy gauge (something like 14 gauge), wire as jumpers, connect the terminals as follows:

2) One wire should connect the top terminal strip right-hand screw to the middle terminal strip right-hand screw.

3) The next wire should connect the top terminal strip left-hand screw to the middle terminal strip left-hand screw.

4) Connect the cable you are using for the midrange/tweeter to amplifier, to the middle two terminals. Observe the polarity of the wire and terminals; the polarity should be what you would thing of as normal; the red wire to the red marked terminal and the black wire to the other middle terminal.

5) Connect the cable you are using for the woofer to amplifier, to the bottom two terminals. Observe the polarity of the wire and terminals; again, the polarity will be what we think of as normal. The red wire to the red marked terminal and the black wire to the other bottom terminal.

6) At the amplifiers, connect the cable coming from the midrange/tweeter to the midrange/tweeter amp; black wire to the black amplifier speaker binding post (or "0" in the case of a tube amp), and red wire to the red amplifier speaker binding post (or "8" in the case of a tube amp).

7) Connect the cable coming from the woofer to the woofer amp; black wire to the black amplifier speaker binding post (or "0" in the case of a tube amp), and red wire to the red amplifier speaker binding post (or "4" in the case of a tube amp).

8) Repeat steps #1-7 for the other speaker.

BI-AMPED, TRI-WIRED

1) Set the switch on the rear of the speaker to the "bi amp" position.

2) Connect the cable you are using for the tweeter to amplifier, to the top two terminals. Observe the polarity of the wire and terminals; the polarity should be what you would thing of as normal; the red wire to the red marked terminal and the black wire to the other top terminal.

3) Connect the cable you are using for the midrange to amplifier, to the middle two terminals. Observe the polarity of the wire and terminals; the polarity should be what you would think of as normal; the red wire to the red marked terminal and the black wire to the other middle terminal.

4) Connect the cable you are using for the woofer to amplifier, to the bottom two terminals. Observe the polarity of the wire and terminals; again, the polarity will be what you think of as normal. The red wire to the red marked terminal and the black wire to the other bottom terminal.

5) At the amplifier, connect the cables together coming from the midrange and tweeter to the midrange/tweeter amp; black wires to the black amplifer speaker binding post (or "0" in the case of a tube amp), and the red wires to the red amplifier speaker binding post (or "8" in the case of a tube amp).

6) Connect the cable coming from the woofer to the woofer amp; black wire to the black amplifier speaker binding post (or "0" in the case of a tube amp), and red wire to the red amplifier speaker binding post (or "4" in the case of a tube amp).

7) Repeat steps #1-6 for the other speaker.

OTHER CONNECTION CONSIDERATIONS

All the above instructions are assuming that your absolute phase was correct up to the amplifiers, and that the amplifiers were both non-inverting. If your amplifier(s) were to invert the absolute phase, then the speaker connections to that amplifier should be reversed! This is very important; especially if bi-amping! No you won't blow up or otherwise damage anything, you will just have a very strange sound (ie. poor!). For those who don't know what absolute phase is, or if your amp(s) invert the absolute phase, consult your dealer.

BREAK-IN

Due to the extreme performance capability of the Model 4, they require a break-in period before you will get maximum performance from the speaker. The best (and easiest) way to do this is to single amp the speaker with a solid state amp, or even a powerful receiver or integrated amp, set your tuner to a good rock and roll station, crank up the volume to a moderately loud level, and let the system play for about a week. You can do this while you are away

from home. You can be enjoying the speakers during this time, but you will not be getting the full performance untill you have them broken in.

ROOM PLACEMENT SUGGESTIONS AND OTHER TIPS

The Model 4 is not too room sensitive, but it is so articulate that it becomes very revealing of room locations. A little time spent in proper placement can pay you handsome rewards in terms of improved sound quality. Generally speaking, and we emphasize "generally", the Model 4 should be on the short wall, out of the corners, and at least two feet from the side walls. This is important! If you can get them even further out from the side walls, the sound will get better, even though it might look as though they are too close together. Better to have them too close together than too close to the side walls. The speaker can be anywhere from six inches to two feet off the back wall depending on your room. The distance from the center of the speaker and the side wall should never be the same as the distance between the center and rear wall. If the room is less than 11 feet wide, it is perhaps best to place the speakers on the long wall. The side walls of the listening room can benefit from sonex panels, from the corners out to about four feet in front of the speaker; this is especially true of smaller rooms. In large rooms, with the speakers well out from the side walls, the sonex doesn't matter nearly as much. You may still want to use sound absorbant material in the room to stop slap echo or other problems. After you have played around with the Model 4's and determined the best spot in your listening room, you can install the spikes. Without moving the speakers from their best position, get someone to help you, and tip the speaker forward so that you can get to the rear spikes. Install the two rear speaker spikes by screwing a nut onto each spike and running it down until you can see about 1/8" of thread remaining, and screw the spikes into the two rear holes in the bottom of the speaker base so that the spikes stick out about 1 1/2", then run the nuts down against the bottom of the cabinet. Now tip the speaker backwards, and repeat the procedure for the front spikes. Using the necessary tools, level the speaker by adjusting the spikes. After leveling, remember to be sure and have the nuts up tight against the speaker bottom.

AMPLIFIER REQUIRMENTS

If single amping (and we don't recommend this except as an interim measure) you may be happier with a good solid-state amp, many tube amps are unable to control the low end and the bass will turn into bloated mush. Latter the solid-state amp can be used on the woofers when bi-amping. When bi-amping, the Model 4 is not critical as to the midbass/midrange/tweeter amplifer,

any really good amp with about 70 watts per ch into 8 ohms, can be used in this application. The woofer amp however, is quite a different story. The woofer amp should be capable of lots of current into a 4 ohm load, (note that we didn't say lots of watts, but lots of current). It should be capable of about 100 watts/channel into 8 ohms, double into 4 ohms, and double again into 2 ohms (a good indication of current capability), be very fast, go very deep in the bass, be absolutely stable working into complex load, and should not be an amp with mosfet output devices (due to the internal 'on' resistance of the devices). It should have large heat sinks, high quality binding posts, and preferably, no current limiting fuses between the power supply and the amplifier output devices. Another bi-amping consideration is the crossover you use. Due to the slopes required, to properly interface with the Model 4's we suggest you use the Vandersteen WX-4 crossover. It is designed especially for the Model 4.

SPEAKER CABLE

The speaker cable you use with the Model 4 is very important, and the end result in sound quality you get will depend to a large degree on the cables used (the cable will be more of a limiting factor than the speakers). Avoid lamp cord type cables and their larger look-alike brothers with similar-type construction. Custom combinations have been popular but you can run into problems mixing cables. Consult your dealer about proven speaker wire combinations. The main message here is: don't skimp on the speaker cable!

FUSEING THE SPEAKERS

Don't! If your amp has speaker fuses get them out. Buy some 1/4" copper fuel line from your local auto parts place, cut it into 1-5/16" lengths, buff the ends until shiney, coat lightly with a contact preservative, and use in place of the fuses. Do not remove any power supply or line fuses from the amp; you may void your warranty!

SERVICE

If you need to have service work performed on your Model 4, contact your dealer and make arrangements to validate the problem and make repairs, or you may return it to the factory. Before shipping a 4 to the factory, you must write or call first, describe the problem and request a return authorization form with shipping instructions. UNDER NO CIRCUMSTANCES SHOULD A SPEAKER BE SHIPPED WITHOUT FIRST CONTACTING VANDERSTEEN AUDIO OR YOUR DEALER!

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