

NATIONAL TAPE RECORDER**Model RQ-105S**

General Description: Six-transistor, two-track, two-speed battery-operated tape recorder. Audio output 700 mW. maximum. Frequency response 100–7000 c/s. at $3\frac{3}{4}$ i.p.s. Microphone socket impedance 2.7 k Ω . Battery life more than 10 hours.

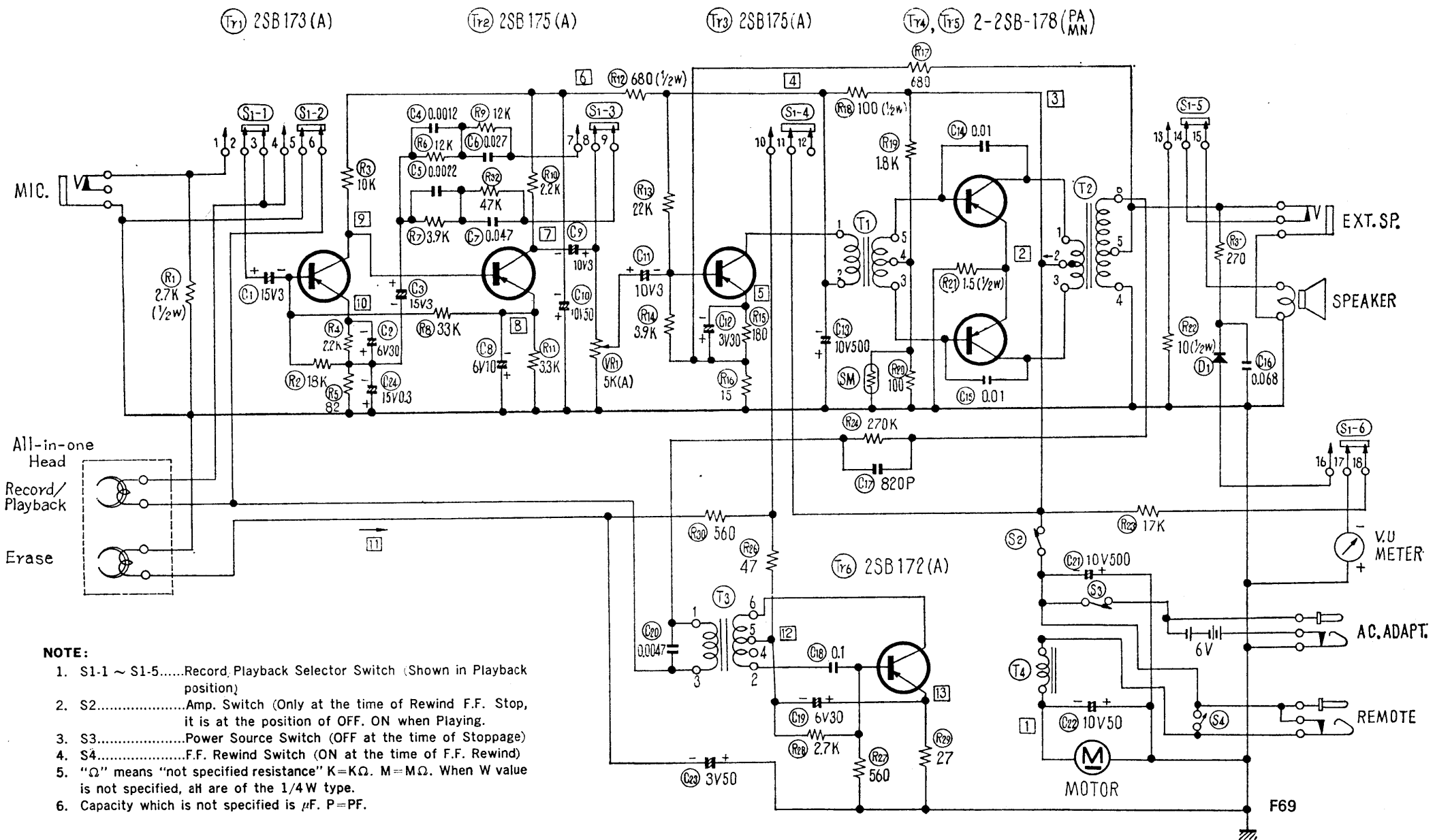
Amplifier Adjustments: To adjust record bias frequency connect a 100-ohm resistor in series with the earth side of the Record/Playback head. By using an oscilloscope and audio generator the frequency of the bias can be compared, using the scope to form a Lissajou's figure. The bias frequency should be between 25–35 kc/s., the frequency may be adjusted by moving the core of the oscillator transformer (T₃).

Record Bias Current: After adjusting the record bias frequency, connect a valve voltmeter across the 100-ohm resistor, and check the voltage across the resistor, it should be in the range 0.065–0.11 volt. If the voltage is not in the above range the record bias frequency may be adjusted in the range 25–35 kc/s.

Erase Current: Connect a D.C. milliammeter in series with the erase head earth connection. When the tape recorder is switched to record, the current through the erase head should be between 5.35 to 7.5 mA.

Head Azimuth Adjustment: Deflection of the angle of the head slit from vertical will deteriorate high frequency characteristics on playing back the tape with recording made with another tape recorder, while it is not so important with the tape recorded and played back on one and the same tape recorder. The higher the deflection, the poorer the performance. To prevent this trouble, the slit of the head should be maintained precisely at right angles to the path of the tape. Connect the vacuum tube voltage meter (V.T.V.M.) with 8-ohm resistor in parallel to the monitor jack, and playback, a standard alignment tape (tape with recording of signals, 3,000 cycles/sec. at $3\frac{3}{4}$ in./sec. on vertical slit). Adjust the angle of the head slit to be precisely vertical by turning the adjusting screws so as to obtain the maximum output signal. When the all-in-one head is replaced, it must be adjusted as described above.

Head De-magnetisation: Magnetisation of the heads may result when the continuity of the heads is measured with an ohmmeter. If it is necessary to measure head continuity, the heads should be de-magnetised after the continuity check. The magnetised head can be neutralised with the use of a standard de-magnetisation tool. The tip of the tool should not be used through the pad, but should be thin enough to fit between the pressure pad and the head. A piece of cellulose tape should be placed over the head of the tool to prevent metal to metal contact between the tool and the head. After de-magnetisation is completed, slowly remove the tool from the vicinity of the head before turning off the current.



NOTE:

1. S1-1 ~ S1-5.....Record, Playback Selector Switch (Shown in Playback position)
2. S2.....Amp. Switch (Only at the time of Rewind F.F. Stop, it is at the position of OFF. ON when Playing.)
3. S3.....Power Source Switch (OFF at the time of Stoppage)
4. S4.....F.F. Rewind Switch (ON at the time of F.F. Rewind)
5. "Ω" means "not specified resistance" K=KΩ. M=MΩ. When W value is not specified, all are of the 1/4W type.
6. Capacity which is not specified is μF. P=PF.

CIRCUIT DIAGRAM—NATIONAL TAPE RECORDER MODEL RQ-105S