

Byer Industries Pty. Ltd.

"BRS" Disc Recording and Playback Unit. Model R-12.



This recorder-playback unit has been designed and manufactured for use by professional and amateur recordists who require a machine capable of recording at 78 r.p.m. on 12-inch, or smaller, discs for immediate playback purposes. Simplicity of operation, robust construction, faithful recording and reproduction, and pleasing appearance were the essentials borne in mind when planning and producing this unit. Recordings may be made on acetate base discs when connected in accordance with the instructions to any amplifier or high-grade radio having pick-up connection facilities.

As a recorder, the unit may be put to any one of many uses, amongst which are included the following:—

In the home.—Record your children, your favourite programme, musical items at parties, commentary for films, surprise recordings of friends.

For artists.—Recordings of voice or instrument for comparison and self-analysis.

For the business man.—Recordings of speeches, company meetings, sales conventions, etc.

As a playback unit, this machine provides a constant speed turntable and a pick-up unit suitable for playing all lateral recordings up to 12 inch with remarkable fidelity.

The frame and turntable are manufactured from sand-cast aluminium alloy, machined on all necessary surfaces and finished in baked enamel. Traversing mechanism is by worm and quadrant, is fully enclosed and impossible to become out of adjustment except through misuse. Engagement of the traversing gear is effected through a simple lever and lock giving "cut" and "play" positions.

The cutting arm is accurately counterbalanced by an adjustable spring to give the correct weight at the needle point. The cutting head is of the moving iron type, giving a good response both for cutting and playback up to 6,000 cycles per second, the one head performing both functions.

The frame is drilled for mounting, and in setting up it is essential that it be screwed firmly to an even, level surface.

SPECIFICATIONS

Size of base.—14 $\frac{3}{4}$ inches long by 13 $\frac{3}{4}$ inches wide. Height from bottom of plate to top of cutter arm.—2 inches.

Depth from bottom of plate to lowest point of motor.—5 inches.

Turntable diameter.—12 inches.

Turntable speed.—78 r.p.m.

Maximum diameter of disc which can be recorded or played.—12 inches.

Maximum cutting circle diameter.—11 $\frac{1}{2}$ inches.

Minimum cutting circle diameter.—3 $\frac{1}{2}$ inches.

Motor specification.—240 volt, 50 cycle, A.C., 1/60 h.p., 1,500 r.p.m., synchronous, 40-degree Centigrade temperature rise, current consumed .16 amp.

Cutter head impedance.—4,000 ohms at 1,000 cycles.

Groove spacing.—112 lines per inch.

Land to groove ratio.—40 to 60.

INSTALLING AND WIRING THE MACHINE

The machine should be firmly mounted in a suitable console or bench and levelled in both directions.

Do not attempt to use the machine unless adequately screwed down and level.

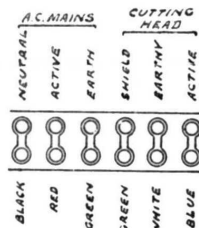
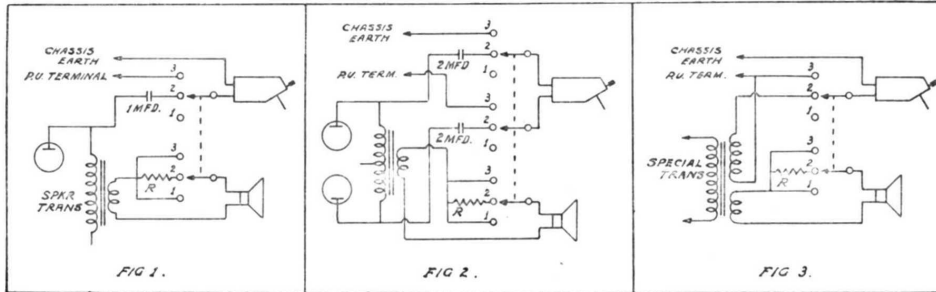


FIG 4.

Figures 1 to 3 show alternative methods of coupling the recorder cutting head to the output stage of single ended and push-pull amplifiers. Generally, the condenser coupling of Figures 1 and 2 is to be preferred to transformer coupling, as the inevitable insertion loss of a transformer is avoided. If, however, the isolation provided by a transformer is desired, it should be wound for a load of 4,000 ohms, which is the impedance of the cutter at 1,000 cycles and should also incorporate a winding for the speaker voice coil. (See Figure 3.)

The diagrams include wiring of switches appropriate to the three circuits. A three-position switch should be used and this connects the circuit as under.

Position 1.—

Connects the speaker to the radio.

Position 2.—

Connects the cutter to the output tube(s) and leaves the speaker wired as a monitor through the monitor volume control R 1, which consists of a variable resistance equal in value to approximately 20 times the voice coil impedance of the speaker.

Position 3.—

The speaker is connected for playback and the cutter can now be used as a pick-up and will deliver .2 volts R.M.S. maximum from standard pressings. This is sufficient to give considerable volume from an amplifier consisting of two pentodes. The pick-up may be connected directly in the grid circuit of the first amplifier tube or coupled through a transformer with an input winding for approximately 1,000 ohms.

In order to fully modulate the cutting head and obtain the maximum permissible signal level on the record, the output stage of the amplifier or radio receiver should be capable of delivering 70 volts

R.M.S. at 1,000 cycles. This corresponds to a power level of approximately 14 watts.

A tapped output transformer may be used to feed the cutter and obtain somewhat varied characteristics from the unit. If it is fed from a higher impedance tap, the high frequencies will be emphasised whilst a lower impedance will emphasise the low frequencies. The amplifier must be capable of delivering sufficient voltage from the low tap, otherwise a fully modulated record cannot be made.

Figure 4 represents the terminal strip underneath the base plate of the machine and shows the connections for A.C. mains and shielded cutting head leads from the amplifier.

OPERATION

It is recommended that only "Byer" manufactured recording blanks and cutting styli be used for recording. It is essential that only angular cutting styli be used as the cutter head axis is at 70 degrees to the turntable surface. Sapphire or steel styli having a rake angle of zero to 5 degrees will NOT operate in this unit.

Operating instructions are printed on the plate on the left of the machine and strict attention should be paid to them before attempting to record. The machine has been manufactured to cut only from inside to outside unless specially ordered. This is in order that the cutting swarf may be self clearing and not foul the cutter. Records may be played on the machine either from inside or outside start.

SERVICE AND SPARE PARTS

The unit is guaranteed to be of best materials and workmanship, and is warranted for a period of 12 months from date of delivery. Wearing parts are few and should not need replacement for many years, but a full category of spare parts is always carried and a fast service is given on repairs or replacements which may be necessary.