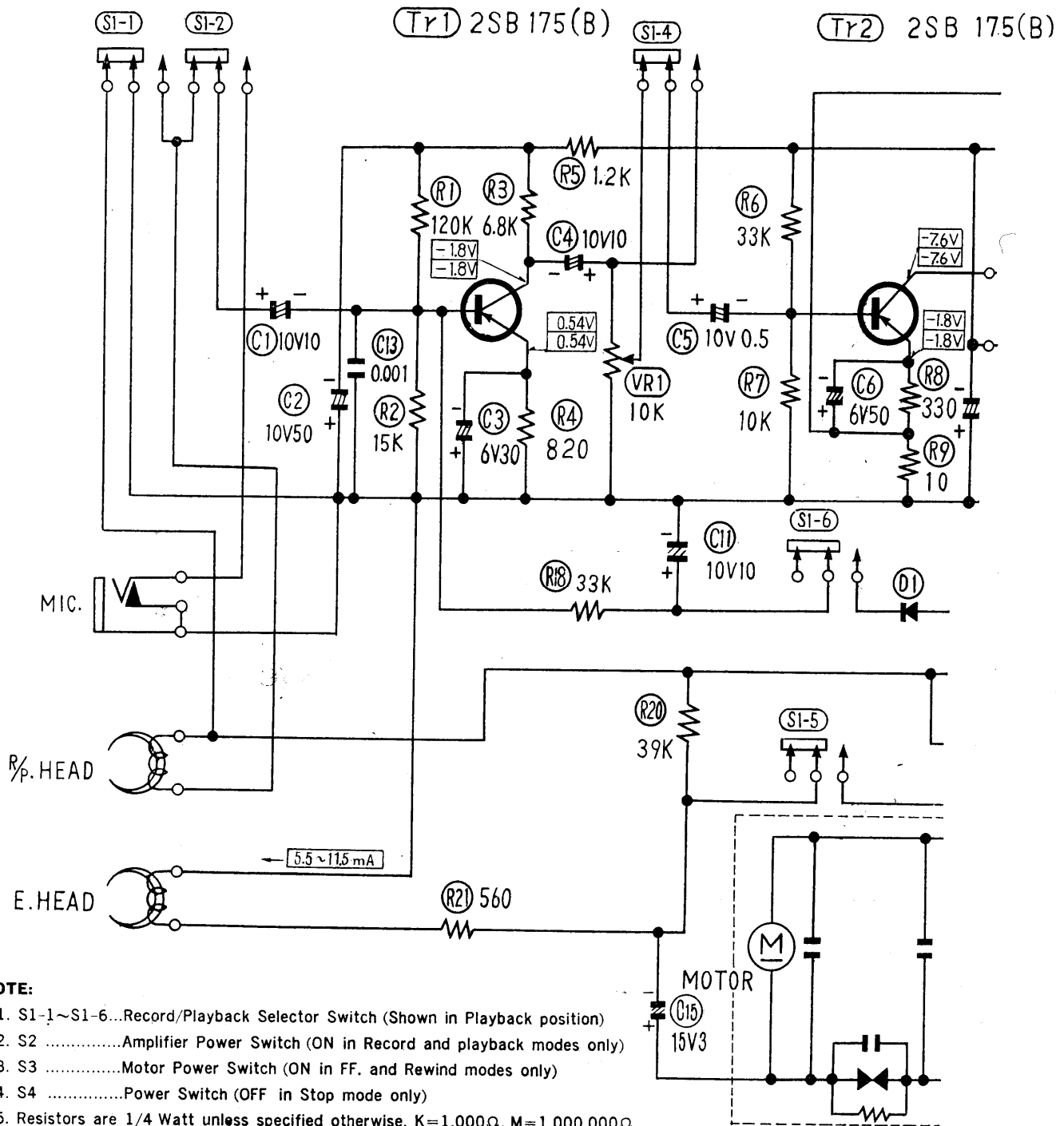


**NATIONAL**

**Model RQ-113S**

**General Description:** Solid state four transistor battery portable tape recorder. Power output 700 mW., D.C. bias and erase. Frequency response 150–6000 c/s. at 3 $\frac{3}{4}$  in./sec. and 150–4000 c/s. at 1 $\frac{7}{8}$  in./sec. Monitor output impedance 8 ohms. Erase current should be within the range 5.5–11.5 mA.



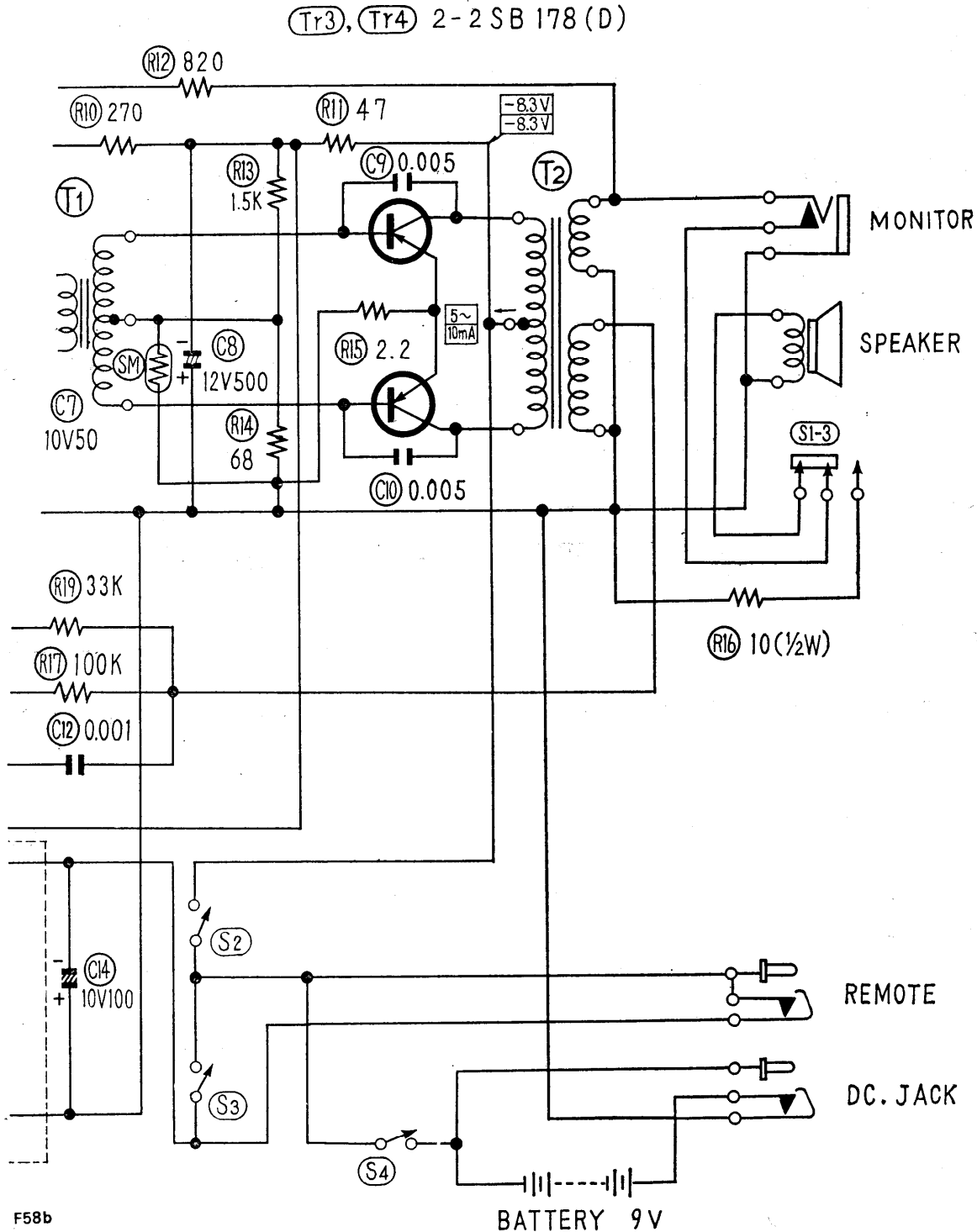
**NOTE:**

1. S1-1~S1-6...Record/Playback Selector Switch (Shown in Playback position)
2. S2 .....Amplifier Power Switch (ON in Record and playback modes only)
3. S3 .....Motor Power Switch (ON in FF. and Rewind modes only)
4. S4 .....Power Switch (OFF in Stop mode only)
5. Resistors are 1/4 Watt unless specified otherwise. K=1,000Ω, M=1,000,000Ω.
6. Capacitors are microfarad (μF) unless specified otherwise. PF=Micro-microfarads.
7. Values indicated in    are DC to chassis ground with no signal applied.
8. The upper values should be measured during playback and the lower values during recording.

F58a

(F58a) CIRCUIT DIAGRAM—MODEL RQ-113S (PART)

**Maintenance:** The tape recorder does not generally require oiling, but on repair just one or two drops of oil may be applied to the capstan, pressure roller and rewind pulley bearings, and also the reel table spindles and the guide pulleys. All traces of oil should be removed afterwards from surfaces of capstan and pressure roller, or the tape may slip and cause damage. The motor bearings require no oiling during the lifetime of the motor and should bearings or armature shaft show excessive wear, replace motor.



(F58b) CIRCUIT DIAGRAM—MODEL RQ-113S (CONTINUED)

**Cleaning:** A soft cloth moistened with alcohol may be used to wipe dirt from the record/playback and erase heads, the surface of the pressure roller and the surface coming into contact with the belt.

**Continuity:** Magnetisation of the heads may result if continuity of heads is measured with an ohmmeter, and if such check is necessary, heads should be demagnetised afterwards. The magnetised head can be neutralised by use of a standard demagnetisation tool, the tip of which should not be used through the pad, but should be thin enough to fit between pressure pad and head. A piece of cellulose tape on the tip prevents metal to metal contact. After demagnetisation, slowly remove tool from vicinity before turning off current.

**Pressure Roller Tension:** 1. Load the tape as in the case of playback, and set the tape recorder in record or playback mode.

2. Hang a loop of twine on the pressure roller shaft and hook the spring scale on the other end of the loop.

3. Pull the spring scale in the direction of a line connecting the centres of the capstan and pressure roller shaft. Slowly increase the pull and read the scale at a point where the tape stops moving.

4. The standard pressure of the Pressure Roller Shaft should be:

$1\frac{7}{8}$ in./sec.	.	.	.	between 7.8 and 12.0 ozs. (220 and 340 g.)
$3\frac{3}{4}$ in./sec.	.	.	.	between 11.2 and 15.6 ozs. (320 and 440 g.)

**Adjustment:** Adjust the pressure roller spring to the standard pressure.

**Winding Torque for Playback:** 1. Make a loop at the end of a fully loaded 3-inch reel of tape, fasten the looped end with splicing tape, and put the reel on the takeup reel table.

2. Hook the tension gauge in the loop and pull out about 6 inches of the tape end.

3. Set the recorder in playback mode, and pull tension gauge in direction of winding, keeping pace with the moving tape until the reading of the tension gauge remains constant, then take the reading. Repeat this several times and take the average to determine the correct torque.

4. The above test should be made with 3-inch tape reel fully loaded.

5. The standard torque should be:

between 0.63 and 1.08 ozs. (between 18 and 30 g.).

**Adjustment:** Adjust torque with the friction spring on the takeup reel table. If torque is too strong, loosen friction spring, if too weak tighten it. If the friction washer gets oily clean it immediately to prevent slip. If tension of takeup belt is weakened, winding torque drops.