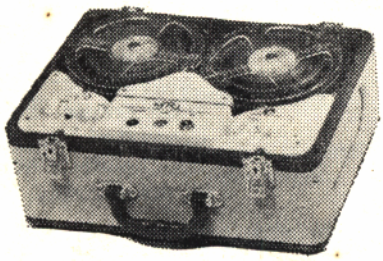

M.R.I. TAPE RECORDER

MARK II, III & 1V

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Service Instructions

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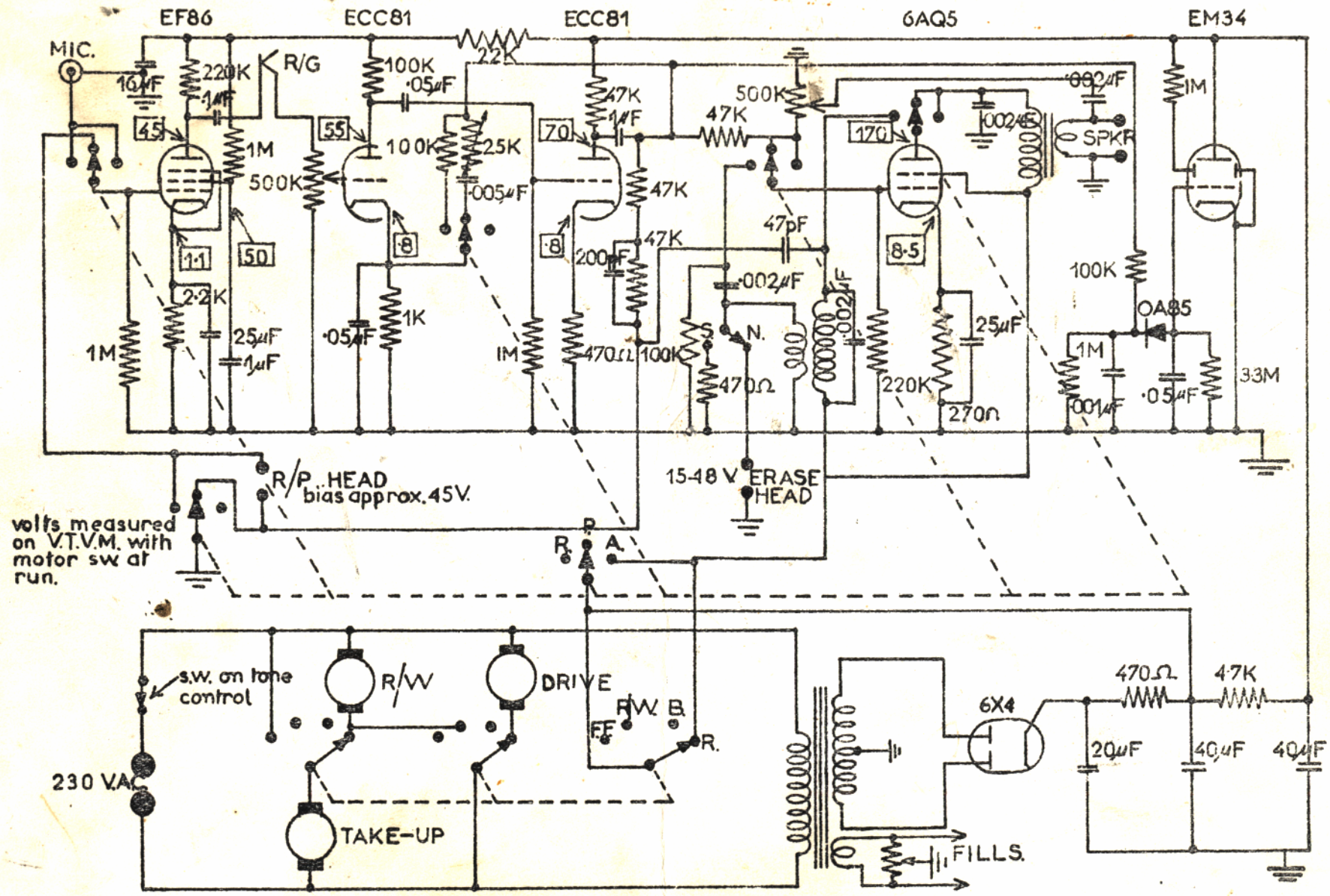
MOWAT RADIO INDUSTRIES LTD.
422 DOMINION ROAD
AUCKLAND S. 2.

SYMPTOM	POSSIBLE CAUSE	REMEDY
(1) Wow	(a) Pinch wheel binding or loose on its shaft.	(a) Remove pinch wheel from its shaft. Clean shaft and pinch wheel. (Later models have pinch wheels fitted with oil impregnated bearings and no grease is necessary. Only dust or grit could cause binding). Replace with fresh grease. **Important:** On models fitted with oil impregnated bearings, ensure that split washer is in position between fibre washer and head of screw. Tighten screw securely.
	(b) Flywheel too tight.	(b) See 16.
	(c) Insufficient pressure between pinch wheel and capstan.	(c) Check for tightness pinch wheel retaining screw, lock nuts holding pinch wheel lever, and screws holding top capstan plate. (The latter, if loose, will allow the capstan to slip away from the pinch wheel). Check to see if pinch wheel lever spring is bent. In this case, bend spring towards front centre of Deck to increase tension.
	(d) Pressure pads too tight.	(d) Adjust pads to just exert pressure on the heads when the pinch wheel is pushed over against the capstan.
(2) Flutter	(a) Jockey pulley binding or slipping.	(a) Remove jockey pulley from its shaft by first loosening the screw holding the jockey pulley lever bush to the speed change shaft, removing the speed change shaft, and then withdrawing the jockey pulley complete with jockey pulley lever. Clean bearing and shaft and replace. Check the jockey pulley tension spring—make sure it has not been stretched. Check the flywheel and drive pulley for oil and if there is any, clean both thoroughly with a degreasing agent. The jockey pulley must be replaced if there is any sign of oil penetrating the rubber. **Important:** Seal the jockey pulley retaining screw and nut with a suitable glue.
	(b) Flywheel loose.	(b) Tighten flywheel bearing screw slightly and adjust finally as in (16).
	(c) Capstan bent.	(c) Replace capstan.
(3) Intermittent wow or flutter	(a) Jockey pulley lever fouling speed change cam.	(a) Remove power supply mounting screws. Adjust cam to clear jockey pulley lever in each speed position. Tighten cam screws securely. The jockey pulley must clear the step on drive pulley when changing speed, and when running.
	(b) Pinch wheel loose.	(b) Tighten pinch wheel but, on models fitted with oil impregnated bearings, make sure the split ring washer is in position between screw head and fibre washer.
	(c) Vibrations from rewind motor being transmitted to tape.	(c) This fault is normally noticed only near the end of the tape. Loosen tension spring on the bottom motor bearing. If this does not effect a cure, turn 1/32in off the diameter of the motor rotor.
(4) Take-up reel binding or stopping.	(a) Brake binding	(a) Adjust brakes as in 5.

SYMPTOM	POSSIBLE CAUSE	REMEDY
	(b) Motor bearings stiff.	(b) Remove lower bearing plate on take up motor and loosen tension spring. If trouble still persists, loosen the upper tension spring as well
	(c) Bad joins in tape.	(c) Remove bad joins, particularly gummed tape joins.
	(d) Tape fouling in guides.	(d) Remove deposits from upper and lower edges of tape guide tracks.
	(e) Motor binding internally.	(e) Dismantle motor and remove the cause of the obstruction. Reassemble taking care that the motor is centred correctly.
(5) Brakes out of adjustment MKII	(a) Brake on take up motor too tight or too loose.	(a) The rewind brake should not be touched. All adjustments should be made on the take up motor brake and the main brake tension screw. Switch from "Rewind" to "Brake" with right hand spool almost full. If spilling occurs, tighten the take up motor brake until it stops. Next, switch from "Fast Forward" to "Brake" with left hand spool almost full. If spilling occurs loosen right hand brake. Both brakes may now be tightened by the main brake tension screw. If this screw is too tight the brakes will bind in the "Run" or other positions of the Brake Run Switch.
	(b) Motor loose on its mounting.	(b) Tighten motor mounting and check brakes as above.
	These brakes normally retain their correct adjustment. If spilling does occur:	
MKIII & IV	(a) Check first to see that the motors have not been shifted on their mountings. If so, this correction must be made before the brakes are adjusted.	(a) Adjust the brakes by bending the brake shoes to increase or decrease the drag on the reel-hub. (i) Too much drag will cause chatter when braking. (ii) Not enough drag will cause spilling. After adjustment, check that both brake shoes are an equal distance clear of the reel-hubs in all positions of the Brake/Run switch, other than in the "Brake" position. This adjustment is made by compressing or stretching the return springs. Tighten brakes by the main adjustment screw ensuring that the shoes are clear of the reel hubs—as above.
(6) Tape moves erratically in "Run" position	(a) Flywheel loose.	(a) Tighten tension screw and adjust tension as in (16).
	(b) Pressure pads too tight.	(b) See 1d.
	(c) Jockey pulley binding or slipping.	(c) See 2a.
	(d) Insufficient Pressure between pinch wheel and fly wheel.	(d) See 1c.
	(e) Loose pinch wheel.	(e) Tighten pinch wheel screw.
(7) Tape moves up or down below pinch wheel	(a) Pressure pads giving insufficient pressure.	(a) Tighten pressure pads to exert a light pressure on heads with the pinch wheel pushed against the capstan.

SYMPTOM	POSSIBLE CAUSE	REMEDY
	(b) Faulty amplifier.	(b) Use normal amplifier tests.
(14) Weak Recording	(a) Faulty R.P. head.	(a) Replace head. Note: An R.P. head which plays back satisfactorily may not record satisfactorily.
	(b) R.P. head out of alignment.	(b) Align R.P. head gap to point directly towards front of instrument.
	(c) Faulty pressure pad.	(c) Adjust pressure pad so that it is centrally over the head gap and gives sufficient pressure.
	(d) Dirt on R.P. head gap.	(d) See 8d.
(15) Spool rubbing on Deck	(a) Spool hub slipped down on motor shaft.	(a) Lift hub to the correct height and tighten both grub screws firmly.
	(b) Motor loose on its mounting.	(b) Tighten motor mountings and follow by checking brakes.
	(c) Faulty spool.	(c) Replace spool.
(16) Recorder slows down after running for a few minutes	(a) Flywheel too tight.	(a) Loosen lock nut at bottom bearing. Turn bearing screw anti-clockwise very slightly. Tighten lock nut. (Note: With the deck out of the cabinet, flywheel should feel slightly loose). Check flywheel bearing tension, with recorder in cabinet, by switching from "Run" ($7\frac{1}{2}$in per sec.) to "Brake" quickly; at the same time put the speed change knob in a disengaged position. Watch flywheel coming to rest. It should take approx. 4secs. If necessary, bend top capstan plate slightly to get the correct tension. Apply a small amount of stiff grease to the top bearing.
(17) Noisy operation	(a) Jockey pulley out of alignment.	(a) Align jockey pulley by bending jockey pulley lever taking extreme care not to bend the rubber on the jockey pulley. Avoid handling the rubber at all and keep well away from grease. Check that jockey pulley does not foul the drive pulley when changing speed.
	(b) Loose screw holding jockey pulley.	(b) Tighten the retaining screw and seal screw with a suitable glue.
	(c) Faulty jockey pulley.	(c) Replace jockey pulley.
(18) Knock coming from flywheel	(a) Faulty top or bottom ball bearing.	(a) Replace bearing.
	(b) Dirt or irregularity on flywheel contacting the idler on each revolution.	(b) Clean flywheel. If necessary, bend the jockey pulley lever slightly so that the jockey pulley just misses the irregularity. Adjust drive pulley if necessary, to prevent jockey pulley fouling when changing speed.
(19) Brake operating other than "Brake" position	(a) Brake operating cam out of position.	(a) Set Brake/Run switch to "Brake". Loosen set screws holding switch bush. Adjust bush so that cam is at top of its travel. Tighten setscrews very firmly.

SYMPTOM	POSSIBLE CAUSE	REMEDY
	(b) Brakes set too tight.	(b) Loosen brakes at the main tension screw.
	(c) Brake operating lever fouling.	(c) Apply grease to brake cam and associated parts so that the brake lever completes its travel in other than the brake positioon.
(20) No tops in music	(a) Pressure pad out of adjustment.	(a) See 14c.
	(b) Faulty R.P. Head.	(b) Replace head.
	(c) R.P. Head not aligned correctly.	(c) Align head as in 8c.
	(d) Faulty Amplifier	(d) Test amplifier, in particular the response correction components.
(21) Hum with volume down	(a) Cathode leak in ECC81 valve.	(a) Replace ECC81 valve.
	(b) Faulty smoothing.	(b) Check electrolytics.
(22) Hum with volume turned up (Play Position)	(a) Faulty EF86 valve.	(a) Replace EF86 valve.
	(b) Faulty R.P. Head.	(b) Replace R.P. head.
	(c) Filament hum balancing potentiometer out of adjustment.	(c) Adjust potentiometer for minimum hum.
(23) Brief stop not operating	(a) Loose retaining screw.	(a) Tighten the retaining screw making sure it is fitted with a shakeproof washer.
	(b) Adjusting bar on pinch wheel lever out of position.	(b) This bar is held by mounting screw for erase pressure pad. Loosen screw and adjust bar. Tighten screw and re-adjust the erase pressure pad.



M.R.I. MARK II, III AND IV CIRCUIT