

ADMIRAL RADIO MODEL 4A1.

Schematic, 4A1 Portable Stereogram

For proper stereophonic listening the two speaker systems should be placed from 8 to 12 feet apart. It may be found that setting the speaker systems at a slight angle so that the speakers face the listener, will increase direction and depth of sound. The listener should be between 8 to 12 feet in front of and directly between the two speaker systems.

To adjust the **Volume** and **Balance** controls for proper listening, proceed as follows:—

1. Locate the speaker systems in position.
2. Place the **SELECTOR** switch in "STANDARD" position.

3. Play a single-channel (Monophonic) record. As the record is playing, adjust the **VOLUME** control for low output level. **NOTE:** The **VOLUME** control consists basically of two ganged potentiometers which simultaneously control the **LOUD-**

To ensure best sound reproduction it is essential that the right and left channel speaker voice coils be correctly phased so that the cones of both speakers move in the same direction at the same time.

This may be checked with the aid of a 1.5 volt flashlight cell. Connect the negative terminal of the cell to the casing of the speaker bayonet plug and whilst momen-

NESS level for both channels. Adjust the **BALANCE** control to approximate mid-rotation.

4. A properly balanced system will now give the effect of the sound originating from a point midway between the two speaker systems. An imbalance of audio outputs will reveal itself as one audio output being louder and overriding the balanced output condition. If necessary, adjust the **BALANCE** control so that the sound appears to originate from half-way between the two speaker systems.

5. Move **SELECTOR** switch to "STEREO" position and play a stereophonic record. The sound output of the Stereo system should give a genuine effect of depth and direction to reproduced sound. Because of the dimensions of a room and furnishings in it and the position of the Stereophonic system, the **BALANCE** control may have to be re-adjusted slightly for optimum performance.

CHECKING THE PHASING OF SPEAKER SYSTEMS

Initially contacting the positive cell terminal with the centre connection of the speaker plug, observe in which direction the speaker cone moves.

Repeat this procedure with the other speaker channel—maintaining, of course, the same polarity of connections, and check that this speaker cone moves in the same direction.

MICROPHONE ATTACHMENTS AND FUNCTIONS

The microphone supplied with this instrument is a high impedance type and is connected by means of a shielded single core cable to a 2-pin plug. It is essential that the shielding of the cable be covered with insulating sleeving.

Should hum be in evidence with microphone operation, reverse the microphone plug in its socket.

The microphone pre-amplifier consists of two transistors, the first being connected in a common collector circuit for matching the high impedance microphone to a common emitter amplifier.

The output of this second stage is taken to a three-position selector switch which performs the following functions:—

1. Standard:
In this position the outputs of the stereophonic cartridge are paralleled and connected to both input circuits of the dual amplifier. Used when playing standard monophonic records.

1. With a record playing, set the "Balance" control fully anticlockwise and adjust volume control for desired sound level of music.

2. With microphone well to one side of the speakers, rotate the "Balance" control clockwise until required level of speech is obtained. Should acoustic feedback or "howl" occur, retard the Balance control until it is no longer in evidence.

CHASSIS AND RECORD CHANGER REMOVAL

Changer Removal

1. Disconnect mains power plug from socket. Remove four control knobs by pulling straight off control shafts.
2. Remove six wood screws securing Record Changer mounting board to main cabinet.
3. Lift mounting board and disconnect pick-up plugs from amplifier chassis; also disconnect three motor wires from terminal block.
4. The mounting board and changer may now be removed; the changer may be separated from the board by removing the three screws going through the rubber mounts into the changer.

AMPLIFICATION CHECK

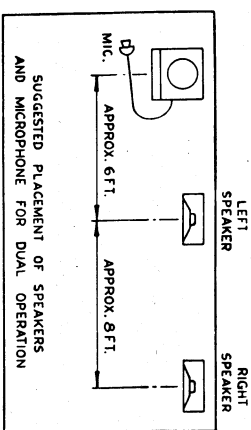
Control Settings

"Bal" Control Mid-rotation
 "Tone" Fully clockwise
 "Volume" Fully clockwise
 "Selector" Refer text

1. Disconnect pick-up plugs from chassis and connect audio generator output between M1 and chassis. Set Selector to "Stereo" position.
2. Connect the voltmeter across left channel speaker voice coil.
3. An input of 60 millivolts at 1000 c.p.s. should give an output of 1 volt across the speaker voice coil.
4. Repeat 1 to 3 inclusive for right channel check, connecting input to M2.

Overall gain check including microphone pre-amplifier.

1. Control settings as previously. Selector set to "Mic." position.



Suggested placement of speakers and microphone for dual operation

Fig. 2

Chassis Removal

1. Remove record changer with mounting board above.
2. Remove two nuts securing each speaker socket to cabinet.
3. Disconnect three-core power cord (from chassis) from terminal block.
4. Unsolder two wires from microphone input socket.
5. Unscrew one nut and two screws securing amplifier chassis to cabinet and remove.

2. Connect voltmeter across right channel speaker voice coil.

3. Connect ungrounded output of audio generator to microphone input socket through a 0.05 mfd capacitor.
4. An input of 2 millivolts at 1000 c.p.s. should give an output of 1 volt across the right channel speaker voice coil.

Note: A small speaker transformer together with two resistors may be used to isolate the output of an audio signal generator from ground.

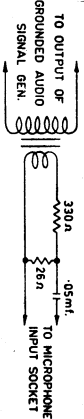


Fig. 3

- 1 volt into the above network will provide 2 millivolts at the output.

RECORD CHANGER SERVICING

NEEDLE AND CARTRIDGE REPLACEMENT

The cartridge used with this record changer is equipped with two jewel-tipped styli; one is for stereophonic and the other microgroove records and the other for standard 8 RPM records. The two styli are mounted on a common shaft which is connected to the Needle Selector.

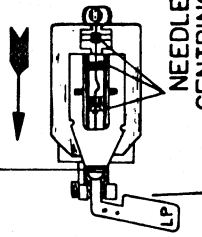
To replace needle assembly, slide the Spring Clip shown in Figure 4 and lift out assembly by means of the Needle Selector tab.

When re-assembling make sure that the needle shaft fits in the three centring notches.

The cartridge may be replaced by lifting out from the spring clamp mounting in the tone-arm.

Be sure to maintain the pick-up connections as shown in the circuit diagram.

SPRING CLIP
SLIDE IN DIRECTION
SHOWN TO REPLACE
NEEDLE ASSEMBLY



NEEDLE
SELECTOR

NEEDLE
CENTRING
NOTCHES

Bottom view of Cartridge.

Fig. 4

RECORD CHANGER TROUBLE SHOOTING

Changer Will Not Trip Into Change Cycle.

1. Check that the trip slider is free of oil, grease or dirt, and that the trip slider moves freely.
2. Check for bent cocking wire on the control plate.
3. Check to see that the gear index assembly is not binding on changer pan.
4. Examine tone arm lead to make sure lead does not hinder normal swing of tone arm.
5. Check tone arm control lever and shaft assembly. Shaft should be free to rotate in set-down arm assembly.
6. With changer in its normal operating position, and out of cycle, set-down friction washer should not be in contact with set-down arm assembly.

Changer Repeatedly Trips Into Cycle.

1. Check tension of gear indexing spring.
2. Check for bent cocking wire on the control plate.
3. Check for bent trip slider.

Tone Arm Does Not Set-Down Properly.

1. Check set-down adjustment. The set-down adjustment may be made whilst the changer is in its cabinet.
2. The set-down adjustment screw found in the rear left-hand side of the Tone Arm will automatically set down on 7", 10" and 12" records if set correctly on 7" recordings.
3. Check for binding in set-down index assembly. interlocks with changer pan.

Tone Arm Skips Grooves on Records.

1. Be sure the grooves on records are clean and not damaged.
2. Check that the record changer is level in its cabinet or compartment.
3. Check that tone arm shielded lead is not improperly dressed, or too short, producing a drag on the tone arm.
4. Check the condition of the phonograph needle in the pickup cartridge; replace worn needles. Check that the needle is not twisted or bent out of shape.
5. Be sure that there is no binding at the bearing in the tone arm base or between the shaft of the tone arm control lever and the shaft of the set-down arm.
6. Check that the trip slider is free of oil, grease or dirt, and that the slider is not bent and is free of burrs.
7. Check that trouble is not due to scratched or faulty record.

Records "Squeak" On Turntable.

1. Be sure the records are free of label burns folded into the centre hole.
2. Remove any dirt on the surface of the centrepost.

Changer Causes Rumble or Noise.

Rumble is due to vibrations developed by the motor finding a conducting path to the pick-up. This path is generally through the thrust bearing to the turntable. To reduce rumble developed in this manner, the thrust bearing should be thoroughly cleaned with carbon tetrachloride and packed with clean Shell Alvania No. 2.

Rumble may also be caused by insufficient motor grommet cushioning, idler wheel not rolling freely, or idler wheel being at an angle. These points should be checked if cleaning and greasing thrust bearing does not reduce rumble. Also, check the following:

1. Check for any mechanical rub near the motor.
2. Speed selector knob should not bind on top surface of pan (or escutcheon).

Records Do Not Push Off, or More Than One Record Drops to the Turntable.

1. Check that centre post slider moves freely up and down the spindle. If not, correct this by cleaning with carbon tetrachloride.
2. Check for broken or weak ejector return spring in the centrepost.
3. Check for weak push-off return spring.
4. Check the push-off adjustment.
5. Check that no foreign material is between the record shelf and the ejector in the centrepost.

Changer Trips Into Change Cycle Before Finishing Record.

1. Check for foreign material between trip motion arm and engagement pawl.
2. Check for bent cocking wire on the control plate.
3. Check for bent trip slider.

Records Fall To Turntable Unevenly.

1. Be sure centrepost is clean.
2. Be sure push-off ejector operates freely.
3. Check the push-off adjustment.
4. Be sure that levelling arm holds record parallel to the turntable.

Changer Stalls In Change Cycle.

1. Idler wheel rubber tyre may have foreign material on it. Clean the idler wheel and the turntable rim with Servisol.
2. Be sure push-off adjustment has proper clearance.

3. Rubber drive belt may be either weak or have oil on it from the motor.

Changer Does Not Shut Off Automatically.

1. Check for binding between levelling arm shaft and the bearing in tone arm base.
2. Check tension in shut-off delay stop engagement spring.
3. Check for binding of shut-off delay stop.
4. Check for binding of cam on shut-off link.
5. Check tension in shut-off arm spring.
6. Examine felt washer. Replace washer if deformed.

"Wow" At All Speeds.

May be caused by a flat spot on the idler wheel.

Slow Motor and "Wow" at 33 $\frac{1}{3}$ RPM.

The rubber drive belt may be either weak or have oil on it from the motor.

Remove turntable, held in position by a circlip. Remove large rubber belt and small brass pulley, then small belt and large pulley.

With a clean rag, moistened with "Servisol," clean pulleys and motor spindle then lightly lubricate pulley shafts only with Shell "Alvania No. 2" grease.

Re-assemble with new drive belts.

CAUTIONS:

1. Never operate record changer through changer cycle with power while the changer is tilted up on one edge. Keep changer level when checking operation with power.
2. See that the motor shaft, the rubber tyre on the idler wheel and the inside rim of the turntable is free of oil, grease, dirt or any foreign material. "Servisol" should be used for cleaning these parts. When handling these parts, keep fingers and hands away from the driving surface. Natural body oils may cause slippage.
3. Always move the speed selector pointer until it makes a definite stop and locks into position. Erratic action will result if this is not done.