

Fig. 1. Dynamic range and average forte of orchestral instruments. L_w —sound power level re 10^{-12} W

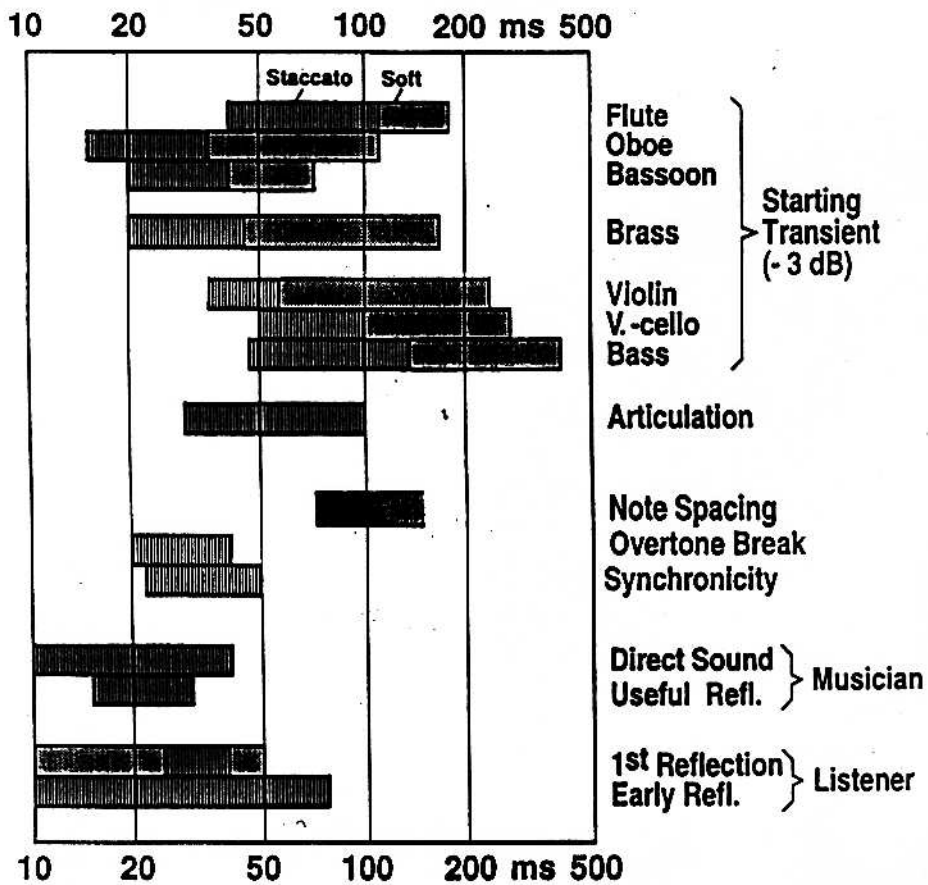


Fig. 3. Characteristic values for temporal structure of sound onsets.

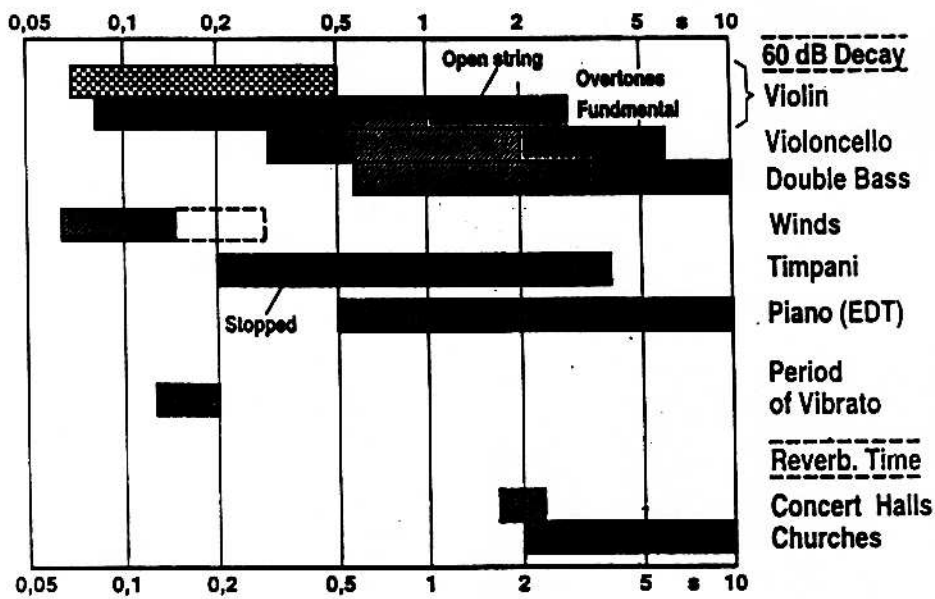
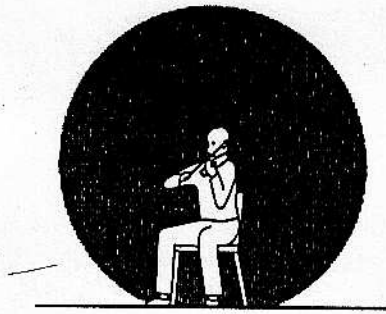
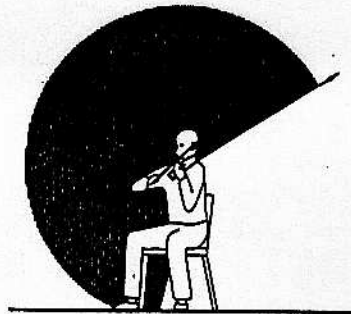


Fig. 4. Characteristic values for temporal structure of sound decays.

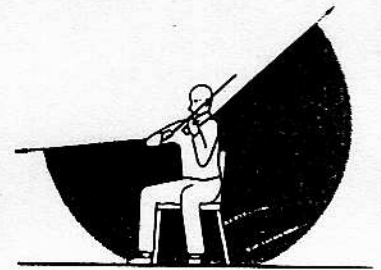
200-400Hz, 550Hz



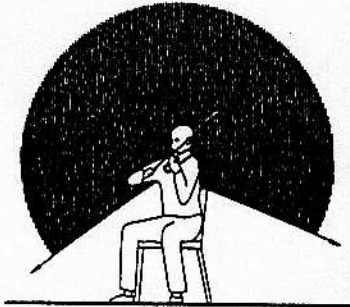
425 Hz



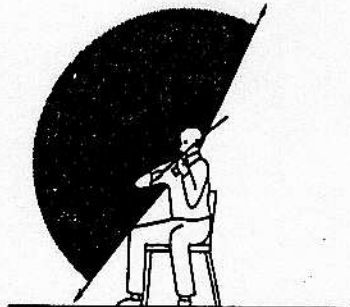
500 Hz



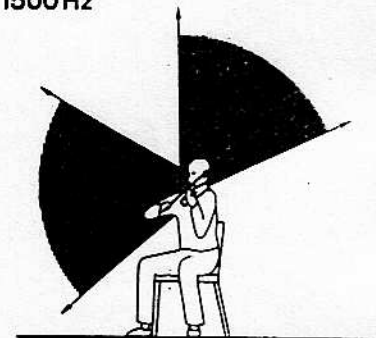
600-800 Hz



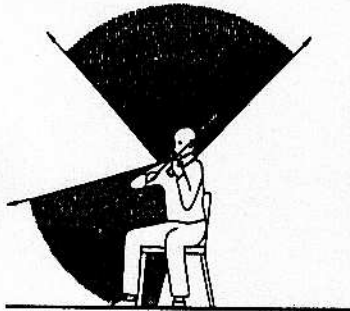
1000-1250 Hz



1500 Hz



2000 Hz



2500-5000 Hz

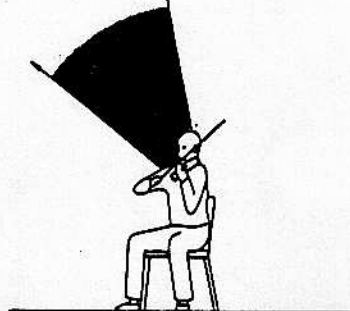


Fig. 11. Main directions of radiation (0 to -3 dB) for violins.

Strings

Woodwinds

Brass

Tutti

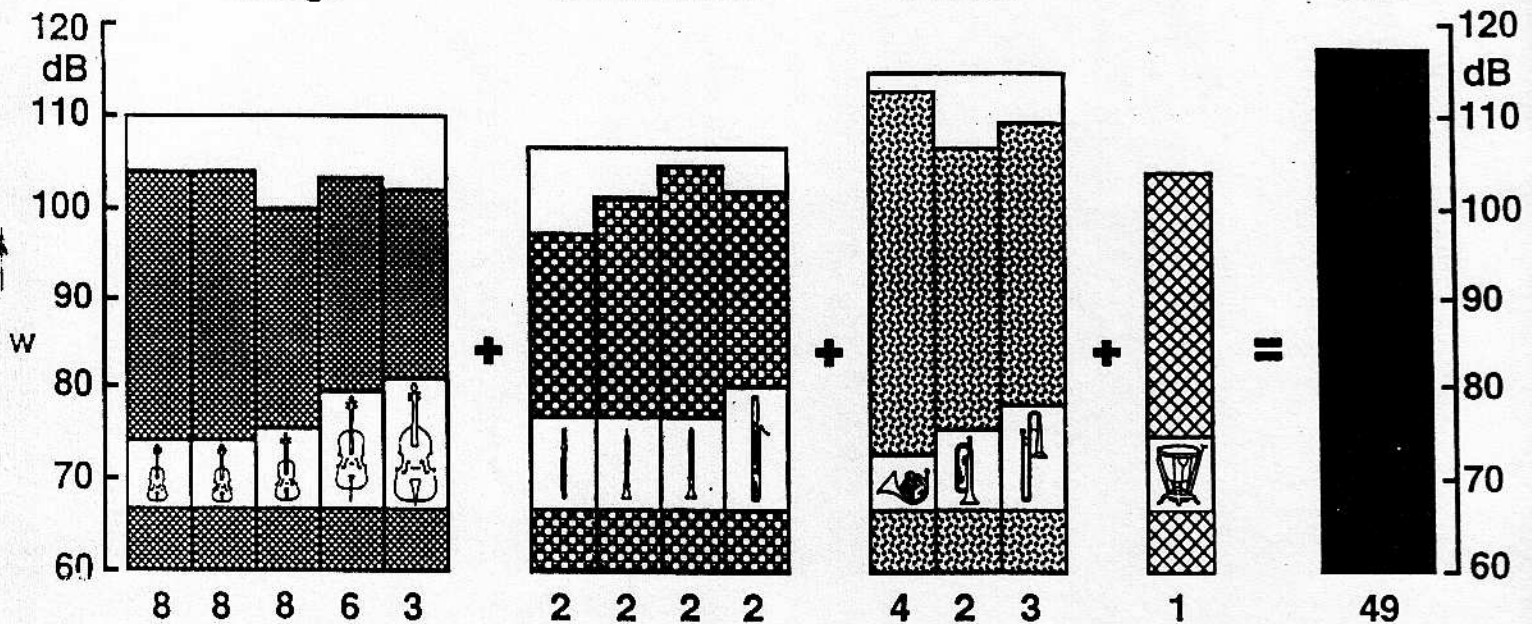
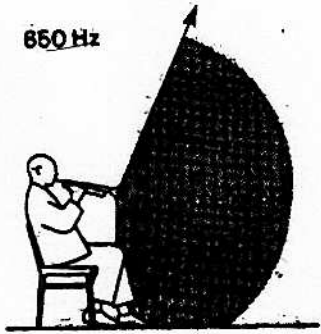
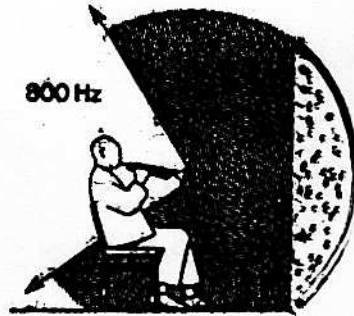


Fig. 12. Sound power levels of instrument groups and whole orchestra when playing fortissimo.

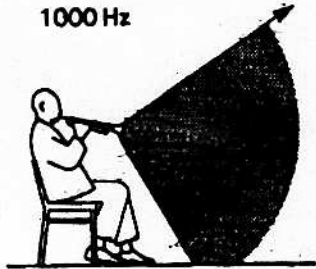
650 Hz



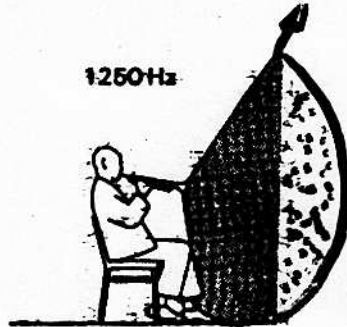
800 Hz



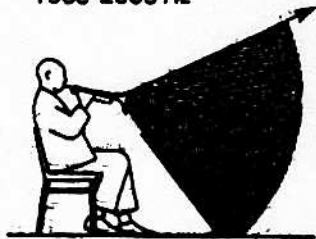
1000 Hz



1250 Hz

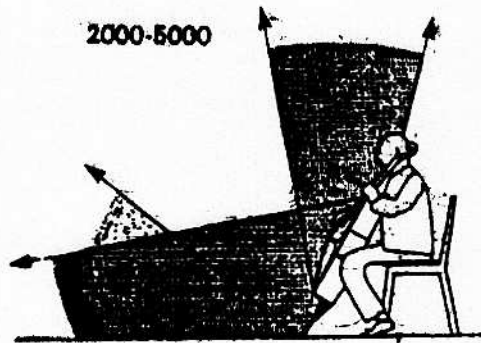
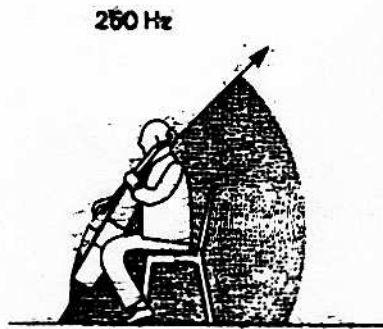
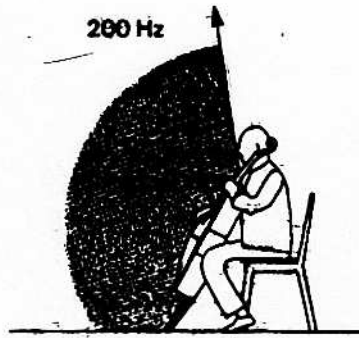


1500-2500 Hz



4000-15,000 Hz





Flöte

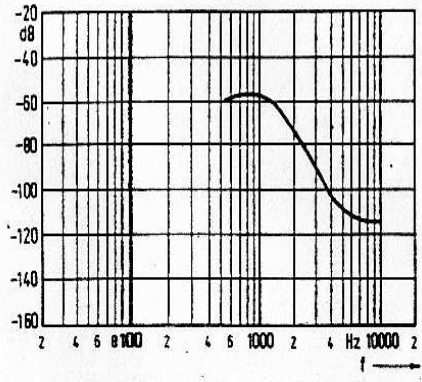


Abb. 12
Frequenzgang des maximal
möglichen Schalldrucks

Abb. 12a

Klarinette

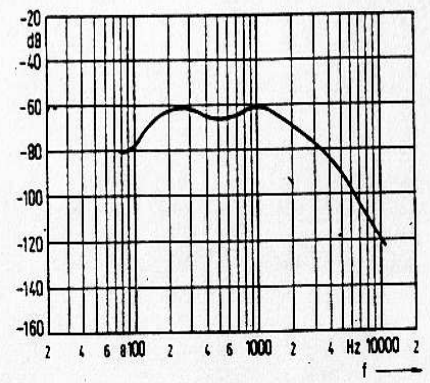


Abb. 12d

Horn

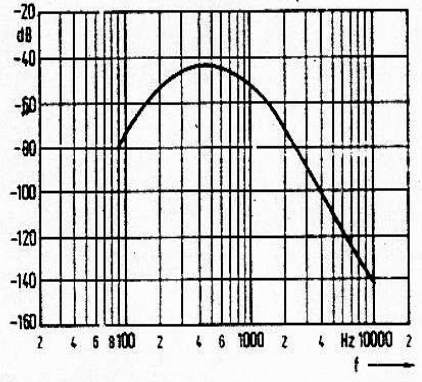


Abb. 12b

Trompete

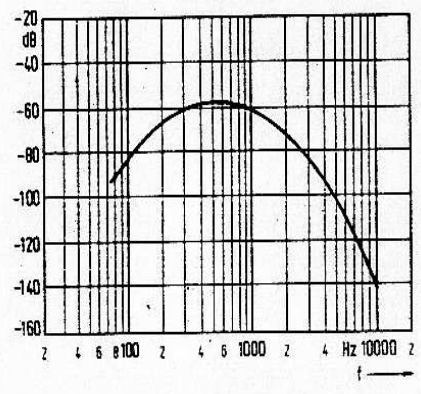


Abb. 12e

Posaune

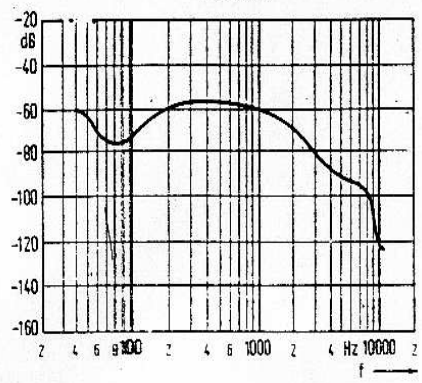


Abb. 12c

Klavier

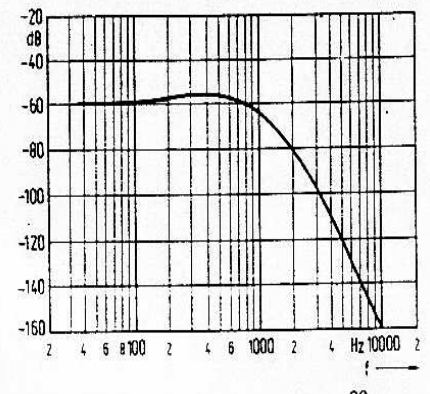


Abb. 12f

Orgel

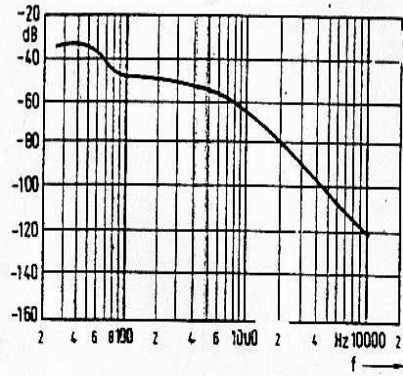


Abb. 12g

kleine Trommel (Snare)

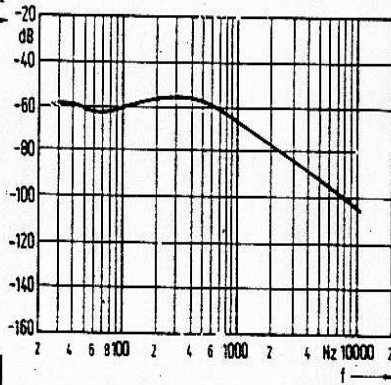


Abb. 12h

Kammerorchester

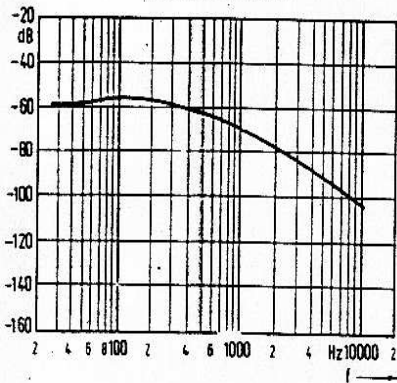


Abb. 12i

Sinfonieorchester

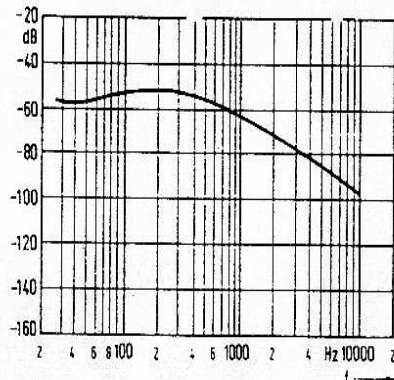


Abb. 12k

Abb. 13 Richtcharakteristik verschiedener Musikinstrumente

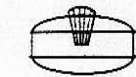
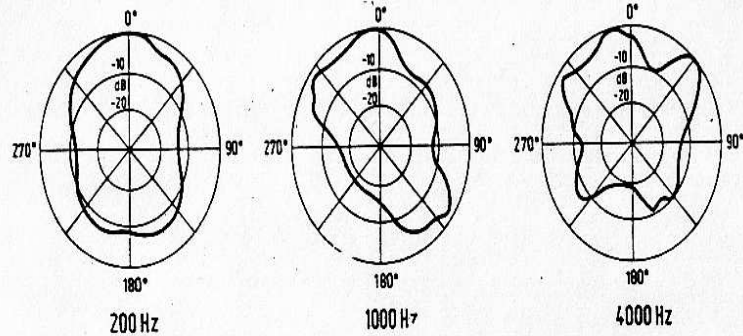


Abb. 13a Geige

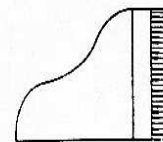
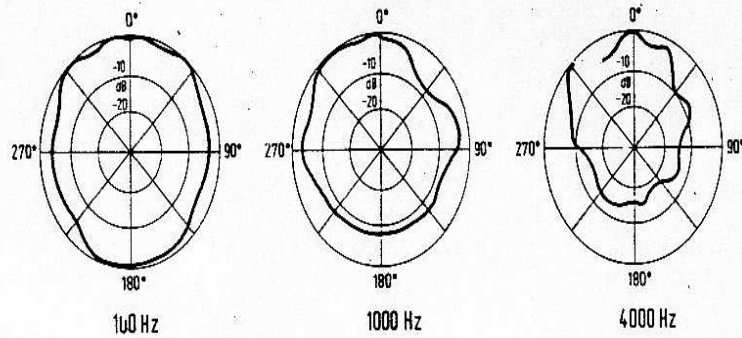


Abb. 13b Klavier

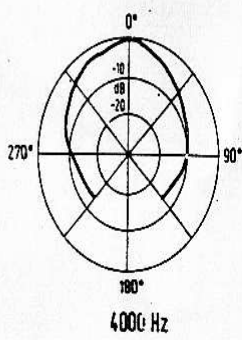
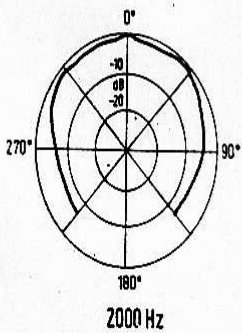
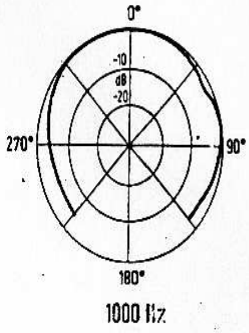


Abb. 13c Klarinette

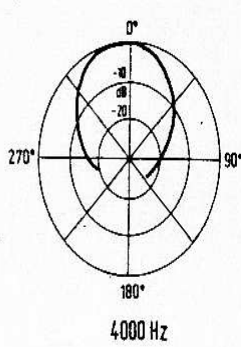
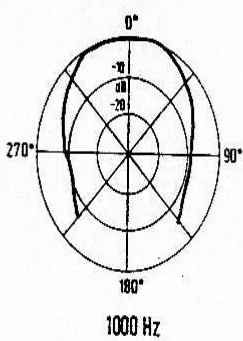
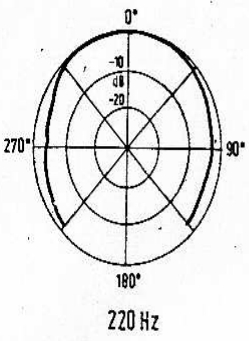


Abb. 13d Trompete

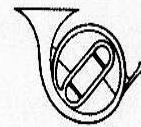
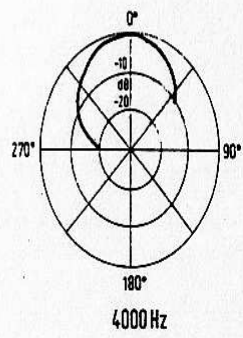
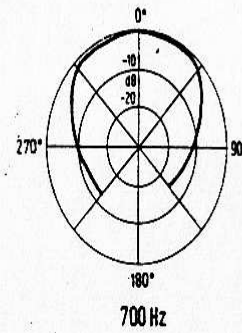
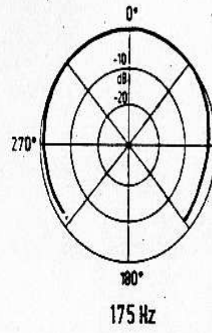


Abb. 13e Horn

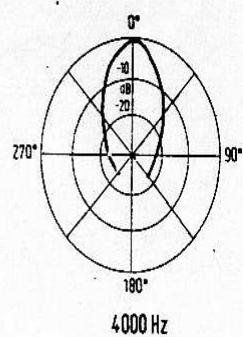
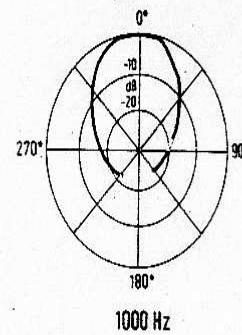
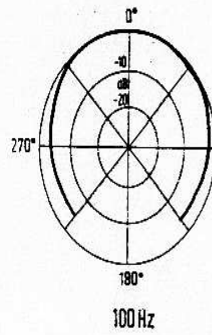


Abb. 13f Baßtuba

Teil I: Die Grundlagen

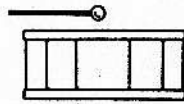
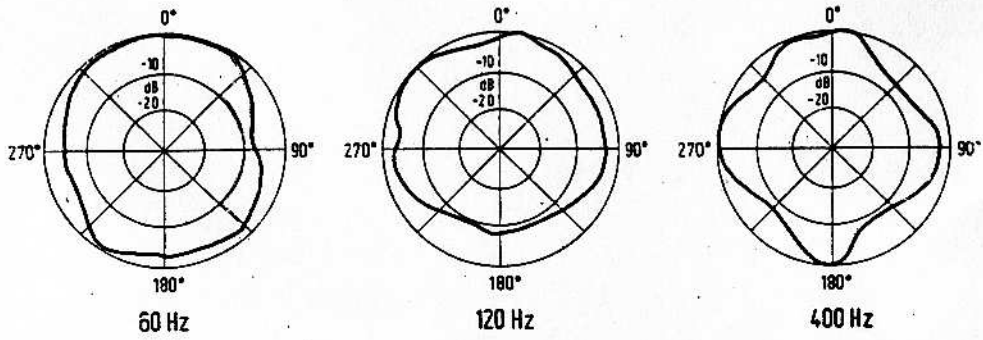


Abb. 13g Große Trommel

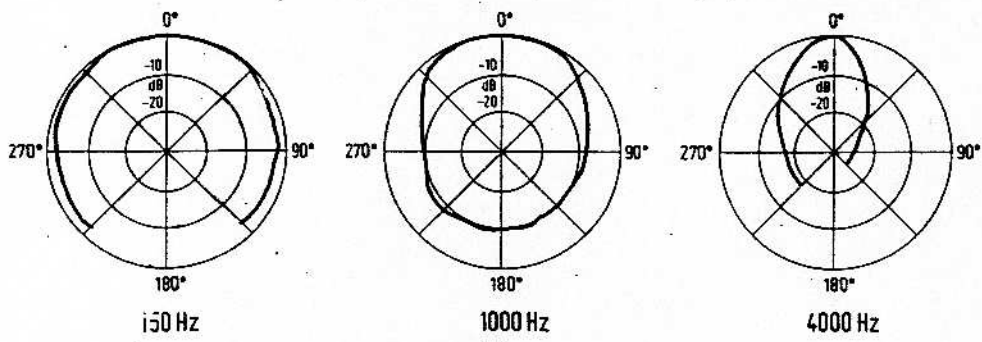


Abb. 13h Saxophon

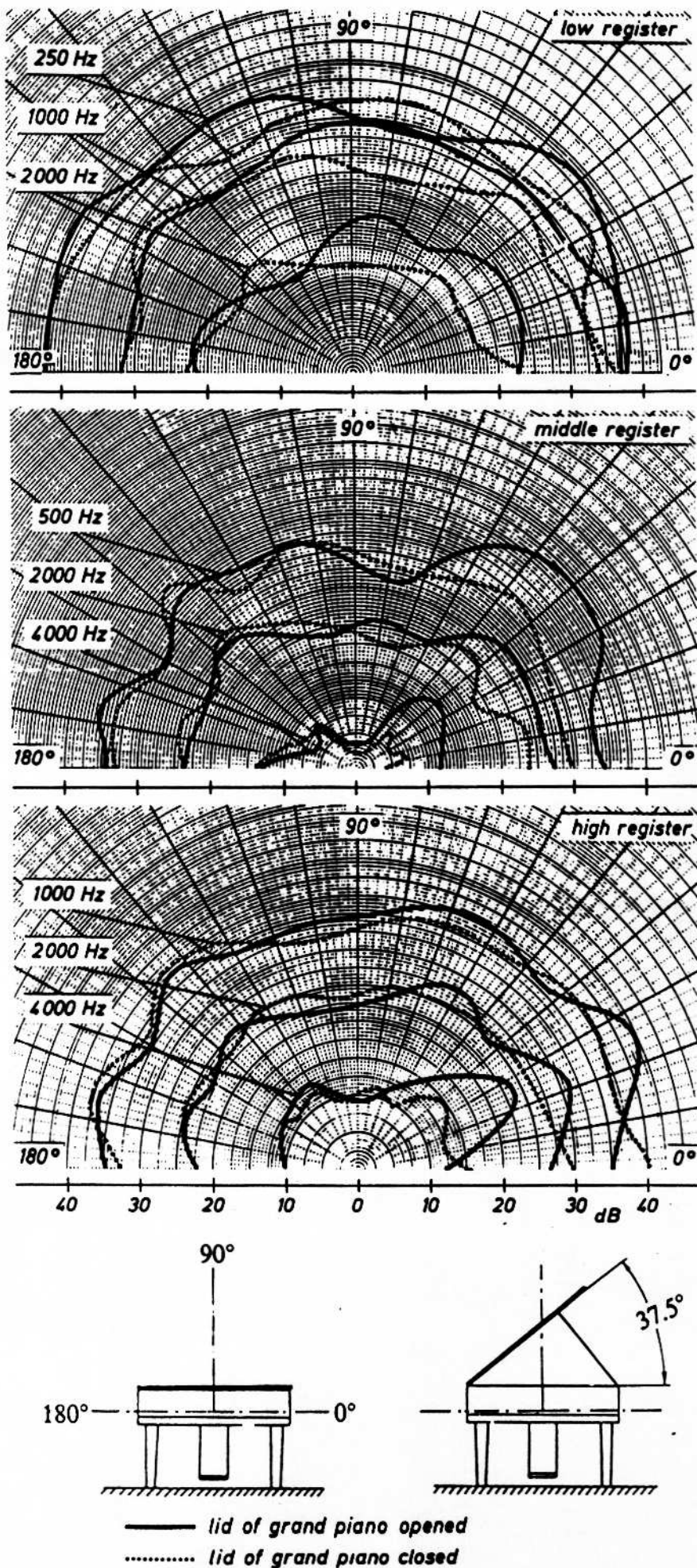
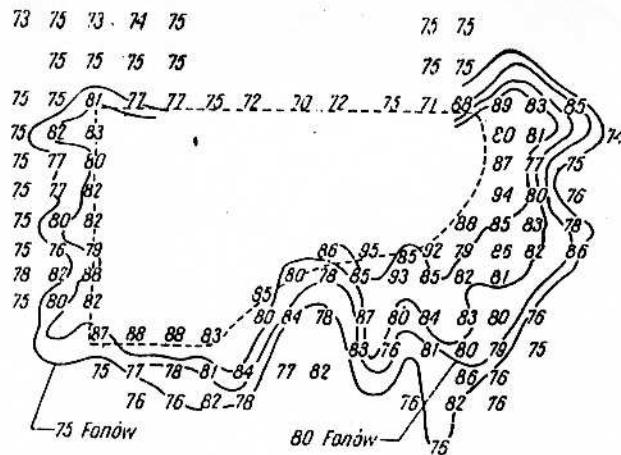
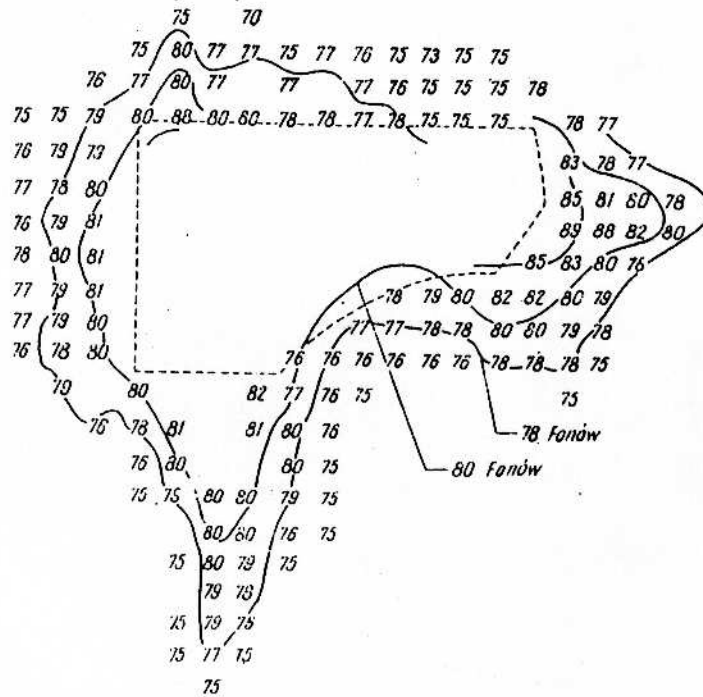


Fig. 12.40. Radiation pattern (vertical plane) for a grand piano in the low, middle, and high registers. Note the increase in radiation between 15 and 35° in the high register when the lid is open (Meyer, 1978).

a



b



Rys.4.1. Krzywe jednakowego poziomu głośności dźwięku dla fortepianu [16] :

- a. przy częstotliwości 130 Hz,
- b. przy częstotliwości 880 Hz .