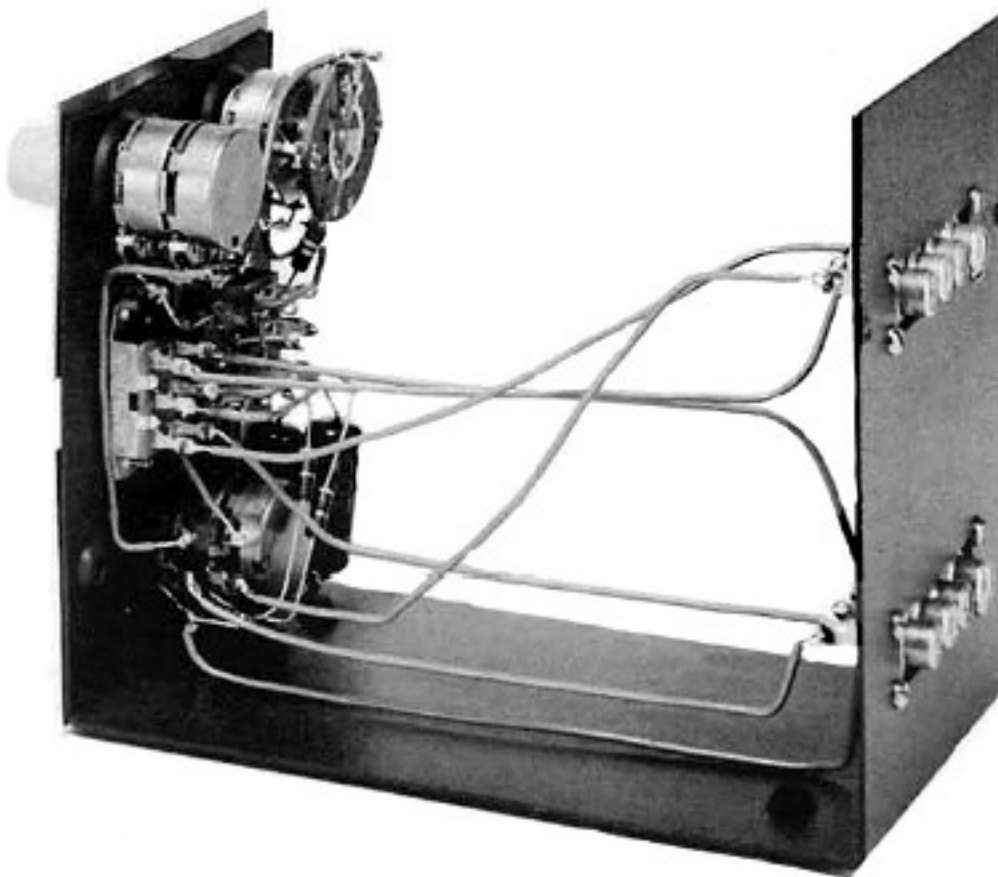
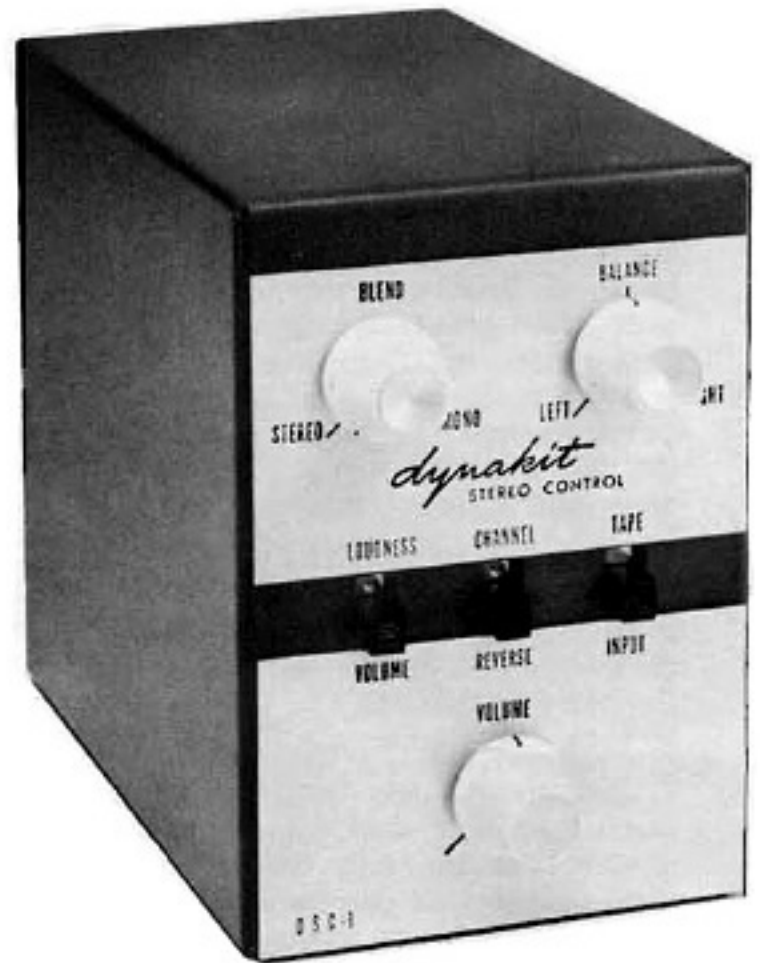


dynakit

This number must be mentioned in all communications concerning Dynakit.

INSTRUCTIONS
FOR ASSEMBLY
OF DSC-1
DYNAKIT
STEREO CONTROL



Price 25¢

DYNA COMPANY

DYNACO

617 NORTH 41st STREET
PHILADELPHIA 4, PA.

INSTRUCTIONS FOR ASSEMBLY OF DSC-1

The Dynakit Stereo Control (DSC-1) adds complete stereo control functions to two Dynakit pre-amplifiers (use with other types of equipment is also possible as described later). The DSC-1 does not amplify or change the signal in any way. It is completely distortionless and free from noise. Its function is to add convenience and flexibility to two monophonic systems so that every desired stereo function is available from the monophonic equipment. Thus complete compatibility is offered for those who have monophonic systems and wish to add stereophonic functions without having to replace the existing system.

Assembly of the Dynakit Stereo Control is quite simple and can be done by following either the step by step directions or the pictorial layout. However, for greatest ease of assembly, it is recommended that both the step by step directions and the pictorial be followed, one being used as a check against the other. It is also suggested that the instructions be read all the way through before commencing construction.

Upon opening your kit, check the components with the parts list. Familiarize yourself with the components; they can be identified by comparison with the pictorial diagram and by specified color coding. Proper color coding will be mentioned for each resistor as it is used.

Component leads should be trimmed as they are used; the length should be such that the proper connection can be made from point to point without strain on lugs or components. Care should be exercised not to allow wires to touch one another unless they are actually connected to the same point.

USE ROSIN CORE SOLDER ONLY - Do not use acid core solder - it is injurious to electronic components and does not make satisfactory electrical connections. Dyna Company assumes no responsibility for the function of any kit in which acid core solder is used. If you have solder on hand the origin of which is doubtful it is wise to obtain new 50/50 or 60/40 rosin Core Solder.

Whenever a connection is made the instructions will specify (S) if the joint is to be soldered; otherwise the leads should be crimped in place and left unsoldered to be soldered at a later step. If good soldering procedure is followed all that is needed is an iron of 35 to 50 watt rating. When a soldering iron of a higher rating is used, care must be taken not to overheat the components. Both the wire and the lug to be connected should be clean and shiny. The wire should first be stripped (the insulation removed for about 1/4 inch) and then tinned by applying the hot iron to the bare portion of the wire while simultaneously applying a small amount of solder to the wire. The iron should heat the wire enough to cause the solder to flow smoothly on the wire. Note that the solder is applied to the work and not the iron. Similar procedure is followed when soldering a joint. The wire or pigtail lead from the

component is connected to the point by hooking it through the hole in the lug and crimping the hook closed. The iron is applied to the joint to heat both the lug and the wire, and then solder is applied to the joint till a small amount flows smoothly on the joint. The iron is then removed and the joint allowed to set at least 10 seconds. The joint should not be disturbed while the solder is setting, and it should set smooth and shiny. If the soldered connection has a dull crackle finish, it is a "cold" joint and should be redone.

All the tools necessary for construction of this kit are a small tip soldering iron, a medium size screw driver, long nose pliers, and cutting pliers.

It takes very little time to construct this kit, so go slowly and double check your work

MECHANICAL ASSEMBLY

1. () Mount the four rubber feet in the holes in the bottom of the chassis. Insert the small end from the outside with a twisting motion until the foot seats snugly against the bottom of the chassis.
2. () Mount the three slide switches on the inside of the front panel with #4 screws. Nuts are not necessary as the holes in the switches are threaded.
3. () Mount the dual volume control (each section has four lugs), in the single hole below the slide switches. Put a 3/8" lockwasher on the shaft, insert control through the hole and fasten from the outside with a 3/8 nut. Orient the control with the three lugs facing to the left as in the pictorial (the single lug on each section faces to the right).
4. () Mount the blend control (with switch on the back), in the right hole above the slide switches. Use a lockwasher on the shaft, orient with three control lugs facing down, and fasten with a 3/8 nut.
5. () Mount the balance control in the remaining hole. Use a lockwasher on the shaft and orient with the lugs facing down, and fasten with a 3/8 nut.
6. () With #4 screws, nuts, and lockwashers mount the pair of four socket connectors or jacks on the inside of the rear chassis panel. Insert the screws from outside the chassis and fasten on the inside with a lockwasher and nut. Note that each jack has both a long lug and a short lug. These will be referred to in the connection instructions.

WIRING PROCEDURE

1. () Connect a 3" wire to lug #4 of the dual volume control. Connect the other end to lug #5 of the loudness switch (S).
2. () Connect one end of a 4" wire to lug #8 of dual volume control. Connect the other end to lug #2 of the loudness switch (S).

3. () Connect one end of a .1 mfd capacitor to lug #4 of dual volume control (S). Connect the other end to lug #6 of the loudness switch.
4. () Connect one end of a 4700 ohm (yellow-violet-red) resistor to lug #6 of the loudness switch (S). Connect the other end to lug #5 of volume control.
5. () Connect one end of a .1 mfd capacitor to lug #8 of volume control (S). Connect the other end to lug #3 of the loudness switch. This capacitor should be placed on top of other .1 capacitor.
6. () Connect one end of a 4700 ohm (yellow-violet-red) resistor to lug #3 of the loudness switch (S). Connect the other end to lug #5 of volume control.
7. () Feed one end of a 22,000 ohm (red-red-orange) resistor through lug #4 of the channel reversing switch and connect it to lug #3 of that switch. Solder at both lug #4 and #3. Connect the other end of the resistor to lug #3 of the balance control.
8. () Feed one end of a 22,000 ohm (red-red-orange) resistor through lug #1 of the reversing switch and connect it to lug #6 of that switch. Solder at both lugs #1 and #6. Connect the other end to lug A of switch on blend control (S).
9. () Connect one end of a 3'' wire to lug #3 of balance control (S). Connect the other end to lug C of blend control switch (S).
10. () Connect one end of a 2-1/2'' wire to lug B of blend control switch. Feed the other end through lug #1 of blend control and connect to lug #2 of blend control. Solder both lugs #1 and #2.
11. () Connect one end of a 1-1/2'' wire to lug D of blend control switch (S). Connect the other end to lug #3 of the blend control (S).
12. () Connect one end of a 3'' wire to lug #3 of the volume control (S). Feed the other end through lug #6 of the balance control and connect to lug #5 of the balance control. Solder both lugs.
13. () Connect one end of a 4-1/2'' wire to lug #7 of the volume control (S). Feed the other end through lugs #1 and #2 of the balance control. Solder both lugs.
14. () Connect one end of a 2-1/2'' wire to lug #4 of the balance control (S). Connect the other end to lug B of blend control switch (S).
15. () Connect one end of a 2'' wire to lug #5 of the tape-input switch (S). Connect the other end to lug #2 of the channel reverse switch (S).
16. () Connect one end of a 1-1/2'' wire to lug #2 of the tape-input switch (S). Connect the other end to lug #5 of the channel reverse switch (S).
17. () Connect one end of a 6'' wire to jack #1 long lug (S). Connect the other end to lug #4 of the tape-input switch (S).
18. () Connect one end of a 6'' wire to lug #6 of the tape-input switch (S). Feed the other end through the long lug of jack #2 and connect to the long lug of jack #3. Solder both lugs.
19. () Connect one end of a 6'' wire to the long lug of jack #5 (S). Connect the other end to lug #1 of the tape-input switch (S).
20. () Connect one end of a 6'' wire to lug #3 of the tape-input switch (S). Feed the other end through the long lug of jack #6 and connect to the long lug of jack #7. Solder both lugs.
21. () Connect one end of a 6'' wire to jack #4 long lug (S). Connect the other end to lug #6 of the volume control (S).
22. () Connect one end of a 5-1/2'' wire to the long lug of the jack #8 (S). Connect the other end to lug #2 of the volume control (S).
23. () Connect one end of a 6-1/2'' wire to the pair of ground lugs (short lugs) between jack #7 and jack #8. Feed the other end through lug #5 of the volume control and connect to lug #1 volume control. Solder both lugs #5 and #1 of volume control.
24. () Connect a 2'' wire to the pair of ground (short) lugs between jack #7 and jack #8. Connect the other end to the pair of ground lugs between jack #5 and jack #6 (S).
25. () Connect a 2'' wire to the pair of ground (short) lugs between jack #1 and jack #2 (S). Connect the other end to the pair of ground lugs between jacks #3 & #4.
26. () Connect a 2-1/2'' wire to the pair of ground lugs between jacks #3 & #4 (S). Connect the other end to the pair of ground lugs between jacks #7 and #8 (S).

You have completed all the wiring of this unit; it is advised that you go back and check each step for correct connection and good soldering. When you are satisfied that all the work is correct, peel paper backing off of back panel label and press label onto back of DSC, between the two strips of jacks, smoothing it into place. Then put the cover on by tilting it over the rear panel and down in back of the front panel. There is a snug fit between the front panel components and the cutouts in the cover; care should be taken when sliding the cover into place to clear the various components. Fasten the cover in front and back with four sheet metal screws provided. Then place the lower brass escutcheon (one hole) over the volume control shaft, square it with the chassis and fasten it with a 3/8'' nut. Install the upper escutcheon in the same manner with two 3/8'' nuts. Put on the knobs; set the pointer on the knobs so that it points up when controls are in center of rotation; tighten small screws in knobs. Your DSC is now ready for use.

CONNECTING YOUR DYNAKIT STEREO CONTROL

The DSC-1 is supplied with four connecting shielded cables. Since this is a relatively high impedance unit, it should be used with these cables and not with longer ones. Connection to a Dynakit preamplifier, or other preamplifier which has a tape monitor switch, is very simple. The following steps are all that is required:

1. Set tape monitor switch of preamp to "tape" position.
2. Plug connecting cable from "audio out" of DSC to "tape in" on preamp. Use the lower strip of input jacks on DSC and connect to preamp for right channel.
3. Plug connecting cable from "audio in" of DSC to "tape out" on preamp. Use lower strip of input jacks on DSC and right channel preamp.
4. If a tape recorder is connected to the system it should have its right channel output plugged into "tape play" of lower strip of inputs on DSC. This applies only to tape recorders which have built in preamplifiers. Connection for tape heads must be made to properly equalized input of preamplifier in accordance with instructions for use of the preamp.
5. If an output is required for tape recordings, this is taken from the "tape record" of the DSC.
6. Repeat these steps with the upper strip of input jacks on the DSC and the left channel preamp.

For equipment which does not have a tape monitor arrangement, it is still possible to use the DSC in between two preamplifiers and two power amplifiers. The outputs of the preamplifiers go to "audio in" of the DSC while the "audio out" connections of the DSC go to the power amplifiers. In this usage, the tape monitor facility is not available in the DSC although the "tape record" connection can be used (but this will not be independent of volume and tone controls as it is in use with Dynakit preamps).

When using the DSC between preamps and amplifiers, the volume control on the DSC should be turned fully clockwise, the level set by the individual volume controls on the preamplifiers, and then the DSC volume control can be turned down for lower levels. If this precaution is not taken, it is likely that the signal levels in the preamplifiers will be such that distortion will be incurred. This problem does not arise with Dynakit preamplifiers where the point of insertion of the DSC is such that signal levels can never be in the distortion range.

The DSC can be connected similarly between program sources and two basic power amplifiers. For example, the output from an AM and FM stereo tuner can be fed directly to the DSC and thence to two amplifiers like the Dynakit Mark III; and all stereo control functions will be available without tone control action. A tape playback machine with its own preamplifiers can also serve as a signal source with the DSC and two basic amplifiers.

USING YOUR DSC

Normally the Dynakit Stereo Control will be operated with two Dynakit preamplifiers, and this usage will be discussed in detail. Use with other brands of equipment is parallel within the limitations discussed above.

With Dynakit preamplifiers the left channel preamp can be stacked on top of the right channel preamp with the DSC adjacent and to the left of the preamps. The combination harmonizes and gives the appearance of an integrated unit.

The "tape monitor" switches of both preamps should be on "tape". The volume controls should be turned fully clockwise, and the "loudness" switch "off". The selector switches of the preamps should be set for the input source to be played. For normal use the three slide switches on the DSC are all down. These switches will be discussed first:

Loudness-volume switch adds loudness compensation to the volume control to compensate for the apparent loss of bass at low volume levels. This switch supplants the function of the corresponding two switches on the preamplifiers.

Channel reverse switch interchanges the two stereo inputs in case the program source does not have the conventional "strings on the left" arrangement. It also selects either right or left input signal for monophonic sources as will be discussed with describing the action of the "blend" control.

Tape-input switch selects either the tape recorder or the inputs to which the selector switches of the preamplifiers are turned. If a tape recorder with an extra head for monitor use is used, this switch permits comparing input with output of the tape recorder to monitor the quality of the recording process. Basically, the switch makes it practical to select an additional high level input source, so that for uses where there is no tape machine it can permit an extra input for crystal pickup or similar high level signal source. For those who use the DSC without preamplifiers, as a control system for two power amplifiers, it permits selecting between two high level signal sources.

There are also three rotary controls in the DSC. Of these, the volume control is familiar to all users. In this case it consists of a dual control so that the volume of both channels can be adjusted simultaneously. The other two controls are specialized stereophonic controls, and their usage requires some explanation.

The balance control is used to correct for differences in level between the two channels. It will normally be close to centered if both channels have identical equipment. However, even in that case, variations in component tolerances will cause one stereo channel to be relatively louder than the other so that the balance control has a function. The control will reduce the sensitivity of the right channel when rotated to the right of center, and vice versa. In using it you should start out with the control centered and turn down the preamp volume control on the louder side of the system until the system seems to be in balance. Then variations in balance which come at different volume levels and with different signal sources can be readily handled by the balance control.

The blend control is a novel and unique control which greatly augments the enjoyment which you will get out of your stereophonic system. At full counter clockwise rotation of the blend control, your system has complete independence between the two channels - the purest of stereophonic conditions. When the control is rotated, a switch clicks on; and there is a small and almost inaudible blending of the two channels. As the control is rotated further clockwise, the channels are blended or mixed; and the separation between them disappears. The reproduction changes from stereophonic to monophonic. At the end of rotation, the blend control has another switch action which opens up one of the input channels so that a single input source can be played through both halves of the stereo system. A flick of the channel reverse switch will put the other input channel through both halves of the stereo system. For example, with an AM and FM tuner you can have separate selection of either type of broadcast for those times when the station is not transmitting stereophonically or when a monophonic-stereophonic comparison is desired.

Normal usage of the blend control is in the range between the two switch positions. It permits filling in "the hole in the middle" effect which is found in some types of stereophonic recording. The degree of blending should be such that there is no effect of completely separate sound sources but instead a spread of sound filling the space from speaker to speaker.

There are several additional uses of the blend control. A monophonic phonograph record when played with a stereophonic cartridge should be played fully blended. In this way, there is cancellation of undesired vertical signal components so that noise is eliminated and quality is improved.

The full monophonic position (extreme clockwise after the switch clicks) is useful in balancing the stereo system. When the blend control is in this position, only one signal goes through both channels; and the balance control can then be rotated until the apparent loudness is the same from both loudspeakers. Then, the system will still be balanced when going back to stereophonic reproduction. It is difficult to balance with stereophonic signals because the signals in the two channels are not the same, and equal loudness is not the criterion for balance.

IN CASE OF TROUBLE

Since your DSC-1 is a very simple electronic unit without tubes or other components which sometimes require replacement, it is not likely to fail in operation. However, if it contains a defective part or if you have made an error in construction, it may not function properly. It is advisable to double check your wiring and soldering if the unit does not seem to work as expected. Having another person check through for you will frequently show up an error which you have overlooked.

One aid to troubleshooting is to check each channel individually. If the blend control is set for "stereo," each channel should be completely independent. If for example, the left channel works, but the right one is inoperative; then the right

channel should be traced through to find the source of the trouble. Factory service is available if the unit cannot be corrected by normal circuit tracing procedures.

FACTORY SERVICE AND GUARANTEE

All parts in the Dynakit are guaranteed for a period of one year, and defective components will be replaced without charge if returned to the factory directly or via your dealer. Many dealers carry Dynakit spare parts in stock to facilitate replacements. After the one year guarantee period, parts are charged for at regular prices.

In the event that the assembled kit does not function properly or breaks down after some use, Dyna Company will service the kit for a service fee of \$2.50 plus the cost of parts which have been damaged by the user or are past the one year guarantee period. This service facility is not available for kits which are incompletely wired, or have been wired with other than rosin core solder, or in which changes have been made without factory authorization. In addition, NO PARTS WILL BE REPLACED NOR WILL ANY SERVICE BE AVAILABLE FOR KITS WHERE THE GUARANTEE POST CARD HAS NOT BEEN RETURNED. THE SERIAL NUMBER ON THIS INSTRUCTION BOOK MUST BE MENTIONED IN CORRESPONDENCE, PARTS RETURN OR KITS RETURNED FOR FACTORY SERVICE. It is the factory prerogative to limit the service facility to one year from the date of purchase.

When shipping the DSC-1 for service a note must be attached specifying the symptoms, the name and address of the sender and the serial number. The kit should be securely packed in a carton in which it is surrounded by several inches of paper or other soft packing material.

Dyna Company assumes no responsibility or liability for damages or injuries sustained in assembly or operation of the Dynakit.

DSC-1 PARTS LIST

- 1 chassis and cover
- 1 brass escutcheon (2 pieces)
- 2 four jack strips
- 2 .1 capacitors
- 2 4700 ohm resistors
(yellow-violet-red)
- 2 22,000 ohm resistors
(red-red-orange)
- 1 dual 750,000 ohm
balance control
- 1 dual 250,000 ohm
volume control (with taps)
- 1 combination control and
switch (blend control)
- 3 slide switches
- 1 hank of hookup wire
- 3 knobs
- 4 connecting cables
- 14 #4 x 1/4" machine screws
- 8 #4 nuts
- 8 #4 lockwashers
- 6 3/8" nuts
- 3 3/8" lockwashers
- 4 #6 sheet metal screws
- 1 back panel label
- 1 instruction book
with warranty card

ENJOYING STEREOPHONIC SOUND

Stereophonic sound offers an important enhancement of enjoyment of your high fidelity system. The proper setup and use of your stereophonic system will bring considerable satisfaction. However, stereophony introduces problems in high fidelity reproduction which can diminish your enjoyment of your hi fi system unless these problems are understood and corrected. These few notes on the subject should assist materially in the installation and use of a stereophonic system which adds to your listening pleasure.

The pieces of equipment to be used should be as similar as possible in each channel. This is particularly true for the loudspeakers to be used. Different types and brands of speakers have very great differences in frequency response and other important characteristics. If, for example, one speaker has a peak in response at a certain frequency where the other does not, the stereophonic balance will be changed at that frequency. The need for frequent rebalancing comes because of this type of dissimilarity.

There has been a relatively high proportion of dissatisfaction with stereo which has arisen because of the attempt to attach an inferior second channel to complete a system. If this channel differs from the first channel it frequently destroys any potential benefits of stereophonic sound.

The proper reproduction of monophonic discs through the stereo system requires the cancellation of identical signals (of opposite phase) so that there is no unwanted vertical signal component in the output. This requires either the paralleling of the two sides of the cartridge or the paralleling of the outputs of identical preamps. If the preamps are slightly different, the vertical components cannot be eliminated properly. In Dynakit preamplifiers, the critical components which determine the response characteristics of the preamplifier playback characteristics have a tolerance of only 1% so that this problem cannot cause difficulty.

Channel phasing is a problem of stereo which is readily solved, once understood. If, on a single sound, one speaker cone moves inward while the other moves out, the system is not properly phased, and the sound area between the speakers will lack homogeneity. All tapes and all discs are reproduced so that their phasing is consistent. Therefore, once phasing of the playback equipment is set it can be maintained for all tape and disc sources without further change. However, the phasing of AM-FM broadcasts may turn out to be different from that of discs and tape in which case it has to be changed for these program sources.

To check for proper phasing, turn the blend control of the DSC-1 to "mono" so that one signal comes through both channels. Then move back and forth between the speakers. If phasing is correct, there will be a smooth transition of sound between the speakers. If it is not correct, there will be an intermediate area where the sound will shift from one to the other. If phasing is not correct, it can be rectified by interchanging the two leads between one of the amplifiers and its associated speaker. If there is frequent shifting between radio and other stereo sources, a switch can be installed in order to make the phasing change convenient.

Proper phasing of the stereo pickup or tape head is generally accomplished by the manufacturer of this item. However, this can be inverted in installation if directions are not followed precisely. If the blending of the channels with the DSC-1 gives cancellation of the signal, this indicates probable incorrect phasing. An interchange of ground and "hot" side of one of the cartridge channels or of the two leads to one channel of the tape head will remedy this type of incorrect phasing.

Hum is another problem which the stereo disc playback cartridge can introduce. In some cases (particularly where independent preamps are used for the two channels) the use of a common ground lead on the two inputs will provoke a hum condition. For this reason, many stereo pickup manufacturers provide separate ground connections for each channel by using four cartridge terminals. The cable shields of the two channels should be kept separated. Even in this case, the power plug for one channel may require 180° rotation in order to prevent a hum condition when the channels are connected.

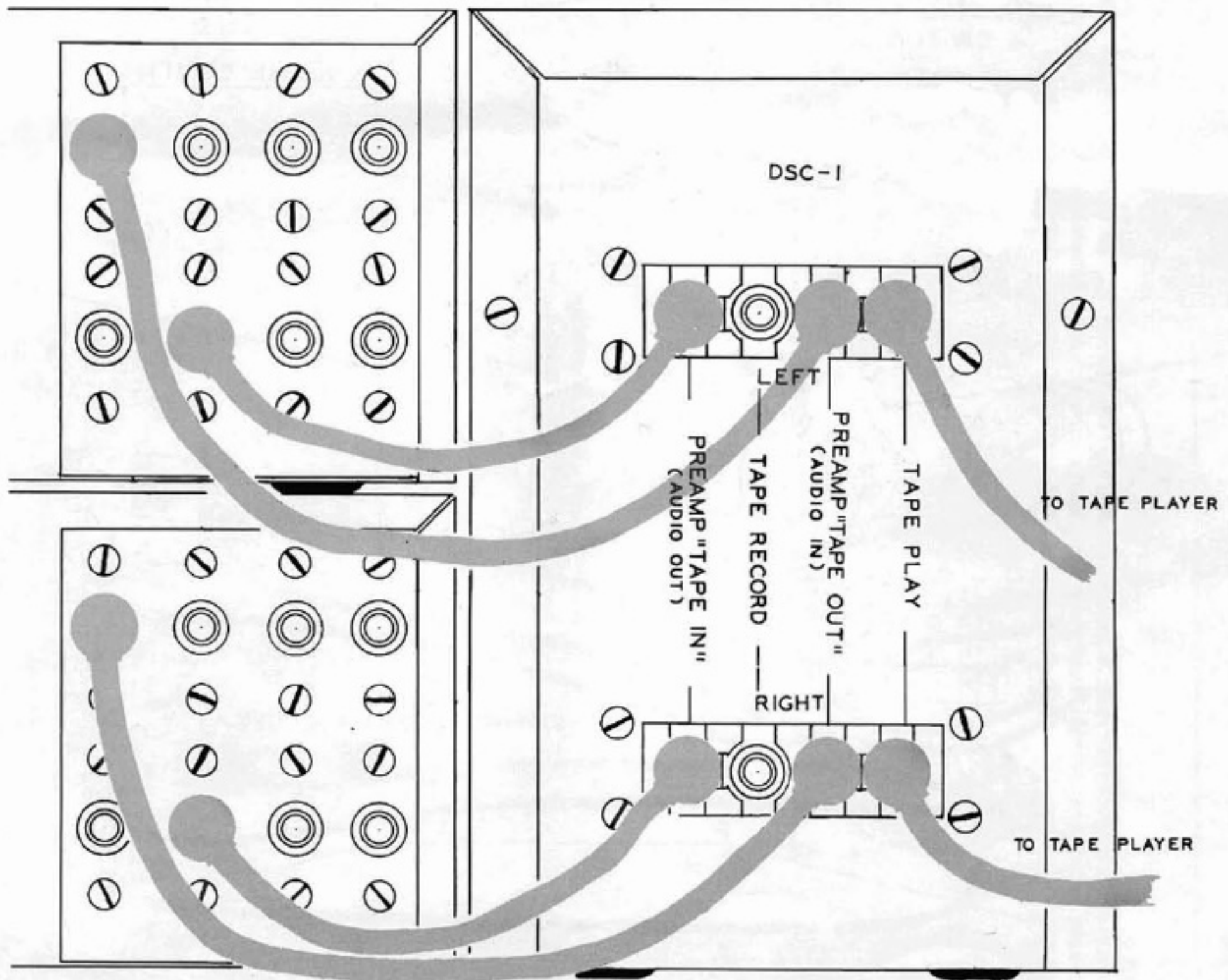
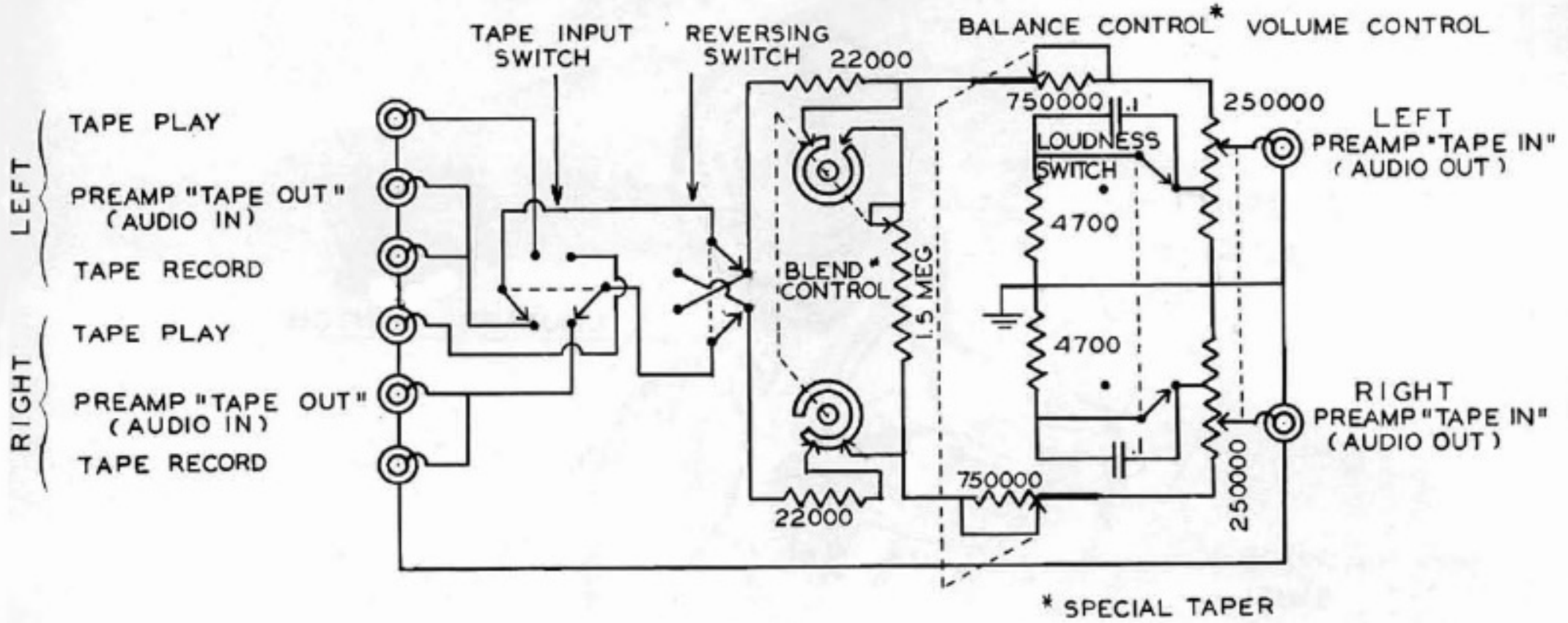
If a three terminal magnetic cartridge arrangement is used, it is very possible that hum will be encountered if the equipment from the two channels has any additional interchannel connection (beside the common shield from the pickup). Connection of the DSC should not give this trouble, or if it does, rotation of the power plug of one amplifier should cure it. However, dissimilar units in each channel can be a source of hum when three terminal cartridges are used. Crystal and ceramic cartridges which go into high level inputs should not normally introduce this type of hum problem.

Positioning of loudspeakers will affect the quality of stereophonic reproduction. Generally, moderate distances of six to ten feet along the same wall provide the best effect. If greater spacing is required, the use of the blend control can help to provide "fill" in the middle. However, if extreme distance is required, a "phantom" middle channel is useful. The most simple way to provide this is to add a center speaker taking its output partially from each side of the stereo channels. Connection of this speaker between the two 4 or 8 ohm outputs (without ground connection) from one amplifier to the other can provide this central channel. Experiments indicate that this channel can be beneficial even with a speaker of different characteristics than the main ones.

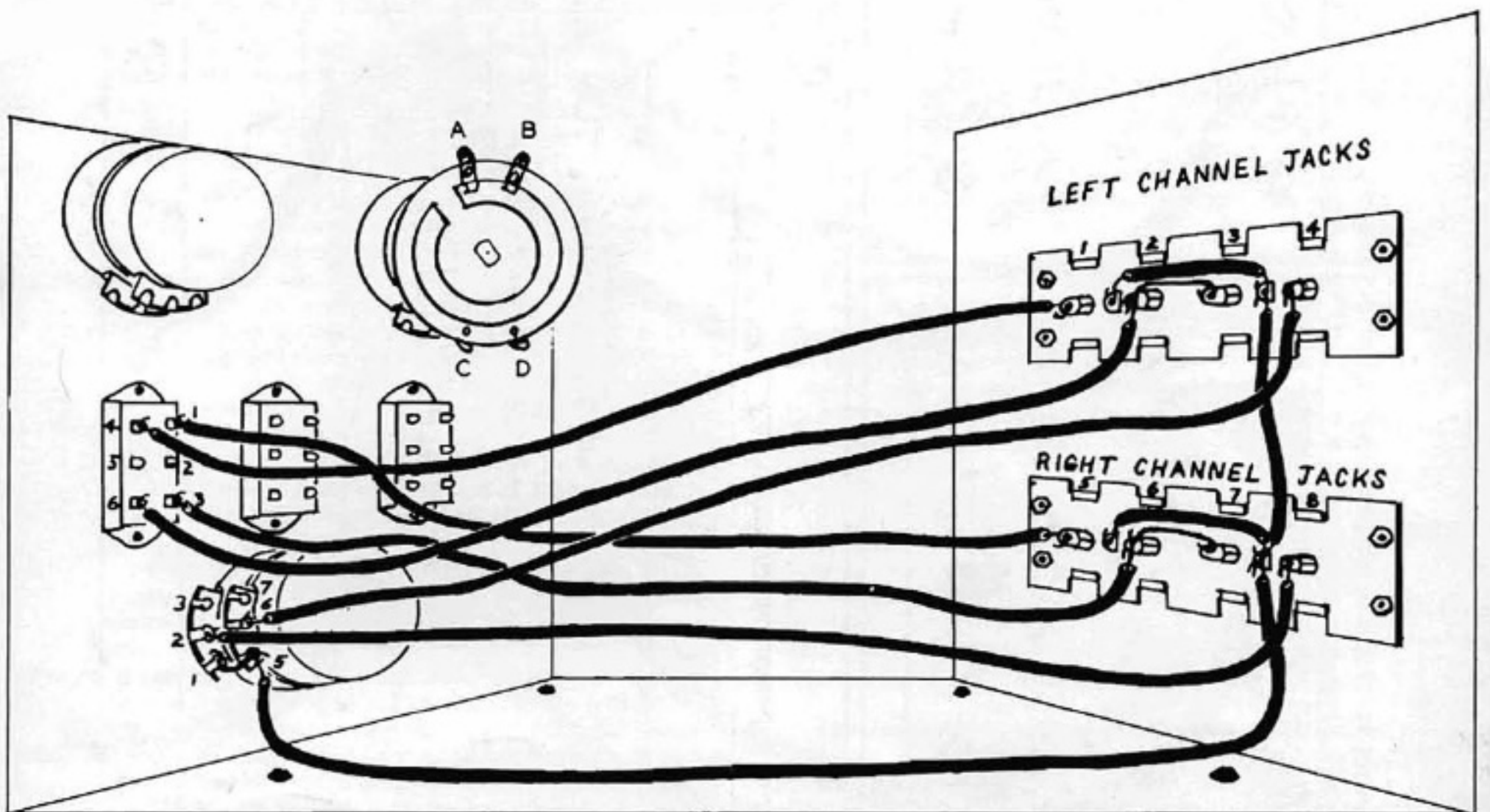
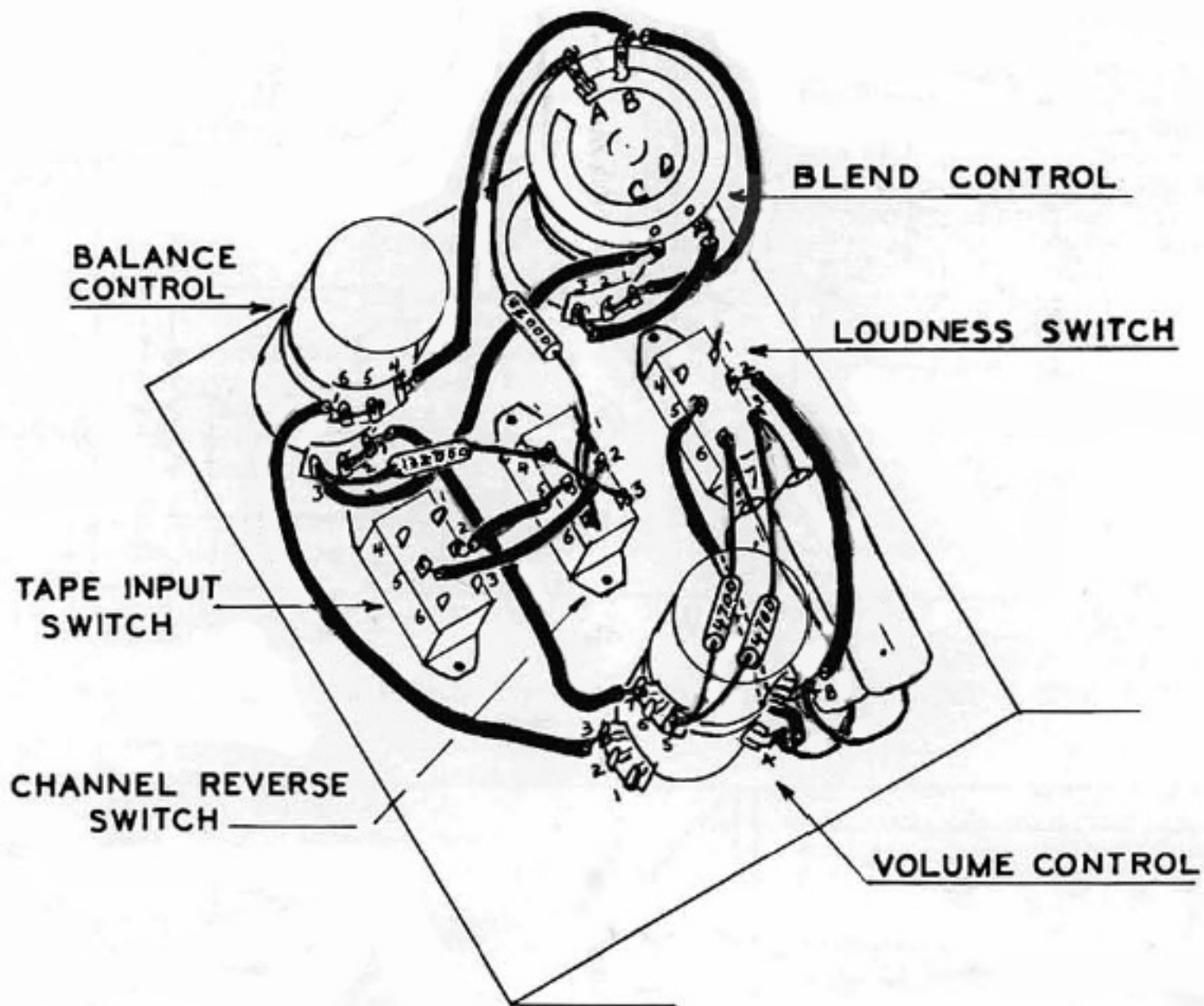
In most rooms, the proper balance of the stereo system will be different for different listening positions. If the listening positions are relatively far from the speakers, this problem is diminished, and optimum results are obtainable for several listening positions simultaneously.

The most basic consideration of the installation and use of a stereophonic system is that stereo alone does not create realism and high quality sound. Two low grade stereo channels will not give the quality of one high grade monophonic channel. There is no substitute for high quality components, carefully installed.

DYNAKIT STEREO CONTROL



CONNECTIONS FOR DSC-1 WITH TWO DYNAKIT PREAMPLIFIERS



The latest tests with available stereo equipment indicate the possibility of hum difficulties in some sound systems with three wire stereo pickups. In order to provide our customers with the most trouble free performance this sheet indicates changes or replacements for certain steps in the instructions which will eliminate all of the possible difficulties. Although the DSC-1 will operate trouble free in most systems when wired according to the original instructions these changes should be made while initially wiring the unit to eliminate possible future complications.

BEFORE STARTING CONSTRUCTION PUT A CIRCLE AROUND THE NUMBERS OF THE STEPS IN THE ORIGINAL INSTRUCTIONS THAT ARE TO BE CHANGED. THIS WILL SERVE AS A KEY WHEN THIS SHEET SHOULD BE REFERRED TO.

MECHANICAL INSTRUCTIONS

Step

- 6 () Before mounting the four socket connectors scrape the paint from around the mounting screw holes indicated in the pictorial on the reverse side of this sheet. Insert a #4 screw through these holes from the outside and mount a ground lug on each of them; then mount a bakelite insulator over the front of the four socket connector and place it over the cutout fastening it in place with a #4 screw. Use #4 hardware in the other three holes of each connector.

WIRING PROCEDURE

Step

- 4 () Connect the other end of the 4700 ohm resistor to lug #1 of the volume control instead of Lug #5.

Disregard steps 23 through 26 and use the following procedure:

23. () Connect one end of a 6-1/2" wire to the pair of ground lugs between jack #7 and jack #8. Connect the other end to lug #1 of the volume control (S).
24. () Connect one end of a 6-1/2" wire to the pair of ground lugs between jack #3 and jack #4. Connect the other end to lug #5 of the volume control (S).
25. () Connect one end of a 10 ohm (brown-black-black) resistor to the pair of ground lugs between jack #7 and jack #8 (S) Connect the other end to the ground lug at the corner of that strip.
26. () Connect one end of a 10 ohm (brown-black-black) resistor to the pair of ground lugs between jack #5 and jack #6 (S). Connect the other end to the ground lug at the corner of that strip (S).

(Over)

27. () Connect one end of a 10 ohm (brown-black-black) resistor to the pair of ground lugs between jack #3 and jack #4 (S). Connect the other end to the ground lug at the corner of that strip.
28. () Connect one end of a 10 ohm (brown-black-black) resistor to the pair of ground lugs between jack #1 and jack #2 (S). Connect the other end to the ground lug at the corner of that strip (S).

