

OPERATING INSTRUCTIONS

FOR THE

VORTEXION TAPE RECORDER TYPE "A"

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OPERATING INSTRUCTIONS FOR VORTEXION TAPE RECORDER "A" DECK

Connect to a suitable A.C. supply socket by means of the 3-pin mains plug.

Set the mains adjuster (at the rear of amplifier panel) to the value nearest the mains supply voltage. This setting also corrects the tape motor.

After verifying this adjustment switch on mains and allow 15 seconds for warming up.

Switch tape deck selector switch to "RECORD" and meter switch to "BIAS". The meter should then read the bias voltage marked on tablet in lid with the tape of type supplied. This figure for bias gives the best results when individual machines are tested. If the type of tape is changed a different bias figure may be needed. If recording $3\frac{3}{4}$ " per second it is advisable to halve the signal limit and halve the bias.

The standard microphone input is balanced line of 15-30 ohms. If long microphone lines 100 yards or more are needed, ordinary twin twisted cable may be used without audible hum if the recorder is earthed. Neither side of the microphone casing or stand should have a connection to the input pair.

If an amplifier earth is impossible or special leads are required a screened microphone cable can be used but the screening should be connected to the amplifier earth and the frame of the microphone and not the stand if used. See note on input III.

of hum pick-up and response loss and distortion will be negligible.

Input II is for low impedance microphones 15 to 30 ohms. where only a 2-wire connection is used.

Input III is for the same input but for 3-point jack plugs which have 2 wires plus screen. Both inputs can be loaded by 8 microvolts.

TO REPLACE VALVES

Remove the four screws in the corners of the amplifier top panel. Lift up the top panel and with a sideways movement clear the jack sockets from the case. The top panel will now open to the left as if hinged. Care should be taken that the pins of a new valve arc straight before any attempt is made to use even slight force to plug it in.

TO SUPPLY POWER TO A RADIO FEEDER UNIT

H.T. to the extent of 20 mA. and L.T., at 6.3V. 1A. may be taken from the octal socket on the mains side panel. Connections are shown in the circuit diagram.

NB—The heaters of any feeder thus supplied must not have one side earthed as this would short circuit the mains transformer in the recorder.

DRIVING AN ADDITIONAL AMPLIFIER

Should the amplifier that the tape deck is to drive require only a small voltage and does not have an input potentiometer one should be provided to prevent undue noise. The value of the potentiometer, which may consist of two fixed resistors, can total anything between 25 ohms and 50,000 ohms without loss, and can be chosen to enable the tape deck output to develop 2 to 5 volts when supplying the full voltage needed by the following amplifier. As an example, should the following amplifier require 0.1 volt a reduction ratio of approximately 20 or 50 to 1 is convenient, and suitable standard values are 5,000 ohms and 100 ohms, or 2,000 ohms and 100 ohms. The values are not at all critical. Full scale deflection on the meter is approximately 2 ½ volts.

The lowest distortion, i.e., under 1% is given by a high bias and low signal with light or no loading on the amplifier during recording. The distortion of the tape amplifier is too low for accurate measurements under these conditions.

POSSIBLE FAULTS IN OPERATING AND THEIR CURES

- 1. Noisy background to recording.** Check connections. If using No.1 input see that earthy side is to sleeve of plug. If No. 2 see that neither side of plug is earthy. Make sure that the microphone does not pick up the mechanical noise of the deck. The microphone should not be held too closely to any large magnetic field such as a transformer, electric motor etc.
- 2. Whistle when recording from radio.** First make sure that the whistle disappears when the deck switch is turned to another position. If it does not then either it is due to the cramped international broadcasting conditions or the radio is at fault. Assuming the whistle did disappear then an earth must be connected to the recorder, make sure the third wire in the mains cable is properly connected or use a separate earth.
- 3. Sluggishness of motors.** Check mains voltage and change selector switch if necessary. Tap sides of spindles with wooden tool handle.
- 4. Loop of slack tape between capstan and take-up motor.**

This occurs in a minor degree with every recorder in the first instant of starting, but in some cases becomes excessive and wraps the tape around the capstan. Starting whilst capstan is still spinning after rewind can cause this, otherwise check 3 above.
- 5. Intermittent squeak when winding tape on or back.**

This is due to chatter of aluminium pinch wheel adjacent to capstan. This may be safely ignored but if found to be annoying it may be remedied by lubrication, as follows — Pull off the spring clip at the top of the spindle, slide off pinch wheel and put a thin smear of vaseline on spindle, replace wheel and cup. Take care then no grease is left on the wheels surface.
- 6. Continuous squeak when playing back or recording.**

Sometimes the felt pressure pads accumulate a resinous foreign substance on their surfaces which, by reason of the excessive friction caused, emit a continuous note from the back of the tape.
- 7. Ripple in recording.** Very noticeable on speech (as if under water). Mains very much too low, check first before changing tap. Alternatively, capstan motor may be faulty.

- 8. Starting switch does not hold in position, although amplifier is warmed up.**

Tape is not properly situated in head box.

- 9. Tape slips in drive or "wows".** Dirty capstan or accumulation of tape deposit on pressure roller. Bad splice in tape sticking in guides or heads. Buckled reels scraping on deck. Dirt in gate mechanism preventing proper closure. Oversize tape. Speed change knob not properly locating. Careless oiling.
- 10. Known, well recorded tape will not play back, but tape drives.** Tape incorrectly positioned in head box. Piece of splicing tape sticking over head working face. Gain control at zero.
- 11. Tape plays back with poor frequency response.**

Accumulation of foreign matter or tape coating over head gap.
- 12. In recording position, tape erases but will not record.**

Microphone or input plug not properly inserted, or in wrong socket.
Microphone cable faulty.
No input signal.
- 13. Records, but incompletely erases previous recording.**

Mains voltage low.
Dirt over erase head gap or splicing material stuck to working face.
- 14. Records weakly and with very poor frequency response.**

Tape coating outside, instead of inside.

Action Preliminary to
OVERHAUL.

- (1) Check mains selector and switch on and if current normal, measure and note Wow and Flutter.
 - (2) Lift up deck and remove amplifier, Suck out dirt and brush clean, especially ledges. Shampoo deck and amplifier when necessary and ensure drips do not enter brake surfaces.
 - (3) Check idler springs secure and clean idlers, mains socket pins tight, motors work, R.C. operates accurately, brakes in proper adjustment, platforms cleaned and tight on spindles, meter tight and glass whole and secure. (dry joints).
 - (4) Oil mechanism where needed especially motor bearings, NOT flywheel. Check and note wear on bearings. Check and note slackness in flywheel.
 - (5) Scrupulously clean surfaces of heads and Capstan and Felt pads. (re- stick or fit where necessary). Turn faces of tape guides when needed.
 - (6) Very carefully clean deck switch contacts especially if any complaint or noise in operation leads to suspicion of faults in this region. Switch rotor to and fro using cleaning fluid until pole stud no longer wipes dirt off under tags. Pay special attention to erase, loudspeaker and head contacts if any noise occurs when deck switch wobbled in Playback or Record positions.
 - (7) Run thro' tape with H. F. whistle and rotate all controls and check for noise. Carry out appropriate oiling, tone or volume control changing.
 - (8) Fit 220 ohm series oscillator I-I. T. resistor, top Capstan bracket BP/ 187/s or pressure roller where necessary.
 - (9) Shampoo case where necessary.
 - (10) Mods. Fit Bobbin tape guides (with discretion about wind back power). R.C., B, S.M. when requested by client. Replace deck rubbers if necessary.
- (10a) Re-check wow and flutter and note figures.
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| Wow and Flutter total % | IN 7.5 ips. | 3.75 ips. | OUT 7.5 ips. | 3.75 |
|-------------------------|-------------|-----------|--------------|------|
- Complete electrical test and new B. & S. P. figs entered in lid where change is needed.
Any parts fitted and labour additional to above CHARGED EXTRA.