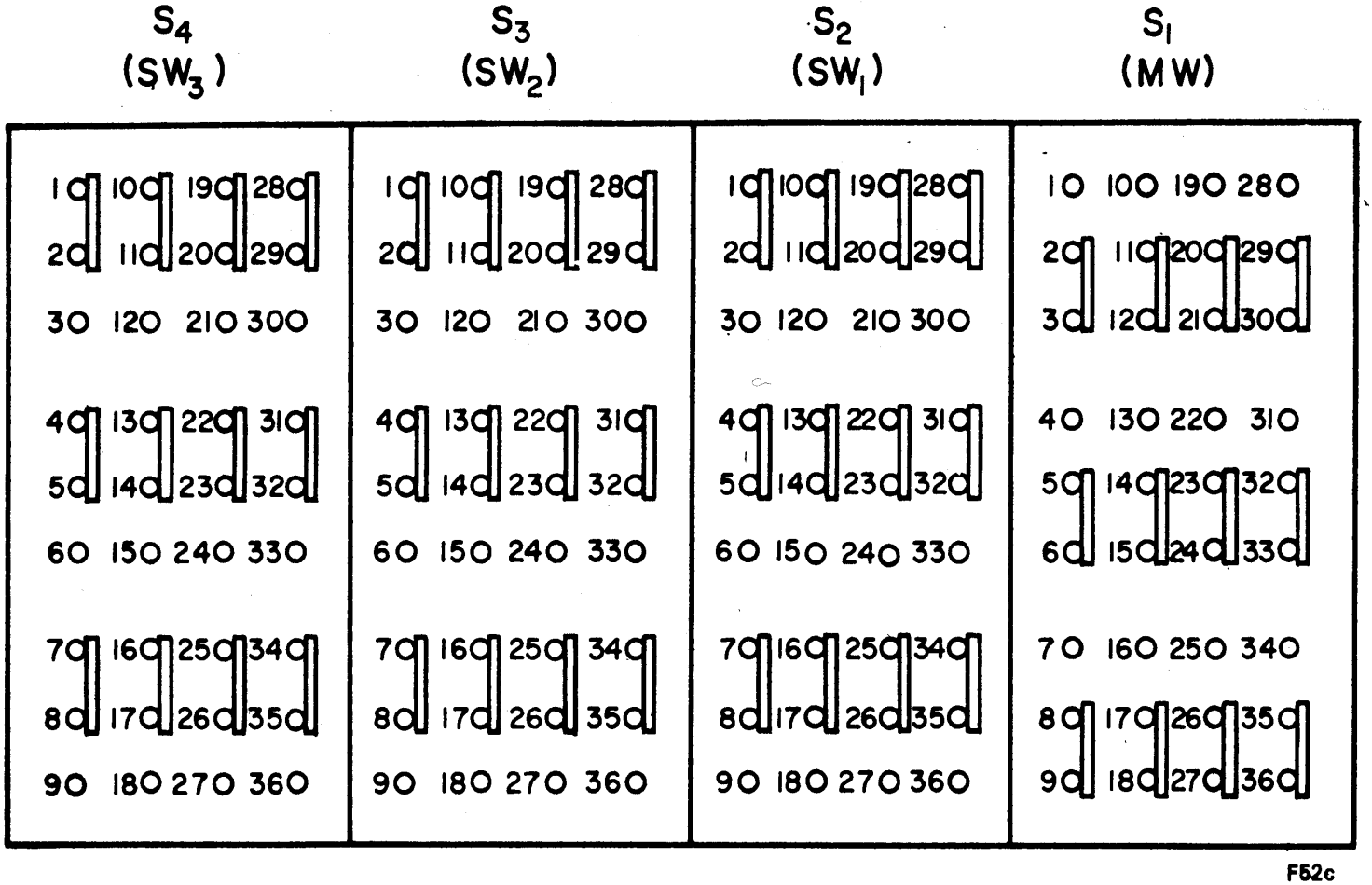
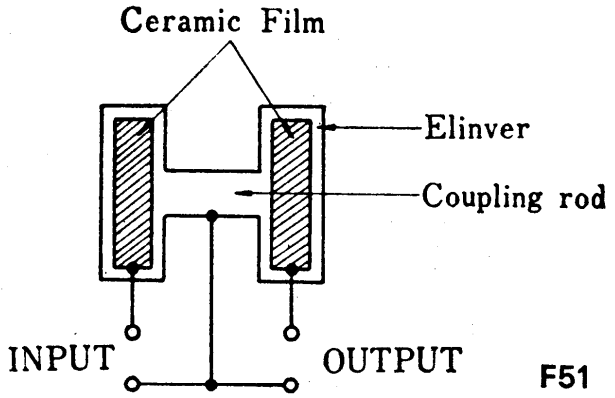
NATIONAL PANASONIC Model R-470

General Description: Ten-transistor, four-waveband portable receiver. Wavebands M.W. 525–1605 kc/s.; S.W.1 1·6–4·5 Mc/s.; S.W.2 4·5–12 Mc/s.; S.W.3 12–26·1 Mc/s. Power output 0·52 watts undistorted up to 1 watt maximum. Intermediate frequency 455 kc/s.

The Mechanical I.F. Filter: The mechanical filter employed as the 1st I.F. transfomer of this superheterodyne receiver is the H-type electro-mechanical I.F. filter. The filter consists of an input transducer, a resonant mechanical section (comprised of elinvers and coupling rod). Two ceramic films, as a function of the input and output transducer, are mounted by silver solder on both sides of the elinvers shown. The input and output transducers serve only as electro to mechanical coupling and do not affect the selectivity characteristics, which are determined by the dimensions of the elinvers and the coupling rod. An electrical signal applied to the input terminal is converted into a mechanical vibration at the input transducer

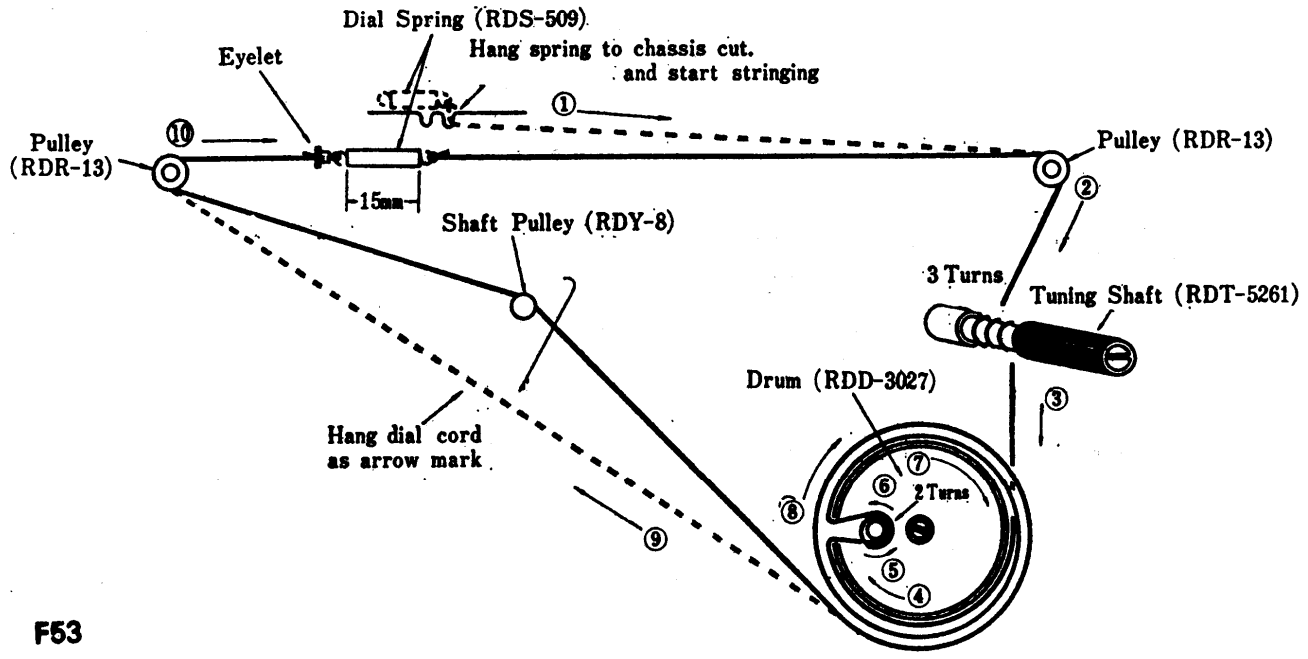


(F52c) Band Selector Switch—Model R-470



(F51) MECHANICAL I.F. FILTER

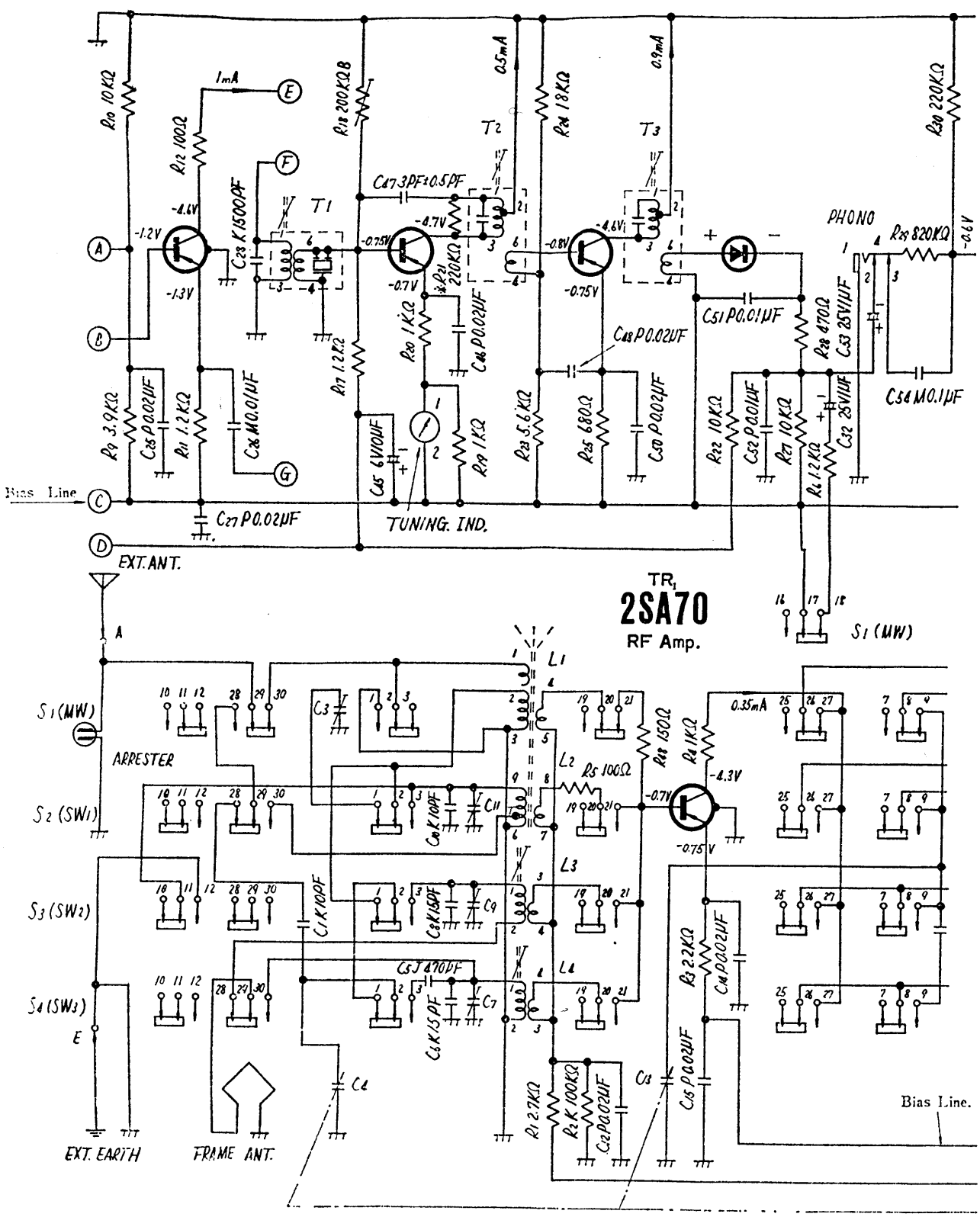
by means of piezoelectric effect of the ceramic film. This mechanical vibration travels through the resonant mechanical section to the output transducer where it is converted by means of piezoelectric effect to an electrical signal which appears at the output terminal. By employing the mechanical filter the selectivity is improved more than 10 times and the bandwidth more than twice compared with the usual I.F. transformer. The frequency characteristic of the mechanical filter is permanent and no adjustment is possible. The filter is enclosed in a hermetically sealed case.



(F53) DRIVE CORD—MODEL R-470

Circuit Diagram Notes: 1. S_1 S_4: Band selector switch in " M.W." position. 2. S_5: Dial light switch in " OFF " position. 3. S_6: Power source switch in " OFF " position. 4. Measured voltages for $TR_1 \sim TR_{10}$ are from transistor terminal to bias line. 5. The value of resistance marked with ※ is standard and it may be changed by the characteristics of transistors. ※R21 = 330 kΩ, 220 kΩ or 150 kΩ. 6. D.C. voltage measurements are taken with circuit tester (10 kΩ/V). 7. Capital letters (M, K, J, P) in the circuit diagram show allowable tolerance of capacitors as follows: M = ±20%; K = ±10%; J = ±5%; P = +100%, −0%. 8. Tolerance of all resistors is ±10%. 9. Battery current; No signal 12 ~ 20 mA. Maximum output 150 ~ 190 mA.

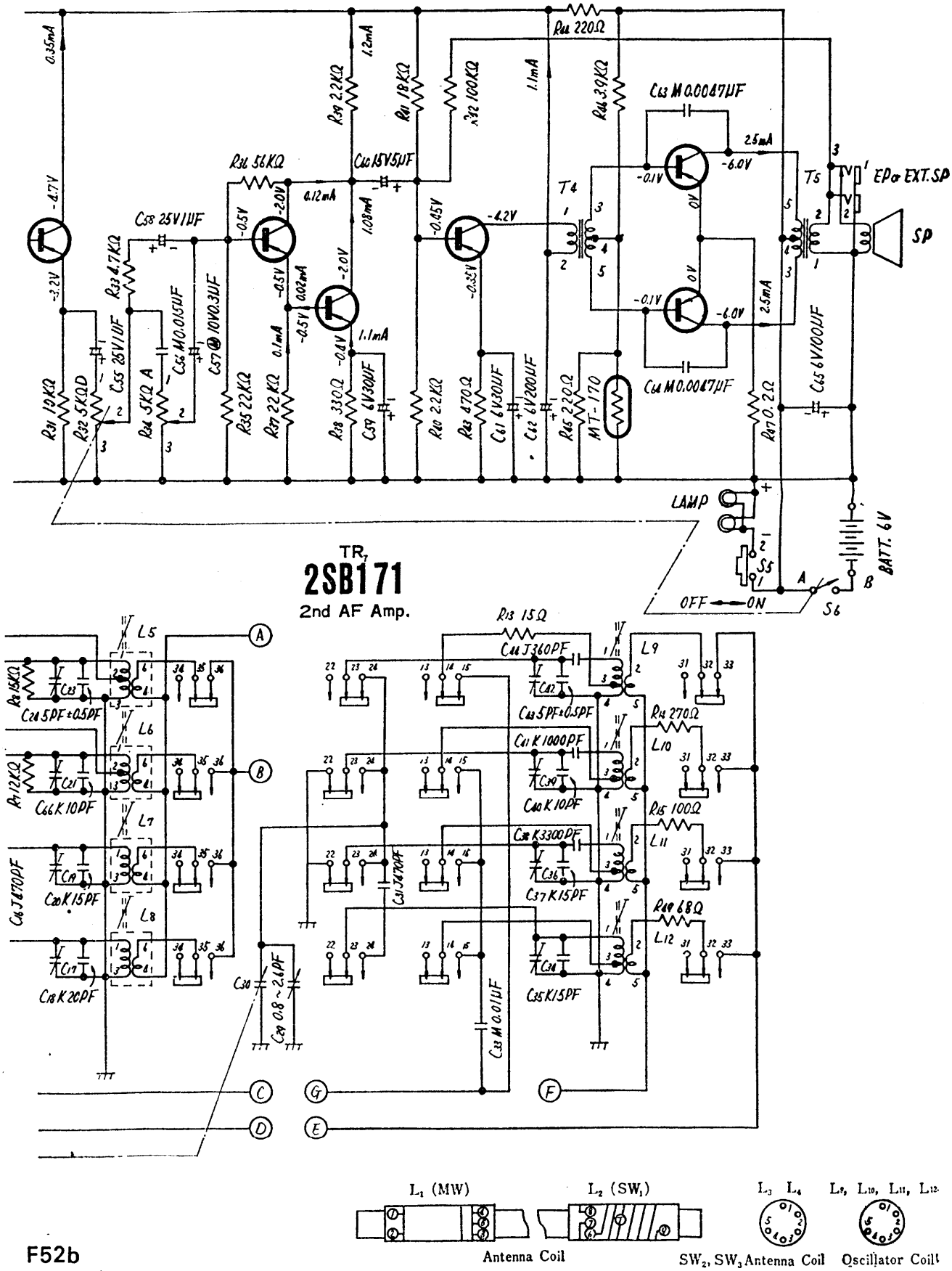
TR2 **2SA70** Conv. | TR3 **2SA101** 1st IF Amp. | TR4 **2SA101** 2nd IF Amp. | D1 **0A70** Det & AGC



F52a

(F52a) Circuit Diagram—Model R-470 (Part)

TR_5	TR_6	TR_8	TR_9 & TR_{10}
2SB173	**2SB173**	**2SB171**	**2SB178×2**
PRE Amp.	1st AF Amp.	3rd AF Amp.	Power Amp.



F52b

(F52b) Circuit Diagram—Model R-470 (Continued)