

MANUAL OF INSTRUCTIONS



HIGH FIDELITY SPEAKER SYSTEM

MODEL HFS 1



ELECTRONIC INSTRUMENT CO., BROOKLYN, NEW YORK

DESCRIPTION OF THE SYSTEM COMPONENTS

Tuned bass-reflex speaker cabinet (not a kit): Acoustically engineered, expertly constructed furniture quality cabinet designed specifically for the woofer speaker supplied. All visible surfaces are smooth-sanded, clear-grained birch hardwood and no plywood edges are exposed to mar the appearance. The front of the cabinet is covered by a handsome acoustical grill cloth framed by a smooth-sanded solid birch "picture" molding.

Heavy-duty 8" woofer: Response engineered for smooth cross-over to tweeter. In bass-reflex cabinet supplied, bass and mid-range are remarkably smooth, clean and free of coloration.

Horn tweeter: The large radius and diaphragm mass of a speaker adequate in the bass region are deterrents to flat high frequency response. One of the best solutions to the problem is the use of a well-designed horn tweeter, which permits the use of a small, precisely controlled and loaded diaphragm as well as providing very high conversion efficiency. The advanced design and the excellence of the techniques used in the manufacture of the horn tweeter supplied in this system are responsible for the clean, crisp extended highs, free of coloration or artificial brilliance.

Tweeter Level Control: The furnishings of a room and the position of the speaker system will effect the intensity of the high frequencies relative to the low frequencies at the position of the listener. Personal preferences also exist as to the most desirable balance between highs and lows. These factors point to the desirability of a variable attenuator in the high frequency channel, which has been provided in this system in the form of a rheostat fastened to the terminal plate on the back panel. With no attenuation, the level of the high frequency output will be about 4 db higher than the low frequency output.

Crossover: As the two speakers are designed to complement each other, a simple "bridging" circuit performs the cross-over function very satisfactorily. A paper capacitor is supplied for this purpose.

SPECIFICATIONS

Frequency Response: (Measured in anechoic chamber, 2ft. away on principal axis):

Woofer: ± 4 db maximum variation 80 to 1800 cycles

Tweeter: ± 2 db maximum variation 2800 to 10,000 cycles.

Crossover Region: 1800 to 2800 cycles; 4 db gradual rise when the tweeter level control is set to minimum attenuation.

(Note: The frequency response of the system is stated in the above manner to provide an adequate criterion for judging smoothness, which we believe has been achieved

to an exceptional degree in this system.)

Impedance: 8 ohms

Power Handling Capacity: 25 watts

Dimensions: 23" wide, 11" high, 9" deep

Weight: 19 lbs.

USE OF TWEETER LEVEL CONTROL

Insert a small screwdriver through the hole in the metal plate on the back panel into the slot in the control rotor. Turning clockwise will increase the resistance in series with the horn tweeter (to a maximum of 15 ohms) to reduce the level of the high frequencies relative to the low frequencies produced by cone woofer; turning counter-clockwise will decrease the resistance in series with the horn tweeter (to a zero minimum) to increase the level of the high frequencies relative to the low frequencies. Bare rooms (highly reflective) will tend to emphasize the highs, while rooms heavily furnished with carpeting and drapes (little reflection) will tend to damp the highs. The tweeter control should be adjusted until the highs seem natural (neither over-emphasized nor under-emphasized). This should be a one-time adjustment, which may be altered when changing the speaker location or the room furnishings. The amplifier tone controls should be used for adjustment of tonal balance with varying program material.

CONNECTION TO AMPLIFIER

Connect the speaker system input terminals to the 8 ohm output terminals of the amplifier. Plastic-covered lamp cord may be used for distances up to 50 ft. with little power loss. For shorter distances, tv antenna lead can be used, particularly if it desired to run the speaker lead under a rug.

REPLACEMENT PARTS LIST

19014	pot., 15 Ω (level control)	1
20501	cap., 2 mfd, 150V	1
40000	nut, #6-32 hex	4
40008	nut, #8-32 hex	10
41000	screw, #6-32 X 1/4	4
41042	screw, wood #7 X 7/8 cs	12
41043	screw, wood #4 X 3/8	8
42002	lockwasher, #6	3
42008	lockwasher, #8	10
42032	washer, #8 flat	10
43000	lug, #6 ground	1
54513	terminal board, 2P	1
55003	speaker, woofer, Jensen P8RS	1
55004	speaker, tweeter, Jensen RP103	1
81096	metal plate	1
88035	cabinet	1
88036	rear panel	1

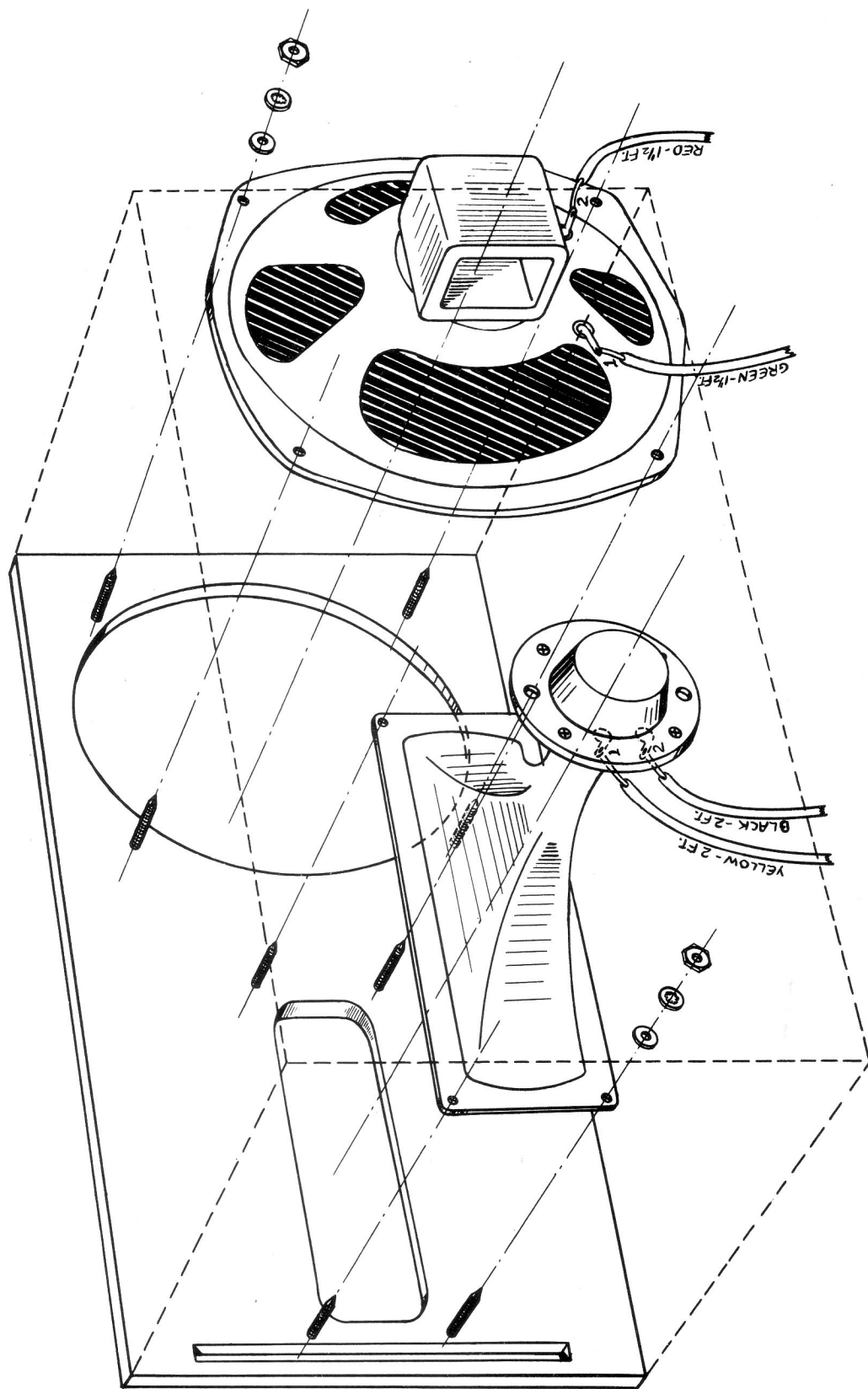


Fig. 1

COMPLETING THE SYSTEM ASSEMBLY

As the speaker cabinet is supplied completely assembled, all that need be done is to mount the speakers (mounting studs have been installed for this purpose) and to complete the simple wiring of the speakers, bridging capacitor, tweeter level control, and terminal board. No drilling, gluing, or woodworking of any sort is necessary, and all required hardware as well as pre-cut, color-coded wires are provided. As for tools, you will require medium and small screwdrivers, a spintite or small adjustable wrench, a soldering iron of any type, and some rosin-core radio solder. A step-by-step procedure has been provided, which is accompanied by pictorial diagrams referred to specifically in each step. The finishing of the cabinet will be determined by individual tastes and requirements.

CONSTRUCTION NOTES: USE ROSIN CORE RADIO SOLDER ONLY. Under no circumstances use acid core solder or acid flux, since acid flux can cause serious damage to components. Before soldering, make certain of a good mechanical connection. Tin the solder iron before using by chipping or sanding off excessive "scale", melting some rosin-core solder over the tip, and then wiping excess solder off with a clean rag. Apply the hot iron and the solder to the joint, but do not place the solder against the iron directly, since it is essential that the solder be melted by the heated-up joint itself if a good connection is to be made. When the solder is flowing freely over the joint, remove the solder and hold the iron against the joint a few seconds longer until it ceases to "smoke", indicating that the flux has been burned off. A good joint, when cool, will be smooth and shiny; an unsatisfactory or "rosin" joint will be pitted and grey. In general, perform the soldering operation quickly, using a minimum of total heat to avoid overheating and damaging components. Use fresh solder if it is necessary to resolder a joint for any reason.

WIRING AND MOUNTING THE SPEAKERS

1. () Fig. 1. Orient the speakers as shown in Fig. 1 to properly identify the terminals by the numbers shown in the drawing. Connect and solder each of the four pre-cut leads to the appropriate speaker terminal, carefully observing the color of lead which is to be attached to each terminal as follows: a) green lead to cone speaker terminal 1; b) red lead to cone speaker terminal 2; c) yellow lead to horn speaker terminal 1; d) black lead to horn speaker terminal 2. Do not disregard the color-coding or serious error will result in the final wiring.

2. () Fig. 1. Carefully center the cone speaker over the circular cut-out, orienting it so that the mounting holes are directly over the four projecting studs and the terminals are located as in the drawing. Gently lower the speaker so that the studs pass through the mounting holes. Careless handling here can

result in the mounting studs damaging or puncturing the cone. Place a large flat washer, large lockwasher, and large hex nut on each mounting stud, in that order. Tighten the nuts with a nut driver (spintite) or a wrench. Do not tighten the nuts excessively or you will spring the speaker frame.

3. () Fig. 1. Mount the horn speaker on the six studs around the rectangular cut-out, orienting the terminals as shown. Fasten the speaker in place with six large flatwashers, six large lockwashers, and six large hex nuts as described above.

MOUNTING OF TERMINAL BOARD AND LEVEL CONTROL ON METAL PLATE

4. () Fig. 2. Mount the tweeter level control on the rectangular plate, using one small lockwasher, one solder lug, and two small hex nuts and two small screws as shown. Do not attempt to insulate the mounting tabs on the control from the metal plate; the 2 watt rating of this control is contingent on its being mounted on a metal panel of certain minimum area to adequately conduct heat away from it.

5. () Fig. 2. Mount the terminal board on the metal plate, using two small lockwashers and hex nuts and screws.

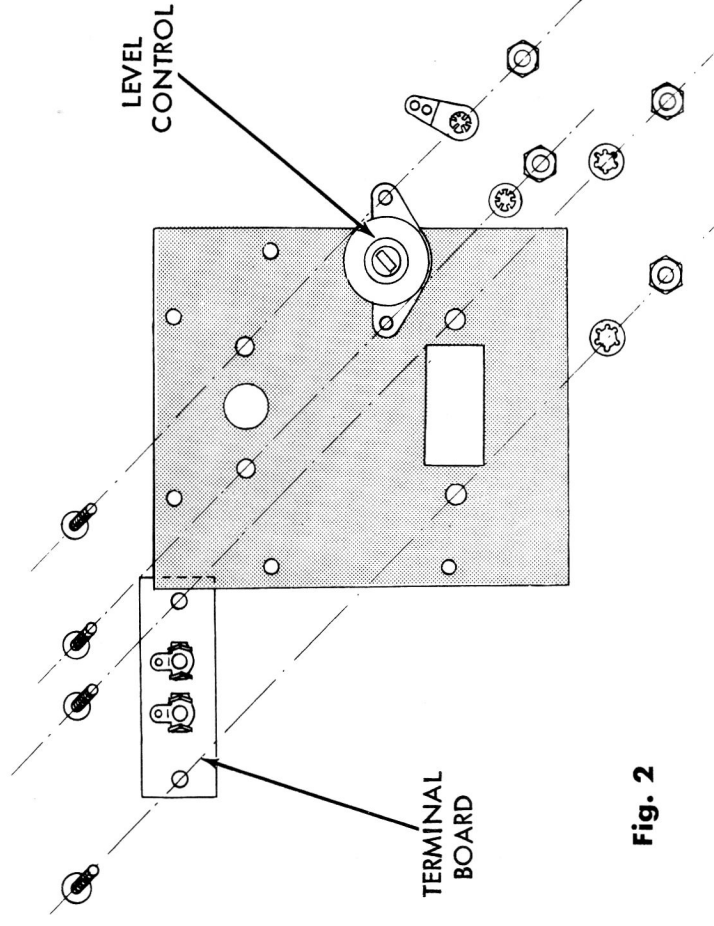


Fig. 2

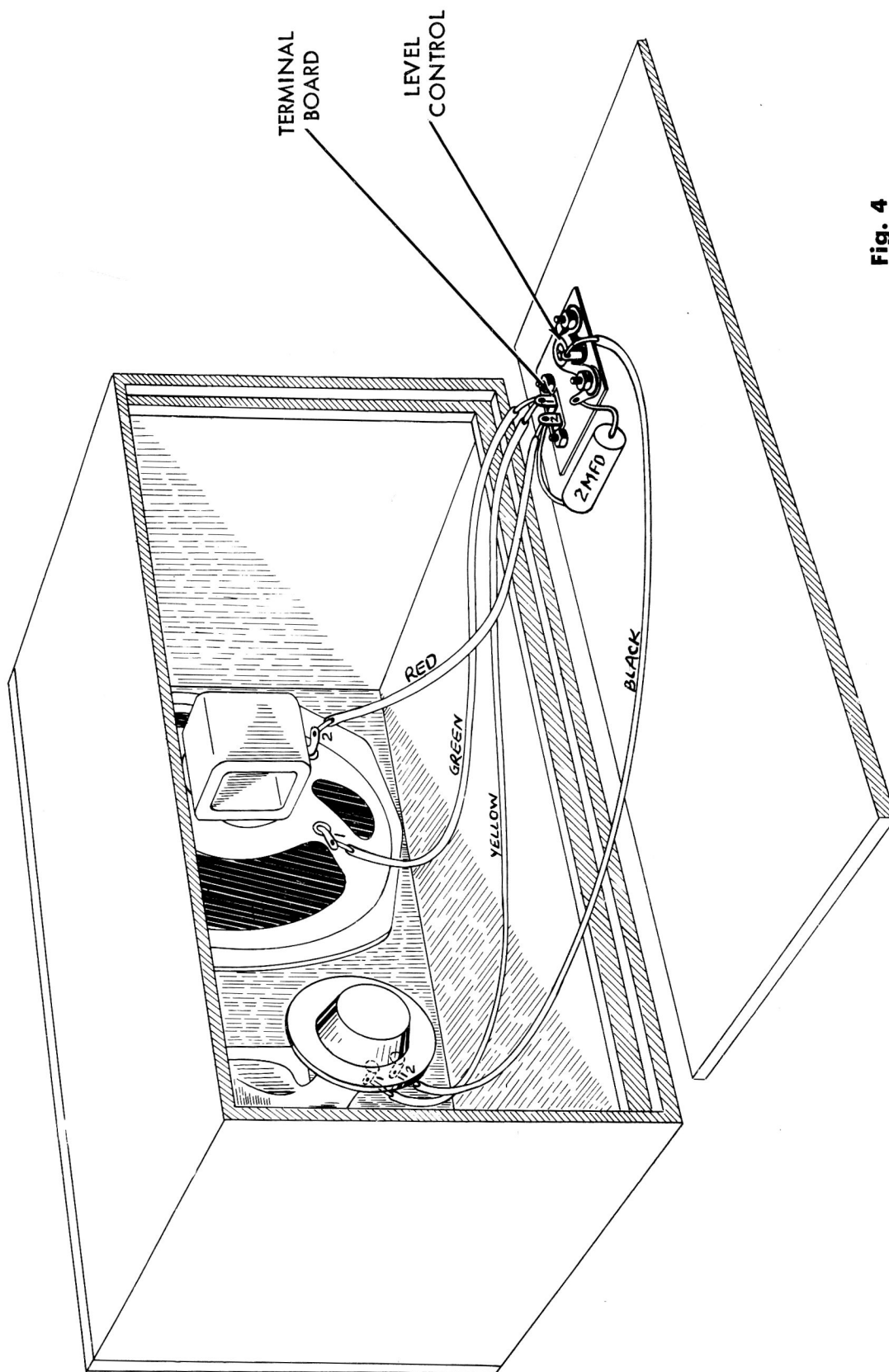


Fig. 4

MOUNTING OF METAL PLATE ON BACK PANEL

6. () Fig. 3. Refer to Fig. 3 to determine which is the inside surface of the back panel. Having done so, lay the paper template provided against the inside surface over the cut-out and use an awl or nail to pierce the template and mark the panel at the locations of the eight mounting holes. Mount the metal plate on the back panel with the eight small wood screws placed at the marked points. Note that the level control and the solder lugs of the terminal board must be on the interior side of the panel.

FINAL WIRING

7. () Fig. 4. Place the cabinet and the back panel on a flat surface, positioned as shown in the drawing.

8. () Fig. 4. Connect the 2 mfd paper capacitor between the solder lug under one of the mounting tabs on the level control and terminal 2 of the terminal board. Push the capacitor against the plate and draw the leads through both lugs so that the capacitor will be held immobile. Crimp and solder the lead going to the solder lug under the mounting tab of the level control. Trim any excess lead. The other lead will be soldered in the next step.

9. () Fig. 4. Connect the red lead from terminal 2 of the cone speaker to terminal 2 of the terminal board. Crimp this lead and the capacitor lead previously installed and solder terminal 2 of the terminal board. Trim off any excess lead.

10. () Fig. 4. Bend the level control terminal lug away from the chassis. Connect the black lead from terminal 2 of the horn speaker to this terminal lug, then crimp the lead and solder the connection. Trim off any excess lead. Be sure that there is no short between the terminal lug or the lead to the metal plate at this point.

11. () Fig. 4. Connect both the yellow lead from terminal 1 of the horn speaker and the green lead from terminal 1 of the cone speaker to terminal 1 of the terminal board; then crimp both leads and solder the connection. Trim off any excess lead. This completes the wiring.

INSTALLING THE BACK PANEL

12. () Fig. 3. The proper orientation of the back panel is shown in Fig. 3. Install the back panel by laying it in against the cleats and fastening it in place with the twelve large wood screws.

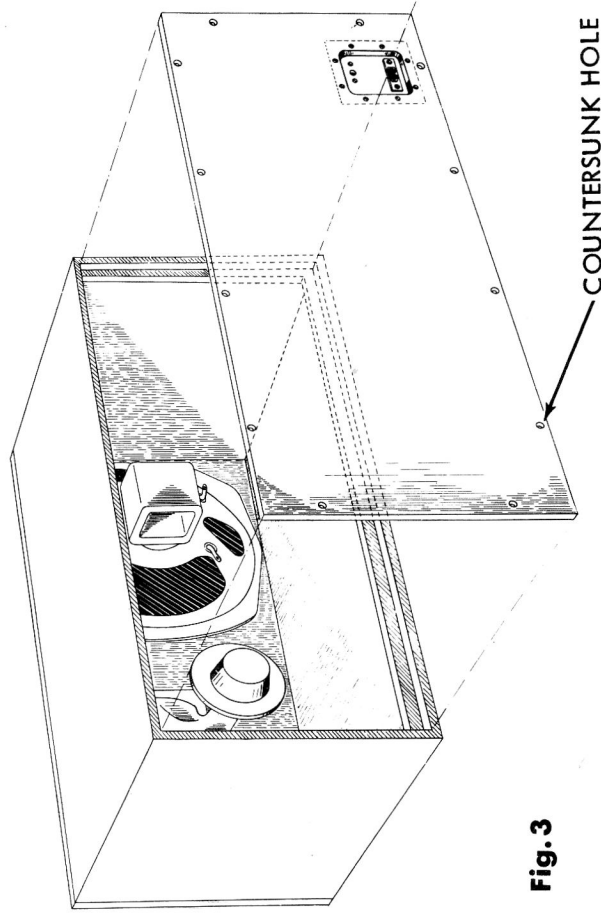
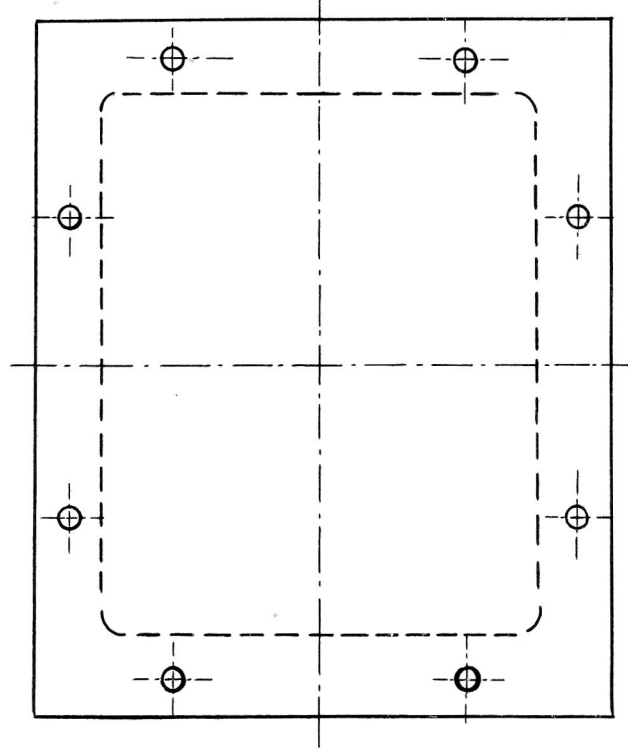


Fig. 3



TEMPLATE