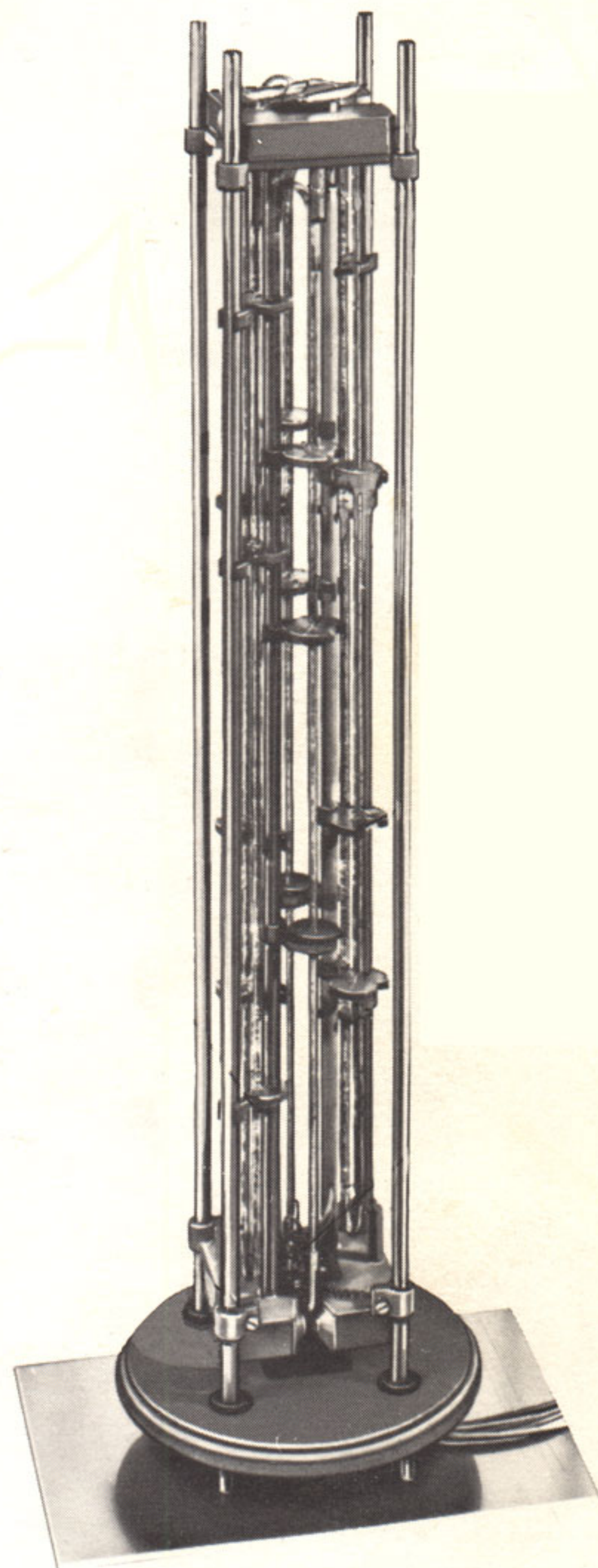


SERVICE MANUAL

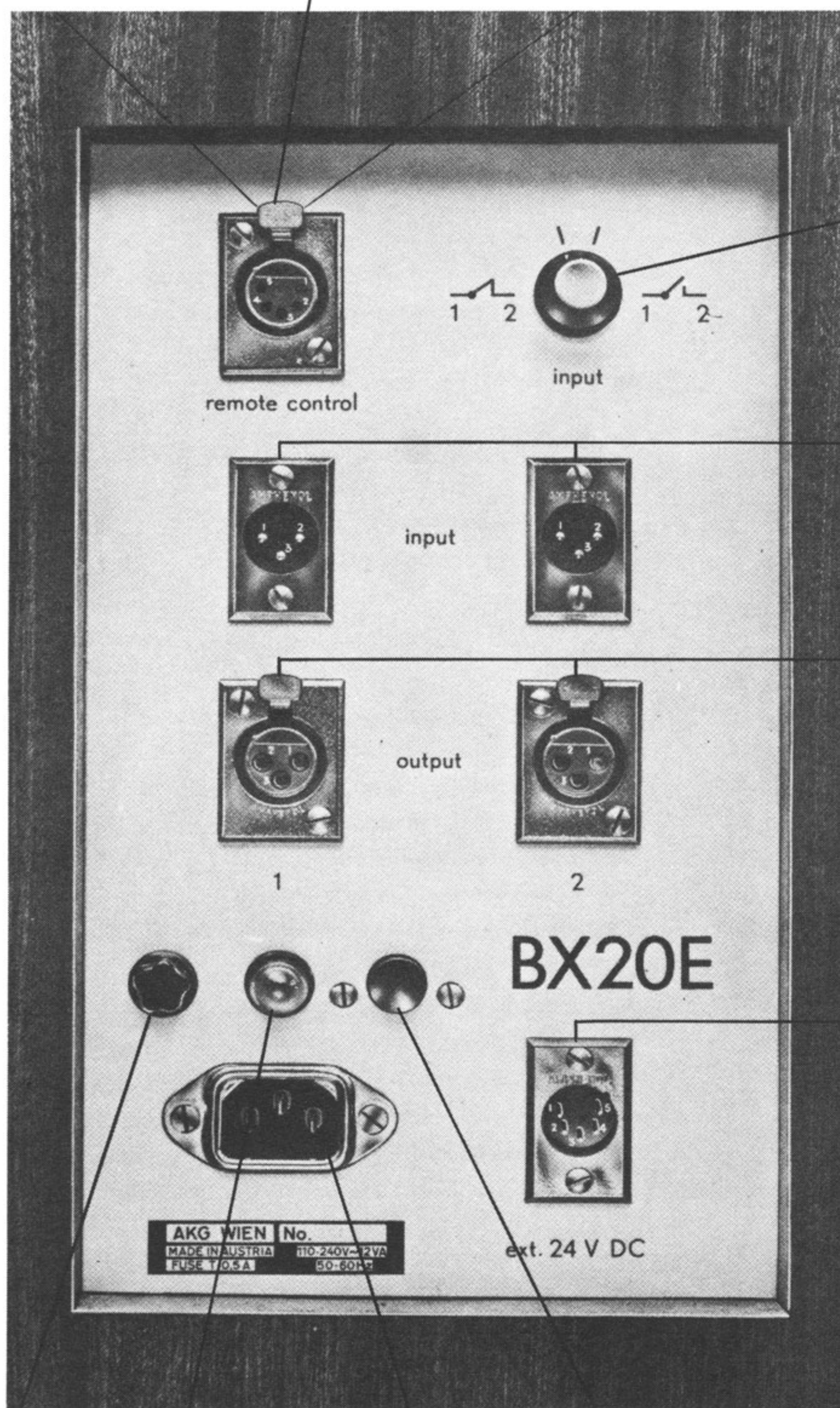


**AKG BX 20E
REVERBERATION
UNIT**

Built-in Connector:
Cannon XLR-5-31

- ① ground (r.c. return)
- ② Remote control channel 2
- ③ Remote control channel 1
- ④ —
- ⑤ Signal lamp 24 V, unstabilized

Required Mating Connector:
Cannon XLR-5-12C



S 1

remote control

input

input

output

1

2

BX20E

ext. 24 V DC

Built-in connector: Cannon XLR-3-32

- ① 0V, ground
- ② } Signal-sym.
- ③ }

Required Mating connector: Cannon XLR-3-11C

Built-in connector: Cannon XLR-3-31

- ① 0V, ground
- ② } Signal-sym.
- ③ }

Required Mating connector: Cannon XLR-3-12C

Built-in connector: Cannon XLR-5-32

- ① 0V, ground
- ② Battery +24 V

Required Mating connector: XLR-5-11C

NOTE

BX20E1 version has inputs and outputs reversed.

Power socket on BX 20E1 is American standard grounded.

Fuse 0,5 A

Pilot lamp

220 V~/110 V~

Mains switch

FRONT PANEL BX 20E

1. DESCRIPTION

The AKG BX 20E Reverberation Unit contains two independent channels of reverberation, each of which is based upon the principle of a long spring whose transmission properties have been changed by statistical variations of the spring parameters. The BX 20E system consists of an acoustically isolated wooden box inside of which is a tube, containing two separate spring systems, which is mounted on a single point pendulum suspension, two amplifier channels on two separate printed circuit boards which are interchangeable, and a 24 volt DC power supply.

A remote control box (R 20E) containing two decay time controls enable the decay time of each channel to be independently varied from 2 to 4.5 seconds.

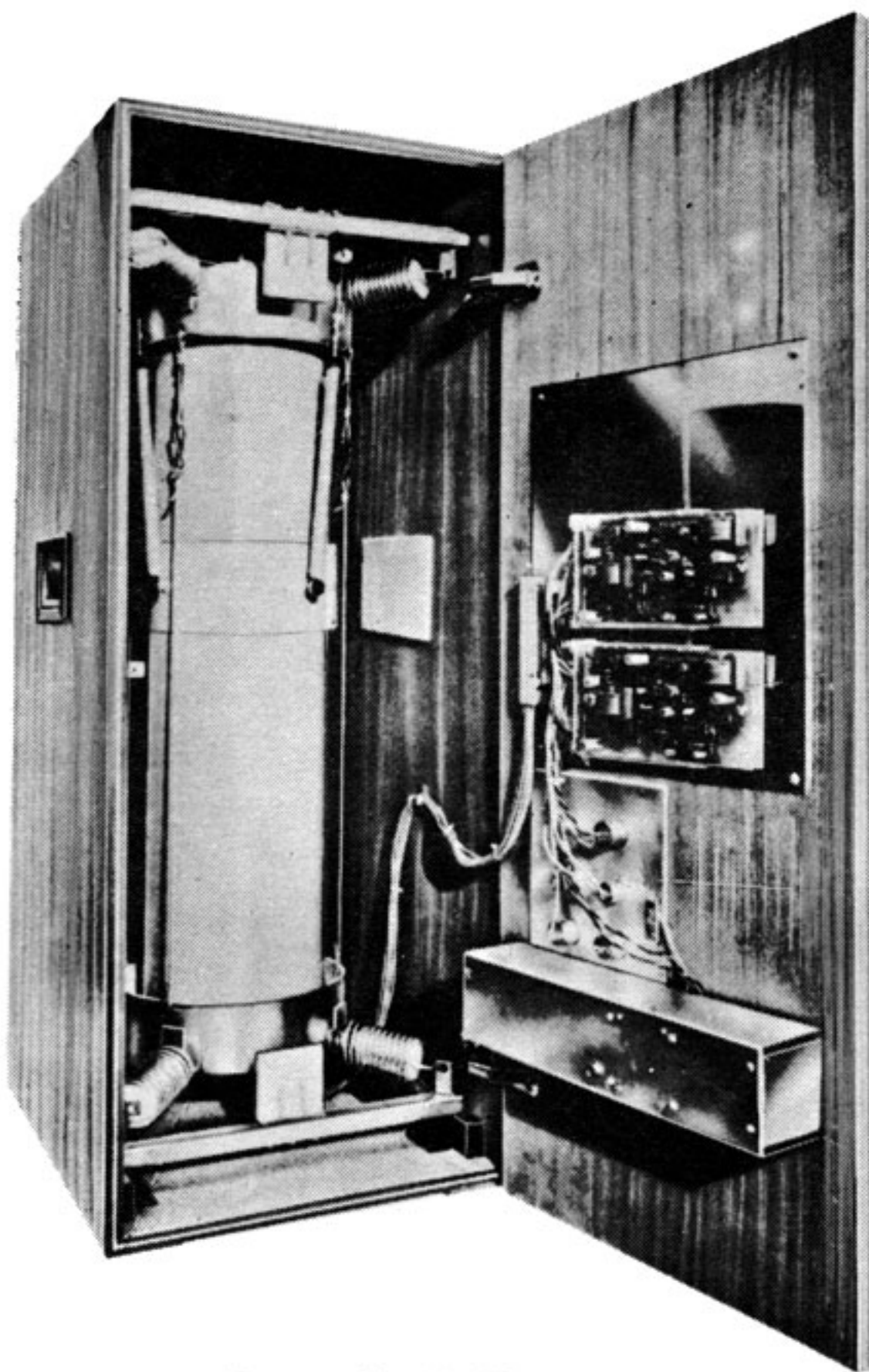


Figure 1 BX 20E



Figure 2 Remote Control Unit R 20E

As shown in Figure 3, Block Diagram, the electronic portion for each channel consists of an input amplifier, an output amplifier and two attenuation amplifiers which control the decay time. The spring is excited by feeding the original signal into one coil half at each end of the spring. The dry (direct) input signal is fed in phase to one coil half at each end of the spring, the reverberated signal is picked up by the remaining coil half, amplified, and connected out of phase to remove any direct signal. The reverberated signal, being random in nature, is not affected by the phase. The attenuation amplifier provides for variation in decay time by using motional feedback. This is done by feeding the input signal into one half of the moving coil system, picking it up at the other half, inverting it and feeding it back into the first coil half. By varying the amplification a larger or smaller effective friction can be introduced at the spring end. The spring itself has the longest decay time when the feedback is at a minimum.

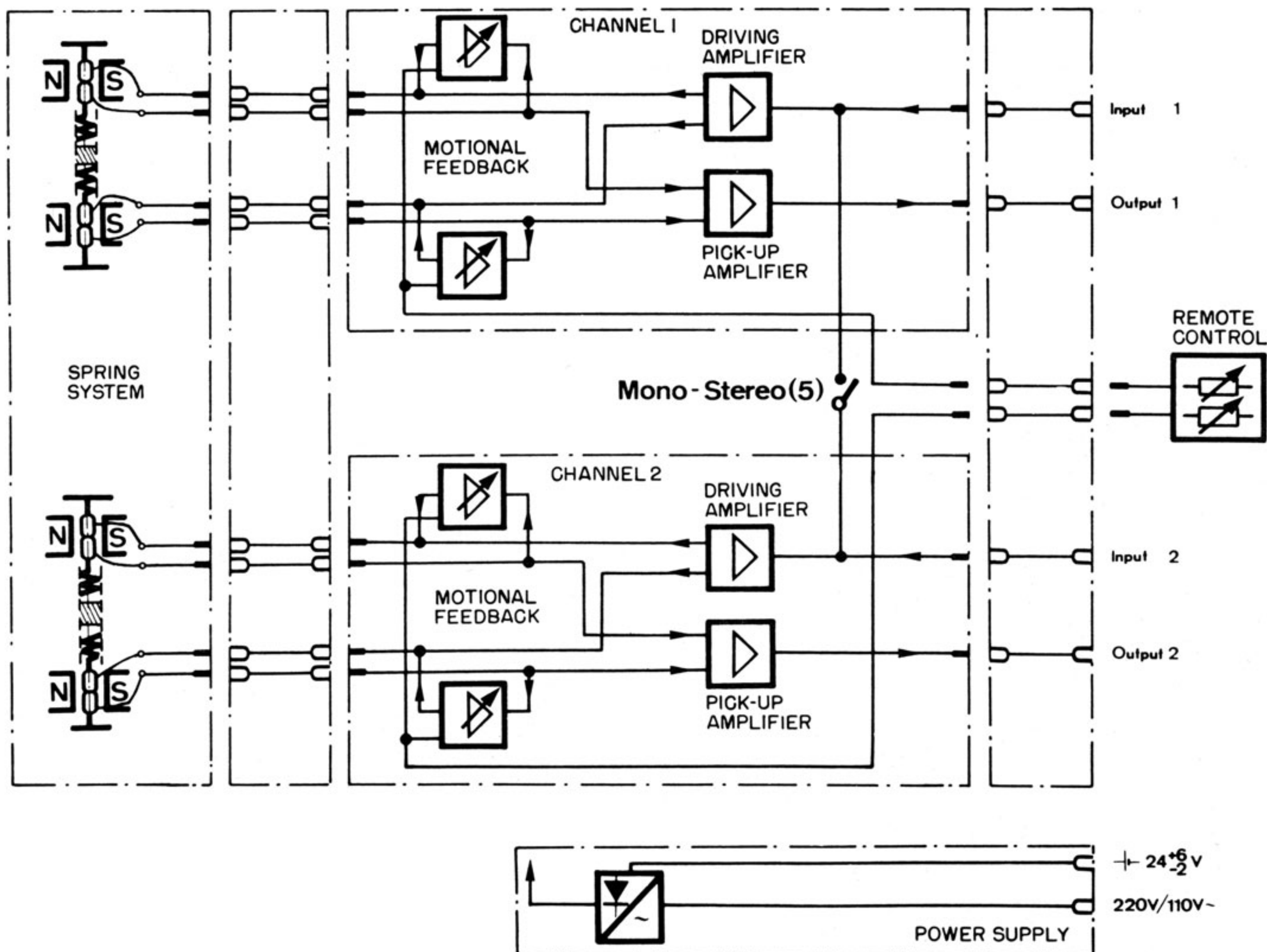


Figure 3 Block Diagram BX 20E

2. TECHNICAL SPECIFICATIONS

- | | |
|--|------------------|
| a. Input level (balanced input) | +6 dBm (1.55V) |
| b. Maximum input | +12 dBm (3.1V) |
| c. Input impedance per channel (stereo) | 2 k ohm |
| (mono) | 1 k ohm |
| d. Output level at mid band frequencies | +4 dBm |
| e. Output impedance per channel | 50 ohm |
| f. Decay time | 2 to 4.5 seconds |
| g. Maximum level difference between channels with pink noise at input and output measured in third octave bands. | |
| with equal reverberation times | 2 dB |
| with different reverberation times | 3 dB |

h. Signal-to-noise ratio	69 dB	(measured with respect to +6dB input at 2 sec. decay time and weighted according to DIN 45405)
i. Frequency response (See Figures 4 and 5)	20-12,000 Hz \pm 5dB	(measured with pink noise at input and in third octave bands at output)
j. Channel separation	60 dB	
k. Acoustic isolation	100 dB SPL	
	(Sound pressure level in vicinity of cabinet can be 100 dB SPL before acoustic feedback occurs.)	
l. Coupling to external magnetic field	1mV/50 milligauss	
m. Resonance of elastic suspension	1 Hz	
	(Periodic vibration of very low frequency should be avoided.)	
n. AC Voltage	220/110VAC 40-60 Hz	
o. Battery supply	24VDC (+6V-2V)	
p. Power consumption	12VA	
q. External dimensions	17 x 19- $\frac{3}{4}$ x 43- $\frac{1}{4}$ inches (430x500x1100 mm)	
r. Weight	100 pounds (46 kilograms)	
s. Temperature range	14° to 116° F (-10° to 60° C)	

NOTE — Maximum angle of cabinet from vertical should be 1.5°

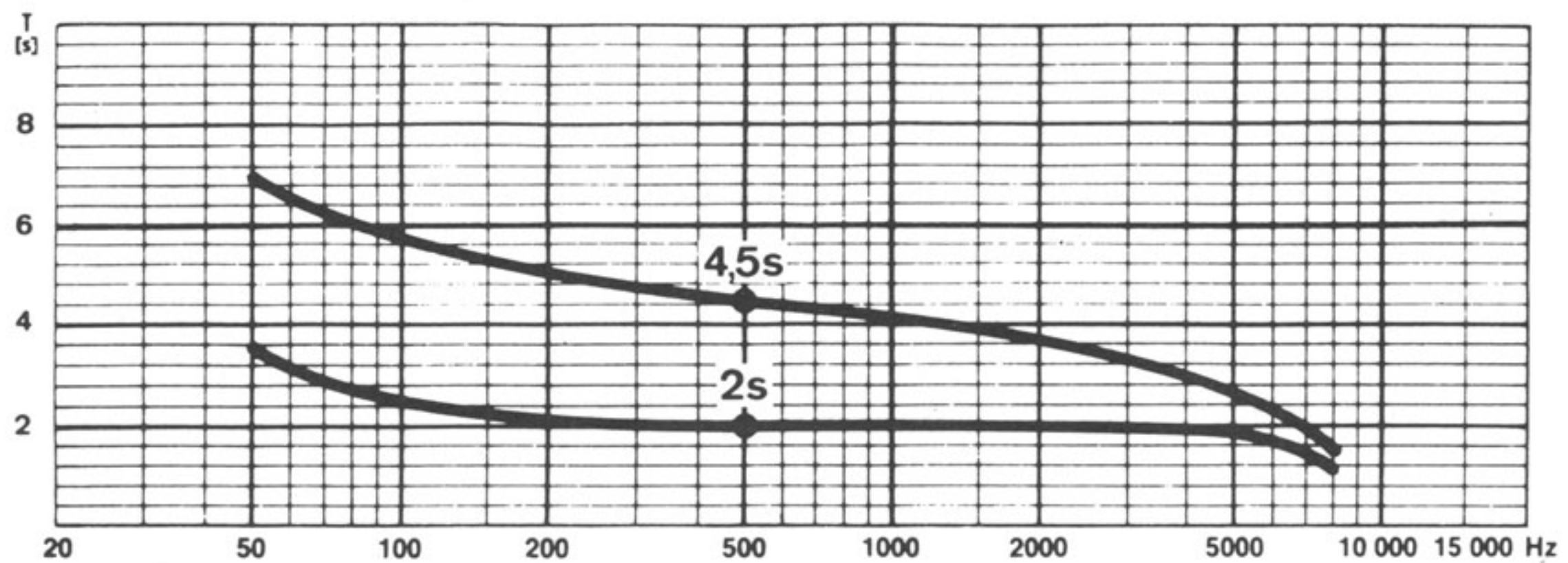


Figure 4 Decay Time Frequency Response

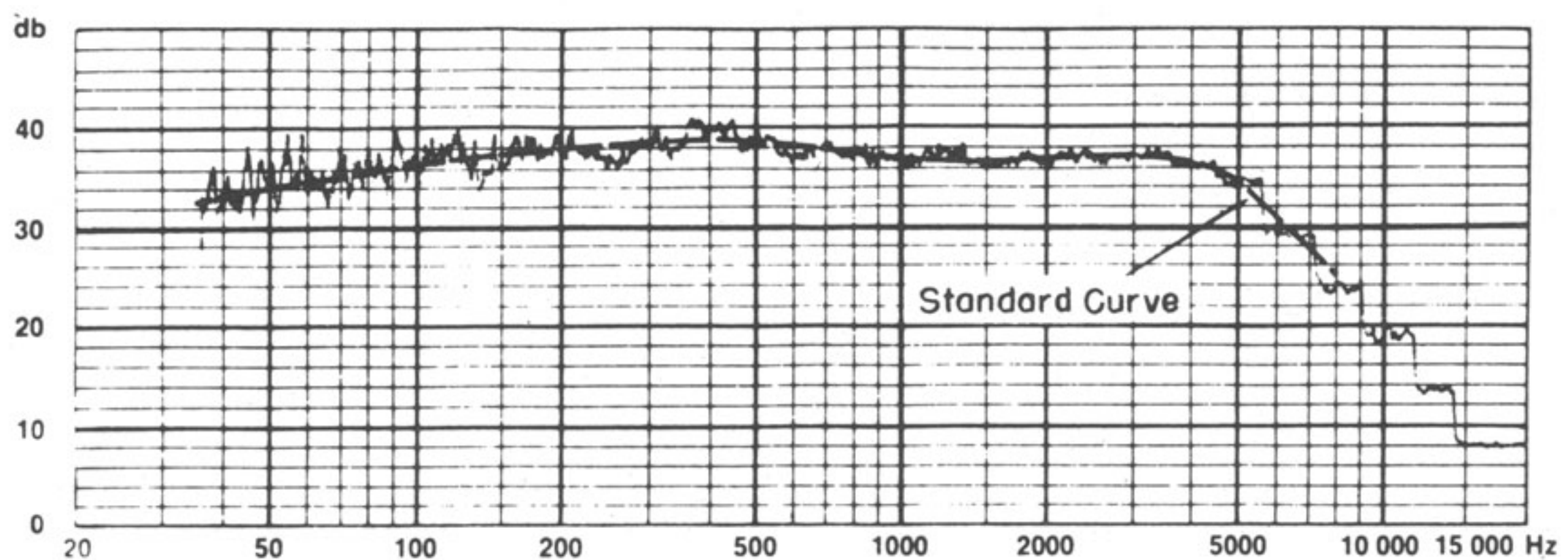


Figure 5 BX 20E Frequency Response (Measured with 1/3 Octave-noise)

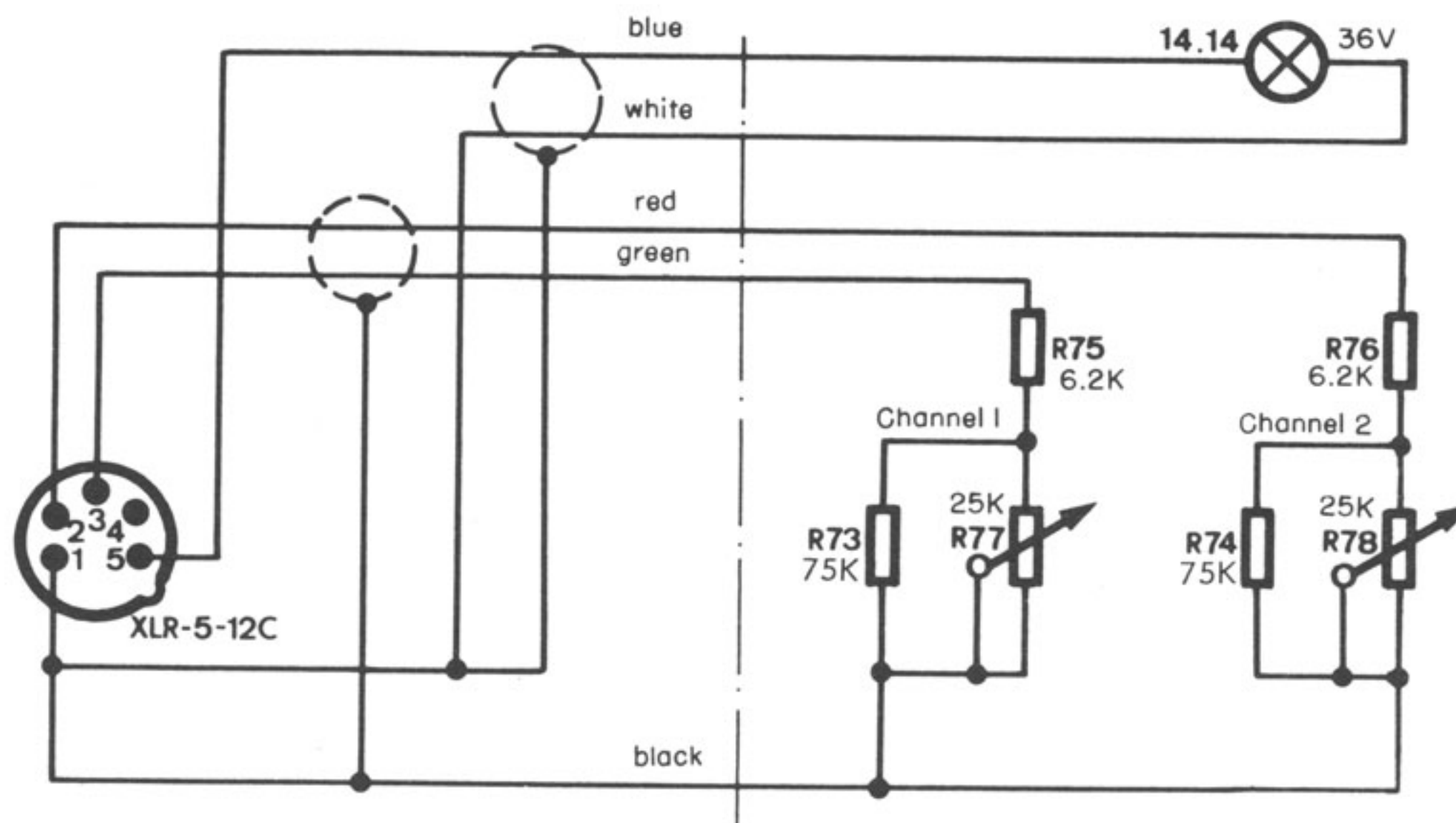


Figure 13 Remote Control Box Schematic Diagram

10. SUSPENSION

Care should be taken that the cardboard tube is not touching the side of the metal protective ring and that the bottom of the tube should not scrape against the floor of the enclosure. If the four springs in the suspension have lengthened and allow the cardboard tube to touch the floor, the three screws on the cradle surrounding the tube can be loosened, the tube moved up $1\frac{1}{2}$ inches, and the screws tightened again.

The cardboard tube will not touch the sides of the box if the whole box is maintained within $1\frac{1}{2}$ degrees of vertical.

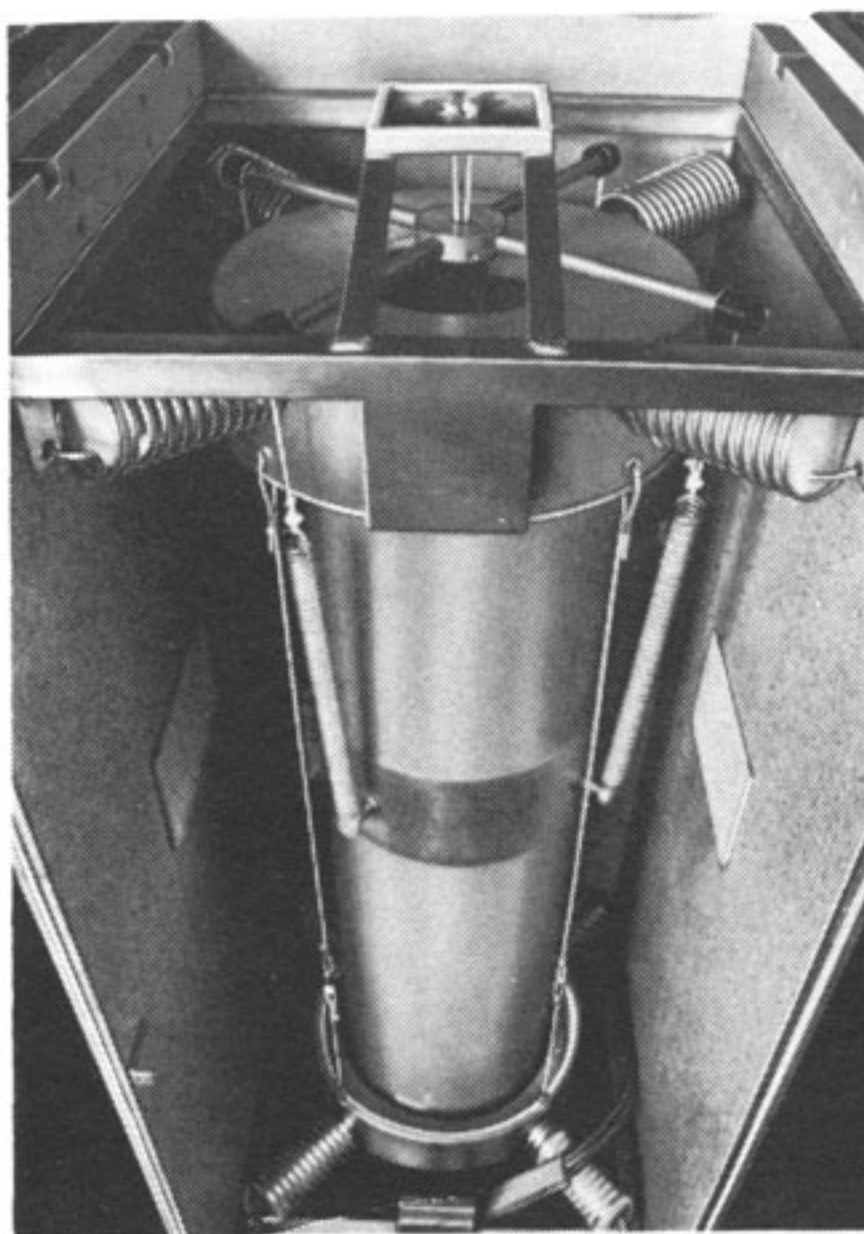


Figure 14 BX 20E Suspension